

**HAS MORTALITY BECOME GEOGRAPHICALLY
POLARISED IN NEW ZEALAND? A CASE STUDY: 1981-2000**

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by Catherine Frances Tisch

University of Canterbury

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Abstract

In the New Zealand context, considerable academic and government attention has been given to the socioeconomic and ethnic disparities in health, and how they have evolved over time. Despite evidence of clear regional health patterning within New Zealand, there has been very little research monitoring how the *geographical* trends in health have evolved over time. The period 1980 to 2001 is very important in New Zealand's contemporary history, as it was a time of rapid social and economic change. For this reason, researchers are motivated to examine the extent to which health differentials evolved during the same period.

The reduction of health inequalities are at the top of the Government's health agenda, it is therefore important not only to monitor the success, or otherwise, of a reduction in social inequalities, but also, geographic inequalities. This thesis examines the extent of geographic inequalities in mortality in contemporary New Zealand, and whether or not mortality has become geographically polarised between 1981 and 2000. This thesis builds on research carried out in New Zealand, and seeks to delve deeper into the specifics of the geographic variation of mortality. Importantly, it fills several knowledge gaps during this period, which include: the geographic inequality of cause-specific mortality, the difference in regional cause-specific mortality between males and females, and the inequalities of mortality at a finer geographic resolution. A significant debate revolves around the relative contribution of compositional and contextual explanations for the geographic variation of health outcomes. The research undertaken in this thesis examines the contribution of population change and deprivation to the geographic inequalities of mortality.

Numerous key findings were identified in this research, four of which are as follows: In 2000, significant geographic inequalities in cause-specific mortality existed within New Zealand; between 1981 and 2000 the geographic mortality gap remained relatively stable; and when the geographic areas are sorted by deprivation, the results indicate that there has been a widening of the mortality gap. Analysis of the relationship between population change and mortality provide cautious support for the finding that mortality rates are higher in areas that have experienced population decline and conversely, that mortality rates are lower in areas where there has been a growth in population.

The high and stable levels of geographic inequality should be of great concern to policy makers as the results of this research indicate that policies addressing health inequalities in New Zealand are not sufficiently potent.

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CHAPTER ONE

Introduction and thesis aims

Health is a basic liberty, fundamental to participation in the society to which one belongs. It is a liberty which is unequally distributed (Sen 1999)

1.1 Evidence of Social and Geographic Health Inequalities

There is a long history of the measurement of health inequalities throughout the developed world, and this tradition has always recognised the contribution made by social circumstances of individuals to health inequalities in society (Boyle *et al.* 2004). Those individuals higher up the social hierarchy are more likely to survive in good health; those further down are more likely to succumb to disease and premature death (Benzeval, Judge & Whitehead 1996b). There is a long tradition of research into social disadvantage and health outcomes in the United Kingdom, for example: Edwin Chadwick's report on *The sanitary conditions of the labouring population* published in 1842; Charles Booth's survey of poverty in London in the late nineteenth century; the work of Collis and Greenwood on *The Health of the Industrial Worker*; and research carried out by Richard Titmuss who showed clear and unrelenting social class gradients in infant mortality in the 1940s (cited in Davey Smith, Dorling & Shaw 2001). However, it was not until the early 1980s that health inequalities were put firmly on the map in terms of public policy and academic research, with the publication of the influential 'Black Report' (Black *et al.* 1980). This was a well-publicised compilation of data illustrating the relationship between ill health/mortality and social class in England and Wales from the 1950s to the 1970s. The social class gradients in health and mortality were evident for both men and women and across ethnic groups.

The evidence also points to an enduring and widening health divide, more often than not, owing to mortality declining more rapidly in higher than lower socioeconomic groups. For example, analysis of the decennial United Kingdom censuses between 1931 and 1991 shows that for men in Social Class I (professionals) there was an 86% decrease in mortality rates, compared with only 50% for men in Social Class V

(unskilled) (Blane, Bartley & Davey Smith 1997). For men aged 55-64, there was a 57% decrease in mortality rates between 1931 and 1991, but in Social Class V mortality rates fell minimally, a decrease of only 2%; consequently, inequality between the classes increased. The concerns of social disparities in health outcomes, and the evidence of a widening gap are echoed in the New Zealand literature. For example, on examination of male mortality between 1975-77 and 1995-97, Pearce, Davis and Sporle (2002) found that, although male mortality had declined, social class differences did not diminish: the relative index of inequality increased from 1.8 in 1975-77, to 2.1 in 1985-87 and 2.3 in 1995-97. More recently, research has indicated that New Zealand's trend of internationally high health inequalities may have reached a plateau. Between 1995 and 2000 the polarisation of life expectancy was such that the difference in health between the least and most deprived quintiles was approximately nine years for males and seven years for females, and that the differential remained relatively stable during this time period (Tobias *et al.* 2001). In New Zealand, the differences in life expectancy are much higher than in England where these differences are approximately half as large (Bajekal 2005).

Social inequalities are matched by inequalities between places. In the United Kingdom there is a considerable historical continuity in the patterning of mortality by area. Britton (1990; cited in Macintyre 1997b) notes that for the last 150 years mortality rates have been highest in the North and West, compared with the South and East; in highly urbanised areas, compared with rural areas; in areas with high concentrations of households characterised as materially and socially deprived, compared with areas with high concentrations of affluent households. For example, in a study of mortality from the 1950s to the 1990s, Dorling (1997) found relatively low death rates between 1990 and 1992 in the South East of England and in the South West, and comparatively high mortality rates in the North West and North East of England and in Scotland. In the early 1990s a person living in Glasgow was 31% more likely to die than someone of the same age and sex who lived in Bristol, and 66% more likely to die than someone living in rural Dorset.

Similar to the trends for social inequalities in health, spatial inequalities in health in the United Kingdom have also increased. Dorling (1997) established that differences in mortality rates between areas had widened between the 1950s and 1990s: the three

areas with the highest mortality rates in the 1990s had mortality rates nearly a third higher than the national average in the 1990s compared with only a fifth higher in the 1950s. The spatial polarisation of health outcomes is also observed in New Zealand. Pearce and Dorling (2006a) found that, although overall life expectancy had increased in New Zealand between 1981 and 2001 (a time of rapid social and economic restructuring), life expectancy had become more geographically polarised than previously recorded. An examination of the slope index of inequality for life expectancy (a widely used metric of inequality) demonstrates an increase from 2.29 years in 1981 to 3.78 years in 2000 for males, and 2.34 years in 1981 to 3.18 years in 2000. This is supported by the latest available evidence that shows that, although overall mortality rates have declined between 1980 and 2001 for New Zealand as a whole, the reduction has not been consistent for all areas (Pearce *et al.* in press). While the majority of District Health Boards experienced decreased mortality rates, rates actually increased in some areas.

1.2 The Importance of Examining Geographic Variations in Health Outcomes

It is important to understand why there are strong and growing inequalities in health in New Zealand so that public policy debates can be well informed and strategies can be developed to address the decrease in this divide. Various explanations have been proposed for the observed geographic variation of health outcomes. A significant debate surrounds the issue of the relative contribution of compositional and contextual factors (Macintyre, MacIvers & Sooman 1993). It has been argued the observed geographic inequalities in health may be a reflection of either the composition of the population in different areas (the composition argument), or may reflect aspects of the physical and/or social context in which people live (the contextual argument). Various individual level factors may affect the geographic variation in health outcomes, these include: social class level, employment status, ethnicity and population change. Conversely, contextual factors that could influence geographic variation in health outcomes include the provision of services, socioeconomic status of an area and levels of environmental pollution. It is often assumed that increases in socioeconomic inequality are the primary driving force behind the increased spatial polarisation of health outcomes. However, a number of researchers have considered

questions related to the effects of area deprivation over and above individual socioeconomic characteristics and have reported what is termed a residual 'area effect' (for example Shouls, Congdon & Curtis 1996; Wiggins *et al.* 1998). Therefore health status is not just a product of the sum of individuals living in a certain area, but is also to some extent determined by the context in which they live. For this reason, the study of the geographic variation of health outcomes is valid and necessary.

1.3 Rationale: The Gap in the Literature

Despite evidence of regional health variation in New Zealand, until recently, there have been few studies monitoring how geographical trends in health have evolved over time. The lack of a temporal geographic aspect to health inequalities research in New Zealand prompted Pearce and colleagues (Pearce & Dorling 2006a; Pearce *et al.* in press) to examine this during the period 1980 to 2001. This time period is very important in New Zealand's contemporary history, as it was a time of rapid social and economic change. For this reason, researchers are motivated to examine the extent to which health differentials evolved during the same period. This thesis builds on the work carried out by Pearce and colleagues (Pearce & Dorling 2006a; Pearce *et al.* in press), and seeks to delve deeper into the specifics of the geographic variation of mortality in New Zealand. In a recent commentary reviewing the explanations of the widening polarisation life expectancy observed in New Zealand, Harper, (2006) commenting on Pearce and Dorling's (2006a) assertions, contends that:

....the effects of economic inequality...[on]...health inequality...would be strengthened by looking at mortality among specific causes of death rather than life expectancy, which may change through multiple age-specific and cause-specific pathways (Harper 2006 p 604).

This important research gap is directly addressed in this thesis where the geographic variations of nine cause-specific mortalities are examined. These causes of mortality either account for a large proportion of the deaths that occur in New Zealand each year, or they are priority areas identified in the *New Zealand Health Strategy* (Ministry of Health 2000). It is envisioned that, by analysing a large number of cause-specific mortalities during the past two decades, Harper's advice may be followed, and the issue of whether or not cause-specific mortality has become

geographically polarised will become evident. The limited number of studies examining the geographic trends in health outcomes in the New Zealand context has, until now, been limited in geographical extent; consequently, it is valuable to undertake analyses of the polarisation of mortality at a finer geographical resolution. For this reason, the analysis in the thesis is undertaken at the District Health Board (DHB) and Territorial Local Authority (TLA) levels. Similarly, studies have been limited by the analysis of health outcomes with males and females combined. It is well known that many causes of death vary remarkably by sex (Bartley 2004); therefore, this research analyses mortality by males and females separately.

One important explanation that has been postulated for explaining the growing spatial divide in health is the role of population change. Selective migration of individuals is shown to account for a large proportion of the polarisation of health outcomes: areas that lose population are more likely to have poorer levels of health than those areas which are growing because of in-migration (Boyle, Exeter & Flowerdew 2004). This key factor has been mentioned, but not specifically studied in relation to the geographic polarisation of health outcomes in New Zealand. Pearce and Dorling (2006a) note that if studying selective migration were to help explain geographic variations in health outcomes anywhere, it would be in New Zealand, because of its almost unprecedented high rate of population turnover. To date, no study has explicitly examined the role of migration in explaining the geographic inequalities in health in New Zealand (Pearce & Dorling 2006b). It is hoped that this thesis will help quantify the role of population change in influencing the contemporary geographic variations in mortality in New Zealand.

1.4 Research Objectives

The overall aim of this thesis is to contribute to a greater understanding of the extent to which geographic inequalities in health have changed during the 1980s and 1990s in New Zealand, and whether the gap has decreased, remained relatively stable or widened over time.

The objectives of this thesis are:

1. To determine the extent to which there are geographic inequalities in all-cause and cause-specific mortality in New Zealand in 2000
2. To determine the extent to which mortality has become geographically polarised between 1981 and 2000
3. To determine the extent to which deprivation and population change influences the geographic polarisation of mortality during this time period.

1.5 Thesis Structure

Chapter Two provides an overview and critical review of the health inequalities literature. Importantly, it identifies the difference between social and geographical health inequalities, and why it is necessary to study the latter. A relatively new emphasis in the geographic health inequalities literature is the polarisation of health outcomes over time. Trends are important to analyse as they greatly enhance understanding of health inequalities, and importantly, can be used to identify whether policies aimed at reducing health inequalities have succeeded. The compositional and contextual debate is introduced, and factors are examined which could account for geographic variations in health outcomes that are observed in New Zealand.

Chapter Three outlines the population and mortality data used for this research, and importantly, outlines the methods employed.

Chapter Four presents background information on the cause-specific mortalities that are analysed in this thesis. Graphs are provided which detail the temporal variation in the numbers of deaths and mortality rates recorded in New Zealand. These temporal variations are important to identify as mortality rates at the regional level can be compared with what was recorded for New Zealand as a whole.

The focus of Chapter Five is to present findings on the extent to which there are contemporary geographic inequalities in mortality in New Zealand. This is achieved primarily through the use of maps indicating the levels of inequality in mortality (expressed as age standardised mortality rates) at the DHB and TLA levels, for both males and females, for 2000. The chapter concludes with a summary of the level of similarity between the geography: of all-cause mortality and cause-specific mortality, the geographic distribution of male and female mortality, and the level of inequality at the DHB and TLA levels.

The contemporary geographic inequalities in mortality presented in Chapter Five, pave the way for more in depth analysis of the changes of geographic inequalities in mortality between 1981 and 2000, which is the focus of Chapter Six. For each cause-specific mortality, the temporal trends of male and female inequalities in mortality recorded by each DHB and TLA throughout the study period are examined. The rate ratio analysis indicates whether mortality rates have decreased, remained steady, or increased over time. The second half of Chapter Six investigates the level of geographic polarisation between the 'worst' (highest mortality rate) and 'best' (lowest mortality rate) areas, for each sex and cause of mortality, throughout the study period.

The focus of Chapter Seven is to observe the relationship between deprivation (both absolute and relative) and population change on the geographic inequalities in mortality.

Chapter Eight highlights the key findings and situates them within the wider body of national and international literature. Limitations of the study are noted and policy implications resulting from this research are discussed.

Finally, the conclusions related to the aims of this thesis are presented in Chapter Nine. Future research avenues are identified which would further the findings of this research.

1.6 Conclusion

Chapter One has introduced the thesis within the context of previous international and national research, and has justified why this research was undertaken. The nature of geographic inequalities in health has been the subject of much debate, and it is only recently that the extent to which health is geographically polarised in New Zealand has become known. However, many gaps have been identified that warrant further research, and it is anticipated that this thesis will help fill some of those knowledge gaps and extend the knowledge of geographic inequalities in health, and how they have changed over time.

CHAPTER TWO

A Review of the Health Inequalities Literature: The Growing Importance of Geography

2.1 Introduction

The aim of Chapter Two is to critically examine the social and geographical health inequalities literature. This Chapter has three purposes. First, the reader is introduced to the health inequalities debate, with an overview of the literature since the publication of the influential Black Report (Black *et al.* 1982). Although the majority of research has focused on social position and the subsequent effects on health, attention will be paid to the growing evidence of geographical inequalities in health. Second, an examination is made of the increasingly observed widening social and geographical health gap, both at the international and national scale. Gaps in the research are highlighted and reasons are given as to why it is necessary to examine the geographical polarisation of health observed. Finally, possible explanations are provided for the geographical polarisation in health outcomes, with specific reference given to compositional and contextual factors.

2.2 Perspectives on Health Inequalities

Section 2.2 provides an overview of the health inequalities debate thus far, with a particular focus on the research that has emerged since the publication of the Black Report. The main limitations of the debate are provided, and the importance of geography in this research arena is highlighted.

2.2.1 The Nature of Health Inequalities

Interest and examination of health inequalities is not a new phenomenon. As early as the nineteenth century, prominent distinctions between occupations and life expectancy were observed. For example, in 1842 Edwin Chadwick reported that the

life expectancy for professional persons was 35 years, compared with 22 years for tradesmen and just 15 years for labourers and servants (Chadwick 1842; cited in Macintyre 1997a). Almost a century later associations were found between infant mortality and social class; 48 infant deaths per 1000 in Social Class I (Professionals) compared with 123 per 1000 in Social Class V (Unskilled) (Registrar General 1913; cited in Macintyre 1997a). During the same study, associations were also noted among adult mortality; 81 adult deaths per 1000 in Social Class I compared with 127 per 1000 in Social Class V (Registrar General 1913; cited in Macintyre 1997a). Macintyre (1997a) provides a useful timeline of further health inequalities research documented up until the mid twentieth century.

The sporadic nature of health inequalities research throughout the mid twentieth century changed dramatically with the publication of the Black Report (Black *et al.* 1980). The report was commissioned by the 1970s Labour administration in response to an increasing concern that the National Health Service was not solving the issue of health inequalities in Britain. The report aimed to review the evidence on class differences in health, elucidate possible causes, and provide policy recommendations. The Labour government was succeeded in 1979 by the new Conservative party who gave the Black Report a cold reception. A common response from Ministers was to accept the notion that health inequalities existed but that these differences were due to individual behavioural patterns, such as smoking and a lack of exercise, rather than to deprivation (Townsend, Davidson & Whitehead 1992). For example, the former Under-Secretary of State for Health, Ray Whitney, suggested that the Black Report ignored the evidence of lifestyles and concentrated on poverty: “those rates do not mean that those diseases are a function of poverty. Other reasons and issues are neglected by those who write these reports and those who pounce on them and seek to benefit politically from them” (Whitney 1987 cited in; Townsend, Davidson & Whitehead 1992 p 11). The Conservative government lacked the political willpower to implement the necessary policies that were addressed in the Black Report, and consequently, the Labour party spent the next 17 years making political gains from the non-implementation of the suggestions of the Black Committee. When the Labour administration was re-elected in 1997 an Independent Inquiry into Inequalities in Health was launched. Although the recommendations of the Black Report were not implemented, it was extremely important in setting the agenda for further research

into health inequalities both in Britain and elsewhere (Davey Smith 1990; Townsend, Davidson & Whitehead 1992).

The Black Report primarily focussed on mortality rates (as an indicator of health status) of people in different social classes (as a measure of social position) to describe the nature of health inequalities. Using data from the 1970-1972 Decennial Supplement on occupational mortality, the authors showed that crude death rates among working aged people (15-64 years) Social Class V were two and a half times greater than experienced by people in Social Class I. Moreover, regular class gradients, based on the father's social class, were shown to exist for stillbirths, infant mortality (deaths in the first year) and childhood mortality (age 1-14 years). When mortality was examined by specific cause of death, health inequalities were revealed for most causes, notably accidents in childhood, and diseases of the respiratory system, digestive diseases and malignant neoplasms among adults. Although the majority of research in the Black Report focussed on mortality, morbidity data from the British General Household Survey was also examined. Available data on rates of self reported long standing illness tended to reflect those observed for mortality; long standing illness was twice as high among male unskilled workers compared with male professional workers, and approximately two and a half times as high among female unskilled workers compared with female professional workers. When severe or 'limiting' long-standing illness was isolated from long standing illness, lower social classes were found to be even further disadvantaged.

As previously mentioned, since the publication of the Black Report a great deal of research has focussed on health inequalities. The main findings of these studies are briefly summarised below.

At the time of the Black Report little data were available on the relationship between health inequalities and social position in other developed societies. It is now widely accepted that health varies by social position in many other developed countries including the Netherlands (Mackenbach 1994), Australia (Turrell & Mathers 2001), and New Zealand (Pearce, Davis & Sporle 2002). For example, analysis of mortality by occupational class in New Zealand for 1995-1997 showed that the mortality rate for males in Class 6 (lowest socioeconomic group: mortality rate 559 per 100,000)

was almost three times greater than the mortality rate for males in Class 1 (highest socioeconomic group: mortality rate 197 per 100,000) (Pearce, Davis & Sporle 2002). However, earlier work which compared 1975-77 with 1985-87 showed that the male social class gradient while increasing, became more complex (Pearce, Marshall & Borman 1991). The most deprived, Class 6, did not have the highest mortality rate, Class 5 did. The authors offer the effects of unemployment during this time of rapid social and economic change as a reason for the unexpected trend. The majority of research on class differences and health use mortality to indicate health status, however similar measures of morbidity as used in the British General Household Survey also reveal evidence of health inequalities (Rickards *et al.* 2004) (this is discussed in more detail below).

At the time of the Black Report little was known about variations in health outcomes by dimensions of class other than on the basis of occupational status (the British Registrar General's 'social class' schema would more accurately be termed 'occupational class'). Critics cited many limitations of the use of an occupational based classification scheme for capturing disparities in health. Reasons centrally focussed on problems of appropriately classifying women, the retired, informal workers, homemakers and other groups excluded from the labour market (Krieger, Williams & Moss 1997). These criticisms led some academics to doubt the magnitude of health inequalities (O'Shea 2002). However, there is now evidence from many countries that health inequalities persist with alternate measures of social class such as poverty (Shaw *et al.* 2000a), deprivation (McLoone & Boody 1994), educational level (Steenland, Henley & Thun 2002) and housing tenure (Ellaway & Macintyre 1998). The association between health and income (as measured directly or via indicators of material well-being), or health and education often seem to be a stronger predictor than the frequently used indicator of occupational class (Hay 1988; Winkleby *et al.* 1992; Benzeval, Judge & Shouls 2001). For example, Goldblatt (1990) showed that the simple variable 'household access to car' was a greater predictor of mortality than occupational class. In analysis of the Health and Lifestyle Survey, Blaxter (1990) reported greater risks of health problems for low income groups compared with low occupation groups while controlling for differences in the other socioeconomic indicators. In an United States study, researchers aimed to quantify the relative impact of different dimensions of socioeconomic status

(education, income and occupation) on risk factors (such as cigarette smoking and blood pressure) for disease (Winkleby *et al.* 1992). The relationship between the socioeconomic measures and risk factors was strongest and most consistent for education, indicating higher risk associated with lower levels of educational achievement.

While the Black Report primarily used mortality statistics as evidence of health inequalities, more recent research has shown that a range of other indicators are associated with class, such as morbidity (Marmot *et al.* 1991), hospitalisations (Petrou *et al.* 2006), cause-specific mortality (Kunst *et al.* 1998) health behaviours (Honjo *et al.* 2006) and physical measures such as height (Walker, Shaper & Wannamethee 1988) and weight (Langnäse, Mast & Müller 2002). It is generally noted that social gradients by other indicators are not as steep as observed for mortality (Macintyre 1997a).

One striking observation amongst numerous studies is the approximate linear relationship between social class and health, that is, increases or decreases in health occur throughout the class hierarchy, not just at the two extremes (Chandola 1998; Sloggett & Joshi 1998; Adler & Ostrove 1999). Thus differences in mortality rates between classes at the top of the scale are comparable in magnitude to the differences between classes at the bottom of the social scale. Macintyre (1997a) has noted that nearly all published data on socioeconomic status (whether measured by income, education or ecological indices) and health (whether measured by birth weight, mortality, or morbidity) tends to illustrate the linear relationship.

There is increasing evidence to suggest that class inequalities in health have increased over time, despite the fact that almost everywhere infant mortality and premature mortality have declined. Central to the evidence of widening health inequalities was the calculation of life expectancy by social class for the period 1971-1999 amongst a representative sample of approximately one percent of the population in England and Wales (Donkin, Goldblatt & Lynch 2002). This longitudinal study showed evidence of a steady increase in the gap between life expectancy of those in non-manual and manual classes between 1971-81 and 1997-1999. In 1997-1999 men in non-manual classes had a life expectancy 3.5 years greater than those in manual classes. The

comparable difference in 1977-1981 was 2.6 years. Among females, the difference between classes was 2.8 years, an increase from 2.4 years in 1977-1981. The growing social divide is documented in other countries such as the United States (Schalick *et al.* 2000), Australia (Turrell & Mathers 2001) and New Zealand (Blakely *et al.* 2005).

Since the publication of the Black Report, a great deal has been learnt about the social disparities in health. There is a broad consensus that health inequalities measured by social position are a feature of all developed societies, they have undoubtedly widened over time, they can be observed using a range of social class measures and that the relationship between class and health is generally linear.

2.2.2 The Health Inequalities Debate – Explanations for the Observations

There is general consensus that the incidence of ill health varies by social status, whereby the better off generally have lower mortality and morbidity than those living in worse off circumstances (Benzeval, Judge & Whitehead 1996a). Unfortunately consensus is not reached on the explanations of these patterns. Identifying the causes for such social inequalities in health is complex and is most likely the result of a combination of factors. These factors generally fit within five theoretical explanations. These are:

- Artefact explanations
- Theories of natural and social selection
- Cultural/behavioural explanations
- Materialist/structural explanations
- Psychosocial and social capital explanations.

The first four explanations were introduced in the influential Black Report. These theoretical explanations have come to dominate academic thinking and debate and have had a major impact on research into social inequalities in health (Blane 1985; Bloor, Samphier & Prior 1987; Blane 1993; Davey Smith, Blane & Bartley 1994). The fifth explanation for social inequalities in health is more recent and is influenced by the work of Marmot and Wilkinson (Marmot & Wilkinson 1999). Below is a

synopsis of the five theoretical explanations for social disparities in health and indicates how the health inequalities debate has shifted from a focus on mainly compositional explanations to those based on the importance of context.

2.2.2.1 The Artefact Theory

The artefact theory suggests that links between class and health are artificial and are the result of the process in which the statistics are derived and errors in measurement (Fox & Benzeval 1995). Supporters of the artefact argument cite a number of reasons for this, such as the numerator/denominator bias and the inability to accurately measure social phenomena over time. Possible biases can arise from using national health statistics and census population data, because the numerator and denominators are derived from different sources. However, this viewpoint is easily disputed as there are numerous studies which have clearly found inequalities in health based on longitudinal and cross-sectional studies such as the Whitehall Study which investigated the health of British civil servants (Marmot *et al.* 1991). Vågerö and Illsley (2004) aptly summarise the nature of artefactual effects: "...measurement problems may affect the size and pattern of differences but do not cast doubt on their existence" (p 123).

2.2.2.2 The Natural or Social Selection Theory

The Black Report also discusses social selection, whereby social variations in health are the result of social mobility. This viewpoint suggests that social mobility is affected by health (as opposed to health being affected by social position), and that the healthy move up the class hierarchy while the less healthy move down. The consequence of downward social mobility is a concentration of people with greater morbidity and higher risk of dying among lower classes or socioeconomic groups. The lower end of the social scale is therefore made up of the most vulnerable people. In contrast, upward social mobility leads to a concentration of the strongest and most robust individuals in the population. Therefore the higher social or socioeconomic classes have the lowest rates of premature mortality. This explanation has some plausibility, but proponents and opponents are divided about the explanatory power of

this hypothesis (Dahl 1996). Generally it is not considered to be the major factor accounting for social inequalities in health. For example, on examination of a birth cohort, Power, Matthews and Manor (1996) aimed to analyse the effects of health related mobility and accumulation of social circumstances for men and women aged 33 years. The authors found that inequalities in self-reported health were due to differential lifetime socioeconomic circumstances and not primarily to health related social mobility.

2.2.2.3 The Cultural/Behavioural Theory

The third explanation identified in the Black report views cultural/behavioural factors as the mechanism by which health inequalities are produced. The authors emphasise that social differences in lifestyles lead to disparities in health among social classes. Behaviours typically identified as health damaging include cigarette smoking, drug taking, poor dietary intake, excessive alcohol consumption violence, and lack of exercise (Blaxter 1990). According to the cultural/behavioural theory, variations in ill health between social groups develop because lower social groups adopt disproportionately more health damaging and risky behaviours than those in higher social groups. There is no disputing the aetiological significance of these behaviours for morbidity and mortality, or that these behaviours are socially patterned. For example, in many developed countries smoking prevalence continues to be much more prevalent among lower socioeconomic classes compared with higher socioeconomic classes (Barbeau, Krieger & Soobader 2004). Smoking cessation is positively associated with social class, in some part due to the greater capacity of the higher social classes to quit the habit with access to effective resources for smoking cessation and home environments that are more conducive to smoking cessation (Honjo *et al.* 2006). Many people assume that such behaviours constitute a complete explanation of health inequalities. However, the research evidence strongly suggests they do not, and for this reason there are many critiques of the cultural/behavioural theory. Germov (2002) notes that such accounts are often criticised for their victim blaming and overly simplistic account of inequality. The impetus behind this argument is that solely concentrating on the individual as the cause of illness ignores important social processes, contexts and relationships that affect their lives, which lie

outside of their control (Stronks *et al.* 1996). Germov (2002) also notes that focussing on the individual as the cause and cure of illness assumes that the individual has the necessary resources and time available to change their behaviour and lifestyle. Other arguments against the cultural/behavioural explanation include that the poor are often heavy users of health services (Wagstaff 2002), socioeconomic gaps remain even after controlling for lifestyle differences (Rose & Marmot 1981) and not all forms of health damaging behaviour are strongly related to class (for example dental self care (Sanders, Spencer & Slade 2006)).

2.2.2.4 Material and Structural Circumstances Theory

The fourth explanation of health inequalities in the Black Report is referred to as material and structural circumstances theory and emphasises the individual's external environment, in particular the role of social, economic and political factors, in determining the distribution of health and illness (Germov 2005). The drive behind this explanation is that health inequalities develop because the disadvantaged are more likely to be exposed to hazards inherent in society, for example exposure to poor living and working conditions, discrimination, psychosocial stress, fewer educational and employment opportunities, less income available to purchase necessities for healthy living and lack of access to health care services and facilities (Germov 2005). As Macintyre (1997a) explains, despite the authors' attempts to clarify the main components of this explanation, there remains some confusion between what she terms the 'hard' version, in which material conditions themselves are the key determinants of health, and the 'soft' version where social as well as economic capital are regarded as important. At an ecological and individual level, Barker and colleagues (Barker 2001; Barker *et al.* 2002; Barker 2006) have completed an important series of studies revealing relationships between infant morbidity and mortality in later life. Their primary finding concerns the link between low birth weight and high blood pressure in adulthood; this in turn leads to increased susceptibility to heart disease and stroke mortality. When growth is impaired during intrauterine stages the body sets a higher level of blood pressure. As birth weight is class related the underlying cause is seen to be poor maternal nutrition associated with poverty, which results in low birth weight. This is a more material focus. From a

structural point of view, the provision of facilities and availability of goods and services in particular areas can effect the promotion of good health. Macintyre *et al.* (1993) showed that people who lived in poorer areas had access to fewer recreational and sports facilities than those who lived in better off areas. Sooman, Macintyre, and Anderson (1993) found that there were price disincentives in poorer areas to eat healthily. It is evident that there are several ways in which a materialist explanation of health can exist. Many researchers have argued that “the distinction between cultural/behavioural and materialist explanations is artificial” (Blane 1985 p 434). The reasons behind such statements are that material and social circumstances can indirectly affect health through behavioural habits in addition to direct impacts on individual’s health status. In other words the distinction between material and cultural explanations is blurred. This statement is highlighted in an examination of a sample of the population from the Netherlands to distinguish the importance of cultural/behavioural and materialist/structuralist explanations for socioeconomic inequalities in health (Stronks *et al.* 1996). The results showed the observed inequalities in health could to a large extent be attributed to socioeconomic differences in behaviour and structural conditions. However, the contribution of structural conditions was greater. In addition, they demonstrated that there was a considerable overlap between lifestyle and structural conditions, and if the overlap was ignored, the contribution of behavioural factors would have been overestimated.

2.2.2.5 Psychosocial/Social Capital Explanations

A more recent explanation, influenced by the work of Marmot and Wilkinson (1999) has steered away from the traditional focus on class analysis, and highlighted psychosocial factors and the lack of social cohesion or social capital as the basis for persistent health inequalities.

There is a growing body of opinion that social isolation and a lack of involvement in community life (the concept of social cohesion), can contribute to poor health status. This idea is not new and stems largely from the work of Durkheim (1951) who demonstrated that suicide was more common among socially isolated individuals. Contemporary research suggests that social networks are an important predictor of

health status. A prospective study of 2835 women who were diagnosed with breast cancer showed that women without close relatives (hazard ratio 2.65), friends (hazard ratio 4.06), or living children (hazard ratio 5.62) had elevated risks of breast cancer mortality and all-cause mortality compared with those with more social ties (Kroenke *et al.* 2006). The suggestions from this and similar studies is that social networks provide social support in the form of advice, information, and emotional and financial support in times of stress (Gatrell 2002). The notion of social support has been extended to the wider concept of social capital. Social capital embraces a variety of aspects of the social environment such as feelings of trust and safety; tolerance of diversity; extent to which individuals participate in the local community; and quality and quantity of neighbourhood, family and friends connections (Bullen & Onyx 1998). Although difficulties exist in adequately measuring social capital, evidence suggests (primarily in the relationships between wealth inequality and trust, trust and reciprocity, wealth inequality and reciprocity, and all of these and health) that there is some value in incorporating this concept in explaining health variations. For example, Kawachi and colleagues (1997) found a strong association between the percentage of people in each state of the United States of America who answered 'yes' to the assertion that 'most people would try and take advantage of you if they got the chance' and the state level mortality rates. States with the lowest levels of trust had the highest levels of mortality rates. In this example trust is used as an example of social capital. Similar associations can be found over a much longer time period in England and Wales. Between 1901 and 1991 there was a steady increase in life expectancy of approximately two years every decade. During the decades in which World War I and World War II occurred, the rise in life expectancy rose at a much greater rate, in the order of six to seven years (Reidpath 2004). The observation that health improved during times of major conflict seems counterintuitive. Wilkinson (1996) suggests that the members of society pulled together which gave a sense of greater intra-societal cohesion and camaraderie. The neomaterialists, however, believe that explanations lie in the improvements in living conditions associated with labour reform and rationing of food and fuel, this ensured that everyone got something (see section 2.5.3.1 for an in-depth discussion of the income inequality versus the neomaterialists debate).

2.3 Where Does Geography fit into this Debate?

While there is evidence from the international literature on social inequalities in health in a range of contexts including New Zealand, researchers have recently acknowledged that there are also clear spatial inequalities in health. Importantly, evidence demonstrates that the spatial inequalities in health outcomes cannot be simply examined or explained by the spatial variation in social position. Therefore the analysis of geographic inequalities in health is a valid and important study area. This section will demonstrate the extent to which health inequalities vary at a range of geographic scales, in a range of contexts. An emerging field of research is the degree to which geographic disparities in health vary over time; this opposes the dominant trend of prior research that examined inequalities at one point in time.

Geographers have much to contribute to the health inequalities research field. Their traditional concerns with spatial distribution, place, environment and scale can help improve the knowledge and understanding of health inequalities and variations (Boyle *et al.* 2004). Arguably the most well known and cited example of the relationship between geography and health was John Snow's study of the distribution of cholera cases in the Soho area of London (University of California Los Angeles 2006). Snow investigated an outbreak of cholera deaths and found that nearly all victims drank from the same water supply. This was a confirmation of Snow's initial theory that cholera was a water borne disease. His work influenced public health policies with the installation of main drainage and sewage systems in the following decades. Snow was not a geographer, he was a medical professional, but he used geographical insights to further the medical understanding of a particular disease. Another early geographical study of health was Edwin Chadwick's research in the 1840s. Not only did he show that life expectancy varied by social position (gentry and professional, farmers and tradesmen, labourers and artisans); it also varied by geographic district. He demonstrated that when districts were ranked by life expectancy, the order was not the same for the three social groups; the highest social group were best off in Bath and the lowest social group were best off in Rutland. Interestingly, the highest and lowest social groups did worse off in Liverpool, while the middle group were worse off in Manchester. This early study indicates that both place and social position may

interact and produce distinctive patterns in health (Chadwick 1842; cited in Macintyre 1997b).

There is a great deal of historic and contemporary evidence for the patterning of health outcomes by area. The geographic distribution of health outcomes can be analysed at a variety of scales including the international, national, and regional levels. These inequalities are evident in many countries such as England, Canada and Australia where national indicators of health are relatively good. The degree of inequality between areas is also evident between different groups in the population, for example, men versus women.

There are striking variations in life expectancy worldwide, primarily caused by differences in public health provision, access to medicine, and nutritional uptake. Figures 2.1 and 2.2 display life expectancy for those people born in 2003 (World Health Organization 2005). The worst life expectancies are shown in red and orange, averaging less than 47 years for males and 50 years for females. These countries make up a large proportion of Africa. These African countries have average life expectancies that are only half of those in countries such as Australia or Japan, which are amongst the highest in the world. It can be seen that life expectancy is generally worse for men than women, but that this also varies between countries. These maps give a very good indication of the huge disparities in health and subsequent mortality rates at the international scale.

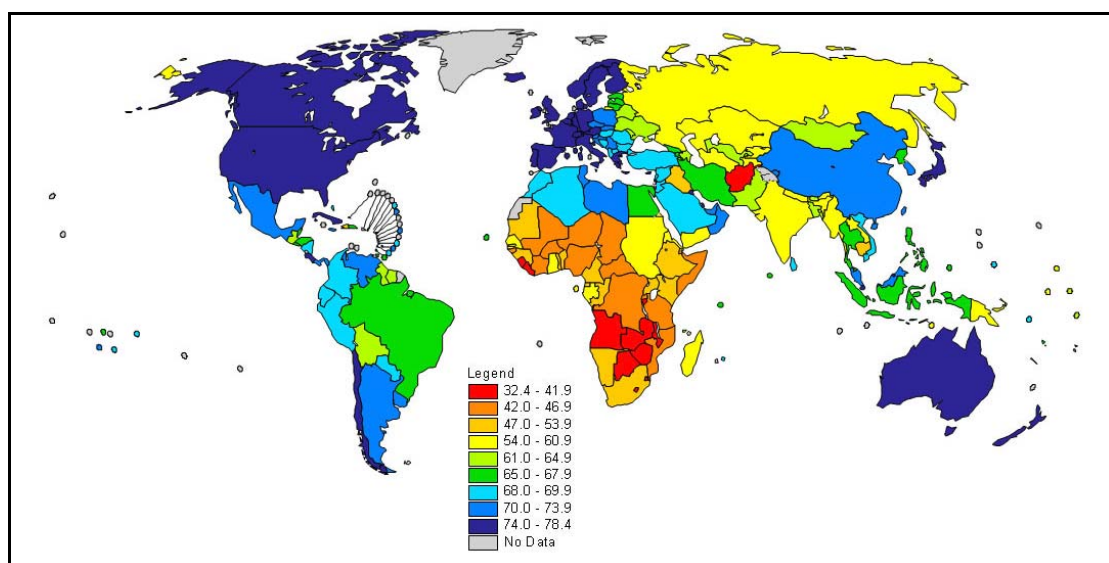


Figure 2.1: International variations in life expectancy at birth for males in 2003 (World Health Organization 2005)

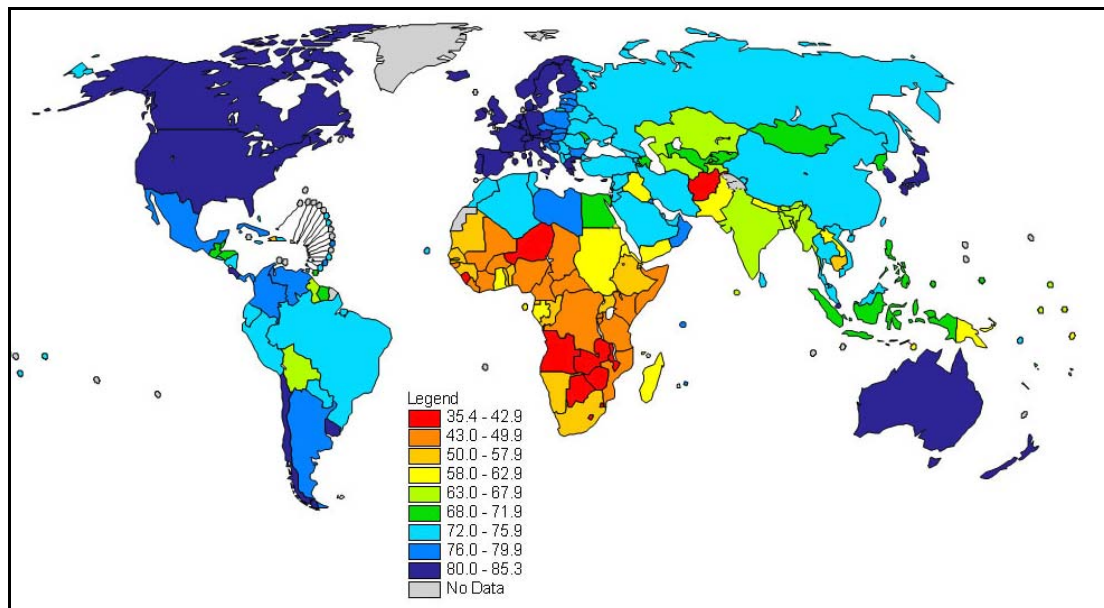


Figure 2.2: International variations in life expectancy at birth for females in 2003 (World Health Organization, 2005)

Within countries, it is evident that there are regional disparities in health outcomes. Regional health variations are a strong research field in the United Kingdom; with evidence indicating mortality rates are consistently higher in the north and in Scotland and lower in the south. This is commonly referred to in the literature as the North/South divide. For example, in his study of mortality rates throughout Britain between 1990 and 1992, Dorling (1997) showed evidence of relatively low death rates in both the South East of England and in the South West and relatively high death rates in the North West and North East of England and in Scotland. In the early 1990s a resident living in Glasgow was 31% more likely to die than a resident of Bristol. These geographical differences appear to have persisted for a long time (Shaw, Dorling & Brimblecombe 1998). Similar inequalities according to geography emerge in Australia. Inequalities in mortality by geographic region for males and females at different life course stages, were examined for the period 1998-2000 (Draper, Turrell & Oldenburg 2004). All Statistical Local Areas (SLAs) comprising each state and territory were grouped into four categories using the Accessibility/Remoteness Index of Australia (ARIA) – highly accessible, accessible, moderately accessible, remote/very remote. In 1998-2000, life expectancy at birth for males born in areas classified as highly accessible was 77.3 years compared with 73.1 years for males born in areas classified as remote/very remote. The corresponding figures for females were 82.7 years and 79.7 years. For males and females in each age group the all cause mortality rates were significantly higher for residents in remote/very remote

areas than for those in highly accessible areas. Evidence for regional inequalities in health within countries has also been documented in Brazil (Sichieri *et al.* 1992), Canada (Veugelers & Hornibrook 2002), China (Ru-Kang 1993), Costa Rica (Wesseling *et al.* 1999), Italy (Materia *et al.* 2005), Japan (Fukuda, Nakamura & Takano 2004; Nakaya & Dorling 2005), Scotland (Craig 2005), Spain (Benach *et al.* 2003) and the United States (Devesa *et al.* 1999).

At a smaller geographic scale, health disparities are also evident within cities. For example, in Oulu, Finland, researchers examined small area differences in mortality from all causes among males and females, with the aim of identifying areas where mortality has been persistently high or low (Rytkönen, Rusanen & Näyhä 2001). Within the city, results revealed a three-fold difference in mortality rates. Analysis of male mortality showed that in the west-central and northwest parts of the city mortality reached twice the average figure and was 30-40% below the average in the east. The pattern of female mortality showed very similar results. Local scale variations in health outcomes have been demonstrated in other cities including Sydney (Burnley 1998), London (London Health Observatory 2005), Barcelona (Borrell *et al.* 1997) and New York city (Almog *et al.* 2004).

The evidence presented thus far has focussed on international research. Research in New Zealand also suggests that there are large disparities in health behaviour measures (Barnett 2000), morbidity (Pearce *et al.* in press), hospitalisations (Ellison-Loschmann, King & Pearce 2004), life expectancy (Pearce & Dorling 2006a), and mortality (Ministry of Health 2006b), at a range of geographic scales, primarily, the District Health Board, Territorial Local Authority and Census Area Unit. For example, Pearce, Barnett and Kingham (2006) analysed small area data on standardised incidence rates (SIRs) of melanoma during the period 1995 to 2000. They found a wide range of values (SIRs between 39 and 148) with the highest rates experienced in the northern part of New Zealand and very low rates in the far south of the country. In a study of the geographic distribution of suicide, rates were found to be highest in eastern North Island DHBs compared to the rates in other DHBs (Ministry of Health 2006b). In 2005, the Ministry of Health published *The Atlas of Cancer Mortality in New Zealand 1994-2000* (Ministry of Health 2005) which shows areas (DHBs and TLAs) with high or low cancer mortality. This is undoubtedly the

most comprehensive overview of the geographic distribution of a particular cause of mortality for New Zealand in recent times. The research mentioned is among many that demonstrate geographic disparities in various health outcomes in New Zealand. What these studies do not clearly illustrate is whether health outcomes between social groups or geographic areas have improved, remained steady or widened over time. In addition, they fail to quantify what contribution various risk factors play in the geographic distribution of health. The important concept of a polarisation of health outcomes will be examined in the following section where international and national evidence will be reviewed.

2.4 Geographic and Social Polarisation in Health Outcomes

Section 2.3 provided an overview on the perspectives of health inequalities following the publication of the Black Report. The geographic inequalities in health, at a range of spatial scales were also explored. Recently Asthana *et al.* (2002) presented a succinct and useful overview of several recent trends in health geography research since 1998. One of the key research avenues they identified was polarisation. The authors noted that the geographical evidence for social and spatial inequalities in health continues to accumulate, and go on to conclude that “more work is also needed to improve our understanding on health *change*, as opposed to health variation over space at any one point in time” (Asthana *et al.* 2002 p 171). The evidence of a widening social and geographical health gap over time will be explored with reference to international and national literature.

2.4.1 Evidence of Social and Geographical Polarisation in Health Outcomes

The realisation that place and socioeconomic position influence health is as relevant at the beginning of the twenty-first century as it was in the early 1800s. Over the past century, there have been dramatic reductions in mortality rates (especially amongst developed countries) with corresponding increases in life expectancy. However, it is well known that these gains have not been evenly distributed throughout populations and across places. What is worrying is that not only is there evidence of social and geographical polarisations of health, but that the gap is widening.

2.4.1.1 Social Polarisation of Health Outcomes: The Evidence

A large number of publications have explored the effect of social position on health, and whether or not health has become increasingly socially polarised over time. The studies can generally be separated into two groups: those that focus on rates derived from individuals grouped by personal socioeconomic characteristics or studies where rates are calculated for geographical areas and are ranked by socioeconomic status.

Similar to circumstances in most developed countries, mortality rates in the United States have fallen since the 1960s, however, improvements have not been shared equally by all social groups. For example, in their study of inequality in mortality by income level between 1967 and 1986, Schalick *et al.* (2000) showed that in relative terms, the inverse relationship between income group and mortality was greater in 1986 than in 1967. They demonstrated that mortality rates (derived from a nationally representative survey) for people in the highest income group declined between two and three times more rapidly than rates for the middle and low-income groups. This study is representative of many where social polarisation of health is based on measured individual socioeconomic circumstance (Duleep 1989; Pekkanen *et al.* 1995; Steenland, Henley & Thun 2002; Avendaño *et al.* 2005).

Until recently, little attention had been given to the significance of demography and geography in influencing homicide rates in Britain (Shaw, Tunstall & Dorling 2005). The authors found that throughout the period 1981 to 2000, the standardised mortality ratio for murder rose monotonically with poverty, so that, for every increase in poverty there was a concurrent rise in the murder rate. They also showed that the inequality in murder rates rose steadily over the two decades for people living in the poorest tenth of Britain and were stable or have fallen slightly among people living in the richest tenth of Britain. When people living in the poorest tenth of Britain were compared to the national average they were 143% more likely to be murdered in 1981-85, increasing in the subsequent five year periods to 161%, 171% and finally 182% in 1996-2000. While this analysis does examine a polarisation in murder due to poverty it does not make full use of the geographical analysis by addressing further composition or contextual effects that may influence murder rates. This research is typical of many that categorise social polarisation of health based on the

socioeconomic status of the geographic area in which people live (Singh & Siahpush 2002; Almog *et al.* 2004).

2.4.1.2 Geographic Polarisation of Health Outcomes: The Evidence

Within the last decade there has been an increased interest in the urban literature on the issues of social polarisation and exclusion. Badcock (1997) provides a review of such issues and demonstrates the significance of restructuring and the contraction of the welfare state for widening social inequalities and how this reflects in the incidence of poverty in cities, particularly in the United States. Cities are becoming increasingly polarised through the increase in those who are highly skilled and highly paid, and an increase in those who have a low skills status and consequently low incomes (Hamnett 1996). It is accepted that with the growth in income distribution a parallel growth in unemployment and greater insecurity in the labour market has occurred (Burgers 1996).

In the health inequalities literature, the polarisation thesis has also received attention. Britain has long been associated with geographical inequalities in health: evidence suggests that geographical inequalities in mortality now stand at the highest levels ever recorded and show little signs of abating. Dorling and colleagues (2000) analysed the variation in local mortality rates in Britain between the 1950s and the late 1990s. Standardised mortality rates were calculated for premature deaths (under 65 years of age) by population decile. When standardised for age and sex distributions, people living in the areas of the country with the highest death rates in 1996-1998 were 50.3% more likely to die prematurely than the average person, while people living in the best decile area were 25.3% less likely to die. The gap has grown significantly since the 1950s when those living in the worst health areas were only 31.0% more likely to die than average, while people living in the best health areas were only 18.2% less likely to die before the age of 65. This research supports the findings of other studies that show that in recent years mortality rates by area have been polarising in Britain (Shaw, Dorling & Brimblecombe 1998; Shaw *et al.* 2000a; Shaw *et al.* 2000b; Congdon *et al.* 2001; Leyland 2004). A similar widening of the mortality gap can be seen in Canada. Mustard, Derksen and Black (1999) examined

the disparity in premature mortality for Regional Health Authority populations in Manitoba. They determined that declining premature mortality in low mortality populations and rising premature mortality in high mortality populations resulted in a widening of regional mortality rates over the 10 year period.

Section 2.3 demonstrated that there are regional disparities in a variety of health outcome measures within New Zealand. Very little research however has concentrated on the geographical disparity in health in New Zealand over time, and whether the gap has closed, remained steady or widened. One of the few studies to consider how the geographical trends in health have evolved over time was conducted by Pearce and Dorling (2006a) who calculated life expectancies for each DHB between 1980 and 2001. The geographical inequality in life expectancy was measured by calculating the slope index of inequality (SII). They found that although overall life expectancy had increased during the study period, New Zealand had experienced an increased geographical disparity in life expectancy, particularly during the late 1980s and early 1990s. An examination of the SII showed a steady rise for men (2.29 years in 1981 to 3.78 years in 2000) and women (2.34 years in 1981 and 3.18 years in 2000). The findings of Pearce and Dorling (2006a) are consistent with the latest available evidence which describes the geographical polarisation of all-cause mortality in New Zealand (Pearce & Dorling unpublished). The authors found that although overall mortality rates had declined over the period 1980-2001, the reduction was not consistent for all areas; in some DHBs the age standardised mortality rates had actually increased. This included the DHBs of Lakes, Tairāwhiti and Whanganui. The relative index of inequality (RII) was calculated to determine the relationship between mortality and deprivation. The authors found that the mortality risk of the poorest DHB compared with the richest DHB increased from 1.15 times in 1981 to 1.25 times in 2001.

2.4.2 Gaps in the Polarisation of Health Outcomes: Research to Date

Overall, there appears to be a greater focus on the social polarisation of health outcomes as opposed to the geographical polarisation of health outcomes.

Examination of the geographical polarisation in health is important as the popular notion of social polarisation of health can only partially account for this phenomenon. Pearce *et al.* (in press p 3) note “in fact spatial inequalities often reflect social inequalities not well measured by deprivation indices and social inequalities can partly be inequalities for which geographical factors are an underlying cause”. This important point is echoed in Australian research where the authors conclude that “the mortality burden in the Australian population attributable to socioeconomic inequality is large and has profound and far-reaching implications in terms of unnecessary loss of life, loss of potentially economically productive members of society, and increased costs for the health care system” (Turrell & Mathers 2001 p 231). However the “...simultaneous occurrence of widening, narrowing, and unchanging mortality inequalities [over time]...is difficult to explain...on the basis of [a single] broad-ranging societal-level explanations” (Turrell & Mathers 2001 p 238).

In respect to the New Zealand literature, many areas are identified that warrant further investigation. A closer inspection of the relationship between population change and geographic polarisation of health outcomes would be a valuable avenue of research. Evidence from international research demonstrates that increases in geographic area mortality differences can largely be accounted for by migration patterns. Authors investigating this issue in England and Wales noted that “migration, rather than changes in the deprivation of the area that non-migrants live in, accounts for the large majority of these changes” (Norman, Boyle & Rees 2005 p 2768). A further gap in the geographic polarisation of health research in New Zealand is the lack of analysis at a range of geographic levels. It is well known that processes influencing geographic variations in health can occur at a range of scales. The majority of research conducted in New Zealand focuses on the District Health Board level. The Territorial Local Authority is a level of government administration in which policies could affect health status; it is therefore an important geographic scale to monitor changes in health over time. Additionally, the polarisation of different causes of mortality and morbidity is unclear, as this has not been examined extensively in New Zealand

2.5 Explaining Geographical Variation in Health Outcomes – Unhealthy People or Unhealthy Places?

2.5.1 The Role of Contextual and Compositional Effects

In understanding geographic health inequalities, considerable debate focuses on what accounts for the observed differences in health between places: whether it is the characteristics of people who live in particular areas (composition), or factors that reflect the wider nature of the environment within which people live (context) (Macintyre, MacIvers & Sooman 1993). Compositional and contextual factors can provide insight into why geographic variations of health outcomes occur. They also indicate how policy can address these issues and help reduce the impact among these populations. To give an example, a compositional explanation for observed geographic differences in alcohol consumption could be that the rate of drinking is higher in some areas because personal and household circumstances are associated with drinking. In this respect, the observed variability among areas is due to the concentration of people in these areas who exhibit this drinking behaviour. Alternatively, a contextual explanation would be that features of the social, economic, cultural or physical environment affect drinking rates. This could refer to the proximity and concentration of liquor outlets or the reputation of an area. An implication of a compositional explanation might be to direct policy toward improving the circumstances of individuals, while a contextual explanation might direct attention toward health damaging and health promoting features of neighbourhoods (Macintyre & Ellaway 1999).

In this section the key compositional and contextual factors that could influence the geographic variation of mortality in New Zealand are addressed, drawing on international and national literature. The compositional factors discussed relate to unemployment, social class, ethnicity and migration. The contextual effects that might influence the geographic variation of mortality relate to area based socioeconomic status, income inequality, and economic restructuring.

2.5.2 The Key Compositional Effects

There is an extensive body of literature that supports the idea that observed disparities in health can be largely accounted for by *compositional* effects. Supporters of the composition theory suggest that spatial variations in health outcomes reflect levels of ill health which resident individuals would have, regardless of situation. Therefore areas with relatively high levels of morbidity or mortality are those in which a relatively high proportion of the residents are at higher risk of sickness or death. A mainly compositional interpretation of geographic health variation would be that similar types of people will have similar health experiences, no matter where they live (Curtis & Rees Jones 1998). The relationship between individual level factors such as social class and employment status and poor health is powerful and well documented.

2.5.2.1 Social Class

It has been demonstrated that social class is a strong and consistent predictor of health outcomes. Individuals who are lower in the social class hierarchy suffer disproportionately from almost every disease and show higher rates of mortality than those in classes above them (Townsend & Davidson 1982). The following are some typical observations of social class and health status in the United Kingdom. The relationship between social class and life expectancy displays a consistent gradient: individuals in Social Class I have the longest life expectancy (men 78.5 years, women 82.8 years) and those in Social Class V have the shortest (men 71.1 years, women 77.1 years) (Donkin, Goldblatt & Lynch 2002). When social class and mortality is compared between European nations, the same gradient exists. Kunst, Groenhof and Mackenbach (1998) compared mortality rates by class in eleven European countries. For manual class men living in Sweden, Norway, Denmark, England, Wales, Ireland, Italy, Spain and Portugal, the probability of dying between the ages of 45 and 65 was between five and seven times more than that of non-manual class workers. The most unfavourable probabilities of dying were found to be in Finland and France where manual class workers were 10 and 12 times (respectively) more likely to die than their non-manual counterparts.

The differential experience of health in children by social class of the head of household is also found to exist (Petrou *et al.* 2006). A follow up study of more than 100,000 children from Oxfordshire and West Berkshire revealed a significant social class gradient in mortality during the first ten years of life (the adjusted odds ratio for each decrement in social class category was 1.08). A social class gradient in hospital admission rates for 14 of the 16 groups of diseases studied was also found. Until recently, little was known about the social class differences in the use of medicine. A cross sectional analysis of Danish schoolchildren showed that medicine used for headache, stomach ache, difficulties in getting to sleep, and nervousness increased by decreasing social class (controlled for age and prevalence of the symptom for which medicine was taken). The adjusted odds ratios for medicine use among school children from lower social classes were: medicine for headache 1.35, medicine for stomach ache 1.41, medicine for difficulties in getting to sleep 2.00, and medicine for nervousness 3.22.

In New Zealand there is also evidence of a social class gradient among many health outcomes. The association of occupational class with working age male mortality for 1974-78, 1985-87 and 1995-1997 has been documented (Pearce, Marshall & Borman 1991; Pearce, Davis & Sporle 2002) This research found that mortality for the lower occupational classes was twice that of the higher occupational classes and there were steeper gradients for deaths amenable to medical intervention. In another study, the linkage of mortality records between 1991 and 1994 allowed researchers to measure the association of a number of socioeconomic factors with mortality (Blakely *et al.* 2002). This body of work found that there were strong socioeconomic gradients for all-cause mortality and most cause-specific mortalities among males and females, regardless of socioeconomic indicator. By cause of death, the strongest socioeconomic gradients were observed for respiratory diseases, followed by lung cancer, cardiovascular disease and unintentional injury.

The studies mentioned represent only a small percentage of research that demonstrates the significant social class/socioeconomic inequalities at the individual level over a wide range of adverse health outcomes. It should therefore be apparent that social class is a key compositional factor that influences health and therefore potentially contributes to geographic variations in health outcomes.

2.5.2.2 Unemployment

Although the majority of people who are unemployed have low incomes, studies show that unemployment has an independent effect on health and therefore needs separate consideration (Shaw *et al.* 2003). In Britain a study was undertaken to assess the effect of unemployment on mortality in a group of more than 6000 middle aged men (Morris, Cook & Shaper 1994). Over the five-year study period 96% of men in employment survived, compared to just 91% of those unemployed. They found that men who were unemployed at some point during the five-year study were twice as likely to die in any one year compared to men who were in continuous employment. Even after adjustment for socioeconomic variables and health-related behaviours, the relationship between employment status and health outcomes remained. This suggests that unemployment itself has a detrimental effect on health. A number of studies focus on identifying what it is about unemployment that is detrimental to health. Unemployment has been found to be a risk factor for psychological symptoms of depression requiring medical attention, even in men without a previous history of psychological vulnerability (Montgomery *et al.* 1999). Unemployment is also linked to higher odds of experiencing a rise in anxiety attacks, a loss of confidence, and a reduction in self esteem, even compared with individuals in low paid employment (Theodossiou 1998). A recent United States longitudinal study examined the effect of employment status on the risk of suicide (Kposowa 2001). After three years of follow up, unemployed men were more than twice as likely to commit suicide compared with their employed counterparts. Interestingly, job insecurity and potential job loss also affects people's health status. Analysis of a 1994 Canadian national sample of adults determined that high levels of job insecurity lowered self-rated health and increased distress and the use of medications (McDonough 2000).

A small number of New Zealand studies have examined the relationship between unemployment and health at the individual level. A group of researchers from Christchurch gathered individual data over a 21 year period and used this to examine the links between exposure to unemployment during adolescence and risks of a range of adjustment problems including mental health problems, crime, substance abuse, and suicidal behaviours (Fergusson, Horwood & Woodward 2001). After controlling for confounding and reverse causality, exposure to unemployment remained

significantly ($p < 0.05$) associated with suicidal thoughts, substance abuse and criminal behaviours. An additional New Zealand study that focussed on the relationship between suicide and a cohort of New Zealand citizens found that being unemployed was associated with a twofold to threefold increase in the relative risk of death by suicide, compared with being employed (Blakely, Collings & Atkinson 2003). The authors note that up to half of the association between being unemployed and suicide might be attributable to confounding by mental illness.

It can be concluded from the international and New Zealand literature that unemployment and job insecurity can be viewed as another key compositional element that can adversely affect individual health status.

2.5.2.3 Ethnicity

The differences in health outcomes among ethnic groups have been repeatedly documented in international literature; for example, the health of Australia's indigenous population is shown to be much worse than that of the non-indigenous population. Between 1995 and 1997, more than half of the deaths of indigenous males occurred in those aged below 50. This contrasts to the age distribution of all Australian deaths where more than 70% of male deaths occur in people aged above 65 (Australian Institute of Health and Welfare 2000). In the United States, African Americans have much poorer health outcomes than white Americans throughout the life course and for a variety of health outcomes. For example, in 2001, African American women were 20% less likely to have been diagnosed with breast cancer; however, they were 30% more likely to die from breast cancer, compared to non-Hispanic white women. Moreover, African Americans had 2.4 times the infant mortality rate of non-Hispanic whites. Although African Americans make up only 13% of the total United States population, they accounted for 50% of HIV/AIDS cases in 2003 (The Office of Minority Health 2006).

In New Zealand ethnic disparities also exist in health: Maori females on average live to 71.6 years and males 67.2 years, which is 9 years and 8.1 years less (respectively) than their non-Maori counterparts (Ministry of Health 1999). When all cause

mortality is examined in terms of Maori versus non-Maori, disparities emerge. In 2001, Maori females had an aged standardised mortality rate of 607 per 100,000; this was 95.2% higher than the non-Maori female rate of 311 per 100,000. Among males, the Maori male age standardised mortality rate for 2001 was 780 per 100,000. This was 61.6% higher than for non-Maori who had an age standardised mortality rate of 483 per 100,000 (New Zealand Health Information Service 2005). Ethnic disparities in New Zealand also exist for hospitalisations. Regional patterns of asthma hospitalisations were examined for Maori and non-Maori between 1994 and 2000. Analysis demonstrated that the rate of asthma hospitalisation was higher in Maori than non-Maori in each age-group: 0–4 years relative risk (RR) = 1.43; 5–14 years RR = 1.08; 15–34 years RR = 1.31; 35–74 years RR = 2.97 (Ellison-Loschmann, King & Pearce 2004).

Many possible factors have been proposed to explain the observed ethnic variations in health outcomes. These include:

- Genetic/biological factors
- Individual behaviour/cultural factors
- Material/structural factors
- Migration and racism
- Inequalities in access to healthcare.

The genetic/biological argument suggests that ‘faulty genes’ may play a role in the observed ethnic inequalities in health. An example of this is Tay Sachs disease (a metabolic disorder characterised by the onset of severe mental and developmental retardation). One person in every 250 of the general population is a carrier of Tay Sachs disease. The chances of being a carrier dramatically increases among Jewish populations, to one in every 25 (National Human Genome Research Institute 2006).

The role of cultural characteristics in affecting ethnic disparities in health has been examined using a variety of measures, one of which is acculturation. Acculturation is defined as the degree to which a person participates in the language, values and practices of his or her ethnic community compared with those in the dominant culture (*The Dictionary of Anthropology* 1997). Some studies have shown that health behaviours may worsen as populations become more acculturated; for example,

research in the United States showed that Hispanic women who were more acculturated had five times more chance of being alcohol abusers than women in the low acculturation group. The research also revealed that women in the high acculturation group had nine times more chance of being frequent heavy drinkers than women in the low acculturation group (Caetano 1987).

Material and structural explanations for ethnic disparities in health include the social conditions and context that affect the health of individuals including poverty, unemployment and poor housing conditions. Housing quality is a crucial structural factor that can influence health status. The Survey of English Housing notes that overcrowding is relatively common in ethnic minority households in Britain: one in ten African Caribbean and Indian households, and more than one in three Pakistani and Bangladeshi households were overcrowded compared with roughly one in 50 white households (National Centre for Social Research & Department of the Environment 2002). Housing quality also varies; approximately one third of Pakistani and Bangladeshi people live in households which lack a basic amenity, for example, exclusive use of an inside toilet. Migration has also been linked to mental illness because stress is induced by problems associated with leaving the native land, difficulty of resettlement and adaptation into the new environment. This process often results in social isolation, cultural conflicts, poor social integration and assimilation, identity crises and racial discrimination (Kuo 1976). It has also been acknowledged that cultural and racial stereotyping may limit employment opportunities (Blackaby *et al.* 2002). Differential access to health services by different ethnic groups has been identified as another reason why ethnicity and health may be related. Reasons for disparities in access to health care are many, but can include the following: lack of financial resources, linguistic barriers, lack of ethnic diversity in the healthcare system, and structural barriers, all of which affect a person's ability and willingness to obtain needed care (Calderón & Beltrán 2004).

It can be seen that ethnicity is a key element in the relationship between health and the individual with many factors highlighted as to why this pattern exists. It is important to note that ethnicity must be considered in relation to other structural factors such as housing quality and poverty.

2.5.2.4 Population Change

It is possible that health selective migration is a factor that contributes to observed geographical differences in health. Bentham (1988) distinguishes between three types of health selective migration:

- Migration of sick people away from areas with health hazards
- Migration of sick people in order to be better placed to receive care
- Migration for housing or labour market reasons of healthy people.

First, sick migrants may move away from an area perceived as harmful to health. One example supporting this hypothesis comes from a study of respiratory disease in Berlin, New Hampshire, where sick people moved to cleaner areas (Anderson, Ferris & Zickmantel 1964; cited in Bentham 1988). The effect of selective migration was to reduce observed mortality and morbidity rates in the polluted area and raise rates in the cleaner destination area. The correlations between geographical distribution of illness and pollution would therefore be diminished. Second, people who are ill may migrate to be better placed for access to medical care. Areas that have care institutions situated within them will attract people because of their poor health. This has the likely effect of elevating morbidity and mortality rates in the areas with care institutions and showing favourable levels of health in the migrant origin area (Norman, Boyle & Rees 2005). Third, although some types of selective migration will be those people with poor health status, the majority of migration will be dominated by healthy individuals (particularly highly mobile young adults), whose health is better than average. While this does not have a direct effect on health status of the people remaining in such areas, the depletion of the healthy portion of the population would affect the geographic patterning of health outcomes by resulting in higher morbidity and mortality rates in the local community.

Despite Bentham's (1988) theoretical advances in the 1980s in understanding ways in which migration can affect geographic variations in health outcomes, relatively little research has focused on differential migration and its effect on geographic variations in health until recently. In a longitudinal study of migrants at the local authority district level in Britain, Brimblecombe, Dorling and Shaw (1999) found that observed differences in mortality between districts could be accounted for entirely by

migration. Some researchers have also examined the relationship between mortality and population change. Davey Smith, Dorling and Shaw (1998) investigated the relationship between population change and mortality across Britain between 1971 and 1991. They convincingly demonstrated that there was a significant negative relationship between the two variables: those areas that had decreasing populations had higher mortality rates than those areas that were growing as a result of in-migration. These conclusions were confirmed by further research that examined the relationship between population change and mortality for a range of causes of death (Davey Smith, Shaw & Dorling 2001). A clear pattern for all causes, lung cancer, coronary heart disease, stroke and respiratory disease mortality was found, which all show strong negative correlations with population change. Population change played a significant role in the widening mortality gap in Madrid where Regidor and colleagues (2002) compared age and sex standardised mortality for 1996-1997 with population change in the preceding decade. Their results showed that for men, mortality was higher in areas where the population had decreased than in areas where the population had grown. Analysis in Scotland aimed to determine whether the mortality gap between the least and most deprived people could be explained by patterns of population redistribution between 1981 and 2001 (Boyle, Exeter & Flowerdew 2004). Areas were partitioned into three groups, those that experienced more than a 10% population increase, those that experienced more than a 10% population decline and those areas in between where the population remained relatively stable. Their results demonstrated that the widening mortality gap in Scotland could not be explained simply as a product of population change. Although the mortality gap widened in those places that experienced population decline, it also widened in the other two classifications of areas.

Unfortunately there have been no New Zealand studies that have examined the relationship between selective migration or population change on health outcomes (Pearce & Dorling 2006b). Overall, the effects identified in many of these studies suggest that morbidity and mortality rates rise in places that are losing people and fall in places that are gaining people.

2.5.3 The Key Contextual Effects

In addition to the premise that it is the aggregated characteristics of people that contribute to spatial patterning of health, there is a body of theory and research that *contextual* health effects associated with space and place may contribute to health variation. Context refers to characteristics and nature of an area, independent of its inhabitants, that exert an influence on the morbidity or mortality risk of the resident population (Kawachi, Subramanian & Almeida-Filho 2002). Thus, two individuals of the same age, sex, ethnicity and socioeconomic status may experience different health outcomes because they live in different places. Contextual factors can influence all those living in the same area equally or, alternatively, may influence particular groups more significantly.

There is an emerging body of theory that supports the argument that contextual health effects associated with place may contribute to health variation. In a review of the literature, Curtis and Rees Jones (1998) identify and describe three main theoretical approaches to the relationship between place and health:

- Spatial patterning and diffusion of physical and biological risk factors
- Social relations
- Sense of place.

The first theoretical approach highlights the notion that a direct pathway between exposure to hazards and experience of ill health can occur. Some examples of physical and biological risk factors include climate, air and water pollution and housing quality. The second approach underlines the role of space and place in influencing social relations important to health. The causal pathways are often indirect and are more aligned to psychosocial/behavioural explanations rather than physical/material explanations. The third approach points to the relationship between area and health. This approach arises from a cultural geography perspective and emphasises the importance of subjective meanings and the notion of 'sense of place'.

After conducting research into health inequalities in Scotland, Macintyre, MacIvers and Sooman (1993) have identified the following aspects of neighbourhoods that influence health outcomes:

- Physical features of the environment which are shared by all residents
- Availability of healthy environments at home, work and play
- Provision of services to support people in their daily lives
- The socio-cultural features of an area
- The reputation of an area.

The key contextual effects that are explored in more detail include income inequality, community socioeconomic status, economic restructuring and variations in health expenditure. These are key contextual effects that have been identified as influencing geographic disparities in health outcomes.

2.5.3.1 Income Inequality

Wilkinson's research suggests that societies with lower levels of income inequality have the highest levels of life expectancy (Wilkinson 1996). He argues that it is not the total wealth of the society that is most important, rather, the distribution of that wealth – the more equal it is, the better the life expectancy and therefore less likelihood of health inequality. Wilkinson states that there is "...a strong international relationship between income distribution and national mortality rates. In the developed world it is not the richest countries which have the best health, but the most egalitarian" (Wilkinson 1996 p 3). Wilkinson's work has initiated significant debate as to the validity of his claims. Although a significant number of studies have supported his conclusions with further evidence (Kaplan *et al.* 1996; Kennedy *et al.* 1998; Barnett, Pearce & Moon 2004), others have challenged his theories and claims (Judge, Mulligan & Benzeval 1998; Osler *et al.* 2002; Shibuya, Hashimoto & Yano 2002).

In respect to New Zealand research, there has also been conflicting evidence as to whether contextual effects of income inequality affect individual health status. Research by Barnett, Pearce and Moon (2005) focussed on the relationship between socioeconomic inequality and ethnic variations in smoking behaviour in New Zealand. This cross sectional study found that the level of social inequality between Maori and Pakeha had an independent effect on Maori smoking rates. Among

Pakeha, smoking rates were more sensitive to variations in absolute rather than relative deprivation. The authors conclude that the study provides a certain degree of support for the Wilkinson hypothesis in respect to the importance of relative inequality upon health. Opposing this view, Blakely, Atkinson and O'Dea (2003) found no convincing association of income inequality at the regional level and all-cause mortality within New Zealand. The authors cite a previous New Zealand ecological study that found that income inequality had an effect on all-cause mortality that was independent of average income (O'Dea & Howden-Chapman 1999). Blakely and colleagues come to the conclusion that the previous study was confounded by ethnicity at the individual level.

An important consideration is how and why income inequality might be associated with health. In the academic literature, there are three main interpretations of the relationship between income inequality and health, and the mechanisms involved: the individual income interpretation, the psychological environment interpretation, and the neo-material interpretation (Lynch *et al.* 2000). According to the individual income interpretation, associations between income inequality and health at the ecological level only reflect the individual level association between income and health. The individual income interpretation assumes that health outcomes at the ecological level are merely sums of individual effects (Diez Roux 1998). However, researchers recognise the importance of contextual determinants of health. In examinations of differential health outcomes at the individual level, contextual health effects of income distribution have remained after adjustment for individual income, in most (for example Daly *et al.* 1998) but not all studies (for example Fiscella & Frank 1997). Lynch *et al.* (2000) cite Wolfson *et al.* (1999) in support of the belief that the observed aggregated variation in mortality cannot be entirely or substantially explained by an underlying individual level relation between income and mortality. The psychosocial environment interpretation is heavily influenced by the work of Richard Wilkinson and proposes that psychosocial factors are important in understanding the effects of income inequality on health. Wilkinson has argued that income inequality and mortality are linked through the effects of emotional and psychological stress on health. His theory postulates that psychosocial pathways (as an effect of relative rather than absolute income inequalities) exert a powerful influence on health through effects of low social status and through poor social

relations found in more hierarchical societies (Wilkinson 1999). He states that "...health appears to be related less to people's absolute material living standards than to their position in society, as expressed by their income" (Wilkinson 1999 p 259). Comparing positions in the social hierarchy leads him to believe that experiences of depression, insecurity, inferiority, isolation and anxiety are associated with relative economic position. These negative emotions often induced stress related behaviours such as smoking and drinking (Lynch *et al.* 2000). At the same time, perceptions of relative position translate beyond the individual into lower levels of social capital and cohesion within communities. Wilkinson argues that health benefits of friendship and informal social support rest on the psychosocial effect of such relations (as opposed to the practical material support it can offer). These benefits are important to health. He concludes that:

...if increased income inequality is closely accompanied by a weakening of social bonds, the combination of the two can hardly fail to have a potent effect on health...low social status and poor social relations are probably two of the most powerful risk factors influencing population health (Wilkinson 1999 p 262)

Lynch *et al.* (2000) raise doubts about the exclusion of absolute income inequality and material conditions in favour of a predominantly psychological focus for the interpretation of health inequalities. For this reason they propose a neo-material interpretation, which stresses that income inequality reflects individual and community forms of absolute deprivation which are the result of political and economic processes. They argue that poorer individuals live in deprived communities characterised by underinvestment in human, physical, health and social infrastructures. These characteristics lead to experiences that negatively influence health, resulting in higher mortality for the more deprived. The aggregate effect is that societies with increasing income inequality will experience higher mortality and incidence of ill health than they would if the inequality had not increased.

There appears to be conflicting evidence as to whether regional income inequality affects health both internationally and within New Zealand (Blakely, Atkinson & O'Dea 2003, Macinko *et al.* 2003; Lynch *et al.* 2004a; Subramanian & Kawachi 2004; Wilkinson & Pickett 2006). Overall however, the majority of research supports the idea that income inequality negatively impacts upon health. Of the three mechanisms

offered to explain this phenomenon, the neo-material interpretation is felt to be a more comprehensive justification for the associations between income inequality and health. This interpretation recognises that political and economic processes generate income inequalities that influence individual resources and access to community resources. Although there is evidence to support Wilkinson's theories it is hard to justify how interpersonal relations could inform public policy agenda to reduce health inequalities. Public policy based on the theory of Lynch *et al* (2000) however can address the distribution of public and private resources, which are more likely to impact upon reducing health inequalities

2.5.3.2 Community Socioeconomic Position

Area-based socioeconomic position does not have to be viewed as a proxy for individual level socioeconomic position, when this conceptualisation is considered; it is a relatively crude measure, as people will inevitably be misclassified. Area based measures can be used as indicators of additional aspects of socioeconomic position (Shaw *et al.* 2003). Macintyre *et al.* (1993) note that areas of low socioeconomic status may also be disadvantaged with respect to access to facilities such as transport, retail outlets, leisure facilities, and high levels of environmental pollution. These factors can influence health independently of the socioeconomic characteristics of the people living in them. There are also indirect and broader implications in which the socioeconomic position of an area can influence health status. Shaw *et al.* (2003) note that people are often stereotyped by their area of residence; this can have direct effects on their lives and material wellbeing. The following factors are examples of this:

- Areas are often served by certain industries, some of which are more or less susceptible to closure and hence redundancies
- Employers may be unwilling to employ people from certain areas of a city
- Different areas are served by different schools, attendance by children gives them different chances of success at education and hence employment opportunities afterwards.

It has been noted that many studies suggest an association between the contextual attributes of neighbourhoods and health status of its inhabitants, but few studies have

actually directly measured this association (Pearce, Witten & Bartie 2006). The objective of research conducted by Pearce *et al.* (2006) was to develop a national index for New Zealand that measured the level of geographic access to a range of community resources that have been linked to health and health inequalities. Key local community resources were identified to incorporate into the index, these included: shopping facilities, recreational amenities, educational and health facilities. These resources have been identified as biologically plausible mechanisms for mortality, heart disease and diabetes. Results indicate that clear regional variations in geographic accessibility to community resources exist throughout New Zealand. For example, the average travel time to the nearest health facilities ranged from less than one minute to more than 174 minutes. The authors note that variations between urban and rural areas are particularly apparent, but also that differences are observed between neighbourhoods within urban areas. The next stage of research identified is to determine whether different features of neighbourhoods have an independent effect upon health outcomes.

2.5.3.3 Economic Restructuring

As mentioned above, unemployment can have detrimental effects on individual health. Unemployment (often a result of economic restructuring) has been identified as a contextual effect that impacts upon health as it has been observed many times that employment is not evenly distributed spatially. For example, analysis of the 1991 census in Britain showed that unemployment rates of men aged 16-64 in the 'worst health' areas was 20%; four times more than the rate in the 'best health' areas and twice the national average (Shaw *et al.* 2003). A further 12% of men in the 'worst health' areas were permanently sick; this was more than five times higher than the rate in the 'best health' areas. In respect to economic restructuring, Mitchell *et al.* (2000) demonstrated that the degree of deindustrialisation which an area experienced in Britain in the 1980s, had an independent association with the health of the resident individuals. Those living in an area that experienced higher degrees of industrial decline and which was originally more dependant on industrial employment, were more likely to report a high number of symptoms (HNS, which included painful joints, persistent cough, stomach trouble and headaches). A further context in which

the adverse health effects of economic reform were felt was in the Former Soviet Union (Brainerd 2001). Analysis showed that male suicide rates were highly sensitive to the state of the economy, suggesting that the steep and prolonged decline in GDP in the western countries of the Former Soviet Union may have been partly to blame for the suicide epidemic in the 1990s.

New Zealand is a particularly interesting country in which to study the effects of market reforms on health status. New Zealand underwent a significant period of economic and social restructuring during the 1980s and 1990s. Consequently, many people suffered from unemployment, especially in the manufacturing and state sector (in particular forestry and rail transport) (Brown 1999; Barnett, Pearce & Moon 2004). In addition, the introduction of market rents in the state rental sector had a dramatic effect on living standards. After 1991, a second set of reforms took place, this time aimed at the welfare system, where health, housing and education sectors were restructured (Le Heron & Pawson 1996). Owing to rapid economic and welfare restructuring during the 1980s and 1990s, many researchers have been motivated to examine how these reforms have impacted upon the health of New Zealanders. Brown (1999) analysed standardised mortality ratios for Maori versus non-Maori and established that Maori aged 30-79 experienced an increase in mortality ratios relative to the rest of the population. He postulated that the decline in economic stability was a source of stress among middle aged Maori and that this was a contributing factor to the increase in observed relative mortality. Davis, Graham and Pearce (1999) established that socioeconomic and health differentials in self reported measures of health widened between 1980 and 1991. The *a priori* hypothesis that socioeconomic inequalities in child mortality would have increased during the period of rapid structural reform was only partly supported (Shaw *et al.* 2005). Socioeconomic inequality measured by household income suggested an increase in relative inequalities and conversely a stable or even decreasing inequality in absolute terms. Pearce and Dorling (2006a) note that, although overall mortality rates have declined during the period, the reduction has not been consistent throughout New Zealand; in fact, some areas experienced an increase in mortality rates. An innovative study focussed on Hawke's Bay examined the health of a cohort of meat workers made redundant in 1986 compared with a cohort from the neighbouring plant that remained open until 1994 (Keefe *et al.* 2002). The authors showed that among the cohort made

redundant in 1986, there was an increased risk of serious self-harm which led to hospitalisation or death when compared with the employed counterparts. This study showed that involuntary job loss increased the risk of mental distress leading to serious self-harm.

There is increasing acceptance of the evidence that people's area of residence may influence their health over and above individual circumstances. Complex mathematical procedures and an increase in the availability of individual and longitudinal data enable researchers to unpack the relative contribution of composition and contextual effects on health status.

2.6 Conclusion

This chapter has provided an overview of the key literature on social and geographical inequalities in health. Section 2.1 examined the perspectives on health inequality, indicating the shift from a mainly compositional explanation for health variation to contextual effects on health outcomes. Particular attention was paid to the Black Report and the international and national evidence that has steadily accumulated in the reports wake. Key themes in the publications since the Black Report were identified, these included: the social disparities in health observed in other developed countries, the use of a range of social class measures, the linear relationship between class and health and the widening of the social class health gap over time. The importance of geography was introduced and the geographic disparities in various health outcomes were examined.

Section 2.2 examined the evidence for social and geographical polarisations in health outcomes at both the international and national scale. It was apparent that the majority of studies have focussed on the social polarisation of health and it is only recently that researchers have begun to explore the geographical polarisation in health in considerable detail, especially in the New Zealand context. Reasons were explored as to why it is important to examine the geographical polarisation in health. Notably, that the social polarisation of health outcomes can only partially account for the

geographic polarisation of ill health observed. Other contextual factors are important which cannot be explored when a purely social focus is employed.

The final section focussed on the key compositional and contextual factors that might explain the widening geographical polarisation of health. The central theme that geography potentially exerts a significant influence on health was explored in two ways. First, since the composition of population varies from place to place, there is a spatial variation in the health of the population that arises due to factors such as ethnicity and population change. Second, the physical and social characteristics of the local environment may produce geographical differences in health between areas. Factors such as income inequality, economic restructuring, and community based socioeconomic status were explored.

The research conducted in this thesis fits into the geographic polarisation of health field. The limited number of studies reviewed, especially in the New Zealand context, indicates that considerably more research needs to be carried out in this area. The following chapter introduces the methodology for the examination of the geographic polarisation of mortality in New Zealand between 1981 and 2000.

CHAPTER THREE

Methods

3.1 Introduction

This chapter outlines the data and methods used to determine the extent to which mortality has become geographically polarised during the past two decades in New Zealand, and some of the factors that may be influencing the geographic patterns observed. Section One examines the use of mortality and population data, and the procedure in obtaining this data. Section Two outlines each of the objectives of this thesis and how they are explored methodologically.

3.2 Data

3.2.1 Mortality Data

The Ministry of Health is the government body responsible for ensuring that the health and disability system works for all New Zealanders. The Ministry of Health's mandate to collect health information is set out in legislation, in particular the Births, Deaths and Marriages Registration Act 1995 and the New Zealand Public Health and Disability Act 2000. A full list of legislative requirements can be viewed in Appendix 1.

The New Zealand Health Information Service (NZHIS) is a division of the Ministry of Health, which is responsible for the collection, and dissemination of health-related data. There are a number of information systems currently supported by the NZHIS one of which is the New Zealand Mortality Collection. In this thesis mortality is used as an indicator to measure the extent of geographic inequalities in health in New Zealand. The New Zealand Mortality Collection was established to provide data for public health research, policy formulation, and performance monitoring (New Zealand Health Information Service 2006a). The NZHIS Mortality Collection classifies the underlying cause of death for all deaths registered in New Zealand,

using the World Health Organisation (WHO) International Classification of Diseases, 10th Revision, Australian Modification, 2nd Edition (ICD-10-AM II).

All-cause and cause-specific mortality data for the period 1980 to 2001 was obtained from NZHIS. Data was obtained under the following categories:

- Cause of mortality ICD10 code (recalculated to ICD10 for deaths prior to 2000)
 - Ischaemic heart disease I20-I25
 - Cerebrovascular disease I60-I69
 - Chronic obstructive pulmonary disease J44
 - Diabetes mellitus E10-E14
 - Prostate cancer C61
 - Breast cancer C50 (females only)
 - Lung cancer C33-C34
 - Colorectal cancer C18-C21
 - Total cancer C00-C96
 - All-cause mortality
- Year of death
- Age at death (grouped into age bands 0, 1-4, 5-9.....85+)
- Sex
- District Health Board (DHB) and Territorial Local Authority (TLA) where the deceased last resided. DHBs and TLAs were recalculated to 2001 census boundaries for the entire study period. A map indicating the names and locations of DHBs and TLAs can be viewed in Appendix 2 and 3, respectively.

The two levels of geographic aggregation used in this thesis are TLAs and DHBs. There are 74 TLAs in New Zealand as defined under the Local Government Act 1974. The definition of the boundaries of TLAs is overseen by the Local Government Commission, and a considerable weight is placed on the 'community of interest'. Factors such as size of community, relevance of the components of the community to each other, and the capacity of the unit to service the community in an efficient manner, are highly regarded by the Commission (Statistics New Zealand 2006b).

Twenty one DHBs have existed since 1 January 2001, when the New Zealand Public Health and Disability Act 2000 came into force. DHBs are responsible for providing Government-funded health care services for the population of a specific geographical area.

Just as disease classifications change over time, so too, do area boundaries. The issue of changing boundaries is extensively discussed in the geographic literature; in essence the problem is that different results are obtained when different boundaries are used to calculate statistics. The issue of changing boundaries arises because of the continual changes in census procedures which produce differences in geography (Martin, Dorling & Mitchell 2002). The inconsistencies between censuses make it impossible to produce comparable population information for the same place, for two census years. The solution to this problem is to choose a specific geographic definition and freeze this over time. This enables robust comparisons to be made (Shaw, Dorling & Brimblecombe 1998), but is often fraught with difficulties. In the United Kingdom, the linkage of data for incompatible areal units is an entire field of research which involves complex mathematical procedures (Martin, Dorling & Mitchell 2002; Boyle *et al.* 2005).

The major obstacle of changing geographic boundaries is fortunately not a problem in New Zealand as mortality and census population data is available for units small enough to reconstitute into different geographies. This is a great advantage when examining health of New Zealanders over time. Mortality and population data from NZHIS was assigned to TLAs and DHBs for each year using consistent 2001 census boundaries. Census boundaries from 2001 were chosen as opposed to other census boundaries, primarily because DHBs were constructed in 2000. The census boundaries constructed in 2001 will therefore most closely match these. Other advantages of using 2001 census boundaries include the ease of comparability with other aspects of the census data (such as the New Zealand Deprivation Index constructed for 2001), and contemporary DHB and TLA organisations can view how mortality rates have changed in their particular region over time.

The mortality data for unspecified DHBs and TLAs and unspecified cause of death was excluded from the analysis. The reason being that geographic analysis could not

be undertaken when the DHB and TLA was not specified, or when the cause of death was not identified.

3.2.2 Population Data

Every five years in New Zealand a census takes place, which is the official count of population and dwellings. The census provides a unique source of detailed economic, demographic and social information relating to the population at one point in time (Statistics New Zealand 2006a).

Data was provided by Statistics New Zealand for age-specific and sex-specific populations from the five censuses that took place during the period of interest (1981, 1986, 1991, 1996, and 2001). Population data was obtained for 19 defined age groups for each sex (for example 0, 1-4, 5-9, 10-14 through to 85+). Because the census takes place every five years, interpolation is required to estimate the population in the inter-census years. Population estimates for inter-census years were calculated by the Ministry of Health for each age-sex group, for each TLA and DHB, using linear interpolation. This process assumes that the population either decreases or increases at a constant rate between the two census years of interest.

Just as mortality data was assigned to TLAs and DHBs for all years based on 2001 census boundaries, so too, was the population data. The population for unspecified DHBs and TLAs was excluded from the analysis; the reason being that geographic analysis could not be undertaken when either the TLA or DHB was not specified.

3.3 *Statistical Analysis*

The first aim of this thesis is to determine the extent to which there are geographical inequalities in mortality in New Zealand. The inequalities are examined using many statistical and geographical analyses, including standardisation of mortality rates. Confidence intervals are used to determine the statistical significance of the rate ratios calculated, and finally, data is displayed in map form using a Geographical Information System (GIS). The second aim, to determine whether mortality has

become geographically polarised between 1981 and 2000, is examined by the calculation of rate ratios, for each DHB and TLA, per year. Rate ratios between the best and worst (in terms of age standardised mortality rates) DHBs and TLAs for each year is calculated. In order to explore some of the factors that might be contributing to the geographic patterns observed, two factors are examined: deprivation and population change.

3.3.1 Analyses Used to Determine the Extent to Which There Are Geographic Inequalities in Mortality in New Zealand

3.3.1.1 Standardisation

In order to compare the prevalence of mortality between populations, it is necessary to ensure that the difference observed is not simply due to different population size and age structures of the populations involved. Because both age and sex are strongly associated with health outcomes, it is usual practice to standardise for age and sex before making mortality comparisons. This permits meaningful comparisons between populations and over time (Bartley 2004).

There are two basic methods of standardisation – *direct* and *indirect*. Both methods use a study population (the population of interest) and a standard population (usually national population or world population) to generate weighted age-specific mortality rates. The indirect standardised mortality rate is the mortality rate *expected* in the study population if the age-specific rates of the standard population had applied. The standardised mortality ratio (SMR) is the ratio of the number of deaths *observed* in the study population to the number that would be expected if the age-specific rates of the standard population had applied. This ratio is usually multiplied by 100. An SMR of 110 means that the mortality in the study population is 10% greater than would be expected, had the age-specific rates in the standard population applied. A disadvantage of using SMRs is that when they are calculated for several populations with significantly differing population structures, any difference may be due to the different population structures rather than different age-specific rates. For this reason

they cannot be compared directly with each other, only with the standard population. Because of this inherent bias, the direct standardisation method was chosen for this research.

Directly age standardised mortality rates allow different populations to be compared with each other since they are standardised against the same population (Julious, Nicholl & George 2001). Direct standardisation assumes that the distribution of the population in each age group for the study population is the same as that in the standard population. Essentially it determines how many deaths or cases would have occurred in the study population if it had had an identical age structure to the identified standard population, but the age-specific rates remained the same. The method used to calculate directly standardised mortality rates is described by Moon and colleagues (2000) and can be summarised as:

$$ASMR = \sum ASR_i \times P_i$$

Notation:

ASMR	Age standardised mortality rate
ASR _i	Age specific mortality rate in age group i of the study population
P _i	Proportion of people in age group i of the standard population

It is important to always choose a standard population that is similar to the study populations, if not, rates will be generated that could lead to misleading results. In this research, the New Zealand population was selected as the standard population. For example, the ASMRs calculated for 1991 used the New Zealand sex-specific and age-specific population in 1991; similarly, the ASMRs calculated for 2000 used the interpolated New Zealand sex-specific and age-specific population in 2000. An alternative population sometimes used in New Zealand health publications is the world population (New Zealand Health Information Service 2005; Ministry of Health 2006b). This is usually chosen in order to compare results with overseas research. It was decided that the world population would not be used as the standard population as New Zealand has a different population structure, and more accurate results can be obtained using the chosen standard population (Pearce *et al.* in press).

A comparison between the male and female population proportions for New Zealand in 1981 and 2000 is shown in Table 3.1. This table illustrates the changing nature of New Zealand's population structure, particularly the evidence of an ageing population. For example, the proportion of males aged 65 years and older in 1981 was 0.084, this had risen to 0.107 by 2000 (representing a 27.5% increase) and similarly for females, the proportion aged 65 years and older in 1981 was 0.113, but this had risen to 0.132 by 2000 (representing a 16.9% increase). For this reason, it is important to use the New Zealand population for each year as the standard as opposed to the New Zealand population in one year and assume that all other years have the same population structure.

Table 3.1: New Zealand population proportions for males and females, 1981 and 2000

Age Groups (years)	Population proportions			
	1981		2000	
	Male	Female	Male	Female
0	0.017	0.015	0.015	0.014
01-04	0.066	0.062	0.062	0.056
05-09	0.095	0.090	0.081	0.073
10-14	0.100	0.095	0.081	0.073
15-19	0.100	0.095	0.074	0.069
20-24	0.088	0.084	0.067	0.065
25-29	0.076	0.076	0.067	0.069
30-34	0.076	0.075	0.074	0.078
35-39	0.061	0.060	0.078	0.081
40-44	0.054	0.053	0.075	0.076
45-49	0.048	0.046	0.068	0.067
50-54	0.051	0.048	0.062	0.060
55-59	0.047	0.046	0.048	0.047
60-64	0.038	0.042	0.041	0.040
65-69	0.033	0.038	0.035	0.035
70-74	0.025	0.031	0.030	0.033
75-79	0.015	0.021	0.022	0.028
80-84	0.007	0.013	0.012	0.020
85+	0.004	0.010	0.008	0.017
Total	1	1	1	1

The process of calculating population proportions for each sex for each year makes it possible to calculate more accurate ASMRs. A disadvantage of using the world population as the standard is that it does not separate by sex, and is clear from Table 3.1 that there are important sex differences in the age structure in New Zealand.

ASMRs exhibit considerable fluctuation, which depend on the number of deaths, and the population on which the rate is based. To calculate ASMRs, the numbers of deaths were averaged for rolling three year periods, so, for example, the ASMR for 1981 is based on the average number of deaths from 1980, 1981 and 1982. The three year moving average method allows for a degree of 'smoothing' this variation, and also allows for the underlying temporal trends to be more clearly illustrated. The three year moving average is widely used in various New Zealand publications (Dharmalingam *et al.* 2004; Statistics New Zealand 2004; Ministry of Health 2006b). ASMRs are expressed as the number of deaths from a particular cause of mortality per 100,000 of the population. Rates are presented separately for males and females. Visual Basics for Microsoft Applications (VBA) was used to automate calculation of ASMRs. 'Age standardised mortality rates' or 'ASMRs' or 'mortality rates' or 'rates' are used interchangeably throughout this thesis.

3.3.1.2 Confidence Intervals

Confidence intervals are calculated to give an indication of the level of uncertainty of the calculation of ASMRs. Statistical uncertainties usually arise because the rates are based on a random sample of finite size from a population of interest. Confidence intervals are then used to assess what would happen if the same study were repeated, using different samples each time. However, for this research, the information is not based on a sample and is therefore not subject to sampling error. It is, however, subject to random fluctuations of deaths over time, changes in coding procedures and variation in coding of underlying cause of death. The confidence interval is a way of conveying the stability of the ASMRs. The smaller the confidence interval, the more stable the rate. More deaths lead to a smaller interval, so mortality rates from rare causes of death or for small TLA/DHB populations will have quite wide intervals, and the rates are likely to be fairly unstable.

The method used to calculate 95% confidence intervals for ASMRs was taken from the London Health Observatory (2006) and can be summarised as:

$$95\% \text{ confidence interval} = \text{ASMR} \pm 1.96 \times \frac{\text{ASMR}}{\sqrt{\text{deaths}}}$$

3.3.1.3 Correlation Coefficients

A correlation coefficient is a number between -1 and 1 which measures the degree to which two variables are linearly related (Armitage & Berry 1994). If there is a perfect positive correlation between two variables a correlation coefficient of 1 is expected. This situation occurs when one variable has a high (low) value, so does the other. Conversely, a perfect negative correlation between two variations results in a correlation coefficient of -1, this occurs when one variation has a high (low) value; the other has a low (high) value. A correlation coefficient of 0 indicates that there is no linear relationship between the two variables. Correlation coefficients are used to determine the degree to which mortality is similar, for example, the geographic variation of male all-cause mortality compared with female all-cause mortality, or the geographic variation of male all-cause mortality compared with male lung cancer mortality. Correlation coefficients are calculated in Statistica version 7.1. In the context of this research, correlations coefficients are said to be ‘significant’ if they are statistically significant at the 0.05 level ($p < 0.05$). Similarly, correlation coefficients are said to be ‘non-significant’ when they are not statistically significant at the 0.05 level.

3.3.1.4 Number of Lives That Could be Saved

The calculation of the number of lives that could be saved is another way of indicating the degree of geographic inequality in mortality. The number of lives that could be saved is a summary measure of the absolute difference between the area with the highest mortality rate and the overall New Zealand mortality rate (not the lowest mortality rate for a certain area as this would produce far higher numbers and a much more dramatic summary). The number of lives that could be saved if the ‘worst’

DHB (DHB with the highest mortality rate) could reduce its ASMR to that of New Zealand, can be calculated as follows:

Number of lives saved = ASMR 'worst' (xx/100,000) – ASMR for NZ (xx/100,000)

3.3.1.5 Maps for Display of Geographic Inequality in Mortality Data

Maps are particularly useful for revealing spatial patterns of health outcomes: for this reason they are used in this thesis to show the geographic inequality in mortality. ASMRs are mapped at the DHB and TLA level to show the spatial distribution of mortality. These relationships are often not obvious from numerical or tabular data. A quintile interval for the display of mortality rates was chosen; therefore, each class contains an equal number of areas. Maps are generated using the Geographical Information System (GIS) ArcGIS version 9.

3.3.2 Analysis Used to Determine Whether Mortality has Become Geographically Polarised During the Period 1981 to 2000

3.3.2.1 Regression

Regression is a form of statistical modelling that attempts to evaluate the relationship between one variable (termed the dependent variable) and one or more other variables (termed the independent variables). The equation is usually displayed as:

$$Y = mx + c$$

Where:

- Y = dependent variable
- x = independent variable
- m = gradient of slope line
- c = intercept of Y when x is 0

The R^2 value is a dimensionless value that measures the strength of the linear relationship between the independent and dependent variables. R^2 values range from 0 to 1, with 1 representing a perfect fit between the data and the line drawn through them, and 0 representing no statistical correlation between the data and the line. In this thesis the R^2 value will be used to validate the relationship between population change between 1981 and 2000 and ASMRs calculated for 2000, and in the calculation of the slope index of inequality.

3.3.2.2 Age Standardised Rate Ratios

Age standardised rate ratios (subsequently referred to as rate ratios) involve the comparison of two rates to assess whether change has occurred. To assess whether a geographic polarisation of mortality has taken place, the ratio of the ASMR in 2000 to the ASMR in 1981, for each DHB and TLA, for each sex and cause of mortality is calculated. Three distinct interpretations of the results can be made:

- If the rate ratio is equal to 1, there is no difference in the ASMR between 1981 and 2000, therefore, ASMRs had remained steady
- If the rate ratio is greater than 1, the ASMR was greater in 2000 than it was in 1981, therefore, ASMRs have increased
- If the rate ratio is less than 1, the ASMR was greater in 2000 than it was in 1981, therefore, ASMRs have decreased.

Rate ratios are also calculated to determine the gap between the best and worst DHBs/TLAs in terms of mortality. For each cause of mortality and each sex, DHBs/TLAs were ranked in terms of ASMRs from worst (highest ASMR) to best (lowest ASMR). The rate ratio was calculated as the ASMR for the worst DHB/TLA divided by the ASMR for the best DHB/TLA. For example, if the rate ratio was 1.5 this would indicate that people who lived in the region with the highest mortality rate were 1.5 times more likely to die from 'X' than those people who lived in the area with the lowest rate. For some causes of death, especially at the TLA level, annual rates are based on very few death counts, which often lead to extremely high and unstable mortality rates. For this reason, a threshold value is used. Rate ratios are based on the best and worst areas where the rate is based on five or more deaths.

In Chapter Six summary tables are provided that indicate how many DHBs and TLAs recorded decreased or increased ASMRs between 1981 and 2000. For some cause-specific mortalities the number of TLAs that recorded decreased rates plus the number of TLAs that recorded increase rates do not always add up to 74 (which is the total number of TLAs in New Zealand). The reason being, that random rounding is reported by Statistics New Zealand for all censuses since 1981 (Statistics New Zealand 2001). All data gathered by Statistics New Zealand is rounded to base three. The following is a hypothetical example of a problem that was encountered due to base three rounding of population data. For example, TLA 'X' registered one death from colorectal cancer in 1996; the deceased was male and aged 80-84. However, TLA 'X' did not record any males aged 80-84 in the 1996 census. This of course does not make sense, however, due to base three rounding there may have actually been up to three males aged 80-84, but this specific sub-population was rounded down to zero. A numerator cannot be divided by zero; therefore, rate ratios cannot be calculated if either one of the rates suffers from this issue.

3.3.2.3 Confidence Intervals for Rate Ratios

Confidence intervals are calculated to give an indication of the stability of the rate ratios. The method used to calculate 95% confidence intervals for rate ratios was adopted from Rothman (1986), and can be summarised as:

$$\exp\{\ln(\text{rate ratio}) \pm \cdot \text{SD}[\ln(\text{rate ratio})]\}$$

Notation:

exp = exponent

ln = natural log

SD = standard deviation

Confidence intervals are displayed in graph and table form throughout the thesis. The bars in the graphs and/or numbers in brackets in the tables always represent the 95% confidence interval.

3.3.3 Possible Explanations for Geographic Inequalities in Mortality

Many explanations have been proposed to account for the geographic variation in health outcomes, these include: ethnicity, income inequality, and health behaviours. Two variables that are examined in this thesis are deprivation and population change.

3.3.3.1 Area Based Absolute and Relative Deprivation

Composite measures have been utilised in many countries to define the socioeconomic characteristics of an area, and they come in the main from census sources (Elliot *et al.* 2001). The composite measures are usually referred to as deprivation indices and often are designed to assign an area on a continuum from affluence to poverty. There are many well known deprivation indices used internationally including: the Carstairs indices; the Townsend indices; and the Jarman Underprivileged Area score. The New Zealand equivalent is the New Zealand Deprivation Index.

The New Zealand Deprivation Index 2001 (NZDep2001) is an area-based deprivation measure calculated from the 2001 Census of Population and Dwellings (Salmond & Crampton 2002a). The deprivation score is calculated at the meshblock level and then aggregated to larger units. Principle components analysis was used to create the index from the nine variables listed in

Table 3.2: NZDep2001 variables. Source: Salmond & Crampton, 2002a

Variable (proportions in small areas) in order of decreasing weight in the index
People aged 18-59 receiving a means tested benefit
People aged 18-59 unemployed
People living in equivalised households with income below an income threshold
People with no access to a telephone
People with no access to a car
People aged <60 living in a single parent family
People aged 18-59 without any qualifications
People not living in own home
People living in equivalised households below a bedroom occupancy threshold

Although there has been considerable debate concerning the choice of variables and their weighting, and various statistical techniques used, there is a general agreement

that area-based measures of deprivation provide powerful and informative means of measuring variations in health status (Curtis 1990; Morris & Carstairs 1991; Reading, Openshaw & Jarvis 1994).

Salmond and Crampton (2002b) describe the method of calculating an average New Zealand deprivation score for a user defined region. This method was followed to create an average deprivation score for the TLAs and DHBs. Because census variables change over time, it is not possible to recreate a comparable deprivation measure over time. For this reason, it is assumed that the level of deprivation calculated using the 2001 census variables is the same throughout the entire study period.

Once the deprivation score was calculated, measures of absolute (standardised rate difference (SRD) and slope index of inequality (SII)) and relative (standardised rate ratio (SRR) and relative index of inequality (RII)) inequality were calculated. The SII is defined as the slope of the regression line showing the relationship between a group's health status and its rank in socioeconomic terms (Low 2004). The SII and RII are important deprivation measures, and they have been praised for overcoming some technical issues inherent in the comparison of categories (Blakely *et al.* 2005). Importantly, the SII utilises the ASMRs at all levels of deprivation rather than just comparing the ASMRs of the two extreme groups (as calculated for the SRD (ASMR for the most deprived – ASMR for the least deprived) and SRR (ASMR for the most deprived / ASMR for the least deprived)). In this research, the SIIs were calculated following the method outlined in Low and Low (2004) in Microsoft Excel 2003. The DHBs and TLAs were ranked by average NZDep2001 score with the associated ASMRs, for each cause of mortality, for 1981, 1986, 1991, 1996 and 2000. Once the relative rank has been calculated and plotted on the x axis and the ASMRs on the y axis, the regression-based slope and intercept can be calculated. If the slope of the SII is negative, it can be interpreted in this context, as the people in the more deprived area have an expected mortality rate of 'X' per 100,000 greater than that expected for people living in the less deprived areas, and vice versa for a positive slope of the SII.

The RII is simply calculated as:

$$\text{RII} = \text{y intercept} / (\text{y intercept} - \text{SII})$$

Source: (Blakely *et al.* 2005)

The y intercept is automatically calculated as part of the SII procedure.

3.3.3.2 Population Change

As discussed in Section 2.5.2.4 the relationship between mortality and population change has been examined in the United Kingdom but not yet in New Zealand. In this thesis, population change is determined by calculating the percentage of population change between 1981 and 2000 for each DHB and TLA. The percentage change in population is plotted on the x axis as the independent variable with the ASMR in 2000 plotted on the y axis as the dependent variable. The R^2 , β coefficient (slope of the regression line), and level of statistical significance are used to validate the relationship between percentage change in population and the ASMRs. The R^2 , β coefficient and level of statistical significance was calculated in Statistica version 7.1.

3.4 Conclusion

This chapter has discussed the characteristics of mortality and population data and the methods used in this research to achieve the aims set out in Chapter One. An understanding of the way the data was derived and the methods employed in this analysis is of fundamental importance to the implications of the results. The first section in this chapter concentrated on the mortality and population data. The subsequent sections explored in detail the methods used to answer the aims of this thesis. The chapters that follow focus on the results found in this study and can be considered in light of the methods adopted for this research.

CHAPTER FOUR

Background on diseases

4.1 Introduction

The aim of this Chapter is to provide evidence for the temporal variation of deaths and age standardised mortality rates (ASMRs) for the specific causes of death analysed in this research. In addition, this Chapter provides background detail on the risk factors associated with the cause-specific mortalities analysed. Deaths and mortality rates are expressed for New Zealand as a whole; this will set the context for the further chapters that analyse mortality rates at the regional level. The terms *increase* and *decrease* are used when the slope (β coefficient) of the trend is statistically significant ($p < 0.05$); otherwise the terms *stable* or *level* are used.

4.2 All-cause mortality

All-cause mortality is an aggregation of all-cause specific mortality. Figure 4.1 shows the number of deaths from 1981 to 2000, while Figure 4.2 shows mortality rates during the same period. The number of male deaths remained stable, whereas for females, the number of deaths increased. Overall, there was a significant decrease in all-cause mortality rates for males (rates decreased by 12.4%, $\beta = -6.6$) and females (rates decreased by 4.6%, $\beta = -2.3$). However, Figure 4.2 shows that there were periods where the mortality rate increased, notably the mid 1980s and mid 1990s. Over the entire period, males had a higher overall mortality rate compared with females.

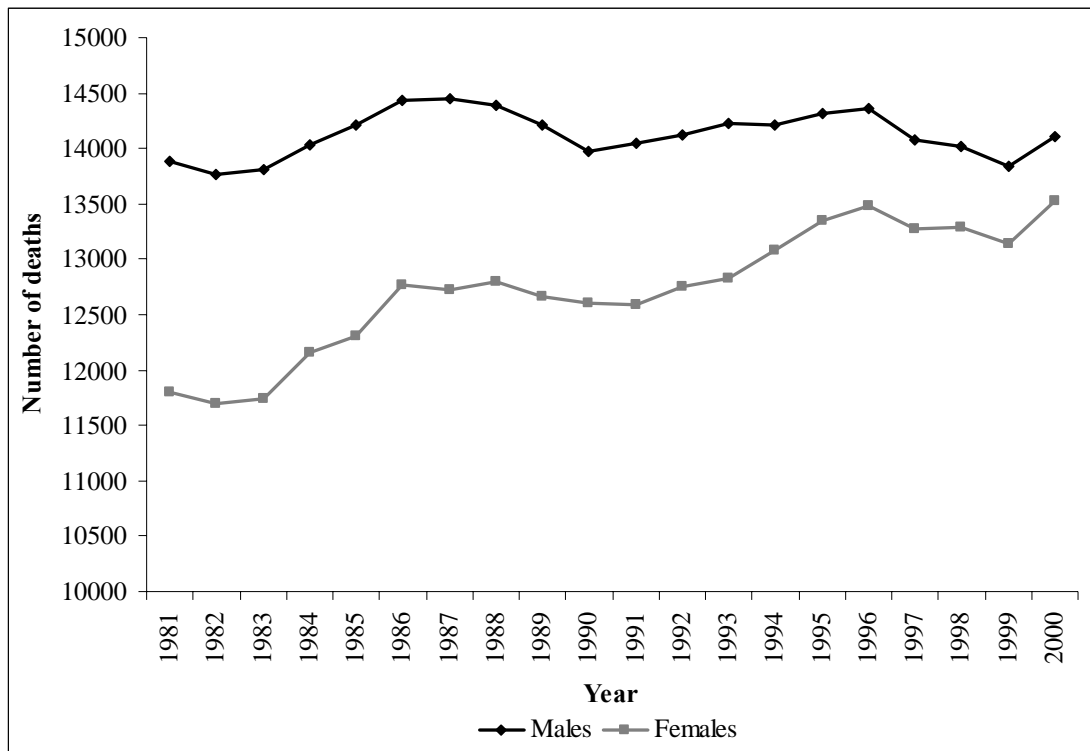


Figure 4.1: Number of deaths from all-cause mortality, 1981-2000

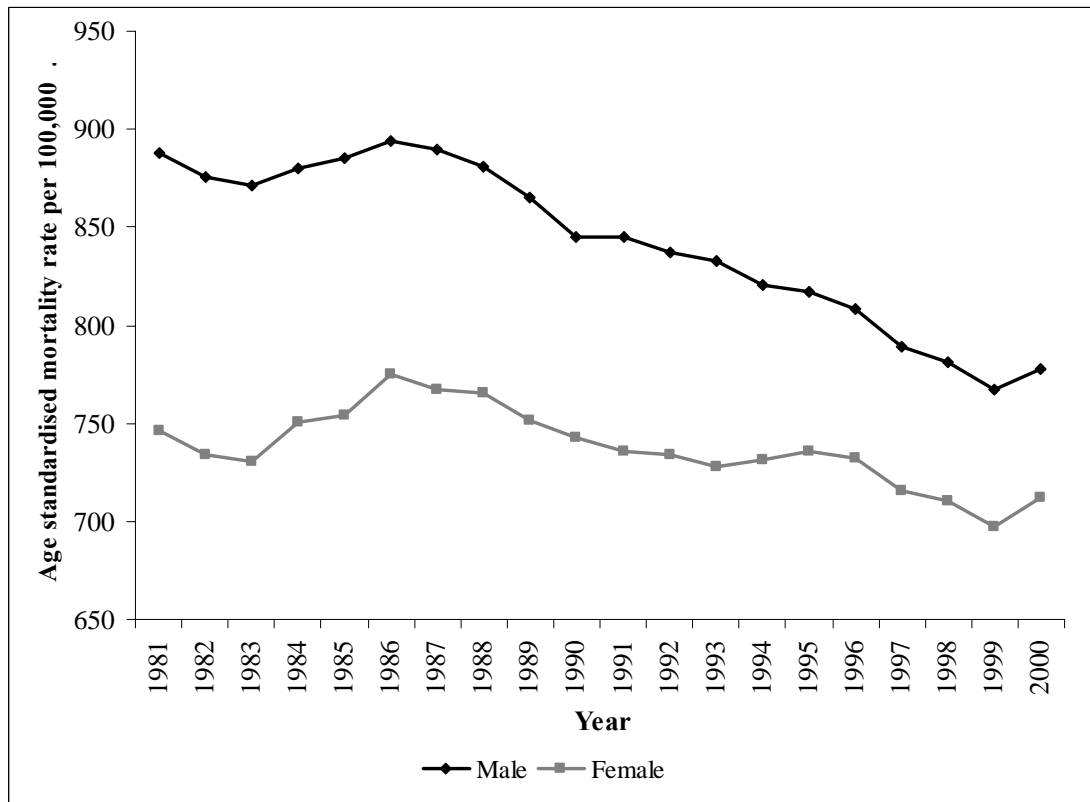


Figure 4.2: All-cause mortality ASMRs per 100,000, 1981-2000

4.3 Ischaemic heart disease

Ischaemic heart disease (IHD) is caused by a lack of oxygen in cells of the myocardium (Anderson, Keith & Novak 2002). The inability to provide enough oxygen to the heart is often caused by fatty deposits (atheroma), which accumulate in the cells lining the wall of the coronary arteries. The exact cause of IHD is unknown, however, there is abundant evidence that the following factors increase the risk of IHD: family history of IHD, diabetes, high blood pressure or atherosclerosis, smoking, poor nutrition, being overweight, hypertension, and elevated cholesterol (Ministry of Health 2006a).

In 2000, IHD was the second leading cause of death after cancer. The number of deaths attributed to IHD and the resulting mortality rates are shown in Figure 4.3 and 4.4, respectively. The number of deaths from IHD decreased for males during the period, while deaths from IHD for females remained at a relatively stable level. The mortality rates for males decreased over this period (rates decreased by 27.3%, β : -4.18), and remained relatively stable for females (rates decreased by 14.0%, β : -1.90).

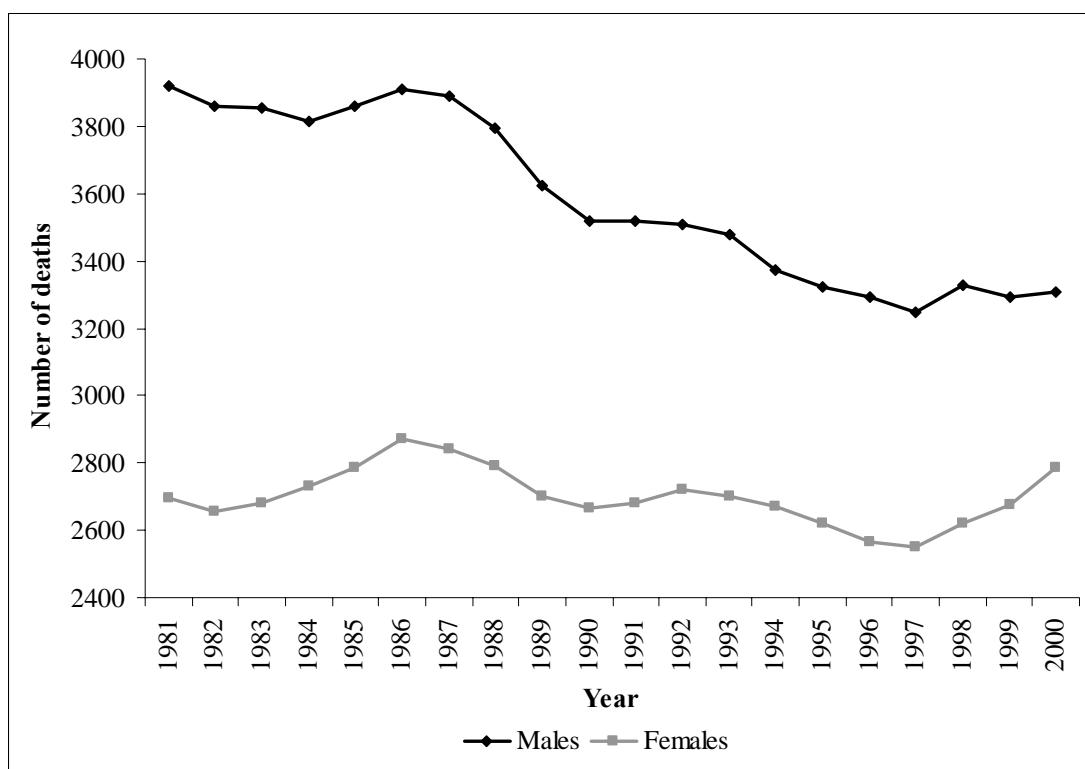


Figure 4.3: Number of deaths attributed to IHD, 1981-2000

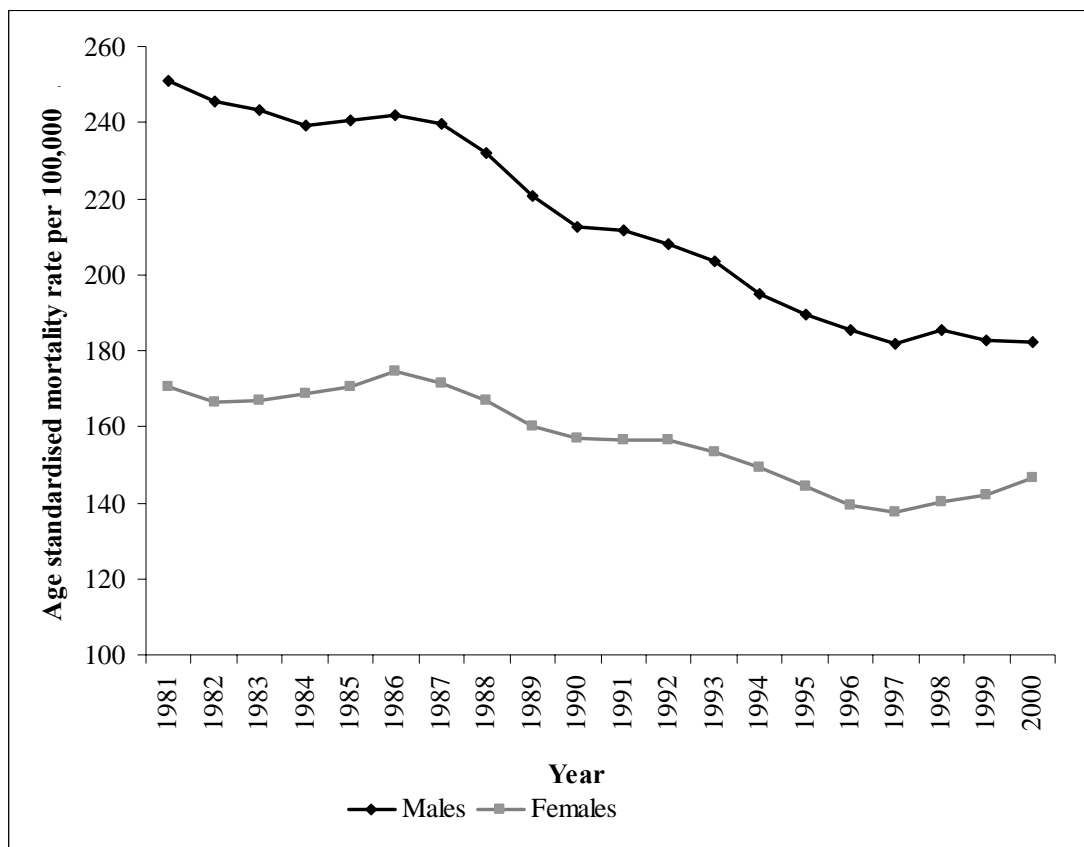


Figure 4.4: IHD ASMRs per 100,000, 1981-2000

4.4 All-Cancers

Cancer is the general term used to refer to a malignant tumour (Macpherson 1995). Cancer occurs when there is an uncontrolled division of cells forming a group of abnormal cells. As the cells multiply, they form a tumour which can invade other tissues (Cancer Society of New Zealand Inc 2003c). Cancer can develop as a result of many factors including: genetic mutations attributed to environmental causes, certain viral infections, poor nutrition, alcohol consumption and physical inactivity, and a familial tendency for certain cancers (Macpherson 1995; Cancer Society of New Zealand Inc 2003a).

Cancer was the leading cause of mortality for both males and females in 2000, in which there were 7,158 deaths (3,965 males and 3,463 females) (Figure 4.5). The age distribution of cancer mortality is similar between males and females: 72.7% of male cancer deaths occurred in those aged 65 years and over, 67.9% of female cancer deaths occurred in those aged 65 years and over. Figure 4.6 shows the variation in

cancer mortality rates between 1981 and 2000. In contrast to all-cause mortality where mortality rates declined during the period, both male and female cancer mortality rates increased: in 2000 male cancer mortality rates were 24.6% higher (β : 1.67), and female cancer mortality rates were 23.6% higher (β : 1.63), than those recorded in 1981. Males had a consistently higher cancer mortality rate, and in 2000, the male rate was 16.6% higher than the female rate.



Figure 4.5: Number of deaths attributable to cancer, 1981-2000

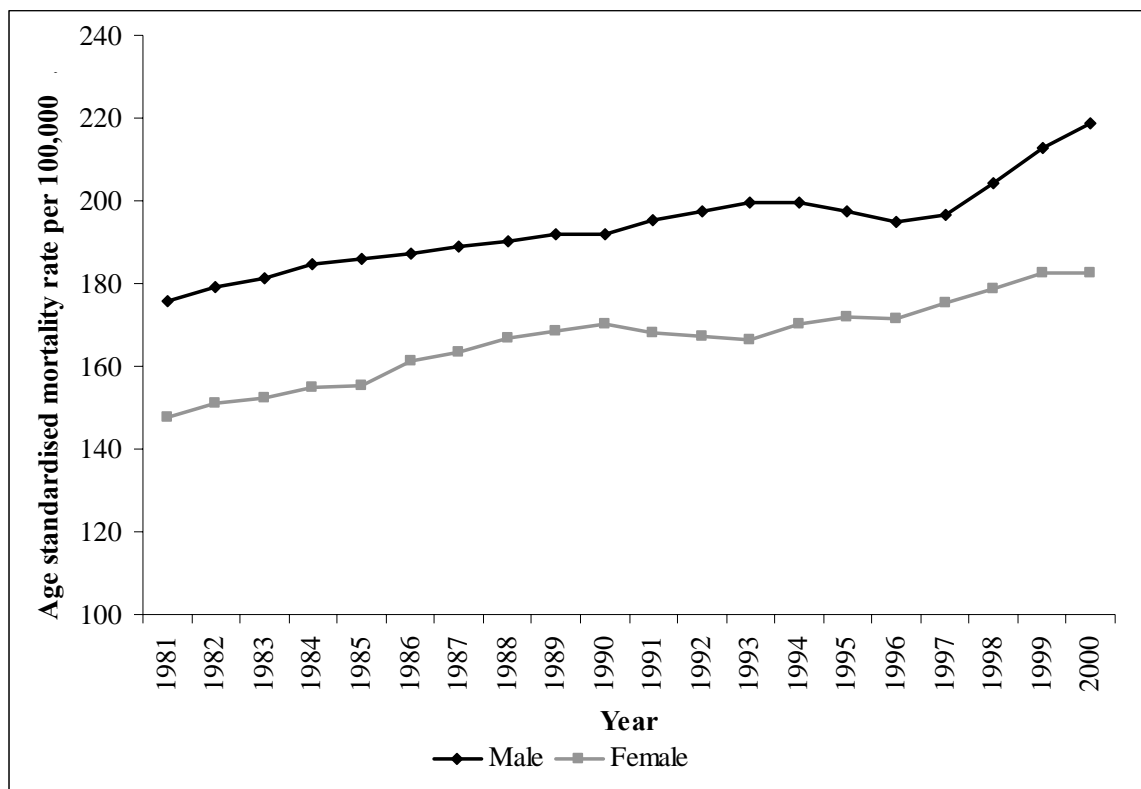


Figure 4.6: Cancer ASMRs per 100,000, 1981-2000

4.5 Lung cancer

Lung cancer is a malignant tumour of the lungs (Cancer Society of New Zealand Inc 2005). There are a number of factors causally associated with the development of lung cancer, including: smoking, exposure to asbestos fibres, radiation exposure (particularly radon gas), familial predisposition, and presence of other lung diseases, (Cancer Society of New Zealand Inc 2005; American Cancer Society 2006).

Lung cancer is one of the leading causes of cancer death; accounting for 18.6% of the cancer deaths in 2000 (1,384 deaths). Sex disparities exist in both the magnitude of deaths and trends over time. For each year, the majority of those who died from lung cancer were males (60.2% of total lung cancer deaths in 2000) (Figure 4.7). The number of deaths attributable to lung cancer remained relatively stable over the period for males, and increased for females. The male lung cancer mortality rate decreased by 9.0% between 1981 and 2000 (β : -0.45), while the female rate increased by 75.3% (β : 0.63) (Figure 4.8). The gap between male and female lung cancer mortality rates narrowed from 3.1 times in 1981, to 1.6 times in 2000.

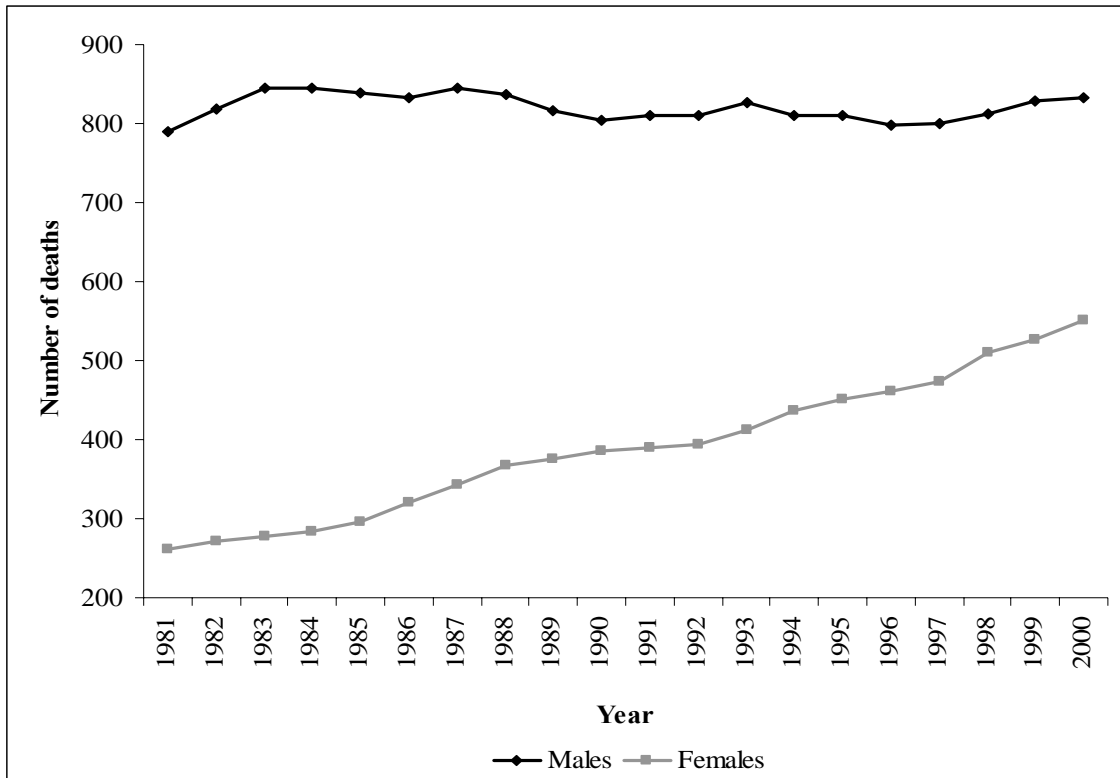


Figure 4.7: Number of deaths attributable to lung cancer, 1981-2000

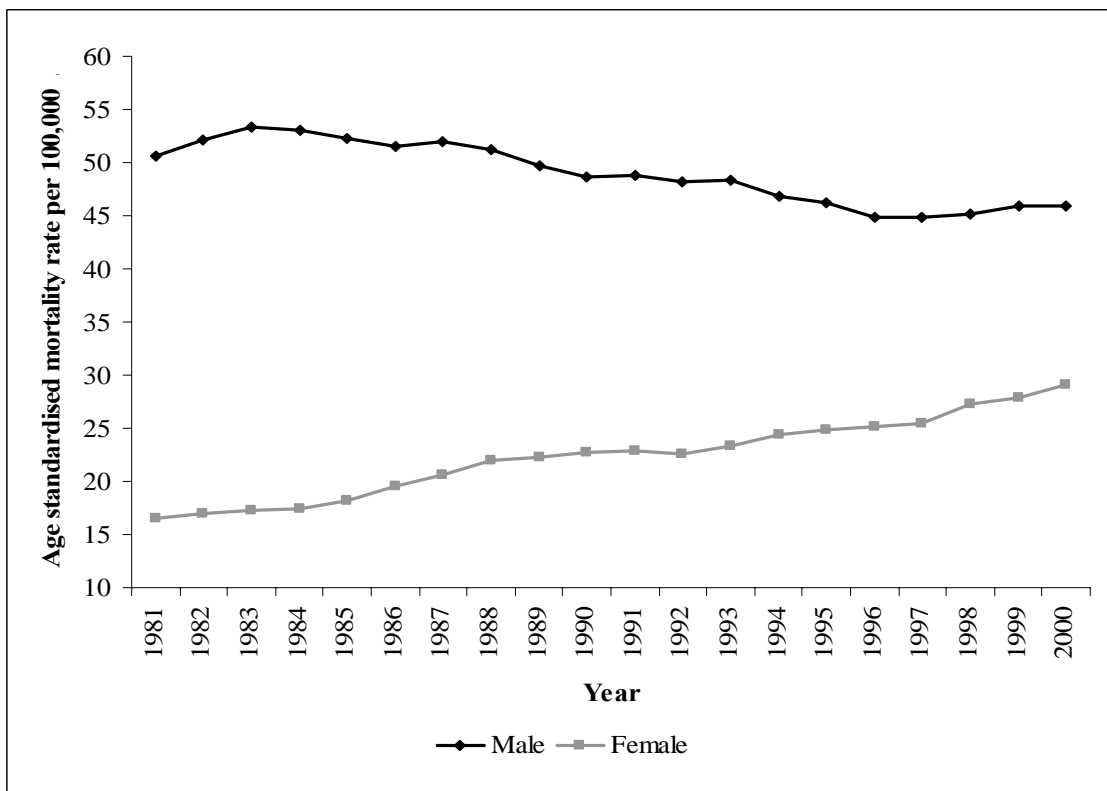


Figure 4.8: Lung cancer ASMRs per 100,000, 1981-2000

4.6 Colorectal cancer

Colorectal cancer is a malignant growth that begins on the inside wall of the bowel, including the colon and rectum (National Health Service Cancer Screening Programmes 2006). Risk factors associated with colorectal cancer include: a previous bowel polyp, a diet high in red meat and fat and low in vegetables, lack of exercise, obesity, and familial history (National Health Service Cancer Screening Programmes 2006).

The number of deaths attributable to colorectal cancer is shown in Figure 4.9, the corresponding mortality rates are shown in Figure 4.10. In 2000, there were 1108 deaths from colorectal cancer in New Zealand (564 males and 544 females). Figure 4.10 indicates that there was little difference between the male and female mortality rates in any given year (usually in the order of 2 per 100,000). This contrasts with many of the other cause-specific mortalities where a considerable sex inequality exists (for example lung cancer). However, between 1981 and 2000 males experienced a 17.7% increase in colorectal cancer mortality rates (β : 0.22), in comparison; female rates were relatively stable (β : 0.03).

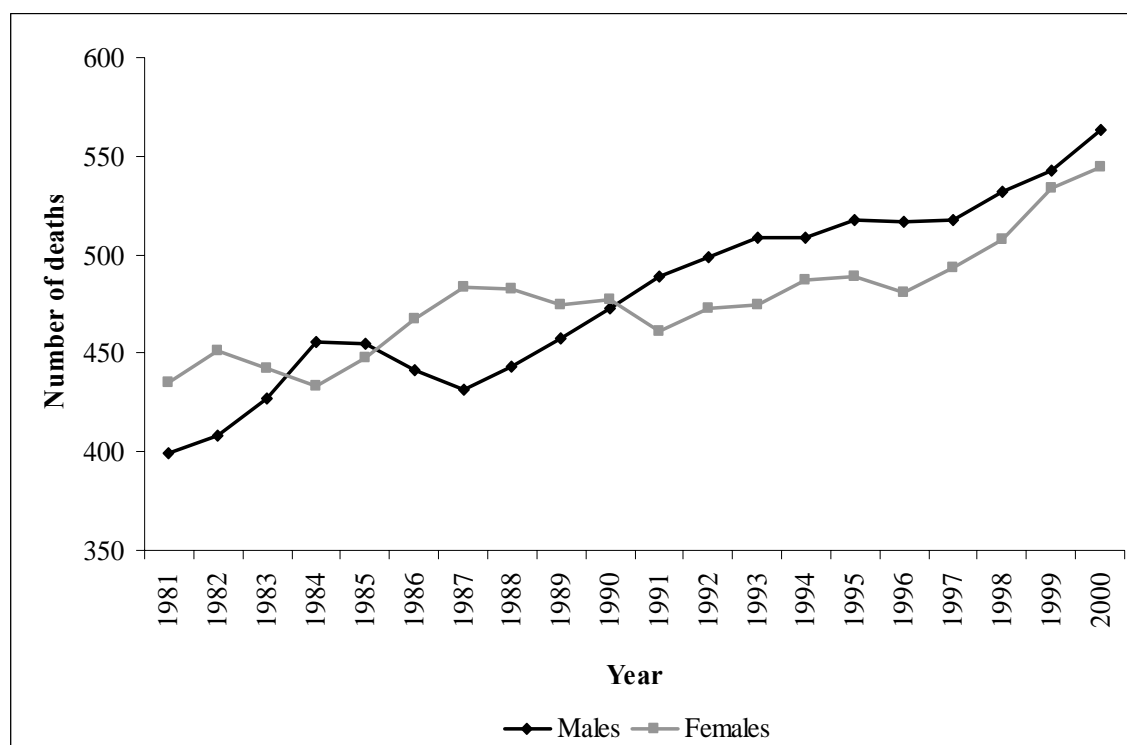


Figure 4.9: Number of deaths attributable to colorectal cancer, 1981-2000

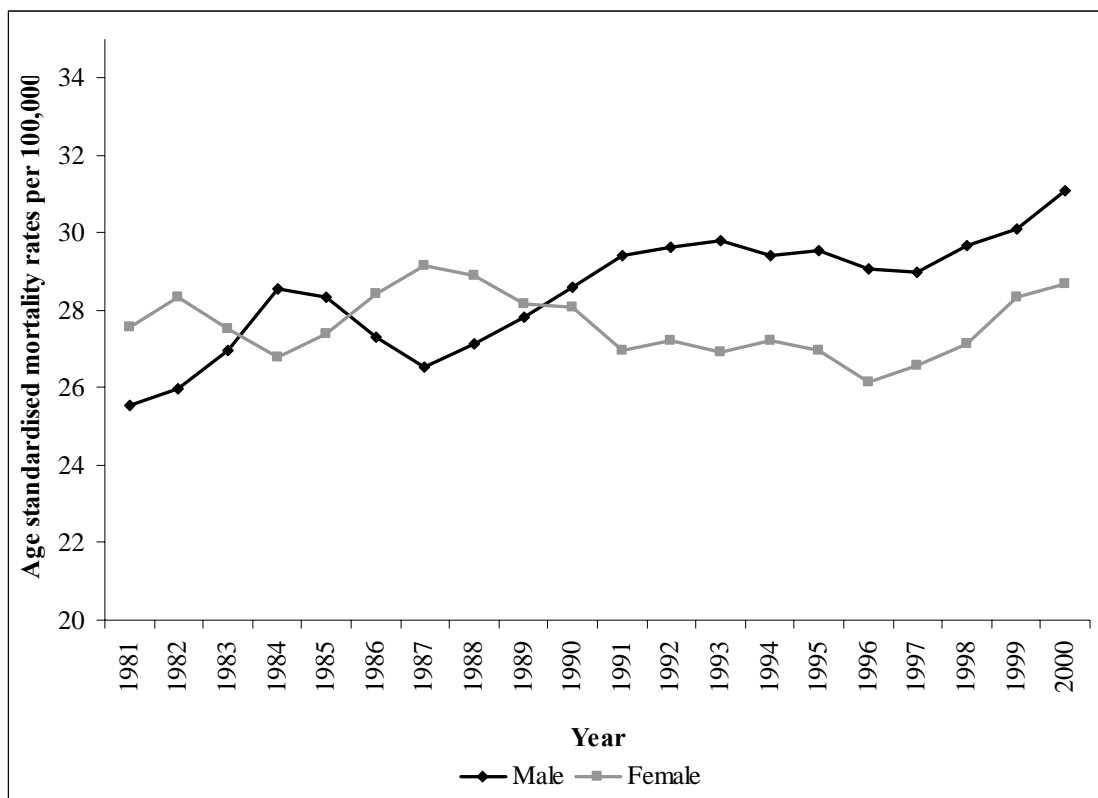


Figure 4.10: Colorectal cancer ASMRs per 100,000, 1981-2000

4.7 Breast Cancer

Breast cancer is a malignant tumour which originates in the breast tissue (Cancer Society of New Zealand Inc 2003b). Evidence suggests the following risk factors are associated with breast cancer: being a woman, older age, familial history of breast cancer, excessive alcohol consumption, obesity and high fat diets, and a lack of physical activity (American Cancer Society 2005).

Breast cancer was the leading cause of cancer mortality for females in 2000, with a mortality rate (31.8 per 100,000) slightly higher than that of female lung cancer (29.0 per 100,000). A total of 603 females died from breast cancer in 2000; accounting for 17.4% of female deaths from cancer (Figure 4.11). Figure 4.12 shows breast cancer mortality rates between 1981 and 2000. These graphs indicate that both the actual numbers of deaths and the mortality rates (β : 0.10) increased during this period. The increase in the number of deaths was not linear; a general increase in the number of

deaths was observed up until a peak in 1989, followed by a decrease at a similar rate until 1993, at which time the number of deaths began to increase.

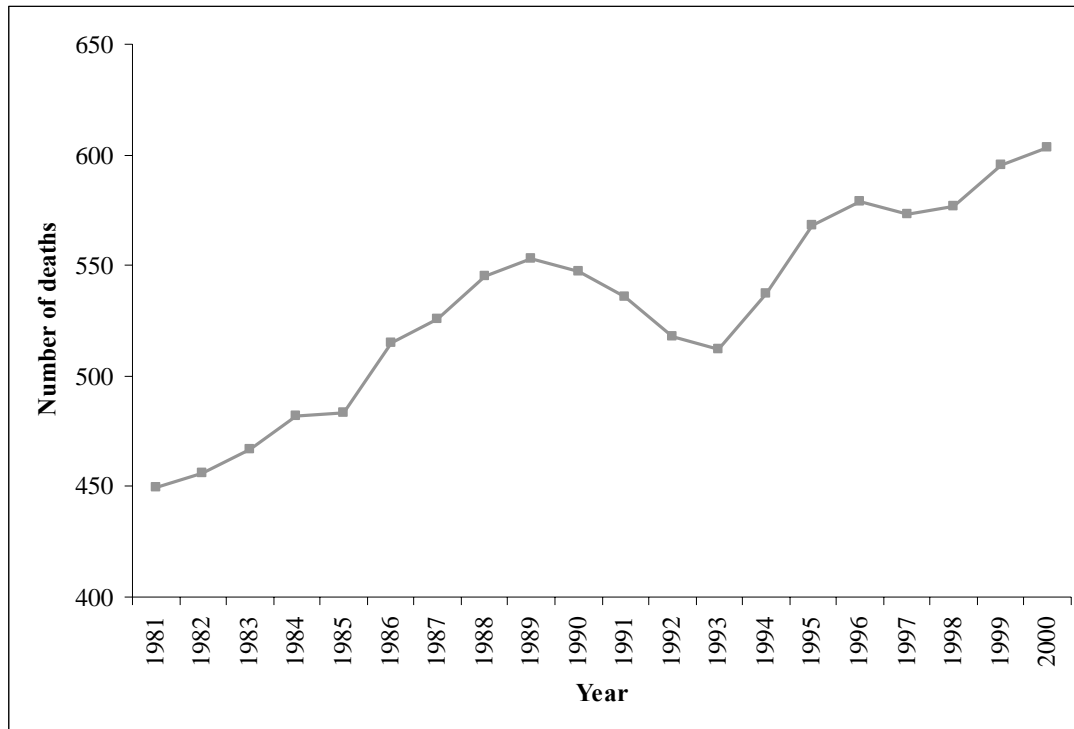


Figure 4.11: Number of deaths attributable to breast cancer, 1981-2000



Figure 4.12: Breast cancer ASMRs per 100,000, 1981-2000

4.8 Prostate cancer

Prostate cancer is a malignant tumour of the prostate gland. Little is known about the aetiology, but the majority of prostate cancers require the male hormones, androgens, to grow (Macpherson 1995). As there are few known risk factors (with the exception of age) it is impossible to determine high-risk groups or individuals to target in order to prevent the prevalence of prostate cancer.

There were 556 deaths from prostate cancer in 2000, accounting for 3.9% of all male deaths, and 14.0% of all male cancer deaths (Figure 4.13). Prostate cancer mortality is elevated amongst older men, with 92.3% of deaths in 2000 occurring in males aged 65 years and older. During the study period, the number of deaths attributed to prostate cancer increased by 109.4%. Prostate cancer mortality rates also steadily increased over this time, finishing 80.5% higher than in 1981 (β : 0.66) (Figure 4.14).

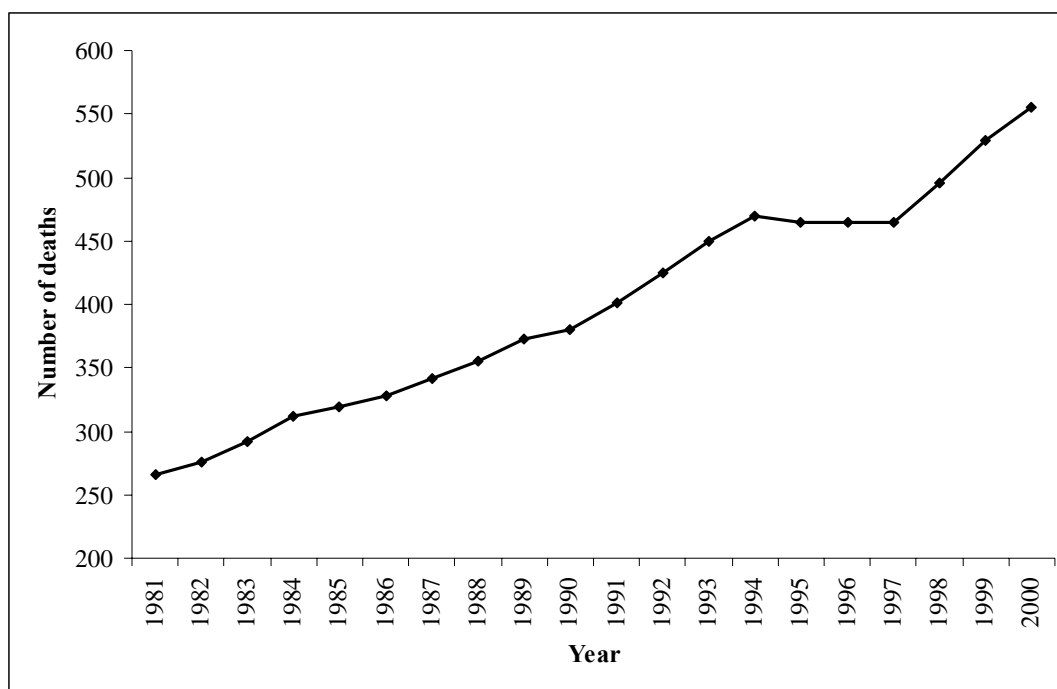


Figure 4.13: Number of deaths attributable to prostate cancer, 1981-2000

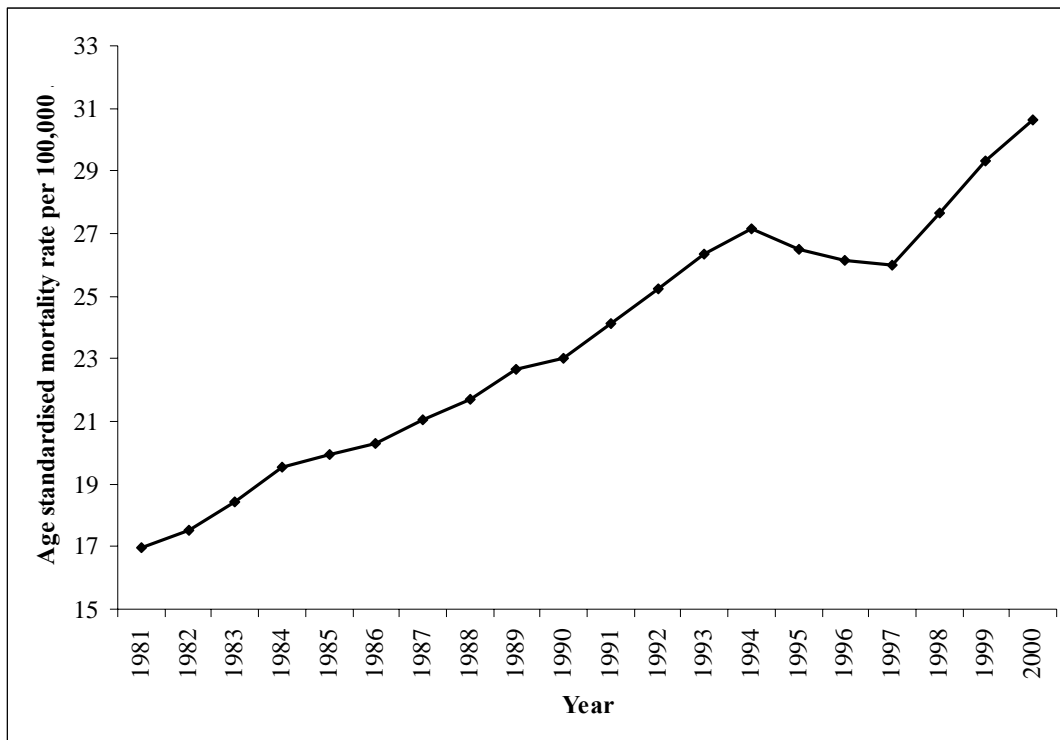


Figure 4.14: Prostate cancer ASMRs per 100,000, 1981-2000

4.9 Chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease (COPD) is a progressive condition, characterised by diminished inspiratory and expiratory capacity of the lungs (Anderson, Keith & Novak 2002). The risk factors for COPD are well known and include: genetic factors, history of tobacco smoking, heavy exposure to occupational dusts and chemicals, and indoor/outdoor air pollution.

In 2000, 1,430 deaths were attributed to COPD, accounting for 5.2% of deaths in New Zealand (Figure 4.15). Figure 4.16 shows that COPD mortality rates increased disproportionately for males compared with females: the male COPD mortality rate increased by 29.4% for males (β : 0.42), while the female rate increased by 226.3% (β : 1.18). Due to the rapid increase in female COPD mortality, the gap between male and female COPD mortality rates has narrowed from 3.1 times in 1981, to 1.2 times in 2000.

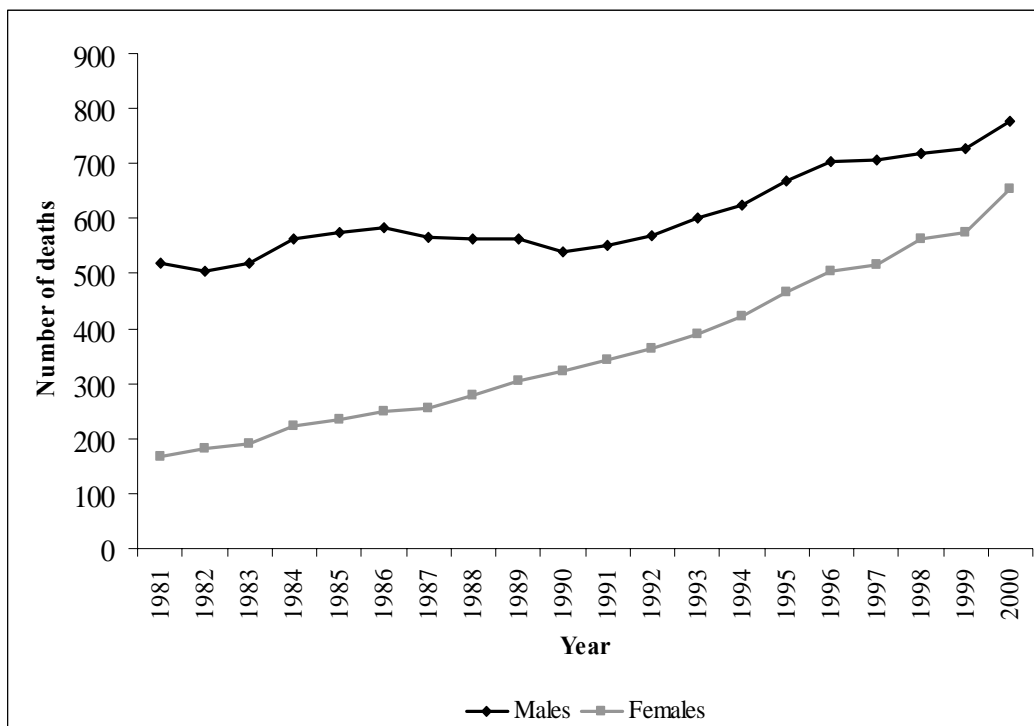


Figure 4.15: Number of deaths attributed to COPD, 1981-2000



Figure 4.16: COPD ASMRs per 100,000, 1981-2000

4.10 Cerebrovascular disease

Cerebrovascular disease (CVD) refers to all disorders where an area of the brain is affected by ischemia or bleeding, and where one or more of the cerebral blood vessels are involved in the pathological process (American Association of Neurological Surgeons 2003). Key risk factors for CVD have been identified, and include: high blood pressure, high cholesterol, various heart disorders, diabetes, heavy drinking, smoking, unhealthy diet and a sedentary lifestyle.

In 2000, CVD was the third leading cause of mortality after cancer and IHD. Of the 2,659 deaths that were attributed to CVD in 2000, the majority (61.2%) were females (Figure 4.17). The number of CVD deaths decreased for males during the period, but remained relatively stable for females. Figure 4.18 illustrates the temporal change in CVD mortality rates, and overall, the rate decreased for both males (by 18.8%, β : -0.87) and females (by 15.4%, β : -1.02). Females had a consistently higher CVD mortality rate than males, and in 2000, the female rate was 50.5% higher than the male rate.

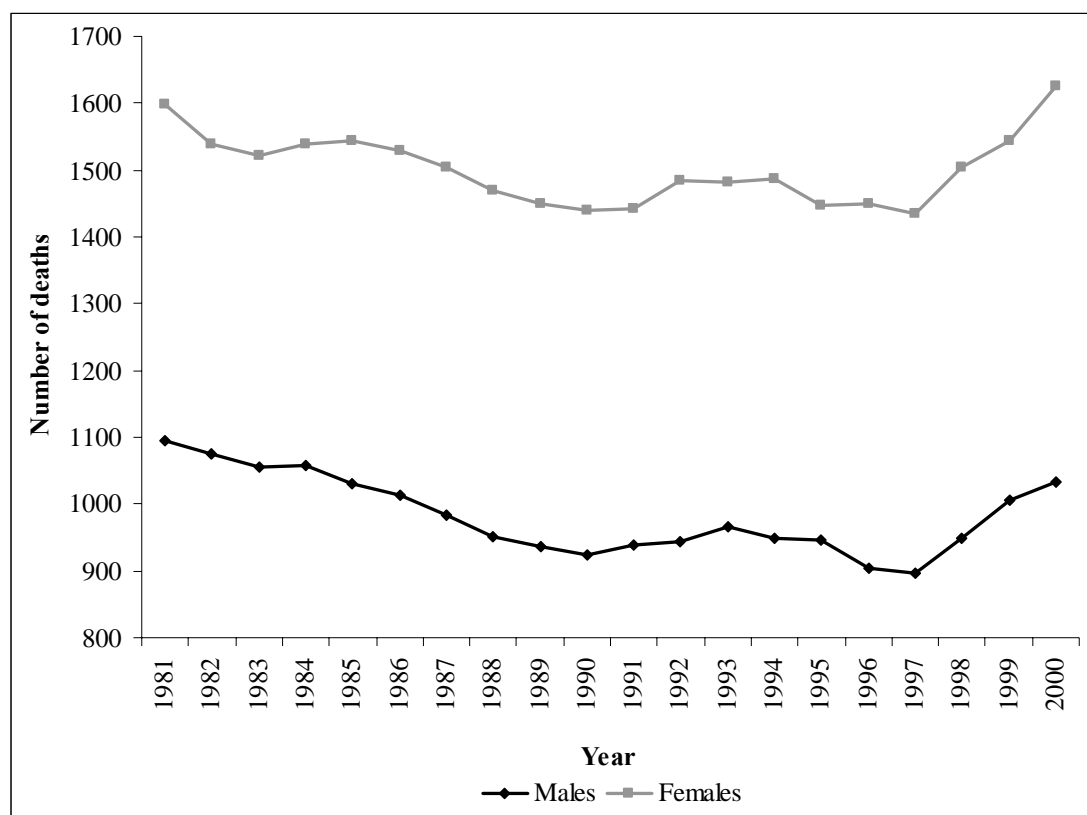


Figure 4.17: Number of deaths attributed to CVD, 1981-2000

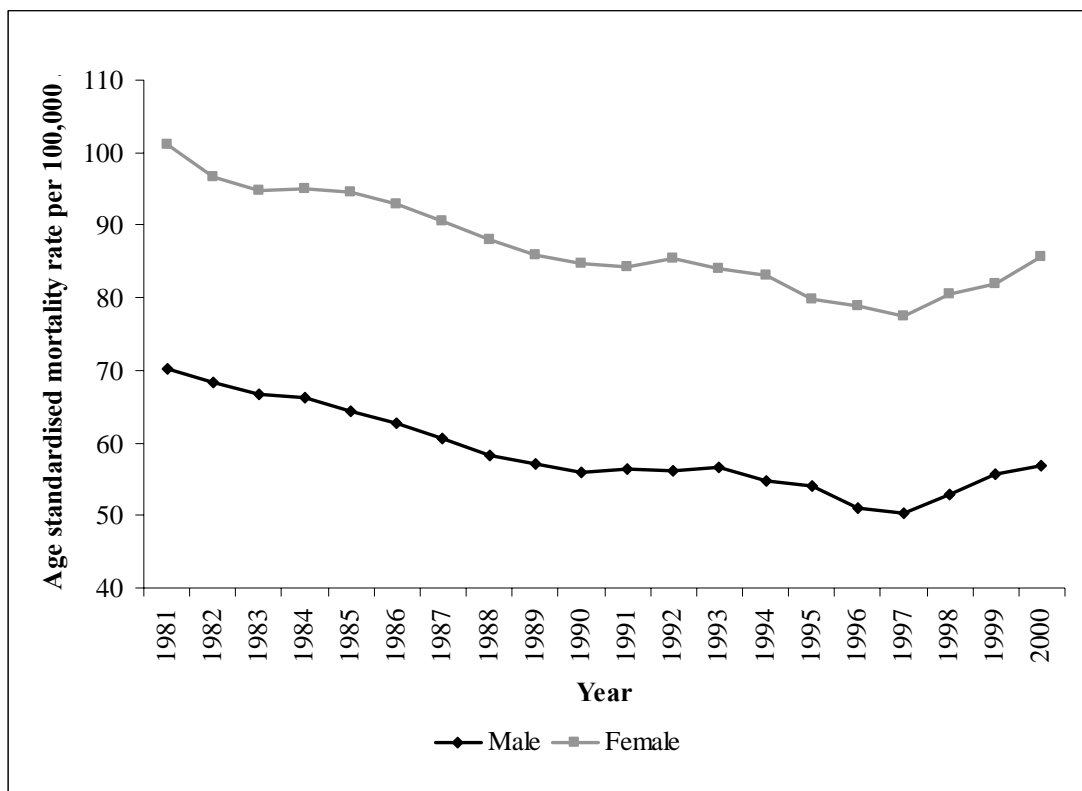


Figure 4.18: CVD ASMRs per 100,000, 1981-2000

4.11 *Diabetes mellitus*

There are two forms of diabetes mellitus (commonly referred to as diabetes). Type 1 diabetes is caused by insufficient production of insulin and results in abnormal metabolism of carbohydrates, fats and proteins. This disease typically appears in childhood or adolescence. Type 2 diabetes, in contrast, typically appears in adulthood and is exacerbated by obesity and an inactive lifestyle (Diabetes New Zealand 2006). In this thesis the two types of diabetes are combined.

In 2000 there were 748 deaths attributed to diabetes mellitus, this is considerably larger than in 1981 when 363 people died from the disease (Figure 4.19). The majority of deaths occurred in those people aged 65 years and older (72.0% of male diabetes mellitus deaths, 81.7% of female diabetes mellitus deaths). The mortality rates for males and females have followed a similar increasing trend, with rates rising from approximately 11 per 100,000 in 1981 for both males and females, to 21 per 100,000 for males (β : 0.49), and 19 per 100,000 for females (β : 0.39) by 2000 (Figure 4.20).

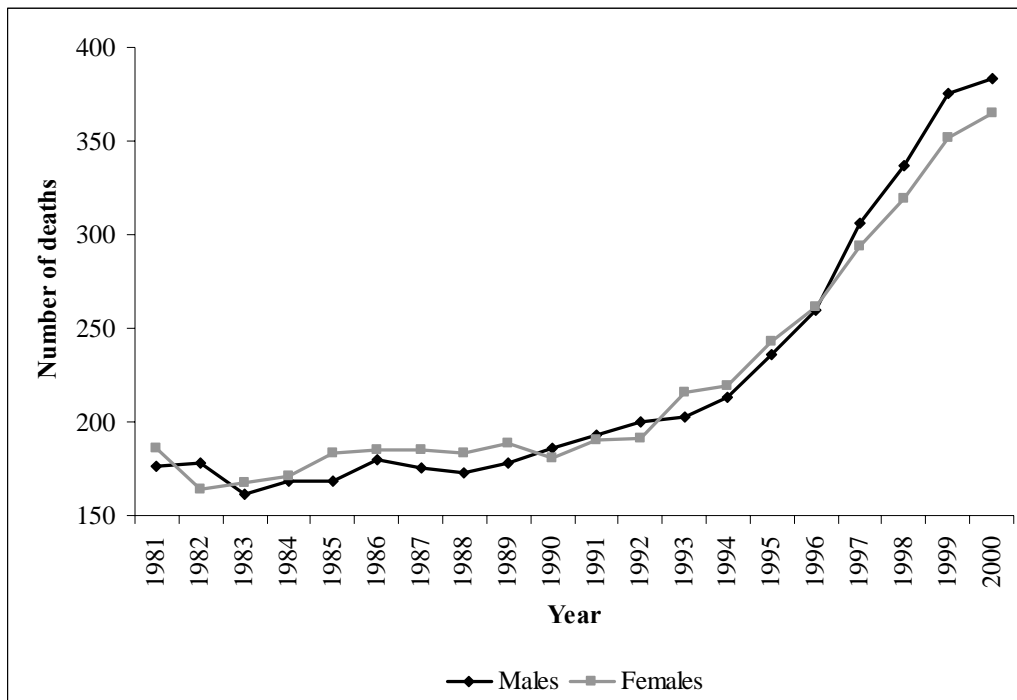


Figure 4.19: Number of deaths attributable to diabetes mellitus, 1981-2000



Figure 4.20: Diabetes mellitus ASMRs per 100,000, 1981-2000

4.12 Conclusion

In general, age standardised mortality rates have decreased for all-cause, ischaemic heart disease, male lung cancer and cerebrovascular disease, between 1981 and 2000. Rates remained relatively stable for female cerebrovascular disease and increased for cancer, female lung cancer, male colorectal cancer, breast cancer, prostate cancer, chronic obstructive pulmonary disease and diabetes mellitus. It is important to understand how these rates have varied over time for New Zealand as a whole, as it sets the scene for the following chapters, which examine how rates have changed over time at the regional level. An important distinction is whether or not all regions have followed the general trends described above.

CHAPTER FIVE

To what extent are there geographic inequalities in mortality in contemporary New Zealand?

5.1 Introduction

The objective of this chapter is to illustrate the geographic inequalities in mortality within New Zealand over the period 1981 to 2000. The extent to which there are geographical inequalities in mortality in 2000 becomes clear.

5.2 All-cause mortality

The geographic variation in male all-cause mortality is shown in Figure 5.1. The figure shows that there is a large variation in mortality rates, ranging from 663/100,000 in the Waitemata DHB to 992/100,000 in the Tairāwhiti DHB. In the South Island, there is a general north to south trend of increasing mortality rates, with the highest rates being experienced in the West Coast DHB. In the North Island, the relatively high mortality rates are confined to the central DHBs; generally mortality rates reduce with distance from this area. However, high mortality rates are experienced in Northland. Very similar and significant geographic disparities for female all-cause mortality at the DHB level can be observed (correlation of male and female all-cause mortality = 0.89) (Figure 5.2). Again, the north to south gradient is observed in the South Island with relatively high rates on the West Coast. The central North Island cluster of high mortality is more obvious among females. The trends for the Auckland and Wellington inserts show close similarity between males and females.

The variation of mortality rates observed at the DHB level mask important small-scale variation at the TLA level (Figure 5.3 and Figure 5.4). For males, a cluster of high mortality is shown on the eastern North Island, surrounded by a moderately high mortality cluster to the southwest (Figure 5.3). Relatively high mortality is shown

throughout the Northland region. The north to south gradient observed in the South Island at the DHB level is not as obvious at the TLA level. The West Coast is highlighted as a region of relatively high mortality, along with other TLAs, notably Kaikoura and Waimate Districts and Invercargill City. Very similar and significant geographic disparities in all-cause mortality for females can be observed (correlation of male and female all-cause mortality = 0.81) (Figure 5.4). Again, the central North Island stands out as a region of relatively high mortality, but the distinct clusters observed for males are not as obvious as those for females at the TLA level. The figure shows a number of TLAs along the central west coast on the North Island with relatively high mortality rates (Stratford, Whanganui, Horowhenua and Upper Hutt), surrounded by TLAs with moderate or even low mortality rates. Similar to the distribution of mortality for males, the north to south gradient for females observed at the DHB level is not as obvious at the TLA level. The mortality rate quintile for the southeast TLAs of Clutha and Gore Districts is reasonably high when compared with their male counterparts. The eastern South Island TLAs north of Selwyn District and the southwestern TLAs have relatively low mortality rates for both males and females.

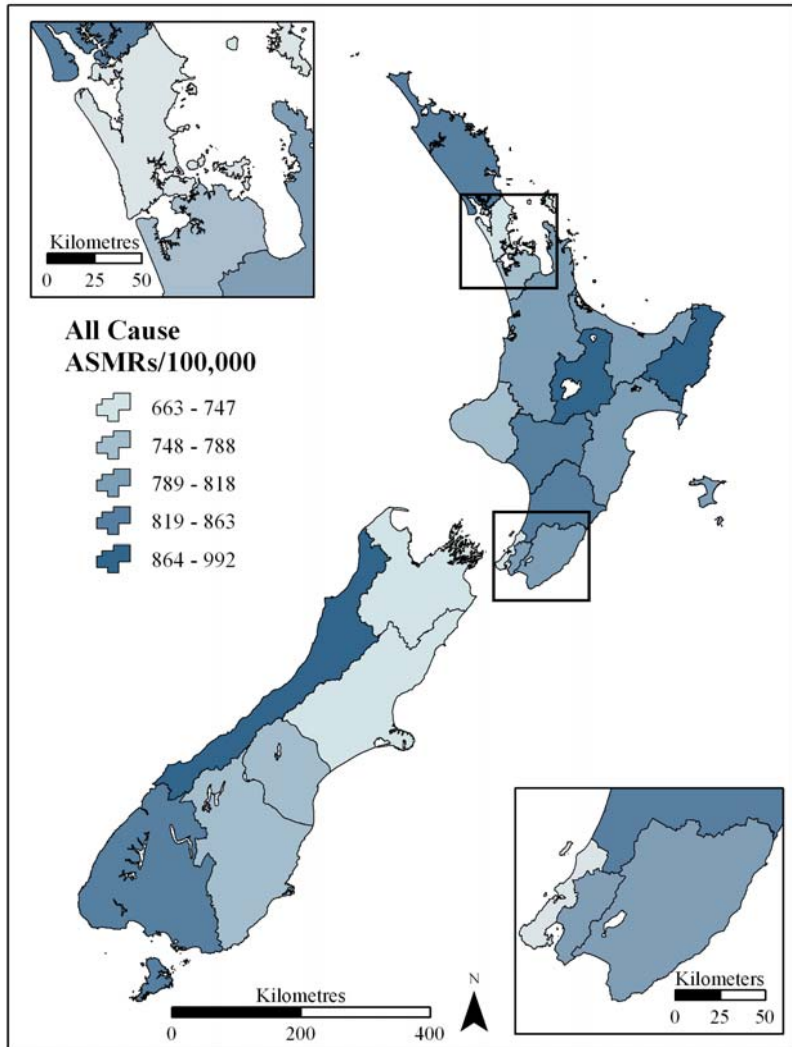


Figure 5.1: Geographic inequality in male all-cause ASMRs per 100,000 at the DHB level, 2000

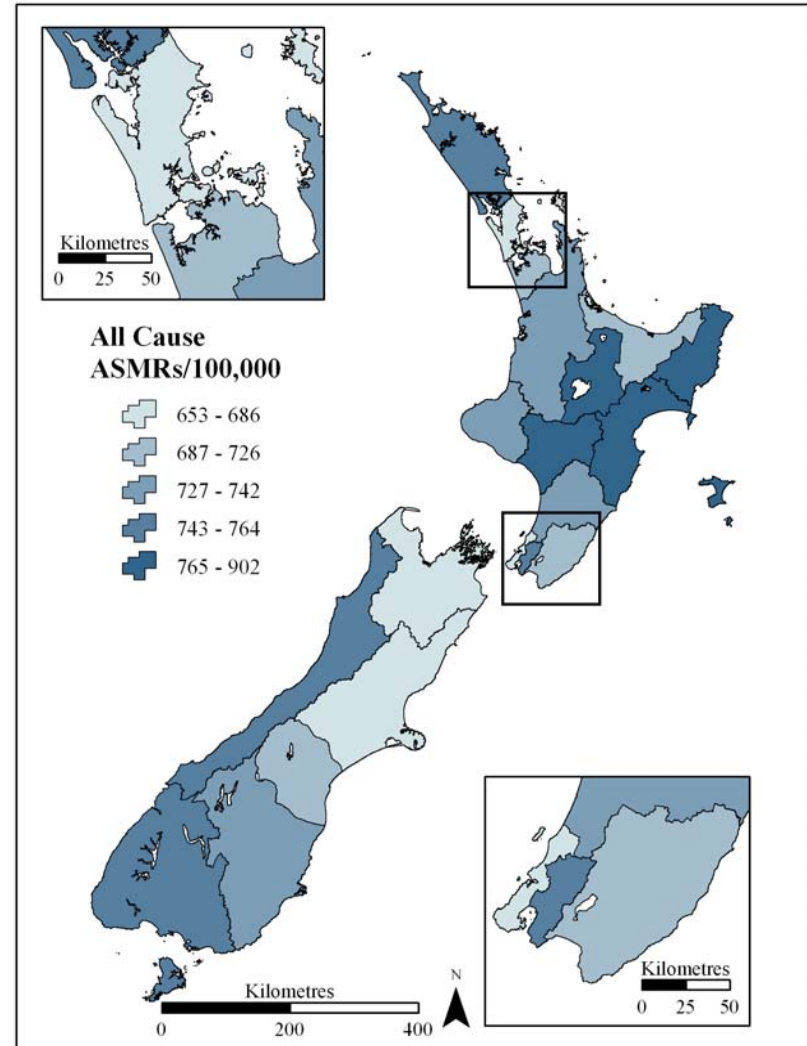


Figure 5.2: Geographic inequality in female all-cause ASMRs per 100,000 at the DHB level, 2000

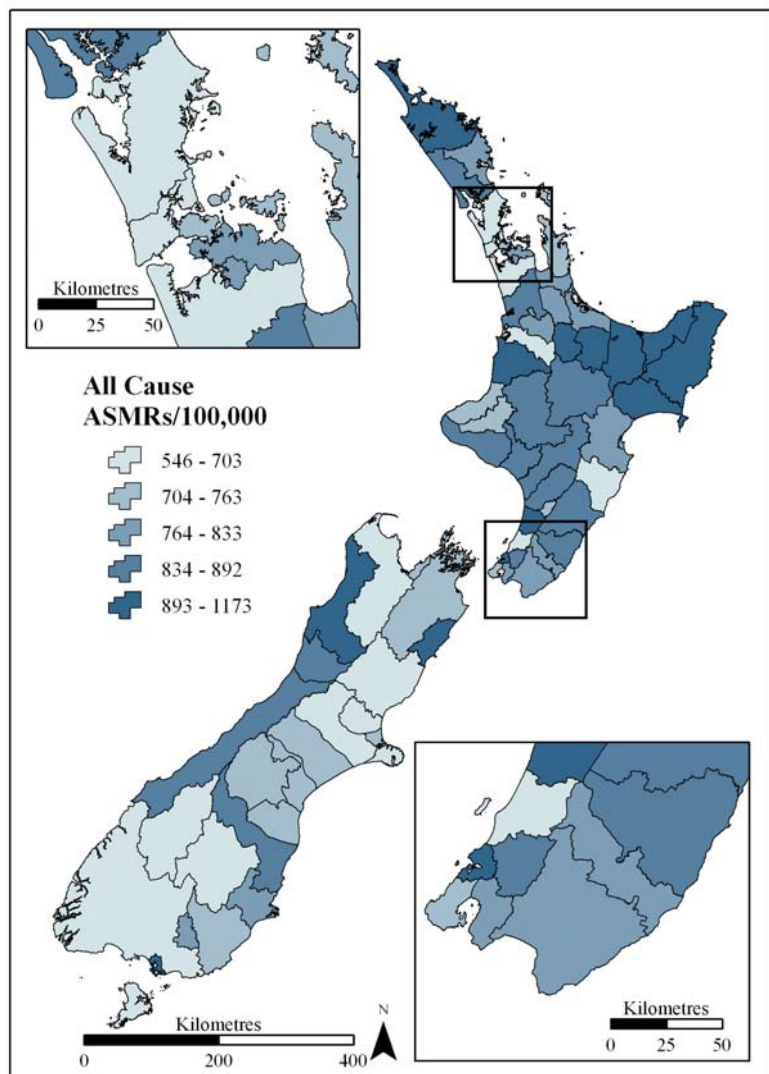


Figure 5.3: Geographic inequality in male all-cause ASMRs per 100,000 at the TLA level

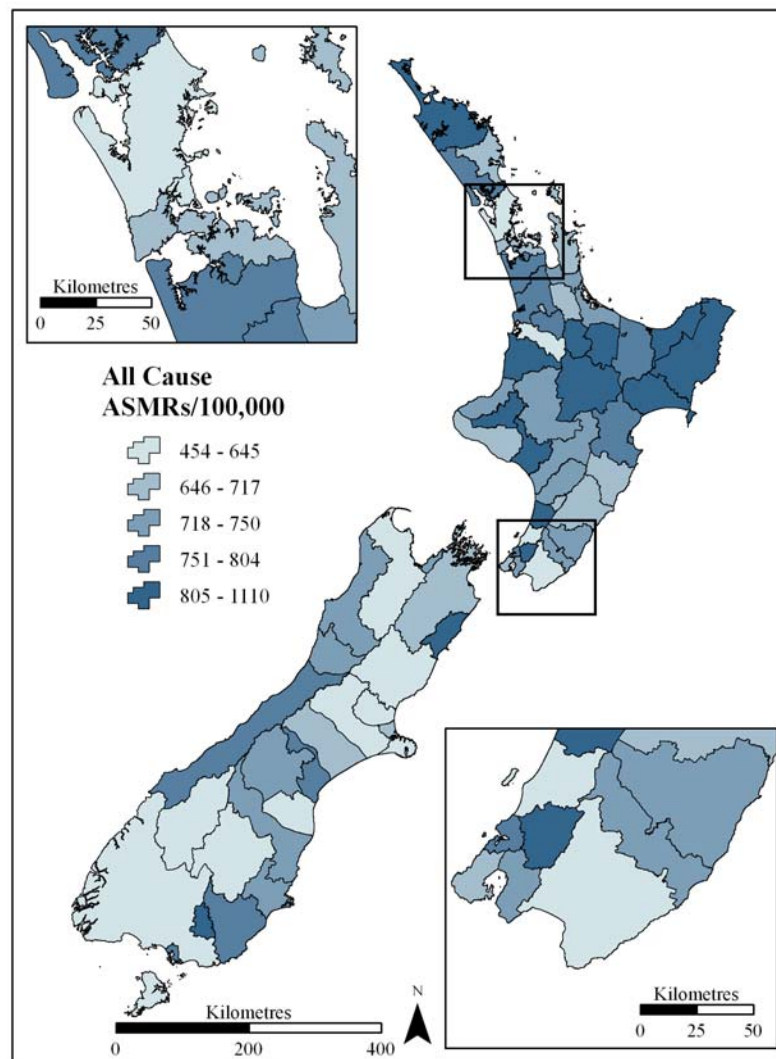


Figure 5.4: Geographic inequality in female all-cause ASMRs per 100,000 at the TLA level

5.3 *Ischaemic heart disease*

The geographic variation in male ischaemic heart disease (IHD) mortality rates for 2000 (Figure 5.5) is generally similar to the geographic pattern observed for male all-cause mortality (correlation = 0.58, $p < 0.05$). The consistent north to south gradient in the South Island is notable, the main differences being a lower mortality quintile for the West Coast and the increase in quintile position for Southland. In the North Island, there seems to be a distinct shift of the high mortality cluster to the south, with high rates now obvious into the Whanganui, MidCentral and Wairarapa DHBs. Relatively high mortality is experienced in Northland; this is consistent when compared to all-cause mortality. Similar to that for males, the distribution of female IHD is moderately and significantly similar to that of female all-cause mortality (correlation = 0.61) (Figure 5.5). When female and male geographic distribution of IHD mortality is compared, the correlation is even stronger (correlation = 0.72, $p < 0.05$). The north to south gradient for all-cause mortality is almost non-existent for IHD. Similar to that for males, Southland DHB features as having high mortality rates. The North Island DHBs on the east coast have relatively high mortality rates as does the Taranaki DHB. The upper central North Island DHBs experience moderate to low mortality rates for IHD. The Nelson-Marlborough, Northland and West Coast DHBs experience interesting shifts in quintile position, when compared with all-cause mortality.

The geographic disparity observed for male IHD mortality is very similar to that of male all-cause mortality at the TLA level (correlation = 0.77, $p < 0.05$) (Figure 5.6). Similarities include the relatively high mortality rates in the central and Northland TLAs, and general north to south gradient in the South Island. Of particular interest are the very low mortality rates experienced in Taupo District, which is surrounded by moderate to high IHD mortality rates. Remaining consistent with the DHB analysis, many of the Southland regions TLAs are highlighted as having relatively high mortality rates. Interestingly, Kaikoura District, which is highlighted as having high all-cause mortality rates, is not shown to have high mortality rates for IHD. The correlation between all-cause and IHD mortality for females is slightly less than that observed for the male counterparts, but still statistically significant (correlation = 0.66) (Figure 5.8). The relatively high mortality rates scattered throughout the South Island and relatively low rates found throughout the central North Island are notable. The general north to south gradient in the South Island is, however similar and relatively high mortality rates along the central eastern and western coasts of the North Island.

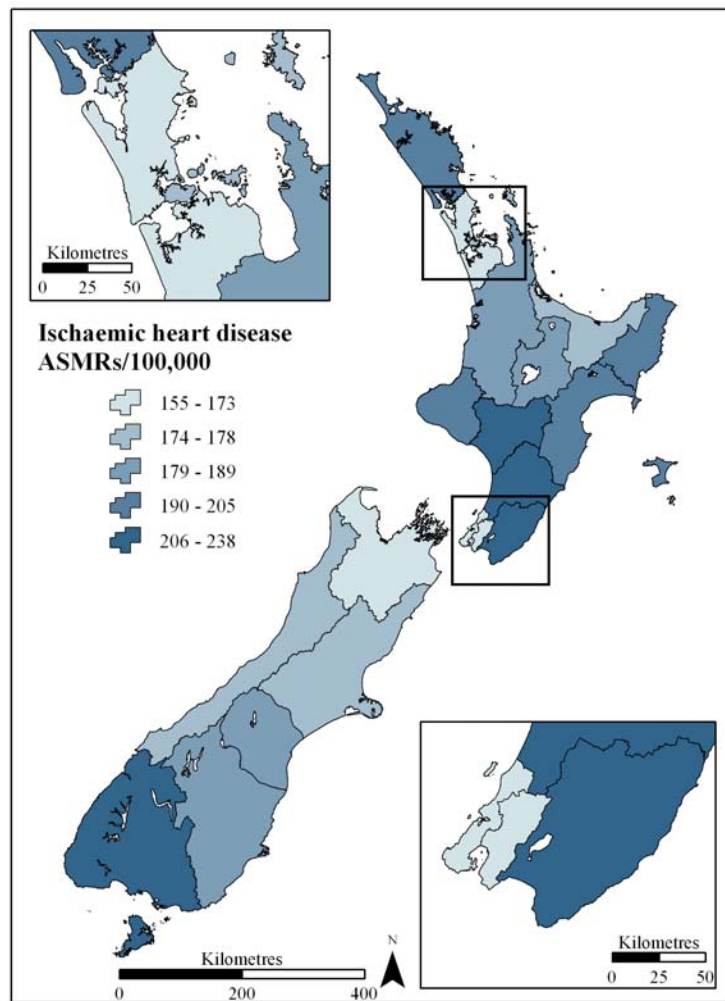


Figure 5.5: Geographic inequality in male IHD ASMRs per 100,000 at the DHB level, 2000

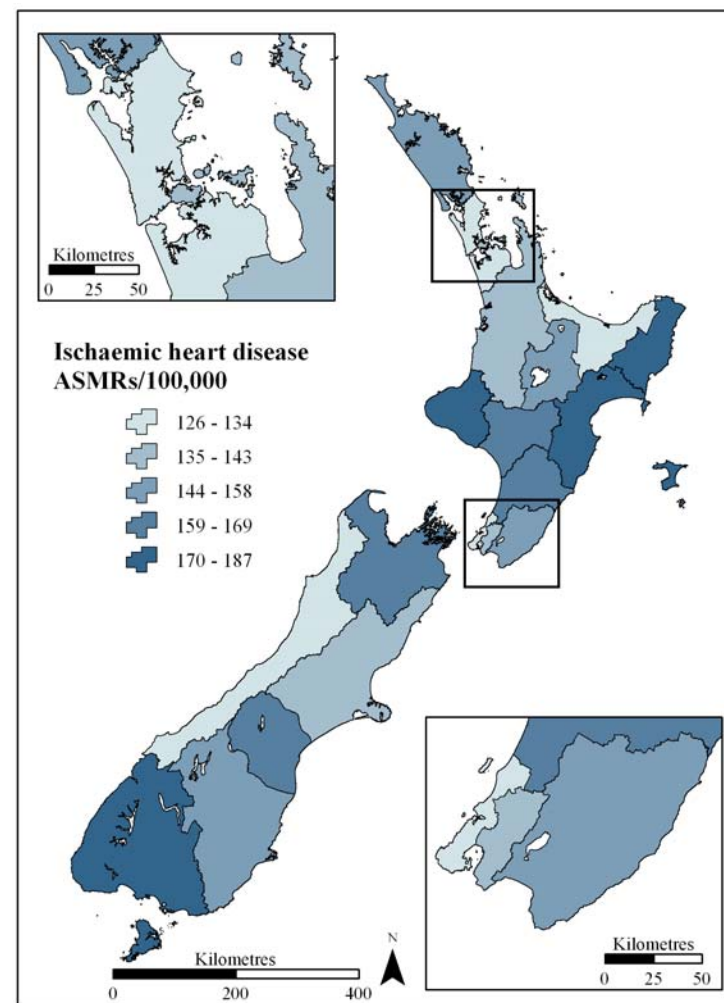


Figure 5.6: Geographic inequality in female IHD ASMRs per 100,000 at the DHB level, 2000

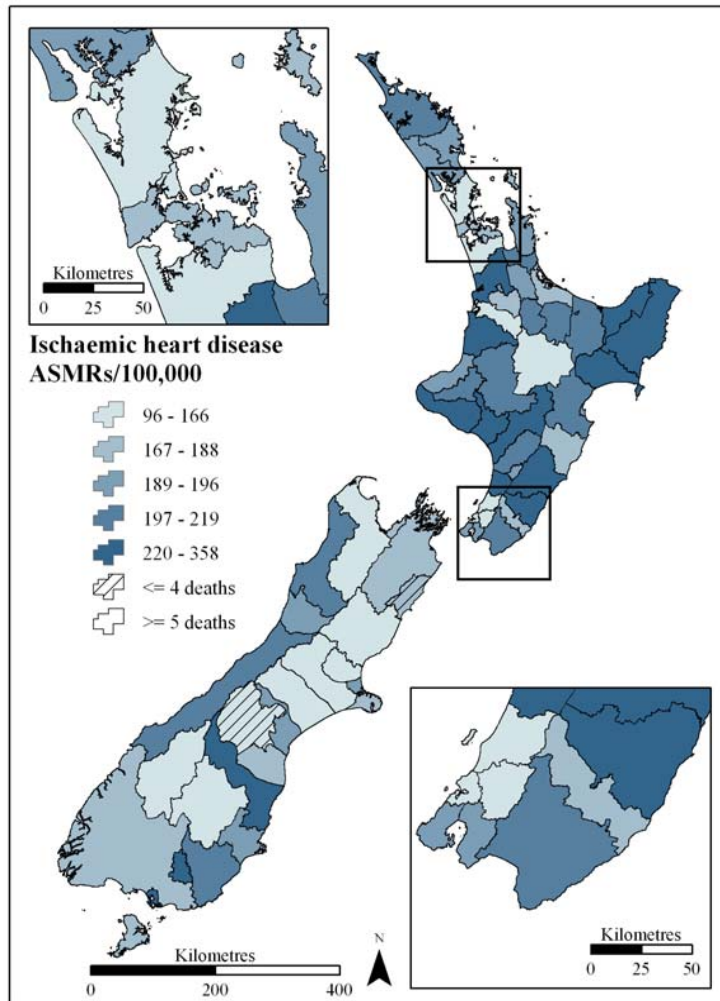


Figure 5.7: Geographic inequality in male IHD disease age ASMRs per 100,000 at the TLA level, 2000

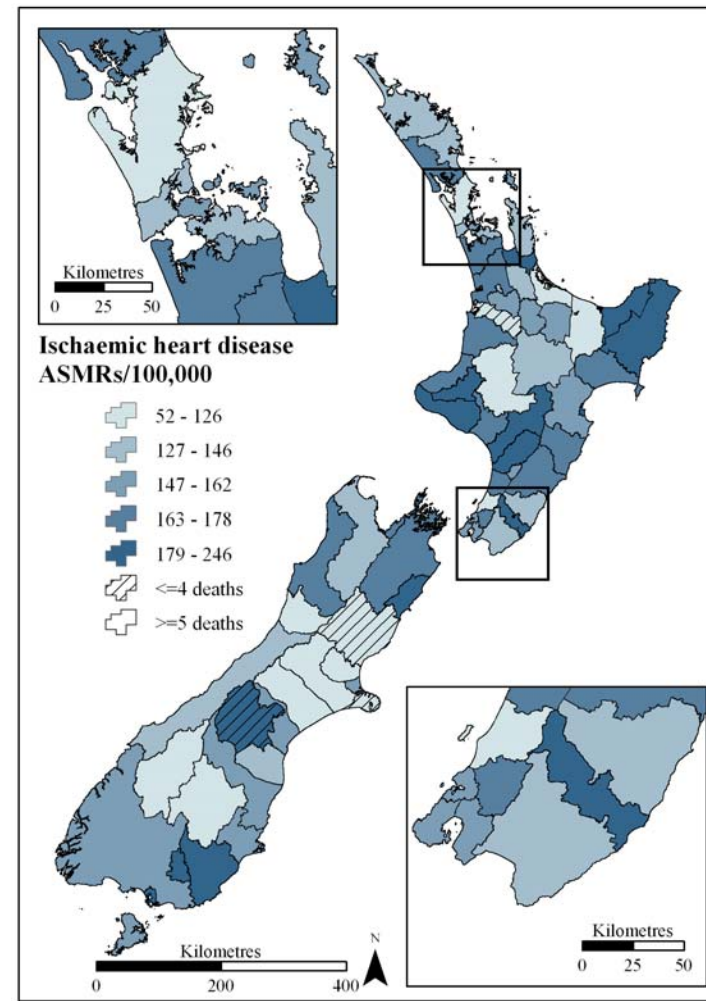


Figure 5.8: Geographic inequality in female IHD ASMRs per 100,000 at the TLA level, 2000

5.4 *All-Cancer*

For male cancer mortality a somewhat similar geographic pattern is observed when compared with male all-cause mortality (correlation = 0.61, $p < 0.05$) (Figure 5.9). The DHBs with consistently high rates (Tairāwhiti and Lakes) and consistently low rates of mortality (MidCentral, Waitemata and Nelson-Marlborough) stand out. However, there are some DHBs that demonstrate different distribution when compared with all-cause mortality and particular notice should be taken of the West Coast DHB, which interestingly is in the highest quintile for all-cause mortality but in the lowest quintile for cancer mortality. The geographic distribution of female cancer mortality is broadly similar to that of all-cause mortality (correlation = 0.61, $p < 0.05$) (Figure 5.10). The central regions of the North Island continue to have high mortality rates. Again, mortality rates in the West Coast DHB for female cancer are in the lowest quintile, very different to the overall all-cause mortality distribution. The South Island DHBs of Nelson-Marlborough, Canterbury and South Canterbury all experience relative increases in mortality rates (by quintile position) as does Wairarapa. Interestingly, females in Tairāwhiti experience a relatively low mortality rate for cancer compared with all-cause mortality.

At the TLA level, there are a number of similarities and dissimilarities between male cancer mortality and male all-cause mortality (correlation = 0.48, $p < 0.05$) (Figure 5.11). TLAs in Northland, Gisborne District and parts of the central North Island consistently appear as high mortality areas for males. Figure 5.11 indicates that there are pockets of dissimilarity not revealed at the DHB level. For example, there are parts of the central South Island with relatively high mortality rates and areas in the southern South Island with relatively low rates. For all-cause mortality, the TLAs of the eastern North Island consistently feature as areas of high mortality, for cancer; however, there are pockets of relatively high and relatively low cancer mortality. Figure 5.12 indicates the geographic inequalities in female cancer mortality at the TLA level, with a lack of geographic clustering. The correlation between female all-cause mortality and cancer mortality is relatively high and significant (correlation = 0.70).

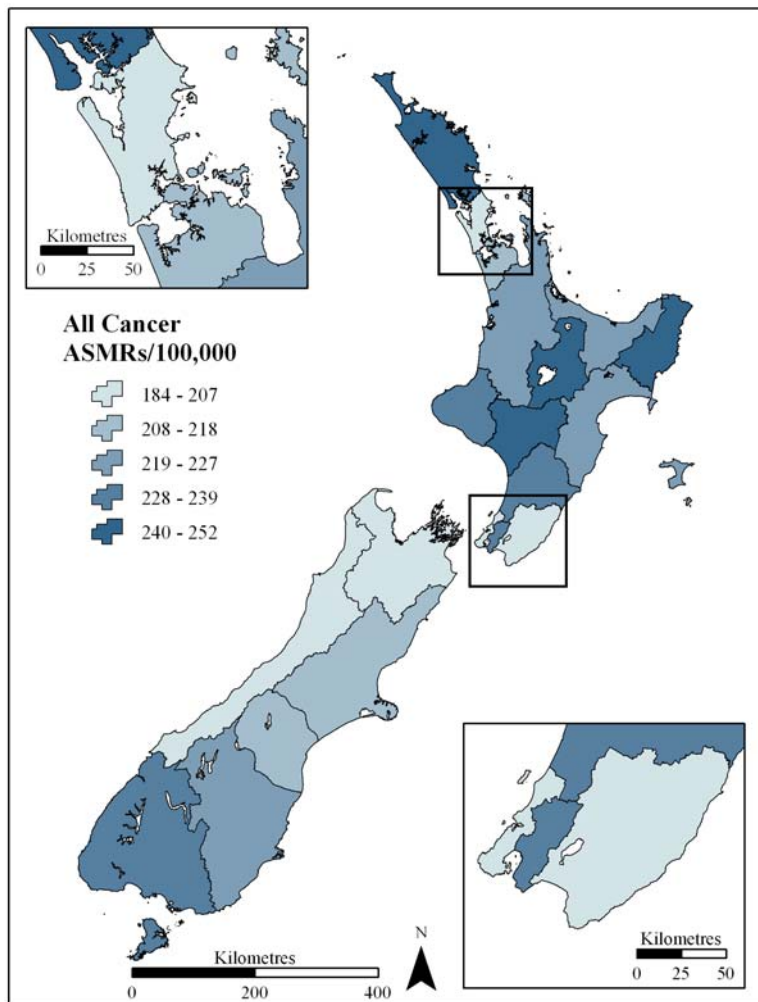


Figure 5.9: Geographic inequality in male cancer ASMRs per 100,000 at the DHB level, 2000

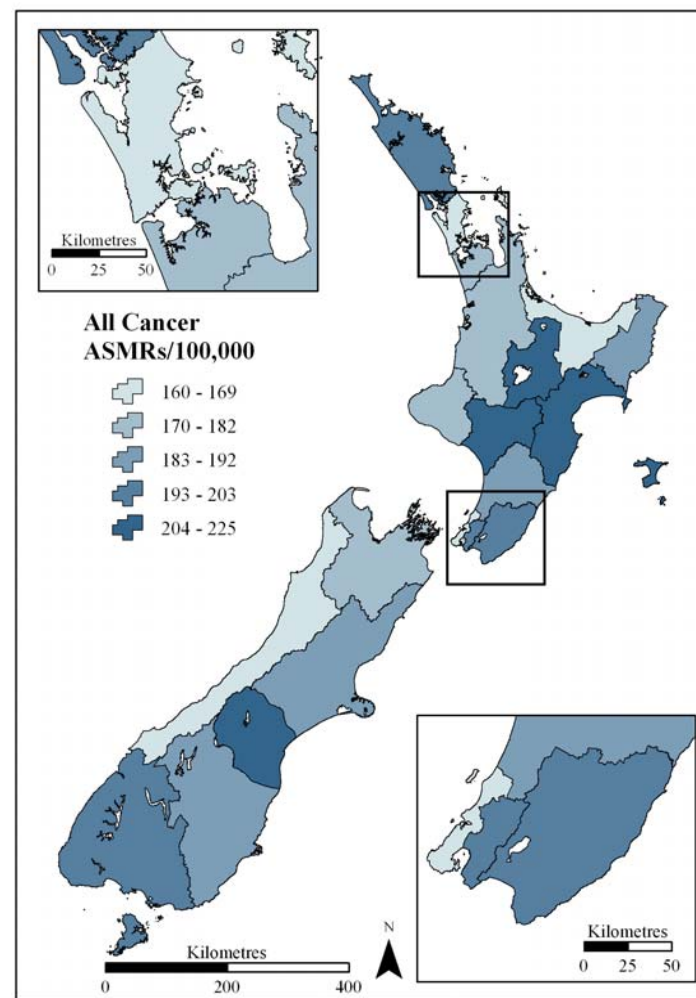


Figure 5.10: Geographic inequality in female cancer ASMRs per 100,000 at the DHB level, 2000

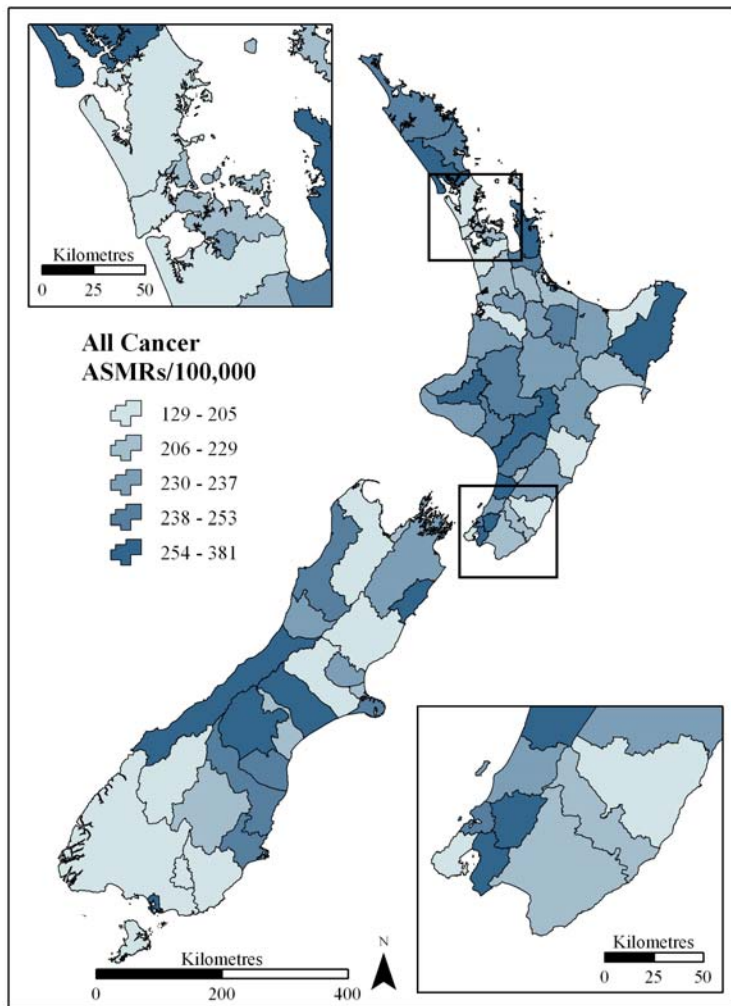


Figure 5.11: Geographic inequality in male cancer ASMRs per 100,000 at the TLA level, 2000

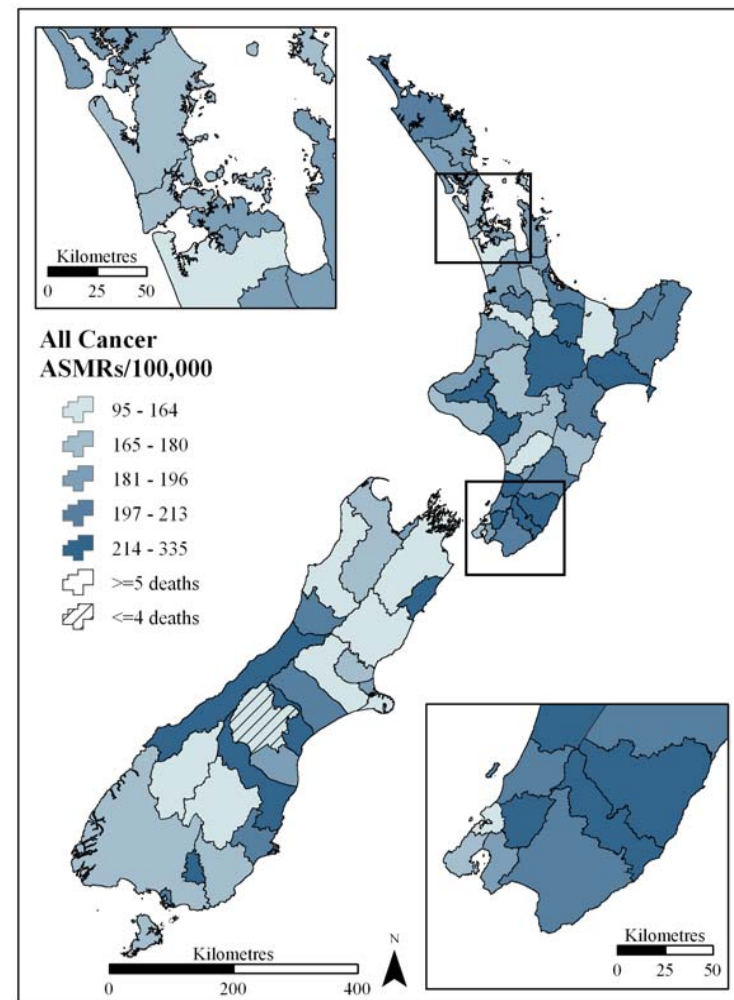


Figure 5.12: Geographic inequality in female cancer ASMRs per 100,000 at the TLA level, 2000

5.5 Lung cancer

Figure 5.13 illustrates the geographic disparity in male lung cancer mortality for 2000. A general pattern is apparent with relatively high lung cancer mortality along the central east coast of the North Island, Northland and among southern South Island DHBs. DHBs that experience mortality rates in lower quintiles for lung cancer mortality as opposed to all-cause mortality include Bay of Plenty and the West Coast (the correlation of male all-cause and male lung cancer mortality = 0.56, $p < 0.05$). Broadly similar geographic patterns for female lung cancer mortality can be seen (Figure 5.14). The notable exceptions when comparing all-cause with female lung cancer include the extension of relatively high mortality rates along the eastern North Island and a consistent cluster of mid range rates throughout the central South Island with relatively low rates at the two extremes. The correlation between all-cause mortality and lung cancer mortality for females is high and significant (correlation = 0.79).

The geographic disparity in male lung cancer mortality at the TLA level is shown in Figure 5.15. Relatively high mortality rates were experienced among the Northland TLAs and in a belt occurring throughout the southern central North Island. Notable differences when compared with all-cause mortality include the lack of consistently high mortality among the central and eastern North Island TLAs (this is reflected in the moderate correlation of 0.52, $p < 0.05$). The moderately high rates experienced in Otago DHB are consistent with the cluster of TLAs observed in Figure 5.15. Among females, there seems to be an increased agreement between lung cancer mortality patterns and all-cause mortality patterns that are not as obvious among males (correlation = 0.60, $p < 0.05$) (Figure 5.16). An important difference to note is the relatively low mortality cluster along the eastern coast of the North Island.

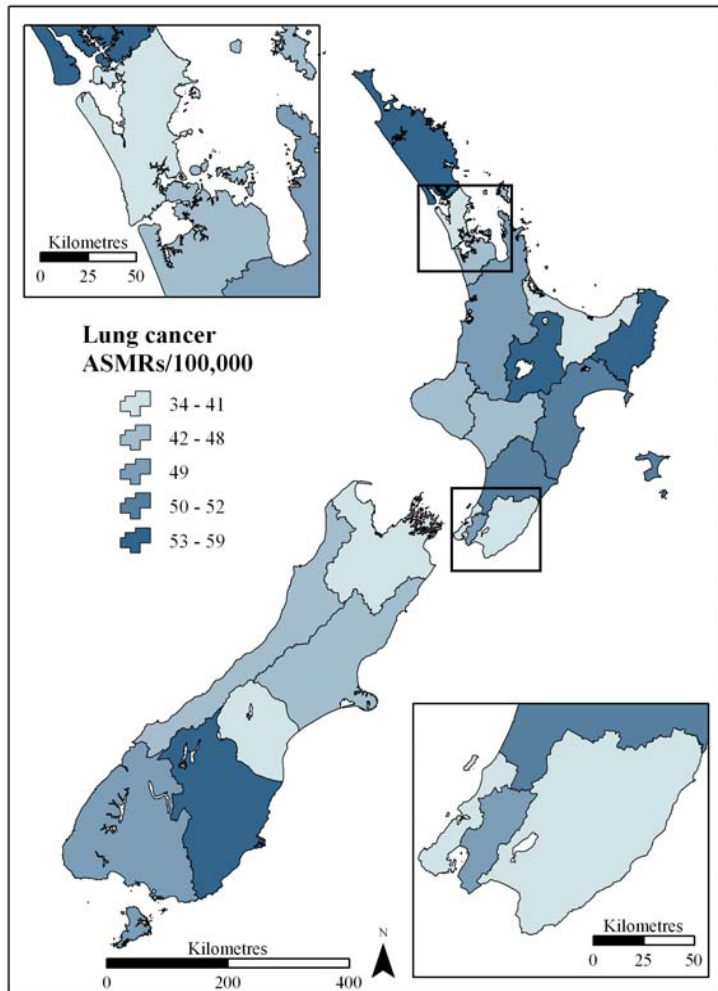


Figure 5.13: Geographic inequality in male lung cancer ASMRs per 100,000 at the DHB, 2000

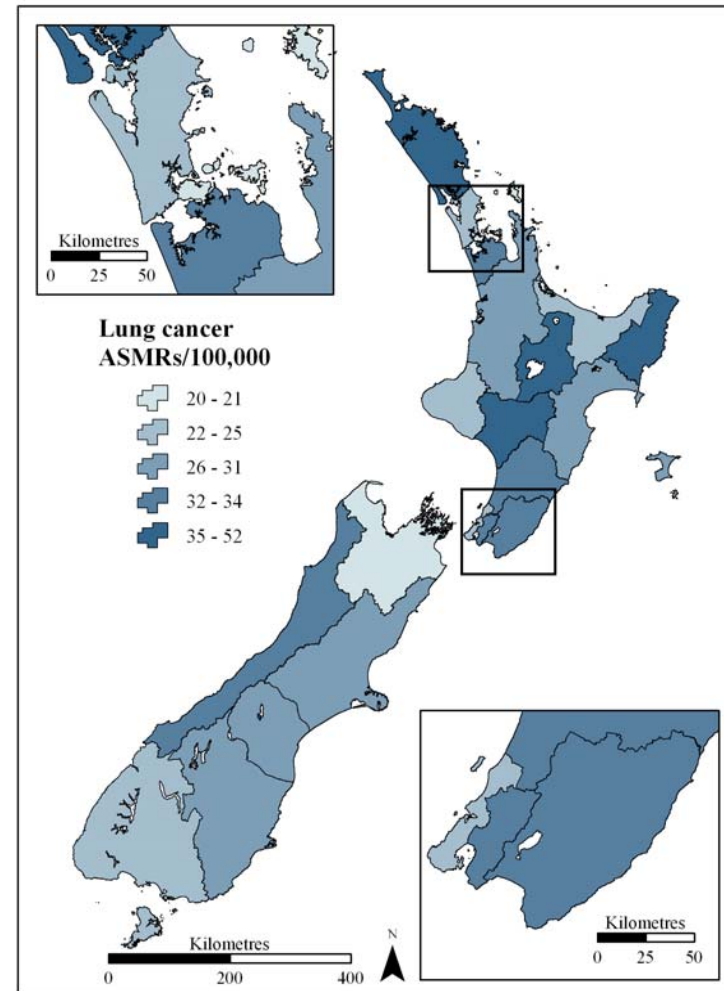


Figure 5.14: Geographic inequality in female lung cancer ASMRs per 100,000 at the DHB level, 2000

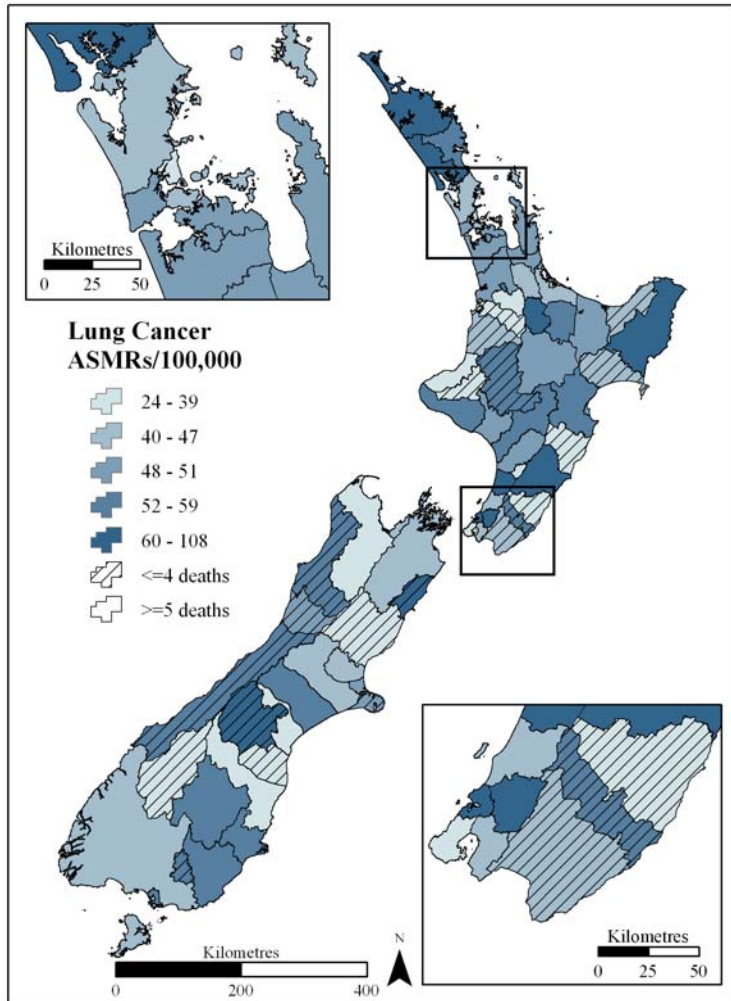


Figure 5.15: Geographic inequality in male lung cancer ASMRs per 100,000 at the TLA level, 2000

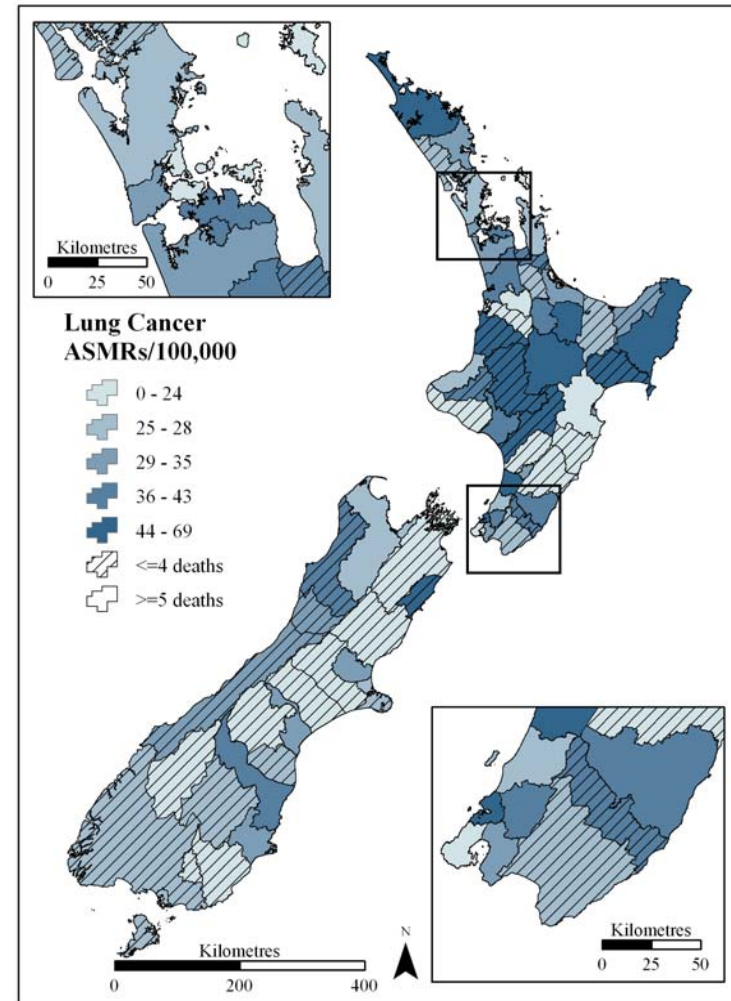


Figure 5.16: Geographic inequality in female lung cancer ASMRs per 100,000 at the TLA level, 2000

5.6 *Colorectal cancer*

In comparison to all-cause mortality, there are some striking differences that can be observed for colorectal cancer mortality (correlation = -0.17, not significant) (Figure 5.17), the major differences being that the majority of South Island DHBs feature in the mid to upper quintiles but considerably more of the North Island DHBs feature in the mid to lower quintiles. The western DHBs of Taranaki and Whanganui experienced the highest mortality rates for the North Island. The central and eastern North Island DHBs that usually experience some of the highest rates were among the DHBs with the lowest rates for colorectal cancer mortality. The similarities between all-cause and colorectal cancer mortality patterns were few, but notable patterns include Northland with relatively high mortality and the general north to south gradient throughout the South Island. Figure 5.18 indicates that among females, the highest mortality rates were almost exclusively experienced in the South Island: this is very different to the geographic pattern observed for all-cause mortality (correlation = 0.06, not significant). In contrast to male colorectal cancer mortality, Northland was among the lowest quintile for female colorectal cancer mortality.

At the TLA level, no strong geographic patterns emerged for male colorectal cancer mortality (Figure 5.19). TLAs with high mortality were often juxtaposed with TLAs with low mortality; for example, Banks Peninsula/Selwyn Districts, and Wairoa/Hastings Districts. Among females, a clear band of high mortality can be seen down the entire western length of the South Island and another cluster of high mortality is in the central South Island (Figure 5.20). Relatively low mortality rates can be seen along the eastern South Island above the Selwyn District. In the North Island, the central and eastern regions that often have high mortality rates are not observed for colorectal cancer mortality.

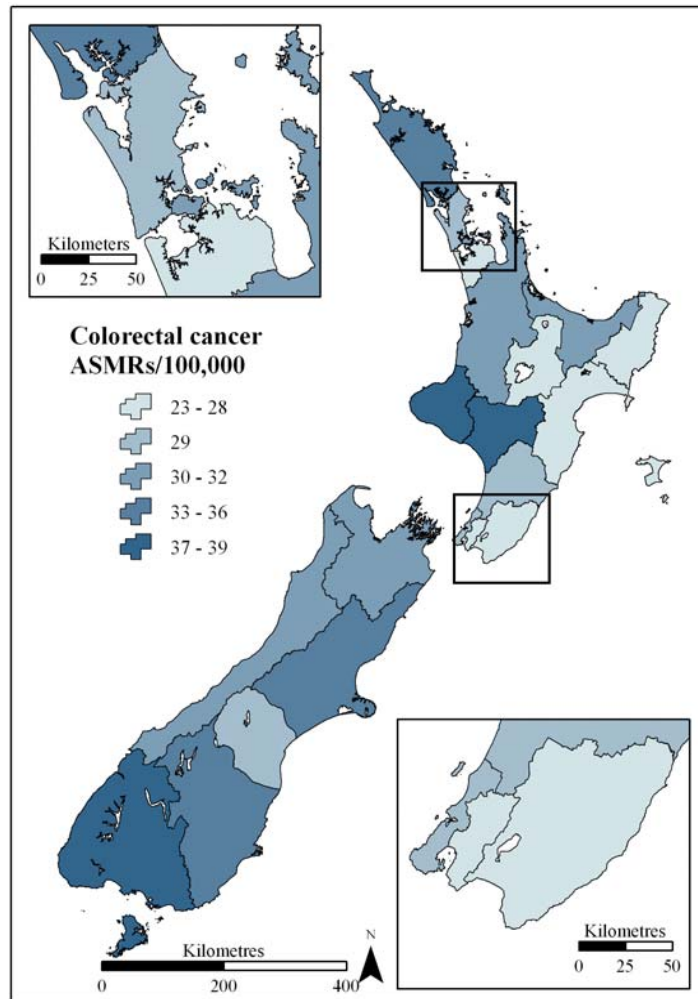


Figure 5.17: Geographic inequality in male colorectal cancer ASMRs per 100,000 at the DHB level, 2000

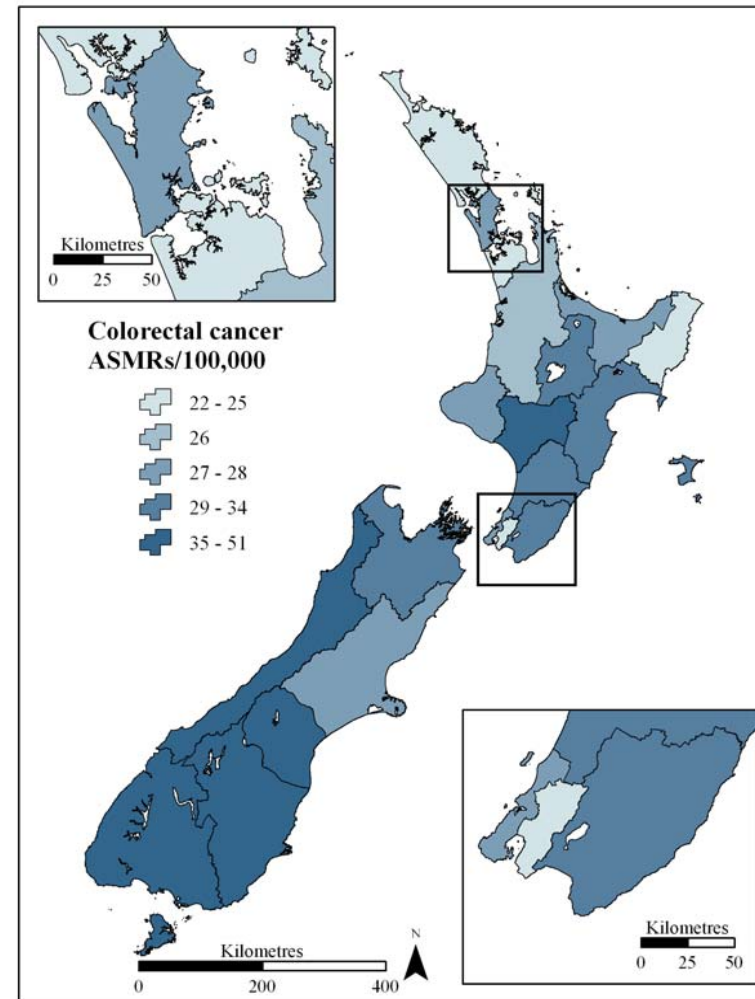


Figure 5.18: Geographic inequality in female colorectal cancer ASMRs per 100,000 at the DHB level, 2000

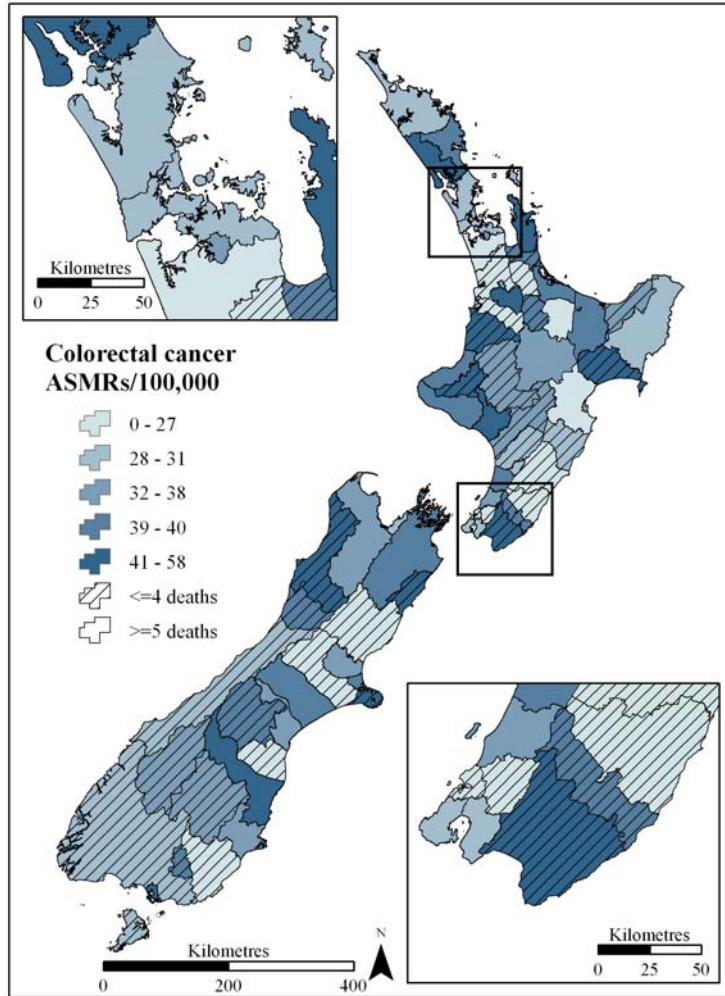


Figure 5.19: Geographic inequality in male colorectal cancer ASMRs per 100,000 at the TLA level, 2000

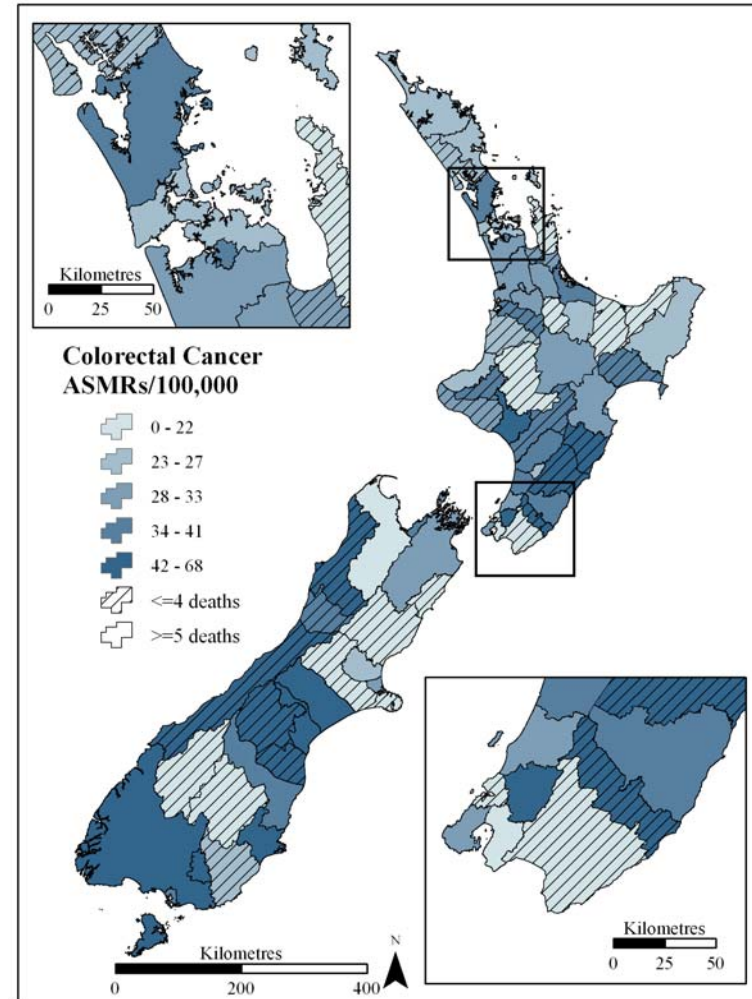


Figure 5.20: Geographic inequality in female colorectal cancer ASMRs per 100,000 at the TLA level, 2000

5.7 *Breast cancer*

For breast cancer mortality at the DHB level, prominent differences can be observed when compared to all-cause mortality (correlation = -0.07, not significant) (Figure 5.21). The usual north to south gradient evident in the South Island is almost reversed; with Nelson-Marlborough experiencing the highest rates and Southland and West Coast DHBs experiencing the lowest rates. In respect to the North Island, a cluster of DHBs between the Lakes and Waitemata indicate relatively low rates. Relatively high breast cancer mortality rates in the North Island are constricted to the Northland, Hawke's Bay and Hutt Valley DHBs.

Dramatic differences are also observed between all-cause mortality and breast cancer mortality at the TLA level (correlation = 0.12, not significant) (Figure 5.22). The map shows that the entire Nelson-Marlborough DHB consists of TLAs that all experience high levels of mortality. TLAs in northern Canterbury also show evidence of high mortality rates. Apart from this cluster of high breast cancer mortality at the top of the South Island, there is very little evidence of clustering throughout the rest of New Zealand. Figure 5.22 shows that areas of relatively high breast cancer mortality are often juxtaposed with areas of relatively low mortality.

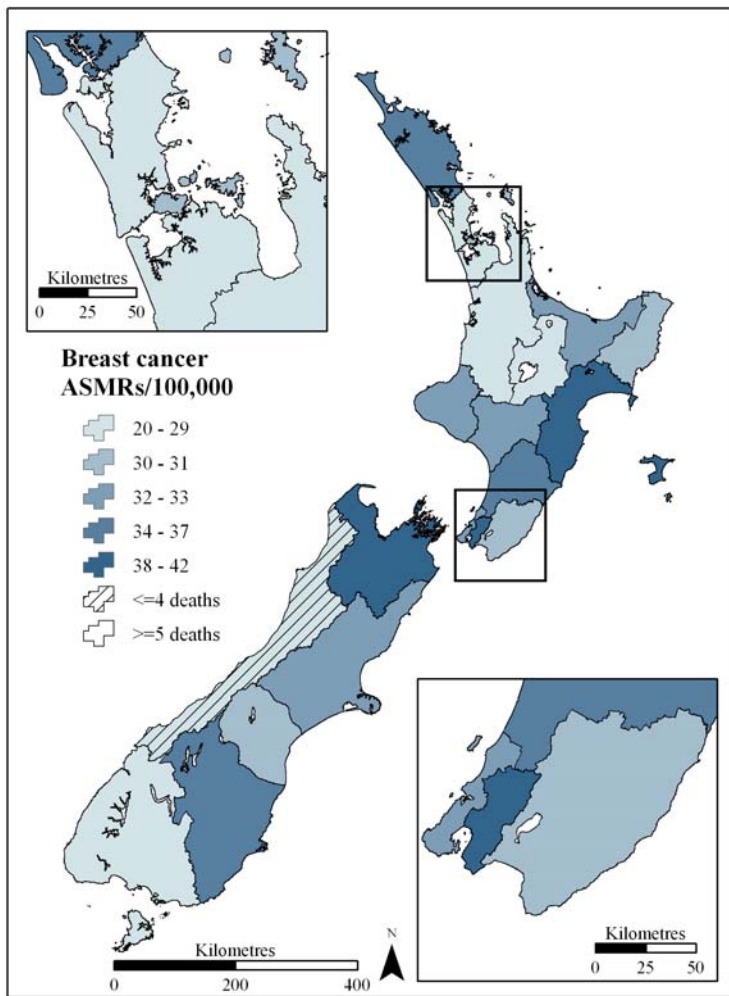


Figure 5.21: Geographic inequality in breast cancer ASMRs per 100,000 at the DHB level, 2000

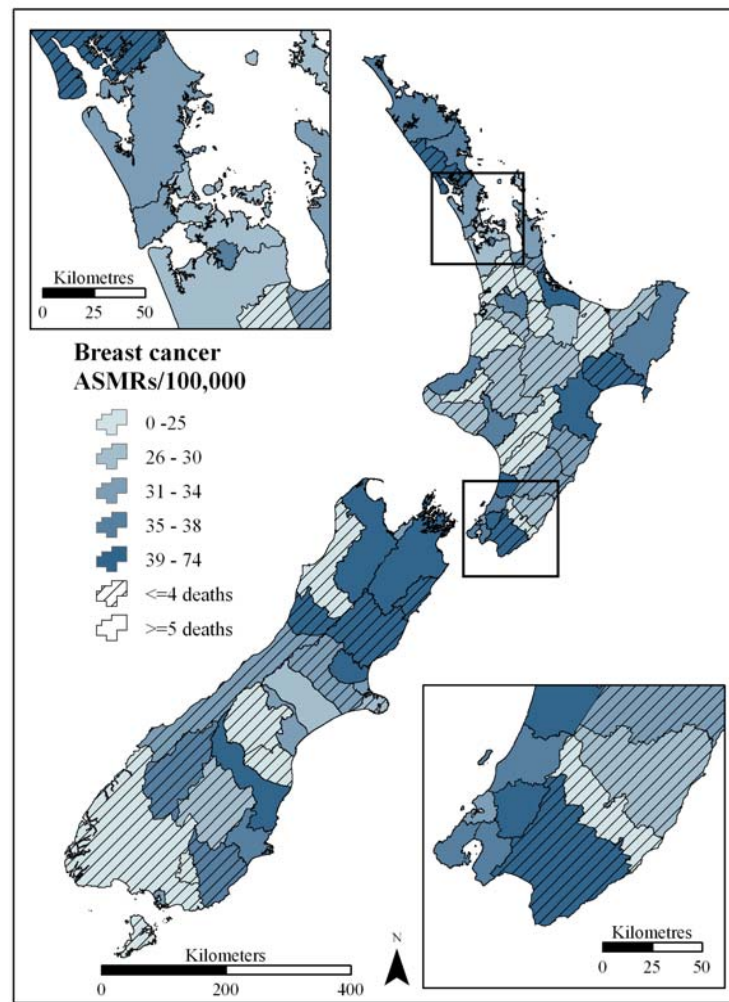


Figure 5.22: Geographic inequality in breast cancer ASMRs per 100,000 at the TLA level, 2000

5.8 *Prostate cancer*

Figure 5.23 shows the geographic disparity in male prostate cancer mortality at the DHB level. In the South Island there is a general trend of moderate to low mortality rates with the West Coast experiencing relatively high prostate cancer mortality, similar to all-cause mortality. The two main differences in respect to the South Island include the reversal of rate patterns between Nelson-Marlborough and Southland. The central North Island DHBs remain relatively high in respect to prostate cancer mortality. A cluster of predominantly low mortality is observed in the lower North Island. Important differences to note include the moderate mortality rate experienced by Northland and the unusually high mortality experienced by Hutt Valley DHB. Overall, the correlation between male all-cause and prostate cancer mortality is moderate (correlation = 0.57, $p < 0.05$).

At the TLA level, the geographic disparity in male prostate cancer mortality is quite different to all-cause mortality patterns among males (correlation = 0.12, not significant) (Figure 5.24). Almost the entire upper South Island, parts of north Canterbury and along the West Coast of the South Island have relative high prostate cancer mortality. In the North Island there is little evidence of clustering of relatively high or low prostate cancer mortality.

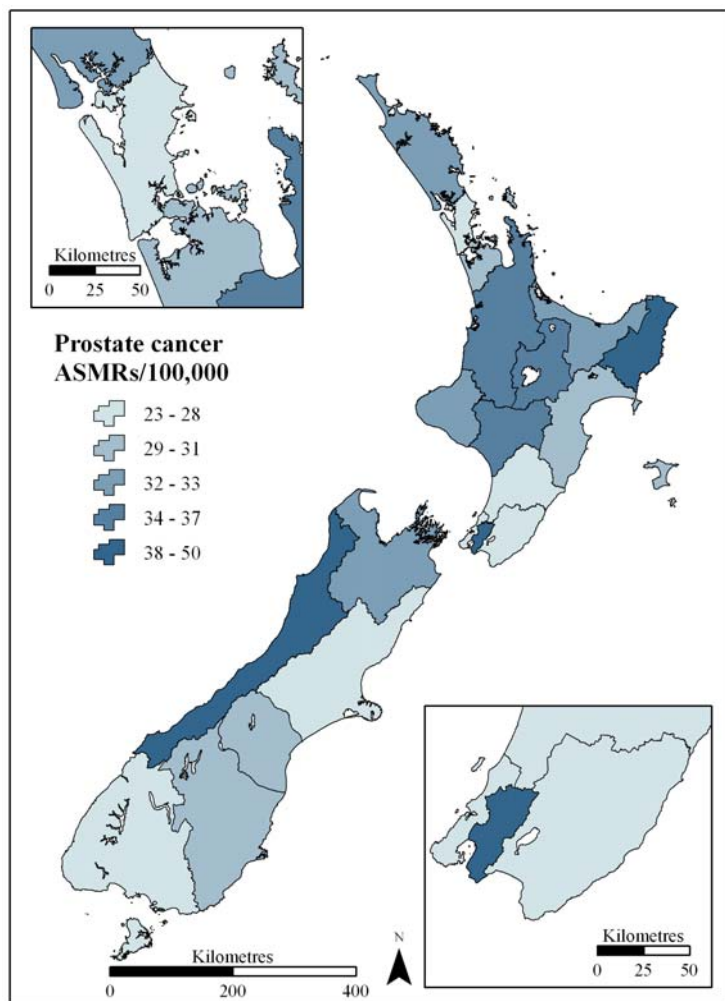


Figure 5.23: Geographic inequality in prostate cancer ASMRs per 100,000 at the DHB level, 2000

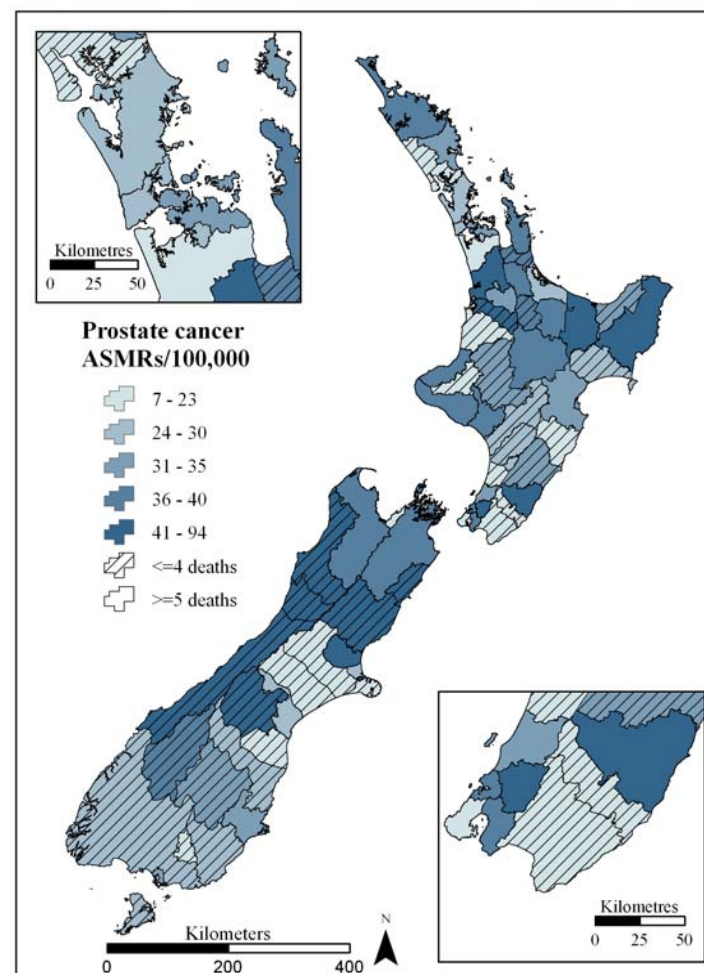


Figure 5.24: Geographic inequality in prostate cancer ASMRs per 100,000 at the TLA level, 2000

5.9 *Chronic obstructive pulmonary disease*

The geographic distribution of male chronic obstructive pulmonary disease (COPD) mortality is shown in Figure 5.25. A general north to south gradient in mortality rates is observed in the South Island; this is consistent with the geographic distribution of all-cause mortality (the correlation between male all-cause and male COPD mortality = 0.68, $p < 0.05$). The increase in quintile position for the Nelson-Marlborough and Southland DHBs is an interesting revelation. The cluster of relatively high mortality in the North Island observed for all-cause mortality has shifted position to the central and western DHBs. The Hawke's Bay and Bay of Plenty DHBs experience a relative decrease in quintile position when compared with all-cause mortality quintile position. The geographic disparity for female COPD mortality is quite different to the female all-cause mortality and male COPD mortality (correlation = 0.36, not significant) (Figure 5.26). The north south gradient in the South Island is not particularly evident, nor is the central North Island cluster of high mortality rates. Instead, two DHBs from different areas (Otago and Waikato) stand out as having comparatively high rates. Relatively low COPD mortality is seen throughout the top of the North Island, in the Wellington region and parts of the South Island.

Among TLAs in the South Island, there seems to be a general west/east divide, with areas on the West Coast having relatively high male COPD mortality and TLAs on the east having relatively low male COPD mortality (Figure 5.27). The east is, however, spotted with a couple of TLAs with relatively high rates, notably the Waimate and Gore Districts. Relatively high COPD mortality rates occur in the central North Island. In contrast to all-cause mortality, TLAs in the Northland region have comparatively low COPD mortality. Overall, there are numerous similarities and dissimilarities when comparing all-cause mortality and COPD at the TLA level for males (correlation = 0.50, $p < 0.05$). Among females at the TLA level, low levels of clustering are observed (Figure 5.28). Areas that do stand out as having relatively high mortality rates are the eastern North Island TLAs and Waikato TLAs. Similar to male COPD mortality, rates in Northland are relatively low, compared with all cause mortality. Low COPD mortality is also experienced in the Southland and Canterbury TLAs. The correlation between all-cause mortality and female COPD mortality is quite low (correlation = 0.28, $p < 0.05$).

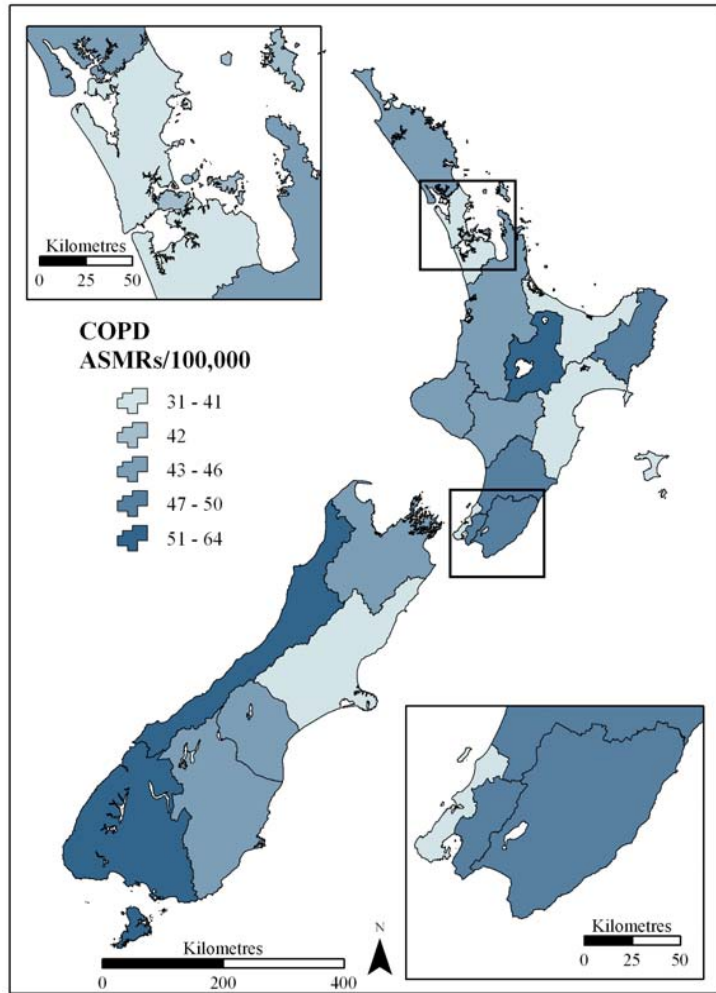


Figure 5.25: Geographic inequality in male COPD age ASMRs per 100,000 at the District Health Board level, 2000

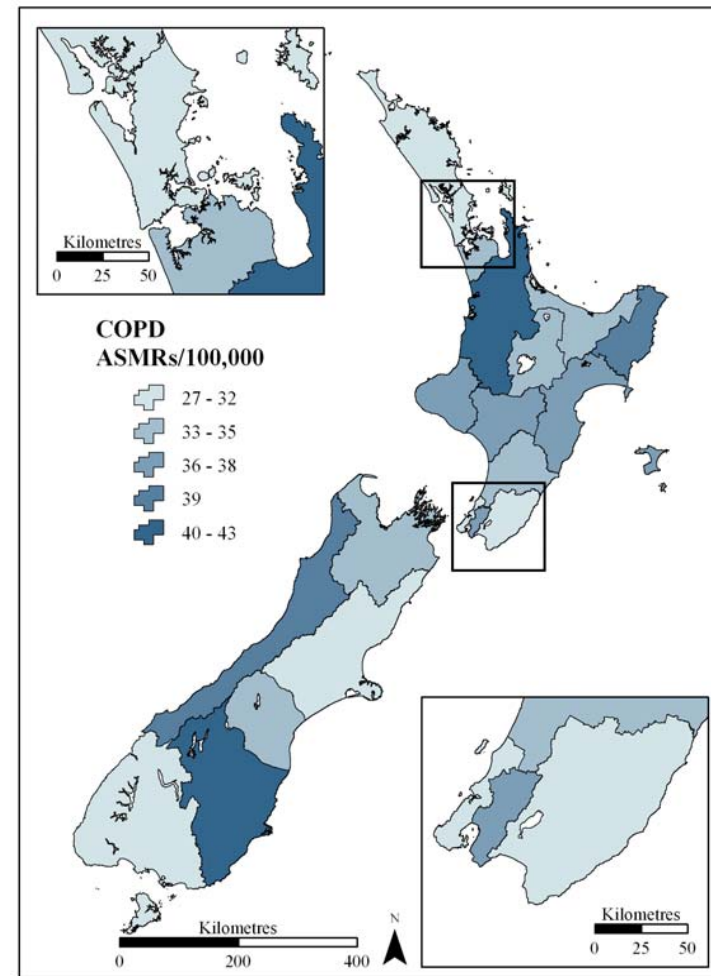


Figure 5.26: Geographic inequality in female COPD ASMRs per 100,000 at the DHB level, 2000

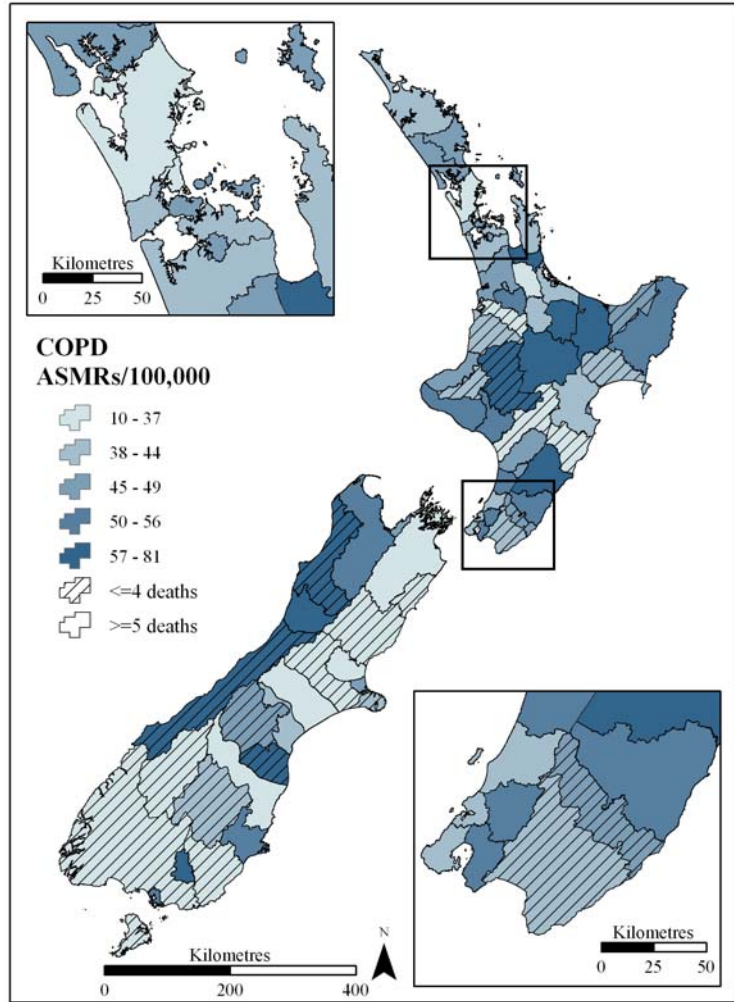


Figure 5.27: Geographic inequality in male COPD ASMRs per 100,000 at the TLA level, 2000

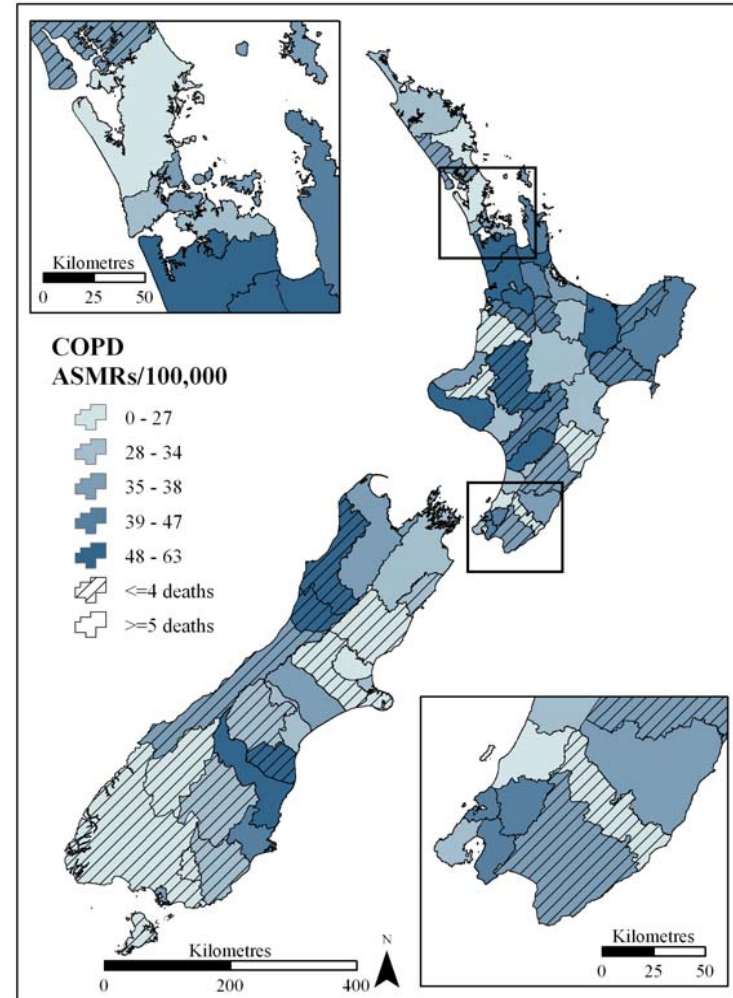


Figure 5.28: Geographic inequality in female COPD ASMRs per 100,000 at the TLA level, 2000

5.10 *Cerebrovascular disease*

Figure 5.29 illustrates the variation in cerebrovascular disease (CVD) mortality among males at the DHB level. Many differences can be noted when compared with all-cause mortality (correlation = 0.17, not significant). There are a number of DHBs that dramatically shift in quintile position. The DHBs that improved in their quintile position include Northland and the West Coast, whilst the Auckland DHB shifted from best to worst quintile. Similar to that for males, there is little agreement in the geographic distribution of female CVD mortality and all-cause mortality (correlation = 0.09, not significant) (Figure 5.30). Nelson-Marlborough, Canterbury and Otago Districts in the South Island, which experience low mortality rates for all-cause mortality, have relatively high rates for CVD mortality. In the same vein, the West Coast experience relatively low mortality rates. A cluster of moderately high rates can be seen in the North Island, neighboured by relatively low rates in the north and south extremes. Again, Auckland is highlighted as an area with relatively high CVD mortality rates.

There is a moderate level of correlation between CVD and all-cause mortality at the TLA level for males (correlation = 0.36, $p < 0.05$) (Figure 5.31). A cluster of relatively high mortality rates occurs in the North Island, but with a slight diagonal slant from west to east. Relatively low mortality rates exist throughout the South Island, with the notable exception of Ashburton and Buller, the latter, however, is high for all-cause mortality. Similar correlations between all-cause and CVD are observed for the Wellington region, but differences exist within the Auckland region; there are high rates of CVD mortality in Auckland and Manukau cities. Among females, the variability of CVD is dissimilar to all-cause mortality (correlation = 0.32, $p < 0.05$) (Figure 5.32). Noteworthy differences include relatively high cerebrovascular disease mortality in parts of the South Island: Marlborough District, Nelson City, Queenstown-Lakes District and a cluster of TLAs south of Dunedin City. Low mortality is evident throughout the central South Island. In the North Island, moderately high mortality is spread throughout central regions, with exceptionally high mortality being scattered throughout the island. Auckland city is again highlighted as a TLA with a relatively high cerebrovascular disease mortality rate, but there are relatively low rates north of this.

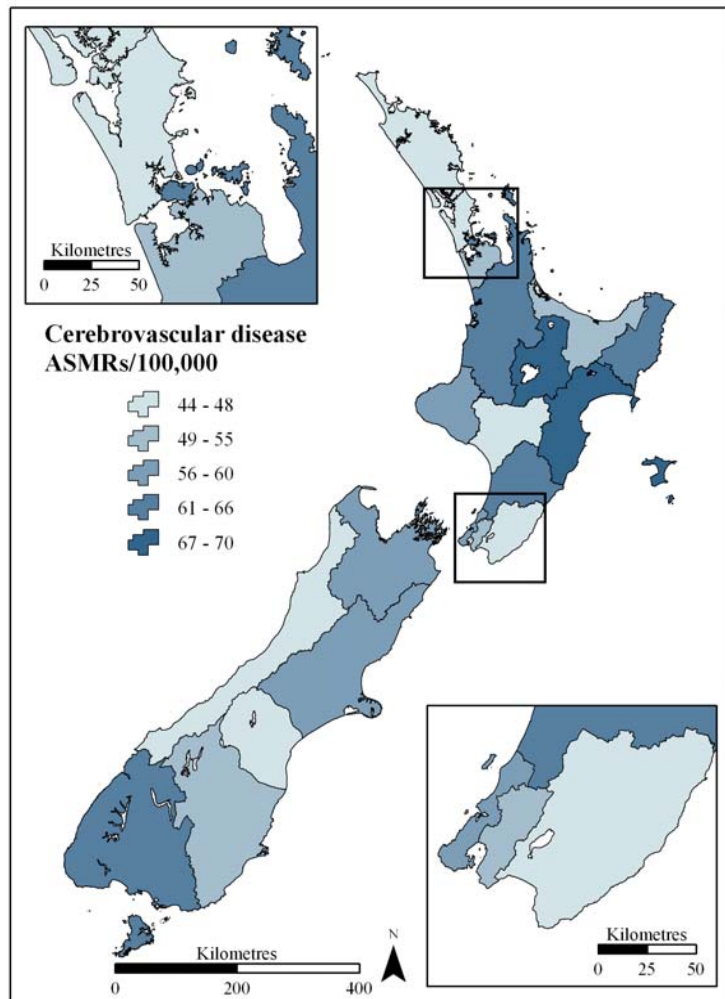


Figure 5.29: Geographic inequality in male CVD ASMRs per 100,000 at the DHB level, 2000

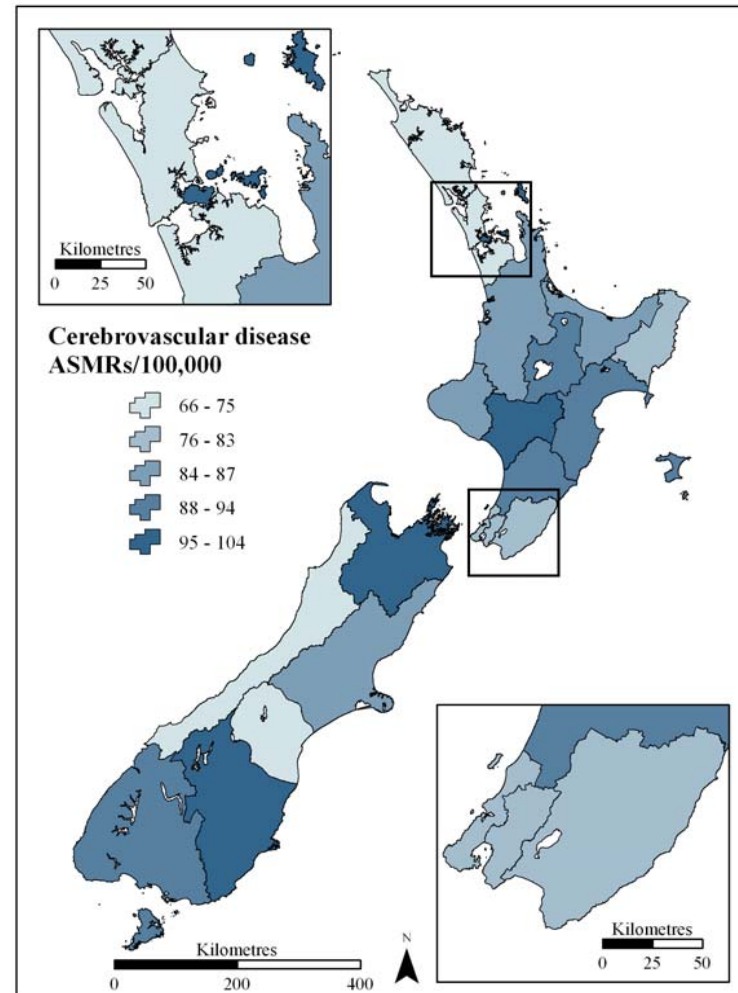


Figure 5.30: Geographic inequality in female CVD ASMRs per 100,000 at the DHB level, 2000

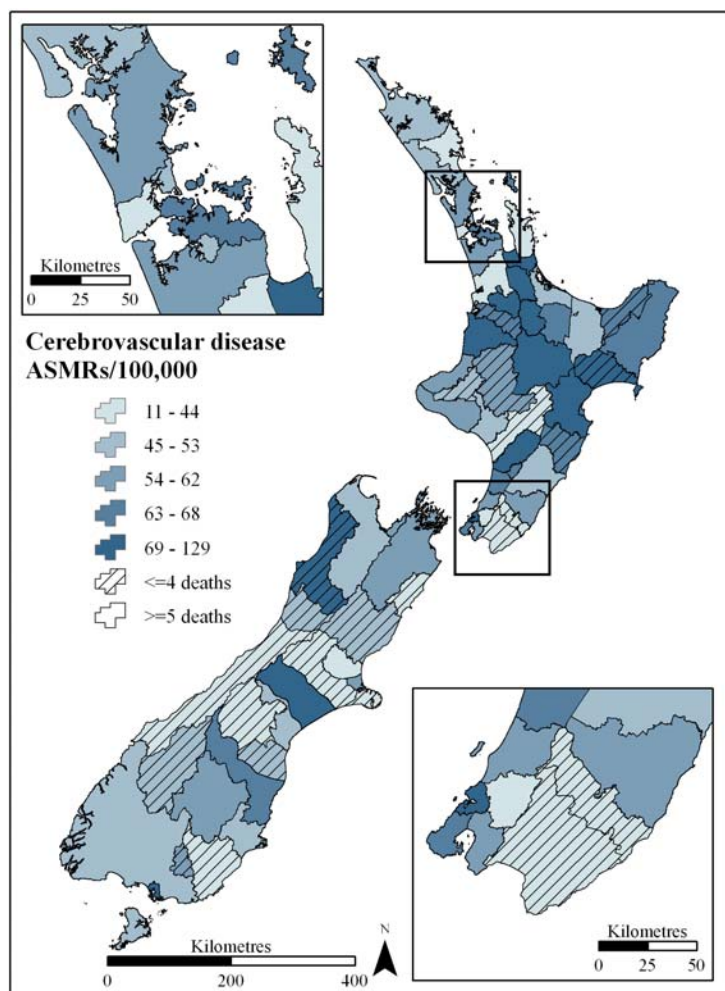


Figure 5.31: Geographic inequality in male CVD ASMRs per 100,000 at the TLA level, 2000

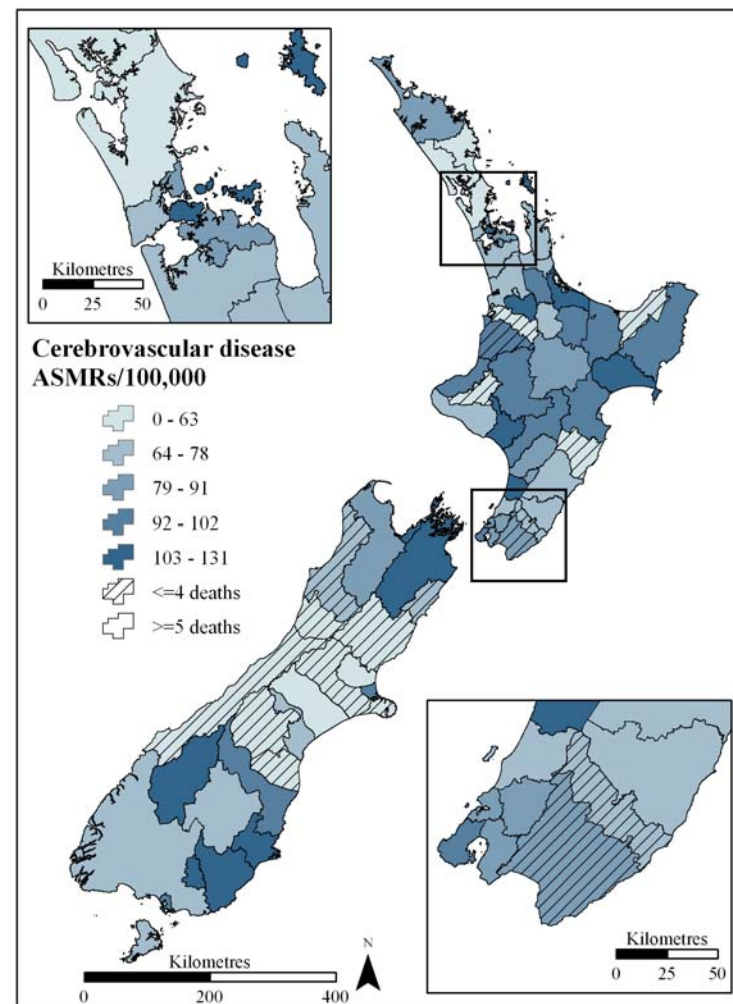


Figure 5.32: Geographic inequality in female CVD ASMRs 100,000 at the TLA level, 2000

5.11 *Diabetes mellitus*

Among males there is a high level of consensus between the geographic distribution of diabetes mellitus mortality and all-cause mortality for males (correlation = 0.78, $p < 0.05$) (Figure 5.33). The DHBs that experience relatively high mortality are predominantly concentrated in the central and eastern areas of the North Island and Northland. It can be seen that considerably more DHBs in the South Island are in the moderate to low quintiles. An important note is the comparatively low mortality rate quintile for West Coast when compared with all-cause mortality. Among females patterns are again broadly similar to that of all-cause mortality (correlation = 0.77, $p < 0.05$) (Figure 5.34). The classic north to south gradient in the South Island is more evident among females than among males, with West Coast standing out as relatively high. The strong clustering of high rates in the central/eastern North Island is not as evident as among all cause mortality, with the highest rates for diabetes mellitus being experienced in the Tairāwhiti and Northland DHBs. The Wellington and Auckland regional patterns for females are generally the same as for all cause mortality.

At the TLA level, the north to south gradient in diabetes mellitus mortality among males is evident throughout the South Island, with relatively higher rates experienced in the central areas of the West Coast (Figure 5.35). One important shift in quintile position is for Kaikoura District (from highest quintile for all-cause mortality to lowest quintile for diabetes mellitus mortality). In the North Island, broadly similar patterns of mortality are observed as for all-cause mortality with relatively high mortality rates occurring in central/eastern TLAs and Northland TLAs. An important difference is the higher mortality quintile for Manukau City when compared with all-cause mortality (correlation all-cause mortality and male diabetes mellitus = 0.51, $p < 0.05$). Among females the majority of TLAs in the South Island is in the moderate to low quintile range, with the exception of relatively high rates in the West Coast TLAs (Figure 5.36). A stronger degree of clustering is evident in the North Island when compared with all-cause mortality (correlation all-cause mortality and male diabetes mellitus = 0.55, $p < 0.05$). The highest rates are clustered in the eastern region with moderately high rates in the central region.

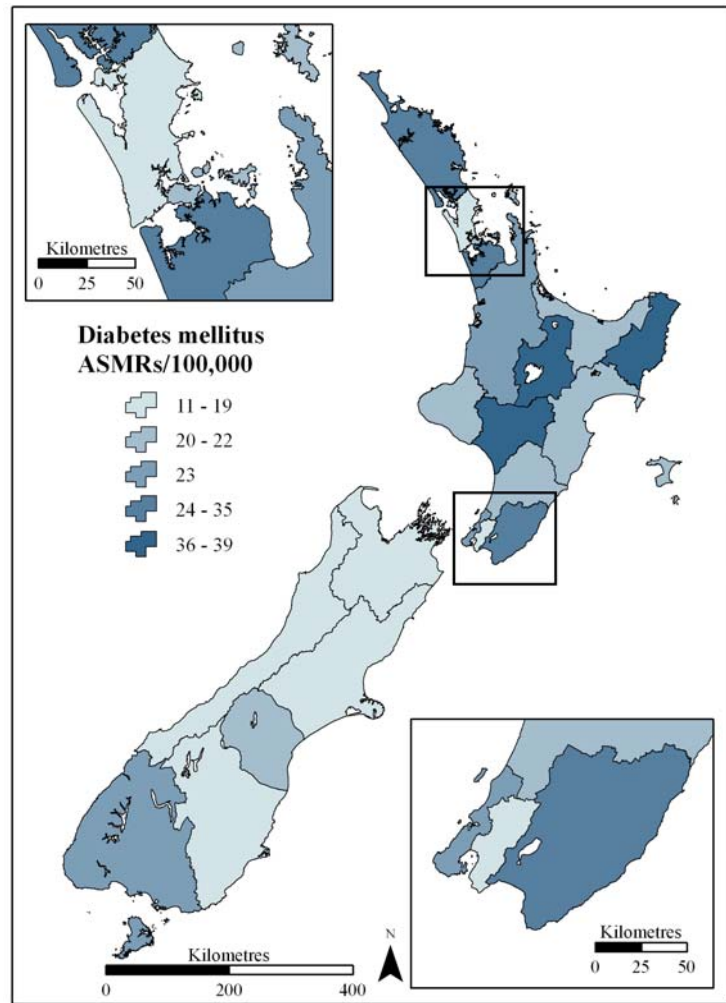


Figure 5.33: Geographic inequality in male diabetes mellitus ASMRs per 100,000 at the DHB level, 2000

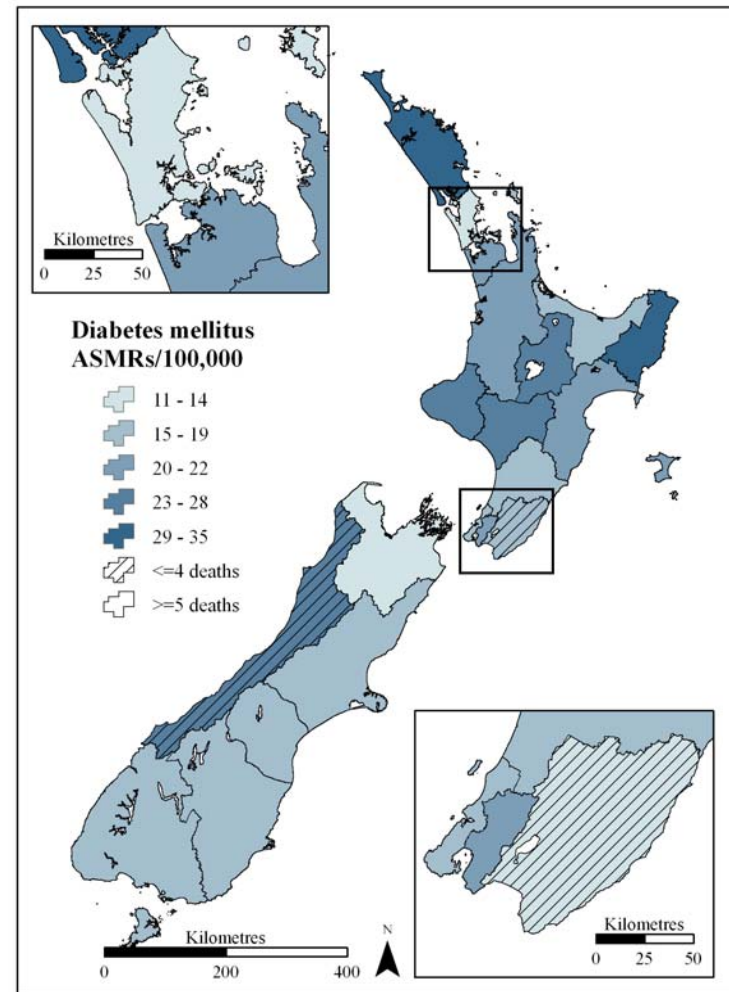


Figure 5.34: Geographic inequality in female diabetes mellitus ASMRs per 100,000 at the DHB level, 2000

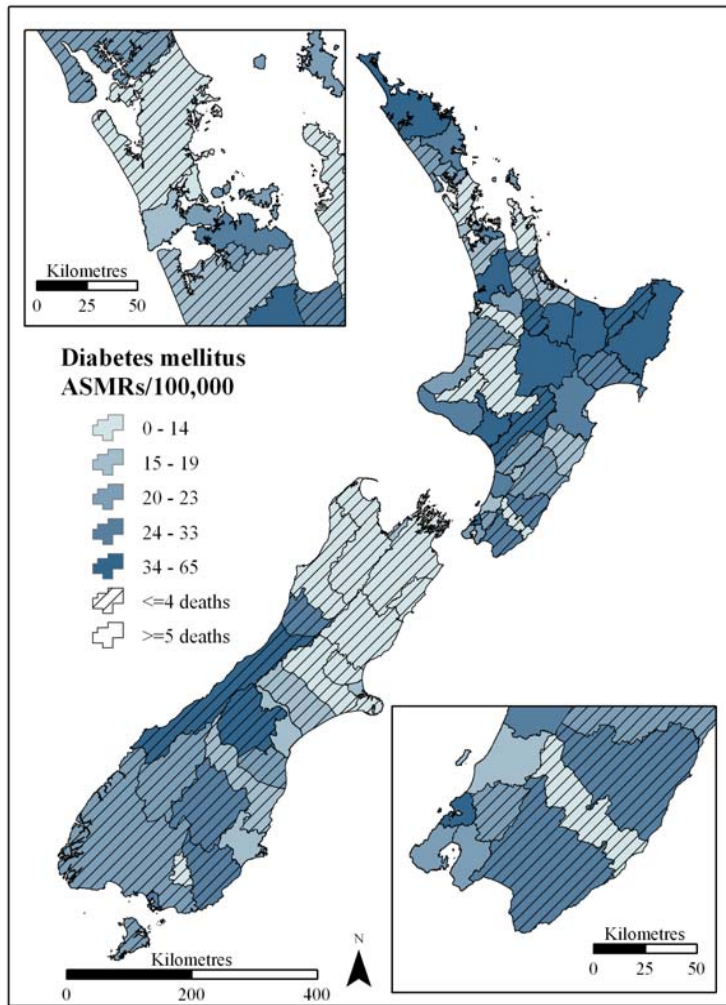


Figure 5.35: Geographic inequality in male diabetes mellitus ASMRs per 100,000 at the TLA level, 2000

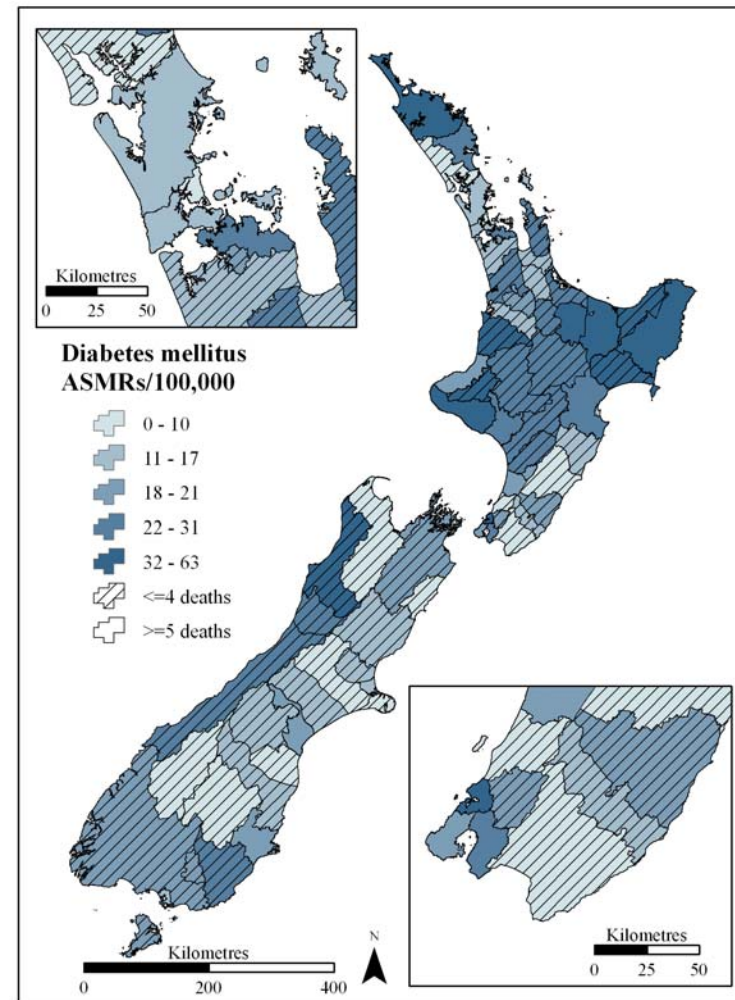


Figure 5.36: Geographic inequality in female diabetes mellitus age ASMRs per 100,000 at the TLA level, 2000

5.12 Summary and Conclusions

The objective of Chapter Five is to examine the levels of geographic inequality for all-cause as well as cause-specific mortality, focussing on mortality rates experienced in 2000. The rate ratio between the highest ('worst') and lowest ('best') age standardised mortality rates for 2000 is summarised in Table 5.1. It can be seen that at the DHB level, the lowest rate ratio is 1.4, indicating that people who lived in the DHB with the highest age standardised mortality rate were 1.4 times more likely to die than those who lived in the DHB with the lowest rate. The largest level of geographic inequality occurred for diabetes mellitus mortality for both males and females, where there is a greater than three fold difference in mortality rates. The lowest rate ratios occur for all-cause, IHD and cancer mortality. At the TLA level, there is a considerably larger variation in geographic polarisation, ranging from a rate ratio of 2.2 (male all-cause mortality) to rate ratio of 6.3 for male diabetes mellitus mortality. For each cause of mortality, there is general agreement in the value of the rate ratio between males and females, the major exceptions being the relatively high rate ratio for female lung cancer and relatively high rate ratio for female colorectal cancer at the TLA level and male CVD at the TLA level.

Table 5.1: Rate ratio between lowest and highest ASMRs for each cause of mortality in 2000

Causes of mortality	District Health Board		Territorial Local Authority	
	Male	Female	Male	Female
All cause	1.5	1.4	2.2	2.5
IHD	1.5	1.5	3.8	3.0
All cancer	1.4	1.4	3.0	2.5
Lung cancer	1.7	2.6	2.5	3.1
Colorectal cancer	1.7	2.3	2.3	4.0
Breast cancer		1.7		2.2
Prostate cancer	2.2		2.9	
COPD	2.1	1.6	3.0	2.7
CVD	1.6	1.6	3.7	2.3
Diabetes mellitus	3.4	3.1	6.3	6.0

The rate ratio analysis can be taken a step further to examine how many lives could be saved if the worst regions could reduce their mortality rate to the overall New Zealand

mortality rate, and a summary of this is shown in Table 5.2. The table shows that by reducing geographic inequalities in mortality, a large number of lives could be saved.

Table 5.2: Number of lives per 100,000 that could be saved if the regions with the highest ASMR could reduce the mortality rate to that of New Zealand

	District Health Board		Territorial Local Authority	
	Male	Female	Male	Female
All Cause	214	189	214	258
IHD	55	40	93	82
All Cancer	33	43	76	89
Lung Cancer	13	23	53	37
Colorectal Cancer	8	22	21	33
Breast Cancer	N/A	10	N/A	38
Prostate Cancer	19	N/A	35	N/A
COPD	21	9	34	25
CVD	14	47	63	32
Diabetes Mellitus	18	16	31	34

The correlation between the geography of all-cause mortality and cause-specific mortality at the DHB level for males is summarised in Table 5.3, and for females in Table 5.4. The extent to which the geographic patterns are similar between all-cause mortality and cause-specific mortality is evident from the correlation value and whether or not the correlation is statistically significant. For both sexes IHD, cancer, lung cancer and diabetes mellitus mortality are significantly associated with all-cause mortality. The correlations are generally similar for these causes for both sexes; the strongest geographic similarity occurring for diabetes mellitus for both sexes and lung cancer among females. A number of differences between the two sexes can be observed at the DHB level. A strong and significant correlation is recorded between all-cause mortality and COPD mortality among males (correlation = 0.68). This is not evident among their female counterparts (correlation = 0.36, not significant). Prostate cancer is moderately associated with all-cause mortality (correlation = 0.57, $p < 0.05$), whereas breast cancer is not (-0.07, not significant). Of particular interest is that cerebrovascular disease and colorectal cancer are not significantly associated with all-cause mortality among males and females.

Table 5.3: Correlation between male all-cause mortality and male cause-specific mortality at the DHB level, 2000

	All Cause
All Cause	1.00
IHD	0.58 *
All Cancer	0.61 *
Lung Cancer	0.56 *
Colorectal Cancer	-0.17
Prostate Cancer	0.57 *
COPD	0.68 *
CVD	0.17
Diabetes Mellitus	0.78 *

* p<0.05

Table 5.4: Correlation between female all-cause mortality and female cause-specific mortality at the DHB level, 2000

	All Cause
All Cause	1
IHD	0.61 *
All Cancer	0.61 *
Lung Cancer	0.79 *
Colorectal Cancer	0.06
Breast Cancer	-0.07
COPD	0.36
CVD	0.09
Diabetes Mellitus	0.77 *

* p<0.05

At the TLA level, broadly similar correlations between all-cause mortality and cause-specific mortality are recorded for males (Table 5.5) and females (Table 5.6). Similar to the DHB analysis, IHD, cancer, lung cancer and diabetes mellitus mortality are significantly correlated with all-cause mortality. The strongest geographic correlations are recorded between all-cause mortality and IHD for both sexes, and cancer and lung cancer for females. The remaining significant correlations (six for males, three for females) are moderately correlated with all-cause mortality.

Table 5.5: Correlation between male all cause mortality and male cause-specific mortality at the TLA level, 2000

	All Cause
All Cause	1.00
IHD	0.77 *
All Cancer	0.48 *
Lung Cancer	0.52 *
Colorectal Cancer	0.24 *
Prostate Cancer	0.12
COPD	0.50 *
CVD	0.36 *
Diabetes Mellitus	0.51 *

* p<0.05

Table 5.6: Correlation between female all-cause mortality and female cause-specific mortality at the TLA level, 2000

	All Cause
All Cause	1.00
IHD	0.66 *
All Cancer	0.70 *
Lung Cancer	0.60 *
Colorectal Cancer	0.10
Breast Cancer	0.12
COPD	0.28 *
CVD	0.32 *
Diabetes Mellitus	0.55 *

* p<0.05

A comparison of the consistency between male and female geographic variation for 2000 is shown at the DHB level in Table 5.7, and at the TLA level in Table 5.8. At the DHB level, there is a strong level of agreement between the geographic variation of all-cause, IHD and diabetes mellitus (DM) mortality, for males and females. Moderate associations are found between the geographic distributions of male and female all-cancer (AC) and lung cancer (LC) mortality. The correlation between males and females for the remaining causes of death are not significant.

Table 5.7: Correlation between male and female mortality at the DHB level, 2000

		Males								
		All cause	IHD	AC	LC	CC	PC	COPD	CVD	DM
Females	All cause	0.89 *								
	IHD		0.72 *							
	AC			0.49 *						
	LC				0.62 *					
	CC					0.34				
	BC						-0.37			
	COPD							0.21		
	CVD								0.42	
	DM									0.84 *

* p<0.05

When the correlations at the DHB level (Table 5.7) are compared with the correlation coefficients at the TLA level (Table 5.8), some similarities emerge. The main similarity is the strong and significant relationship between male and female all-cause mortality (correlation = 0.81). Consistent with the DHB analysis, the correlation between male and female IHD, all-cancer, lung cancer and diabetes mellitus mortality variation at the TLA level is significant. However, the correlation coefficients are considerably smaller, especially for diabetes mellitus. The other major difference between the level of agreement between male and female variation of mortality is the low but significant association for COPD and CVD.

Table 5.8: Correlation between male and female mortality at the TLA level, 2000

		Males								
		All cause	IHD	AC	LC	CC	PC	COPD	CVD	DM
Females	All cause	0.81 *								
	IHD		0.50 *							
	AC			0.30 *						
	LC				0.40 *					
	CC					-0.10				
	BC						-0.14			
	COPD							0.33 *		
	CVD								0.42 *	
	DM									0.43 *

* p<0.05

In summary, the extent to which the geographic variation of cause-specific mortality is correlated with the geographic variation of all-cause mortality is variable when comparing the two sexes and the two geographic levels of aggregation. The majority of cause-specific mortalities are significantly associated with all-cause mortality, but range considerably in their correlation coefficient value. In general, the correlation

coefficients between all-cause mortality and cause-specific mortality are greater at the DHB level. However, a larger number of specific causes of mortality are significantly associated with all-cause mortality at the TLA level. The analysis of the level of agreement between male mortality and female mortality suggests that greater agreement occurs at the DHB level compared with the TLA level; however, fewer causes of mortality are statistically significant at the DHB level.

CHAPTER SIX

To what extent has mortality become geographically polarised between 1981 and 2000?

6.1 Introduction

Chapter Six examines the extent to which mortality has become geographically polarised between 1981 and 2000. For each cause of mortality, tables are constructed showing the mortality rates between 1981 and 2000, with a summary column indicating the amount of change (rate ratio) between these two periods. These tables are provided for both males and females, at the DHB and TLA levels. The tables demonstrate the extent of change in mortality rates for each region. Summary tables are also provided which determine the extent to which mortality has become polarised between the ‘best’ (lowest mortality rate) and ‘worst’ (highest mortality rate) areas.

6.2 All-cause mortality

Temporal Trends

District Health Boards

Male all-cause mortality rates have decreased amongst all DHBs in New Zealand between 1981 and 2000 (Table 6.1 and Appendix 4). The decrease was significant for 10 of the 21 DHBs. The rate ratio for New Zealand indicates that males were 12% less likely to die in 2000 than they were in 1981. The most dramatic decrease in mortality rates was recorded in the West Coast DHB, where rates decreased by 31%. At the other end of the scale, Northland, Lakes, Tairāwhiti and Whanganui DHBs recorded only small decreases in mortality rates, in the order of 2% to 4% (not significant).

Table 6.1: Geographic inequality in male all-cause ASMRs per 100,000 at the DHB level, 1981-2000

District Health Boards	Males					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
West Coast	1265.5	1322.8	1172.5	1190.0	875.0	0.69	(0.84, 1.15)
Auckland	914.3	951.1	852.8	809.8	746.7	0.82	(0.76, 0.88)
South Canterbury	932.2	918.5	833.0	835.1	763.8	0.82	(0.77, 1.00)
Otago	922.5	937.3	860.4	813.1	766.0	0.83	(0.69, 0.97)
Capital and Coast	890.7	841.8	816.5	790.7	741.6	0.83	(0.76, 0.92)
Canterbury	845.5	863.2	832.0	779.1	721.8	0.85	(0.8, 0.91)
Waitemata	775.8	773.0	747.8	732.0	662.9	0.85	(0.56, 0.85)
Hutt Valley	920.5	927.4	841.6	831.6	790.7	0.86	(0.76, 0.97)
Southland	961.8	978.9	955.2	907.9	841.1	0.87	(0.79, 1.16)
<i>New Zealand</i>	888.2	893.9	844.7	808.6	778.0	0.88	(0.79, 0.93)
Wairarapa	933.5	936.4	958.4	833.8	818.4	0.88	(0.77, 1.00)
Nelson-Marlborough	820.2	778.0	709.1	709.2	720.0	0.88	(0.75, 0.92)
Hawke's Bay	915.7	910.5	912.5	846.6	817.8	0.89	(0.80, 1.00)
Counties Manukau	864.8	875.0	844.3	780.9	773.7	0.89	(0.82, 0.98)
MidCentral	945.5	962.4	901.6	863.8	846.5	0.90	(0.81, 0.99)
Taranaki	876.7	892.7	860.4	766.3	787.9	0.90	(0.86, 1.01)
Bay of Plenty	881.4	867.7	821.1	805.9	802.3	0.91	(0.82, 1.01)
Waikato	872.8	891.8	834.3	806.2	811.4	0.93	(0.71, 1.08)
Northland	894.7	907.7	881.7	872.2	854.5	0.96	(0.85, 1.07)
Lakes	924.6	968.8	928.8	956.2	883.7	0.96	(0.82, 1.11)
Tairāwhiti	1035.9	984.9	917.8	1051.6	991.8	0.96	(0.79, 1.02)
Whanganui	878.0	887.3	834.0	807.0	863.3	0.98	(0.86, 0.90)

Female all-cause mortality rates have decreased by 5% for New Zealand between 1981 and 2000 (Table 6.2 and Appendix 5). This decrease was representative of most DHBs, with the exception of Waitemata, Hawke's Bay, Hutt Valley, Tairāwhiti, Whanganui, and Lakes which recorded a non-significant increase in mortality rates. The largest decrease was recorded in the West Coast DHB with all-cause mortality rates down by 31% (not significant).

Table 6.2: Geographic inequality in female all-cause ASMRs per 100,000 at the DHB level, 1981-2000

District Health Boards	Females					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
West Coast	1092.8	1091.1	971.8	1014.1	752.8	0.69	(0.55, 0.87)
Wairarapa	806.4	744.3	797.8	794.9	710.9	0.88	(0.71, 1.10)
Auckland	753.1	799.8	729.2	733.7	679.5	0.90	(0.84, 0.97)
Canterbury	737.1	738.5	716.4	707.9	667.1	0.90	(0.84, 0.97)
Counties Manukau	777.8	802.6	736.4	748.1	714.8	0.92	(0.83, 1.01)
South Canterbury	781.3	767.7	762.9	724.0	725.9	0.93	(0.78, 1.10)
Southland	794.9	865.2	792.7	763.3	746.3	0.94	(0.82, 1.08)
Capital and Coast	724.0	751.3	720.2	694.9	681.2	0.94	(0.85, 1.04)
Otago	774.0	777.3	757.1	699.1	731.0	0.94	(0.86, 1.04)
Waikato	763.5	740.2	731.2	715.3	726.5	0.95	(0.87, 1.04)
<i>New Zealand</i>	<i>746.6</i>	<i>775.3</i>	<i>735.9</i>	<i>732.4</i>	<i>712.5</i>	<i>0.95</i>	<i>(0.93, 0.98)</i>
MidCentral	777.3	857.3	794.1	787.2	742.3	0.95	(0.85, 1.07)
Taranaki	759.7	811.2	736.3	691.7	728.0	0.96	(0.84, 1.10)
Nelson-Marlborough	701.3	656.3	626.2	695.9	685.7	0.98	(0.85, 1.12)
Northland	753.6	788.7	751.3	793.6	745.8	0.99	(0.86, 1.13)
Bay of Plenty	697.9	768.5	738.7	723.8	694.0	0.99	(0.88, 1.13)
Waitemata	633.4	673.9	657.7	674.7	653.4	1.03	(0.94, 1.13)
Hawke's Bay	756.0	838.7	749.0	752.1	787.1	1.04	(0.93, 1.17)
Hutt Valley	733.3	801.9	772.9	820.6	764.1	1.04	(0.92, 1.18)
Tairāwhiti	845.0	828.0	807.7	912.9	901.8	1.07	(0.87, 1.31)
Whanganui	725.6	746.9	772.1	716.9	796.4	1.10	(0.93, 1.29)
Lakes	767.9	893.5	791.8	778.7	845.1	1.10	(0.93, 1.30)

Territorial Local Authorities

For the majority of TLAs, all-cause mortality rates in 2000 were less than those recorded in 1981; this is consistent with the overall New Zealand temporal analysis (Appendix 6 and 7). Nevertheless, only eight (from 72) TLAs recorded a significant decrease in rates. A small proportion of TLAs experienced male mortality rates that were higher in 2000 than in 1981, however, none were significant. The Queenstown-Lakes District recorded the highest rate ratio at 1.20. Similar to the trend for males, the majority of TLAs recorded a decrease in female all-cause mortality rates (a significant difference for three TLAs, Appendix 7 and 8). Approximately one third of TLAs experienced female mortality rates that were higher in 2000 than in 1981 (not significant). The TLA with the highest rate ratio was Queenstown-Lakes TLA on 1.43.

Summary of Temporal Trends

A summary of the temporal all-cause mortality rate trends between 1981 and 2000 is shown in Table 6.3. Although the majority of DHBs and TLAs recorded a decrease in all-cause mortality rates between 1981 and 2000, there is evidence of an increase in mortality rates within many DHBs and TLAs, particularly among females.

Table 6.3: Number of DHBs and TLAs that recorded a decrease or increase in all-cause ASMRs between 1981 and 2000

Geographic level	Sex	Decreasing Rates	Increasing Rates
DHB	Males	21 (100%)	0 (0%)
	Females	15 (71%)	6 (29%)
TLA	Males	58 (81%)	14 (19%)
	Females	47 (65%)	25 (34%)

Geographic Inequality

District Health Boards

The ratio of the mortality rates for worst to best DHBs is illustrated in Figure 6.1. The level of geographic inequality for males remained relatively stable with a rate ratio of approximately 1.6 (β : 0.0031, not significant), and conversely, decreased for females from a rate ratio of 1.7 in 1981 to 1.4 in 2000 (β : -0.012, $p < 0.05$). Of particular interest is the similar level of inequality between males and females during the early 1980s which was not observed throughout the rest of the period. The remainder of the period was characterised by larger levels of male inequality compared with female inequality. A certain degree of consistency between the DHBs from which the rate ratios are calculated exists: areas with the highest mortality rates were largely confined to the West Coast DHB and more recently the Tairāwhiti DHB. Areas that experienced the lowest mortality rates were either the Waitemata or Nelson-Marlborough DHBs.

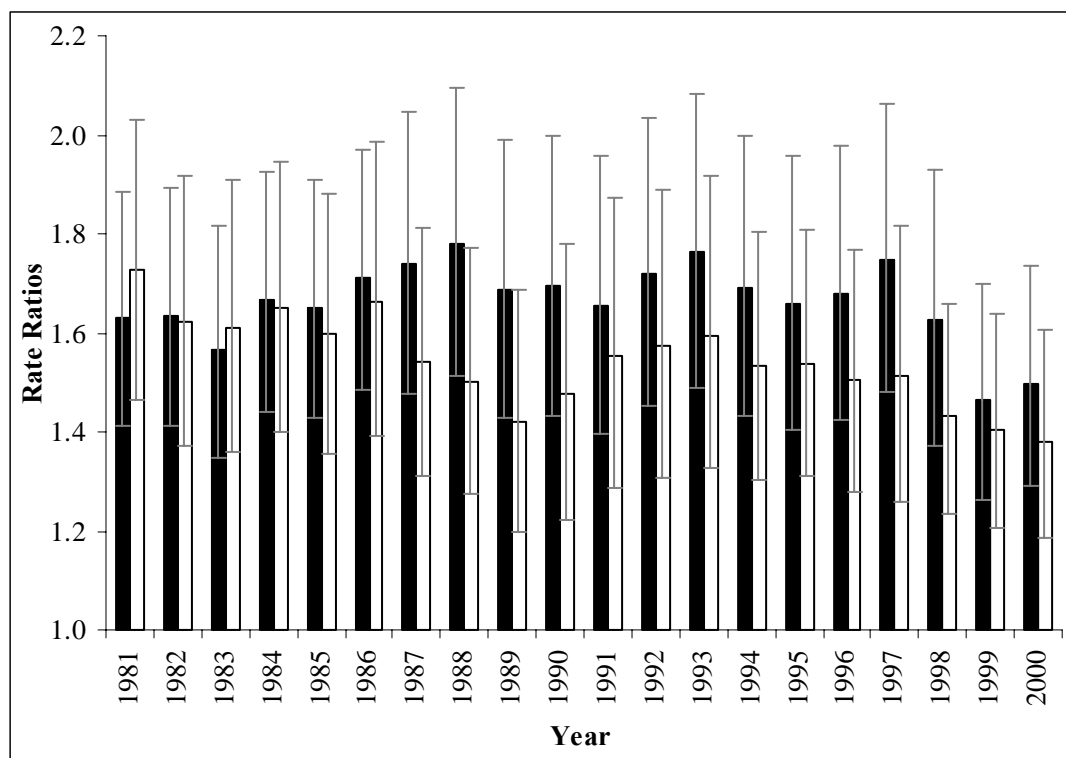


Figure 6.1: Geographic inequality between the highest and lowest all-cause ASMRs at the DHB level, 1981-2000

Territorial Local Authorities

The level of geographic inequality at the TLA level is illustrated in Figure 6.2. For both males and females, a general trend of increasing inequality between the early 1980s and the late 1980s is observed. Mortality rates then decreased to the mid 1990s, where they remained relatively stable. The level of geographic inequality between the TLA with highest mortality rate and the TLA with the lowest mortality rate consistently remained above two, peaking in the late 1980s at approximately four. The level of geographic inequality remained stable throughout the period (males: β - 0.047, females: β -0.050, not significant).

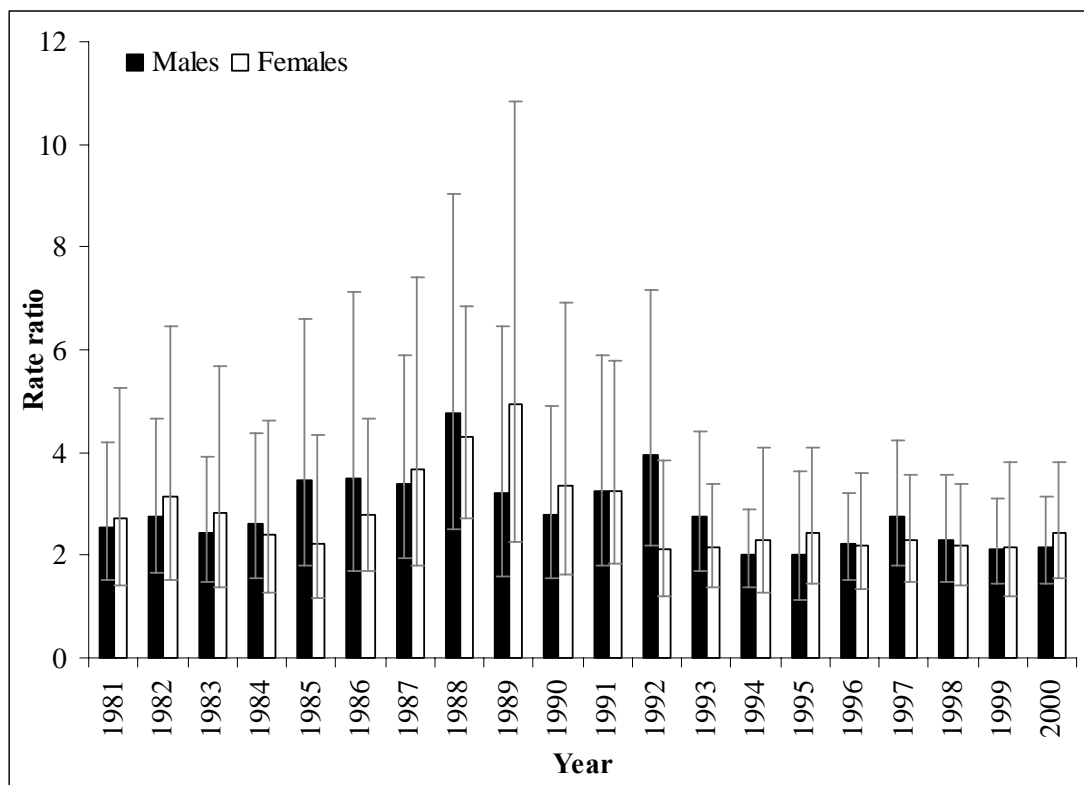


Figure 6.2: Geographic inequality between the highest and lowest all-cause ASMRs at the TLA level, 1981-2000

6.3 *Ischaemic heart disease*

Temporal Trends

District Health Boards

A greater decrease in male IHD mortality rates for New Zealand was observed in comparison to male all-cause mortality rates for New Zealand (28% decrease in IHD mortality rates, 12% decrease in all-cause mortality rates) (Table 6.4 Appendix 9). Table 6.4 shows that all DHBs experienced a decrease in IHD mortality rates, ranging from males living in South Canterbury who were 38% less likely to die from IHD in 2000 than they were in 1981, to males living in Whanganui who were 2% less likely to die from IHD. A significant decrease in mortality rates was recorded for 13 of the 21 DHBs.

Table 6.4: Geographic inequality in male IHD ASMRs per 100,000 at the DHB level, 1981-2000

District Health Board	Males					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
South Canterbury	290.0	295.8	235.2	208.9	180.5	0.62	(0.45, 0.85)
Hutt Valley	262.0	255.4	218.3	185.1	164.9	0.63	(0.49, 0.81)
West Coast	280.9	286.6	247.9	173.5	178.0	0.63	(0.40, 0.99)
Counties Manukau	248.7	239.6	207.6	174.9	163.7	0.66	(0.55, 0.79)
Nelson-Marlborough	261.8	220.2	169.6	154.6	173.0	0.66	(0.52, 0.84)
Auckland	266.3	267.2	228.5	204.7	176.7	0.66	(0.57, 0.77)
Waitemata	231.7	215.6	195.6	169.7	155.0	0.67	(0.57, 0.79)
Otago	280.0	261.1	231.8	194.2	188.9	0.67	(0.56, 0.81)
Capital and Coast	249.0	199.7	175.5	185.6	169.4	0.68	(0.56, 0.83)
Canterbury	250.0	256.1	216.8	191.9	175.2	0.70	(0.61, 0.80)
<i>New Zealand</i>	<i>250.9</i>	<i>242.1</i>	<i>211.5</i>	<i>185.4</i>	<i>182.4</i>	<i>0.73</i>	<i>(0.69, 0.76)</i>
Wairarapa	292.8	262.8	233.7	220.7	217.0	0.74	(0.50, 1.09)
Bay of Plenty	234.9	209.3	182.1	145.3	176.5	0.75	(0.61, 0.93)
Waikato	242.3	239.1	208.7	187.0	189.5	0.78	(0.67, 0.92)
Tairāwhiti	258.7	251.0	226.6	212.7	204.3	0.79	(0.53, 1.18)
MidCentral	262.7	271.8	224.7	188.0	212.7	0.81	(0.66, 0.99)
Hawke's Bay	245.3	228.7	224.7	185.3	205.2	0.84	(0.67, 1.04)
Lakes	211.2	227.5	207.2	212.8	180.1	0.85	(0.62, 1.18)
Southland	252.4	226.6	232.8	222.8	224.0	0.89	(0.69, 1.14)
Taranaki	227.6	234.5	222.3	170.3	204.2	0.90	(0.70, 1.15)
Northland	209.5	226.8	211.0	188.9	197.5	0.94	(0.74, 1.20)
Whanganui	243.4	263.8	210.0	183.4	237.7	0.98	(0.73, 1.32)

The overall change in female IHD mortality rates between 1981 and 2000 is shown in Table 6.5 (Appendix 10). The rate ratio between 2000 and 1981 for all New Zealand females was 0.86, slightly higher than the male IHD equivalent of 0.73, and considerably lower than the female all-cause mortality rate ratio of 0.95. Overall, females were 14% less likely to die from IHD in 2000 than in 1981. Unlike the trend for males where all DHBs recorded a decrease in rate ratios, five DHBs recorded and increase in the rate ratio, the highest being Lakes DHB on 1.35 (however, the difference in mortality rates was not significant). The five DHBs that recorded rate ratios greater than one were among those that are left behind by the general improvement in female IHD mortality.

Table 6.5: Geographic inequality in female IHD ASMRs per 100,000 at the DHB level, 1981-2000

District Health Board	Females					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
West Coast	210.3	179.2	155.6	136.1	126.3	0.60	(0.35, 1.04)
Counties Manukau	190.7	173.2	152.7	142.4	133.2	0.70	(0.56, 0.87)
Hutt Valley	184.4	179.6	172.5	157.8	142.6	0.77	(0.59, 1.02)
Otago	193.6	184.3	165.1	134.0	150.7	0.78	(0.63, 0.95)
Auckland	178.2	186.6	177.8	148.1	140.0	0.79	(0.67, 0.92)
Bay of Plenty	158.5	155.2	130.2	108.4	127.9	0.81	(0.62, 1.06)
South Canterbury	193.3	188.3	190.5	174.9	158.6	0.82	(0.58, 1.16)
Waikato	171.3	161.3	157.1	124.3	140.8	0.82	(0.68, 1.00)
Waitemata	156.3	160.8	141.6	126.7	130.5	0.83	(0.69, 1.01)
Wairarapa	175.7	191.2	176.1	139.1	150.4	0.86	(0.53, 1.37)
<i>New Zealand</i>	<i>170.6</i>	<i>174.4</i>	<i>156.6</i>	<i>139.3</i>	<i>146.6</i>	<i>0.86</i>	<i>(0.82, 0.91)</i>
Capital and Coast	156.2	153.9	117.0	115.6	134.4	0.86	(0.69, 1.08)
Northland	171.0	169.5	128.9	152.0	148.6	0.87	(0.65, 1.16)
Canterbury	164.0	179.4	162.9	145.2	142.9	0.87	(0.75, 1.01)
MidCentral	173.8	181.8	156.4	148.1	161.4	0.93	(0.73, 1.17)
Nelson-Marlborough	162.0	159.0	131.3	137.9	160.5	0.99	(0.75, 1.31)
Southland	185.7	209.2	191.1	157.2	186.3	1.00	(0.75, 1.33)
Taranaki	171.2	171.8	157.0	148.4	174.6	1.02	(0.77, 1.35)
Hawke's Bay	160.4	174.6	162.4	144.4	173.1	1.08	(0.84, 1.38)
Whanganui	143.9	174.9	187.4	152.1	168.9	1.17	(0.82, 1.68)
Tairāwhiti	141.3	169.6	151.2	144.6	186.8	1.32	(0.82, 2.13)
Lakes	117.1	182.7	138.6	134.0	158.4	1.35	(0.88, 2.08)

Territorial Local Authorities

Male mortality rates decreased in most, but not all TLAs (27 TLAs had significantly lower rates in 2000 compared with 1981 (Appendix 7 and 11)). A small percentage of TLAs recorded an increase in mortality rates; however, none of these increases were significant. For females, a similar number of TLAs recorded a decrease in IHD mortality rates during the study period (Appendix 7 and 12). Five of the TLAs recorded a significant decrease in mortality rates. Several TLAs had rate ratios greater than one, but none of the increases were significant.

Summary of Temporal Trends

A summary of the trends in IHD mortality rates is illustrated in Table 6.6. The majority of areas experienced a decrease in mortality rates during the study period; however, this trend was not equally experienced by males and females. It is evident that a greater percentage of areas experienced a decrease in male IHD mortality rates than for females. This trend is similar to that observed for all cause mortality; the

main exception being the larger percentage of TLAs that experienced decreased rates of IHD mortality compared with all-cause mortality.

Table 6.6: Number of DHBs and TLAs that recorded a decrease or increase in IHD ASMRs between 1981 and 2000

Geographic level	Sex	Decreasing Rate	Increasing Rate
DHB	Males	21 (100%)	0 (0%)
	Females	15 (71%)	6 (29%)
TLA	Males	68 (94%)	4 (6%)
	Females	59 (82%)	13 (18%)

Geographic Inequality

District Health Boards

Figure 6.3 indicates that the levels of geographic inequality remained relatively stable at approximately 1.5, throughout the period (males: β 0.0058, females: β -0.0094, not significant). In general, people who lived in the DHB with the highest mortality rate were at least 1.3 times more likely to die from IHD than people who lived in the DHB with the lowest rate.

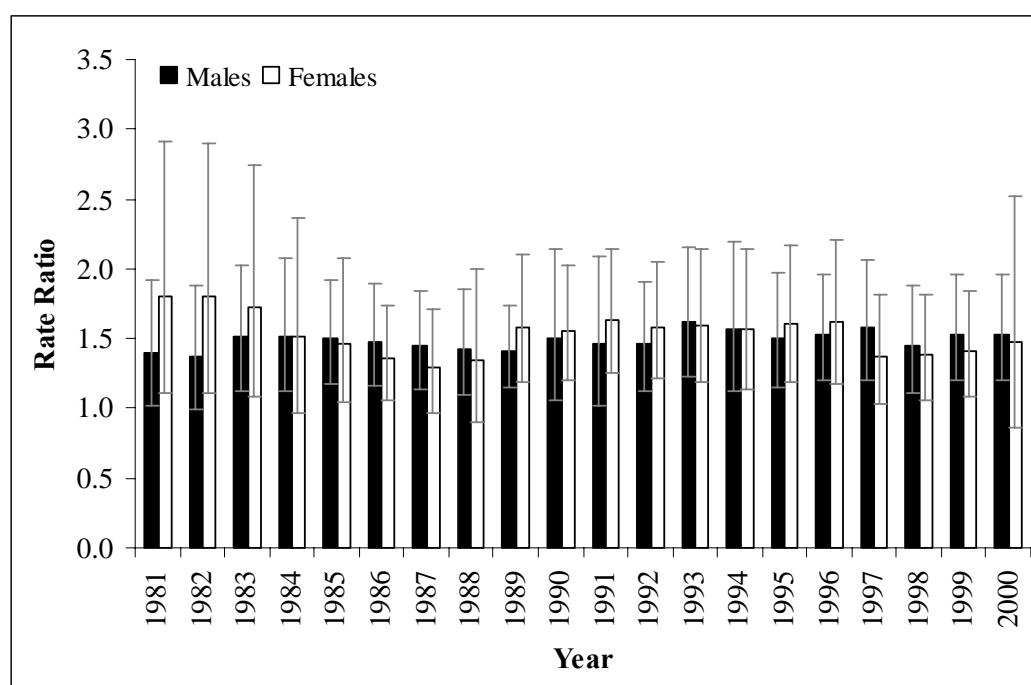


Figure 6.3: Geographic inequality between highest and lowest IHD ASMRs at the DHB level, 1981-2000

Territorial Local Authorities

The geographic disparity between the lowest and highest IHD mortality rates for TLAs is illustrated in Figure 6.4. The trend for males and females is very similar, with the largest geographic disparities occurring in the mid 1980s, and early 1990s. There is also evidence of increasing rate ratios from the mid 1990s. Throughout most of the 1980s, males had larger rate ratios with the trend reversing throughout the 1990s. For both males and females, the rate ratio was always above 2 (slightly higher than the DHB equivalent of 1.3). Overall, the level of geographic inequality in IHD mortality at the TLA level remained stable over time (males: β : -0.015; females: β : -0.005, not significant).

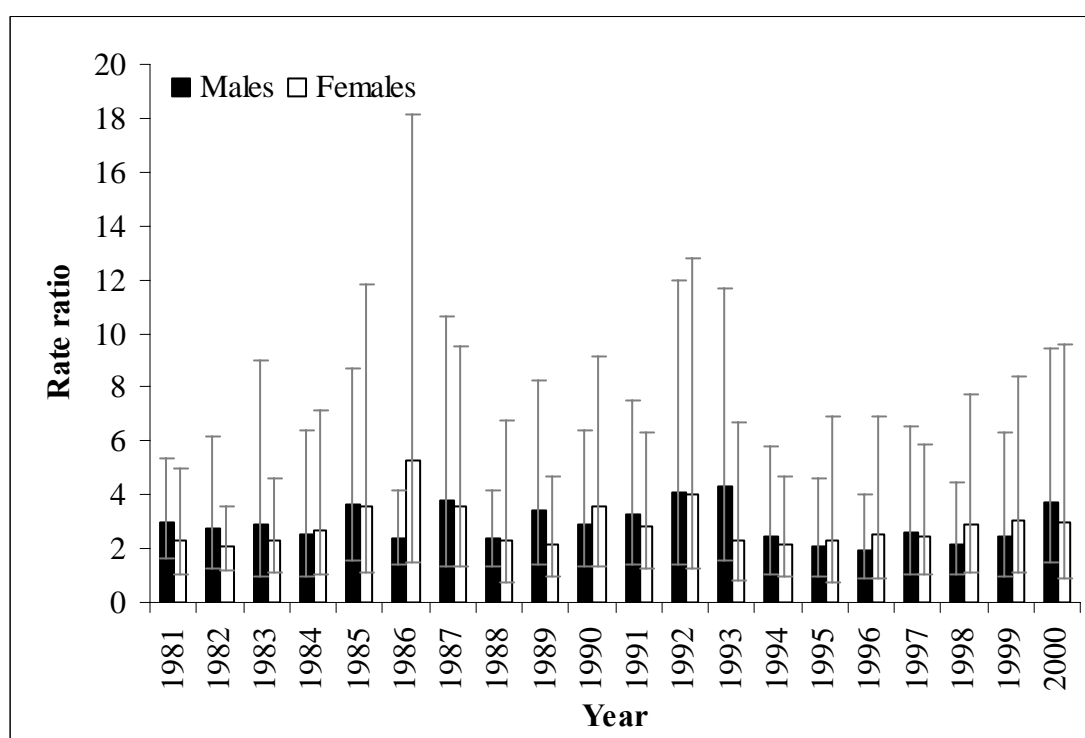


Figure 6.4: Geographic inequality between the highest and lowest IHD ASMRs at the TLA level, 1981-2000

6.4 All-Cancer

Temporal Trends

District Health Boards

The overall change in male cancer mortality rates between 1981 and 2000 is presented in Table 6.7 (Appendix 13). Unlike the trend for all-cause mortality, there has been a significant increase in cancer mortality for males in New Zealand (rate ratio = 1.25). Cancer mortality rates increased for all DHBs, with the exception of Wairarapa DHB where rates remained the same. A wide range of rate ratios were recorded: males who lived in West Coast were 5% more likely to die from cancer in 2000 than males who lived there in 1981; but males who lived in Northland, Whanganui and Lakes DHBs were 51% more likely to die. Eleven DHBs experienced cancer mortality rates in 2000 that were significantly higher than in 1981.

Table 6.7: Geographic inequality in male cancer ASMRs per 100,000 at the DHB level, 1981-2000

District Health Boards	Male					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
Wairarapa	184.6	178.1	208.3	221.6	184.1	1.00	(0.64, 1.57)
West Coast	194.3	222.9	217.9	188.8	204.9	1.05	(0.66, 1.68)
Counties Manukau	197.7	205.3	198.3	195.6	211.0	1.07	(0.89, 1.28)
Auckland	196.5	211.6	210.6	209.9	211.4	1.08	(0.93, 1.25)
Waitemata	175.9	187.0	187.7	180.6	201.0	1.14	(0.97, 1.35)
South Canterbury	185.9	206.5	209.8	226.0	213.5	1.15	(0.82, 1.61)
Capital and Coast	168.9	153.0	172.8	165.2	201.6	1.19	(0.97, 1.46)
MidCentral	190.7	178.1	196.9	188.2	232.3	1.22	(0.98, 1.51)
Canterbury	174.9	182.5	206.4	203.1	217.8	1.25	(1.08, 1.43)
<i>New Zealand</i>	<i>175.6</i>	<i>187.3</i>	<i>195.4</i>	<i>195.0</i>	<i>218.7</i>	<i>1.25</i>	<i>(1.19, 1.31)</i>
Hutt Valley	188.8	206.2	194.6	215.0	239.5	1.27	(0.99, 1.63)
Waikato	172.8	187.3	189.1	198.2	219.3	1.27	(1.07, 1.51)
Tairāwhiti	196.6	210.3	207.4	218.7	252.2	1.28	(0.86, 1.93)
Otago	173.8	209.9	215.7	215.6	227.3	1.31	(1.07, 1.60)
Taranaki	170.6	183.2	180.6	188.5	230.1	1.35	(1.03, 1.76)
Bay of Plenty	160.4	178.5	207.1	170.2	222.0	1.38	(1.10, 1.75)
Hawke's Bay	157.1	171.6	198.7	187.6	221.7	1.41	(1.11, 1.80)
Nelson-Marlborough	140.0	172.8	153.1	161.6	206.7	1.48	(1.12, 1.95)
Southland	152.4	172.1	185.4	195.7	229.1	1.50	(1.13, 2.00)
Northland	163.5	176.6	185.6	190.9	246.6	1.51	(1.18, 1.93)
Whanganui	159.7	151.3	197.1	214.3	240.9	1.51	(1.08, 2.11)
Lakes	160.3	195.4	181.0	239.3	242.3	1.51	(1.08, 2.11)

The temporal change in female cancer mortality rates is shown in Table 6.8 (Appendix 14). The rate ratio for New Zealand indicates a significant increase in rates during the period, so that by 2000, females were 24% more likely to die from cancer than females in 1981. All DHBs recorded an increase in mortality rates and 11 DHBs experienced cancer mortality rates in 2000 that were significantly higher than in 1981.

Table 6.8: Geographic inequality in female cancer ASMRs per 100,000 at the DHB level, 1981-2000

District Health Boards	Female					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
Auckland	165.9	176.3	180.7	184.3	164.7	0.99	(0.85, 1.16)
Counties Manukau	169.0	181.4	170.9	185.9	172.3	1.02	(0.84, 1.24)
West Coast	138.5	179.7	183.4	163.0	159.5	1.15	(0.66, 2.02)
Waikato	153.6	148.7	155.5	173.5	179.1	1.17	(0.97, 1.41)
Capital and Coast	143.3	136.3	151.0	147.3	168.5	1.18	(0.95, 1.46)
Tairāwhiti	160.9	170.0	205.0	234.4	191.9	1.19	(0.76, 1.87)
MidCentral	157.8	178.9	183.8	185.0	191.6	1.21	(0.96, 1.54)
Waitemata	136.9	156.9	175.4	156.9	167.1	1.22	(1.02, 1.46)
Canterbury	150.1	158.7	171.5	176.2	183.4	1.22	(1.06, 1.41)
<i>New Zealand</i>	<i>147.5</i>	<i>161.1</i>	<i>168.2</i>	<i>171.3</i>	<i>182.4</i>	<i>1.24</i>	<i>(1.17, 1.30)</i>
Otago	149.9	169.4	186.0	171.5	187.5	1.25	(1.01, 1.55)
Southland	146.1	167.8	135.5	159.6	195.4	1.34	(0.99, 1.80)
Taranaki	134.5	161.0	158.3	153.8	182.0	1.35	(1.00, 1.83)
Hutt Valley	137.1	164.4	171.6	186.5	193.3	1.41	(1.07, 1.86)
Nelson-Marlborough	123.0	129.8	133.6	151.2	173.9	1.41	(1.05, 1.91)
South Canterbury	146.2	183.4	193.5	180.8	208.1	1.42	(1.00, 2.03)
Bay of Plenty	117.8	143.5	156.5	148.9	167.8	1.42	(1.08, 1.88)
Northland	141.4	151.3	168.9	167.0	203.1	1.44	(1.08, 1.91)
Lakes	153.5	159.9	181.6	198.4	224.7	1.46	(1.03, 2.07)
Hawke's Bay	142.9	166.9	148.6	165.9	211.9	1.48	(1.16, 1.90)
Whanganui	146.0	148.7	168.4	170.3	216.7	1.48	(1.05, 2.10)
Wairarapa	135.8	144.5	178.0	183.1	203.0	1.50	(0.92, 2.42)

Territorial Local Authorities

Approximately one quarter of the TLAs experienced a decrease in cancer mortality rates (Appendix 7 and 15). The TLA that made the most improvement was Opotiki District; males who lived in Opotiki District in 2000 were 41% less likely to die from cancer than males who lived there in 1981. It should be noted that all male cancer mortality rates at the TLA level in 2000 were not significantly different from those in 1981. A similar percentage of TLAs experienced a decrease in female cancer mortality rates (Appendix 7 and 16). The TLA that made the most improvement in cancer mortality rates was Central Hawke's Bay District; females who lived in this

district were 40% less likely to die from cancer than females who lived there in 1981. All TLAs, except Upper Hutt City, recorded rates in 2000 that were not significantly different from those in 1981.

Summary of Temporal Trends

A summary of the temporal trends for cancer mortality between 1981 and 2000 is shown in Table 6.9. The table highlights the trend of increasing cancer mortality rates for males and females, at both geographic levels, and the very similar level of agreement between the sexes.

Table 6.9: Number of DHBs and TLAs that recorded a decrease or increase in cancer ASMRs between 1981 and 2000

Geographic level	Sex	Decreasing Rates	Increasing Rates
DHB	Males	1 (5%)	20 (95%)
	Females	1 (5%)	20 (95%)
TLA	Males	20 (27%)	53 (73%)
	Females	21 (29%)	52 (71%)

Geographic Inequalities

District Health Boards

The degree to which cancer mortality became geographically polarised at the DHB level is shown in Figure 6.5. For both males and females, the rate ratio between the DHB with the highest cancer mortality rate and the DHB with the lowest rate ranged between 1.3 and 1.6. This indicates that people who lived in the DHB with the highest mortality rate were between 30% and 60% more likely to die from cancer than those people who lived in the DHB with the lowest rate. Overall, the level of geographic inequality remained stable throughout the period (males: β 0.0019, females: β 0.007, not significant at $p < 0.05$).

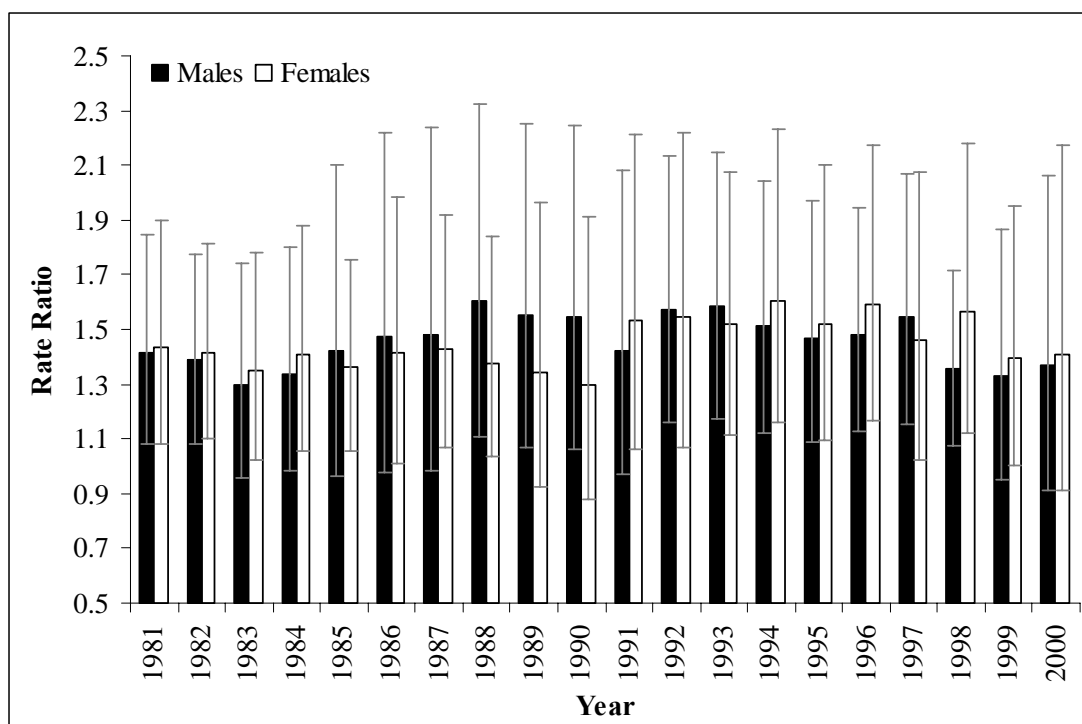


Figure 6.5: Geographic inequality between the highest and lowest cancer ASMRs at the DHB level, 1981-2000

Territorial Local Authorities

Similar to temporal trends observed at the DHB level, the TLA temporal analysis indicates large geographic inequalities in cancer mortality in the late 1980s and early 1990s for females, and the mid 1990s for males (Figure 6.6). Post 1998, a trend of increasing geographic inequality is shown. The level of geographic polarisation at the TLA level was greater than that observed at the DHB level: the rate ratio was always greater than two, indicating that there was at least, a two fold difference in cancer mortality rates. Overall, the level of geographic inequality remained stable throughout the period (males: β - 0.006, females: β -0.025, not significant).

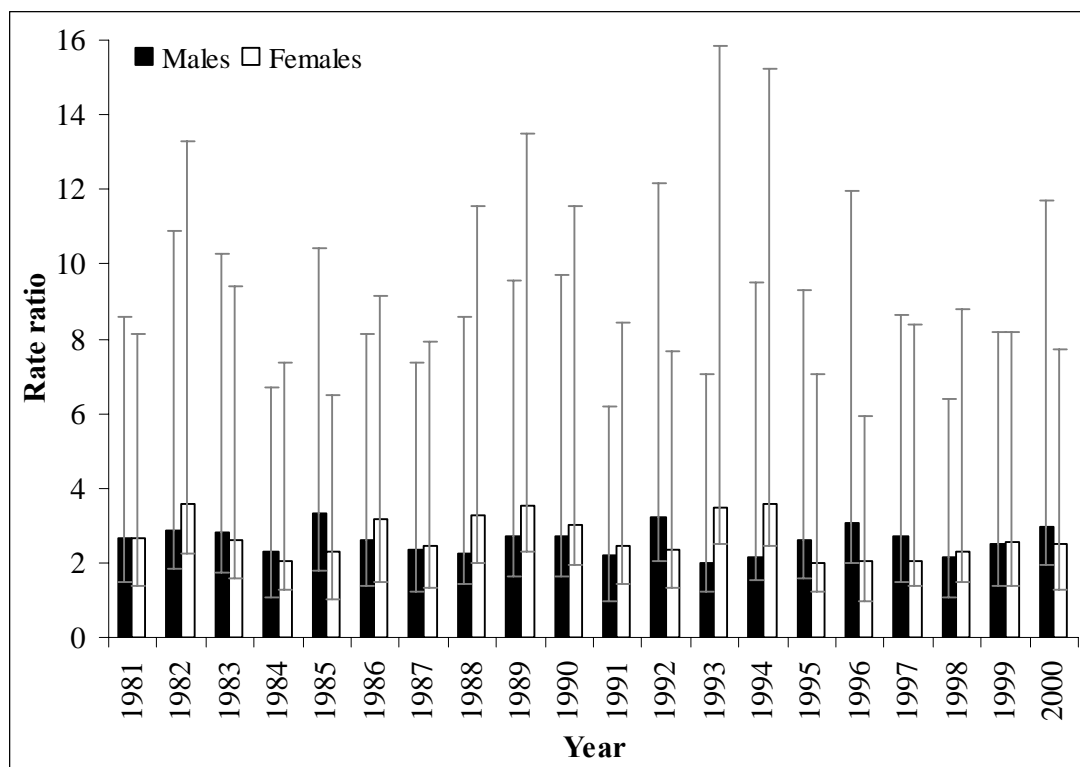


Figure 6.6: Geographic inequality between the highest and lowest cancer ASMRs at the TLA level, 1981-2000

6.5 Lung cancer

Temporal Trends

District Health Boards

The variation in male lung cancer mortality rates at the DHB level is shown in Table 6.10 (Appendix 17). Between 1981 and 2000, the mortality rate for New Zealand decreased by 9%, this is similar to the decrease in male all-cause mortality. The difference being, however, the decrease was not recorded in all areas; the rate ratio was greater than one for seven DHBs (although all DHBs recorded lung cancer mortality rates that were not significantly different). The extent to which lung cancer mortality rates have changed within each DHB is extremely variable; ranging from a 35% decrease for Capital and Coast to a 40% increase for Northland.

Table 6.10: Geographic inequality in male lung cancer ASMRs per 100,000 at the DHB level, 1981-2000

District Health Boards	Males					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
Capital and Coast	52.1	38.1	37.7	40.2	34.1	0.65	(0.43, 1.00)
Wairarapa	52.5	43.5	45.0	75.1	34.7	0.66	(0.26, 1.68)
South Canterbury	52.0	67.8	58.2	48.6	34.9	0.67	(0.32, 1.40)
West Coast	64.2	63.3	75.3	41.2	44.9	0.70	(0.28, 1.73)
Counties Manukau	62.7	63.3	53.6	45.0	47.8	0.76	(0.54, 1.08)
Auckland	54.1	63.3	53.3	48.3	42.3	0.78	(0.57, 1.07)
Hutt Valley	59.3	53.1	52.9	52.0	49.0	0.83	(0.50, 1.36)
Waitemata	48.8	49.0	43.3	43.9	40.5	0.83	(0.60, 1.16)
MidCentral	60.0	47.9	50.0	35.6	52.4	0.87	(0.58, 1.33)
<i>New Zealand</i>	<i>50.5</i>	<i>51.6</i>	<i>48.7</i>	<i>44.9</i>	<i>46.0</i>	<i>0.91</i>	<i>(0.83, 1.00)</i>
Waikato	53.2	51.6	43.3	47.2	48.8	0.92	(0.66, 1.27)
Canterbury	49.4	47.7	49.4	43.4	48.0	0.97	(0.74, 1.28)
Southland	50.0	45.1	46.0	49.4	48.6	0.97	(0.56, 1.68)
Bay of Plenty	42.1	46.6	44.5	35.3	41.4	0.98	(0.61, 1.59)
Taranaki	42.3	50.2	52.5	39.9	42.2	1.00	(0.56, 1.77)
Nelson-Marlborough	36.0	37.4	30.2	34.8	37.5	1.04	(0.58, 1.86)
Tairāwhiti	51.3	59.9	54.8	58.9	54.4	1.06	(0.46, 2.43)
Whanganui	45.3	47.4	50.1	38.2	48.2	1.06	(0.54, 2.10)
Otago	50.7	62.9	55.5	50.8	53.9	1.06	(0.72, 1.57)
Lakes	46.1	59.9	50.5	66.0	54.5	1.18	(0.62, 2.24)
Hawke's Bay	38.0	46.6	54.7	37.7	49.7	1.31	(0.79, 2.16)
Northland	42.4	47.3	51.9	49.7	59.3	1.40	(0.86, 2.28)

The change in female lung cancer mortality rates between 1981 and 2000 is shown in Table 6.11 (Appendix 18). It becomes apparent that the rate ratios are considerably larger than those experienced by their male counterparts. Overall, New Zealand females were 75% more likely to die from lung cancer in 2000 than they were in 1981. All DHBs recorded an increase in mortality rates; ranging from 11% for Auckland to a more than four fold increase for the West Coast (note; only five DHBs recorded a significant increase in mortality rates).

Table 6.11: Geographic inequality in female lung cancer ASMRs per 100,000 at the DHB level, 1981-2000

District Health Boards	Females					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
Auckland	19.1	26.3	24.0	26.8	21.1	1.11	(0.70, 1.75)
Tairāwhiti	34.0	28.1	35.1	32.9	43.0	1.26	(0.48, 3.32)
Taranaki	17.7	18.5	27.3	23.2	25.1	1.42	(0.62, 3.22)
Capital and Coast	17.2	14.1	18.4	22.3	24.7	1.43	(0.79, 2.60)
Hutt Valley	23.4	19.2	25.4	23.7	34.0	1.46	(0.75, 2.83)
Waitemata	16.2	21.0	21.9	22.0	25.3	1.56	(0.94, 2.58)
Nelson-Marlborough	12.4	13.5	16.6	16.4	19.8	1.60	(0.64, 4.03)
Waikato	17.9	15.6	21.6	25.5	30.0	1.68	(1.00, 2.83)
Southland	14.8	13.2	14.8	18.5	25.2	1.70	(0.69, 4.17)
Counties Manukau	19.8	17.3	27.0	27.9	34.4	1.74	(1.02, 2.96)
<i>New Zealand</i>	<i>16.6</i>	<i>19.5</i>	<i>22.8</i>	<i>25.1</i>	<i>29.0</i>	<i>1.75</i>	<i>(1.51, 2.03)</i>
MidCentral	18.5	22.3	24.9	30.5	33.0	1.78	(0.94, 3.38)
Hawke's Bay	15.4	24.7	23.6	31.3	29.0	1.89	(0.91, 3.89)
Northland	21.6	31.5	29.3	31.5	41.2	1.90	(0.95, 3.82)
Bay of Plenty	13.1	17.8	18.8	25.4	25.0	1.91	(0.87, 4.21)
Canterbury	12.4	16.4	20.4	21.2	25.7	2.08	(1.32, 3.30)
Lakes	24.4	19.7	34.2	36.7	52.4	2.14	(0.94, 4.92)
Otago	13.5	18.0	22.2	26.4	30.6	2.27	(1.20, 4.31)
South Canterbury	10.7	18.1	16.0	22.1	29.7	2.77	(0.85, 9.05)
Whanganui	15.1	23.8	23.7	25.2	43.8	2.91	(1.10, 7.71)
Wairarapa	10.5	11.8	24.1	25.0	32.4	3.08	(0.65, 14.59)
West Coast	6.7	29.0	35.0	20.1	32.2	4.79	(0.57, 40.59)

Territorial Local Authorities

At the TLA level, the majority of male mortality rates decreased (however, only 10 TLAs experienced rates in 2000 that were significantly lower than those in 1981 (Appendix 7 and 19)). An almost opposite trend occurred among females, where the majority of TLAs experienced an increase in lung cancer mortality rates during this period (however, only three TLAs experienced rates in 2000 that were significantly higher than in 2000) (Appendix 7 and 20).

Summary of Temporal Trends

A summary of the temporal trends in lung cancer mortality for IHD is shown in Table 6.12. It is apparent that there are considerable sex inequalities in lung cancer mortality during the study period. For males, 33% of DHBs recorded an increase in mortality rates; this is minimal compared with 100% of DHBs that recorded an increase in female lung cancer mortality rates. At the TLA level, 93% of areas recorded a decrease in male lung cancer mortality rates.

Table 6.12: Number of DHBs and TLAs that recorded a decrease or increase in lung cancer ASMRs between 1981 and 2000

Geographic level	Sex	Decreasing Rates	Increasing Rates
DHB	Males	14 (64%)	7 (33%)
	Females	0 (0%)	21 (100%)
TLA	Males	67 (93%)	5 (7%)
	Females	7 (11%)	59 (89%)

Geographic Inequalities

District Health Boards

The geographic inequalities in lung cancer mortality rates at the DHB level is illustrated in Figure 6.7. The level of inequality for both males and females follows a similar trend: a gradual increase in inequality from the early 1980s to the late 1980s/early 1990s followed by a general decrease in inequality for the remainder of the period. The major exception to this general temporal trend is the peak in geographic inequalities in lung cancer mortality for females between 1993 and 1995. Overall, however, there is an indication of stable geographic inequalities (males: β - 0.0068, females: β 0.0077).

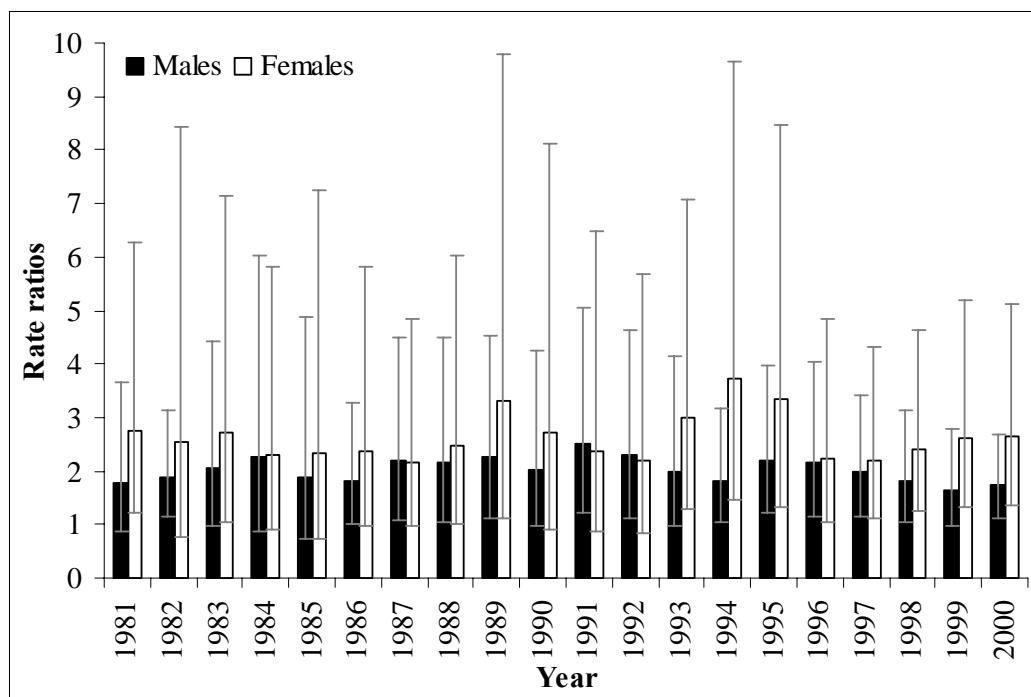


Figure 6.7: Geographic inequality between the highest and lowest lung cancer ASMRs at the DHB level, 1981-2000

Territorial Local Authorities

At the TLA level there seems to be two distinct peaks in geographical inequality for males and females; one in the mid to late 1980s and one in the mid to late 1990s (Figure 6.8). During these periods, the rate ratio was consistently between three and four for both males and females. This compares with the remaining periods where the geographic inequality for lung cancer mortality was approximately two. Throughout the period, the geographic inequality was generally greater among males than females, this trend reversed after 1997. Overall, the levels of geographic inequality for lung cancer mortality decreased for males and increased for females, however, the trend was not significant (males: β -0.051, females: β 0.027).

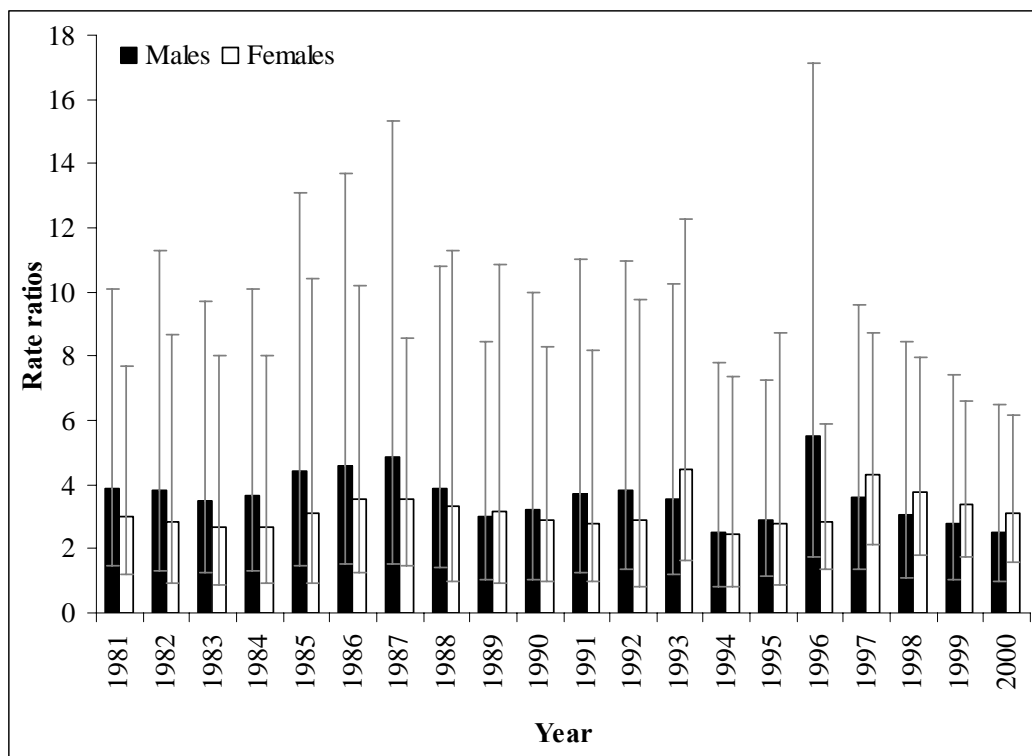


Figure 6.8: Geographic inequality between the highest and lowest lung cancer ASMRs at the TLA level, 1981-2000

6.6 Colorectal cancer

Temporal Trends

District Health Boards

The change in male colorectal cancer mortality rates at the DHB level is shown in Table 6.13 (Appendix 21). The rate ratio between 2000 and 1981 indicates that overall, males were 22% more likely to die of colorectal cancer in 2000 than they were in 1981. The significant increase opposes the trend for male all-cause mortality. The table shows there were only three DHBs that recorded rate ratios less than one, indicating that males who lived in the remaining 18 DHBs experienced an increase in colorectal cancer mortality rates during the period. Canterbury was the only DHB to experience a significant increase in male colorectal cancer mortality rates.

Table 6.13: Geographic inequality in male colorectal cancer ASMRs per 100,000 at the DHB level, 1981-2000

District Health Boards	Males					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
South Canterbury	40.0	32.6	37.0	48.6	29.4	0.73	(0.32, 1.67)
Hutt Valley	28.9	28.3	23.2	32.7	23.9	0.83	(0.41, 1.67)
Wairarapa	28.8	24.5	43.1	37.6	27.7	0.96	(0.3, 3.05)
Hawke's Bay	27.1	25.1	29.0	28.8	27.9	1.03	(0.55, 1.92)
Auckland	29.2	28.7	27.4	29.9	30.3	1.04	(0.70, 1.54)
MidCentral	27.2	27.5	29.7	29.4	28.9	1.06	(0.59, 1.92)
West Coast	28.6	33.0	25.1	28.1	30.8	1.08	(0.32, 3.58)
Taranaki	34.4	32.0	29.3	26.3	38.1	1.11	(0.60, 2.06)
Tairāwhiti	20.3	23.4	26.7	30.2	22.5	1.11	(0.30, 4.11)
Counties Manukau	23.0	21.6	25.3	25.6	26.5	1.15	(0.68, 1.95)
Waitemata	24.3	22.2	26.4	24.4	28.7	1.18	(0.76, 1.83)
<i>New Zealand</i>	25.6	27.3	29.4	29.1	31.1	1.22	(1.07, 1.38)
Otago	27.8	36.0	38.3	35.5	34.1	1.23	(0.73, 2.05)
Capital and Coast	22.4	20.1	26.8	19.8	29.3	1.31	(0.75, 2.27)
Nelson-Marlborough	23.9	30.3	33.6	25.1	31.7	1.33	(0.67, 2.62)
Waikato	22.7	29.6	29.5	32.9	31.1	1.37	(0.86, 2.18)
Whanganui	27.4	29.1	32.8	44.3	39.2	1.43	(0.64, 3.23)
Canterbury	24.5	28.5	32.2	29.9	35.6	1.46	(1.02, 2.09)
Bay of Plenty	21.7	22.4	28.1	23.1	31.9	1.47	(0.79, 2.75)
Southland	24.3	30.3	32.2	32.4	36.5	1.50	(0.73, 3.07)
Lakes	17.2	35.3	35.7	32.0	26.7	1.55	(0.57, 4.23)
Northland	19.3	27.1	22.1	27.1	36.3	1.89	(0.94, 3.78)

Table 6.14 shows that there was very little variation in mortality rates between 1981 and 2000, for New Zealand females (Appendix 22). Similar to that for males, the increase in rates during the study period is the opposite of all-cause mortality. It is evident from Table 6.14 that there was a wide variation in rate ratios: the DHB making the most improvement was Auckland on 0.74, in comparison the DHB that experienced the greatest increase in mortality rates was West Coast DHB on 1.79. For all DHBs, the rates experienced in 2000 were not significantly different to those experienced in 1981.

Table 6.14: Geographic trends in female colorectal cancer ASMRs per 100,000 at the DHB level, 1981-2000

District Health Boards	Females					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
Auckland	29.8	29.1	30.3	28.5	22.2	0.74	(0.50, 1.11)
Waikato	31.9	25.9	24.7	23.7	26.4	0.83	(0.53, 1.30)
Counties Manukau	27.9	30.3	27.4	25.6	23.5	0.84	(0.50, 1.41)
Northland	29.8	22.3	27.3	28.3	25.3	0.85	(0.42, 1.69)
Hutt Valley	26.4	23.2	31.7	27.3	23.3	0.88	(0.44, 1.78)
Wairarapa	38.7	32.0	29.9	27.5	34.3	0.89	(0.33, 2.41)
Tairāwhiti	23.7	29.4	26.6	51.5	22.0	0.93	(0.26, 3.27)
Taranaki	28.4	29.5	25.4	27.1	27.3	0.96	(0.48, 1.94)
Capital and Coast	25.6	26.0	22.6	20.8	26.6	1.04	(0.61, 1.76)
New Zealand	27.5	28.4	27.0	26.1	28.7	1.04	(0.92, 1.18)
Canterbury	26.2	30.3	27.3	23.3	27.6	1.05	(0.74, 1.51)
Waitemata	25.1	23.2	23.0	21.3	26.7	1.06	(0.69, 1.65)
MidCentral	28.9	32.0	35.1	33.4	30.8	1.07	(0.61, 1.87)
Lakes	27.7	28.7	32.3	31.5	30.0	1.08	(0.44, 2.64)
Nelson-Marlborough	28.3	18.9	25.7	27.9	31.0	1.10	(0.57, 2.12)
Whanganui	35.4	22.2	19.4	24.2	40.6	1.15	(0.55, 2.39)
Otago	28.8	32.6	34.3	27.2	35.4	1.23	(0.76, 2.00)
Hawke's Bay	25.8	27.3	24.0	25.9	32.9	1.28	(0.70, 2.32)
South Canterbury	36.8	39.6	40.7	34.5	50.5	1.37	(0.67, 2.80)
Bay of Plenty	17.4	26.8	19.3	21.7	27.1	1.56	(0.76, 3.19)
Southland	25.0	40.4	22.5	36.1	44.1	1.76	(0.89, 3.50)
West Coast	21.7	43.1	14.2	34.0	38.9	1.79	(0.50, 6.48)

Territorial Local Authorities

Approximately 70% of TLAs experienced an increase in mortality rates between 1981 and 2000 (Appendix 7 and 23). For females, the rate ratios were almost evenly split, with 54% of TLAs experiencing an increase in mortality rates during the study period (not significant) (Appendix 7 and 24).

Summary of Temporal Trends

A summary of the temporal trends for colorectal cancer mortality is shown in Table 6.15. Analysis for both sexes indicates that more areas recorded increased mortality rates, and a greater percentage of areas recorded an increase in male mortality rates compared with female rates.

Table 6.15: Number of DHBs and TLAs that recorded a decrease or increase in colorectal cancer ASMRs between 1981 and 2000

Geographic level	Sex	Decreasing Rates	Increasing Rates
DHB	Male	3 (14%)	18 (86%)
	Female	8 (38%)	13 (62%)
TLA	Male	19 (28%)	52 (72%)
	Female	32 (46%)	37 (54%)

Geographic Inequalities

District Health Boards

The geographic polarisation of colorectal cancer mortality rates at the DHB level is illustrated in Figure 6.9. For both males and females, the level of geographic inequality was relatively stable up until 1990 (rate ratio approximately two), when the level of inequality began to increase. Inequalities peaked in the early 1990s (rate ratio approximately three for females) then slightly decreased and remained relatively stable throughout the rest of the period. Overall, the level of geographic inequality was stable for males (β : 0.0019, not significant) and females (β : 0.0034, not significant). The level of geographic polarisation was similar between males and females, and always greater than 1.5.

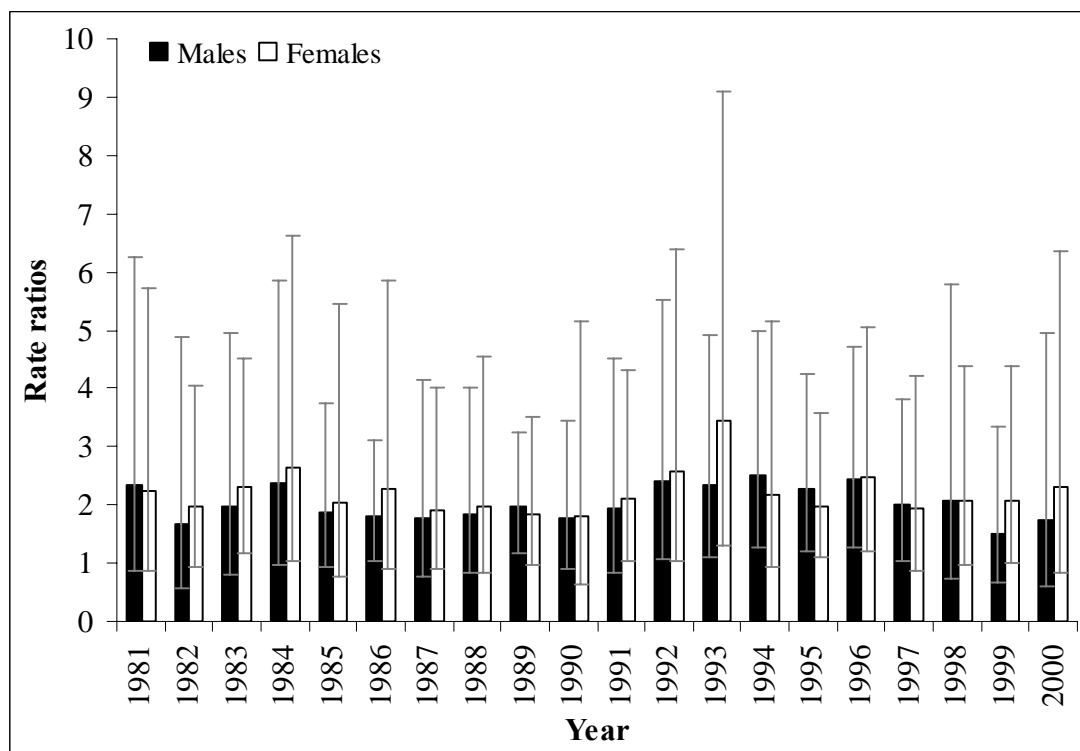


Figure 6.9: Geographic inequality between the highest and lowest colorectal cancer ASMRs at the DHB, 1981-2000

Territorial Local Authorities

The geographic inequality between the best and worst TLAs in terms of colorectal cancer mortality rates is shown in Figure 6.10. Rate ratios were stable throughout the period, until the mid 1990s where females recorded a widening of inequalities. Throughout the period, levels of geographic inequality were very similar to those observed at the DHB level. Overall, the level of geographic inequality in colorectal cancer mortality at the TLA level remained stable (males: β -0.004, females: β 0.029, not significant).

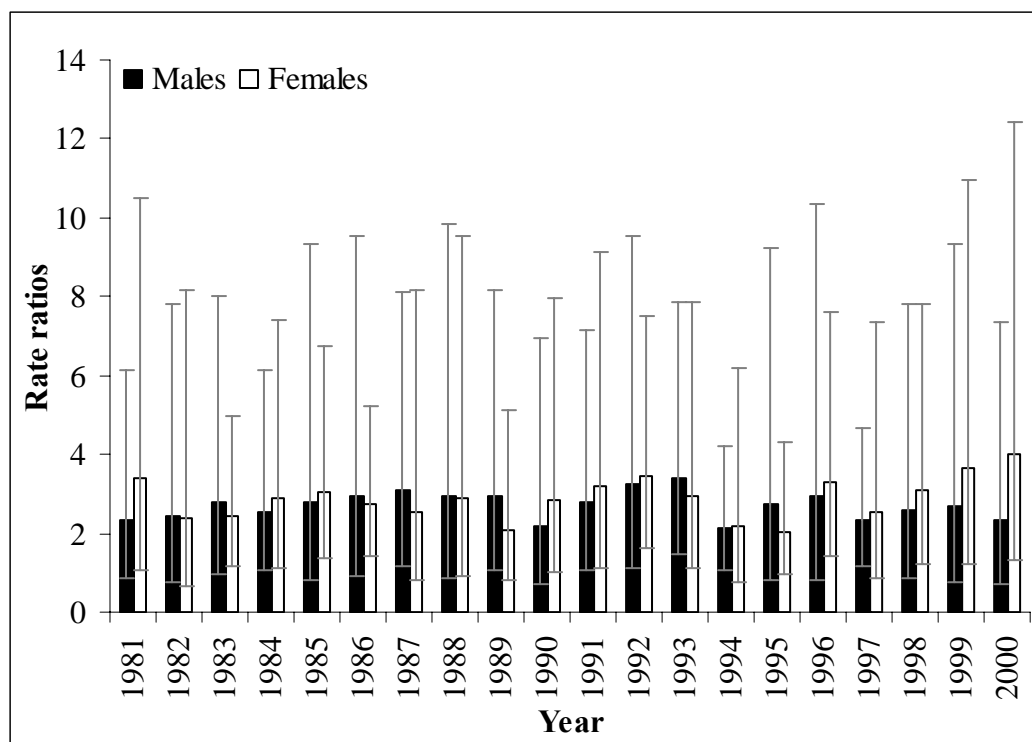


Figure 6.10: Geographic inequality between the highest and lowest colorectal cancer ASMRs at the TLA level, 1981-2000

6.7 Breast cancer

Temporal Trends

District Health Boards

The change in breast cancer mortality rates between 1981 and 2000 is shown in Table 6.16 (Appendix 25). The rate ratio indicates that New Zealand females were 12% more likely to die from breast cancer in 2000 than they were in 1981, this increase is not experienced equally among DHBs. The West Coast DHB made the most improvement with a 40% reduction in mortality rates, whereas Hawke's Bay experienced a 68% increase in rates (not significant).

Table 6.16: Geographic inequality in female breast cancer ASMRs per 100,000 at the DHB level, 1981-2000

District Health Boards	Females					
	1981	1986	1991	1996	2001	Ratio 2000:1981
West Coast	33.4	32.2	29.5	16.2	20.1	0.60 (0.15, 2.37)
Lakes	34.7	36.4	28.5	43.0	25.5	0.73 (0.32, 1.66)
Counties Manukau	32.5	36.4	28.2	37.4	26.7	0.82 (0.52, 1.30)
Southland	30.4	29.6	26.6	28.6	27.6	0.91 (0.44, 1.86)
Auckland	31.8	33.8	34.2	34.1	30.1	0.95 (0.65, 1.37)
Whanganui	33.6	26.3	23.7	30.8	32.8	0.98 (0.43, 2.20)
Capital and Coast	32.3	27.7	27.3	23.2	31.8	0.98 (0.61, 1.57)
Canterbury	33.4	33.0	33.7	34.5	33.4	1.00 (0.72, 1.38)
MidCentral	32.9	34.8	37.7	34.5	34.1	1.04 (0.60, 1.78)
Tairāwhiti	27.4	29.0	46.4	37.7	29.5	1.08 (0.35, 3.29)
<i>New Zealand</i>	<i>28.4</i>	<i>31.3</i>	<i>31.3</i>	<i>31.4</i>	<i>31.8</i>	<i>1.12 (0.99, 1.26)</i>
Wairarapa	26.6	25.9	24.9	28.2	31.2	1.18 (0.37, 3.71)
Taranaki	26.8	33.8	29.0	25.1	31.5	1.18 (0.59, 2.36)
Waitemata	23.5	29.4	32.3	27.2	28.7	1.22 (0.79, 1.88)
South Canterbury	24.4	30.5	46.0	36.6	29.9	1.22 (0.49, 3.07)
Waikato	23.3	32.9	31.1	34.8	28.9	1.24 (0.77, 1.99)
Otago	24.4	35.3	32.1	36.6	34.2	1.40 (0.83, 2.35)
Bay of Plenty	21.7	23.1	26.8	24.6	31.9	1.47 (0.77, 2.81)
Northland	24.5	24.8	25.6	30.4	36.7	1.50 (0.76, 2.94)
Hutt Valley	24.7	31.8	33.3	31.2	38.2	1.55 (0.82, 2.92)
Nelson-Marlborough	23.8	22.1	33.3	24.7	38.4	1.62 (0.83, 3.16)
Hawke's Bay	25.1	31.0	28.2	26.3	42.2	1.68 (0.94, 3.01)

Territorial Local Authorities

Two thirds of TLAs experienced breast cancer mortality rates that were lower in 2000 than in 1981 (however, only two TLAs experienced rates that were significantly lower in 2000 than in 1981) (Appendix 7 and 26).

Summary of Temporal Trends

A summary of the temporal trends in breast cancer mortality at the DHB and TLA level is illustrated in Table 6.17. It is evident that completely opposite trends occurred at the two geographic levels: two thirds of DHBs experienced an increase in breast cancer mortality rates, compared with one third of TLAs.

Table 6.17: Number of DHBs and TLAs that recorded a decrease or increase in breast cancer ASMRs between 1981 and 2000

Geographic level	Sex	Decreasing Rates	Increasing Rates
DHB	Female	7 (33%)	14 (64%)
TLA	Female	46 (66%)	24 (34%)

Geographic Inequalities

District Health Boards

The extent of geographic inequality in breast cancer mortality rates at the DHB level is shown in Figure 6.11. During the period, a general trend of increasing levels of inequality was observed up until 1993 where the rate ratios began to decrease. During the two decades, the rate ratio was always above 1.5, indicating that females who lived in the DHB with the highest mortality rate were at least 50% more likely to die from breast cancer than females who lived in the DHB with the lowest rate. The beta coefficient (0.0028) suggests that the level of geographic inequality remained stable during the period.

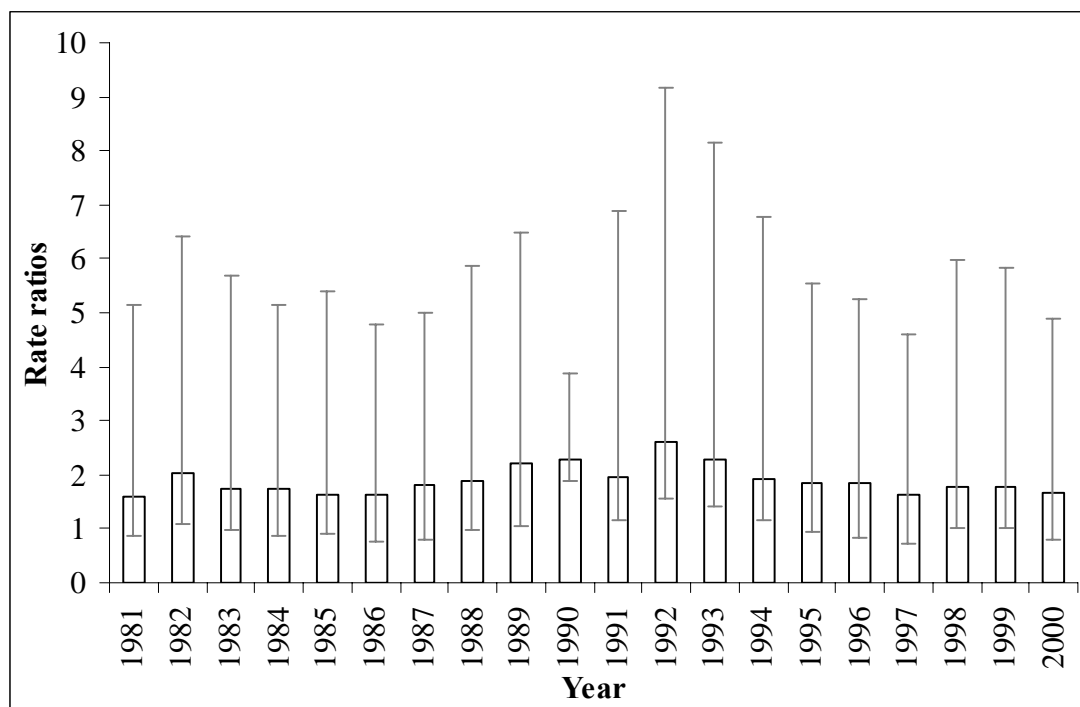


Figure 6.11: Geographic inequality between the highest and lowest breast cancer ASMRs per 100,000 at the DHB level, 1981-2000

Territorial Local Authorities

The difference between the TLA with the lowest breast cancer mortality rate and the TLA with the highest rate is shown in Figure 6.12. The level of geographic inequality declined throughout the early to mid 1980s. After 1987, the level of geographic inequality increased to a peak in 1990 where subsequent rate ratios remained relatively stable. Overall, there has been a significant decline in the level of geographic inequality for breast cancer mortality at the TLA level, decreasing from 4.5 in 1981 to 2.1 in 2000 (β : -0.086, significant at $p < 0.05$).

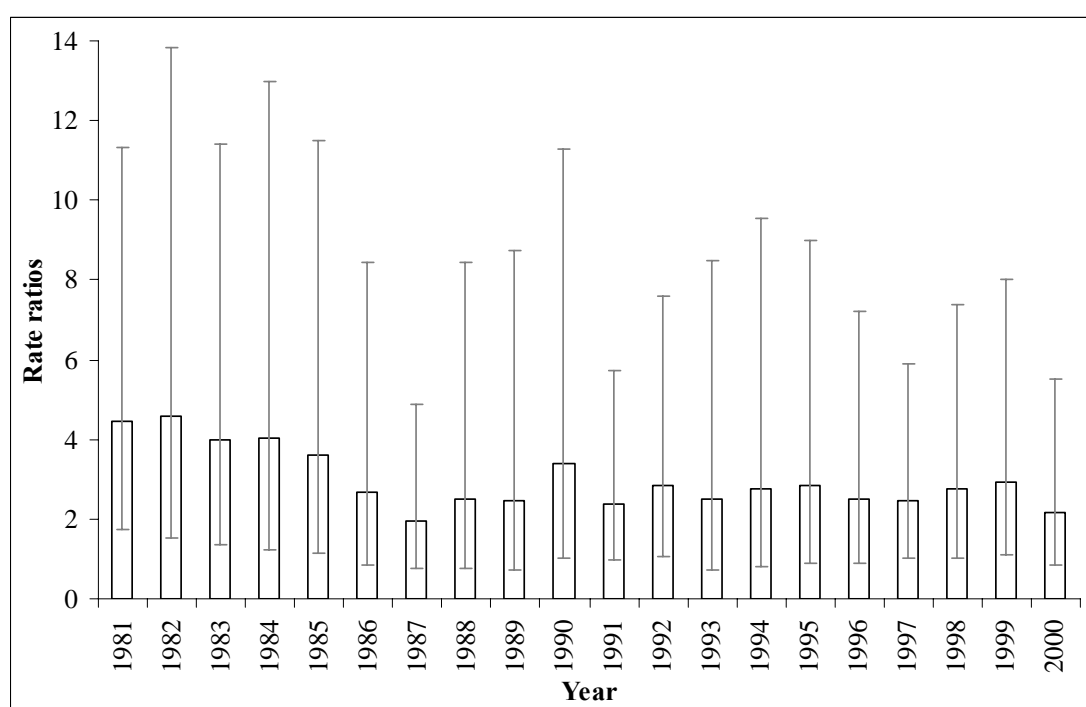


Figure 6.12: Geographic inequality between the highest and lowest breast cancer ASMRs per 100,000 at the DHB level, 1981-2000

6.8 Prostate cancer

Temporal Trends

District Health Boards

The geographic trends in prostate cancer mortality at the DHB level are shown in Table 6.18 (Appendix 27). The rate ratio for New Zealand indicates that males were 81% more likely to die from prostate cancer in 2000 than in 1981. This general increase in prostate cancer mortality rates is reflected in the individual DHB rates; all

DHBs experienced rates that were higher in 2000 than in 1981 (although only eight significant). It is evident that there is a large variation in the degree to which rates have increased: ranging from the Tairāwhiti DHB on 1.29 to the West Coast DHB on 4.29.

Table 6.18: Geographic inequality in prostate cancer ASMRs per 100,000 at the DHB level, 1981-2000

District Health Boards	Males					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
Tairāwhiti	31.2	14.2	29.3	27.1	40.3	1.29	(0.47, 3.58)
Canterbury	19.9	22.3	26.3	28.3	26.0	1.31	(0.87, 1.96)
Waitemata	20.0	22.5	22.5	23.4	28.0	1.40	(0.87, 2.26)
Wairarapa	19.2	16.9	37.5	25.8	27.9	1.46	(0.40, 5.27)
Capital and Coast	15.1	14.7	21.1	26.7	23.0	1.52	(0.79, 2.94)
Counties Manukau	19.0	22.7	21.7	27.0	29.7	1.57	(0.88, 2.79)
South Canterbury	18.5	17.7	28.8	26.5	29.7	1.60	(0.60, 4.26)
Auckland	19.0	20.8	25.8	24.9	30.9	1.63	(1.06, 2.50)
Nelson-Marlborough	18.6	19.9	19.2	20.9	32.5	1.74	(0.84, 3.62)
<i>New Zealand</i>	<i>17.0</i>	<i>20.3</i>	<i>24.1</i>	<i>26.2</i>	<i>30.7</i>	<i>1.81</i>	<i>(1.56, 2.09)</i>
MidCentral	14.3	20.1	29.2	29.0	26.7	1.87	(0.91, 3.82)
Northland	15.8	24.4	18.6	27.0	32.1	2.03	(0.95, 4.34)
Waikato	17.1	22.3	26.3	28.9	35.2	2.06	(1.24, 3.41)
Hutt Valley	18.0	20.9	23.9	31.5	38.7	2.15	(1.02, 4.54)
Otago	13.8	19.1	23.2	24.3	31.4	2.27	(1.20, 4.30)
Whanganui	15.3	13.7	20.6	28.0	34.9	2.28	(0.85, 6.15)
Southland	12.0	22.8	24.0	23.9	28.4	2.37	(0.91, 6.15)
Bay of Plenty	13.1	20.5	29.5	21.6	32.8	2.50	(1.18, 5.32)
Taranaki	12.8	20.6	20.8	25.8	33.3	2.60	(1.11, 6.05)
Hawke's Bay	11.7	15.0	18.4	20.1	30.7	2.62	(1.18, 5.85)
Lakes	13.1	9.1	21.7	42.0	37.3	2.84	(0.95, 8.49)
West Coast	11.6	30.8	26.0	27.4	50.0	4.29	(1.01, 18.33)

Territorial Local Authorities

Of the 69 TLA that rate ratios were calculated for, 65 of them recorded higher prostate cancer mortality rates in 2000 than in 1981 (significant for two TLAs) (Appendix 7 and 28).

Summary of Temporal Trends

A summary of temporal trends for prostate cancer mortality is shown in Table 6.19. The table convincingly shows that the New Zealand trend of increase prostate cancer mortality rates were mirrored at the regional level.

Table 6.19: Number of DHBs and TLAs that recorded a decrease or increase in prostate cancer ASMRs between 1981 and 2000

Geographic level	Decreasing Rates	Increasing Rates
DHB	0 (0%)	21 (100%)
TLA	4 (6%)	65 (94%)

Geographic Inequalities

District Health Boards

The extent of geographic inequalities in prostate cancer mortality at the DHB level is illustrated in Figure 6.13. The figure shows that the level of geographic inequality remained very relatively stable throughout the period (β : -0.0036, not significant at $p < 0.05$). During this period, males living in the DHB with the highest mortality rate were approximately 2 times more likely to die from prostate cancer than males living in the DHB with the lowest rate.

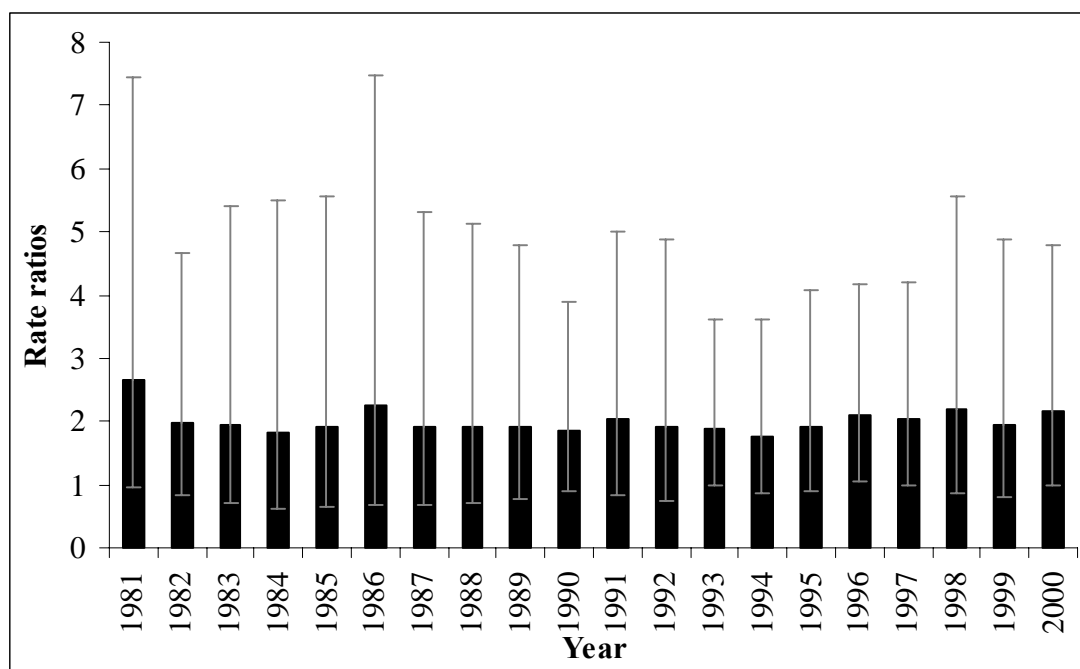


Figure 6.13: Geographic inequality in prostate cancer ASMRs at the DHB level, 1981-2000

Territorial Local Authorities

Geographic inequalities of prostate cancer mortality at the TLA level are shown in Figure 6.14. Similar to the DHB analysis, the level of geographic inequality remained relatively stable throughout the period, with the exception of an apparent peak in geographic inequalities in 1989. Again, similar to the DHB analysis, the level of inequality between the best and worst prostate cancer mortality areas was generally two fold and stable over time (β : 0.017, not significant).

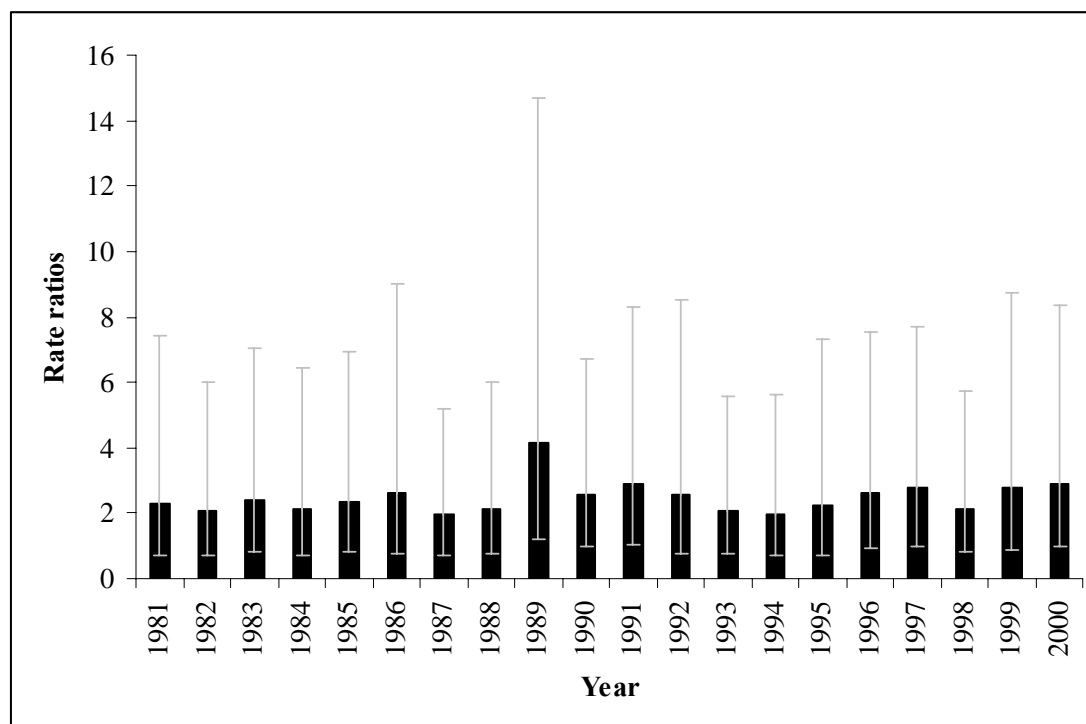


Figure 6.14: Geographic inequality in prostate cancer ASMRs at the DHB level, 1981-2000

6.9 Chronic obstructive pulmonary disease

Temporal Trends

District Health Boards

COPD mortality rates have significantly increased for New Zealand males between 1981 and 2000 (Table 6.20 Appendix 29). Closer inspection of the table reveals that mortality rates for COPD have increased in most, but not all, DHBs (significant increases in mortality rates for Auckland and Waikato DHBs). Only two DHBs experienced a decrease in COPD mortality between 1981 and 2000: the Capital and Coast DHB on 0.92 and the Otago on 0.95, however, results are not significant.

Table 6.20: Geographic inequality in male COPD ASMRs per 100,000 at the DHB level, 1981-2000

District Health Board	Males					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
Capital and Coast	42.4	36.3	34.8	34.4	39.0	0.92	(0.59, 1.43)
Otago	48.2	47.3	34.2	45.1	46.0	0.95	(0.63, 1.44)
Wairarapa	43.6	63.0	49.8	60.1	48.1	1.10	(0.45, 2.71)
Hutt Valley	44.1	41.2	35.7	60.1	50.4	1.14	(0.66, 1.96)
Hawke's Bay	35.0	38.2	36.4	37.2	41.3	1.18	(0.69, 2.00)
Tairāwhiti	42.2	42.7	34.2	66.0	50.3	1.19	(0.49, 2.92)
Canterbury	32.8	33.9	36.8	44.5	40.3	1.23	(0.89, 1.69)
West Coast	51.2	43.9	43.0	52.3	64.1	1.25	(0.52, 3.02)
South Canterbury	35.5	46.7	41.9	35.5	45.3	1.28	(0.61, 2.69)
<i>New Zealand</i>	<i>33.1</i>	<i>36.1</i>	<i>33.2</i>	<i>39.6</i>	<i>42.9</i>	<i>1.29</i>	<i>(1.16, 1.45)</i>
Whanganui	34.4	31.6	29.1	47.7	44.7	1.30	(0.63, 2.69)
Counties Manukau	29.7	34.5	31.9	38.4	40.0	1.35	(0.84, 2.15)
Southland	37.7	43.0	34.4	40.9	50.9	1.35	(0.74, 2.45)
Waitemata	22.1	27.0	21.9	34.0	31.1	1.40	(0.89, 2.21)
Nelson-Marlborough	31.9	35.4	35.8	28.6	44.9	1.41	(0.79, 2.51)
MidCentral	34.0	37.2	40.0	39.5	48.6	1.43	(0.88, 2.33)
Auckland	28.7	36.9	33.6	41.6	42.3	1.47	(1.03, 2.10)
Waikato	30.1	35.7	31.0	40.3	45.5	1.51	(1.02, 2.25)
Bay of Plenty	26.7	33.6	28.4	27.1	41.3	1.55	(0.89, 2.69)
Northland	29.4	29.1	33.2	33.8	45.6	1.55	(0.87, 2.76)
Taranaki	27.6	30.3	27.0	28.8	45.4	1.65	(0.88, 3.08)
Lakes	27.4	38.9	32.3	49.5	57.8	2.11	(0.96, 4.64)

Table 6.21 demonstrates that at the DHB level, New Zealand females experienced a significant increase in COPD mortality between 1981 and 2000 (Appendix 30). The magnitude of the female rate ratios is considerably higher when compared with their male counterparts. For all DHBs, COPD mortality rates were higher in 2000 than in 1981 (a significant increase in rates for 16 DHBs $p < 0.05$). The most dramatic increase in COPD mortality occurred in the Taranaki DHB: females experienced an eight fold increase in rates.

Table 6.21: Geographic inequalities in female COPD ASMRs per 100,000 at the DHB level, 1981-2000

District Health Board	Females					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
Wairarapa	16.2	18.8	22.4	33.6	30.7	1.89	(0.49, 7.26)
Tairāwhiti	19.2	17.5	24.7	28.3	38.7	2.02	(0.61, 6.65)
Southland	12.7	15.4	13.6	20.0	27.0	2.12	(0.84, 5.39)
Lakes	15.0	28.2	28.9	33.6	32.8	2.19	(0.77, 6.24)
Hutt Valley	17.2	19.6	30.8	35.8	38.4	2.23	(1.08, 4.59)
Auckland	11.8	16.0	18.1	32.8	31.6	2.69	(1.68, 4.29)
Northland	10.7	13.4	21.1	36.0	30.0	2.81	(1.06, 7.44)
Waitemata	10.3	10.3	16.0	27.0	31.5	3.06	(1.69, 5.53)
Capital and Coast	9.5	17.7	20.9	25.8	29.7	3.13	(1.53, 6.42)
West Coast	11.9	21.8	30.2	24.3	38.6	3.23	(0.66, 15.83)
<i>New Zealand</i>	<i>10.5</i>	<i>15.1</i>	<i>20.0</i>	<i>27.3</i>	<i>34.3</i>	<i>3.26</i>	<i>(2.75, 3.87)</i>
Canterbury	9.5	12.1	19.4	27.9	31.5	3.30	(2.02, 5.40)
Waikato	12.5	12.5	22.1	23.7	43.1	3.45	(1.95, 6.10)
Nelson-Marlborough	9.3	12.4	15.1	16.4	32.8	3.54	(1.35, 9.30)
Hawke's Bay	10.4	20.6	17.2	33.0	37.9	3.65	(1.63, 8.16)
Otago	11.0	14.1	17.6	32.4	41.1	3.72	(1.95, 7.10)
Bay of Plenty	8.7	17.3	19.9	21.2	34.8	4.01	(1.53, 10.53)
South Canterbury	7.6	10.6	13.5	16.2	35.3	4.62	(1.24, 17.19)
Counties Manukau	7.4	17.9	24.5	26.5	34.7	4.67	(2.08, 10.52)
Whanganui	8.0	15.9	19.7	37.7	37.7	4.72	(1.36, 16.33)
MidCentral	6.6	13.8	20.6	25.5	33.4	5.09	(1.97, 13.13)
Taranaki	4.4	12.8	20.5	12.6	38.1	8.70	(2.27, 33.39)

Territorial Local Authorities

One third of TLAs experienced a decrease in male COPD mortality rates; the TLA making the most improvement was Central Hawke's Bay District which recorded a 62% decrease in mortality rates (Appendix 7 and 31). The remaining two thirds of TLAs experienced an increase in COPD mortality rates between 1981 and 2000 (however, significant only for Auckland City TLA). In contrast to the one third of TLAs that recorded an improvement on the 1981 male mortality rates, only two TLAs experienced a decrease in female COPD mortality (Appendix 7 and 32). 12 TLAs recorded female mortality rates that were significantly higher in 2000 compared with 1981.

Summary of Temporal Trends

A summary of temporal trends between 1981 and 2000 is shown in Table 6.22. It can be concluded that although a small number of TLAs and DHBs experienced a decrease in COPD mortality rates, the majority experienced an increase in COPD

mortality between 1981 and 2000. At both levels of geography, a greater percentage of females had an increase in rates compared with males.

Table 6.22: Number of DHBs and TLAs that recorded a decrease or increase in COPD ASMRs between 1981 and 2000

Geographic level	Sex	Decreasing Rates	Increasing Rates
DHB	Males	2 (10%)	19 (90%)
	Females	0 (0%)	21 (100%)
TLA	Males	23 (32%)	50 (68%)
	Females	2 (3%)	58 (97%)

Geographic Inequalities

District Health Boards

The degree of inequalities in COPD mortality at the DHB level is shown in Figure 6.15. For males and females, the peak polarisation occurred in the early 1980s and mid 1990s; with mortality rates being approximately two and a half times greater in the worst areas compared with the best areas. Although the rate ratios declined over time for both males and females, the decrease was only significant for males (males: β -0.0268, $p < 0.05$, females: β -0.0241, not significant).

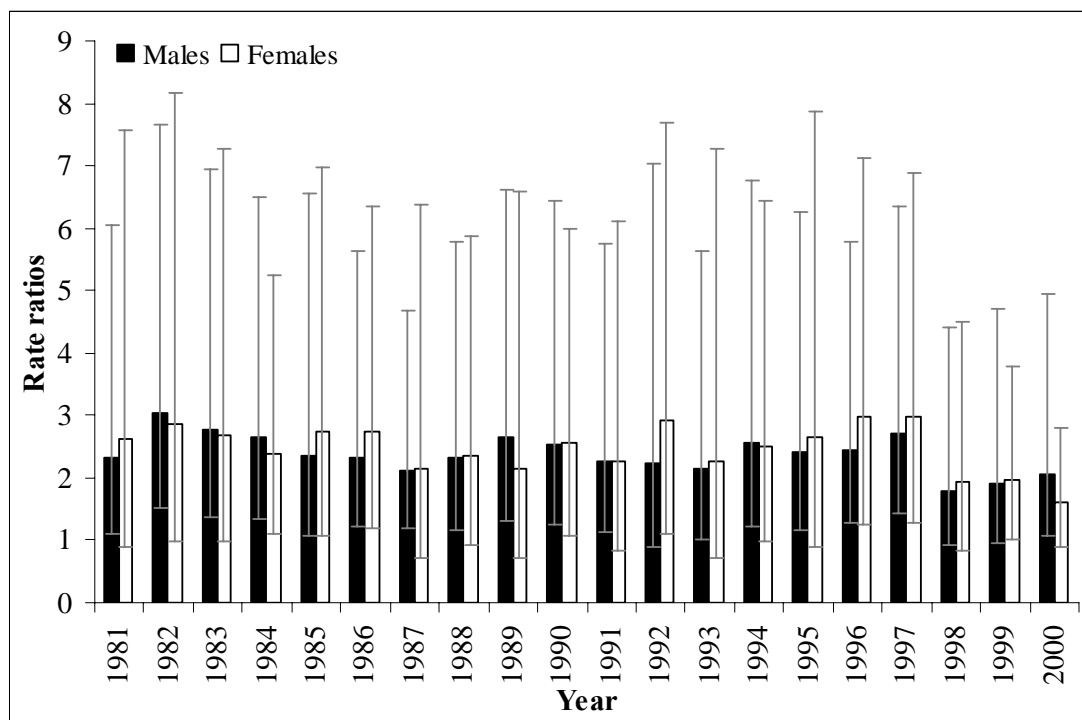


Figure 6.15: Geographic inequality between the highest and lowest COPD ASMRs at the DHB level, 1981-2000

Territorial Local Authorities

The degree of COPD mortality inequalities between TLAs can be seen in Figure 6.16. There is a general trend of increasing inequalities throughout the 1980s, peaking for males in 1985, and in 1988 for females. After this peak, the level of geographic inequality gradually decreased for the remainder of the period. At all times, the rate ratio was above 2.5, this is similar to the DHB analysis. Overall, the level of geographic inequality in COPD mortality at the TLA level remained stable (males: β - 0.091, β 0.013, not significant).

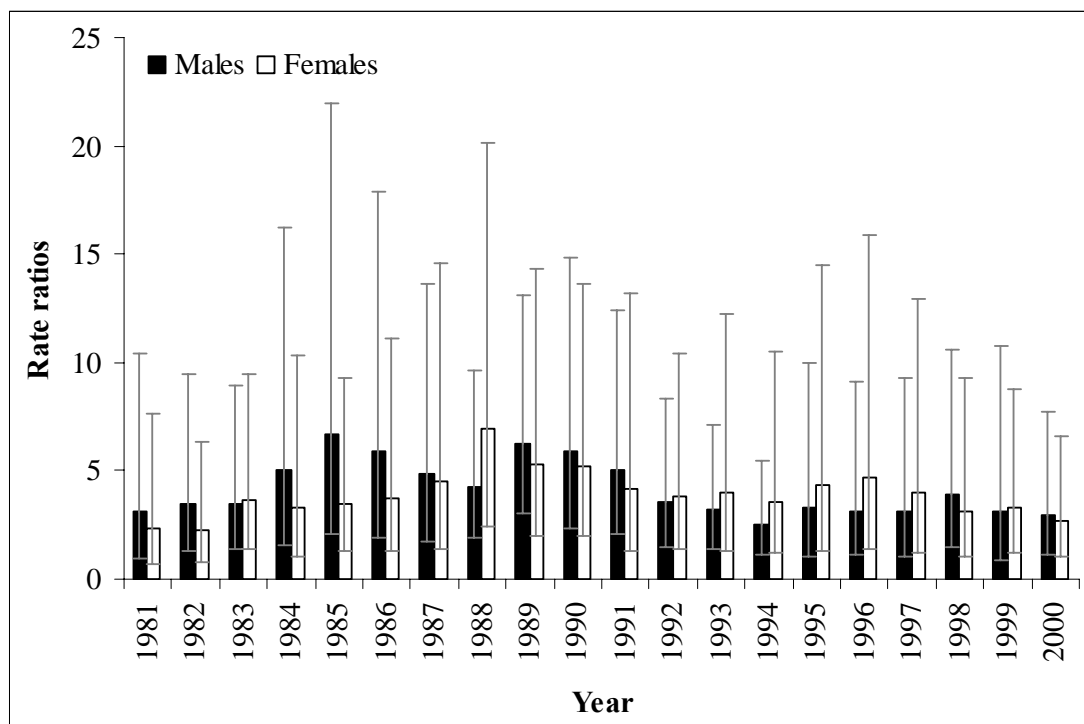


Figure 6.16: Geographic inequality between the highest and lowest COPD ASMRs at the DHB level, 1981-2000

6.10 Cerebrovascular disease

Temporal Trends

District Health Boards

The geographic variation in male cerebrovascular disease (CVD) mortality rates is shown in Table 6.23 (Appendix 33). For males living in New Zealand, CVD mortality rates decreased by 19% between 1981 and 2000. The table shows that the majority of DHBs experienced lower CVD mortality rates in 2000 compared with 1981, however, only the Canterbury and Otago DHBs were significant.

Table 6.23: Geographic inequality in male CVD ASMRs per 100,000 at the DHB level, 1981-2000

District Health Board	Males					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
Wairarapa	100.2	86.1	80.7	54.3	47.7	0.48	(0.23, 1.00)
Northland	73.2	63.2	52.3	43.2	47.1	0.64	(0.41, 1.00)
West Coast	72.5	83.6	36.7	49.1	47.2	0.65	(0.27, 1.60)
Tairāwhiti	88.3	54.8	40.7	61.7	61.2	0.69	(0.34, 1.41)
South Canterbury	69.3	62.3	61.4	56.0	48.0	0.69	(0.37, 1.29)
Otago	78.2	69.2	55.2	56.1	54.3	0.69	(0.49, 0.99)
Hutt Valley	66.7	56.8	56.0	60.7	50.4	0.76	(0.47, 1.22)
Whanganui	57.9	56.4	70.3	47.5	44.3	0.77	(0.40, 1.45)
Canterbury	74.5	63.3	58.4	49.5	57.4	0.77	(0.61, 0.98)
Bay of Plenty	65.5	61.0	49.1	46.4	51.5	0.79	(0.52, 1.18)
<i>New Zealand</i>	<i>70.1</i>	<i>62.8</i>	<i>56.5</i>	<i>50.9</i>	<i>56.9</i>	<i>0.81</i>	<i>(0.75, 0.88)</i>
Auckland	78.4	78.8	58.8	59.6	64.0	0.82	(0.64, 1.05)
Waitemata	57.5	49.9	51.9	43.3	48.2	0.84	(0.62, 1.14)
Counties Manukau	65.3	51.2	53.6	47.7	55.4	0.85	(0.60, 1.20)
Hawke's Bay	80.5	54.8	59.4	52.6	70.3	0.87	(0.60, 1.27)
Waikato	70.2	67.9	58.9	49.5	61.9	0.88	(0.66, 1.18)
Nelson-Marlborough	61.9	51.0	45.2	44.9	55.8	0.90	(0.57, 1.42)
MidCentral	71.7	72.9	63.0	63.1	65.9	0.92	(0.63, 1.33)
Capital and Coast	65.3	54.0	54.9	43.6	60.4	0.93	(0.65, 1.32)
Lakes	74.2	58.8	58.6	60.9	69.6	0.94	(0.54, 1.64)
Taranaki	58.8	68.4	57.9	52.5	55.9	0.95	(0.59, 1.54)
Southland	55.7	58.7	61.5	51.6	66.5	1.19	(0.72, 1.97)

The rate ratio for New Zealand female CVD mortality between 1981 and 2000 was 0.85, being fractionally higher than the male equivalent of 0.81, but lower than the female all-cause equivalent of 0.95 (Table 6.24 Appendix 34). When compared with males, there was a greater number of DHBs that recorded an increase in CVD mortality; however, the results were not significant.

Table 6.24: Geographic inequality in female CVD ASMRs per 100,000 at the DHB level, 1981-2000

District Health Board	Females					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
Wairarapa	154.5	113.1	94.9	108.5	75.7	0.49	(0.27, 0.88)
West Coast	126.6	112.5	81.3	79.0	66.1	0.52	(0.25, 1.10)
South Canterbury	104.6	91.7	91.3	77.4	66.8	0.64	(0.39, 1.06)
Tairāwhiti	120.9	78.5	64.8	93.2	80.6	0.67	(0.36, 1.23)
Hutt Valley	98.8	104.0	80.4	95.0	76.6	0.78	(0.53, 1.13)
Counties Manukau	96.2	94.7	84.3	70.5	75.1	0.78	(0.58, 1.05)
Canterbury	108.0	92.4	91.4	85.4	84.4	0.78	(0.65, 0.94)
Auckland	119.3	106.8	86.8	88.8	96.4	0.81	(0.67, 0.97)
Waitemata	91.4	75.1	79.1	75.8	74.1	0.81	(0.63, 1.04)
Northland	90.2	82.7	84.6	76.4	74.1	0.82	(0.54, 1.24)
Waikato	100.4	90.7	82.5	74.5	84.4	0.84	(0.65, 1.09)
<i>New Zealand</i>	<i>101.2</i>	<i>92.9</i>	<i>84.3</i>	<i>78.8</i>	<i>85.6</i>	<i>0.85</i>	<i>(0.79, 0.91)</i>
Capital and Coast	90.2	99.0	80.4	74.0	82.6	0.92	(0.69, 1.22)
Otago	102.9	86.0	87.5	68.3	97.2	0.94	(0.72, 1.23)
MidCentral	91.4	99.2	92.0	91.3	87.7	0.96	(0.70, 1.32)
Hawke's Bay	92.8	87.3	77.7	67.3	89.8	0.97	(0.69, 1.35)
Taranaki	88.9	95.2	67.3	67.1	87.0	0.98	(0.66, 1.45)
Nelson-Marlborough	101.9	73.0	81.2	73.8	103.2	1.01	(0.71, 1.44)
Southland	90.6	93.2	86.8	87.1	92.5	1.02	(0.68, 1.53)
Bay of Plenty	81.1	79.8	72.9	65.3	86.7	1.07	(0.74, 1.54)
Lakes	81.2	104.6	89.0	68.2	94.2	1.16	(0.69, 1.96)
Whanganui	86.0	95.4	96.5	91.9	103.9	1.21	(0.76, 1.91)

Territorial Local Authorities

Sixty TLAs recorded a decrease in male CVD mortality rates, with forty five of those occurring below the New Zealand rate ratio of 0.81 (only Christchurch City TLA experienced a significant decrease in rates) (Appendix 7 and 35). When compared with male CVD at the TLA level, a similar number of TLAs experienced a decrease in female CVD mortality rates; with 46 of them occurring below the New Zealand CVD rate ratio of 0.85 (only three had a significant decrease in rates between 1981 and 2000) (Appendix 7 and 36). Of the 13 TLAs that had rate ratios greater than 1, Queenstown-Lakes was the highest on 3.27, however, none of these results were significant.

Summary of Temporal Trends

A summary of the temporal variation in CVD mortality rates between 1981 and 2000 is shown in Table 6.25. The table indicates that the majority of DHBs and TLAs experienced a decrease in CVD mortality rates. However, this is not recorded equally

by the two sexes; a greater percentage of DHBs recorded a decrease in mortality rates for males. At the TLA level the difference was negligible.

Table 6.25: Number of DHBs and TLAs that recorded a decrease or increase in CVD ASMRs between 1981 and 2000

Geographic level	Sex	Decreasing Rates	Increasing Rates
DHB	Male	20 (95%)	1 (5%)
	Female	16 (76%)	5 (24%)
TLA	Male	60 (83%)	12 (17%)
	Female	58 (82%)	13 (18%)

Geographic Inequalities

District Health Boards

The geographic inequalities in CVD mortality rates at the DHB level are illustrated in Figure 6.17. For males, during the early 1980s there was a general decrease in inequality, followed by an increase during the late 1980s and early 1990s. The greatest level of polarisation occurred in 1992. After this time, the levels of inequality gradually decreased, and remained relatively stable. The trend for females also followed a U shape trend during the 1980s, but with a smaller peak than that observed for males. In general, the level of inequality was slightly larger for males than for females. During this twenty year period, the rate ratio for males and females was generally above 1.5, indicating that people who lived in the DHB with the highest mortality rate were 50% more likely to die from CVD than people who lived in the DHB with the lowest rate. Overall, the level of geographic inequality decreased for males and females but was not statistically significant (males β : -0.0094, females β : -0.0112).

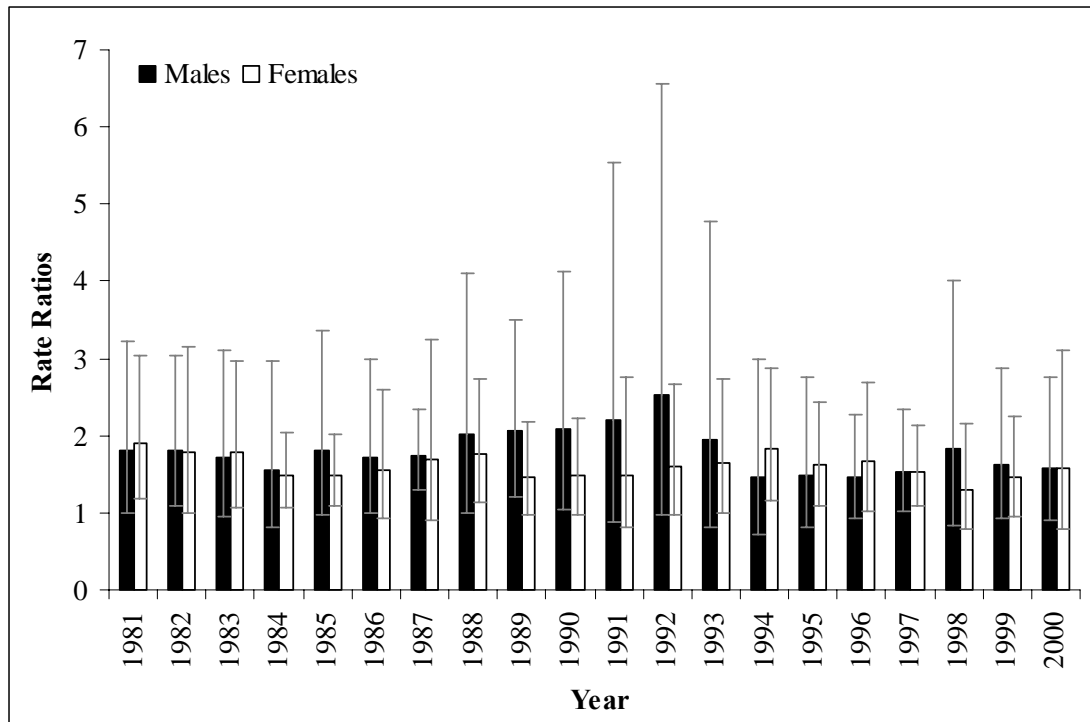


Figure 6.17: Geographic inequality between the DHB with the highest and the lowest CVD ASMR, 1981-2000

Figure 6.18 demonstrates the level of geographic inequality in CVD mortality rates at the TLA level. In general, the level of inequality among males was greater than that shown for females, this is particularly evident in the late 1990s where inequality decreased for females, and increased for males. At any point in time, the rate ratio for both males and females is greater than 2.5, indicating that people who lived in the worst TLA were at least two and a half times more likely to die from CVD than those people who lived in the best TLA. Overall the level of geographic inequality for CVD remained stable for males (β -0.038, not significant) and decreased for females (β -0.053).

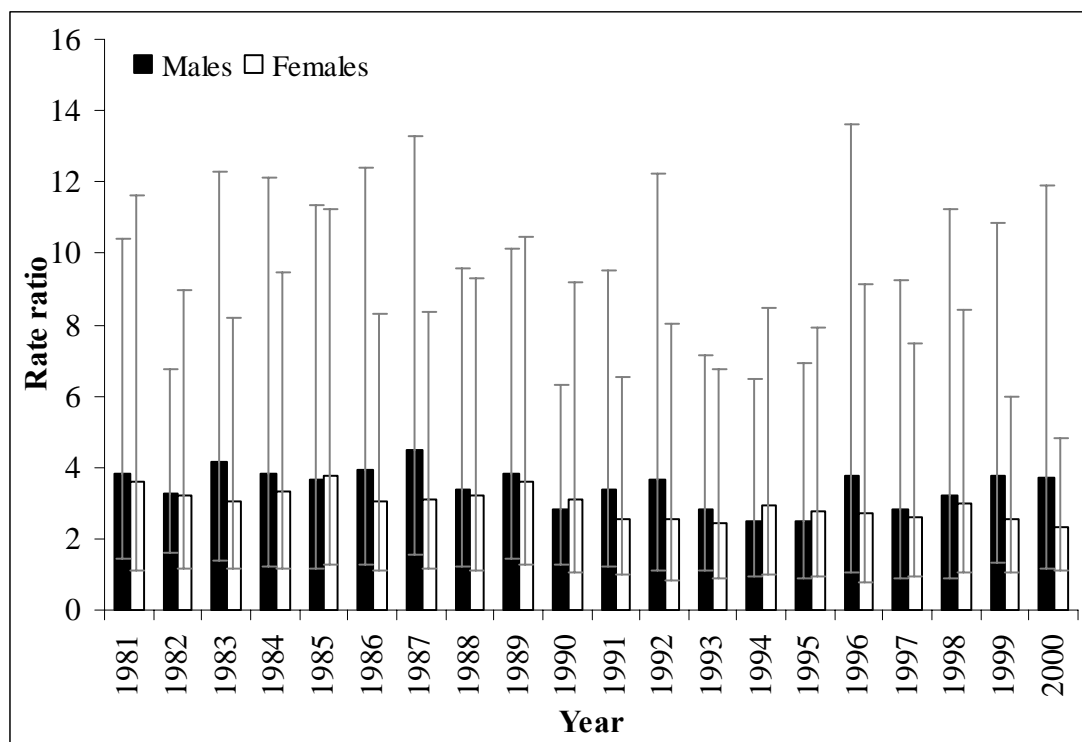


Figure 6.18: Geographic inequality between the TLA with the highest and the lowest CVD ASMR, 1981-2000

6.11 *Diabetes mellitus*

Temporal Trends

District Health Boards

Table 6.26 illustrates the significant increase in male diabetes mellitus mortality rates between 1981 and 2000 (Appendix 37). On average, males in New Zealand were 88% more likely to die of diabetes mellitus in 2000 than they were in 1981. This is considerably higher than the male all-cause decrease of 12%. The table shows that all DHBs experienced an increase in diabetes mellitus mortality rates, with rate ratios ranging from 1.26 for Nelson-Marlborough DHB to 4.71 for Whanganui DHB (only three DHBs had rates in 2000 that were significantly different than in 1981).

Table 6.26: Trends in male diabetes mellitus ASMRs per 100,000 at the DHB level, 1981-2000

District Health Boards	Males					Ratio 2000:1981	
	1981	1986	1991	1996	2000	(95% CI)	
Nelson-Marlborough	9.1	9.3	8.9	7.8	11.5	1.26	(0.41, 3.86)
Hutt Valley	13.8	12.8	9.8	13.8	18.9	1.37	(0.55, 3.39)
Canterbury	10.0	10.4	11.2	12.3	14.4	1.44	(0.82, 2.53)
Counties Manukau	16.3	13.5	14.9	18.3	26.4	1.61	(0.90, 2.90)
Auckland	12.5	9.9	10.6	13.0	20.5	1.64	(0.96, 2.82)
Bay of Plenty	12.7	11.4	13.6	15.9	20.9	1.64	(0.73, 3.71)
South Canterbury	12.1	16.0	13.8	17.9	20.5	1.69	(0.50, 5.79)
Otago	11.0	12.8	8.8	11.6	18.8	1.71	(0.80, 3.64)
Wairarapa	14.4	7.4	26.6	19.0	24.8	1.72	(0.40, 7.39)
Waikato	13.1	14.1	12.1	13.0	23.1	1.77	(0.99, 3.16)
Waitemata	6.5	8.2	9.1	9.5	12.0	1.84	(0.84, 4.03)
<i>New Zealand</i>	<i>11.3</i>	<i>11.1</i>	<i>11.6</i>	<i>14.6</i>	<i>21.2</i>	<i>1.88</i>	<i>(1.57, 2.24)</i>
Hawke's Bay	10.4	11.5	12.2	18.7	21.7	2.08	(0.86, 5.05)
Tairāwhiti	17.2	17.3	9.7	27.1	37.1	2.15	(0.62, 7.48)
MidCentral	9.9	6.3	10.5	13.1	22.0	2.23	(0.96, 5.20)
Capital and Coast	10.0	10.6	6.2	18.7	23.1	2.31	(1.09, 4.87)
Southland	9.8	10.2	8.3	10.4	22.7	2.31	(0.81, 6.59)
Northland	15.0	13.7	15.8	26.2	35.3	2.34	(1.09, 5.02)
Taranaki	9.3	14.0	19.8	11.6	22.4	2.42	(0.86, 6.79)
West Coast	7.1	6.9	13.9	9.3	19.1	2.70	(0.36, 20.08)
Lakes	12.6	9.5	16.0	24.2	36.4	2.89	(0.97, 8.64)
Whanganui	8.2	11.8	13.9	20.1	38.8	4.71	(1.35, 16.39)

The geographic trends in female diabetes mellitus mortality rates between 1981 and 2000 are shown in Table 6.27 (Appendix 38). The rate ratio indicates that females were 63% more likely to die from diabetes mellitus in 2000 than they were in 1981. The rate ratios indicate that all DHBs recorded greater diabetes mellitus rates in 2000 than in 1981 (only three DHBs experienced significantly different rates in 2000 compared with 1981). The rate ratios range from 1.13 for Tairāwhiti to 2.46 for Northland.

Table 6.27: Trends in female diabetes mellitus ASMRs per 100,000 at the DHB level, 1981-2000

District Health Boards	Females					Ratio 2000:1981
	1981	1986	1991	1996	2000	(95% CI)
Tairāwhiti	31.4	10.7	20.2	25.5	35.4	1.13 (0.40, 3.19)
Waitemata	9.4	7.0	7.0	8.4	11.4	1.21 (0.60, 2.46)
Nelson-Marlborough	10.5	8.8	10.6	11.5	13.6	1.29 (0.46, 3.65)
Canterbury	11.9	12.3	8.5	8.2	15.8	1.32 (0.80, 2.18)
Waikato	15.6	13.8	14.0	18.2	20.7	1.33 (0.74, 2.39)
Southland	13.1	13.5	11.7	15.1	17.9	1.37 (0.50, 3.74)
Counties Manukau	16.0	13.0	12.2	21.3	22.2	1.38 (0.73, 2.61)
Lakes	19.2	11.6	18.8	14.5	28.1	1.47 (0.53, 4.06)
Bay of Plenty	10.9	10.3	14.4	14.5	16.9	1.56 (0.62, 3.87)
West Coast	16.4	20.1	23.2	14.3	25.7	1.56 (0.33, 7.36)
Otago	12.0	11.7	9.3	8.7	19.0	1.57 (0.78, 3.17)
Hutt Valley	13.0	10.5	10.8	19.5	20.7	1.59 (0.66, 3.83)
<i>New Zealand</i>	<i>11.8</i>	<i>11.2</i>	<i>11.1</i>	<i>14.2</i>	<i>19.2</i>	<i>1.63 (1.36, 1.94)</i>
MidCentral	10.8	11.1	10.3	16.5	17.7	1.63 (0.70, 3.79)
South Canterbury	11.8	17.3	9.4	12.7	19.4	1.64 (0.49, 5.56)
Whanganui	15.3	9.8	17.0	13.4	26.8	1.75 (0.63, 4.88)
Hawke's Bay	12.0	9.9	8.9	16.9	21.2	1.77 (0.77, 4.06)
Wairarapa	9.1	8.5	16.6	9.2	16.9	1.86 (0.31, 11.36)
Taranaki	11.3	9.2	8.3	17.3	25.5	2.26 (0.88, 5.79)
Auckland	7.5	11.5	10.8	10.6	17.4	2.32 (1.26, 4.28)
Capital and Coast	8.2	9.0	7.9	16.6	19.4	2.38 (1.07, 5.30)
Northland	14.3	13.1	18.6	28.9	35.2	2.46 (1.08, 5.57)

Territorial Local Authorities

The majority of TLAs recorded mortality rates that were higher in 2000 than in 1981 for both sexes, however, few of the increases were significant (males: two TLAs, females: one TLA) (Appendix 7, 39 and 40).

Summary of Temporal Trends

Table 6.28 summarises the trends in diabetes mellitus mortality rates at the DHB and TLA level. The table convincingly shows that the majority of TLAs and DHBs experienced rates in 2000 that were greater than those experienced in 1981.

Table 6.28: Number of DHBs and TLAs that recorded a decrease or increase in diabetes mellitus ASMRs between 1981 and 2000

Geographic level	Sex	Decreasing Rates	Increasing Rates
DHB	Males		21 (100%)
	Females		21 (100%)
TLA	Males	10 (15%)	57 (85%)
	Females	18 (26%)	50 (74%)

Geographic Inequalities

District Health Boards

The geographic inequalities in diabetes mellitus mortality at the DHB level is shown in Figure 6.19. The graph demonstrates that among females, the level of geographic inequality was relatively high at the beginning of the 1980s. This was followed by a general decrease in the level of inequality through to the mid 1980s, where the trend reversed and inequalities started to increase. After a peak in inequalities in the early 1990s, the rate ratio remained at a relatively stable and high level. The net effect of these temporal trends was a stable level of geographic inequality for females (β 0.081, not significant). Among males, a general trend can be observed of widening polarisation in diabetes mortality (β 0.052, $p < 0.05$).

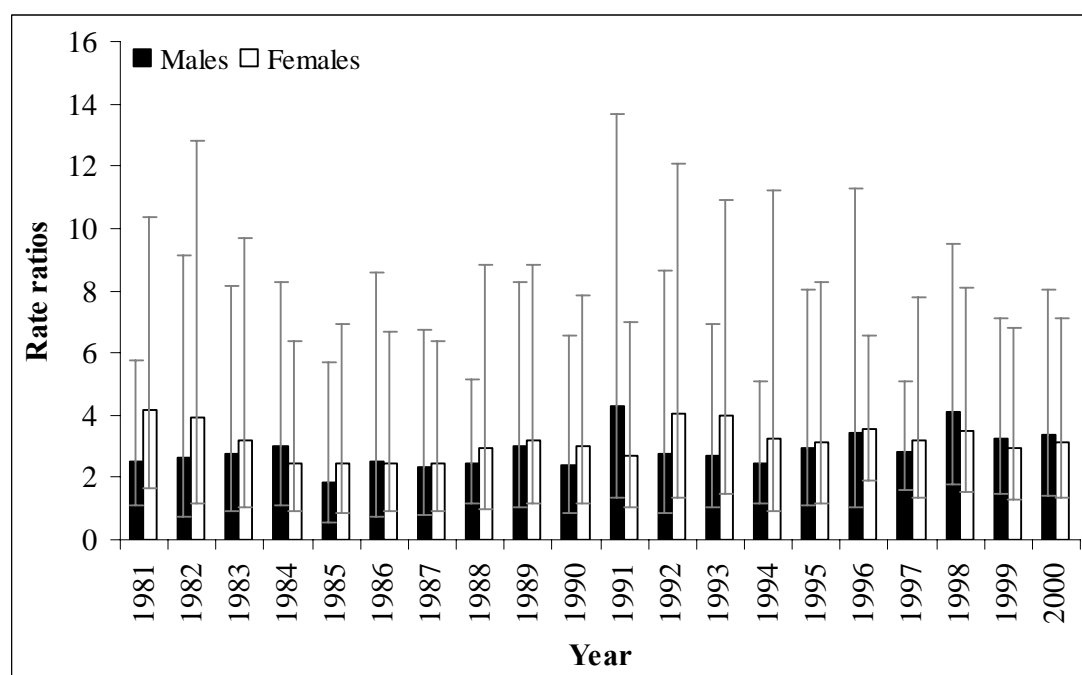


Figure 6.19: Geographic inequalities between the highest and lowest diabetes mellitus ASMRs per 100,000 at the DHB level, 1981-2000

Territorial Local Authorities

The geographic inequalities in diabetes mellitus mortality at the TLA level is shown in Figure 6.20. Similar to the DHB analysis, the level of geographic inequality among females generally decreased throughout the mid 1980s, with a reversal in this trend in

the late 1980s. The rate ratios remained relatively stable throughout the mid 1990s, with levels of inequality increasing and remaining at relatively high levels during the late 1990s. For males at the TLA level, a general trend of increasing levels of inequality was observed; this was very similar to that shown for DHBs. Overall, there was a significant increase in geographic inequalities throughout the period (males: β 0.22, females: β 0.14), with females generally noting a higher level of inequality when compared with their male counterparts.

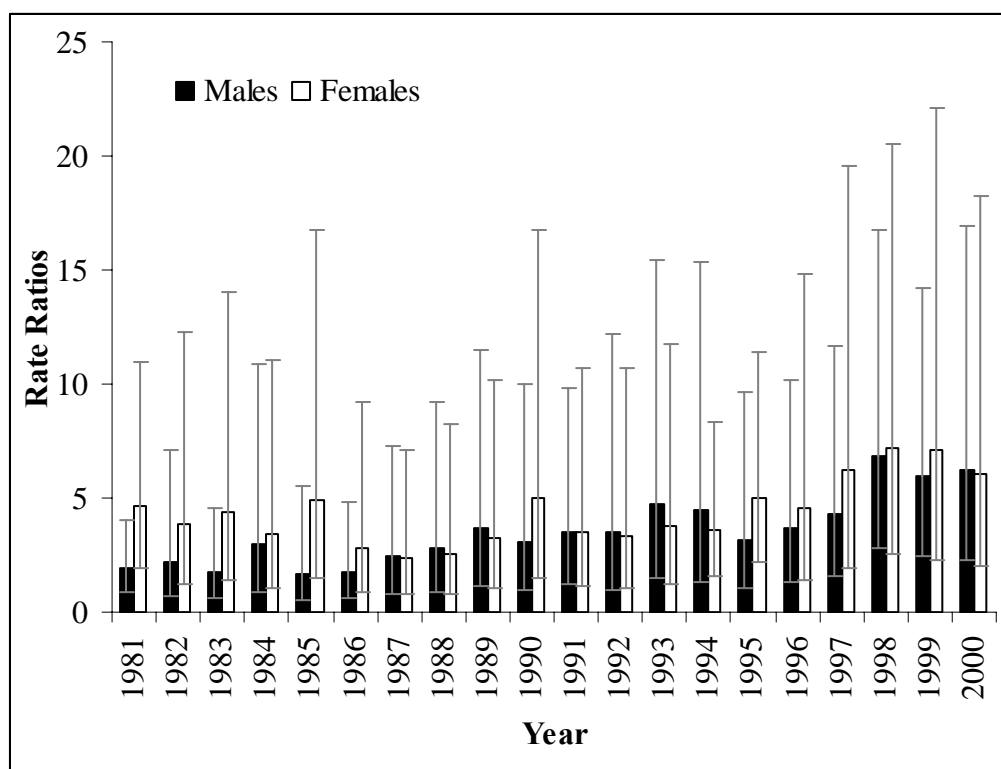


Figure 6.20: Geographic inequality between the highest and lowest diabetes mellitus ASMRs per 100,000 at the TLA level, 1981-2000

6.12 Summary

This section has presented information with the aim of identifying whether or not mortality has become geographically polarised between 1981 and 2000. A table summarising the specific causes of mortality and the degree of polarisation is shown below (Table 6.29). When examining the increase or decrease polarisation columns, it becomes apparent that there is a general agreement between the geographic level and sex, for each specific cause of mortality. The beta coefficient summarises the linear trend in mortality during the time period. The beta coefficient is usually larger

at the TLA level; this is not surprising given the larger levels of inequality usually experienced when smaller geographic units are used (a lot of variation in mortality rates is masked at the DHB level). Although the negative and positive beta coefficients suggest that the level of geographic polarisation of mortality is either decreasing or increasing over time, respectively, it can be seen that the majority of associations are not significant. Significant narrowing of the level of geographic polarisation was observed for: female all-cause mortality at the DHB level, breast cancer mortality at the TLA level, male COPD mortality at the DHB level, and female CVD mortality at the TLA level. The only cause of death that was associated with a significant widening of geographic polarisation was diabetes mellitus. It can be concluded that geographic inequality remained stable between 1981 and 2000 for the majority of cause-specific mortalities

Table 6.29: Summary of geographic polarisation (either increasing or decreasing) of mortality between 1981 and 2000

Cause of mortality	Geographic level	Sex	↑ polarisation beta coefficient	↓ polarisation beta coefficient
All-cause	DHB	Male	0.003	
		Female		-0.012 *
	TLA	Male		-0.047
		Female		-0.050
IHD	DHB	Male	0.006	
		Female		-0.009
	TLA	Male		-0.015
		Female		-0.005
Cancer	DHB	Male	0.002	
		Female	0.007	
	TLA	Male		-0.006
		Female		-0.025
Lung cancer	DHB	Male		-0.007
		Female	0.008	
	TLA	Male		-0.051
		Female	0.027	
Colorectal cancer	DHB	Male	0.002	
		Female	0.003	
	TLA	Male		-0.004
		Female	0.029	
Breast cancer	DHB	Female	0.003	
	TLA	Female		-0.086 *
Prostate cancer	DHB	Male		-0.004
	TLA	Male	0.017	
COPD	DHB	Male		-0.027 *
		Female		-0.024
	TLA	Male		-0.091
		Female	0.013	
CVD	DHB	Male		-0.009
		Female		-0.011
	TLA	Male		-0.038
		Female		-0.053 *
Diabetes mellitus	DHB	Male	0.081	
		Female	0.052 *	
	TLA	Male	0.220 *	
		Female	0.140 *	

* p<0.05

CHAPTER SEVEN

To What Extent does Deprivation and Population Change Influence Geographic Inequalities in Mortality?

7.1 Introduction

An important integral component of research concerning geographic health inequalities is to identify possible causes for the observed variations in health status. As mentioned in Chapter Two an important question is whether the observed geographical inequalities are a reflection of the composition of the population in different areas, or additionally, reflect something to do with the physical and social context in which they live. Two factors that have been identified in the literature as being possible determinants for the geographic inequalities in health are population change and area deprivation status. These two factors are analysed in the context of this thesis.

7.2 Absolute deprivation

7.2.1 All-cause

The difference in all-cause mortality rates in absolute terms (standardised rate difference (SRD)) between the most deprived DHB compared with least deprived DHB increased by 26% for males between 1981 and 2000, and by 17% for females (Table 7.1). At the TLA level, the difference in mortality rates between the most deprived and least deprived TLAs decreased by 30% for males, and increased by 46% for females.

Table 7.1: SRD per 100,000 for all-cause mortality, 1981-2000

Geographic level	Sex	Standardised rate difference per 100,000				
		1981	1986	1991	1996	2000
DHB	Male	260	212	170	320	330
	Female	212	154	150	238	248
TLA	Male	594	690	493	658	413
	Female	381	556	526	351	557

When the relationship between deprivation and mortality rates for all areas are analysed (as opposed to the SRD that just takes into account the two extremes of deprivation), a consistent negative slope index of inequality (SII) is observed (Table 7.2). This indicates that those people who lived in the more deprived areas had all-cause mortality rates greater than those experienced by people who lived in the less deprived areas. The mortality gap between the more and less deprived areas increased during the period for males (by 85%) and females (by 21%). A similar increase in the negative SII was observed at the TLA level for males (by 60%). For females the SII remained relatively constant and negative. In 1981 and 1986, the mortality gap was greater for females compared with males. For the remainder of the period, the gap between the more and less deprived areas was greater for males than females.

Table 7.2: SII per 100,000 for all-cause mortality, 1981-2000

Geographic level	Sex	Slope index of inequality per 100,000				
		1981	1986	1991	1996	2000
DHB	Male	-90	-104	-97	-107	-168
	Female	-91	-116	-82	-94	-110
TLA	Male	-135	-144	-170	-146	-216
	Female	-142	-165	-126	-138	-136

Figure 7.1 and Figure 7.2 illustrate the significant inverse relationship between deprivation rank and male all-cause mortality rates at the DHB (correlation = -0.77) and TLA level (correlation = 0.74), respectively, for 2000.

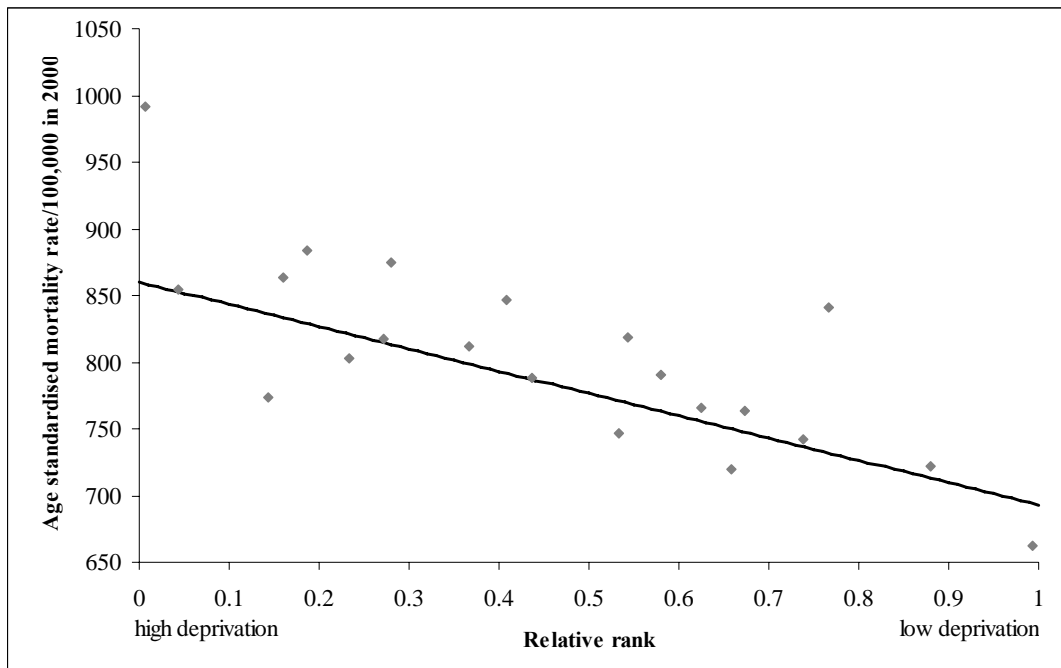


Figure 7.1: Relationship between relative deprivation rank and male all-cause ASMRs at the DHB level for 2000

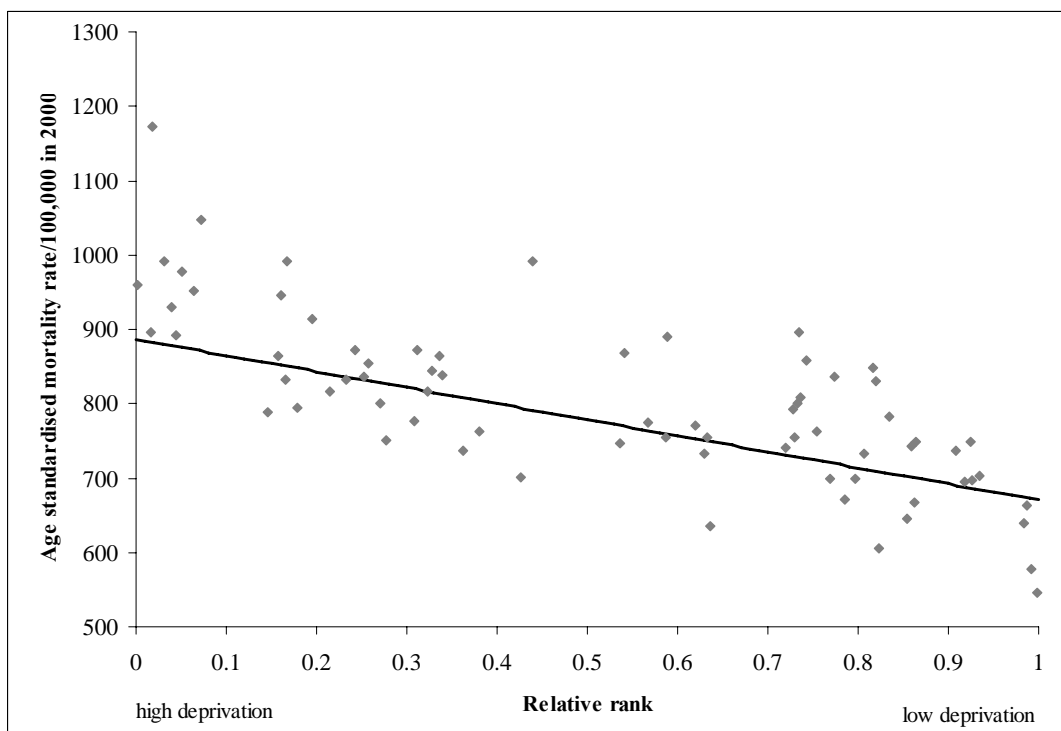


Figure 7.2: Relationship between relative deprivation rank and male all-cause ASMRs at the TLA level for 2000

7.2.2 Ischaemic heart disease

The level of inequality between the IHD mortality rate in most deprived compared with the least deprived DHB increased both for males and females between 1981 and 2000 (Table 7.3). Of particular interest, was the negative SRD for females in 1981 (indicating females in the least deprived DHB had a higher IHD mortality rate than females in the most deprived DHB). For the remainder of the period the SRD reversed to become positive, which increased consistently in magnitude. The greatest level of inequality for both males and females occurred in 2000. At the TLA level, the SRD values were considerably more variable and generally higher than their DHB counterparts. A trend of decreasing SRD for males and increasing SRD values for females can be observed.

Table 7.3: SRD per 100,000 for IHD, 1981-2000

		Standardised rate difference per 100,000				
Geographic level	Sex	1981	1986	1991	1996	2000
DHB	Male	27	35	31	43	49
	Female	-15	9	10	18	56
TLA	Male	152	173	73	128	138
	Female	70	147	159	18	139

When the relationship between deprivation rank and IHD mortality rates were analysed for all areas combined, a general trend of increasing negative SII is observed during the period (Table 7.4). At the DHB level, there was a considerable level of variation in IHD mortality rates. At the TLA level, the SII was generally greater in value and consistently negative, when compared with the SII at the DHB level.

Table 7.4: SII per 100,000 for IHD, 1981-2000

		Slope index of inequality per 100,000				
Geographic level	Sex	1981	1986	1991	1996	2000
DHB	Male	11	-6	-8	2	-25
	Female	-4	1	2	-5	-10
TLA	Male	-4	-20	-24	-3	-38
	Female	-17	-15	-20	-16	-11

Unlike the relationship observed for all-cause mortality, the correlation between deprivation rank and mortality rates for IHD was weak and not significant at the DHB level (males = -0.33; females -0.18). Of interest, is the significant relationship that exists between deprivation rank and IHD mortality rates for males at the TLA level (correlation = -0.52) which was not observed for females (correlation: -0.23).

7.2.3 All-cancer

The SRD indicates that in general, the cancer mortality gap between the most and least deprived areas increased between 1981 and 2000. When the relationship between cancer mortality rates and deprivation rank were analysed for all areas, similar trends were observed. Table 7.5 reveals some interesting differences between the SII at the DHB and TLA level: both sexes experienced an increase in the SII at the DHB level, conversely, both sexes experienced a small decrease in the SII at the TLA level.

Table 7.5: SII per 100,000 for all-cancer, 1981-2000

		Slope index of inequality per 100,000				
Geographic level	Sex	1981	1986	1991	1996	2000
DHB	Males	-6	-9	-4	-11	-24
	Females	-11	-10	0	-20	-17
TLA	Males	-45	-24	-23	-24	-37
	Females	-33	-22	-9	-19	-18

Figure 7.3 illustrates the inverse relationship between deprivation rank and cancer mortality at the DHB level with the SII shown (correlation males = -0.53, $p < 0.05$; correlation females: -0.29, not significant). At the TLA level, the correlations between deprivation rank and mortality rates are generally similar when comparing males and females, and are both statistically significant (correlation = males: -0.28; females: -0.27).

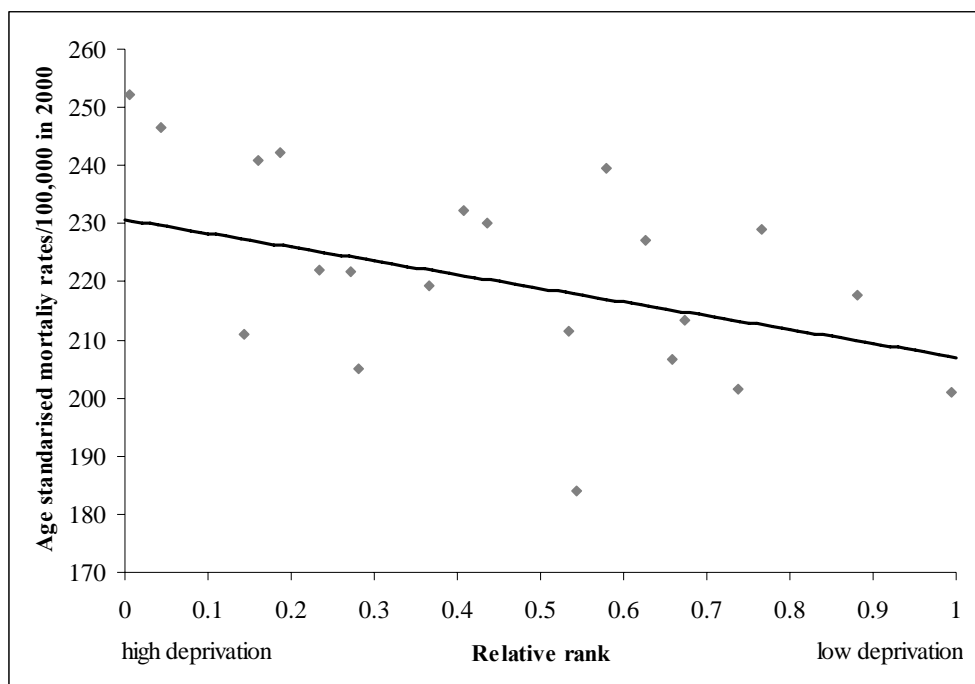


Figure 7.3: Relationship between relative deprivation rank and male all-cancer ASMRs at the DHB level in 2000

7.2.4 Lung cancer

The SRD between lung cancer mortality in the most and least deprived DHBs generally increased over time for males, and remained relatively stable for females, at the TLA level, there was no distinguishable trend. The SII demonstrates a much clearer association between deprivation rank and lung cancer mortality. During the entire period, the SII was negative, indicating that people who lived in more deprived areas had higher lung cancer mortality rates than those people who lived in the lesser deprived areas. Table 7.6 demonstrates that there was a general increase in the SII for all groups, except males at the TLA level which remained relatively stable over the period.

Table 7.6: SII per 100,000 for lung cancer mortality, 1981-2000

Geographic level	Sex	Slope index of inequality per 100,000				
		1981	1986	1991	1996	2000
DHB	Male	-2	-9	-9	-3	-10
	Female	-7	-6	-9	-10	-14
TLA	Male	-21	-18	-18	-10	-19
	Female	-11	-11	-14	-15	-20

A relatively strong and significant relationship can be observed between deprivation rank and lung cancer mortality at the DHB level for males (Figure 7.4, correlation = -0.53) and females (Figure 7.5, correlation = -0.67). At the TLA level, both male and female lung cancer mortality rates were significantly correlated with deprivation rank, but to a lesser extent when compared to their DHB counterparts (correlation = males:-0.31; females: -0.61). The difference in cancer mortality rates between the more and less deprived areas was at its lowest in 1991, for all levels of analysis. At both the DHB and TLA levels, there was a stronger relationship between deprivation and female lung cancer mortality rates when compared with male mortality rates.

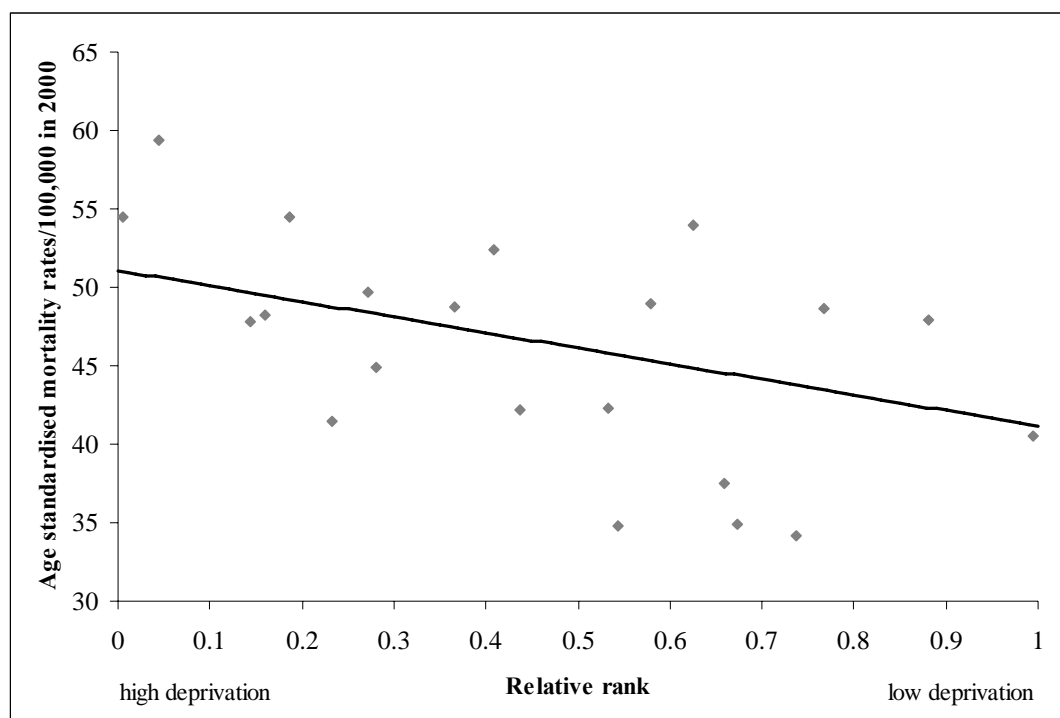


Figure 7.4: Relationship between deprivation rank and male lung cancer ASMRs at the DHB level in 2000

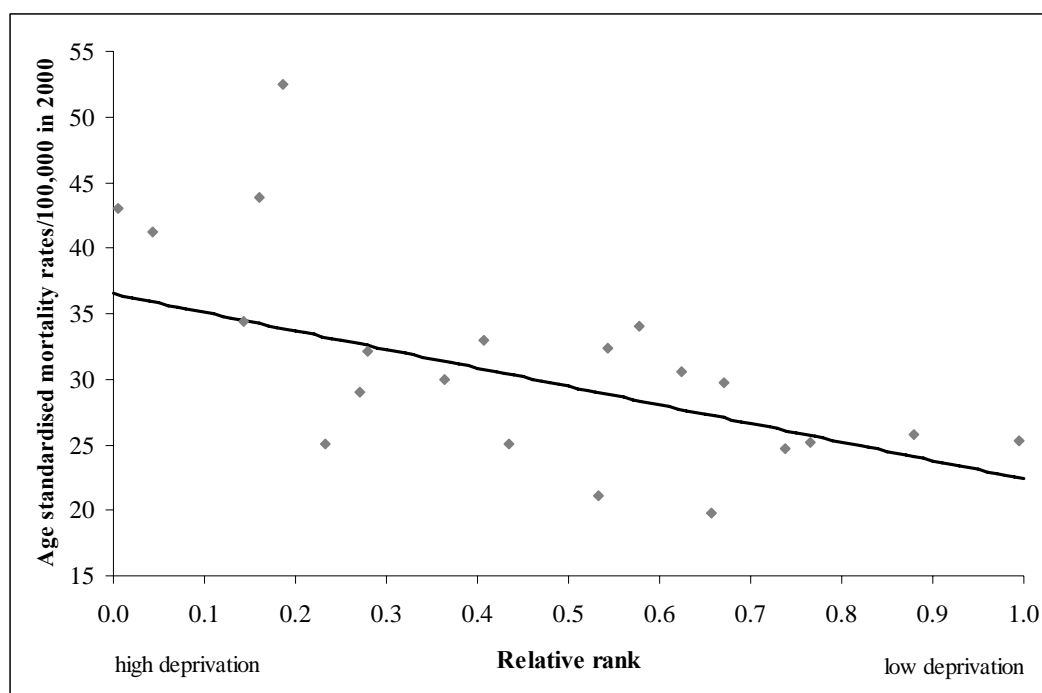


Figure 7.5: Relationship between deprivation rank and female lung cancer ASMRs at the DHB level for 2000

7.2.5 Colorectal cancer

Analyses of the SRD and SII for colorectal cancer mortality reveal that no trends exist throughout the study period. There is very little difference in the colorectal cancer mortality rates experienced by those who live in more or less deprived areas; this is illustrated in Figure 7.6. In contrast to the negative relationship observed between all-cause mortality and deprivation rank, the relationship between deprivation rank and colorectal cancer mortality was positive for males and females (correlation = males: 0.13; females 0.20, not significant) at the DHB level, and conflicting at the TLA level (correlation = males: -0.16; females: 0.13, not significant).

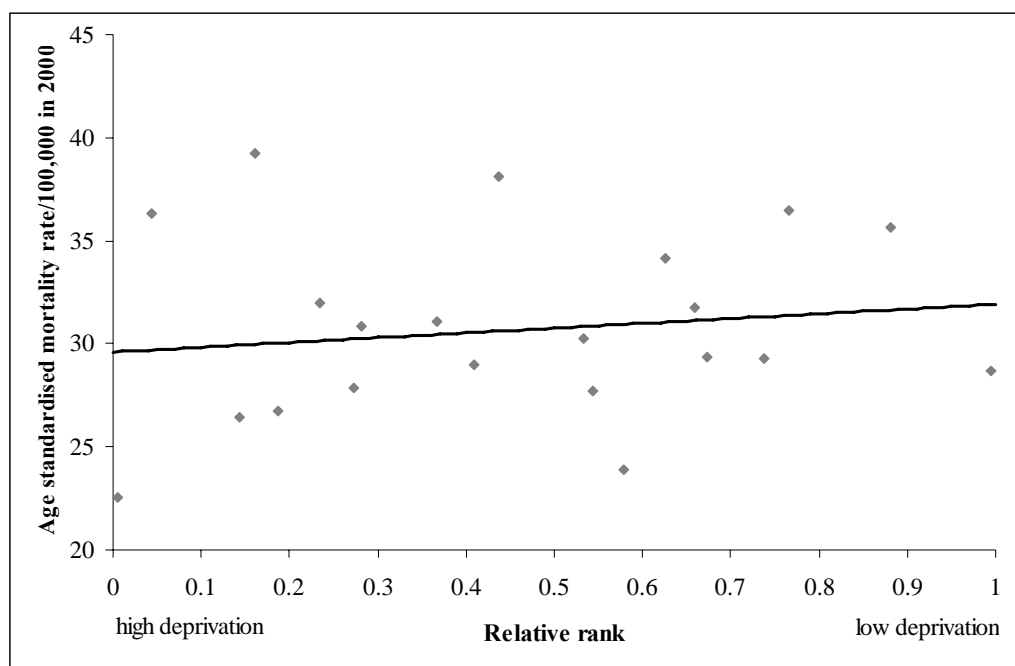


Figure 7.6: Relationship between deprivation rank and male colorectal cancer ASMR at the DHB level for 2000

7.2.6 Breast cancer

Similar to the colorectal cancer analysis, no temporal trends are apparent when the SRD and SII are calculated for breast cancer mortality rates. The SII frequently oscillates around zero, indicating that there was very little difference between the mortality rates of females who lived in the more deprived and lesser deprived areas. Figure 7.7 illustrates the non-linear relationship between deprivation rank and breast cancer mortality at the DHB level. The figure shows that amongst the most deprived DHBs there was a wide range of mortality rates. Mortality rates amongst the least deprived were relatively moderate.

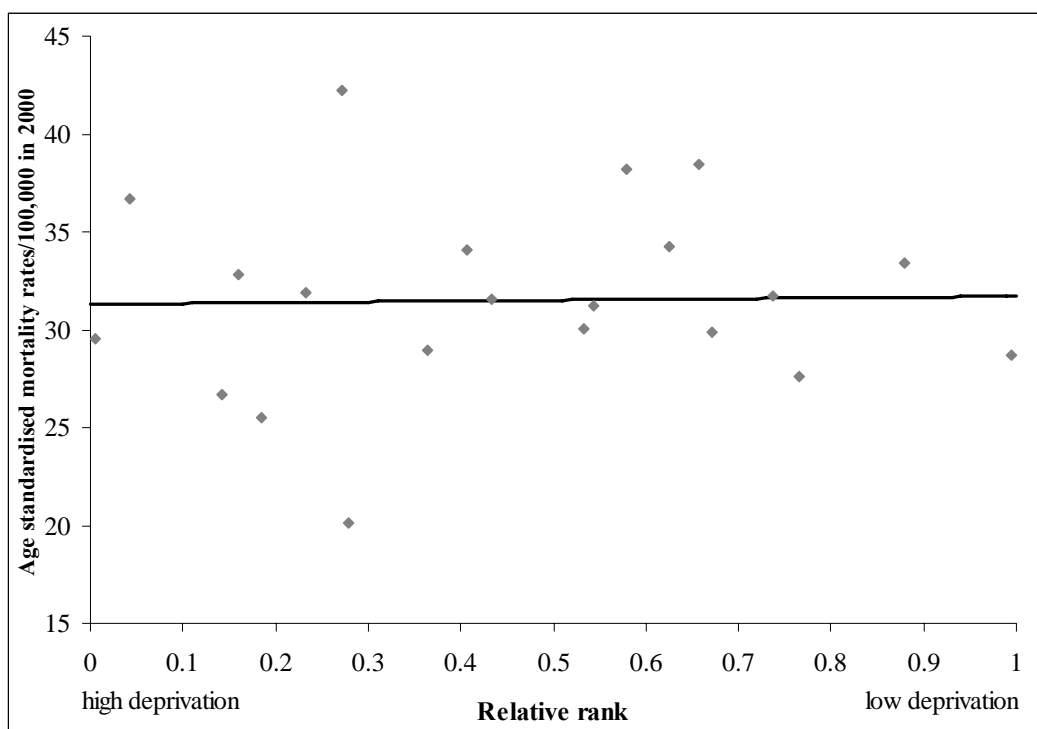


Figure 7.7: Relationship between deprivation rank and breast cancer ASMRs at the DHB level for 2000

7.2.7 Prostate cancer

The SRD and SII (Table 7.7) calculations for prostate cancer mortality were both variable throughout the period, and often oscillated either side of one and zero, respectively. Between 1996 and 2000, the prostate cancer mortality gap between the more deprived compared with the less deprived grew, so that by 2000, the mortality gap was approximately 8 per 100,000. Figure 7.8 illustrates the general trend of higher prostate cancer mortality rates amongst the more deprived DHBs, and lower rates amongst the least deprived DHBs in 2000. The significant correlation between deprivation rank and mortality rates was significant at the DHB level (correlation = -0.52), but the correlation was not significant at the TLA level (-0.10).

Table 7.7: Slope index of inequality per 100,000 for prostate cancer, 1981-2000

Geographic level	Slope index of inequality per 100,000				
	1981	1986	1991	1996	2000
DHB	3	2	1	-3	-8
TLA	-4	1	-2	-1	-9

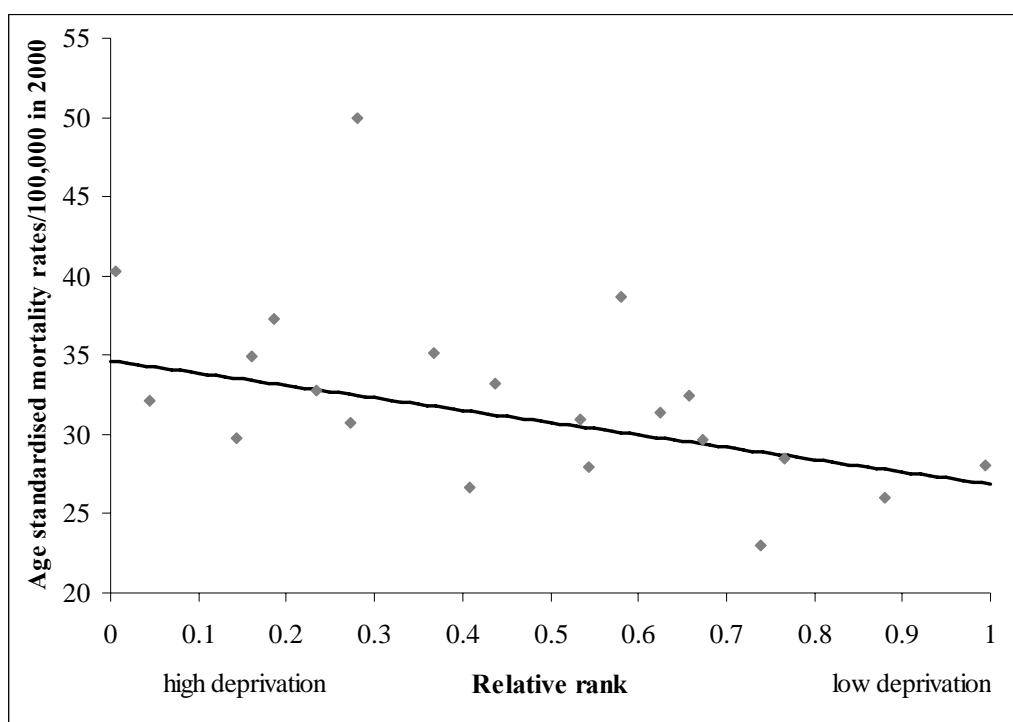


Figure 7.8: Relationship between deprivation rank and prostate cancer ASMRs at the DHB level in 2000

7.2.8 Chronic obstructive pulmonary disease

Table 7.8 shows that for all levels of analysis, COPD mortality rates were highest in the most deprived areas. Between 1981 and 2000 the SRD remained relatively stable for both males and females, at the DHB and TLA levels. The table indicates that there was a sex inequality whereby males generally had a higher SRD value than their female counterparts.

Table 7.8: SRD per 100,000 for COPD, 1981-2000

Geographic level	Sex	Standardised rate difference per 100,000				
		1981	1986	1991	1996	2000
DHB	Male	20	16	12	32	19
	Female	9	7	9	1	7
TLA	Male	37	27	12	33	39
	Female	N/A	23	53	3	20

As opposed to the SRD which remained relatively steady throughout the period, a much clearer pattern is revealed between absolute deprivation and COPD mortality when the SII is calculated (Table 7.9). At the DHB level (and periodically the TLA

level) there were periods when there was very little difference between the COPD mortality rates experienced in more and less deprived areas. Overall, all areas experienced a greater level of inequality in 2000 compared with 1981.

Table 7.9: SII per 100,000 for COPD, 1981-2000

Geographic level	Sex	Slope index of inequality per 100,000				
		1981	1986	1991	1996	2000
DHB	Male	0	-2	-3	-2	-10
	Female	0	-7	-7	-3	-6
TLA	Male	-1	-9	-10	0	-13
	Female	-2	-11	-13	-6	-7

A graphical representation of the SII analysis for male COPD mortality at the DHB level in 2000 is shown in Figure 7.9. The figure indicates that although the lowest male COPD mortality rates tend to occur in the least deprived areas, there is a large variation in mortality rates experienced by the most deprived areas. For this reason the correlation was negative, however, not significant (correlation = male: -9.6; females: -5.5).

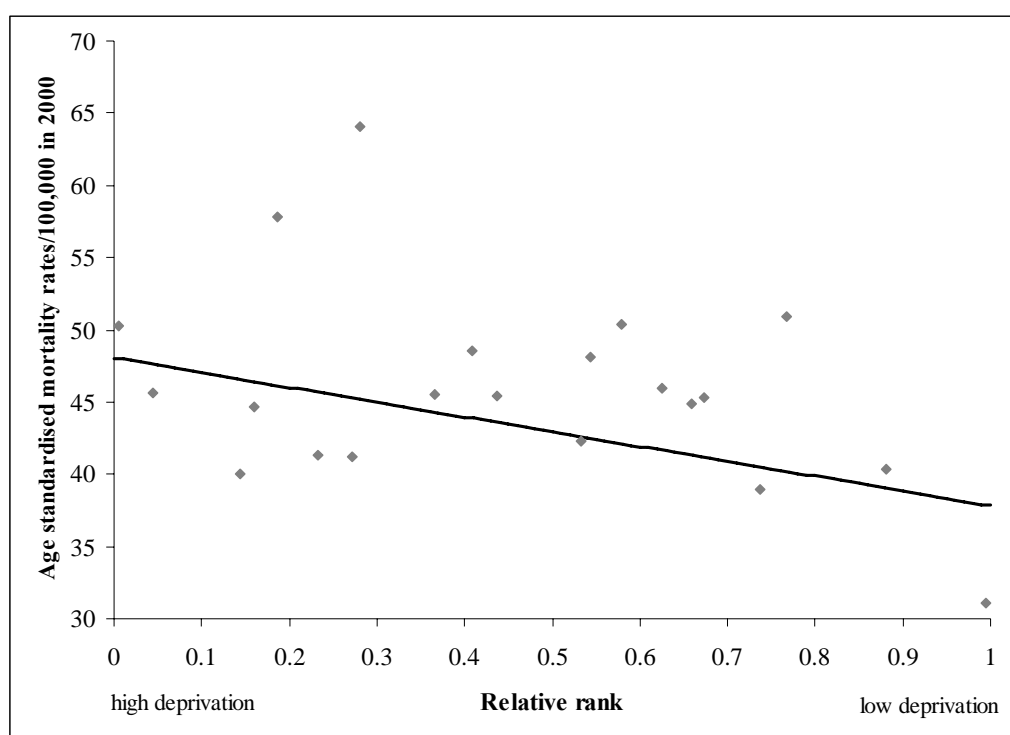


Figure 7.9: Relationship between deprivation rank and male COPD ASMRs at the DHB level for 2000

7.2.9 Cerebrovascular disease

A general decrease in the CVD mortality gap was observed during the period, so that by 2000, there was virtually no difference in the mortality rates from CVD throughout the deprivation hierarchy (correlation = males: -0.04, not significant) or females (correlation = 0.00, not significant). Of particular interest is the negative and significant correlation between deprivation rank and male CVD mortality at the TLA level (correlation = -0.37), this is however, not apparent when female mortality rates are analysed (correlation = -0.21, not significant).

7.2.10 Diabetes mellitus

The difference in diabetes mellitus mortality rates between the most and least deprived places grew between 1981 and 2000 (Table 7.10), although, the trend was not linear. For all levels of analyses, the greatest level of SRD occurred in 2000.

Table 7.10: SRD per 100,000 for diabetes mellitus mortality, 1981-2000

Geographic level	Sex	Standardised rate difference per 100,000				
		1981	1986	1991	1996	2000
DHB	Males	11	9	1	18	25
	Females	22	4	13	17	24
TLA	Males	16	8	21	23	38
	Females	10	14	33	17	45

The relationship between deprivation rank and diabetes mellitus mortality for all areas combined showed that between 1981 and 1986, the SII decreased, which was followed by a consistent increase for the rest of the period (Table 7.11). Consistent with the SRD analyses, the greatest level of absolute inequality occurred in 2000. The consistent negative value indicates that those people who lived in the most deprived areas had higher diabetes mellitus mortality rates than those who lived in the least deprived areas, and that the gap increased over time.

Table 7.11: SII per 100,000 for diabetes mellitus mortality, 1981-2000

Geographic level	Sex	Slope index of inequality				
		1981	1986	1991	1996	2000
DHB	Males	-6	-4	-6	-11	-19
	Females	-7	-3	-9	-14	-14
TLA	Males	-8	-4	-9	-15	-25
	Females	-10	-6	-10	-17	-20

Figure 7.10 illustrates that in DHBs where deprivation status was high (low deprivation rank), diabetes mellitus mortality rates were also high, these results were significant for males (correlation = 0.77) and females (correlation = 0.80) in 2000.

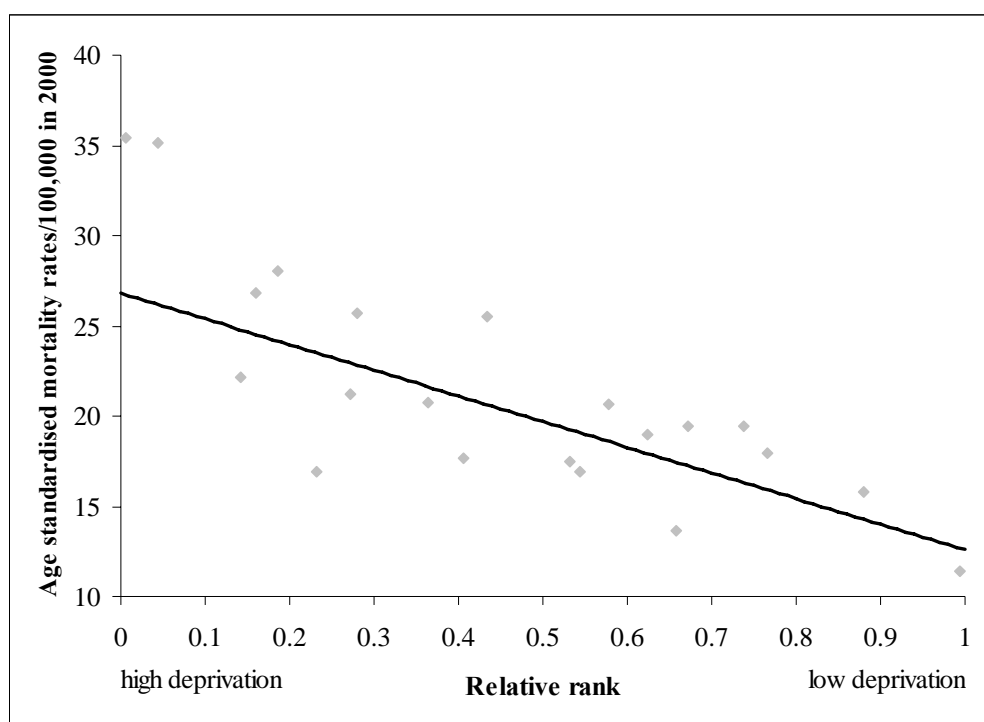


Figure 7.10: Relationship between deprivation rank and female diabetes mellitus ASMRs at the DHB level for 2000

7.2.11 Summary

In summary, absolute inequalities were stable (colorectal cancer, breast cancer and cerebrovascular disease mortality) or modestly increasing (all-cause and remaining causes of death) during the study period. Although standard rate differences were calculated, the slope index of inequality provides a much clearer representation of the

relationship between deprivation rank and mortality rates for all areas. For the majority of causes of mortality, the level of the SII was at its greatest in 2000.

7.3 *Relative deprivation*

7.3.1 All-cause

Relative inequalities between 1981 and 2000 as measured by the standardised rate ratio (SRR) widened by 47% among males, and by 15% among females, at the DHB level (Table 7.12). Both males and females experienced a decrease in the SRR between 1981 and 1991, with an increase in the SRR thereafter. At the TLA level for males, relative inequalities decreased (by 29%) whilst a widening was observed for females (by 81%). Generally, the SRR is greater for males when compared with their female counterparts and greater at the TLA level compared with the DHB level.

Table 7.12: SRR for all-cause mortality, 1981-2000

Geographic level	Sex	Standardised rate ratio				
		1981	1986	1991	1996	2000
DHB	Male	1.34	1.27	1.23	1.44	1.50
	Female	1.33	1.23	1.23	1.35	1.38
TLA	Male	2.07	2.40	1.87	2.22	1.76
	Female	1.68	2.32	2.07	1.69	2.23

When the relationship between relative deprivation and all-cause mortality rates were taken into account for all areas (as opposed to the SRR which measures relative inequality between the most and least deprived areas), the relative index of inequality (RII) increased amongst all groups (with the exception of females at the TLA level where the RII remained relatively steady) (Table 7.13). Overall, there was a greater increase in the RII for males (DHB: RII increased by 188%; TLA: RII increased by 100%) compared with females (DHB: RII increased by 31%; TLA: RII no change).

Table 7.13: RII for all-cause mortality, 1981-2000

Geographic level	Sex	Relative index of inequality				
		1981	1986	1991	1996	2000
DHB	Male	1.11	1.12	1.12	1.14	1.24
	Female	1.13	1.16	1.12	1.14	1.17
TLA	Male	1.16	1.17	1.22	1.20	1.32
	Female	1.21	1.24	1.19	1.21	1.21

7.3.2 Ischaemic heart disease

Consistent with the all-cause SRR analyses, the SRR widened for IHD mortality between 1981 and 2000 for all groups, except males at the TLA level where the SRR decreased fractionally (Table 7.14). In general, the SRR indicates that people who lived in the most deprived areas experienced IHD mortality rates greater than those people who lived in the least deprived area, and that the gap between the two has widened during the period.

Table 7.14: SRR for IHD mortality, 1981-2000

Geographic level	Sex	Standardised rate ratio				
		1981	1986	1991	1996	2000
DHB	Male	1.12	1.16	1.16	1.25	1.32
	Female	0.90	1.05	1.07	1.14	1.43
TLA	Male	2.05	2.06	1.46	1.75	2.00
	Female	1.49	2.76	2.73	1.14	2.68

The RII trend in relative inequalities in IHD mortality is not as clear as the SRR analyses. Table 7.15 lists the RII values between 1981 and 2000 for all groups. It is evident from the low RII values (often less than one) table that there was not a consistent or large difference between the mortality rates for the more deprived compared to the lesser deprived, especially at the DHB level. The RII was generally at its greatest in 2000.

Table 7.15: RII for IHD mortality, 1981-2000

Geographic level	Sex	Relative index of inequality				
		1981	1986	1991	1996	2000
DHB	Male	0.96	1.03	1.04	0.99	1.15
	Female	1.03	0.99	0.99	1.04	1.07
TLA	Male	1.02	1.08	1.11	1.02	1.23
	Female	1.10	1.08	1.12	1.11	1.08

7.3.3 All-cancer

The SRR between the most and least deprived areas appears to have decreased marginally for females between 1981 and 2000, and conversely, increased for males (Table 7.16). Overall, no consistent patterns can be observed for all groups analysed. However, by 2000, there was still a considerable gap in the relative inequality between the cancer mortality rates for the most and least deprived areas.

Table 7.16: SRR for all-cancer mortality rates, 1981-2000

Geographic level	Sex	Standardised rate ratio				
		1981	1986	1991	1996	2000
DHB	Males	1.12	1.12	1.11	1.21	1.25
	Females	1.18	1.08	1.17	1.49	1.15
TLA	Males	2.56	1.95	2.17	1.92	1.11
	Females	1.60	1.10	1.70	1.64	1.57

The RII for all-cancer mortality increased over the two decades at the DHB level; however, the increase was not consistent for all time periods (Table 7.17). Conversely, at the TLA level, the RII decreased for both males and females. Although the level of the RII changed differently over time for the various groups, the level was very similar by 2000.

Table 7.17: RII for all cancer mortality rates, 1981-2000

Geographic level	Sex	Relative index of inequality				
		1981	1986	1991	1996	2000
DHB	Males	1.03	1.05	1.02	1.06	1.11
	Females	1.08	1.07	1.00	1.13	1.10
TLA	Males	1.24	1.12	1.11	1.12	1.18
	Females	1.21	1.13	1.05	1.11	1.10

7.3.4 Lung cancer

The relative difference in lung cancer mortality rates between the most and least deprived areas was extremely variable during the period; however, a general trend of decreasing SRR was observed. The RII for lung cancer mortality increased relatively steadily during the two decades. In Table 7.18 the RII is shown to be greater for women than men throughout the entire period. For all groups, the RII was greatest in 2000.

Table 7.18: RII for lung cancer mortality rates, 1981-2000

Geographic level	Sex	Relative index of inequality				
		1981	1986	1991	1996	2000
DHB	Male	1.04	1.19	1.19	1.06	1.24
	Female	1.49	1.34	1.46	1.51	1.63
TLA	Male	1.32	1.37	1.40	1.22	1.48
	Female	1.80	1.68	1.72	1.77	1.99

7.3.5 Colorectal cancer

The SRR analysis for colorectal cancer mortality was variable over the two decades, with the ratio constantly oscillating about one. Table 7.19 illustrates the degree of variation in the RII between 1981 and 2000. Similar to the SRR patterns, the RII often varied about one; however, by 2000 the RII was at, or below, one. Overall, the RII increased for males, and decreased for females.

Table 7.19: RII for colorectal cancer mortality rates, 1981-2000

Geographic level	Sex	Relative index of inequality				
		1981	1986	1991	1996	2000
DHB	Male	0.90	1.01	0.90	1.07	0.93
	Female	1.08	1.00	1.02	0.98	0.93
TLA	Male	0.96	0.95	0.89	1.12	1.00
	Female	1.01	0.98	0.85	1.05	0.83

7.3.6 Breast cancer

Similar to the colorectal cancer SRR analysis, the ratio of the breast cancer mortality rate of the most deprived compared with the least deprived areas was extremely variable throughout the period, and oscillated about one. Table 7.20 illustrates the RII for breast cancer mortality, and shows the variable nature of the relative inequalities. By 2000, the difference between the more and less deprived areas for breast cancer mortality in relative terms was negligible.

Table 7.20: RII for breast cancer mortality rates, 1981-2000

Geographic level	Relative Index of Inequality				
	1981	1986	1991	1996	2000
DHB	0.99	1.03	1.02	1.17	0.99
TLA	1.35	1.24	0.99	1.16	0.99

7.3.7 Prostate cancer

The difference in prostate cancer mortality between the most and least deprived areas in relative terms was variable throughout the study period, with no clear trends being observed. The RII for prostate cancer mortality increased steadily at the DHB level, and was somewhat variable at the TLA level (Table 7.21). The table shows that the RII is generally greater at the TLA level when compared with the DHB level, and the increase has been more consistent in the latter.

Table 7.21: RII for prostate cancer mortality rates, 1981-2000

Geographic level	Relative index of inequality				
	1981	1986	1991	1996	2000
DHB	0.86	0.92	0.96	1.10	1.29
TLA	1.21	0.97	1.08	1.05	1.33

7.3.8 Chronic obstructive pulmonary disease

The SRR for COPD mortality between the most and least deprived areas was variable between 1981 and 2000; however, the SRD was consistently above one, indicating that the most deprived area had a COPD mortality rate greater than that observed in

the least deprived area. A much clearer trend emerges in the RII analysis (Table 7.22). The RII for COPD mortality increased for all groups between 1981 and 2000. Of particular interest was the greater RII for males in 2000, this was the opposite of the general trend observed for the previous years. For males, the greatest relative inequality in COPD mortality rates occurred in 2000, for females this occurred in 1986.

Table 7.22: RII for COPD mortality rates, 1981-2000

Geographic level	Sex	Relative index of inequality				
		1981	1986	1991	1996	2000
DHB	Male	0.99	1.06	1.08	1.04	1.27
	Female	1.00	1.56	1.40	1.10	1.18
TLA	Male	1.04	1.26	1.30	1.00	1.34
	Female	1.15	1.93	1.81	1.20	1.21

7.3.9 Cerebrovascular disease

The relative difference between CVD mortality rates in the most deprived area compared to the least deprived area generally decreased between 1981 and 2000. During the period the SRR was generally greater for males when compared with their female counterparts. Table 7.23 demonstrates that there was very little difference between the RII in 2000 compared with 1981. As similar to the SRR analyses, males generally had higher RII values than females.

Table 7.23: RII for CVD mortality rates, 1981-2000

Geographic level	Sex	Relative index of inequality				
		1981	1986	1991	1996	2000
DHB	Males	1.10	1.06	0.99	1.09	1.07
	Females	0.94	1.07	0.96	0.91	1.02
TLA	Males	1.18	1.00	1.16	1.09	1.19
	Females	1.03	1.13	0.96	0.95	1.01

7.3.10 Diabetes mellitus

The SRR generally increased over time for diabetes mellitus mortality, so that by 2000, there was at least a three-fold difference in the relative gap between the most and least deprived areas. The RII for diabetes mellitus mortality increased steadily throughout the time period, with the exception of 1986 where the RII decreased among all groups (Table 7.24). In relative terms, mortality for diabetes mellitus for the more deprived areas was at least two times greater than in the lesser-deprived areas.

Table 7.24: RII for diabetes mellitus mortality rates, 1981-2000

Geographic level	Sex	Relative index of inequality				
		1981	1986	1991	1996	2000
DHB	Males	1.79	1.43	1.75	2.11	2.49
	Females	1.80	1.31	2.32	2.85	2.13
TLA	Males	1.86	1.41	2.09	2.56	3.42
	Females	2.15	1.67	2.23	3.06	2.87

7.3.11 Summary

In summary, relative inequalities were stable (colorectal cancer, breast cancer and cerebrovascular disease mortality) or modestly increasing (all-cause and remaining causes of death) during the study period. Although standardised rate ratios were calculated, the relative index of inequality provides a much clearer picture of socioeconomic inequalities as the deprivation and mortality rates for all regions are taken into account, as opposed to the two extremes. For the majority of causes of mortality, the level of the RII was at its greatest in 2000.

7.4 Population change

7.4.1 All-cause

In places where the population has decreased between 1981 and 2000, the average all-cause mortality rate is high compared with places where the population has grown; this is reflected in Figure 7.11 and Figure 7.12. While the figures indicate that the

lowest mortality rates tend to be experienced by those who lived in areas where population had increased, there is a larger degree of variation in the mortality rates experienced by those who lived in areas where the population had decreased. The correlation between population change and all-cause mortality rates was significant for males and females at the DHB (correlation = males: -0.47; females: -0.51) and TLA levels (correlation = males: -0.47; females: -0.34).

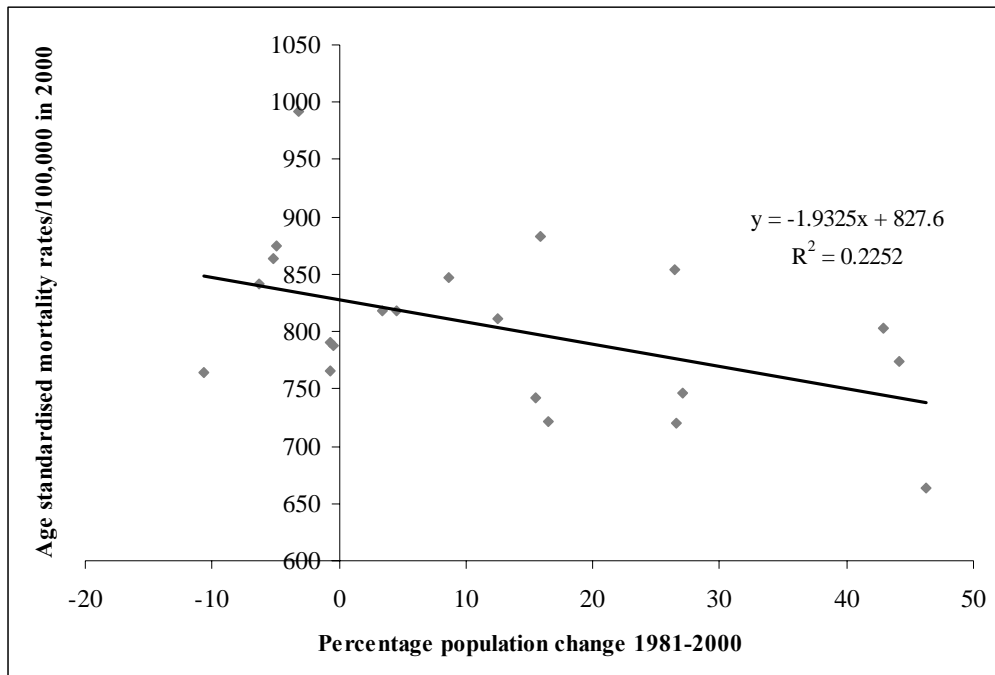


Figure 7.11: Relationship between population change and male all-cause ASMRs at the DHB level in 2000

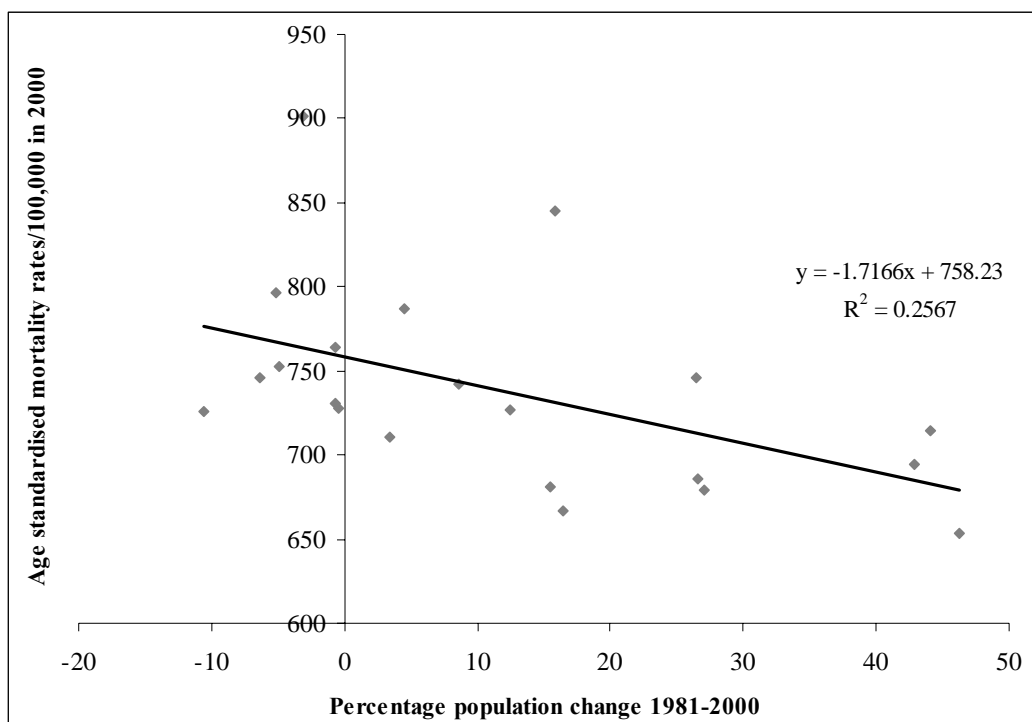


Figure 7.12: Relationship between population change and female all-cause ASMRs at the DHB level in 2000

7.4.2 Ischaemic heart disease

Consistent with all-cause mortality, there is an inverse relationship between population change and IHD mortality; this is illustrated in Figure 7.13 and Figure 7.14, for males and females, respectively. Relatively high and significant correlations were observed between population change and IHD mortality rates at the DHB level for both males and females (correlation = -0.59). At the DHB level, areas that experience population decline have some of the lowest and highest mortality rates for IHD; conversely, areas that experience a growth in population generally experience low mortality rates. At the TLA level, the correlation coefficient was lower but still significant: males -0.49 and females -0.44. There is a large degree of variation in mortality rates for those areas where a small percentage of population decline or growth occurred, with the extremes of population change generally indicating the hypothesised mortality trends.

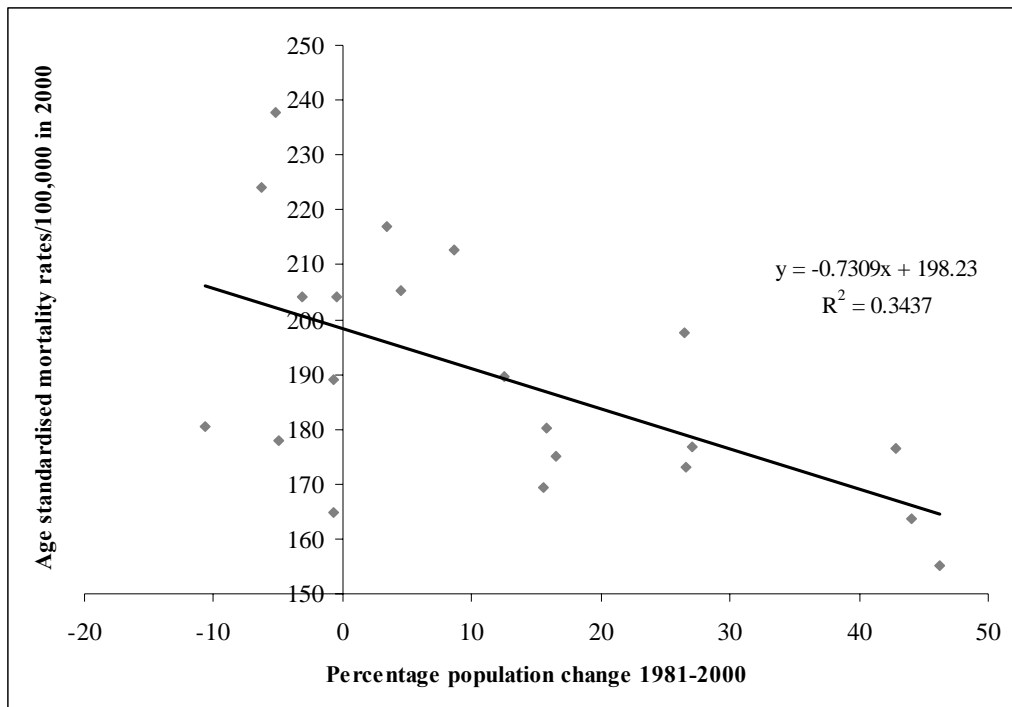


Figure 7.13: Relationship between population change and male IHD ASMRs at the DHB level in 2000

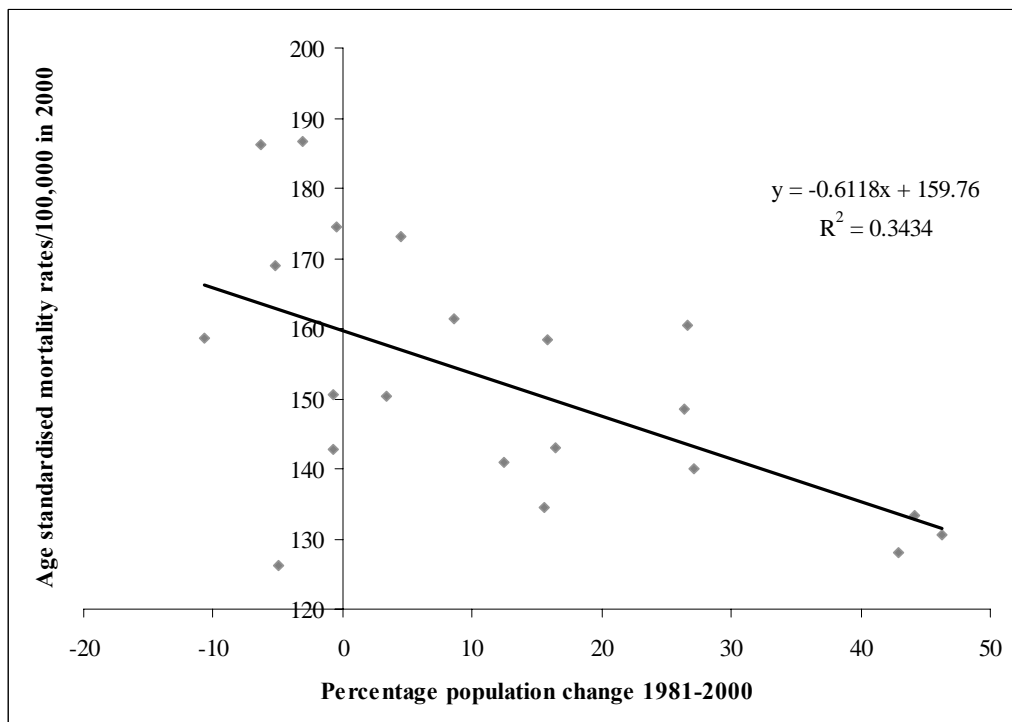


Figure 7.14: Relationship between population change and female IHD ASMRs at the DHB level in 2000

7.4.3 All cancer

There is an inverse relationship between population change and cancer mortality rates, for both males and females; however, not all correlations are significant (DHB = males: -0.27, not significant; females: -0.48, significant, TLA = males: -0.25, significant; females: -0.20, not significant). The significant relationship between population change and female cancer mortality rates at the DHB level is shown in Figure 7.15.

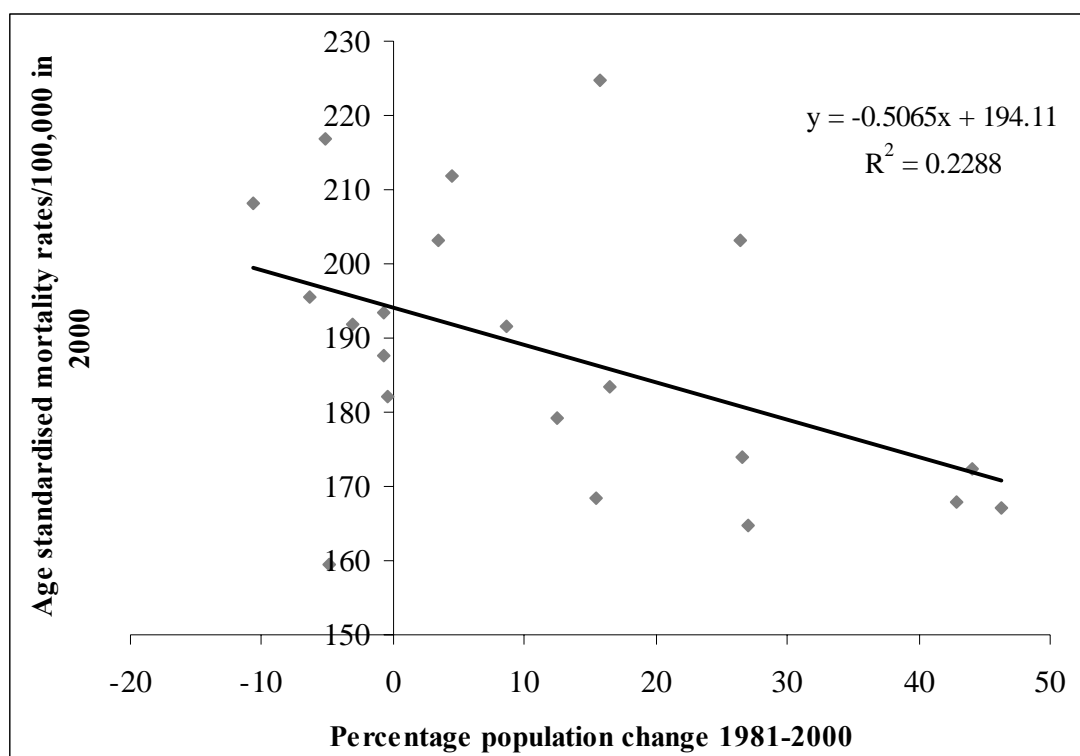


Figure 7.15: Relationship between population change and female all-cancer ASMRs at the DHB level in 2000

7.4.4 Lung cancer

There is a negative relationship between population change and lung cancer mortality at the DHB level for both males and females. The correlations however were not significant. At the TLA level the correlations were larger and statistically significant: males -0.31 ($p < 0.05$) and females -0.25 ($p < 0.05$).

7.4.5 Colorectal cancer

Similar to the previous causes of mortality, there is an inverse relationship between population change and colorectal cancer, of particular interest, is the difference in trends between males and females. At the DHB level, the correlation between population change and colorectal cancer mortality for males is -0.11 (not significant) and for females is -0.59 ($p < 0.05$), these results are reflected in the trends observed in Figure 7.16 and Figure 7.17. These figures indicate that there was a weak relationship between population change and colorectal cancer for males (low β and low R^2 value), and a relatively strong relationship for females (comparatively larger β and R^2 values). Similar trends are observed at the TLA level.

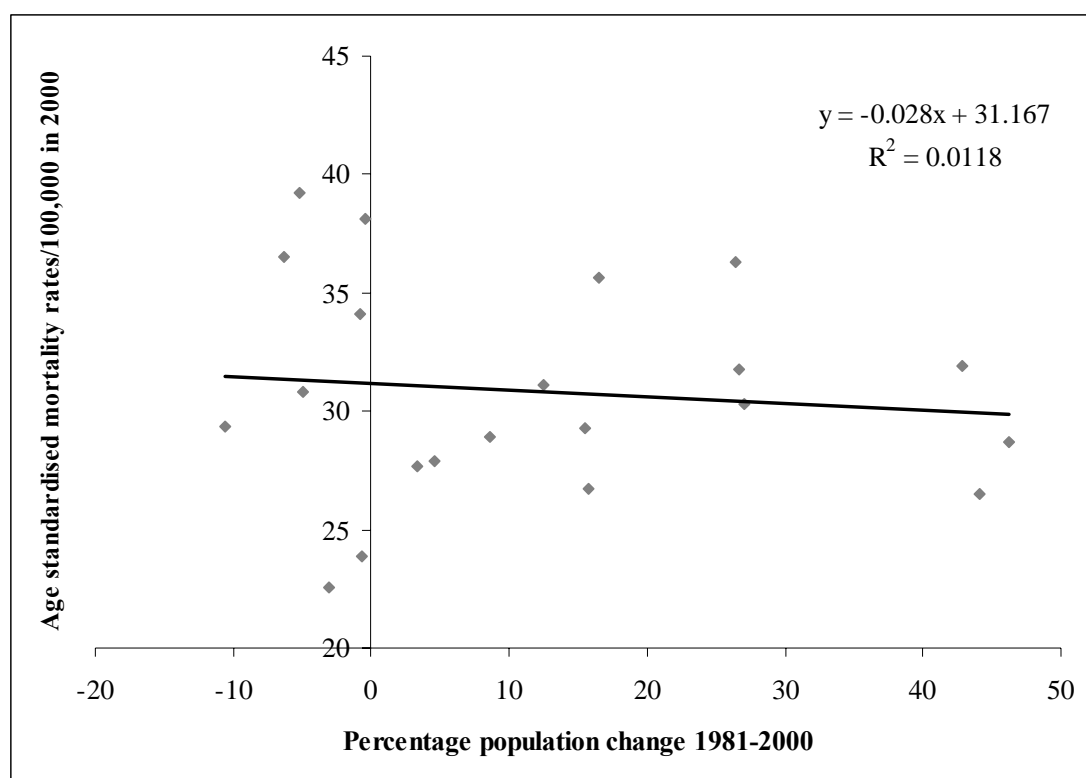


Figure 7.16: Relationship between population change and male colorectal cancer ASMRs at the DHB level in 2000

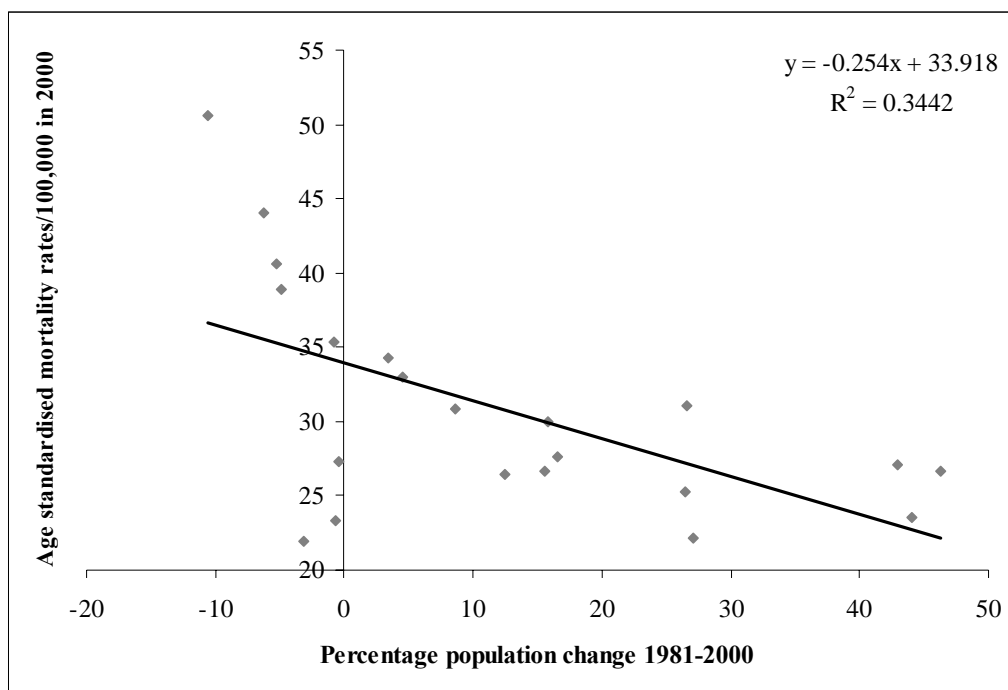


Figure 7.17: Relationship between population change and female colorectal cancer ASMRs at the DHB level in 2000

7.4.6 Breast cancer

The relationship between population change and breast cancer mortality is the opposite of that observed for all-cause mortality, although, the correlations are not significant. At the DHB level there was no correlation between population change and breast cancer mortality (correlation = 0.00), at the TLA level the correlation was 0.18.

7.4.7 Prostate cancer

There was a weak and non-significant inverse correlation between population change and prostate cancer mortality (correlation coefficient: DHB -0.30, TLA -0.09). The TLAs that experienced a population decrease, included the lowest and highest prostate cancer mortality rates.

7.4.8 Chronic obstructive pulmonary disease

The relationship between population change and COPD mortality rates was moderate and significant for males (DHB -0.58, TLA -0.33) and moderate for females, but only significant at the TLA level (correlation = -0.35; DHB = -0.33, not significant). Figure 7.18 demonstrates the relationship between population change and male COPD mortality at the DHB level. Although the relatively low R^2 values suggests a degree of scatter, the graph illustrates that the lowest mortality rates occur in the areas with the most population growth, and a large proportion of the high mortality rates occur in regions where population has declined.

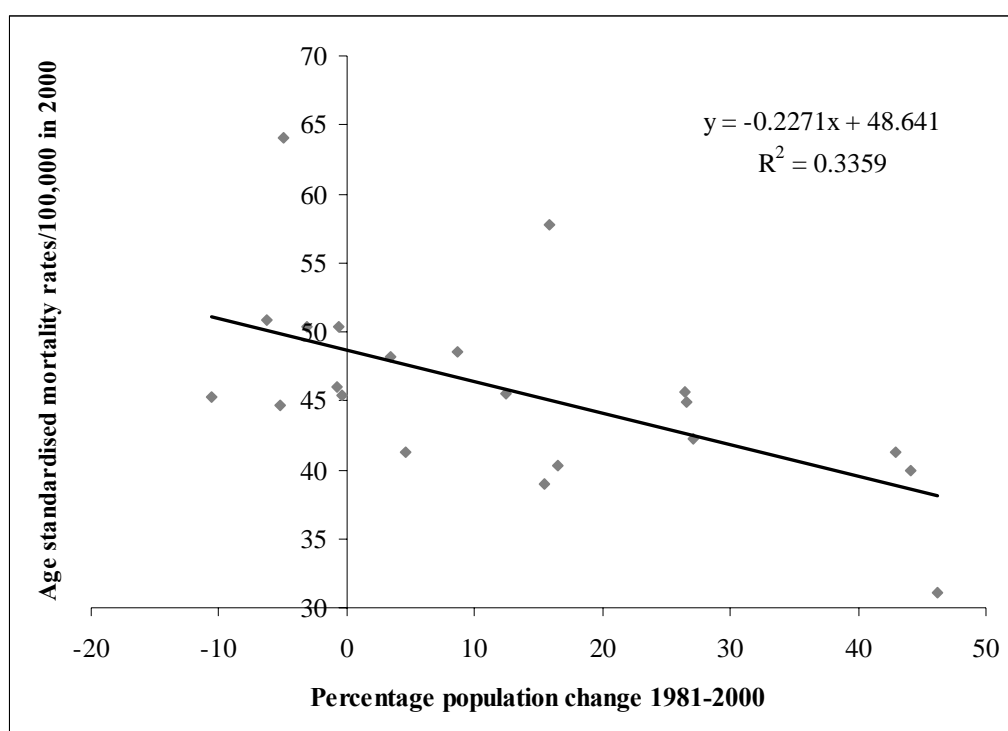


Figure 7.18: Relationship between population change and male COPD ASMRs at the DHB level in 2000

7.4.9 Cerebrovascular disease

The correlations between population change and CVD mortality at both geographic levels and for males and females, is negligible and not significant. A very weak and non-significant relationship is observed between CVD mortality and population change at the DHB level: males = β -0.012, females = β = -0.005. Similar correlations are found for males at the TLA level.

7.4.11 Diabetes mellitus

An inverse relationship was observed between population change and diabetes mellitus mortality rates, although, not all correlations were statistically significant. At the DHB level, males and females had similar correlations between population change and diabetes mellitus mortality rates (males: correlation = -0.22 , $\beta = -0.09$; females: correlation = -0.30 , $\beta = -0.10$), all results were statistically significant.

7.4.12 Summary

A summary table of the correlation coefficients indicating the relationship between mortality rates and population change can be seen in Table 7.25. A clear pattern for all-cause and IHD mortality can be observed, which shows significant moderate negative correlations, for males and females at each geographic level. In addition, there are significant correlations between population change and COPD for males, and colorectal cancer for females. Overall, a larger number of causes of mortality are significantly correlated with population change at the TLA level; however, they are generally lower in value than their DHB counterparts.

Table 7.25: Correlations between population change 1981-2000 and ASMRs

Age standardised mortality rates	DHB	TLA
<i>Males</i>		
All-cause	-0.47 *	-0.47*
IHD	-0.59 *	-0.49 *
All-cancer	-0.27	-0.25 *
Lung cancer	-0.10	-0.31 *
Colorectal cancer	-0.11	-0.08
Prostate cancer	-0.30	-0.09
COPD	-0.58 *	-0.33 *
CVD	-0.03	-0.07
Diabetes mellitus	-0.22	-0.20
<i>Females</i>		
All-cause	-0.51 *	-0.34 *
IHD	-0.59 *	-0.44 *
All-cancer	-0.48 *	-0.20
Lung cancer	-0.23	-0.25 *
Colorectal cancer	-0.59 *	-0.32 *
Breast cancer	0.00	0.18
COPD	-0.33	-0.35 *
CVD	-0.01	-0.10
Diabetes mellitus	-0.3	-0.24 *

* p<0.05

7.5 Conclusion

These results indicate the extent to which deprivation and population change have changed over the last two decades, and can further the understanding of the determinants which may be influencing the geographic polarisation of mortality rates. These results demonstrate that for the majority of causes of mortality, both absolute and relative inequalities have increased between 1981 and 2000. What is particularly worrying is that by 2000, levels of absolute and relative inequality were at their highest for most causes of death. Relative and absolute inequalities tell different stories; therefore it is important and necessary to report both variables, especially for policy purposes. From a public health perspective it may be more important to prevent an absolute difference of a larger number of deaths that might have a smaller relative inequality, than to prevent a smaller number of deaths that represents a larger reduction in relative inequalities.

The correlations between population change between 1981 and 2000 and the mortality rates experienced in 2000 are all negative, indicating that areas that experienced population decline had relative high mortality rates, and areas that experienced population growth had relatively low mortality rates. However, it is important to note that approximately half of the correlations were not statistically significant.

CHAPTER EIGHT

Discussion

8.1 Introduction

The key findings of this thesis can be summarised as follows:

- In 2000, significant inequalities in mortality existed within New Zealand
- The geography of cause-specific mortality is variable when compared with the geography of all-cause mortality
- Significant sex inequalities exist
- The gap between the 'worst' and 'best' areas has remained relatively stable between 1981 and 2000
- Socioeconomic inequalities in mortality have generally increased between 1981 and 2000
- There is a moderate level of association between population change (between 1981 and 2000) and mortality rates in 2000

These key findings are discussed in relation to the objectives of this thesis, and in the context of the national and international literature.

8.2 The Geography of Mortality in New Zealand

The aim of objective one was to determine the extent to which mortality varied geographically throughout New Zealand in 2000. The main trends that emerged were the high levels of geographic inequality in mortality in contemporary New Zealand, and the variable correlations between the geography of all-cause mortality and the geography of cause-specific mortality.

8.2.1 The Level of Geographic Inequality in Mortality in Contemporary New Zealand

The latest available mortality data that are analysed in this thesis shows that by all levels of analysis (males and females, cause-specific mortalities, and by DHBs and

TLAs), there are high levels of health inequality in contemporary New Zealand. Table 5.1 lists the rate ratio between the best and worst mortality rate for each cause of death, and shows that the level of inequality ranges from 1.5 for all-cause mortality to approximately 3.0 for diabetes mellitus mortality at the DHB level, and from approximately 2.2 for all-cause mortality to approximately 6.0 for diabetes mellitus mortality at the TLA level. The high levels of geographic inequality at the start of the twenty-first century are supported by the findings of Pearce *et al.* (unpublished) who show that the male suicide rate was five times higher in the worst DHB compared with the best DHB in the year 2000. A comprehensive review of contemporary geographic inequalities in cause-specific mortality was conducted for the United Kingdom (Fitzpatrick *et al.* 2001). Table 8.1 shows that very similar levels of inequality to those found in this thesis were found for all-cause, IHD, cancer and lung cancer by region for England. For breast cancer, colorectal cancer, and prostate cancer the rate ratios were comparatively higher in New Zealand; however, it should be noted that England was disaggregated into nine regions, compared with New Zealand's 21 when analysed at the DHB level, therefore important sub-regional variations are inevitably masked.

Table 8.1: Rate ratios highest mortality rate: lowest mortality rate, New Zealand and England

Cause of mortality	New Zealand		England	
	Male	Female	Male	Female
All-cause	1.5	1.4	1.3	1.3
IHD	1.5	1.5	1.4	1.5
All cancer	1.4	1.4	1.3	1.2
Lung cancer	1.7	2.6	1.7	2.1
Colorectal cancer	1.7	2.3	1.3	1.2
Prostate cancer	2.2		1.2	
Breast cancer		1.7		1.1
Respiratory conditions (COPD)	2.1	1.6	1.5	1.5

Similar levels of geographic inequality can be found in other countries such as Germany (IHD rate ratios 1.5 for both men and women (Müller-Nordhorn *et al.* 2004), Spain (all-cause rate ratio 1.7 for males and 1.6 for females, breast cancer rate ratio 2.1 (Ortega *et al.* 1996)) and the USA (rate ratio 1.7 all cancers female (National Cancer Institute 2006a), breast cancer rate ratio 2.1 (National Cancer Institute 2006b), prostate cancer rate ratio 2.0 (National Cancer Institute 2006c)).

8.2.2 The Level of Agreement Between the Geographic Distribution of All-Cause Versus Cause-Specific Mortality

The geography of all-cause mortality indicates a general north to south/low to high gradient throughout the South Island with relative high rates on the West Coast. A central North Island cluster of relatively high mortality rates also exists, with rates decreasing from this area. Relatively high mortality rates are also experienced in Northland. As shown in Chapter Five, there was a significant and relatively strong level of agreement for the correlation between the geographic distribution for all-cause mortality and mortality from IHD, cancer, lung cancer, COPD, and diabetes (Tables 5.3 and 5.4).

The level of agreement between the geographic distributions of all-cause mortality compared with cause-specific mortality is demonstrated in other countries. Within England, mortality rates are generally greater in the north than in the south. With some significant exceptions, this geographic pattern is reflected for the major causes of mortality (Fitzpatrick *et al.* 2001). Northern regions have higher mortality from IHD, stroke, lung cancer and accidents. In the USA, the geographic distribution of all-cause mortality, with relatively high rates in the south eastern region, was similar to the geographic distribution of IHD, lung cancer mortality and stroke (Pickle *et al.* 1996). The north-south divide in England is not evident for all mortality outcomes. For example, London stood out as having the highest rates of mortality from infectious and respiratory diseases. Suicide, and drug and alcohol related mortality also did not reveal the north-south gradient that was evident for all-cause mortality (Fitzpatrick *et al.* 2001). In the USA, the geographic distribution of COPD and diabetes mellitus mortality was very different to that of all-cause mortality (Pickle *et al.* 1996). There was little geographic clustering in breast, prostate and colorectal cancer mortality in the United Kingdom (Fitzpatrick *et al.* 2001) or USA (Pickle *et al.* 1996). The lack of correlation between the geographic distributions of breast, prostate, or colorectal cancer mortality and all-cause mortality is also evident in the research from this thesis, which found very weak and predominantly non-significant correlations. As noted in Pickle *et al.* (1996), geographic patterns for all-cause mortality are influenced by the patterns of rates for the leading causes of death; it is therefore perhaps of no surprise that the correlation between the geographic

distribution of all-cause mortality and IHD and cancer are strong and significant in this thesis.

8.2.4 Sex Inequalities in Mortality

Although not a specific aim of this thesis, the sex inequality in mortality became apparent throughout the examination of results, and deserves discussion. In this thesis mortality was examined by males and females separately, previous New Zealand research has focussed on a combination of the two sexes (Pearce & Dorling 2006a; Pearce *et al.* in press). This thesis provides evidence for the importance of conducting research broken down by sex, as an aggregated analysis often masks important sex inequalities (Table 8.2). The table shows the ASMRs for all-cause mortality calculated in 2000. It is evident that females always had a lower mortality rate than their male counterparts. The difference between male and female mortality rates for all New Zealand was 66/100,000. DHBs that had gaps considerably lower than this included Otago, South Canterbury and Waitemata; in these areas the level of sex inequality is very low. Conversely, DHBs with a considerably higher mortality gap included Bay of Plenty, MidCentral, Northland, Wairarapa and the West Coast, in these areas, the level of sex inequality is very high. Similarly, analysis of all-cause mortality for England showed a high level of sex inequality, both between the sexes and between regions (Fitzpatrick *et al.* 2001). The difference between male and female mortality rates for all England was 346/100,000. Regions of England that experienced sex differences considerably lower than this included the east, southeast and southwest regions. Conversely, the northeast and northwest regions had a relatively large difference between male and female mortality rates.

Table 8.2: All-cause age standardised mortality rates per 100,000 for both sexes combined (Source: Pearce et al. in press), males and females in 2000

District Health Boards	All	Males	Females
Auckland	713	747	680
Bay of Plenty	747	802	694
Canterbury	694	722	667
Capital and Coast	711	742	681
Counties Manukau	744	774	715
Hawke's Bay	802	818	787
Hutt Valley	777	791	764
Lakes	863	884	845
MidCentral	793	847	742
Nelson-Marlborough	702	720	686
Northland	798	855	746
Otago	748	766	731
South Canterbury	744	764	726
Southland	793	841	746
Tairāwhiti	946	992	902
Taranaki	757	788	728
Waikato	768	811	726
Wairarapa	763	818	711
Waitemata	658	663	653
West Coast	813	875	753
Whanganui	828	863	796

The inequalities in mortality between males and females are also demonstrated in the rate ratio analysis showing the change in rates between 1981 and 2000 for each area. Table 8.3 compares the rate ratios (indicating level of change in mortality rates between 1981 and 2000) for males and females conducted in this research with the aggregated analysis which is taken from Pearce and colleagues (Pearce *et al.* in press) analysis. Although the rate ratios for the aggregated analysis are generally consistent with the male and female analysis (for example Counties Manukau, Northland, Waikato, Wairarapa and West Coast), some important sex inequalities are masked (for example Hutt Valley, Lakes, Tairāwhiti and Whanganui). Unfortunately, no further research has been undertaken in New Zealand using the same geographic units and specific causes of death to examine how mortality has changed over time, therefore, no further comparisons can be made.

Table 8.3: Rate ratios comparing 2000 all-cause age standardised mortality rates to 1981 all-cause age standardised mortality rates

District Health Boards	All	Males	Females
Auckland	0.85	0.82	0.90
Bay of Plenty	0.95	0.91	0.99
Canterbury	0.88	0.85	0.90
Capital and Coast	0.88	0.83	0.94
Counties Manukau	0.91	0.89	0.92
Hawke's Bay	0.96	0.89	1.04
Hutt Valley	0.94	0.86	1.04
Lakes	1.02	0.96	1.10
MidCentral	0.92	0.90	0.95
Nelson-Marlborough	0.92	0.88	0.98
Northland	0.97	0.96	0.99
Otago	0.88	0.83	0.94
South Canterbury	0.87	0.82	0.93
Southland	0.9	0.87	0.94
Tairāwhiti	1.01	0.96	1.07
Taranaki	0.93	0.90	0.96
Waikato	0.94	0.93	0.95
Wairarapa	0.88	0.88	0.88
Waitemata	0.93	0.85	1.03
West Coast	0.69	0.69	0.69
Whanganui	1.03	0.98	1.10

8.3 The Geographic Polarisation of Mortality

Research objective two was concerned with identifying the trends in mortality by area between 1981 and 2002, and to determine the extent to which mortality had become geographically polarised during this period.

8.3.1 Temporal Trends in Mortality Rates

Few New Zealand studies have examined trends in mortality over time, those that have, have tended to focus on reporting trends by cause-specific mortality for New Zealand as a whole (New Zealand Health Information Service 2005). Chapter Four indicated whether mortality rates for New Zealand as a whole had increased, decreased, or remained stable over time. Mortality rates for all-cause, IHD, CVD and male lung cancer had decreased over the period. The continual progress in reducing the mortality rate from IHD is highlighted in other national studies (Public Health Agency of Canada 1997; Jemal *et al.* 2005). Mortality rates for cancer, female lung cancer, male colorectal cancer, breast cancer, prostate cancer, COPD and diabetes

mellitus increased over time. Several other countries have reported similar increases in rates for diabetes mellitus (Jemal *et al.* 2005), COPD (Jemal *et al.* 2005) and prostate cancer (Cancer Research United Kingdom 2006c). Significant differences in trends found in this research are reported for breast cancer (Cancer Research United Kingdom 2006b), and male colorectal cancer (Cancer Research United Kingdom 2006a).

As discussed earlier, the analysis of national level mortality rates can mask important regional variations. Summary tables were provided throughout Chapter Six to indicate whether mortality rates had increased or decreased over time for each DHB and TLA. In general, trends at the regional level mirrored trends at the national level; however, this did not always hold true. For example, although male lung cancer mortality rates for New Zealand show a decrease over the period, at the DHB level, one third recorded an increase in rates. Similarly, breast cancer mortality rates for New Zealand as a whole increased over the period, but for one third of DHBs, the rates decreased. This highlights the importance of conducting geographic research, as national statistics will mask important regional detail. Despite this, it is extremely difficult to find literature pertaining to the trend of cause-specific mortality over time at the regional level.

8.3.2 Geographic Polarisation Between the ‘Best’ and ‘Worst’ Areas

Regional variations in mortality in New Zealand have hitherto received little analytical attention, despite publications documenting contemporary regional variation in mortality (Ministry of Health 2005; 2006b) and hospitalisations (Ellison-Loschmann, King & Pearce 2004). Such studies have been confined to a limited temporal scope. This thesis demonstrates why it is important to examine geographic inequalities over time, as, despite government rhetoric claiming to reduce inequalities, the differences between the best and worst areas have remained relatively stable throughout the period. Table 6.44 demonstrates the level of geographic inequality between the areas with the lowest and highest mortality rates. The table suggests that the level of geographic inequality has decreased for most causes of mortality, but on closer inspection, it can be seen that this difference is only minimal and not

significant. Two studies that have examined the geographic polarisation of health in New Zealand were those of Pearce and his colleagues (Pearce *et al.* in press; Pearce & Dorling unpublished). When DHBs were ordered from the lowest to highest mortality rate, results showed that the level of geographic inequality (as measured by the rate ratio) for all-cause mortality for both sexes combined decreased from 1.7 in 1981, to 1.4 in 2000. Conversely, the findings of a recent study examining New Zealand regional male suicide mortality indicates that the geographic inequality in male suicide increased from a rate ratio of 3.3 in 1981, to 5.5 in 2000 (Pearce, Barnett & Jones unpublished). This confirms the importance of monitoring changes in cause-specific mortality, as all-cause mortality can mask important variations among certain diseases. In the USA, geographic analysis showed that all regions (USA broken into nine areas) experienced a decline in all-cause mortality rates; however, a widening of regional inequality was observed: the rate ratio between highest and lowest mortalities increased from 1.14 to 1.24 (Lynch *et al.* 2004b). For breast cancer, the level of regional inequality reduced from 1.5 to 1.3, and for stroke mortality, geographic inequality increased from 1.4 to 1.6. Unfortunately these data are not broken down by sex, or to a smaller level of geography.

8.4 Causes of the Geographic Distribution of Mortality

The aim of the third research objective was to examine two factors that might influence the geographic inequalities in mortality: deprivation and population change. It is important to consider what factors might be influencing geographic variations in mortality from a theoretical and policy point of view. A wide range of compositional and contextual factors have been shown to be determinants of population health, only two of which are examined in this research.

8.4.1 Population change

8.4.1.1 Population change and all-cause mortality

The relationship between population change and all-cause mortality was significant, additionally, the correlation coefficient was in the anticipated direction (DHB level

males: correlation = -0.47; females: correlation = -0.51). These results are consistent with other studies that support the finding that areas with shrinking populations have higher mortality rates compared with areas with a growing population. Davey Smith *et al.* (1998) showed that there was an inverse relationship between population change and mortality across Britain between 1971 and 1991. The correlations for all-cause mortality and population change were strong and significant for males (correlation = -0.68) and females (correlation = -0.50). Adjusting for social class attenuated the correlations, but they remained substantial. In Sweden, a very similar study was conducted (Molarius & Janson 2000). The authors found a similar inverse association between population change and all-cause mortality to that found by Davey Smith and colleagues (1998); this was significant for men (correlation = -0.61) but not for women (correlation = 0.15). After the authors controlled for socioeconomic conditions, results revealed that approximately one third of the correlation between population change and mortality could be explained by the proportion of inhabitants with a high income. Regidor and colleagues (2002) came to similar conclusions in a study of mortality in men in the Madrid area of Spain. They showed that mortality was higher in areas where the population had shrunk than in areas where the population had grown, and that results remained significant when both deprivation and wealth indicators were controlled for. Contrary to these previous studies, recent evidence from Scotland finds that the significant negative association between population change and mortality for small areas in Scotland remains when low social class is accounted for (Davey Smith, Dorling & Shaw 1998); however, the relation disappears when area deprivation is accounted for (Exeter *et al.* 2005). This analysis suggests that the relation between population change and mortality in Scotland is an artefact of the relation between area deprivation and mortality.

8.4.1.2 Population Change and Cause-Specific Mortality

The relationship between population change and cause-specific mortality has rarely been investigated. Results from this thesis are partially supported by the two available studies found to examine this relationship. Results of the correlation between population change and cause-specific mortality in a Swedish study revealed that few correlations were statistically robust (Molarius & Janson 2000). The few

causes of mortality that did show significant and strong correlations with population change were male mortality from cancer (-0.62), alcohol related diseases (-0.56) and mental disorders (-0.50). Similar negative but somewhat weaker correlations were observed for mortality from cardiovascular disease, diabetes mellitus and lung cancer. In women, only mortality from diabetes mellitus was inversely related to population change (-0.49). These findings contrast with to Davey Smith and colleagues (2001) who repeated their initial analysis (Davey Smith, Dorling & Shaw 1998) to include the relationship between population change and cause-specific mortality. They found strong negative correlations for all-cause, lung cancer, coronary heart disease, stroke, respiratory disease and cirrhosis mortality. The results presented in this thesis also find negative correlations between population change and cause-specific mortality as found in Davey Smith *et al* (2001), but often to a weaker extent, and correlations were not always significant. Correlation coefficients that were similar when results from this thesis are compared with Davey Smith were found for male IHD (CHD in Davey Smith, Shaw & Dorling 2001) and COPD (respiratory disease) and female IHD and breast cancer. The results from this thesis provide partial support for the hypothesis that area level population change influences the observed geographic disparity in mortality.

8.4.2 Deprivation

8.4.2.1 Temporal trends

An examination of the slope index of inequality and relative index of inequality demonstrates a widening in the levels of absolute and relative inequality for all-cause mortality between 1980 and 2000 for both males and females. Inequalities have increased for all-cause mortality for males, and to a lesser extent for females (Table 8.4).

Table 8.4: Slope index of inequality (SII) and relative index of inequality (RII) for male and female all-cause mortality, 1981 and 2000

	Males		Females	
	1981	2000	1981	2000
SII (per 100,000)	90	168	91	110
RII	1.11	1.24	1.13	1.17

Of particular interest is the general decrease in regional inequalities between 1986 and 1991. This was followed by an increase in inequalities. These results agree with a number of New Zealand studies, including the work of Pearce and Dorling (Pearce & Dorling 2006a) which showed almost identical patterns of absolute inequalities during the same period, but using geographic differentials in life expectancy as opposed to geographic mortality measures. Similarly, Tobias and Cheung (2003) found that levels of geographic inequality remained at a stable but high level in the late 1990s. The results of this study and the above mentioned New Zealand research are consistent with similar research in a number of other developed countries which have noted widening regional socioeconomic inequalities in health, for example: Britain (Phillimore, Beattie & Townsend 1994; Marang-van de Mheen 1998; Shaw *et al.* 2000a), the USA (Pappas *et al.* 1993; Schalick *et al.* 2000; Singh & Siahpush in press), Europe (Regidor, Gutierrez-Fisac & Rodriguez 1995; Borrell *et al.* 1997) and Australia (Turrell & Mathers 2001).

Although the general finding from this research is that during the last few decades all-cause mortality inequalities have widened, the evidence is not entirely consistent by cause of death. For example, among males and females aged 25-64 in Australia, mortality inequality increased for six and eight specific conditions, respectively, with widening differentials being evident for a number of the major contributors to total mortality in Australia, including: cancer; heart disease; and diabetes. Causes of mortality for which socioeconomic differentials decreased included injury, poisoning and suicide. Similarly, in a recent New Zealand study, Blakely *et al.* (2005) demonstrated an increase in inequalities between high and low income groups for male and female all-cause, all cancers, lung cancer, colorectal cancer, female breast cancer and male IHD mortality. Although Blakely's study is unique in that individual socioeconomic circumstances are known, very similar results were found in the results from this thesis. The differences in the study conducted by Blakely *et al.* (2005) which were not observed in this thesis were the increase in inequalities for breast and colorectal cancer, and the decrease in inequalities for IHD for females and stroke (CVD in thesis) mortality.

8.5 *Synthesis of Research Objectives*

Although the three research objectives are treated somewhat separately throughout this thesis, they are inextricably linked. This thesis demonstrates that socioeconomic inequalities have increased for almost all causes of death between 1981 and 2000. Of particular interest is the fact that these increases are not reflected in a widening of the geographic mortality gap. It would be foolish to assume that the two explanations examined in this thesis are the only ones that are impacting upon the observed geographic inequalities in mortality; obviously they are not. Data from several sources note that the levels of geographic inequality in health are likely to be an expression of a number of complex and socially patterned factors, which operate at a range of scales across the life course (Shaw, Dorling & Brimblecombe 1998; Macintyre, Ellaway & Cummins 2002; Davey Smith 2003; Cummins *et al.* 2005). Therefore, in New Zealand the stable level of geographic inequality in mortality is likely to reflect a range of explanations which to some extent diminish the effect of the growing socioeconomic inequality within New Zealand, and the effects of population change, both of which, are interlinked.

8.6 *Limitations*

A number of data and analytical limitations are identified. Their potential contributions to the results obtained are discussed.

8.6.1 *Data issues*

This research uses mortality to measure the extent of geographic inequalities in health in New Zealand. Mortality statistics have distinct advantages over other sources of health data, primarily because the data are based on mandatory death registration and therefore have the advantage of virtually complete coverage. Consequently, they can be used for the analysis and comparison of small geographic areas and population subgroups. Mortality data are collected from information given on the death certificate. Coding of cause of death involves a complex set of procedures outlined by the International Classification of Diseases, to assign codes to specified causes of death and to select from among these the underlying cause of death. This set of

standardised nomenclature allows for internal consistency and international comparability. It is possible that some degree of error exists within the quality of mortality data available for New Zealand, and therefore, could potentially be affecting the results obtained in this thesis. Error can be introduced through reporting of the underlying cause of death, the change in coding practice over time, and the low number of death certificates that are supported by autopsy findings. For example, in a survey of several hundred New Zealand death certificates, results revealed that 20-25% were flawed in some way or another (Brown & Frankovich 1998). However, in a reply to these findings, Cohen (1998) argues that the New Zealand Health Information Service has a high standard of mortality statistics, largely due to experienced analysts who go to great lengths to obtain accurate details of cause of death. This could involve requests for more detailed information from the certifier and reselection of the underlying cause of mortality. The high level of New Zealand mortality data is reiterated in a recent World Health Organisation document (Mathers *et al.* 2005) that ranks New Zealand amongst the top 23 countries for its high quality of death registration data. It is therefore concluded that whilst acknowledging the potential limitations of mortality data in general, and in the New Zealand context, it would have a minor impact on the results obtained in this research.

Another issue that should be considered is the stability of the geographic areas used in the analysis. The result of administrative reorganisation is that geographic boundaries change over time. As discussed in Chapter Three, boundary changes pose problems of comparability when analysing data for geographic areas over time. A resolution to this problem is to fix boundaries at a chosen point in time and match the data in other years with this geographic definition. This is the approach adopted in this research. It may be argued that the use of 2001 DHB and TLA boundaries is not representative of the past, as the construction of these administrative units occurred relative recently, and these levels of government administration would not have influenced the mortality rates in the past as they could potentially do now (for example through levels of healthcare expenditure and provision of services). However, it is envisaged that the use of contemporary districts will allow future mortality comparisons to be made (as these administrative units are likely to stay constant in the immediate future), and it will be functional for people working within the DHB and TLA

organisations to observe the extent to which mortality rates in their particular area have changed over time.

The use of small numerators (in this context, deaths), especially in areas with small populations, may lead to the calculation of spuriously high mortality rates. For this reason, areas where fewer than five deaths were registered are hatched so that care can be taken in the interpretation of mortality rates. For some causes of death, many TLAs registered fewer than 5 deaths, for example, colorectal cancer. This limits some of the results that could be obtained; for example, this is particularly relevant for the calculation of rate ratios, as mortality rates are not used if they are based on fewer than five deaths.

8.6.2 Artefact explanations

A well known issue in spatial analysis is the modifiable areal unit problem (MAUP), as defined by Openshaw (1984). MAUP generally concerns two issues: scale and aggregation. Bias in this research may be associated with either issue, but the issue of scale has the potential to introduce a greater degree of error into the analyses. This is due to idea that different processes may operate at different levels of geographic scale. The inequality of mortality was examined at the DHB and TLA levels. It is conceivable that determinants of the geographic variability of mortality operate at other geographic scales, such as the census area unit and/or the meshblock level. The decision to analyse mortality data at the DHB and TLA level was based on the comparability with relevant New Zealand literature and from a policy point of view, as these are areas of potential policy intervention. Results from Chapter Five indicate that scale is a very important issue when examining geographic inequalities in mortality. The levels of mortality at the DHB level often masked important differences that were observed at the TLA level, and it was generally found that there was a greater level of inequality at the TLA versus the DHB level. These results are consistent with other literature which has shown that the underlying geography is influential in health differentials (Langford, Bentham & McDonald 1998; Krieger *et al.* 2002; 2003; Woods, Rachet & Coleman 2005).

The problem of inferring causality from geographic patterns is known as the 'ecological fallacy' (Robinson 1950). Mortality rates for areas show the average mortality experience for people living in that area during a particular period of time. Areas can also show the average values for possible causal factors. The fact that there is a significant relationship between mortality and other factors at an areal level does not imply causality. For example, the existence of a generally positive relationship between area level deprivation and mortality (as shown in Chapter Seven) does not mean that all individuals in the deprived areas are 'deprived', and therefore subject to an increased mortality risk, and vice versa. Regional differences in the composition of the resident population from which the NZDep score is calculated, may be affecting the results presented in Chapter Seven.

A potential limitation of this research relates to the use of 2001 New Zealand Deprivation Index to analyse regional inequalities in mortality between 1980 and 2000. Ideally, to allow for temporal sequencing between area deprivation and mortality, a deprivation index for each census year would be preferable. The deprivation rank in 2001 was assumed to be the same throughout the whole study period; this is because comparable deprivation indices for all censuses of interest are not available. In a recent commentary, Harper (2006) suggests that analysis of the geographic polarisation of life expectancy in New Zealand (Pearce & Dorling 2006a) is limited by the non-availability of a deprivation measure prior to 2001. In a reply to this comment, Pearce and Dorling (2006b) rightly note that although regional levels of absolute deprivation may have changed, it is unlikely that the relative ranking would have changed significantly over the period. The authors cite Mare, Mawson & Timmons (2001) whose research confirms this notion. It is therefore concluded that the constant deprivation rank that was applied to all years would have had a minimal, if any, impact on the results obtained in this research.

8.7 Implications of Research in the Health and Policy Arena

Reducing inequalities in health is at the top of Governments Health agenda. Numerous documents have been written to address inequalities in health, such as: *The New Zealand Health Strategy* (Ministry of Health 2000), *The Primary Health Care Strategy* (Ministry of Health 2001b), and *The New Zealand Disability Strategy* (Ministry of Health 2001a). These documents provide frameworks to assist the health sector improve the health status of all New Zealanders. Specifically, DHBs have a statutory responsibility for reducing health inequalities (New Zealand Public Health and Disability Act 2000) and have a powerful mandate to direct health resources as needed at the local level.

A series of workshops was recently held in partnership between academics and the Ministry of Health Inequalities team, entitled: *Tackling Inequalities: Moving Theory to Action* (Ministry of Health 2004). The purpose of which, was to increase the knowledge and skills of DHB and Ministry of Health staff in order to advocate for eliminating inequalities in health. As a result of the workshops, critical factors and obstacles were identified by participants relating to the implementation of strategies to reduce inequalities in health. One of the key obstacles identified was the lack of a common knowledge base across the health sector, stating that information and understanding of the data was needed. This obstacle highlights the notion that DHBs are aware of health inequalities, but that they are unsure about the levels of contemporary inequality and how disparities should be monitored. In response to this obstacle, an implication of the research presented in this thesis could be the dissemination of results amongst DHBs. In addition to providing the most recent mortality rates for regions, the inclusion of time series information will allow DHBs and TLAs to assess progress over time and to compare themselves with other regions. Of particular interest to these organisations would be whether policy initiatives in the past have helped to reduce the burden of disease. The inclusion of TLA analysis will enable DHBs to examine whether cause-specific mortality is being recorded equally among their constituent TLAs. The observation of local level health inequalities could be used as an impetus for further local level and contextual based investigations. The research presented in this thesis can therefore be used to tackle the obstacle of a lack of knowledge of health inequalities. A further issue identified at

the workshop focussed on choosing appropriate measures of health inequalities. The methods presented in this thesis could be followed to assess whether there are inequalities in other health outcomes such as hospital admissions and rates of notifiable disease.

In a related matter, results from this thesis could be used to raise the profile of health inequalities in New Zealand. The numbers of participants at the workshops were less than that expected. The reviewers' identify the possibility that issues of tackling inequalities are not viewed as seriously within DHBs as the Ministry of Health Inequalities Team expected. The report also recognises that some DHBs may view tackling inequalities as an ethnic issue, not an issue for the entire organisation. The research from this thesis demonstrates that wide geographic inequalities in mortality exist, and cannot simply be accounted for by ethnic composition (Pearce & Dorling 2006a). The fact that geographic disparities exist between DHBs should be of great interest. The research presented can be used as a catalyst to raise awareness of disparities amongst these organisations, as the geographic polarisation of health has been given little consideration despite attention paid to the socioeconomic and ethnic disparities in health (Pearce *et al.* in press).

The results of this research suggest that the relationship between area deprivation and mortality is more strongly and consistently correlated with mortality, than population change. Therefore, deprivation circumstances, rather than population change, should continue to be prioritised in the allocation of health resources. However, there are significant correlations between many of the cause-specific mortalities and population change. These results raise concerns about the population-based formula used to calculate DHB funding in New Zealand as the DHB with the lowest all-cause mortality rate (Waitemata) is being provided with disproportionately extra resources and funding due to its increasing population despite its needs for these resources being significantly less (Pearce & Dorling 2006a). Policy makers should be aware of the unique mortality circumstances experienced in areas where the population has declined, as resource availability is likely to fall most in these shrinking areas over time. In light of these results, a re-examination of the funding formula may be wise.

Inextricably linked to this situation of selective migration and hence population change, is economic and income inequalities. Although not specifically studied in this thesis, previous research suggests that as income inequality increases so the patterns of selective migration are enhanced over time to which increasingly, only the wealthiest have resources to be able to move to (Blakely *et al.* 2005; Pearce & Dorling 2006a). In order to moderate income inequalities in New Zealand, a more redistributive tax policy and a more generous benefit system is required (Pearce & Dorling 2006a). The 2001 Household Savings survey indicates that holdings of wealth in New Zealand are highly unequal (Skilling & Waldegrave 2004). In 2001, the wealthiest 10% of the population held over 50% of the total household wealth. In contrast, the bottom 10% held negative wealth, where liabilities exceed assets, and the bottom half of the distribution held less than 3% of the total household wealth. When income is assessed, inequalities also exist. In 1997, the richest 10% of the New Zealand population received 27.8% of the nation's income, whereas the poorest 10% received only 2.2% of income (World Bank 2005).

There is no one central and fundamental policy that is likely to reduce geographic disparities in health. However, reducing geographical inequalities in income inequality, unemployment, housing, education, deprivation and health related behaviours, all of which are socially patterned and undoubtedly the most fundamental determinants of public health, must be an important public policy goal. The fact that the magnitude of geographic inequalities in mortality in contemporary New Zealand are the same as those observed 20 years ago should be of great concern.

8.8 Conclusion

This chapter has reviewed each of the three research objectives of this thesis, and has related the findings to the national and international literature. In light of the fact that contemporary geographic inequalities in mortality are at the same level as those recorded 20 years ago should be of great concern to public health and policy makers. Many obstacles for tackling inequalities in health were identified in the *Tackling Inequalities: Moving Theory to Action* workshop. Several avenues in which this research could benefit DHBs in order to increase their level of awareness of

geographic health inequalities were identified. A number of areas were identified that could benefit from health policy review in order to reduce geographic inequalities in health, primarily, the funding of DHBs based on population size. This research shows that areas where population is shrinking would benefit substantially from increased resources, as they are often the ones that record relatively high mortality rates. This compares with DHBs such as Waitemata that receive the most funding based on growing population, however, they often record the lowest mortality rates.

CHAPTER NINE

Research Conclusions

9.1 Introduction

The research presented in this thesis was designed to increase the level of understanding of geographic inequalities in mortality in New Zealand, and to determine whether or not mortality has become increasingly polarised between 1981 and 2000. The findings have been described in the context of New Zealand and wider international research. The purpose of this final chapter is to summarise the main findings of this research and to discuss future research ideas stemming from this study. Finally, a concluding statement will complete this thesis.

9.2 Thesis Objectives Revisited

Three research objectives were examined in this thesis:

1. to examine the extent to which there are geographic inequalities in all-cause and cause-specific mortality in New Zealand in 2000
2. to determine the extent to which mortality has become geographically polarised between 1981 and 2000
3. to determine the extent to which deprivation and population change influences the geographic variation of mortality during this time period.

The first objective was met through a detailed analysis of male and female mortality rates at the DHB and TLA levels. Geographic inequalities were determined by calculating the rate ratio between the area with the highest mortality rate and the area with the lowest mortality rate. Analysis was also carried out to determine whether the geography of all-cause mortality was similar to the geography of cause-specific mortality, this was calculated using correlation coefficients. The second research objective was fulfilled by calculating the rate ratio of the highest to lowest mortality rates for each year. Beta (β) coefficients and levels of significance were used to determine whether mortality has become polarised over time. This section also

examined the temporal trends to determine the proportion of DHBs and TLAs that experienced increasing or decreasing mortality rates over time. The third research objective was completed through the calculation of absolute and relative deprivation measures and levels of population change during the study period.

9.3 Key Findings

The key findings relating to the geography of mortality address research objective one. It was found that for the majority cause-specific mortalities, the highest mortality rates for 2000 were experienced in the central and eastern regions of the North Island and in Northland. A general trend of a north to south, low to high mortality gradient was found in the South Island with the West Coast usually experiencing relatively high rates. The geography of mortality for all-cancers, lung cancer, CVD, COPD and diabetes mellitus were in general agreement with the geography of all-cause mortality, as described above. However, these trends were not evident for all causes of mortality, particularly breast, prostate and colorectal cancer. Studies from England (Fitzpatrick *et al.* 2001) and the USA (Pickle *et al.* 1996) also indicate a considerable level of agreement between the geographic distribution of all-cause mortality and that for cancer and ischaemic heart disease.

In contemporary New Zealand, health inequalities exist between areas of high ('worst' area) and low ('best' area) mortality rates. Geographic inequality was measured as the ratio of the mortality rate in the worst area to that of the mortality rate in the best area. In 2000, the rate ratio for all-cause mortality was 1.5 for males and 1.4 for females at the DHB level (and 1.6 for both males and females at the TLA level). This indicates that those people who lived in the worst DHB were approximately 1.5 times more likely to die than those who lived in the best DHB. The rate ratio for all-cause mortality and all cancers was the lowest, at 1.4. The highest rate ratios for both males and females; at both geographic levels was that for diabetes mellitus, where there was a three fold difference in mortality rates.

The second research objective was to determine the extent to which mortality became geographically polarised between 1981 and 2000. The geographic inequalities between the worst and best areas generally decreased during this period (as measured by β coefficient). However, when the rate ratio for 2000 was compared to the rate ratio of 1981, for all causes of mortality, for both sexes and geographic levels, there was no significant difference in mortality rates ($p < 0.05$). Therefore, during the period, it can be concluded that the geographic inequality between the worst and best areas remained at a stable and relatively high level, and that no significant polarisation of mortality occurred.

Two determinants that could influence the geographic variation of mortality were examined in this thesis: deprivation and population change. Results show that in relative and absolute terms, there has been a general increase in socioeconomic disparity of mortality between 1981 and 2000. For males the RII increased from 1.11 in 1981 to 1.24 in 2000, and for females, from 1.13 in 1981 to 1.17 in 2000 (at the DHB level). Similarly, the SII increased: by 2000 the gap between the more and lesser deprived was 168 per 100,000 for males (90 per 100,000 in 1981) and 110 per 100,000 for females (91 per 100,000 in 1981). The RII and SII increased for all causes of death during this period, with the exception of colorectal cancer and breast cancer, where there was little change over time or difference between those who lived in more deprived or less deprived areas.

The correlation between population change and all-cause mortality rates is negative, suggesting that those areas that have experienced a decline in population between 1981 and 2000 had higher mortality rates in 2000; similarly, those areas that experienced a growth in population had lower mortality rates. This is in agreement with the international literature, which has shown similar trends in recent times (Molarius & Janson 2000). However, results in this thesis provide limited support of this argument, as there is only a moderate level of agreement between the cause-specific relationships and population change; approximately half of the correlations are statistically significant.

9.4 Future research

Investigation of the geographic polarisation of mortality in New Zealand has until now, focussed on all-cause mortality, at the DHB level, for both sexes combined (Pearce & Dorling 2006a; Pearce *et al.* in press). The research provided in this thesis delves deeper to help understand how specific causes of mortality have changed over the past two decades and quantifies two particular variables that may have been contributing to the patterns observed. It is acknowledged that there are several key areas that warrant further investigation. Exploration into these aspects would increase the level of understanding of the geographic polarisation of mortality and contemporary health inequalities in New Zealand.

International research indicates that mortality rates are higher in areas that have experienced population decline; conversely, mortality rates are lower in areas where there has been a growth in population. Although many studies have found the negative association between population change and mortality remains when deprivation is accounted for (Davey Smith, Dorling & Shaw 1998; Molarius & Janson 2000; Davey Smith, Shaw & Dorling 2001), Exeter (2005) found that this was not true for Scotland. The analysis in this thesis did not account for deprivation in the population change analysis; therefore a further avenue of study would be to investigate whether the relationship between population change and mortality remains when area deprivation is controlled for.

The geographic inequalities of mortality presented in this thesis focussed on the best and worst areas; however, to analyse the overall trends, it would be a useful next step to divide the population into ten equal sized population groups based on mortality rates. This type of analysis has been carried out for Britain (Dorling 1997). The 'bottom' group would be made up of the worst tenth of areas in terms of mortality rates and so on up to the best tenth of areas, which have the lowest mortality rates. These decile groups could then be compared, and the relative changes in their mortality charted over time. The places that make up each decile of the population can therefore change over time as the relative health of areas changes.

From an economic point of view, an interesting research avenue would be the analysis of mortality rates for those aged 65 and under, as opposed to all ages combined. Sixty five is the age that people officially retire in New Zealand; therefore, any deaths that occur in the population under 65 are potentially the most avoidable in society and are most costly to it.

As noted by Dorling (1997) “explaining the patterns of life chances will be far more difficult than describing them” (p 147). This thesis has discussed the associations between mortality rates and two variables: deprivation and population change. It is well known that other compositional and contextual factors could be influencing the geography of mortality. For example, more deprived areas are often more poorly resourced in terms of shops, recreational facilities, public transport and primary healthcare services than those serving better-off neighbourhoods (Macintyre 1997a). Several factors have been identified that would be particularly useful to study in the future: ethnicity, income inequality, the variation in DHB funding, and the geography of health behaviour.

It is possible that some of the evidence for growing geographical inequalities could be explained by ethnic disparities in health. Research has shown that in New Zealand, there is considerable variation between Maori and non-Maori health outcomes: non-Maori have a higher health status than their Maori counterparts (Ministry of Health & University of Otago 2006). However, Pearce and Dorling (2006a) argue that the increase in polarisation is unlikely to be fully explained by widening ethnic differences in mortality, as deaths of Maori account for only 10% (approximately) of total deaths in New Zealand. Unfortunately it was not possible to obtain ethnicity data for the research undertaken in this thesis; a valuable extension of this research would be to determine the extent to which ethnicity correlates with the geographic variation in mortality.

As discussed in Chapter Two, the international literature which focuses on the relationship between income inequality and health is highly debated; this is also reflected in New Zealand research (Blakely, Atkinson & O'Dea 2003; Barnett, Pearce & Moon 2004). Income inequality was a contextual variable that was pursued for this thesis but after much deliberation it was decided the cost of obtaining data to create a

gini coefficient score for each DHB and TLA for each census during the study period, was too high. Gini coefficients have been calculated for New Zealand as a whole and for Health Funding Authorities (before the introduction of DHBs) (Howden-Chapman & Tobias 2000) but not for contemporary administration districts. The calculation of a gini coefficient value for each DHB and TLA would be extremely useful as it would not only further this research, but it could be utilised in other health applications to see whether income inequality had an impact on their geographic variations.

A further variable that could potentially impact on the spatial variation of mortality is the variation in spending between the DHBs. One of the few New Zealand studies that have looked at a similar issue is that conducted by Malcolm (2002), who examined the variation between DHBs in expenditure on referred services and compared the gap between budgets and actual expenditure in these services. He found a wide percentage variation from equity between the DHBs, and his analysis showed a high and significant correlation between this inequality and measures of disadvantage. He concluded that the inverse care law (those populations in greatest need are those less likely to receive the services they need) is largely ingrained in New Zealand's primary healthcare system. It would be beneficial to complete a similar study to observe whether variations in health expenditure impact upon the geographic variation of mortality in New Zealand.

It is well known that biological factors (for example blood pressure) and behavioural factors (for example physical activity) are causally associated with health outcomes. Unfortunately data on health behaviour factors are not available through the census; however, such information is available through Health Surveys, which are periodically undertaken by the Ministry of Health. The most up to date New Zealand Health Survey (Ministry of Health 2004) does have DHB level data on a variety of health behaviours and health risk factors, including fruit and vegetable intake, levels of physical activity, alcohol consumption and tobacco smoking. Of particular interest would be to determine whether there is a correlation between health behaviour and cause-specific mortality.

Overall, an extremely useful and as yet unexplored avenue of research would be to undertake regression analysis, while controlling for collinearity, to see how much

variation in the geography of mortality can be explained by the above-mentioned dependent variables (deprivation, population change, income inequality, ethnicity, DHB expenditure and health behaviour/risk factors).

Chapter Five provided a mainly descriptive analysis of the geography of mortality. It was not intended to provide an in-depth spatial analysis; however, this would be an interesting opportunity to follow up. One Geographic Information Systems (GIS) technique that would be relevant to this research would be a spatial autocorrelation measure. Spatial autocorrelation refers to the correlation of a variable with itself in space (Lawson 2001). A positive autocorrelation exists when high values correlate with high neighbouring values or when low values correlate with low neighbouring values. To compare an area's mortality rate with its neighbouring mortality rates, a Moran scatter plot can be calculated in GeoDa. This provides a statistic (Moran's I) to determine the extent of overall clustering that exists in a dataset. A further technique that would be worth considering in relation to the geography of mortality would be smoothing of the mortality rates. Advantages of smoothing include the removal of spurious outliers and the highlighting of overall patterns beyond particular high and low rates. An obvious disadvantage would be that over-smoothing hides interesting extreme cases. One of the rate smoothers identified as warranting further research is Empirical Bayes smoothing which is implemented in GeoDa.

9.5 Concluding Statement

This research has provided an up-to-date description of contemporary geographic inequalities in mortality in New Zealand, and how they have changed over the past two decades. Despite New Zealand registering a decline in age standardised mortality rates for all-cause mortality; mortality rates from cancer, female lung cancer, male colorectal cancer, breast cancer, prostate cancer and COPD have increased. Within these cause-specific mortalities, sex and regional variations became apparent. It is estimated that approximately 900 lives could have been saved in 2000 if the worst DHBs could have reduced their mortality rate to that of the overall New Zealand rate. An even larger number could have been saved if the worst areas could have reduced their mortality rate to that of the best area. During the period 1981 to 2000, the level

of regional socioeconomic inequalities in New Zealand increased rapidly, moreover, by 2000 the relative and slope index of inequalities were at their highest levels recorded during this period. The high levels of contemporary geographic inequality should be of great concern to policy makers, as this research shows that there are major differences in mortality rates between the 'worst' and 'best' areas, and between the most deprived and least deprived areas of New Zealand. Future research in this field should focus on investigating other factors that could be influencing the geographic disparity in mortality, including: income inequality, health behaviour factors and DHB expenditure. This research reveals that New Zealand has not improved geographical inequalities in health for the past 20 years, and highlights the significant challenge for public health and health care officials to reduce these disparities.

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Appendices

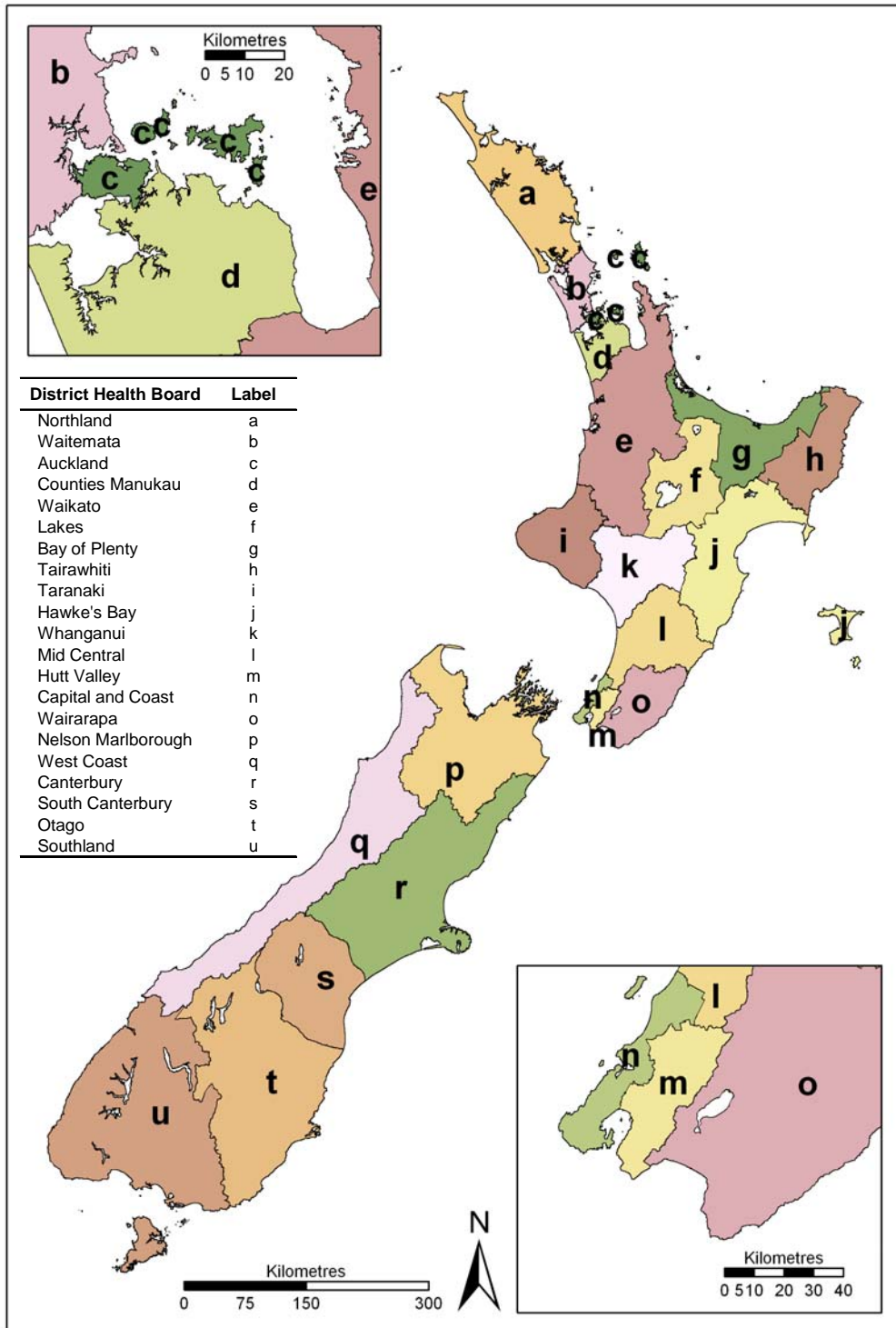
Appendix 1 Legislative requirements of the Ministry of Health

The Ministry of Health's mandate to collect health information is set out in legislation, in particular:

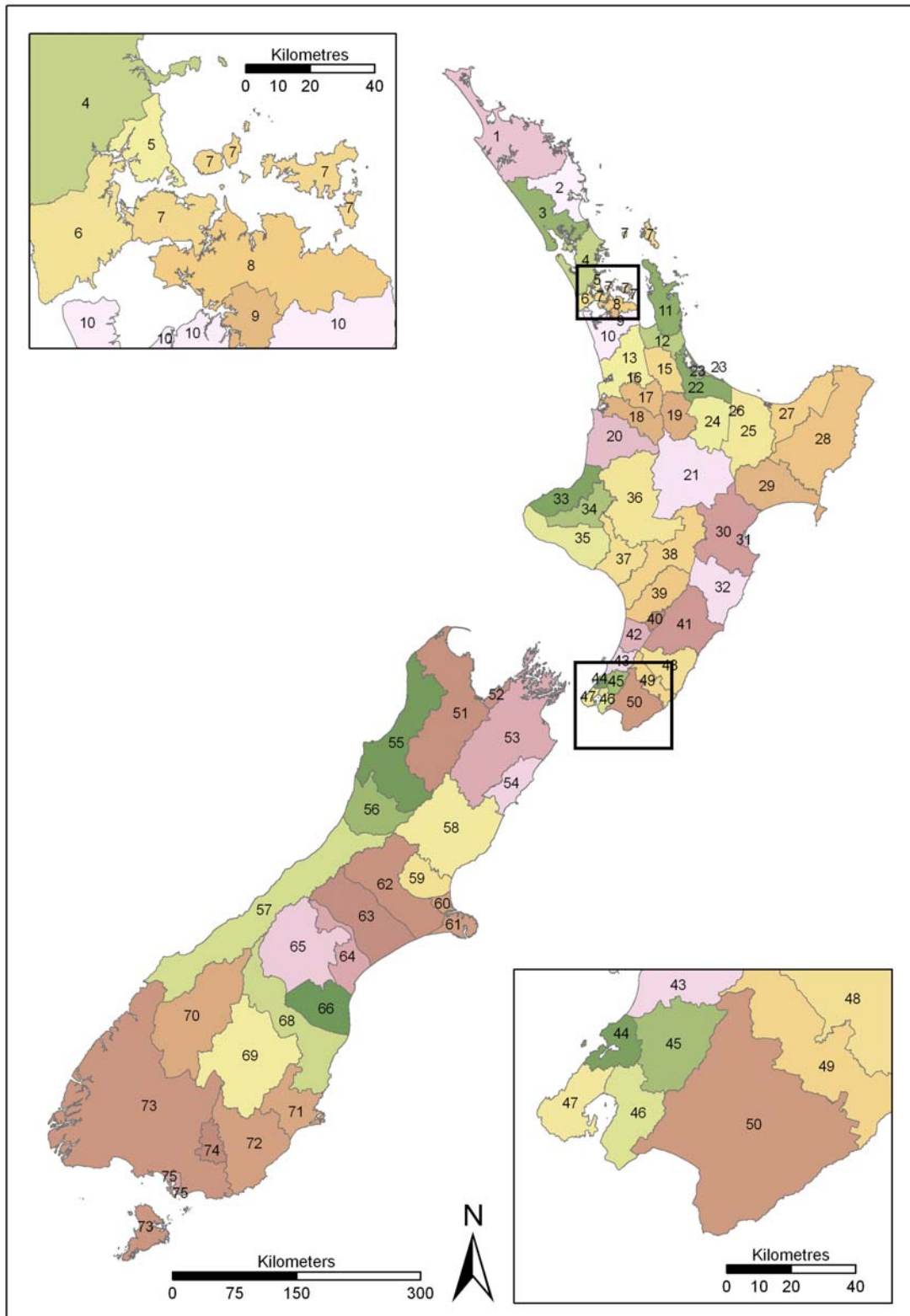
- Births, Deaths and Marriages Registration Act 1995
- Coroners Act 1988
- New Zealand Public Health and Disability Act 2000
- Health Act 1956
- Privacy Act 1993
- Health Information Privacy Code 1994
- Health (Retention of Health Information) Regulations 1996
- Official Information Act 1982
- Cancer Registry Act 1993
- Cancer Registry Regulations 1994
- Public Records Act 2005

Source: (New Zealand Health Information Service 2006b)

Appendix 2: Map of the District Health Boards



Appendix 3: Map of the Territorial Local Authorities



	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	870.0	914.3	958.5	860.3	904.4	948.6	852.5	896.6	940.6	863.6	908.1	952.6	889.1	934.3	979.5	905.3	951.1	996.9	853.1	897.9	942.8	865.1	910.5	956.0	842.5	887.7	932.8	812.9	857.5	902.1
Bay of Plenty	808.4	881.4	954.3	788.1	859.2	930.3	784.9	855.1	925.3	767.3	835.8	904.2	803.4	872.5	941.6	799.5	867.7	935.9	793.1	860.1	927.2	769.3	834.4	889.4	761.6	825.4	889.2	755.0	817.6	880.2
Canterbury	804.3	845.5	886.6	809.8	850.9	892.1	811.2	852.2	893.3	831.6	873.0	914.4	815.2	856.1	897.0	822.2	863.2	904.1	834.7	875.8	916.9	831.0	872.0	912.9	824.7	865.4	906.1	793.9	833.7	873.6
Capital and Coast	831.6	890.7	949.7	793.9	851.6	909.4	757.4	813.8	870.3	754.4	810.8	867.1	760.5	817.1	873.6	784.4	841.8	899.2	792.1	849.8	907.5	793.0	850.8	908.5	776.3	833.5	890.7	766.7	823.7	880.6
Counties Manukau	805.8	864.8	923.9	775.7	832.7	889.7	780.8	837.3	893.7	784.9	840.6	896.4	798.1	853.7	909.3	819.4	875.0	930.6	835.0	890.5	946.0	820.2	874.7	929.2	790.0	843.0	896.0	791.8	844.4	897.0
Hawke's Bay	843.5	915.7	987.9	841.9	913.9	985.8	848.5	920.5	992.5	860.9	933.2	1005.5	848.6	920.1	991.7	839.5	910.5	981.5	845.1	916.2	987.3	841.1	911.9	982.7	829.2	899.4	969.6	808.0	877.1	946.3
Hutt Valley	842.7	920.5	998.3	820.2	897.0	973.8	803.6	879.6	955.6	799.4	875.3	951.2	808.6	884.7	960.8	849.6	927.4	1005.2	883.9	963.5	1043.2	886.8	966.6	1046.5	850.0	928.4	1006.7	782.0	857.3	932.6
Lakes	820.5	924.6	1028.7	829.9	933.2	1036.6	823.3	924.6	1025.9	861.7	964.2	1066.7	850.6	951.4	1052.2	868.0	968.8	1069.5	854.8	954.0	1053.1	841.8	939.5	1037.1	820.2	916.3	1012.4	810.3	905.2	1002.0
MidCentral	876.6	945.5	1014.4	861.7	929.9	998.2	851.3	919.1	986.8	855.6	923.3	991.0	862.0	929.8	997.5	893.6	962.4	1031.2	924.9	994.9	1064.8	923.9	993.8	1063.6	894.0	962.6	1031.3	867.0	934.6	1002.2
Nelson-Marlborough	743.5	820.2	896.9	729.0	804.5	880.1	733.8	809.1	884.5	710.6	784.3	858.0	730.5	804.8	879.1	705.5	778.0	850.6	665.6	735.7	805.9	656.9	726.1	795.3	661.8	730.9	800.0	654.2	722.5	790.9
Northland	817.3	894.7	972.1	783.5	858.8	934.2	780.7	855.6	930.5	809.2	884.8	960.4	822.3	898.0	973.7	832.0	907.7	983.3	857.7	933.9	1010.0	844.3	919.2	994.2	850.0	924.6	999.2	813.5	886.0	958.6
Otago	861.6	922.5	983.5	858.2	919.2	980.2	866.3	927.8	989.2	881.7	943.8	1005.8	882.5	944.7	1006.9	875.3	937.3	999.4	846.0	907.0	968.1	848.1	909.4	970.6	839.8	900.8	961.8	801.9	861.5	921.2
South Canterbury	827.5	932.2	1037.0	799.3	902.4	1005.6	773.4	875.2	977.0	827.6	932.8	1038.0	814.4	919.2	1024.1	813.8	918.5	1023.3	753.2	853.6	954.0	748.9	848.7	948.5	699.7	796.1	892.6	695.4	791.2	887.1
Southland	876.7	961.8	1046.9	860.6	945.0	1029.5	880.0	965.5	1050.9	883.9	969.8	1055.8	895.5	982.4	1069.3	891.9	978.9	1065.9	886.8	973.5	1060.1	883.4	969.7	1056.0	870.0	955.7	1041.3	855.4	940.3	1025.2
Tairāwhiti	900.5	1035.9	1171.2	854.3	986.3	1118.4	861.8	994.4	1127.0	870.4	1003.8	1137.3	887.1	1021.7	1156.3	852.8	984.9	1117.0	811.6	941.1	1070.5	814.6	944.5	1074.4	823.5	954.1	1084.7	797.9	926.8	1055.8
Taranaki	798.1	876.7	955.3	800.4	879.2	957.9	812.8	891.9	971.0	785.5	863.3	941.0	812.4	891.2	970.0	814.0	892.7	971.4	780.3	857.3	934.4	780.8	857.9	935.0	742.8	818.1	893.4	761.9	838.2	914.5
Waikato	821.5	872.8	924.1	817.2	868.1	919.0	820.3	871.1	921.8	840.1	891.2	942.3	824.2	874.6	925.0	841.1	891.8	942.4	822.9	872.7	922.5	813.7	862.9	912.2	805.6	854.4	903.2	791.9	840.0	888.2
Wairarapa	795.4	933.5	1071.5	800.5	939.3	1078.0	835.1	976.5	1117.8	820.8	961.6	1102.3	823.0	964.4	1105.8	796.4	936.4	1076.3	802.1	941.2	1080.2	791.7	928.9	1066.2	812.6	950.5	1088.3	833.3	972.5	1111.6
Waitemata	728.1	775.8	823.6	709.5	756.1	802.7	705.5	751.5	797.4	754.0	784.0	799.5	720.6	766.1	811.5	727.7	773.0	818.3	730.4	775.3	820.2	716.8	760.9	804.9	712.3	755.8	799.3	697.9	746.5	783.2
West Coast	1100.1	1265.5	1430.8	1073.6	1236.5	1399.4	1015.7	1175.2	1334.6	1091.0	1256.7	1422.4	1098.2	1264.7	1431.2	1152.5	1322.8	1493.2	1110.5	1279.2	1447.9	1122.5	1292.9	1463.4	1065.7	1233.2	1400.7	1055.9	1223.3	1390.8
Whanganui	782.3	878.0	973.7	794.8	891.7	988.6	788.9	885.8	982.8	800.5	898.4	996.4	785.3	882.7	980.1	789.3	887.3	985.4	774.1	871.3	968.4	774.0	871.1	968.2	754.5	850.5	946.4	740.8	835.9	931.0
New Zealand	873.5	888.2	903.0	860.7	875.3	889.9	857.1	871.7	886.2	865.5	880.1	894.6	870.7	885.3	899.8	879.3	893.9	908.5	875.2	889.7	904.2	866.1	880.5	894.9	850.6	864.9	879.1	831.0	845.0	859.1
	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	808.2	852.8	897.5	805.5	850.1	894.6	803.5	847.9	892.3	792.7	836.7	880.8	780.0	823.7	867.3	766.5	809.8	853.0	750.0	793.0	835.9	730.1	772.6	815.1	718.1	760.4	802.7	704.5	746.7	788.8
Bay of Plenty	759.2	821.1	882.9	771.3	832.6	893.9	760.4	820.3	880.2	746.2	804.7	863.2	750.1	807.9	865.8	748.8	805.9	863.1	723.6	779.3	835.1	715.1	770.0	825.0	713.1	767.4	821.6	747.2	802.3	857.3
Canterbury	792.3	832.0	871.7	787.9	827.2	866.5	782.5	821.4	860.3	774.0	812.5	850.9	759.2	797.0	834.8	742.0	779.1	816.2	713.3	749.6	785.9	699.2	735.0	770.8	684.4	719.7	755.0	686.6	721.8	757.1
Capital and Coast	759.8	816.5	873.2	754.1	810.3	866.5	743.5	799.1	854.6	739.1	794.2	849.3	728.6	783.0	837.3	736.3	790.7	845.0	707.6	760.9	814.1	713.1	766.5	819.9	692.5	745.0	797.5	689.3	741.6	793.9
Counties Manukau	792.0	844.3	896.6	795.4	847.2	898.9	785.1	835.9	886.7	771.1	820.9	870.7	760.9	809.7	858.5	733.5	780.9	828.3	713.8	760.2	806.5	712.2	758.2	804.1	711.0	756.7	802.3	727.8	773.7	819.6
Hawke's Bay	842.1	912.5	982.9	836.9	906.7	976.4	835.2	904.6	974.0	795.2	862.6	930.0	788.7	855.5	922.2	780.6	846.6	912.7	771.4	837.0	902.6	763.1	828.2	893.4	758.8	823.7	888.6	753.3	817.8	882.3
Hutt Valley	766.8	841.6	916.4	755.9	830.3	904.6	763.5	838.2	912.8	750.2	824.0	897.9	765.8	840.3	914.8	757.7	831.6	905.6	749.1	822.6	896.2	743.1	816.1	889.1	725.0	797.0	869.1	718.9	790.7	862.5
Lakes	833.1	928.8	1024.6	816.8	910.8	1004.7	812.8	905.9	999.0	785.3	876.3	967.3	810.7	902.5	994.4	862.2	956.2	1050.1	828.8	920.1	1011.4	814.8	904.8	994.8	760.1	846.8	933.5	795.1	883.7	972.2
MidCentral	835.3	901.6	967.9	833.1	899.3	965.4	833.9	899.9	965.8	850.1	916.6	983.1	843.5	909.6	975.6	799.6	863.8	928.1	754.4	816.7	879.0	752.7	814.8	876.9	770.9	833.5	896.1	783.6	846.5	909.4
Nelson-Marlborough	641.9	709.1	776.3	622.3	687.7	753.1	607.5	671.5	735.5	636.5	701.4	766.4	647.3	712.2	777.2	644.9	709.2	773.4	612.8	675.0	737.3	611.1	672.7	734.3	636.4	698.8	761.1	657.2	720.0	782.8
Northland	810.0	881.7	953.5	807.2	878.1	949.0	828.6	899.7	970.8	821.6	891.8	961.9	814.3	883.5	952.8	804.1	872.2	940.2	782.2	848.9	915.5	803.9	871.0	938.0	782.1	848.0	914.0	788.7	854.5	920.4
Otago	800.8	860.4	920.0	773.5	831.9	890.3	765.2	823.2	881.2	754.0	811.4	868.8	754.3	811.5	868.6	756.1	813.1	870.1	735.9	792.2	848.6	725.5	781.5	837.6	705.7	761.2	816.6	710.3	766.0	821.7
South Canterbury	734.9	833.0	931.1	776.7	877.1	977.5	789.9	890.8	991.8	751.4	849.6	947.9	740.1	837.0	934.0	738.6	835.1	931.5	741.2	837.9	934.5	720.2	815.7	911.2	676.1	769.1	862.0	671.2	763.8	856.3
Southland	869.7	955.2	1040.7	841.1	925.3	1009.4	816.6	899.5	982.3	801.9	884.0	966.1	824.4	907.3	990.3	825.0	907.9	990.8	800.9	882.5	964.2	767.1	847.1	927.0	763.2	842.9	922.6	761.4	841.1	920.8
Tairāwhiti	789.1	917.8	1046.5	825.8	957.2	1088.5	845.7	978.4	1111.2	895.1	1031.9	1168.7	892.3	1028.9	1165.4	913.2	1051.6	1190.1	849.9	984.0	1118.0	832.2								

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	716.1	753.1	790.0	724.4	761.5	798.6	718.1	755.1	792.2	736.9	774.5	812.1	739.9	777.7	815.5	761.3	799.8	838.3	753.4	791.9	830.3	745.2	783.7	822.2	724.4	762.7	800.9	703.5	741.5	779.5
Bay of Plenty	628.6	697.9	767.3	667.0	737.2	807.3	670.8	739.9	809.0	722.0	792.5	863.0	702.7	771.4	840.2	700.6	768.5	836.4	679.1	744.9	810.6	694.4	759.8	825.2	707.7	772.6	837.5	704.7	768.4	832.1
Canterbury	700.1	737.1	774.2	680.8	717.2	753.5	680.4	716.6	752.7	695.2	731.6	768.0	691.6	727.8	764.0	702.2	738.5	774.8	694.4	730.4	766.4	691.9	727.7	763.5	682.6	718.0	753.4	676.0	711.2	746.4
Capital and Coast	672.1	724.0	775.9	672.7	724.7	776.6	641.1	691.8	742.6	658.4	709.9	761.4	650.3	701.5	752.7	698.4	751.3	804.3	697.7	750.7	803.7	716.7	770.4	824.1	697.2	750.2	803.2	685.5	738.1	790.7
Counties Manukau	720.1	777.8	835.5	698.4	754.4	810.4	684.1	738.7	793.3	693.0	747.2	801.4	706.5	760.6	814.7	747.7	802.6	857.4	723.3	776.4	829.5	709.7	761.6	813.5	678.4	728.6	778.8	669.5	718.8	768.1
Hawke's Bay	691.8	756.0	820.3	688.3	752.4	816.5	706.1	770.9	835.7	749.5	816.2	882.9	748.0	814.6	881.2	771.1	838.7	906.3	758.7	825.3	891.9	750.6	816.5	882.3	721.6	785.9	850.1	696.9	759.7	822.5
Hutt Valley	666.1	733.3	800.5	682.2	750.0	817.8	684.2	752.0	819.8	688.9	756.7	824.6	695.5	763.4	831.3	732.5	801.9	871.3	742.6	812.9	883.1	743.0	813.7	884.5	706.5	775.9	845.4	714.9	785.2	855.6
Lakes	666.9	767.9	869.0	677.8	778.5	879.3	664.3	762.3	860.2	707.4	807.8	908.1	731.8	832.4	933.0	790.3	893.5	996.8	778.8	879.6	980.4	805.4	906.7	1008.0	763.5	861.1	958.7	742.0	837.4	932.7
MidCentral	715.2	777.3	839.4	695.8	756.9	818.0	695.9	756.7	817.6	732.5	794.5	856.6	762.2	825.1	888.1	793.4	857.3	921.2	807.9	872.3	936.8	789.7	853.4	917.0	763.5	826.0	888.6	734.4	795.7	857.1
Nelson-Marlborough	629.7	701.3	772.8	625.3	696.3	767.2	628.3	699.0	769.6	627.5	697.6	767.8	582.7	650.0	717.3	589.0	656.3	723.5	613.2	681.2	749.3	632.5	700.9	769.4	613.6	680.6	747.5	585.6	650.5	715.4
Northland	675.4	753.6	831.8	673.1	750.5	828.0	665.2	741.5	817.8	679.8	756.1	832.4	694.6	771.0	847.3	712.4	788.7	865.0	699.0	773.6	848.2	699.9	773.7	847.5	707.5	781.1	854.6	713.0	786.0	859.0
Otago	720.5	774.0	827.6	684.2	736.5	788.8	690.4	743.0	795.5	719.6	773.2	826.9	716.7	770.3	823.9	723.5	777.3	831.2	712.8	766.4	820.0	716.7	770.5	824.2	719.4	773.3	827.1	702.8	756.0	809.2
South Canterbury	687.6	781.3	875.0	619.3	708.4	797.4	626.2	715.4	804.5	644.5	734.6	824.7	651.0	741.2	831.4	676.3	767.7	859.1	676.2	767.2	858.3	689.7	781.4	873.2	700.5	792.8	885.2	678.9	769.8	860.7
Southland	716.3	794.9	873.4	682.6	759.4	836.1	679.4	756.0	832.6	722.4	801.2	880.1	744.9	824.8	904.8	783.3	865.2	947.1	729.0	807.8	886.7	713.7	791.6	869.4	693.9	770.5	847.2	724.1	802.0	880.0
Tairāwhiti	721.7	845.0	968.3	692.1	813.2	934.2	695.5	816.9	938.3	715.5	838.5	961.5	704.8	826.8	948.9	705.9	828.0	950.1	666.2	785.0	903.8	682.5	802.6	922.7	684.8	805.0	925.1	679.5	799.0	918.5
Taranaki	685.6	759.7	833.8	668.5	741.6	814.7	679.5	753.0	826.6	681.6	755.1	828.6	730.4	806.2	882.0	735.3	811.2	887.0	707.4	781.5	855.6	651.0	721.9	792.8	627.3	696.6	766.0	628.4	697.5	766.6
Waikato	712.6	763.5	814.4	679.2	728.4	777.7	684.8	733.7	782.6	694.9	743.9	792.9	695.5	744.2	792.9	691.9	740.2	788.4	680.0	727.3	774.7	697.8	745.3	792.9	698.5	745.7	792.9	695.6	742.4	789.2
Wairarapa	678.7	806.4	934.0	599.5	719.7	839.9	585.4	703.8	822.3	594.6	713.6	832.7	606.3	726.0	845.6	623.6	744.3	865.0	668.3	792.4	916.5	692.0	817.7	943.3	696.4	822.1	947.8	695.2	820.3	945.3
Waitemata	589.4	633.4	677.4	583.0	626.3	669.5	566.5	608.6	650.8	584.0	626.4	668.8	601.9	644.4	687.0	630.8	673.9	717.0	632.6	675.1	717.6	624.0	665.6	707.3	623.4	664.5	705.5	621.1	661.5	702.0
West Coast	932.0	1092.8	1253.7	860.3	1014.9	1169.4	828.4	980.0	1131.5	877.6	1032.8	1188.1	874.5	1029.2	1184.0	932.4	1091.1	1249.8	884.2	1039.8	1195.3	847.0	1000.2	1153.4	794.8	944.4	1094.1	808.3	959.9	1111.5
Whanganui	638.6	725.6	812.6	635.9	722.7	809.5	646.3	733.6	821.0	636.0	722.6	809.2	646.7	733.9	821.1	658.9	746.9	834.9	654.5	742.2	829.9	665.9	754.3	842.7	669.6	758.3	847.0	694.4	784.8	875.1
New Zealand	733.1	746.6	760.1	720.6	733.9	747.2	717.6	730.8	744.0	736.8	750.1	763.5	740.7	754.0	767.3	761.9	775.3	788.8	753.9	767.2	780.5	752.3	765.5	778.8	738.5	751.5	764.6	729.5	742.5	755.4

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	691.3	729.2	767.1	693.0	730.9	768.9	692.1	730.1	768.1	690.7	728.6	766.6	688.7	726.6	764.4	695.6	733.7	771.8	684.3	722.3	760.3	675.5	713.4	751.2	648.4	685.6	722.8	642.4	679.5	716.7
Bay of Plenty	677.1	738.7	800.4	654.0	713.4	772.9	634.5	692.0	749.4	641.5	698.1	754.8	669.0	725.9	782.8	667.7	723.8	779.8	646.6	700.9	755.2	629.2	682.1	735.0	628.0	680.0	732.1	642.0	694.0	746.0
Canterbury	681.2	716.4	751.6	671.5	706.2	740.8	678.4	712.9	747.5	676.5	710.8	745.1	693.0	727.5	762.0	674.1	707.9	741.7	649.4	682.4	715.5	640.3	673.0	705.7	626.9	659.1	691.4	634.7	667.1	699.4
Capital and Coast	668.2	720.2	772.2	646.1	697.0	747.9	621.6	671.3	721.0	619.2	668.5	717.8	629.8	679.2	728.6	645.2	694.9	744.6	631.0	679.9	728.9	622.4	671.0	719.5	614.5	662.6	710.7	632.6	681.2	729.9
Counties Manukau	687.0	736.4	785.8	688.1	736.8	785.5	688.8	737.1	785.3	685.3	732.8	780.2	693.4	740.6	787.9	701.1	748.1	795.0	677.1	722.8	768.5	675.7	721.0	766.3	656.4	700.7	744.9	670.3	714.8	759.2
Hawke's Bay	687.0	749.0	811.0	709.5	772.1	834.6	714.3	776.6	838.9	715.2	777.2	839.1	693.9	754.6	815.3	691.9	752.1	812.3	692.9	753.1	813.4	723.9	785.3	846.8	701.9	762.4	823.0	725.6	787.1	848.7
Hutt Valley	702.8	772.9	843.1	737.5	809.0	880.5	706.3	776.0	845.6	732.2	802.8	873.4	726.8	796.8	866.8	749.9	820.6	891.4	701.6	770.2	838.7	700.6	769.1	837.6	660.5	727.1	793.7	695.8	764.1	832.3
Lakes	699.9	791.8	883.6	701.5	792.5	883.4	693.9	783.0	872.0	710.6	799.5	888.4	692.6	779.6	866.5	692.5	778.7	864.9	673.8	758.4	843.0	705.6	791.6	877.5	722.4	808.8	895.2	756.9	845.1	933.3
MidCentral	732.9	794.1	855.3	752.5	814.2	875.8	742.5	803.4	864.3	735.7	796.1	856.4	724.5	784.1	843.7	727.7	787.2	846.6	709.6	768.2	826.9	701.0	759.2	817.3	664.2	720.7	777.2	685.1	742.3	799.6
Nelson-Marlborough	562.9	626.2	689.4	571.6	634.8	698.0	569.7	632.3	694.9	607.7	671.7	735.7	625.7	690.0	754.2	631.9	695.9	759.9	604.3	666.3	728.4	595.0	656.0	717.0	598.4	659.1	719.7	624.4	685.7	747.0
Northland	680.7	751.3	821.9	671.9	741.1	810.3	674.0	742.6	811.1	719.6	789.5	859.3	726.2	795.6	865.0	725.0	793.6	862.2	687.8	753.9	819.9	676.1	741.0	805.9	653.8	717.0	780.3	681.7	745.8	809.8
Otago	703.9	757.1	810.3	685.0	737.2	789.4	664.6	715.6	766.6	647.8	698.0	748.2	642.4	692.1	741.7	649.4	699.1	748.9	673.2	723.9	774.6	682.2	733.3	784.5	680.7	731.8	783.0	679.9	731.0	782.2
South Canterbury	672.5	762.9	853.3	652.9	742.1	831.4	672.7	763.2	853.7	664.7	754.6	844.6	662.1	751.6	841.1	636.1	724.0	812.0	621.1	707.7	794.3	610.8	696.4	782.0	616.6	702.2	787.9	639.5	725.9	812.3
Southland	715.5	792.7	870.0	708.7	785.4	862.0	707.5	783.9	860.2	726.7	803.8	880.9	735.0	812.3	889.6	688.6	763.3	837.9	650.6	723.1	795.6	630.8	702.1	773.3	639.2	710.7	782.2	673.2	746.3	819.4
Tairāwhiti	687.7	807.7	927.8	730.3	853.1	975.9	736.3	859.3	982.2	797.6	924.8	1052.0	769.2	894.0	1018.7	787.2	912.9	1038.6	721.0	842.0	963.0	796.7	924.1	1051.6	737.0	8				

	1981		1982		1983		1984		1985		1986		1987		1988		1989		1990														
	LL	ASR	UL	LL	ASR	UL	LL	ASR	UL	LL	ASR	UL	LL	ASR	UL	LL	ASR	UL	LL	ASR	UL												
Ashburton District	800.7	808.3	815.9	863.2	871.1	879.1	889.0	907.2	915.4	1003.8	1021.1	960.3	968.8	977.2	935.6	943.9	952.3	845.3	853.4	861.4	764.1	771.9	779.8	760.2	768.1	776.0	736.4	744.3	752.3				
Auckland City	808.8	815.0	1021.2	799.1	904.2	1009.2	792.1	896.4	1000.7	803.9	908.0	1021.1	829.1	934.3	1039.5	847.0	952.2	1057.5	848.1	952.0	1056.0	810.4	910.5	1010.7	789.9	887.6	985.3	762.1	857.2	952.3			
Banks Peninsula District	861.1	861.1	865.0	783.9	785.9	787.9	826.3	828.3	830.3	793.4	795.5	797.6	869.5	871.8	874.0	798.5	800.7	802.9	803.0	801.0	807.2	660.4	662.3	664.2	670.3	672.1	674.0	745.2	747.2	749.1			
Butler District	966.9	970.6	974.3	1016.7	1020.5	1024.3	987.4	991.2	994.9	1171.1	1175.2	1179.2	1197.2	1201.2	1205.3	1238.1	1242.3	1246.4	1185.1	1189.1	1193.1	1174.0	1177.9	1180.4	1150.4	1154.3	1158.1	1101.3	1105.1	1108.9			
Carterton District	828.5	830.5	832.4	777.5	779.3	781.2	874.3	876.3	878.3	877.2	879.1	871.5	973.5	975.5	977.5	858.9	852.8	854.7	858.9	860.8	862.7	799.2	801.1	802.9	970.6	972.6	974.6	966.6	968.6	970.6			
Central Hawke's Bay District	924.0	927.4	930.8	915.2	918.7	922.1	966.1	969.7	973.4	982.1	985.8	989.6	926.4	930.1	933.9	862.2	865.8	869.4	923.5	927.2	930.9	945.4	949.1	952.7	942.9	946.5	950.1	872.9	876.3	879.7			
Central Otago District	769.4	773.4	777.4	861.6	865.9	870.2	909.1	913.7	918.2	919.4	924.0	928.6	848.5	853.1	857.6	831.6	836.2	840.8	805.3	809.9	814.5	734.4	738.8	743.2	682.7	686.9	691.1	680.0	684.2	684.2			
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Christchurch City	779.8	865.7	951.7	780.7	867.2	953.7	779.0	865.8	952.5	797.9	885.8	973.7	789.7	877.4	965.1	802.4	890.9	979.5	815.5	905.0	994.5	819.8	909.9	1000.1	813.3	903.6	993.9	773.6	862.2	950.7			
Clutha District	1009.0	1014.7	1020.4	1005.7	1011.4	1017.0	993.0	998.6	1004.2	1014.9	1020.5	1026.1	942.6	948.0	953.3	895.4	900.6	905.8	962.7	968.1	973.6	1001.7	1007.3	1012.8	1044.0	1049.7	1055.5	868.6	873.9	879.2			
Dunedin City	929.7	968.0	1006.3	908.0	945.6	983.3	908.4	946.0	983.5	910.0	947.4	984.7	920.5	957.8	955.2	930.5	967.8	1005.1	931.3	968.3	1005.2	912.8	949.1	985.5	898.6	934.9	970.2	867.2	902.0	936.9			
Far North District	994.5	1007.1	1019.7	925.8	938.1	950.4	890.8	903.0	915.3	899.9	912.4	924.9	928.5	941.5	954.5	968.6	982.1	995.6	1008.4	1022.4	1036.4	1021.5	1035.7	1050.0	1033.1	1047.6	1062.1	974.6	988.8	1003.0			
Franklin District	847.6	856.7	865.9	828.8	838.1	847.4	764.9	774.1	783.3	808.9	818.6	828.3	808.8	818.6	828.5	824.8	835.0	845.1	757.2	767.0	776.8	781.8	791.8	801.8	743.7	753.5	763.3	795.7	805.9	816.1			
Gisborne District	1022.4	1036.1	1049.8	975.0	988.4	1001.8	983.8	997.2	1010.6	994.6	1008.0	1021.4	1012.9	1026.4	1039.9	976.8	986.0	990.1	1003.4	944.2	952.7	970.2	935.2	948.1	961.0	944.0	957.0	969.9	915.3	928.0	940.8		
Gore District	793.7	797.8	801.9	824.1	828.2	832.2	825.8	829.9	833.9	881.7	885.9	890.0	936.3	940.5	944.7	898.9	903.0	907.1	950.3	954.4	958.6	886.3	890.3	894.3	939.7	943.8	947.8	847.3	851.1	854.9			
Grey District	1115.4	1120.1	1126.0	1069.8	1074.5	1079.2	1010.8	1015.2	1019.7	997.3	1001.7	1006.0	1014.6	1018.9	1023.2	1037.6	1037.6	1042.0	975.2	979.5	983.7	987.5	991.8	996.1	937.7	941.8	945.9	941.3	945.4	949.6			
Hamilton City	870.4	895.5	916.6	849.8	872.8	895.8	833.1	856.1	879.1	867.2	890.8	914.4	872.2	896.0	919.9	899.4	923.9	948.3	852.3	876.4	900.0	832.8	856.9	881.0	814.8	838.8	862.9	801.6	825.7	849.8			
Hastings District	926.5	944.5	962.5	902.6	920.4	938.3	896.0	913.9	931.8	890.2	908.2	926.1	870.6	888.5	906.4	875.4	893.5	911.6	898.7	917.0	935.4	897.8	916.1	934.4	887.5	905.8	924.0	874.0	892.1	910.2			
Hauraki District	964.9	974.3	979.1	1016.5	1021.4	1026.3	1008.9	1013.8	1018.7	1061.0	1065.1	1070.1	977.7	1002.6	1017.4	1003.4	1008.3	1013.1	937.5	942.4	940.2	983.1	988.1	993.1	1023.9	1029.1	1034.4	1002.6	1007.8	1013.1			
Horowhenua District	875.9	887.1	898.3	860.3	871.6	882.9	831.3	842.5	853.7	837.2	848.6	860.0	836.6	847.9	859.2	889.6	901.3	913.0	983.8	996.1	1008.4	983.0	995.3	1007.6	961.3	973.4	985.6	861.3	872.9	884.5			
Hurunui District	686.3	688.5	690.6	716.9	719.1	721.3	690.2	692.4	694.6	734.6	736.9	739.6	731.0	733.3	735.7	800.6	860.6	863.2	911.1	913.8	916.5	984.5	987.3	990.1	836.3	839.0	841.7	774.5	777.1	779.6			
Invercargill City	1195.7	1214.3	1233.0	1171.7	1190.1	1208.8	1187.6	1205.9	1224.3	1174.7	1192.8	1210.9	1171.4	1189.2	1207.1	1162.2	1179.8	1197.4	1158.5	1176.1	1193.7	1159.7	1177.4	1195.0	1116.6	1133.9	1151.3	1121.8	1139.2	1156.5			
Kaikoura District	1112.8	1114.0	1115.1	1109.4	1110.6	1111.7	1168.6	1119.9	1141.7	1142.9	1144.0	948.5	949.6	950.6	930.8	831.9	832.9	811.8	822.9	811.8	812.8	813.9	986.3	987.4	988.5	1010.4	1011.5	1012.7	1186.5	1187.7	1188.9		
Kaipara District	809.0	813.8	818.7	768.5	773.3	778.0	817.0	821.9	826.8	857.8	862.8	867.8	898.6	903.8	908.9	884.5	889.5	894.6	795.7	800.6	805.4	814.6	819.5	824.5	734.8	739.6	744.3	767.3	772.3	777.3			
Kapiti Coast District	847.6	899.4	911.4	860.5	872.5	884.5	855.3	867.7	880.0	835.5	847.9	860.3	882.3	895.3	908.4	909.0	922.4	935.8	923.6	937.5	951.5	899.8	914.0	928.3	863.3	877.5	891.7	841.8	856.2	870.3			
Kawerau District	732.8	734.0	735.2	888.6	889.7	890.9	1132.7	1133.9	1135.0	1014.1	1015.2	1016.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1664.9	1666.1	1667.2	1374.0	1375.2	1376.3	1299.8	1301.2	1302.7
Lower Hutt City	921.5	948.8	976.1	896.0	922.8	949.7	877.8	930.9	851.3	877.4	903.4	869.6	895.9	922.2	913.8	940.7	967.6	957.1	984.4	1011.6	961.0	988.0	1015.1	910.3	936.4	962.6	817.8	842.4	867.0	867.0	867.0		
Mackenzie District	1037.9	1038.9	1040.0	820.5	821.5	822.6	1028.2	1029.3	1030.4	1144.6	1145.8	1146.9	1433.0	1434.1	1435.2	1267.2	1268.0	1268.9	1018.0	1018.7	1019.4	992.6	993.4	994.1	1387.9	1388.6	1389.3	1252.3	1253.1	1253.8			
Manawatu District	769.9	776.9	783.9	754.6	761.5	768.4	806.6	813.7	820.8	835.0	842.3	846.5	870.2	877.6	885.0	858.8	866.1	873.5	843.6	850.9	858.1	847.1	854.4	861.6	861.2	868.5	875.8	880.6	857.9	865.1			
Manukau City	808.2	847.1	886.0	790.6	830.4	870.2	812.3	853.4	894.6	800.2	842.4	884.7	812.4	855.9	899.5	840.0	885.4	930.8	853.3	899.9	946.5	856.1	903.8	951.6	817.2	864.7	912.3	808.9	857.2	905.6			
Marlborough District	923.4	933.8	944.2	938.0	948.5	959.1	971.7	985.6	996.5	930.0	941.3	952.1	933.6	944.5	955.4	839.7	850.2	860.7	788.6	798.9	809.2	734.3	744.4	754.5	801.0	811.7	822.4	767.7	777.4	788.1			
Masterton District	906.5	913.0	919.4	946.5	953.1	959.7	983.4	990.1	996.8	942.5	949.0	956.5	910.1	916.5	922.8	915.9	923.9	930.2	921.4	927.9	934.3	922.4	928.9	935.4	924.8	931.4	938.0	925.0	941.6	948.2			
Matamata-Piako District	762.9	770.4	777.9	744.0	751.4	758.8	758.0	765.5	773.0	805.1	812.8	820.6	765.8	773.3	780.9	759.7	767.3	774.9	740.2	747.8	755.4	779.6	787.5	795.3	764.6	772.5	780.3	741.6	749.4	757.3			
Napier City	836.0	851.3	866.5	860.3	875.9	891.4	862.8	878.5	894.2	897.0	913.1	929.2	894.4	910.6	926.8	886.5	902.7	919.0	891.3	907.8	924.3	864.6	881.0	897.4	849.3	865.7	882.2	818.5	834.9	851.2			
Nelson City	804.8	816.3	827.8	785.3	796.7	808.2	755.9	767.2	778.4	730.9	742.1	753.4	742.5	753.9	765.2	757.0	768.5	780.0	770.2	781.9	793.6	756.2	767.9	779.6	753.7	763.1	777.1	764.1	775.9	787.7			
New Plymouth District	838.3	857.7	877.2	843.9	863.5	883.1	863.7	883.8	903.8	836.3	856.2	876.0	842.5	874.5	894.8	856.4	876.9	897.4	840.3	860.8	881.0	856.5	877.1	897.6	811.1	831.1	851.1	841.2	861.5	881.8			
North Shore City	738.6	774.8	811.0	713.3	749.5	785.7	704.6	741.0	777.5	706.6	743.7	780.7	716.3	754.0	791.8	699.0	736.8	774.5	698.7	736.5	698.3	726.4	764.5	676.7	714.8	752.9	660.9	698.8	736.7	736.7			
Opotiki District	1148.0	1150.6	1153.2	1160.2	1162.7	1165.3	1178.9	1181.5	1184.0	1132.4	1134.9	1137.4	1143.0	1149.5	1180.9	1183.5	1186.0	1182.9	1185.5	1178.0	1093.2	1095.8	1098.3	1077.3	1080.0	1082.6	1072.0	1074.7	1074.7	1074.7			

	1991		1992		1993		1994		1995		1996		1997		1998		1999		2000												
	LL	ASR	UL	LL	ASR	UL	LL	ASR	UL	LL	ASR	UL	LL	ASR	UL	LL	ASR	UL	LL	ASR	UL										
Ashburton District	760.1	768.3	776.5	778.6	786.9	795.3	841.1	850.0	858.8	822.7	831.6	840.6	813.6	822.6	831.6	738.1	746.7	755.3	730.2	737.8	747.3	693.2	701.6	709.9	698.6	707.1	715.6	740.4	749.1	757.8	
Auckland City	759.2	853.2	947.2	755.7	849.8	943.9	753.6	847.8	941.2	742.0	835.8	929.7	729.2	822.6	916.0	716.2	808.9	901.5	701.0	792.2	883.4	682.6	772.0	861.4	672.2	760.3	848.4	660.2	746.7	833.1	
Banks Peninsula District	836.7	838.8	841.0	882.1	884.3	886.5	747.5	748.7	752.1	766.9	769.1	771.3	707.6	790.9	711.8	730.9	733.0	735.1	640.9	642.9	645.0	599.2	595.1	597.2	599.2	658.2	660.4	662.6	695.4	697.7	699.9
Butler District	996.1	999.7	1003.2	1032.3	1035.9	1039.4	1014.9	1018.4	1021.9	994.5	998.1	1001.6	947.9	951.4	954.9	974.5	978.1	981.7	1025.1	1028.7	1032.3	1003.6	1007.2	1010.7	963.9	967.4	970.8	942.4	945.7	949.1	
Carterton District	971.2	973.3	975.4	823.2	825.2	827.1	772.1	774.1	706.7	708.6	710.5	755.1	757.1	759.1	744.1	746.2	748.2	962.6	964.9	967.2	927.8	930.0	932.3	944.3	946.5	948.8	807.3	809.4	811.5	813.6	
Central Hawke's Bay District	939.9	943.4	947.0	967.7	971.5	975.2	1082.2	1086.3	1090.3	965.6	969.5	973.4	841.9	845.6	849.3	745.6	749.2	752.7	731.5	735.0	738.6	908.6	712.1	715.6	638.7	642.1	645.4	633.0	636.3	639.5	
Central Otago District	775.8	780.3	784.9	775.1	779.8	784.5	749.7	754.5	759.2	718.0	722.9	727.7	711.3	716.2	721.2	727.9	733.1	738.3	701.1	706.2	711.3	678.3	678.3	683.4	628.8	633.7	638.6	661.7	666.8	671.9	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	765.0	853.3	941.6	756.6	845.5	934.4	747.2	836.7	926.2	738.9	829.0	919.0	725.8	816.2	906.5	714.9	805.7	896.4	690.4	780.1	869.8	672.8	761.8	850.8	656.4	744.8	833.2	651.6	739.8	828.1	
Clutha District	860.6	865.9	871.3	796.6	801.7	806.8	828.8	833.9	839.0	815.6	820.6	825.6	761.8	766.7	771.6	736.4	741.3	746.1	695.5	700.2	704.8	722.4	727.2	731.9	744.5	749.4	754.2	738.8	743.6	748.4	
Dunedin City	843.0	877.1	911.1	806.8	840.3	873.8	800.3	833.7	867.2	799.5	833.1	866.7	822.4	856.7	890.9	822.3	856.7	891.1	811.0	844.9	878.8	774.3	807.3	840.3	744.5	776.6	808.7	739.4	771.2	803.0	
Far North District	962.0	976.3	990.5	930.0	944.4	958.8	943.4	958.3	973.3	946.1	961.5	976.9	922.6	938.3	954.1	901.4	917.6	933.8	860.8	877.9	893.1	899.0	915.8	932.5	869.3	885.8	902.4	879.3	896.1	912.9	
Franklin District	813.8	824.3	834.7	835.1	845.9	856.7	830.4	841.5	852.7	817.0	828.1	839.2	821.1	832.5	843.8	784.9	796.2	807.5	727.2	738.4	749.6	698.6	709.8	721.0	687.2	698.5	709.8	687.2	698.7	710.2	
Gisborne District	905.2	917.9	930.5	944.8	957.7	970.6	966.0	979.1	992.2	1018.9	1032.3	1045.6	1015.9	1029.2	1042.6	1038.4	1051.8	1065.2	972.0	984.9	997.9	953.3	966.0	978.8	957.2	969.9	989.8	982.2	979.2	992.0	1004.8
Gore District	828.6	832.4	836.2	741.4	745.1	748.7	810.2	814.2	818.1	824.0	828.0	832.1	869.9	874.3	878.7	997.2	999.2	1003.8	1050.1	1054.7	1059.4	931.9	936.3	940.7	830.2	834.3	838.3	826.4	830.4	834.4	
Grey District	930.2	934.5	938.7	938.0	942.3	946.6	958.3	962.7	967.0	882.7	886.9	891.1	962.6	886.8	891.0	877.3	881.5	885.8	986.1	990.6	995.0	956.6	960.9	965.1	874.1	878.1	882.2	835.0	838.9	842.8	
Hamilton City	818.5	843.1	867.7	814.7	839.5	864.3	820.4	845.4	870.5	764.2	788.5	812.9	780.0	804.8	829.6	772.6	797.5	822.4	793.1	818.6	844.2	760.7	786.0	811.3	755.6	781.1	806.5	731.7	777.3	802.8	
Hastings District	876.5	894.6	912.7	882.0	900.4	918.7	877.9	896.4	915.0	858.6	877.2	895.7	838.5	857.1	875.7	818.1	836.7	855.4	830.8	849.6	868.5	827.0	845.8	864.6	828.0	846.8	865.7	814.2	833.0	851.7	
Hauraki District	1022.7	1028.1	1033.5	962.0	967.2	972.5	890.9	896.1	901.2	777.0	781.9	786.8	709.5	714.3	719.0	718.8	723.7	728.6	830.1	835.4	840.7	941.3	947.0	952.7	928.6	934.3	940.0	826.9	832.3	837.7	
Horowhenua District	847.1	858.8	870.6	887.5	895.5	911.5	930.5	942.7	954.9	922.4	1004.9	1017.4	998.0	1010.6	1023.2	968.5	981.1	993.6	916.6	929.8	942.0	932.7	945.0	957.3	1008.4	1021.1	1033.8	1035.1	1048.0	1060.9	
Hurunui District	767.2	769.8	772.4	757.7	760.3	762.9	748.8	751.4	754.0	766.2	768.9	771.6	823.0	825.9	828.7	858.8	861.6	863.6	781.0	783.8	786.6	713.6	716.4	719.2	604.8	607.1	601.9	605.6	608.3		
Invercargill City	1137.3	1154.9	1172.4	1096.9	1114.0	1131.2	1014.5	1030.8	1047.2	935.3	951.0	966.6	940.8	956.5	972.1	912.7	928.0	943.4	907.3	922.6	937.9	903.7	918.9	934.2	960.0	975.8	991.5	975.1	991.0	1006.9	
Kaikoura District	1056.9	1058.0	1059.2	1031.2	1032.4	1033.5	870.8	871.9	873.0	915.1	916.2	917.4	872.3	873.5	874.6	764.6	765.7	766.8	743.3	744.1	745.1	722.8	723.9	724.9	922.2	923.4	924.6	894.0	895.2	896.3	
Kaipara District	723.3	728.1	733.0	785.4	790.4	795.5	860.5	865.8	871.2	894.2	899.7	905.2	862.7	868.1	873.6	825.3	830.7	836.0	805.5	814.9	820.3	888.5	894.3	900.0	863.4	869.2	875.0	848.5	854.3	868.6	
Kapiti Coast District	811.1	825.7	840.2	810.7	826.0	841.4	780.6	796.2	811.7	756.0	771.6	787.2	727.8	737.8	743.3	738.2	754.4	770.6	732.6	749.2	765.8	734.4	751.2	768.0	688.0	704.7	721.4	654.9	671.7	680.0	
Kawerau District	1258.6	1260.0	1261.5	1447.2	1448.7	1450.1	1161.7	1163.1	1164.5	1000.7	1002.2	1003.7	1023.2	1024.8	1026.5	1179.8	1181.6	1183.4	1391.3	1393.1	1394.9	1280.3	1282.1	1283.8	1007.2	1008.8	1010.4	1002.8	1004.4	1006.0	
Lower Hutt City	799.9	824.0	848.1	799.8	823.8	847.8	824.8	849.1	873.4	801.3	825.3	843.3	798.8	822.7	846.6	783.8	805.7	831.2	765.1	788.5	798.8	811.9	758.4	781.8	805.1	734.0	759.9	779.8	752.5	775.6	798.6
Manakau District	1210.8	1211.6	1212.5	1036.7	1037.6	1038.5	1112.9	1113.8	1114.7	1125.4	1126.2	1127.1	1139.6	1140.4	1141.2	1023.5	1024.3	1025.0	753.2	754.1	754.9	836.7	838.7	840.7	712.3	713.8	714.8	747.9	749.0	750.1	
Manawatu District	797.1	804.2	811.2	716.3	723.1	729.9	749.9	756.9	764.0	773.2	780.4	787.7	807.8	815.3	822.9	755.5	762.9	770.4	701.1	708.3	715.5	745.8	753.3	760.7	769.0	776.6	784.1	850.9	858.8	866.7	
Manukau City	790.8	839.2	887.6	787.2	837.0	886.7	772.3	822.9	873.5	754.4	805.8	857.2	745.7	798.2	850.7	714.3	767.1	819.9	708.9	762.3	815.7	708.1	762.1	816.1	711.5	766.3	821.1	755.2	788.7	844.8	
Marlborough District	726.0	736.6	747.2	666.4	676.9	687.4	887.3	698.3	709.3	743.8	755.5	767.1	760.6	772.7	784.8	796.8	809.5	822.1	728.6	740.9	753.2	724.0	736.5	748.9	695.2	707.4	719.7	720.9	733.6	746.3	
Masterton District	935.7	942.5	949.2	962.2	969.2	976.2	847.1	853.9	860.7	866.9	874.0	880.4	807.4	814.3	828.4	865.7	873.1	809.1	816.3	823.5	794.3	801.5	808.6	767.8	774.9	782.0	837.1	844.5	852.0		
Matamata-Piako District	750.3	758.2	766.1	768.2	776.3	784.4	810.5	818.9	827.3	832.7	841.4	850.0	820.9	829.6	838.3	787.0	795.6	804.1	758.6	767.1	775.6	796.4	805.1	813.8	784.0	792.7	801.4	783.0	791.7	800.5	
Marton District	870.1	887.1	904.2	835.4	852.3	869.2	818.5	835.3	852.2	779.8	796.5	812.3	841.1	851.5	868.9	857.4	875.1	892.9	835.5	857.0	874.6	809.6	826.9	844.1	791.5	808.7	825.8	782.9	800.0	817.2	
Nelson City	776.3	788.3	800.3	754.7	766.7	778.7	703.4	715.2	726.9	719.0	731.0	742.9	726.3	738.4	750.4	710.2	722.3	734.4	698.4	710.5	722.7	681.6	693.6	705.7	740.3	753.6	765.6	719.9	732.5	745.2	
New Plymouth District	833.0	853.3	873.5	863.7	884.6	905.5	841.7	862.6	883.4	810.2	830.8	851.4	782.8	803.3	823.8	729.2	749.2	769.3	683.4	702.9	722.4	687.5	707.2	726.9	709.6	729.0	749.6	741.7	762.3	782.9	
North Shore City	663.3	701.5	739.7	649.4	688.2	726.9	645.2	684.7	724.1	639.4	679.6	719.8	635.9	677.0	718.1	648.9	691.4	733.9	633.2	675.4	717.6	634.8	677.3	719.7	587.0	627.9	668.9	597.7	638.8	660.0	
Opotiki District	1057.3	1060.0	1062.7	1037.0	1039.7	1042.3	970.4	973.0	975.7	979.2	981.8	984.5	1133.7	1136.6	1139.5	1149.7	1197.8	1200.9	1139.3	1142.3	1145.4	977.2	980.0	982.8	949.4	952.2	959.4	956.9	963.0	982.0	
Otorohanga District	840.9	847.1	845.3	715.0	717.1	719.2	787.1	789.3																							

TLA	All-cause male	All-cause female	IHD males	IHD females	All-cancer males	All-cancer females	Lung cancer males	Lung cancer females	Colorectal cancer males	Colorectal cancer females	Breast cancer	Prostate cancer	COVD males	COVD females	CVD males	CVD females	Diabetes mellitus males	Diabetes mellitus females	
Ashburton District	0.93 (0.72, 1.20)	0.88 (0.67, 1.15)	0.68 (0.35, 0.96)	0.66 (0.37, 1.18)	0.45 (0.88, 2.39)	1.32 (0.76, 2.30)	0.85 (0.35, 2.00)	4.56 (0.34, 62.03)	1.60 (0.42, 1.11)	1.28 (0.38, 4.22)	0.77 (0.22, 2.68)	0.44 (0.08, 2.47)	1.45 (0.37, 5.59)	4.94 (0.60, 40.73)	0.86 (0.38, 1.94)	0.48 (0.22, 1.07)	1.37 (0.20, 9.46)	0.76 (0.11, 3.77)	
Auckland City	0.82 (0.72, 0.88)	0.80 (0.84, 0.97)	0.63 (0.55, 0.73)	0.79 (0.68, 0.92)	0.94 (0.81, 1.09)	0.91 (0.78, 1.06)	0.59 (0.46, 0.80)	1.10 (0.70, 1.74)	0.97 (0.66, 1.41)	0.70 (0.47, 1.03)	0.78 (0.55, 1.11)	1.60 (1.05, 2.44)	1.47 (1.03, 2.09)	2.75 (1.72, 4.39)	0.80 (0.62, 1.03)	0.81 (0.68, 0.98)	1.63 (0.95, 2.78)	2.23 (1.22, 4.07)	
Banks Peninsula District	0.81 (0.49, 1.34)	0.61 (0.32, 1.18)	0.56 (0.23, 1.40)	0.31 (0.06, 1.58)	1.63 (0.61, 4.35)	0.76 (0.24, 2.39)	1.96 (0.19, 20.38)	2.89 (0.06, 145.42)	3.44 (0.23, 52.36)	0.18 (0.00, 7.79)	0.65 (0.05, 8.12)	N/A	2.67 (0.17, 42.74)	#NUM!	0.39 (0.04, 3.42)	0.47 (0.07, 3.01)	N/A	0.50 (0.01, 32.12)	
Buller District	0.97 (0.67, 1.42)	0.86 (0.56, 1.30)	0.94 (0.44, 2.02)	0.68 (0.30, 1.56)	1.01 (0.54, 2.27)	0.89 (0.34, 2.32)	0.62 (0.16, 2.49)	1.64 (0.19, 13.74)	1.16 (0.22, 6.04)	1.56 (0.21, 11.74)	0.35 (0.04, 3.41)	13.11 (0.38, 454.54)	0.93 (0.22, 4.82)	12.22 (0.35, 423.49)	1.75 (0.36, 8.48)	0.81 (0.21, 56.69)	1.51 (0.20, 10.60)	1.45 (0.20, 10.60)	
Central District	0.97 (0.59, 1.62)	0.88 (0.52, 1.50)	0.53 (0.21, 1.35)	0.98 (0.36, 2.70)	1.10 (0.39, 3.05)	1.18 (0.43, 3.26)	0.61 (0.12, 33.27)	3.87 (0.09, 159.47)	1.95 (0.11, 33.39)	0.47 (0.07, 3.15)	0.60 (0.04, 7.98)	1.04 (0.04, 31.10)	0.96 (0.12, 7.47)	0.81 (0.01, 98.78)	0.51 (0.06, 4.22)	0.46 (0.01, 20.08)	0.41 (0.01, 26.34)	0.74 (0.02, 21.95)	
Central Hawke's Bay District	0.69 (0.46, 1.03)	0.71 (0.47, 1.07)	0.60 (0.29, 1.24)	0.70 (0.31, 1.59)	1.09 (0.45, 2.68)	1.08 (0.48, 3.30)	0.81 (0.12, 52.37)	0.87 (0.10, 45.96)	2.87 (0.18, 48.52)	1.09 (0.24, 4.89)	0.40 (0.08, 1.93)	1.55 (0.07, 3.21)	0.38 (0.05, 1.21)	0.38 (0.05, 1.21)	0.34 (0.11, 1.05)	0.43 (0.13, 1.45)	3.25 (0.06, 163.68)	2.78 (0.06, 139.98)	
Central Otago District	0.86 (0.61, 1.23)	0.93 (0.62, 1.40)	0.51 (0.26, 1.01)	0.61 (0.26, 1.45)	1.86 (0.84, 4.13)	1.23 (0.54, 2.79)	4.23 (0.51, 34.88)	1.89 (0.19, 18.8)	1.18 (0.23, 6.09)	0.55 (0.06, 5.53)	2.81 (0.19, 41.18)	2.61 (0.29, 23.85)	0.90 (0.21, 3.85)	2.16 (0.22, 20.73)	0.68 (0.23, 2.01)	0.83 (0.27, 2.52)	3.11 (0.29, 47.34)	1.32 (0.02, 84.28)	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	0.85 (0.79, 0.92)	0.92 (0.85, 1.00)	0.70 (0.60, 0.81)	0.86 (0.73, 1.01)	1.07 (0.92, 1.24)	1.13 (0.96, 1.32)	0.69 (0.51, 0.92)	1.87 (1.15, 3.05)	1.40 (0.94, 2.09)	1.06 (0.72, 1.58)	0.74 (0.53, 1.03)	1.14 (0.73, 1.79)	1.16 (0.82, 1.63)	3.03 (1.81, 5.08)	0.76 (0.59, 0.99)	0.81 (0.66, 0.99)	1.60 (0.84, 3.04)	1.40 (0.80, 2.45)	
Clutha District	0.73 (0.53, 1.00)	0.77 (0.55, 1.06)	0.72 (0.40, 1.31)	0.93 (0.48, 1.79)	1.04 (0.53, 2.03)	0.82 (0.41, 1.61)	0.88 (0.27, 2.88)	1.80 (0.10, 34.14)	0.78 (0.14, 4.30)	0.41 (0.09, 1.96)	0.93 (0.49, 1.59)	1.70 (0.20, 14.29)	0.53 (0.12, 2.29)	2.46 (0.25, 24.51)	0.34 (0.10, 1.17)	0.38 (0.14, 1.02)	1.08 (0.19, 6.27)	0.72 (0.14, 3.61)	
Dunedin City	0.80 (0.71, 0.90)	0.97 (0.86, 1.09)	0.64 (0.50, 0.80)	0.76 (0.59, 0.96)	1.11 (0.88, 1.41)	1.22 (0.97, 1.60)	0.75 (0.48, 1.15)	2.22 (1.06, 4.65)	1.22 (0.64, 2.30)	1.50 (0.69, 3.42)	1.05 (0.59, 1.86)	2.21 (1.04, 4.71)	1.14 (0.69, 1.87)	4.23 (1.91, 9.34)	0.64 (0.42, 1.00)	1.02 (0.74, 1.40)	1.59 (0.61, 4.13)	1.87 (0.79, 4.43)	
Far North District	0.89 (0.74, 1.07)	0.96 (0.77, 1.20)	0.66 (0.47, 0.94)	0.68 (0.42, 1.08)	1.09 (0.75, 1.57)	1.22 (0.78, 1.92)	0.77 (0.41, 1.45)	2.46 (0.78, 7.53)	1.40 (0.45, 4.39)	0.63 (0.21, 1.88)	0.68 (0.32, 2.54)	1.61 (0.53, 4.91)	1.70 (0.60, 4.77)	2.29 (0.55, 9.62)	0.59 (0.29, 1.17)	0.89 (0.46, 1.72)	2.46 (0.82, 7.40)	1.70 (0.61, 4.78)	
Fairfield District	0.82 (0.65, 1.03)	0.96 (0.75, 1.22)	0.68 (0.44, 1.06)	0.87 (0.52, 1.45)	0.96 (0.61, 1.50)	0.96 (0.58, 1.59)	0.60 (0.27, 1.35)	1.16 (0.34, 3.95)	1.29 (0.34, 4.87)	1.34 (0.36, 4.97)	0.64 (0.22, 1.88)	1.28 (0.50, 5.65)	1.30 (0.42, 4.02)	7.99 (1.03, 61.75)	0.85 (0.37, 1.96)	0.79 (0.38, 1.66)	1.16 (0.23, 6.01)	0.59 (0.10, 3.44)	
Gisborne District	0.96 (0.79, 1.16)	0.77 (0.87, 1.13)	0.76 (0.52, 1.12)	0.72 (0.81, 1.98)	1.28 (0.88, 1.87)	1.12 (0.74, 1.71)	0.94 (0.46, 1.91)	1.31 (0.53, 3.21)	1.35 (0.39, 4.72)	0.93 (0.28, 3.03)	0.83 (0.31, 2.19)	1.57 (0.61, 4.08)	1.14 (0.49, 2.69)	2.26 (0.74, 7.56)	0.69 (0.35, 1.36)	0.71 (0.41, 1.27)	2.40 (0.98, 6.27)	0.98 (0.36, 2.78)	
Gore District	1.04 (0.72, 1.49)	1.14 (0.79, 1.64)	1.23 (0.64, 2.38)	1.51 (0.72, 3.20)	1.12 (0.52, 2.44)	1.19 (0.79, 3.67)	1.04 (0.26, 4.14)	4.31 (0.10, 177.76)	1.30 (0.22, 7.53)	3.61 (0.52, 24.50)	0.57 (0.09, 3.76)	1.24 (0.09, 16.57)	1.79 (0.47, 6.84)	0.76 (0.06, 10.11)	1.02 (0.26, 4.09)	1.01 (0.38, 2.66)	3.17 (0.56, 19.71)	N/A	
Grey District	0.75 (0.54, 1.05)	0.82 (0.57, 1.20)	0.59 (0.30, 1.14)	0.52 (0.22, 1.00)	0.91 (0.47, 1.75)	1.19 (0.55, 2.54)	0.37 (0.10, 1.32)	N/A	1.14 (0.21, 6.25)	3.07 (0.32, 29.56)	0.48 (0.04, 38.13)	1.79 (0.46, 7.03)	3.43 (0.38, 31.34)	0.46 (0.13, 1.57)	0.36 (0.12, 1.08)	2.62 (0.15, 16.49)	2.74 (0.16, 46.97)	N/A	
Hamilton City	0.87 (0.75, 1.01)	0.98 (0.77, 1.04)	0.65 (0.49, 0.86)	0.69 (0.50, 0.96)	1.12 (0.83, 1.50)	1.08 (0.80, 1.47)	0.81 (0.47, 1.39)	1.98 (0.75, 5.23)	1.12 (0.51, 2.47)	0.77 (0.38, 1.57)	1.00 (0.51, 1.97)	2.09 (0.81, 5.40)	1.64 (0.73, 3.39)	4.42 (1.38, 12.61)	0.72 (0.44, 1.18)	0.64 (0.42, 0.99)	1.65 (0.62, 4.28)	1.09 (0.52, 2.78)	
Hastings District	0.88 (0.75, 1.04)	1.04 (0.88, 1.24)	0.68 (0.50, 0.93)	0.60 (0.42, 1.10)	1.16 (0.83, 1.63)	1.18 (0.83, 1.67)	0.77 (0.41, 1.43)	1.18 (0.41, 3.37)	0.92 (0.31, 2.15)	0.99 (0.39, 2.08)	1.16 (0.56, 2.39)	2.21 (0.72, 6.75)	0.90 (0.41, 1.93)	2.75 (0.85, 8.93)	0.94 (0.54, 1.66)	0.99 (0.52, 1.60)	3.89 (0.83, 18.08)	1.75 (0.58, 5.32)	
Hauraki District	0.85 (0.62, 1.17)	1.00 (0.70, 1.47)	0.63 (0.35, 1.10)	0.99 (0.49, 2.02)	1.01 (0.55, 1.85)	1.03 (0.52, 2.05)	0.71 (0.20, 2.45)	1.16 (0.22, 6.98)	1.02 (0.22, 4.68)	1.25 (0.22, 7.20)	1.57 (0.28, 8.80)	2.09 (0.42, 10.46)	0.96 (0.33, 2.77)	0.74 (0.27, 2.04)	1.44 (0.22, 9.58)	1.12 (0.08, 14.97)	1.12 (0.08, 14.97)	N/A	
Hawkeburna District	1.18 (0.97, 1.44)	1.13 (0.91, 1.40)	0.91 (0.62, 1.33)	0.83 (0.53, 1.31)	1.11 (0.75, 1.63)	1.22 (0.79, 1.89)	1.01 (0.49, 2.07)	2.24 (0.70, 7.18)	0.81 (0.30, 2.19)	1.37 (0.46, 4.06)	1.34 (0.51, 3.49)	0.84 (0.24, 3.12)	1.27 (0.51, 3.17)	3.06 (0.56, 16.71)	1.13 (0.52, 2.47)	1.20 (0.66, 2.25)	4.40 (0.80, 24.23)	2.74 (0.40, 18.80)	
Hurumui District	0.88 (0.53, 1.45)	0.93 (0.50, 1.71)	0.76 (0.29, 1.99)	0.59 (0.12, 2.98)	0.90 (0.40, 2.45)	0.74 (0.24, 2.12)	0.81 (0.09, 6.91)	#NUM!	1.37 (0.07, 25.86)	0.23 (0.01, 3.61)	1.84 (0.19, 17.72)	1.57 (0.15, 16.34)	N/A	N/A	1.25 (0.19, 8.33)	0.76 (0.12, 4.74)	0.83 (0.03, 24.73)	1.34 (0.01, 168.31)	
Invercargill City	0.82 (0.69, 0.96)	0.88 (0.73, 1.03)	0.60 (0.45, 0.82)	0.72 (0.52, 1.01)	1.08 (0.8, 1.50)	0.90 (0.63, 1.28)	0.57 (0.30, 1.10)	1.28 (0.46, 3.60)	1.26 (0.53, 2.99)	1.18 (0.50, 2.82)	0.53 (0.24, 1.14)	1.53 (0.53, 4.46)	1.05 (0.51, 2.17)	2.03 (0.72, 5.68)	0.93 (0.53, 1.65)	0.75 (0.46, 1.21)	4.99 (0.46, 4.86)	0.64 (0.21, 1.94)	
Kaikoura District	0.80 (0.42, 1.53)	1.09 (0.52, 2.28)	0.52 (0.15, 1.73)	1.59 (0.35, 7.17)	1.48 (0.48, 4.50)	1.70 (0.33, 8.75)	1.04 (0.16, 6.29)	N/A	1.08 (0.08, 14.48)	N/A	0.64 (0.03, 14.28)	N/A	0.86 (0.03, 25.77)	N/A	0.27 (0.01, 13.79)	#NUM!	N/A	N/A	
Kaipara District	1.05 (0.77, 1.44)	1.02 (0.70, 1.49)	0.90 (0.48, 1.70)	0.80 (0.38, 1.68)	1.19 (0.66, 2.14)	1.45 (0.66, 3.19)	0.86 (0.30, 2.46)	1.27 (0.15, 10.64)	1.89 (0.40, 8.78)	0.78 (0.12, 5.16)	5.47 (0.22, 17.20)	1.06 (0.11, 10.30)	1.36 (0.32, 5.68)	2.51 (0.27, 23.41)	0.63 (0.20, 2.02)	0.40 (0.14, 1.16)	0.91 (0.14, 5.99)	0.92 (0.20, 20.40)	
Kapiti Coast District	0.75 (0.61, 0.91)	0.97 (0.87, 1.11)	0.56 (0.38, 0.82)	0.65 (0.42, 1.01)	0.92 (0.64, 1.32)	1.13 (0.75, 1.69)	0.59 (0.28, 1.24)	1.40 (0.44, 4.39)	1.21 (0.40, 3.67)	0.75 (0.31, 1.72)	0.75 (0.31, 1.72)	2.61 (0.73, 9.37)	1.01 (0.45, 2.28)	1.55 (0.49, 4.90)	0.67 (0.36, 1.25)	0.83 (0.46, 1.50)	3.55 (0.54, 23.19)	1.48 (0.24, 10.45)	
Kawerau District	1.37 (0.74, 2.53)	0.96 (0.75, 1.24)	0.93 (0.30, 2.94)	N/A	N/A	1.21 (0.39, 3.72)	N/A	2.34 (0.21, 25.84)	0.12 (0.01, 5.87)	N/A	N/A	1.53 (0.03, 76.90)	N/A	N/A	0.74 (0.01, 47.34)	N/A	N/A	N/A	
Lower Hutt City	0.82 (0.71, 0.94)	0.98 (0.85, 1.14)	0.64 (0.49, 0.85)	0.73 (0.54, 1.00)	1.02 (0.78, 1.33)	1.21 (0.89, 1.65)	0.49 (0.28, 0.85)	1.50 (0.69, 3.27)	0.79 (0.38, 1.64)	0.54 (0.23, 1.27)	1.16 (0.58, 2.31)	1.57 (0.72, 3.43)	1.22 (0.67, 2.21)	2.19 (0.99, 4.88)	0.85 (0.51, 1.43)	0.73 (0.49, 1.10)	1.59 (0.60, 4.24)	1.73 (0.64, 4.69)	
Mackenzie District	0.72 (0.36, 1.43)	0.76 (0.31, 1.88)	0.53 (0.12, 2.24)	0.73 (0.15, 3.45)	1.34 (0.37, 4.78)	2.09 (0.19, 23.00)	0.42 (0.04, 1.12)	N/A	0.60 (0.02, 17.83)	N/A	N/A	2.16 (0.10, 108.93)	N/A	0.11 (0.00, 4.50)	#NUM!	2.60 (0.05, 130.84)	N/A	N/A	
Manawatu District	1.01 (0.85, 1.44)	1.09 (0.81, 1.47)	0.73 (0.45, 1.20)	0.89 (0.51, 1.56)	1.24 (0.73, 2.10)	0.99 (0.53, 1.86)	0.62 (0.24, 1.60)	1.55 (0.23, 10.31)	1.95 (0.24, 3.70)	1.41 (0.34, 5.91)	0.44 (0.11, 1.78)	2.09 (0.33, 13.04)	1.21 (0.38, 3.86)	8.32 (0.67, 103.15)	1.23 (0.50, 2.99)	1.58 (0.66, 4.12)	2.15 (0.28, 16.52)	1.33 (0.23, 8.07)	
Manukau City	0.93 (0.84, 1.04)	0.92 (0.82, 1.03)	0.69 (0.56, 0.85)	0.69 (0.56, 0.85)	1.06 (0.86, 1.20)	0.96 (0.86, 1.20)	0.61 (0.42, 0.91)	2.06 (1.09, 3.90)	1.24 (0.67, 2.27)	0.72 (0.41, 1.28)	0.58 (0.36, 0.93)	1.84 (0.36, 8.63)	1.55 (0.90, 2.67)	4.06 (1.66, 9.88)	0.95 (0.64, 1.30)	0.88 (0.62, 1.28)	1.77 (0.93, 2.99)	1.67 (0.81, 3.44)	
Marborough District	0.79 (0.63, 0.97)	0.97 (0.76, 1.22)	0.55 (0.37, 0.81)	1.08 (0.66, 1.76)	1.16 (0.76, 1.78)	1.04 (0.63, 1.71)	0.73 (0.30, 1.75)	0.91 (0.68, 1.20)	1.22 (0.42, 3.50)	1.11 (0.35, 3.52)	1.23 (0.44, 3.47)	1.17 (0.42, 3.25)	0.85 (0.33, 2.19)	2.58 (0.54, 12.30)	0.80 (0.37, 1.71)	1.84 (0.81, 19.13)	1.40 (0.18, 19.13)	1.20 (0.26, 5.49)	
Masterton District	0.83 (0.71, 1.21)	0.96 (0.72, 1.27)	0.85 (0.52, 1.38)	0.99 (0.52, 1.90)	0.96 (0.58, 1.71)	1.36 (0.76, 2.45)	0.59 (0.17, 2.03)	3.15 (0.47, 21.29)	0.57 (0.11, 3.06)	1.56 (0.39, 6.34)	2.01 (0.44, 9.23)	1.35 (0.41, 4.47)	1.66 (0.53, 3.87)	0.52 (0.22, 1.24)	0.49 (0.21, 1.03)	3.16 (0.35, 28.25)	3.69 (0.26, 24.44)	N/A	
Matamoras District	1.03 (0.79, 1.33)	1.14 (0.86, 1.52)	0.79 (0.49, 1.28)	0.77 (0.42, 1.41)	1.17 (0.70, 1.95)	1.08 (0.61, 1.93)	0.65 (0.25, 1.87)	1.14 (0.26											

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990				
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL		
Ashburton District	602.4	746.9	891.4	575.8	717.0	858.2	589.4	732.0	874.5	626.3	772.7	919.1	673.1	824.4	975.7	649.1	798.0	946.9	577.8	718.4	859.0	511.0	643.7	776.5	517.0	649.2	781.4	552.6	687.9	823.2		
Auckland City	746.2	753.1	790.0	723.9	761.0	798.1	717.7	754.7	791.7	736.4	774.0	811.6	739.5	777.3	815.1	761.5	800.0	838.5	753.1	791.6	830.0	744.8	783.3	821.8	724.1	762.3	800.6	703.2	741.1	779.1		
Banks Peninsula District	442.0	755.3	1068.5	502.3	833.4	1164.6	495.2	818.1	1140.9	439.0	746.3	1053.5	451.9	756.8	1061.8	448.6	751.3	1054.0	370.8	658.5	940.9	254.0	503.1	752.2	224.2	459.1	694.1	210.8	442.6	674.5		
Buller District	607.6	847.3	1087.0	525.4	750.6	975.9	514.5	736.3	958.1	579.8	813.1	1046.3	594.9	832.0	1069.0	661.0	908.8	1156.7	616.6	858.1	1100.9	576.7	811.1	1045.5	536.7	765.5	994.3	607.9	850.0	1092.2		
Carterton District	503.7	815.0	1126.2	418.0	707.0	995.9	344.3	612.9	881.5	310.2	567.8	825.3	314.7	571.8	828.8	391.4	665.3	939.2	402.8	681.2	959.5	470.2	767.0	1063.7	476.0	776.4	1076.8	545.2	863.0	1180.8		
Central Hawke's Bay District	673.9	931.2	1188.5	631.6	883.2	1134.8	612.6	859.0	1105.5	644.5	897.6	1150.6	626.6	875.0	1123.4	646.8	899.5	1152.2	608.3	850.6	1092.9	602.5	843.8	1085.0	594.4	831.1	1067.9	515.3	738.7	962.1		
Central Otago District	460.8	664.0	867.3	437.6	634.1	830.6	458.1	654.5	850.9	511.4	713.1	914.8	522.0	722.2	922.3	532.1	730.7	929.3	671.6	776.0	980.5	560.1	761.3	962.5	542.7	741.0	939.2	513.6	705.4	897.1		
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Christchurch City	705.1	746.1	787.2	684.8	725.1	765.5	679.2	719.2	759.2	692.6	732.8	773.0	687.4	727.3	767.2	707.2	747.5	787.8	711.4	751.8	792.2	715.7	756.1	796.5	707.1	747.2	787.3	694.3	734.0	773.6		
Clutha District	769.1	980.4	1191.8	710.7	934.0	1117.3	594.5	782.3	970.1	551.2	733.2	915.2	539.7	719.8	900.0	558.0	740.3	922.6	608.5	799.4	990.4	615.6	809.4	1003.3	609.9	805.2	1000.4	498.5	680.6	862.7		
Dunedin City	702.6	766.3	829.9	670.8	713.2	795.6	688.5	751.8	815.1	726.8	791.9	851.0	728.9	794.3	859.7	727.2	792.9	858.4	702.6	767.1	831.6	703.8	768.4	833.0	718.4	787.3	849.0	708.6	773.3	838.0		
Far North District	712.7	859.3	1005.9	722.8	871.3	1019.7	725.0	873.0	1021.0	718.0	863.9	1009.8	736.5	882.2	1028.0	772.0	919.1	1066.2	769.1	913.5	1057.9	710.0	845.6	981.2	682.5	813.3	944.2	676.9	805.4	933.8		
Franklin District	648.8	795.5	942.1	652.4	798.1	943.7	619.1	759.6	901.6	616.3	754.9	893.5	571.7	710.4	843.8	641.9	780.6	919.3	588.5	721.5	854.5	572.5	704.0	835.6	565.3	695.7	826.1	548.7	676.8	804.8		
Gisborne District	721.7	845.0	968.3	692.9	814.0	935.2	696.6	818.2	939.8	717.8	841.1	964.5	707.3	829.7	952.2	708.5	831.1	953.6	698.5	787.7	907.0	684.5	805.0	925.4	686.4	809.9	927.4	680.5	800.3	920.0		
Gore District	520.7	710.1	899.5	483.3	666.9	850.5	547.6	741.1	934.7	555.3	750.0	944.7	661.4	871.7	1082.0	627.8	883.6	1039.5	595.7	797.5	999.3	585.3	785.1	984.8	579.4	766.9	777.9	594.5	794.4	994.3		
Grey District	682.5	911.2	1139.8	649.1	873.2	1097.3	619.5	841.2	1062.8	585.0	802.4	1019.8	601.7	821.5	1041.3	637.3	860.8	1084.3	653.3	912.9	1144.5	637.4	866.3	1095.3	614.3	842.6	1070.9	550.2	729.3	988.5		
Hamilton City	688.8	776.4	864.0	640.4	724.3	808.1	635.9	718.7	801.5	659.6	743.4	827.1	664.8	748.2	831.7	648.2	749.0	831.9	689.9	741.7	823.4	685.6	762.8	850.6	676.3	757.7	839.2	646.5	767.5	805.0		
Hastings District	637.8	731.1	824.5	622.1	714.5	806.9	644.6	738.6	832.6	697.2	794.9	892.6	716.1	815.2	914.3	747.3	848.6	950.7	737.3	837.5	937.6	717.5	815.8	914.2	677.2	772.4	867.6	647.9	740.6	833.3		
Hauraki District	542.1	744.4	946.8	610.8	824.2	1037.5	646.1	862.6	1079.1	632.8	847.9	1063.1	527.7	724.6	921.6	547.2	745.4	943.6	532.2	715.9	908.6	610.9	816.3	1021.7	627.7	833.5	1039.3	657.2	865.5	1073.8		
Horowhenua District	666.8	796.6	926.4	600.1	722.6	845.1	595.5	716.5	837.5	596.4	717.3	838.1	614.2	736.0	857.7	606.2	726.5	846.9	640.0	723.3	884.6	652.0	775.2	898.5	621.4	741.7	862.0	622.0	742.4	862.9		
Hurumui District	350.8	647.0	943.2	367.7	658.9	950.1	452.9	773.8	1094.8	387.0	684.6	982.2	318.8	603.8	885.9	312.6	585.8	859.0	359.4	653.1	946.8	430.7	739.9	1049.1	378.9	679.0	979.1	435.2	743.6	1052.0		
Invercargill City	819.8	929.0	1038.2	776.3	883.0	989.6	746.3	851.2	956.1	817.7	927.4	1037.1	834.1	945.0	1055.8	902.0	1017.3	1132.5	826.0	936.4	1046.8	802.8	911.6	1020.4	762.9	868.9	974.9	791.0	899.7	1006.3		
Kaikoura District	393.2	889.9	1386.5	430.3	942.8	1455.3	462.5	959.0	1455.4	497.1	1006.4	1511.6	512.0	1036.6	1561.1	541.6	1084.4	1627.2	359.2	827.3	1295.5	322.6	772.2	1221.8	371.4	840.5	1309.6	519.1	1017.9	1516.7		
Kaipara District	525.7	739.4	953.1	440.2	635.6	831.0	470.2	668.5	866.8	544.2	753.9	963.6	375.7	787.8	999.9	534.1	737.0	939.9	456.4	642.9	829.4	486.4	676.4	866.5	474.9	662.3	849.6	503.0	693.3	883.6		
Kapiti Coast District	589.9	707.2	824.5	599.7	716.5	833.2	538.9	647.0	755.0	569.1	678.7	788.3	571.1	679.2	787.3	649.1	763.7	878.3	663.0	776.0	888.9	643.3	752.2	861.1	610.5	714.5	818.6	572.0	671.3	770.7		
Kawerau District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lower Hutt City	660.1	735.7	811.2	685.7	762.7	839.7	693.6	771.2	848.7	709.2	787.6	866.0	714.7	793.3	872.0	750.2	830.8	911.3	760.8	842.6	924.5	756.6	839.1	921.5	713.2	794.2	875.2	711.5	793.3	875.0		
Mackenzie District	378.6	970.1	1561.6	273.7	810.9	1364.3	262.6	785.6	1308.7	167.8	607.6	1047.4	152.1	586.8	1021.4	181.3	699.5	1217.7	307.9	859.0	1410.0	344.8	883.6	1422.3	353.7	846.6	1339.5	358.1	857.0	1356.0		
Manawatu District	520.1	666.0	812.0	464.8	603.2	741.6	508.8	652.0	795.1	569.5	719.6	869.7	663.0	822.6	982.3	740.4	906.9	1073.4	695.3	856.2	1017.2	672.5	830.0	987.5	631.8	784.6	937.3	671.8	828.3	984.7		
Manukau City	694.2	761.3	828.5	674.5	739.7	804.9	668.8	732.7	796.6	688.2	752.3	816.3	713.8	778.0	842.2	751.0	815.0	880.8	729.8	792.6	855.3	718.5	799.9	841.3	681.2	740.3	799.5	671.3	729.2	787.1		
Marlborough District	601.9	731.5	861.1	567.2	692.3	817.4	614.6	743.1	871.7	604.4	730.9	857.3	593.2	718.0	842.9	578.0	700.5	822.9	594.7	716.9	839.4	609.6	731.7	853.7	609.6	730.6	851.7	584.5	701.7	818.9		
Masterton District	610.2	768.0	925.8	544.3	694.3	844.2	557.4	708.3	859.1	556.7	707.4	858.1	565.7	716.9	868.4	554.0	703.6	853.2	601.1	755.1	909.2	607.5	761.5	915.4	609.6	761.3	915.6	578.8	727.8	876.8		
Matamata-Piako District	488.3	623.5	758.8	489.2	624.6	760.1	513.1	651.7	790.2	561.5	705.7	849.9	561.1	705.5	849.9	544.4	688.9	831.5	549.4	691.1	832.9	522.9	660.3	797.7	495.3	629.0	762.8	469.4	599.0	728.7		
Napier City	628.5	727.0	825.5	632.5	730.8	829.1	652.3	751.5	850.7	680.2	780.9	881.7	676.0	762.6	876.5	692.4	793.5	894.7	691.6	792.0	892.3	678.5	777.0	875.6	647.7	743.5	839.3	638.8	733.4	828.0		
Nelson City	611.4	721.3	831.3	633.0	745.5	858.0	615.3	726.0	836.7	622.5	733.4	844.3	549.0	652.7	756.3	557.3	661.3	765.3	596.4	703.3	810.2	601.1	708.1	815.0	565.8	669.5	773.2	536.0	636.9	737.8		
New Plymouth District	598.9	685.1	771.4	588.9	674.3	759.6	598.8	684.6	770.3	631.4	719.2	807.0	690.0	781.4	872.8	708.0	800.3	892.6	623.3	761.9	851.6	627.1	713.3	799.5	602.4	686.7	770.9	601.0	701.7	786.4		
North Shore City	559.7	617.3	674.9	569.0	626.5	684.0	541.3	597.0	652.6	562.0	618.2	674.3	575.6	631.9	688.2	601.8	658.8	715.9	604.9	661.6	718.4	605.2	661.5	717.7	609.1	665.0	721.0	612.2	667.9	723.5		
Otago District	598.5	941.0	1283.5	664.9	1017.4	1369.9	716.6	1076.7	1436.9	780.0	1146.0	1512.0	696.3	1043.7	1391.2	646.7	976.7	1306.6	603.0	925.3	1247.6	588.3	902.7	1217.1	625.5	944.5	1263.6	637.1	952.7	1268.3		
Otorohanga District	388.5	716.4	1044.4	331.0	636.6	942.2	351.9	654.0	956.1	393.8	705.6	1017.5	418.1	730.6	1043.0	373.4	678.6	983.7														

	1991		1992		1993		1994		1995		1996		1997		1998		1999		2000												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	515.0	645.4	775.9	494.2	620.5	746.9	502.9	629.4	756.0	676.8	807.9	572.2	705.0	837.8	570.6	701.3	832.0	571.7	700.6	829.6	576.0	704.6	833.1	545.8	670.8	795.7	532.5	675.2	777.8		
Auckland City	691.3	729.2	767.1	692.6	730.6	768.5	691.8	729.8	767.7	689.8	727.7	765.6	687.8	725.7	763.6	695.0	733.0	771.1	683.9	721.9	759.8	675.1	713.0	750.8	648.2	685.4	722.6	679.3	716.4		
Banks Peninsula District	265.5	515.5	765.4	242.3	485.2	728.0	292.3	547.6	803.3	238.5	472.4	706.3	308.8	528.0	820.3	314.8	578.0	846.6	606.8	879.7	331.2	601.7	872.3	249.0	483.4	717.9	228.6	462.8	696.9		
Buller District	669.1	921.1	1173.1	692.0	950.3	1208.6	674.1	931.5	1188.8	618.7	868.9	1119.1	622.2	876.4	1130.7	624.6	883.8	1142.9	578.1	827.3	1076.6	547.0	786.9	1026.9	442.5	658.6	874.8	498.1	724.5	950.9	
Carterton District	515.6	824.8	1134.1	525.4	834.5	1143.6	499.8	796.6	1093.5	457.1	742.5	1027.9	476.3	759.1	1042.0	415.7	678.0	940.3	421.7	682.4	943.0	348.4	638.8	889.2	431.6	693.0	954.4	453.2	717.4	981.5	
Central Hawke's Bay District	560.9	790.0	1019.1	528.9	750.7	972.5	572.7	800.9	1029.1	531.0	751.3	971.7	540.6	760.4	980.1	464.7	668.5	872.3	505.2	714.9	924.5	477.8	682.7	887.5	478.3	682.2	886.2	458.4	658.2	858.1	
Central Otago District	584.7	786.5	988.3	601.5	803.7	1006.0	544.0	735.5	927.0	509.9	693.1	876.3	463.7	636.7	809.8	452.8	621.7	790.7	466.9	634.7	802.4	487.8	657.5	827.2	509.2	681.0	852.9	455.0	618.4	781.9	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	701.5	741.3	781.0	692.4	731.6	770.9	698.3	737.5	776.7	693.1	731.9	770.8	707.5	746.6	785.6	686.3	724.6	762.9	657.3	694.7	732.1	645.9	682.8	719.7	638.8	675.4	712.0	650.7	687.6	724.4	
Clutha District	565.6	759.4	953.2	622.5	820.4	1018.4	666.5	868.5	1070.5	573.3	759.9	946.6	493.8	666.9	840.1	666.5	632.8	799.0	504.7	677.5	850.4	516.2	691.7	867.3	566.4	749.5	932.7	568.0	752.4	936.7	
Dunedin City	694.9	758.9	823.0	666.6	729.2	791.8	653.0	714.7	776.3	649.9	711.2	772.2	664.1	725.7	787.3	666.1	727.9	808.6	683.3	746.1	808.6	674.5	737.2	799.9	672.7	735.5	798.3	676.7	740.0	803.2	
Far North District	668.0	793.8	919.5	694.4	821.1	947.8	678.6	801.1	923.6	723.9	848.0	972.2	704.6	825.2	945.7	730.0	852.1	974.2	711.7	831.2	950.8	722.1	841.2	960.3	715.7	832.9	950.1	710.0	825.4	940.9	
Franklin District	591.3	723.3	855.4	564.3	691.4	818.5	591.4	719.4	847.4	595.1	720.4	845.7	595.0	718.4	842.5	629.6	755.1	880.6	626.1	750.2	874.3	643.7	768.5	893.3	631.2	753.5	875.9	638.8	761.0	883.1	
Gisborne District	687.7	807.7	927.8	730.9	853.9	976.8	737.0	860.1	983.2	798.3	925.7	1053.0	770.0	894.8	1019.7	787.2	912.9	1038.6	721.2	842.2	963.3	797.0	924.5	1052.0	757.5	882.6	1007.7	775.5	902.5	1029.5	
Gore District	523.4	711.4	899.4	514.5	700.8	887.2	525.4	713.3	901.3	620.7	822.9	1025.0	641.3	845.2	1049.2	592.7	791.1	986.4	541.9	730.4	918.9	574.3	769.6	964.9	633.1	837.8	1042.5	605.8	808.1	1010.3	
Grey District	524.0	739.2	954.4	500.6	709.4	918.2	531.1	740.6	950.1	558.6	769.0	979.3	570.2	778.4	986.7	545.8	746.9	948.0	600.4	811.7	1023.1	616.2	831.5	1046.7	571.9	782.6	993.3	542.7	749.9	957.1	
Hamilton City	638.5	716.8	795.2	607.7	683.6	759.5	617.8	693.6	764.0	602.8	677.1	751.4	641.4	717.4	793.4	678.8	789.8	638.6	713.3	787.9	639.2	713.3	787.5	628.5	701.6	746.6	822.1	679.3	764.9	766.5	
Hastings District	636.4	728.0	819.5	679.7	773.5	867.3	694.5	788.8	883.1	723.7	819.3	914.9	692.9	786.1	879.3	686.0	778.2	870.4	664.5	755.1	845.7	679.2	770.3	861.3	644.2	732.7	821.3	671.7	761.6	851.5	
Hauraki District	621.9	823.1	1024.2	625.7	828.3	1029.2	609.3	803.7	998.1	592.1	781.7	971.2	508.7	684.9	861.2	531.0	708.3	885.6	525.8	700.6	875.5	601.6	785.1	968.5	535.2	707.7	880.1	567.9	743.9	919.8	
Horowhenua District	621.7	741.1	860.5	710.8	837.3	963.7	701.3	826.1	950.8	710.4	835.3	960.3	713.8	838.8	963.8	718.1	843.2	968.4	684.4	807.2	930.0	712.2	836.5	960.8	691.2	813.7	936.1	772.1	900.6	1029.1	
Hurumui District	422.7	722.2	1021.7	372.7	647.5	922.2	322.8	578.5	834.2	295.4	540.9	786.0	403.2	672.1	940.9	397.1	658.9	920.7	419.6	684.4	949.2	369.2	624.3	879.4	346.1	588.3	830.4	600.1	801.1	845.4	
Invercargill City	796.1	903.9	1011.7	776.0	882.5	988.9	774.2	880.6	986.9	764.4	869.9	975.5	782.9	889.8	996.6	716.8	819.4	922.0	681.4	781.0	880.6	648.2	745.0	841.9	661.8	759.0	856.2	702.8	802.5	902.3	
Kaikoura District	547.7	1034.9	1522.1	487.9	947.3	1406.7	386.6	811.8	1237.1	310.2	701.9	1093.6	299.0	676.6	1054.2	307.1	672.9	1038.7	326.6	705.1	1083.6	441.6	874.9	1308.1	470.5	622.5	1374.5	504.3	870.1	1455.8	
Kaipara District	487.3	671.6	856.0	528.3	717.3	906.3	500.4	685.5	870.7	532.1	724.8	917.5	520.3	709.6	898.8	565.1	758.0	950.9	525.7	708.6	891.5	518.1	699.0	879.9	519.5	698.6	879.6	468.2	753.9	939.5	
Kapiti Coast District	566.7	664.3	761.9	531.2	623.6	716.0	500.1	587.5	675.0	528.2	616.3	704.4	515.8	600.7	685.6	542.8	628.6	714.5	505.2	586.4	667.7	522.2	603.8	685.4	517.5	597.2	677.0	556.7	638.6	720.5	
Kawerau District	412.7	817.6	1222.5	323.8	745.7	1165.7	393.5	657.8	1358.2	487.0	975.1	1463.2	547.1	1016.9	1486.7	520.1	945.0	1370.0	483.0	884.0	1285.0	555.5	965.1	1374.6	528.2	628.6	1329.0	538.8	801.9	1168.9	
Lower Hutt City	696.7	778.3	859.9	708.6	790.4	872.3	673.7	753.2	832.8	693.7	774.1	854.7	706.7	788.5	869.3	720.2	801.4	882.5	667.2	745.8	824.4	659.8	738.5	817.1	607.8	683.9	760.0	644.8	723.3	801.9	
Mackenzie District	335.1	819.3	1303.5	347.9	870.1	1392.2	411.8	948.4	1485.1	445.4	991.4	1537.4	380.6	911.7	1441.5	224.3	671.0	1156.5	603.9	1051.2	186.7	675.8	1165.0	124.2	561.6	999.0	246.8	738.3	1229.9		
Manawatu District	656.7	810.8	965.0	639.9	791.8	943.8	579.8	724.8	869.8	560.2	702.8	845.3	535.6	675.1	814.5	523.5	660.7	798.0	475.8	607.6	739.3	504.8	640.1	775.4	509.9	645.9	781.8	582.2	726.6	870.7	
Manukau City	680.4	738.0	795.6	689.5	746.6	803.7	687.8	744.3	800.7	678.7	734.1	789.5	689.5	744.7	799.9	688.4	742.8	797.2	665.5	718.5	771.5	659.0	711.5	763.9	635.7	686.7	737.8	646.6	698.8	749.1	
Marlborough District	578.4	693.9	809.4	572.7	686.6	800.5	559.2	671.2	783.2	607.5	723.2	838.9	629.5	746.1	862.7	627.8	743.2	858.6	586.8	697.3	807.8	545.6	651.1	756.6	575.1	682.1	789.1	598.7	705.9	813.2	
Masterton District	592.7	742.5	892.4	632.5	786.0	939.6	640.1	794.3	948.4	656.6	812.2	967.7	657.8	813.1	968.4	682.2	839.8	957.5	721.3	880.4	1039.4	666.9	818.4	970.0	666.8	818.4	968.1	594.6	735.5	876.4	
Matamata-Piako District	473.1	602.1	731.1	504.0	636.1	768.3	531.3	666.2	810.2	559.1	696.8	834.6	581.9	721.7	861.6	543.0	677.9	812.9	546.9	680.5	814.1	579.0	714.4	849.8	595.0	730.4	865.9	581.1	713.7	846.3	
Napier City	622.4	715.3	808.2	642.2	735.8	829.3	628.6	720.3	812.0	620.6	711.2	801.7	603.3	696.2	785.1	620.9	713.4	802.8	630.3	723.3	813.6	629.7	787.0	881.4	683.2	777.3	871.4	703.8	799.5	895.1	
Nelson City	524.5	624.2	724.4	559.1	661.8	764.4	592.8	697.9	803.1	649.7	758.7	867.6	658.7	767.5	876.3	665.2	773.9	882.6	633.7	739.7	845.7	634.9	740.9	846.9	607.0	710.6	814.3	622.4	727.0	831.7	
New Plymouth District	639.7	725.4	811.1	653.0	738.8	824.5	606.4	746.4	832.0	665.5	750.6	835.7	635.5	720.3	803.0	605.2	682.5	765.2	567.2	644.5	721.8	590.8	669.2	747.5	615.5	695.3	775.1	641.7	722.5	803.3	
North Shore City	593.1	647.5	701.9	595.8	649.7	703.6	573.6	625.9	678.1	581.6	633.5	685.5	593.4	645.2	697.1	594.6	646.0	697.5	580.4	631.1	681.9	561.2	611.0	660.7	543.4	592.4	641.4	581.9	632.4	682.9	
Opoitiki District	692.5	1017.5	1342.4	652.7	969.4	1286.1	613.7	942.5	1253.2	607.6	1103.0	1218.8	584.1	879.9	1175.7	596.6	862.2	1119.4	589.5	879.5	1169.5	635.8	932.3	1228.7	676.9	979.1	1281.0	709.0	1010.1	1319.3	
Otorohanga District	482.1	780.1	1078.0	340.2	601.8	863.4	284.2	532.5	780.9	294.7	543.5	792.3	364.0	628.8	893.5	394.5	663.9	933.4													

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	242.7	266.3	290.0	232.7	256.0	279.2	228.7	251.8	275.0	227.4	250.6	273.8	242.2	266.1	290.1	243.1	267.2	291.3	242.6	266.8	291.0	221.3	244.8	268.2	213.9	237.2	260.5	205.8	228.8	251.7
Bay of Plenty	197.7	234.9	272.2	181.6	217.0	252.3	176.7	211.1	245.6	166.6	199.7	232.8	176.0	209.6	243.1	176.1	209.3	242.4	172.0	204.2	236.3	160.0	190.6	221.2	148.0	177.1	206.2	145.9	174.4	203.0
Canterbury	227.8	250.0	272.3	237.1	259.7	282.4	233.5	255.9	278.3	234.7	257.0	279.4	228.2	250.1	272.1	234.0	256.1	278.3	234.8	256.9	279.1	228.5	250.3	272.1	215.0	236.0	257.1	199.3	219.6	239.8
Capital and Coast	217.7	249.0	280.3	192.9	222.5	252.1	174.7	203.0	231.3	163.8	191.3	218.7	168.6	196.3	224.1	171.7	199.7	227.7	169.8	197.7	225.7	172.3	200.5	228.7	166.3	194.1	221.9	158.6	185.8	213.1
Counties Manukau	216.5	248.7	280.9	199.9	230.3	260.7	199.8	229.8	259.9	196.2	225.6	254.9	202.5	232.1	261.7	209.9	239.6	269.4	206.1	235.3	264.5	202.7	231.3	259.9	178.5	205.3	232.0	175.1	201.5	227.8
Hawke's Bay	207.9	245.3	282.7	207.7	245.0	282.3	218.8	256.9	295.0	211.6	249.0	286.4	200.3	236.5	272.8	193.1	228.7	264.3	206.3	242.9	279.4	212.0	248.9	285.8	199.6	235.3	271.1	188.9	223.7	258.4
Hutt Valley	220.3	262.0	303.6	218.2	259.8	301.3	208.0	248.5	289.0	196.3	235.7	275.1	194.8	234.0	273.1	214.5	255.4	296.3	216.1	257.3	298.5	217.8	259.2	300.6	197.0	236.6	276.2	182.4	220.8	259.2
Lakes	160.9	211.2	261.5	160.6	210.2	259.8	162.8	212.0	261.2	160.6	209.2	257.9	165.7	214.4	263.2	177.9	227.5	277.0	170.1	217.8	265.5	156.8	202.3	247.8	143.0	186.4	229.8	155.9	200.8	245.6
MidCentral	226.3	262.7	299.1	207.9	243.0	278.0	205.9	240.7	275.4	209.6	244.5	279.4	214.3	249.5	284.8	235.1	271.8	308.5	233.5	270.1	306.6	234.4	270.9	307.4	211.9	246.6	281.3	196.8	230.3	263.9
Nelson-Marlborough	219.0	261.8	304.7	198.6	239.3	280.0	198.1	238.6	279.1	191.9	231.6	271.4	191.7	231.2	270.7	181.9	220.2	258.4	176.7	214.1	251.5	160.5	196.1	231.6	148.3	182.4	216.5	139.5	172.4	205.3
Northland	172.2	209.5	246.8	172.8	210.0	247.1	177.1	214.6	252.0	189.8	228.1	266.5	185.1	222.8	260.5	189.0	226.8	264.6	177.1	213.5	249.9	185.4	222.1	258.9	181.7	217.8	253.9	172.0	206.8	241.6
Otago	246.6	280.0	313.4	245.9	279.3	312.8	247.5	281.1	314.8	232.7	265.5	298.2	233.1	266.0	298.9	228.5	261.1	293.8	233.4	266.4	299.4	227.7	260.2	292.8	218.5	250.4	282.3	208.1	239.3	270.6
South Canterbury	232.0	290.0	348.0	227.5	285.1	342.7	224.0	281.2	338.3	231.5	289.5	347.5	235.9	294.4	352.9	237.2	295.8	354.3	228.5	285.7	343.0	216.1	271.7	327.3	191.0	243.6	296.2	173.0	223.3	273.7
Southland	208.4	252.4	296.3	204.9	248.5	292.1	204.6	248.3	292.0	195.3	238.2	281.0	188.6	231.0	273.4	184.5	226.6	268.6	192.4	235.3	278.2	191.2	233.8	276.4	199.5	242.9	286.3	192.1	234.6	277.2
Tairāwhiti	190.5	258.7	326.8	198.2	267.4	336.6	212.7	283.9	355.2	210.6	281.7	352.8	202.3	272.1	341.9	183.8	251.0	318.1	164.4	228.6	292.8	159.0	222.4	285.7	161.5	225.2	288.9	160.8	224.5	288.3
Taranaki	187.5	227.6	267.7	194.3	235.1	275.9	204.3	245.9	287.6	196.9	237.8	278.7	200.7	241.8	283.0	194.1	234.5	275.0	187.8	227.6	267.5	191.8	232.0	272.2	187.9	227.6	267.4	190.8	230.8	270.8
Waikato	215.1	242.3	269.5	220.6	247.9	275.3	223.2	250.6	278.0	224.2	251.5	278.9	218.1	245.0	271.8	212.7	239.1	265.5	204.1	229.8	255.5	190.3	215.0	239.8	187.9	212.4	236.8	183.2	207.2	231.2
Wairarapa	215.7	292.8	369.9	210.8	287.5	364.2	227.0	306.2	385.5	209.3	286.1	362.8	209.6	286.4	363.3	189.2	262.8	336.3	186.9	258.9	331.0	177.3	247.3	317.3	177.0	246.6	316.1	174.8	243.8	312.7
Waitemata	205.6	231.7	257.9	198.9	224.3	249.7	192.6	217.3	242.0	185.9	209.9	233.8	191.6	215.7	239.8	191.8	215.6	239.4	193.4	217.1	240.8	180.7	203.5	226.2	173.9	196.1	218.3	172.3	194.2	216.1
West Coast	203.8	280.9	358.0	208.8	286.4	364.0	206.5	283.9	361.3	211.4	291.0	370.6	203.5	281.9	360.3	207.4	286.6	365.8	173.6	246.8	320.0	177.2	251.5	325.9	164.7	237.0	309.2	183.9	259.8	335.7
Whanganui	192.9	243.4	293.8	191.6	242.2	292.9	189.2	239.8	290.4	191.8	242.9	293.9	200.3	252.5	304.7	210.3	263.8	317.3	188.1	239.0	289.9	189.6	240.5	291.5	171.5	220.2	268.8	171.4	219.9	268.4
New Zealand	243.0	250.9	258.7	237.6	245.4	253.1	235.7	243.4	251.1	231.6	239.2	246.8	232.9	240.5	248.1	234.5	242.1	249.7	231.9	239.5	247.0	224.7	232.1	239.5	213.4	220.6	227.8	205.7	212.7	219.8

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	205.4	228.5	251.6	206.6	229.7	252.8	198.9	221.7	244.4	191.6	213.9	236.2	187.4	209.5	231.6	182.9	204.7	226.5	176.0	197.5	219.0	164.5	185.4	206.3	160.9	181.7	202.5	156.1	176.7	197.3
Bay of Plenty	153.4	182.1	210.9	156.0	184.4	212.9	146.2	173.3	200.5	132.8	158.4	184.0	128.5	153.4	178.2	121.3	145.3	169.2	124.1	147.9	171.7	134.5	159.0	183.5	143.3	168.3	193.2	151.1	176.5	201.9
Canterbury	196.6	216.8	236.9	192.8	212.7	232.5	189.5	209.0	228.6	182.5	201.6	220.6	178.4	197.2	215.9	173.5	191.9	210.3	169.0	187.1	205.2	169.8	187.8	205.9	160.6	178.1	195.6	157.9	175.2	192.5
Capital and Coast	149.0	175.5	202.1	144.5	170.4	196.4	143.1	168.8	194.4	150.6	176.6	202.7	155.0	181.3	207.6	159.1	185.6	212.1	149.5	175.2	201.0	146.3	171.8	197.2	140.3	165.2	190.1	144.2	169.4	194.6
Counties Manukau	181.0	207.6	234.2	186.6	213.1	239.6	182.4	208.2	234.1	170.4	195.1	219.8	160.7	184.4	208.0	152.2	174.9	197.7	142.1	163.9	185.7	143.2	165.0	186.8	139.5	160.9	182.3	142.1	163.7	185.2
Hawke's Bay	190.0	224.7	259.4	192.4	227.1	261.9	189.1	223.4	257.7	173.0	205.7	238.4	169.6	201.9	234.1	154.5	185.3	216.0	154.4	185.0	215.7	153.1	183.6	214.1	168.4	200.2	231.9	173.1	205.2	237.3
Hutt Valley	180.0	218.3	256.6	170.4	207.8	245.1	174.4	212.0	249.5	157.9	193.8	229.7	158.0	193.9	229.7	150.0	185.1	220.1	156.9	192.6	228.2	156.3	191.9	227.4	144.3	178.5	212.6	132.0	164.9	197.7
Lakes	161.7	207.2	252.6	155.8	200.1	244.4	146.3	189.1	231.9	151.6	194.8	238.0	161.2	205.3	249.4	168.2	212.8	257.3	169.7	214.0	258.3	159.5	202.3	245.0	144.1	184.7	225.4	140.2	180.1	220.1
MidCentral	191.6	224.7	257.8	188.8	221.6	254.4	195.3	228.5	261.7	188.2	220.8	253.3	175.6	207.0	238.5	158.1	188.0	217.9	155.6	185.2	214.9	170.3	201.0	231.7	184.2	216.0	247.8	181.3	212.7	244.0
Nelson-Marlborough	137.2	169.6	202.0	141.8	174.4	206.9	129.4	160.3	191.2	123.1	153.1	183.0	118.3	147.5	176.7	124.9	154.6	184.2	129.7	159.6	189.5	135.3	165.6	195.8	146.1	177.1	208.1	142.5	173.0	203.4
Northland	176.1	211.0	245.9	176.0	210.4	244.9	178.5	212.8	247.1	167.7	200.7	233.7	157.6	189.3	221.0	157.5	188.9	220.3	153.2	183.9	214.6	171.6	203.6	235.7	167.1	198.6	230.2	166.1	197.5	228.8
Otago	201.0	231.8	262.5	188.1	217.8	247.6	176.2	205.0	233.8	172.3	200.7	229.1	164.2	191.9	219.6	166.5	194.2	221.9	161.0	188.3	215.7	167.0	194.9	222.8	162.4	189.9	217.4	161.4	188.9	216.4
South Canterbury	183.5	235.2	287.0	196.5	249.4	302.3	206.1	260.0	313.9	173.4	223.0	272.6	162.1	210.1	258.1	161.3	208.9	256.5	183.2	233.7	284.2	179.9	229.8	279.8	146.3	191.9	237.5	136.5	180.5	224.5
Southland	190.5	232.8	275.2	175.6	216.2	256.9	170.7	210.7	250.8	169.1	209.0	248.9	181.2	222.4	263.7	181.6	222.8	264.0	184.5	226.0	267.5	171.9	211.9	251.9	187.7	229.4	271.2	182.7	224.0	265.3
Tairāwhiti	162.3	226.6	291.0	173.5	239.4	305.3	172.8	238.4	304.0	173.9	239.7	305.3	154.3	216.7	279.1	150.8	212.7	274.6	135.4	194.7	254.1	132.7	192.0	251.2	132.8	192.4	252.0	142.5	204.3	266.0
Taranaki	1																													

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990				
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR
Auckland	160.7	178.2	195.7	162.1	179.8	197.4	156.2	173.7	191.1	160.9	178.7	196.4	162.7	180.6	198.6	168.3	186.6	204.9	168.1	186.5	204.9	166.6	185.0	203.4	161.9	180.2	198.5	158.2	176.4	194.7		
Bay of Plenty	125.5	158.5	191.4	137.1	170.7	204.4	140.5	173.8	207.0	144.4	177.7	211.0	127.5	158.6	189.7	124.7	155.2	185.7	119.9	149.4	178.8	116.4	144.9	173.5	111.0	138.5	166.0	105.9	132.4	158.9		
Canterbury	146.7	164.0	181.3	148.7	166.0	183.4	152.9	170.4	187.9	158.8	176.5	194.2	159.1	176.8	194.5	161.7	179.4	197.1	156.7	174.1	191.5	152.1	169.3	186.4	148.5	165.4	182.3	145.5	162.1	178.8		
Capital and Coast	132.1	156.2	180.4	131.5	155.6	179.8	133.1	157.4	181.7	125.8	149.5	173.2	119.7	142.9	166.1	129.9	153.9	178.0	127.3	151.2	175.1	127.4	151.3	175.2	107.4	129.6	151.8	104.1	126.0	147.9		
Counties Manukau	161.1	190.7	220.2	145.2	172.9	200.7	145.5	172.7	199.9	139.6	165.9	192.2	149.0	175.7	202.4	146.9	173.2	199.4	135.1	160.0	184.9	130.0	154.0	178.0	123.7	146.9	170.1	124.7	147.7	170.7		
Hawke's Bay	130.8	160.4	190.0	131.2	160.8	190.4	133.2	162.9	192.7	143.5	174.3	205.1	139.8	170.3	200.7	143.8	174.6	205.4	144.1	174.7	205.2	140.7	170.8	200.9	139.8	169.6	199.4	137.3	166.7	196.0		
Hutt Valley	150.5	184.4	218.4	152.0	186.0	219.9	135.2	167.3	199.5	127.9	159.2	190.4	130.9	162.3	193.7	146.6	179.6	212.5	153.4	187.3	221.2	145.4	178.7	212.0	127.2	158.8	190.4	129.4	161.4	193.4		
Lakes	75.9	117.1	158.3	76.1	116.2	156.2	82.2	122.6	163.0	90.8	132.9	175.0	104.5	148.8	193.1	134.4	182.7	230.9	126.5	172.5	218.6	119.1	163.3	207.6	95.5	135.4	175.2	99.3	139.4	179.5		
MidCentral	144.6	173.8	203.0	132.7	160.6	188.6	131.2	158.8	186.5	132.0	159.7	187.3	141.9	170.4	198.9	152.4	181.8	211.1	159.3	189.2	219.1	151.8	180.9	210.1	137.1	164.9	192.7	125.8	152.6	179.3		
Nelson-Marlborough	127.8	162.0	196.1	132.1	166.5	200.9	128.4	162.2	195.9	128.0	161.5	194.9	117.4	149.4	181.5	126.2	159.0	191.9	124.2	156.6	188.9	124.0	156.1	188.2	110.3	140.5	170.7	108.0	137.6	167.3		
Northland	133.4	171.0	208.6	118.1	153.5	188.9	121.7	157.4	193.2	122.5	157.9	193.3	137.0	173.8	210.6	133.7	169.5	205.4	135.1	170.5	205.9	124.3	157.9	191.6	116.9	149.2	181.6	102.2	132.2	162.3		
Otago	167.1	193.6	220.1	156.9	182.7	208.5	154.4	180.0	205.6	157.5	183.4	209.2	159.6	185.6	211.7	158.3	184.3	210.2	155.3	181.0	206.8	147.9	173.0	198.1	145.0	170.0	194.9	142.0	166.7	191.4		
South Canterbury	147.1	193.3	239.4	121.9	164.3	206.7	138.9	183.5	228.2	143.1	188.0	232.9	150.1	195.8	241.4	143.8	188.3	232.8	143.2	187.5	231.9	147.5	192.3	237.2	159.1	205.4	251.7	146.2	190.8	235.4		
Southland	147.4	185.7	223.9	141.6	179.1	216.7	132.3	168.8	205.3	143.6	181.3	219.1	158.0	197.3	236.7	168.7	209.2	249.6	153.9	192.5	231.1	146.2	183.9	221.5	142.3	179.4	216.4	157.4	196.0	234.6		
Tairāwhiti	90.4	141.3	192.1	98.4	151.0	203.6	112.7	168.1	223.6	132.7	192.0	251.2	118.2	174.8	231.4	113.9	169.6	225.2	110.3	164.9	219.5	123.6	180.5	237.5	126.1	183.4	240.7	107.0	160.3	213.7		
Taranaki	136.0	171.2	206.3	127.0	161.1	195.1	126.5	160.5	194.4	132.1	166.6	201.1	143.4	179.0	214.7	136.9	171.8	206.7	121.9	154.9	187.9	114.1	146.0	177.8	114.7	146.4	178.2	121.1	153.5	185.9		
Waikato	146.8	171.3	195.7	136.2	159.7	183.1	143.8	167.5	191.3	147.1	170.9	194.7	144.1	167.6	191.0	138.4	161.3	184.1	139.0	161.6	184.3	140.1	162.6	185.2	138.7	160.8	183.0	133.5	155.1	176.8		
Wairarapa	116.0	175.7	235.3	113.7	172.5	231.4	128.5	190.0	251.5	138.0	201.2	264.3	145.6	209.8	274.1	130.1	191.2	252.2	116.9	157.2	233.6	99.3	153.7	208.1	101.3	156.0	210.6	111.1	167.3	223.5		
Waitemata	134.2	156.3	178.5	133.9	155.7	177.6	128.4	149.6	170.8	125.7	146.4	167.2	132.5	153.5	174.5	139.5	160.8	182.1	136.9	175.6	178.4	129.2	149.0	168.9	127.2	146.7	166.2	125.5	144.7	163.8		
West Coast	140.6	210.3	279.9	139.2	208.6	278.1	141.1	210.9	280.8	123.8	189.9	256.1	88.9	146.9	204.8	115.4	179.2	242.9	108.3	170.8	233.3	127.2	194.2	261.1	90.9	150.1	209.3	110.2	174.5	238.7		
Whanganui	105.4	143.9	182.4	97.6	134.8	172.0	110.5	149.7	188.9	107.9	146.6	185.2	128.5	170.2	211.9	132.6	174.9	217.2	134.3	176.8	219.3	127.8	169.4	211.0	137.2	180.1	223.0	139.7	183.0	226.2		
New Zealand	164.2	170.6	177.1	160.3	166.6	172.9	160.5	166.8	173.1	162.4	168.8	175.1	164.3	170.6	176.9	168.0	174.4	180.8	165.0	171.3	177.6	160.7	166.9	173.1	154.2	160.2	166.3	151.2	157.1	163.1		

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000				
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR
Auckland	159.4	177.8	196.3	154.7	172.9	191.2	151.7	169.8	187.9	141.1	158.7	176.2	137.5	154.8	172.0	131.2	148.1	164.9	125.7	142.2	158.7	120.6	136.9	153.2	121.8	138.3	154.8	123.3	140.0	156.8		
Bay of Plenty	104.3	130.2	156.2	100.2	125.1	150.1	95.9	119.7	143.6	90.8	113.6	136.4	93.3	116.1	138.8	86.7	108.4	130.1	96.9	119.3	141.7	101.8	124.4	147.0	104.9	127.4	149.9	105.7	127.9	150.2		
Canterbury	146.3	162.9	179.6	143.8	160.2	176.5	143.8	160.1	176.3	141.5	157.5	173.5	136.2	151.8	167.5	130.0	145.2	160.4	125.9	140.8	155.6	128.0	143.0	157.9	126.4	141.2	156.0	128.1	142.9	157.8		
Capital and Coast	95.9	117.0	138.1	101.4	122.9	144.4	97.1	118.1	139.0	99.1	120.1	141.2	91.6	111.8	131.9	95.2	115.6	135.9	98.8	119.5	140.1	108.7	130.2	151.7	109.2	130.7	152.3	112.6	134.4	156.2		
Counties Manukau	129.5	152.7	175.9	138.0	161.5	185.1	139.8	163.2	186.6	135.2	157.9	180.6	126.5	148.2	170.0	121.3	142.4	163.5	114.4	134.8	155.1	117.1	137.6	158.0	110.4	130.1	149.9	113.4	133.2	153.0		
Hawke's Bay	133.7	162.4	191.2	127.6	155.5	183.5	120.2	147.2	174.3	126.4	153.8	181.3	125.2	152.3	179.4	118.2	144.4	170.6	109.6	135.0	160.3	119.0	145.3	171.5	127.8	155.0	182.1	144.4	173.1	201.8		
Hutt Valley	139.2	172.5	205.7	150.3	184.6	218.8	141.1	174.2	207.4	134.3	166.7	199.0	131.5	163.3	195.2	126.7	157.8	189.0	122.2	152.8	183.5	119.4	149.8	180.1	115.6	145.4	175.3	113.1	142.6	172.2		
Lakes	99.1	138.6	178.0	104.4	144.2	184.0	97.1	134.6	172.2	103.5	141.5	179.5	94.3	130.4	166.6	97.4	134.0	170.5	101.6	138.8	175.9	113.0	151.4	189.8	109.1	146.7	184.2	119.5	158.4	197.3		
MidCentral	129.4	156.4	183.5	137.8	165.5	193.1	135.0	162.2	189.5	131.3	158.1	184.9	120.2	145.7	171.3	122.5	148.1	173.8	117.8	142.9	168.0	126.3	152.2	178.1	122.8	148.3	173.8	134.9	161.4	188.0		
Nelson-Marlborough	102.5	131.3	160.1	102.4	130.8	159.2	99.4	127.2	155.1	103.4	131.5	159.6	112.7	141.7	170.6	109.6	137.9	166.3	108.8	136.8	164.7	110.7	138.6	166.5	126.5	155.8	185.1	131.0	160.5	189.9		
Northland	99.6	128.9	158.3	107.8	137.8	167.9	117.9	144.8	175.3	119.1	149.8	180.5	120.0	150.5	181.1	121.6	152.0	182.4	119.2	149.0	178.8	112.9	141.6	170.4	117.5	146.4	175.3	119.8	148.6	177.3		
Otago	140.5	165.1	189.7	136.8	161.0	185.1	132.3	155.9	179.6	130.0	153.3	176.5	121.0	143.4	165.7	112.6	134.0	155.5	114.1	135.7	157.4	120.9	143.1	165.4	129.4	152.3	175.3	127.8	150.7	173.6		
South Canterbury	146.0	190.5	235.1	141.4	185.2	229.0	143.9	188.0	232.2	134.7	177.7	220.6	136.3	179.6	222.9	132.2	174.9	217.7	118.9	159.5	200.0	109.9	148.8	187.6	109.2	147.7	186.1	119.0	158.6	198.2		
Southland	153.2	191.1	229.1	155.6	193.6	231.7	144.0	180.6	217.3	136.5	172.2	207.9	130.8	165.8	200.8	123.2	157.2	191.2	128.9	163.5	198.1	136.8	172.1	207.5	143.4	179.3	215.3	149.7	186.3	222.8		
Tairāwhiti	99.3	151.2	203.0	95.5	146.5	197.5	100.3	152.2	204.1	115.6	170.2	224.8	110.0	163.4	216.7	94.5	144.6	194.7	77.8	124.5	171.2	97.6	148.9	200.2	116.6	172.1	227.5	128.9	186.8	244.7		
Taranaki																																

	1981		1982		1983		1984		1985		1986		1987		1988		1989		1990												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	188.3	275.5	362.7	228.8	323.3	417.7	239.8	335.8	431.8	240.3	336.0	431.8	234.6	328.9	423.3	214.6	305.1	395.5	195.2	281.3	367.4	138.5	212.6	286.6	138.1	211.4	284.6	131.8	203.3	274.9	
Auckland City	265.3	290.7	316.0	255.3	280.3	305.3	250.6	275.5	300.4	249.4	274.4	299.4	265.4	291.2	317.0	265.3	291.3	317.3	263.1	289.1	315.1	238.9	263.9	289.0	231.9	256.8	281.7	223.6	248.2	272.7	
Banks Peninsula District	117.6	301.4	485.1	67.7	220.5	373.2	66.0	215.0	364.0	97.1	255.3	413.5	107.5	268.8	430.1	81.0	225.9	370.8	64.7	201.7	338.6	49.3	178.4	307.5	39.3	163.3	287.2	32.0	159.9	287.9	
Buller District	102.2	217.6	332.9	167.3	304.0	440.7	188.0	330.4	472.9	186.7	330.3	473.8	169.2	309.8	450.3	185.0	329.3	473.6	190.7	335.3	479.9	177.6	318.3	458.9	175.9	317.3	458.8	172.7	316.0	459.4	
Carterton District	136.2	326.1	515.9	111.2	292.5	473.8	130.3	318.5	506.7	118.0	302.4	486.7	153.5	360.2	566.9	97.0	279.8	462.6	89.0	266.3	443.6	46.9	194.5	342.1	109.4	287.9	466.3	105.4	285.1	464.8	
Central Hawke's Bay District	161.7	303.0	444.3	153.5	290.0	426.0	181.0	326.5	472.1	176.2	317.9	459.7	149.8	283.0	416.3	102.9	218.9	335.0	124.5	249.2	374.0	152.7	286.1	419.5	176.3	315.9	455.6	158.3	291.8	425.4	
Central Otago District	149.6	266.3	383.1	173.8	296.9	420.0	151.2	267.5	383.8	142.7	255.7	368.7	120.2	225.1	330.1	134.2	242.2	350.1	139.6	248.4	357.3	111.9	211.5	311.1	80.1	168.2	256.3	70.9	155.4	239.9	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	245.0	271.4	297.8	257.7	284.6	311.6	250.9	277.4	304.0	251.2	277.7	304.2	241.1	267.1	293.0	250.8	277.3	303.7	254.0	280.6	307.2	253.2	279.7	306.2	237.0	262.6	288.3	220.2	245.0	269.8	
Clutha District	169.8	276.9	384.0	155.5	259.3	363.0	147.4	249.3	351.1	167.3	275.1	383.0	159.7	266.3	372.8	180.6	293.4	406.1	223.7	345.2	466.8	229.9	352.8	475.7	232.7	355.1	477.6	173.0	282.2	391.3	
Dunedin City	264.8	308.4	352.1	254.4	297.4	345.5	262.6	306.5	350.3	243.5	286.1	328.6	246.4	289.4	332.4	238.6	281.1	323.7	244.0	287.0	330.0	254.5	298.5	342.5	294.2	338.1	233.6	276.3	319.0		
Far North District	235.9	313.2	390.5	208.9	281.5	354.2	193.0	262.3	331.7	180.4	247.2	313.9	173.0	237.9	302.8	182.7	248.3	313.9	191.7	257.6	323.5	199.5	265.6	331.7	216.6	284.3	352.0	182.2	244.4	306.6	
Franklin District	166.7	242.1	317.4	162.6	236.5	310.3	138.3	206.8	275.3	142.7	211.5	283.0	136.3	204.3	270.5	164.6	236.6	308.2	145.1	212.8	280.4	161.2	231.0	300.9	128.1	191.1	254.2	127.4	189.7	251.9	
Gisborne District	218.8	291.3	363.8	227.3	301.0	374.8	248.3	324.9	401.6	242.8	318.8	394.8	230.3	304.5	378.7	205.9	276.8	347.6	178.4	245.3	312.2	177.2	243.9	310.6	175.0	241.4	307.9	179.0	246.1	313.2	
Giore District	113.9	223.3	332.7	137.5	255.5	373.6	159.5	284.0	408.5	159.9	284.7	409.5	167.2	293.9	420.6	127.7	243.4	359.4	175.8	305.4	435.1	142.8	263.3	383.9	186.8	321.0	455.1	139.7	261.8	383.9	
Grey District	201.3	331.1	460.8	196.0	325.2	454.4	182.3	308.3	434.3	175.9	300.5	425.1	144.5	260.7	376.9	159.5	268.7	386.4	120.1	228.8	337.6	159.9	281.0	402.2	139.0	254.4	369.8	150.8	270.2	389.6	
Hamilton City	237.4	290.7	344.1	244.9	298.8	352.7	232.8	285.2	337.7	237.6	290.4	343.2	232.5	284.5	336.5	234.5	286.5	338.4	220.6	270.9	321.3	207.6	256.4	305.2	200.4	248.4	296.3	197.9	247.5	293.1	
Hastings District	244.6	308.0	371.4	242.4	305.5	368.7	244.5	307.7	370.9	237.8	300.0	362.2	225.0	285.6	346.2	236.0	297.6	359.2	253.2	316.5	379.8	256.6	320.1	383.6	229.1	289.3	349.6	212.5	270.6	328.8	
Hauraki District	218.3	349.1	480.0	221.2	352.6	484.0	182.0	304.9	427.7	161.8	279.5	397.2	165.6	284.4	403.3	164.5	282.6	400.6	164.2	267.9	381.5	156.8	269.4	382.0	201.4	323.3	445.3	191.4	309.6	427.9	
Horowhenua District	218.1	299.5	380.9	193.6	269.9	346.3	189.8	264.7	339.9	199.4	275.2	351.0	203.8	279.8	355.9	235.9	316.7	397.5	244.3	325.9	407.4	225.5	303.9	382.3	187.7	259.6	331.6	178.1	248.4	318.7	
Hurunui District	58.5	190.5	322.5	33.3	150.4	267.6	33.4	150.8	268.2	56.4	183.8	311.2	93.3	233.3	373.4	120.1	267.4	414.6	116.8	259.9	403.0	133.8	281.0	428.3	109.7	244.1	378.6	103.5	234.2	365.0	
Invercargill City	348.3	426.2	504.1	338.5	415.6	492.6	334.2	411.2	488.1	314.8	390.2	465.7	313.8	389.8	465.8	312.6	388.8	465.0	293.3	367.2	441.0	292.1	365.6	439.2	289.4	362.6	435.7	300.7	375.1	449.5	
Kaikoura District	87.7	364.2	604.6	32.9	266.2	499.6	13.4	228.8	444.2	4.3	215.6	426.9	-13.6	184.5	382.6	-13.0	176.6	366.1	50.3	284.6	519.0	76.7	318.2	559.8	85.4	329.4	573.5	59.3	296.5	533.8	
Kaipara District	114.2	212.2	310.2	98.3	190.8	283.3	106.7	201.6	296.6	120.7	219.3	317.9	135.9	239.0	342.0	141.6	245.9	350.3	104.4	197.2	290.0	153.5	258.3	363.1	148.2	250.7	353.1	172.9	280.8	388.7	
Kapiti Coast District	199.5	269.7	340.2	190.5	258.4	326.3	203.6	273.6	343.6	212.6	283.3	354.0	234.6	308.5	382.3	238.1	311.2	384.2	221.3	290.7	360.1	220.1	288.4	356.6	197.5	261.8	326.1	183.8	246.0	308.3	
Kawerau District	41.1	232.9	424.6	2.9	143.4	283.9	10.8	184.8	358.8	-12.1	164.1	340.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	442.1	47.9	239.8	431.7	111.1	346.2	581.3
Lower Hutt City	244.0	293.4	342.9	238.3	287.4	336.5	226.8	274.9	323.0	231.9	260.8	307.7	216.8	264.0	311.2	230.8	279.5	328.2	239.7	289.6	339.4	242.9	293.3	343.7	216.6	264.6	312.7	181.2	225.9	270.7	
Mackenzie District	25.2	272.4	519.5	15.2	260.4	505.7	77.3	473.7	798.1	68.1	450.0	831.9	145.8	659.2	1172.6	10.9	545.8	1080.8	62.1	670.3	1278.5	9.5	475.2	941.0	8.4	421.0	833.6	-30.6	323.6	495.8	
Manawatu District	191.0	285.6	380.2	190.6	285.0	379.5	176.6	268.1	359.5	184.1	276.7	369.2	165.1	253.3	341.6	168.2	256.7	345.2	151.9	236.6	321.2	189.4	281.2	373.1	194.2	286.6	378.9	201.0	294.1	387.3	
Manukau City	210.1	247.1	284.1	203.5	239.2	275.0	207.0	242.5	278.0	197.1	231.4	265.7	202.0	236.6	271.2	208.2	243.0	277.8	213.1	247.8	282.5	206.1	239.8	273.5	188.9	221.1	253.2	181.9	213.2	244.6	
Marlborough District	245.1	329.7	414.3	235.2	318.0	400.8	227.3	308.6	390.0	200.3	277.2	354.0	197.2	273.2	349.2	189.9	264.0	338.2	158.7	226.3	293.9	126.7	187.3	247.9	120.1	178.4	236.6	117.2	174.0	230.8	
Masterton District	192.2	294.1	396.0	178.7	277.4	376.2	206.1	310.5	414.8	175.5	273.2	371.0	178.4	276.9	375.5	165.4	260.8	356.3	169.8	265.3	360.8	162.7	255.8	348.9	158.9	250.7	342.5	150.0	239.1	328.2	
Matamata-Piako District	164.4	246.4	328.5	186.6	273.1	359.5	178.1	262.7	347.4	172.7	256.5	340.3	152.5	232.0	311.6	148.8	227.7	306.6	152.3	231.2	310.1	140.9	216.8	292.7	127.3	199.5	271.6	103.8	170.0	236.2	
Napier City	181.2	240.6	300.0	185.0	244.7	304.3	200.7	262.0	323.4	202.2	263.3	324.4	197.0	256.9	316.8	181.8	239.3	296.7	183.8	241.1	298.4	185.7	243.1	300.4	180.9	237.3	293.7	175.4	230.8	286.2	
Nelson City	241.1	318.5	396.0	213.9	287.4	361.0	190.7	260.6	330.5	186.1	254.9	323.8	187.4	256.7	326.0	180.2	248.0	315.8	189.8	259.1	328.5	190.6	259.9	329.3	179.1	246.8	314.5	173.0	239.3	305.7	
New Plymouth District	228.3	286.0	343.7	223.4	280.5	337.6	240.0	298.9	357.7	225.1	282.0	338.9	226.6	283.5	340.4	212.0	262.1	322.2	200.7	254.5	308.3	213.1	268.2	323.3	211.5	266.4	321.2	224.3	280.5	336.8	
North Shore City	211.9	249.6	287.4	205.0	241.8	278.7	204.0	240.5	277.0	186.0	220.7	255.4	194.4	229.6	264.8	187.8	232.2	256.6	195.0	229.9	264.8	181.1	214.7	248.4	175.9	209.1	242.4	174.7	207.8	241.0	
Opotiki District	123.9	296.7	469.4	118.4	289.5	460.6	163.5	352.9	542.3	185.2	384.0	582.8	215.6	427.2	629.8	150.6	335.1	519.6	90.7	274.3	438.9	96.4	253.6	410.8	83.8	233.9	383.9	95.2	250.4	405.6	
Otorohanga District	55.4	200.6	345.8	57.6	197.3	337.0	58.7	201.0	343.3	75.3	225.3	375.3	87.6	244.5	401.4	95.6	251.6	407.5	97.1	255.3	413.6	74.1	221.7	369.2	75.0	224.5	374.0	51.6	187.0	322.3	
Palmerston North City	220.6																														

	1991		1992		1993		1994		1995		1996		1997		1998		1999		2000												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	141.3	214.5	287.7	148.0	222.4	296.8	178.2	257.7	337.2	167.2	244.7	322.2	168.2	245.6	323.1	138.8	210.6	282.5	130.5	200.2	269.9	115.2	181.2	247.1	95.2	156.0	216.7	99.0	160.9	222.7	
Auckland City	224.1	248.9	273.6	225.0	249.8	274.6	216.4	240.8	265.2	209.6	233.6	257.6	205.3	229.0	252.8	201.4	224.9	248.3	191.9	214.8	237.8	177.0	199.2	221.4	170.0	191.8	213.6	162.4	183.7	205.1	
Bays Peninsula District	55.7	201.8	347.9	67.2	209.8	351.6	61.9	192.9	323.9	71.4	206.1	340.7	59.3	184.7	310.0	57.9	180.3	302.7	21.2	119.9	218.6	41.0	148.3	255.7	27.7	125.4	223.1	54.4	169.4	284.3	
Buller District	162.7	304.8	446.9	173.0	319.1	465.2	135.7	268.8	401.8	106.5	226.6	346.8	67.5	168.8	270.2	86.4	195.5	304.6	95.2	208.5	321.9	115.1	235.8	356.4	91.2	203.0	314.8	92.1	204.9	317.7	
Carterton District	97.1	270.8	444.5	43.6	181.1	318.6	36.2	163.7	291.3	41.4	171.9	302.5	36.1	163.1	290.1	75.6	226.1	376.6	91.3	247.0	402.7	100.3	256.9	413.5	65.7	204.6	343.4	44.5	171.5	298.6	
Central Hawke's Bay District	180.6	321.4	462.3	181.4	322.8	464.3	201.4	347.9	494.4	159.5	291.9	424.3	135.7	261.0	386.3	114.8	232.4	350.1	118.1	236.4	354.7	100.8	211.6	322.5	81.8	185.2	288.5	78.3	180.4	282.5	
Central Otago District	97.1	190.4	283.6	101.8	194.1	286.3	112.0	205.0	297.9	91.0	174.9	258.9	80.8	160.1	239.3	81.2	159.3	237.4	88.2	169.6	251.0	95.0	178.0	261.0	73.8	149.4	225.1	64.9	136.3	207.6	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	213.4	237.7	262.1	210.9	235.0	259.1	201.7	225.2	248.7	198.5	221.7	245.0	191.1	213.8	236.5	189.9	212.4	235.0	183.4	205.5	227.6	185.4	207.6	229.8	174.5	196.1	217.6	167.8	188.9	210.1	
Clutha District	166.3	273.5	380.8	133.4	233.0	332.7	116.5	211.7	306.9	108.6	200.4	292.1	110.8	202.9	294.9	115.0	207.5	299.9	105.2	195.6	286.0	97.1	185.0	273.0	107.1	197.4	287.8	109.5	200.4	291.3	
Dunedin City	207.0	247.6	288.1	190.5	229.6	268.6	181.7	219.9	258.2	183.7	222.0	260.4	178.4	216.3	254.2	182.2	220.4	298.7	177.1	215.0	252.9	178.9	217.0	255.2	163.5	200.2	236.9	159.7	196.1	232.5	
Far North District	183.1	244.6	306.2	154.8	211.3	267.8	180.2	239.5	298.8	180.9	239.2	297.5	178.8	235.5	292.2	166.9	221.1	275.2	146.0	196.6	247.3	158.0	210.0	262.0	147.5	198.0	248.5	156.3	207.9	259.5	
Franklin District	130.7	193.3	255.8	135.0	197.6	260.1	149.4	213.1	276.8	142.5	203.9	265.3	140.6	200.6	260.5	129.3	186.7	244.1	113.7	167.8	221.9	110.6	163.5	216.4	107.4	159.5	211.5	113.0	165.7	217.6	
Gisborne District	177.6	244.5	311.3	196.9	266.5	336.1	200.0	269.9	339.8	198.6	268.0	337.4	186.9	254.3	321.7	175.8	241.2	306.5	165.2	229.4	293.7	151.0	213.3	275.7	154.1	217.4	280.7	157.7	222.2	286.6	
Gore District	147.6	272.2	396.7	125.0	240.4	355.8	140.5	259.2	377.8	131.3	264.1	360.8	172.4	299.5	426.6	173.3	299.4	425.5	184.3	313.2	442.1	146.3	264.0	381.7	148.3	267.6	386.8	154.8	275.5	396.3	
Grey District	136.6	251.9	367.2	151.1	270.8	390.5	158.5	280.4	402.3	120.4	231.7	342.9	118.2	229.4	340.7	101.7	208.3	314.9	126.9	242.0	357.0	108.8	217.8	326.8	84.2	184.6	284.9	91.6	194.9	298.2	
Hamilton City	197.5	244.8	292.1	189.3	235.4	281.5	186.0	231.6	277.1	164.2	207.1	249.9	177.8	222.0	266.2	177.2	221.1	265.0	184.0	228.5	273.0	174.4	217.5	260.6	156.7	197.7	238.7	149.7	189.8	229.9	
Hastings District	205.9	263.0	320.2	215.1	273.0	330.9	197.5	252.9	308.3	193.6	248.2	302.8	174.1	225.9	277.8	155.5	204.6	253.7	163.8	213.9	264.0	156.8	205.8	254.9	172.8	223.8	274.8	160.6	209.9	259.2	
Hawaki District	189.4	305.2	421.1	144.1	247.6	351.1	112.0	205.0	297.9	91.5	177.7	263.9	85.5	169.5	253.4	101.7	190.6	279.4	114.9	207.4	299.8	135.6	232.9	330.2	137.0	234.1	313.3	125.0	218.4	311.9	
Horowhenua District	199.3	272.1	344.9	198.8	271.7	344.7	192.3	264.1	335.8	198.1	271.3	344.6	182.2	252.7	323.2	182.1	252.3	324.4	182.8	252.9	323.0	218.6	292.9	367.2	225.1	300.3	375.4	200.2	271.8	343.4	
Hurunui District	87.8	210.3	332.7	63.2	176.2	289.2	62.2	173.4	284.6	52.5	157.1	261.7	73.7	184.4	295.0	57.7	161.0	262.3	53.9	155.4	256.9	42.1	137.0	231.9	44.9	139.8	234.7	48.5	141.1	241.6	
Invercargill City	295.6	369.4	443.2	255.8	324.9	394.0	214.4	278.2	342.0	190.5	251.1	311.6	198.5	260.2	321.9	194.9	256.1	317.3	185.3	245.2	305.2	177.9	236.9	295.8	200.0	262.2	324.4	196.1	257.8	319.6	
Kaikoura District	29.7	240.6	451.5	21.8	235.3	448.8	21.0	226.8	432.6	21.9	235.7	449.6	29.7	240.7	451.5	-11.8	159.9	331.5	-12.0	163.5	339.1	-37.8	97.9	233.6	-18.0	136.4	290.8	11.0	188.1	365.1	
Kaipara District	139.2	239.1	339.0	151.2	253.2	355.3	157.3	259.8	362.3	155.3	231.2	327.1	120.2	211.3	302.4	92.6	175.0	257.4	119.2	208.2	297.2	124.0	213.1	302.1	126.6	215.2	303.8	108.4	191.8	275.1	
Kapiti Coast District	157.8	214.5	271.2	162.0	217.9	273.9	164.0	219.2	274.4	162.9	218.1	273.2	160.0	215.6	267.2	170.0	223.6	277.3	160.3	211.9	263.4	145.2	194.3	245.5	128.5	174.8	221.2	109.2	151.2	193.3	
Kawerau District	128.7	359.0	589.4	144.4	370.0	595.5	48.5	213.5	390.4	19.7	159.6	299.6	20.2	163.3	306.5	36.3	181.5	326.7	57.2	220.7	384.3	49.0	203.4	357.8	37.0	185.1	333.2	51.9	215.5	379.1	
Lower Hutt City	172.5	216.5	260.5	172.0	216.0	260.0	193.4	239.7	286.0	177.4	222.0	266.6	169.9	213.7	257.6	162.0	205.0	248.0	169.7	213.7	257.8	172.0	216.3	260.7	157.9	200.7	243.6	146.8	188.6	230.3	
Mackenzie District	-24.3	184.8	394.0	5.2	258.1	511.0	4.9	243.7	482.5	22.7	245.3	467.9	11.6	198.4	385.3	19.2	207.0	394.8	21.5	232.5	443.4	3.9	195.5	387.2	-12.5	169.9	352.3	-18.8	143.1	305.0	
Manawatu District	150.8	233.4	316.1	127.0	204.0	280.9	120.1	195.1	270.1	149.3	230.4	311.6	146.4	226.7	306.9	134.8	211.9	289.0	96.3	163.8	231.2	109.1	179.5	249.8	114.0	185.3	256.5	134.3	209.8	285.3	
Manukau City	187.2	218.8	250.4	191.1	222.4	253.7	183.4	213.6	243.9	164.8	193.1	221.5	155.6	182.7	209.9	150.2	176.5	202.7	145.7	171.4	197.1	147.1	172.9	198.7	140.4	165.4	190.5	145.4	170.9	196.3	
Marlborough District	121.2	178.0	234.9	124.1	180.9	237.6	125.4	181.3	237.3	113.8	166.9	220.0	117.5	170.6	223.7	128.6	183.1	237.6	136.7	192.2	247.7	132.7	187.3	241.8	137.3	192.3	247.3	127.7	180.7	233.7	
Matamoras District	147.5	235.1	322.6	152.6	240.8	328.9	146.3	232.3	318.4	175.8	267.5	359.2	164.3	252.8	344.4	162.7	249.6	336.5	138.5	202.1	301.6	144.2	226.7	309.2	147.6	230.5	313.5	164.3	250.1	335.9	
Matamata-Piako District	99.6	164.6	229.5	107.3	174.3	241.3	134.9	207.5	280.2	145.8	220.1	294.5	156.4	232.3	308.1	137.8	209.7	281.6	136.9	208.3	279.7	146.0	219.3	292.7	138.5	209.7	280.9	125.9	194.3	262.6	
Napier City	178.9	234.5	290.1	173.6	228.2	282.9	176.5	231.3	286.2	160.9	213.3	265.6	175.8	230.0	284.1	169.6	222.7	275.7	148.9	198.9	249.0	132.5	179.9	227.2	130.2	177.0	223.8	144.4	193.5	242.6	
Nelson City	164.3	229.1	293.9	175.3	241.0	306.7	150.8	212.0	273.3	153.1	214.3	275.6	138.8	197.6	256.5	145.8	205.7	265.5	145.2	204.2	263.3	140.8	198.4	255.9	134.0	189.6	245.2	125.4	179.5	233.6	
New Plymouth District	203.3	257.0	310.7	205.4	259.0	312.7	193.0	244.7	296.4	187.8	238.5	289.2	161.9	209.0	256.0	143.0	187.3	231.6	134.8	178.0	221.2	150.4	195.5	240.7	148.4	193.1	237.8	148.8	190.0	234.2	
North Shore City	174.6	207.6	240.7	161.5	193.1	224.6	154.4	185.0	215.6	160.1	191.0	221.8	156.8	186.9	217.1	161.7	192.0	222.3	144.2	172.9	201.6	150.4	179.5	208.7	123.2	149.9	176.5	122.6	149.2	175.7	
Opoitiki District	79.5	229.3	379.1	66.3	206.4	346.5	42.1	162.3	282.5	70.3	202.7	335.1	132.8	209.9	449.0	137.9	297.7	457.6	118.7	268.6	418.6	74.9	202.6	330.3	129.4	279.3	429.2	125.8	275.7	425.5	
Otorohanga District	54.8	187.6	320.4	33.8	152.7	271.6	54.2	185.4	316.6	84.7	229.2	373.7	76.9	214.6	352.3	77.2	208.7	340.3	56.1	182.6	309.1	66.0	197.3	328.7	33.2	150.1	267.0	34.2	154.6	275.0	
Palmerston North City	183.6																														

	1991		1992		1993		1994		1995		1996		1997		1998		1999		2000												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR											
Ashburton District	89.2	150.8	212.5	87.4	147.1	206.7	82.4	140.1	197.8	92.7	152.5	212.3	73.5	127.8	182.0	82.5	138.2	193.9	72.8	125.8	178.8	84.8	140.7	196.6	69.6	121.6	173.6	73.0	126.0	179.1	
Auckland City	179.6	200.0	220.4	174.6	194.7	214.9	171.4	191.4	211.5	158.3	177.6	196.9	153.4	172.4	191.4	146.8	165.4	183.9	140.7	158.9	177.2	134.4	152.4	170.5	136.0	154.3	172.6	137.5	156.1	174.7	
Banks Peninsula District	2.0	99.5	170.0	-2.2	91.3	184.8	-2.2	93.0	188.1	-17.5	61.9	141.3	6.6	112.6	218.5	21.2	139.9	258.6	21.1	139.4	257.8	-6.4	86.7	179.8	-15.6	55.1	125.7	-19.9	51.6	123.2	
Buller District	105.6	227.9	350.2	97.8	217.8	337.7	65.3	171.7	278.1	53.8	155.2	256.6	53.7	155.0	256.3	42.5	138.4	234.3	46.1	143.6	241.0	54.0	155.9	257.7	54.2	156.5	258.7	58.5	163.2	267.9	
Carterton District	90.6	261.4	432.1	87.7	253.0	418.2	87.2	251.5	415.8	63.6	217.8	371.9	39.9	180.3	320.7	2.2	110.7	219.2	2.1	106.0	209.8	16.5	133.4	250.3	37.0	167.3	297.6	64.0	208.5	353.0	
Central Hawke's Bay District	87.9	206.2	324.6	75.4	188.6	301.7	111.7	237.7	363.7	69.6	178.3	286.9	88.8	204.4	320.1	41.6	135.6	229.6	63.6	167.3	271.0	40.5	132.0	223.5	50.5	145.6	240.8	65.3	167.3	269.2	
Central Otago District	86.8	182.4	277.9	75.4	165.2	255.0	64.1	147.5	231.0	50.1	125.4	200.6	43.6	114.7	185.8	32.3	96.7	161.0	24.7	84.5	144.3	26.9	87.7	148.5	43.5	111.5	179.6	39.6	104.1	169.7	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	160.5	180.2	199.9	157.6	177.0	196.3	159.4	178.8	198.2	154.7	173.7	192.8	150.7	169.4	188.1	142.5	160.6	178.7	138.3	156.1	173.9	136.2	153.7	171.3	133.8	151.1	168.4	135.0	152.4	169.7	
Clutha District	82.3	170.7	259.1	95.0	186.3	277.7	105.5	199.4	293.3	72.4	154.1	235.8	74.1	155.6	237.1	49.6	121.1	192.7	82.4	166.8	251.3	100.0	190.5	281.1	134.3	234.6	335.0	106.1	198.8	291.4	
Dunedin City	138.0	168.4	198.8	139.1	169.7	200.2	142.1	172.9	203.7	143.1	174.0	204.9	135.1	165.0	194.9	130.7	160.3	189.8	130.7	160.2	189.8	128.3	157.7	187.1	130.2	159.8	189.4	131.8	161.7	191.6	
Far North District	89.8	140.8	191.8	100.2	152.5	204.8	110.1	163.8	217.6	101.2	152.0	202.9	93.0	141.5	190.0	93.9	142.2	190.4	95.6	143.6	191.7	83.8	128.9	174.1	95.0	141.7	188.4	96.0	142.0	188.0	
Franklin District	88.3	147.9	207.5	103.2	164.5	225.8	110.7	172.4	234.0	102.0	160.8	218.8	80.1	132.9	185.6	78.8	130.8	182.8	83.6	136.3	189.0	104.5	161.7	219.0	108.3	165.3	222.3	106.9	162.6	218.4	
Gisborne District	113.1	167.6	222.1	110.8	164.6	218.4	114.5	168.6	222.6	129.0	185.6	242.2	125.9	181.7	237.6	112.6	165.7	218.9	96.3	146.5	196.8	111.7	165.1	218.5	129.9	186.9	243.9	146.1	206.1	266.1	
Gore District	98.4	197.0	295.6	83.2	177.2	271.1	79.6	171.9	264.2	84.6	177.7	270.2	93.3	188.9	284.5	104.6	203.0	301.5	109.2	210.1	311.0	140.8	252.3	363.8	133.1	243.6	354.1	120.9	228.4	335.9	
Grey District	52.8	143.0	233.1	59.8	153.2	246.7	46.0	132.7	219.5	55.6	146.3	237.0	86.2	189.0	291.7	86.3	189.0	291.8	102.6	210.1	317.6	71.0	166.7	262.4	60.6	151.4	242.3	37.7	117.5	197.2	
Hamilton City	131.2	168.9	206.5	121.3	157.3	193.3	114.0	148.6	183.3	104.4	137.4	174.0	107.3	140.3	173.3	107.2	140.1	172.9	102.9	135.0	167.1	101.2	132.9	164.7	97.7	128.8	159.8	102.0	133.6	165.2	
Hastings District	146.2	193.3	240.4	146.7	193.6	240.6	128.2	172.2	216.3	132.0	176.4	220.8	135.8	180.5	225.2	145.3	191.0	236.8	125.9	168.7	211.5	116.5	157.9	199.2	99.6	138.1	176.6	115.5	156.3	197.2	
Hauraki District	77.6	165.1	252.6	88.5	179.1	269.8	88.3	178.9	269.1	93.6	185.5	277.3	67.2	149.5	231.9	72.3	156.0	239.7	69.6	150.3	231.0	106.4	197.8	289.2	92.5	178.0	263.5	97.1	185.3	269.9	
Horowhenua District	122.3	182.0	241.8	161.0	227.5	294.0	152.6	217.0	281.3	149.5	213.3	277.1	125.1	184.2	243.3	139.2	201.4	263.5	126.2	185.4	244.7	138.2	199.2	260.1	115.1	171.0	226.8	115.9	171.3	226.8	
Hurunui District	42.6	213.4	384.1	19.9	161.1	302.3	-2.4	102.7	207.8	-17.3	61.2	139.8	-18.7	66.2	151.2	-17.7	62.1	141.8	-16.5	58.4	133.3	-17.7	45.9	109.6	-17.6	45.5	108.5	-9.1	68.9	146.8	
Invercargill City	203.8	262.4	321.0	203.8	261.0	319.1	180.8	236.0	291.1	162.3	214.6	266.9	159.3	211.0	262.7	148.1	198.0	248.0	148.4	198.1	247.9	140.2	188.7	237.1	145.6	194.5	243.5	148.5	197.9	247.3	
Kaikoura District	-21.9	166.4	354.6	-13.2	179.3	371.8	-37.7	133.0	303.7	-27.9	139.2	306.3	-26.9	134.0	295.4	-27.6	137.9	303.5	-32.9	116.2	265.3	-12.5	170.4	353.4	12.9	220.6	428.3	22.8	245.8	468.8	
Kaipara District	68.4	154.8	241.2	75.1	164.6	254.1	71.3	158.6	245.9	90.1	184.6	279.0	92.3	184.8	277.2	110.3	206.6	303.0	87.8	175.7	263.7	86.6	175.5	260.3	82.4	166.8	251.2	80.4	162.8	245.2	
Kapiti Coast District	93.0	135.6	178.2	86.6	126.7	166.9	77.2	114.7	152.2	66.9	101.3	135.7	68.9	103.3	137.7	79.5	115.9	152.3	86.2	122.9	159.6	84.4	120.0	155.6	75.5	108.2	140.9	79.6	112.6	145.7	
Kawerau District	24.4	185.6	319.7	-37.6	132.9	303.4	-48.3	93.3	234.9	-45.2	87.2	219.6	-41.7	108.1	258.0	-35.4	125.0	285.4	-46.7	90.1	226.9	-16.8	128.0	272.9	-9.7	132.4	274.6	-3.4	146.0	295.4	
Lower Hutt City	141.4	180.1	219.8	148.0	187.4	226.8	144.7	183.7	222.7	142.8	181.4	220.0	144.7	183.6	222.5	138.8	176.9	215.0	133.9	171.7	209.4	131.9	169.6	207.4	121.5	158.0	194.6	114.1	149.9	185.8	
Mackenzie District	7.0	351.7	696.3	37.7	406.3	774.9	7.0	349.1	691.3	-33.5	254.6	542.7	-43.7	218.3	480.2	-57.8	111.5	280.9	-59.7	85.6	230.9	-72.2	103.5	279.3	-72.0	107.6	343.4	-31.0	235.6	502.2	
Manawatu District	107.1	180.2	253.3	88.5	156.5	224.6	88.6	156.7	224.8	82.4	148.6	214.9	84.1	150.7	217.3	71.8	134.6	197.3	54.4	111.5	168.5	65.2	125.4	185.6	78.0	141.7	205.4	111.1	183.5	255.9	
Manukau City	131.1	162.8	190.5	143.4	171.4	199.4	141.7	169.2	196.6	134.0	160.4	176.7	127.5	152.8	178.2	122.8	147.4	172.0	113.1	136.6	160.1	111.8	135.1	158.4	102.9	125.2	147.5	108.9	131.6	154.3	
Marlborough District	92.6	144.7	196.8	99.1	151.6	204.1	85.4	134.6	183.9	98.9	150.5	202.2	110.0	163.3	216.7	100.1	150.8	201.6	97.8	147.3	196.8	86.6	133.3	180.0	111.2	162.4	213.5	115.2	166.6	218.1	
Masterton District	112.1	161.4	231.6	109.8	183.8	257.9	96.7	166.0	235.4	102.2	171.9	241.7	79.6	142.7	205.8	87.1	151.3	215.5	90.1	154.7	219.4	93.7	158.5	223.3	94.1	158.3	222.5	79.1	139.1	199.1	
Matamata-Piako District	55.9	111.9	167.9	78.0	140.8	203.5	100.8	168.0	235.3	104.0	171.0	238.0	92.4	155.5	218.6	71.5	128.2	184.9	62.6	116.3	170.0	61.1	113.6	166.1	66.9	120.6	174.4	73.6	128.6	183.6	
Napier City	132.0	178.1	224.1	120.8	165.0	209.1	110.9	153.0	195.2	118.2	161.2	204.0	115.7	158.0	200.3	115.7	157.7	199.8	108.5	149.3	190.2	125.9	169.1	212.4	137.7	182.4	227.1	142.4	187.5	232.6	
Nelson City	123.4	177.2	231.0	127.3	181.3	235.3	117.8	169.8	221.8	122.7	175.3	227.9	128.6	181.9	235.3	128.9	181.8	234.7	126.5	178.7	230.9	118.4	168.8	219.3	124.8	175.3	227.9	122.3	173.4	224.4	
New Plymouth District	134.8	177.6	220.3	140.3	183.5	226.6	148.1	191.9	235.8	152.1	196.0	240.0	157.8	202.0	246.3	142.4	184.4	226.4	128.6	168.6	208.6	116.2	154.3	192.5	117.3	156.4	193.4	131.1	170.8	210.5	
North Shore City	119.4	145.6	171.7	122.4	148.4	174.5	127.1	153.3	179.5	124.4	150.1	175.7	120.3	145.1	170.0	117.5	141.8	166.2	118.0	142.3	166.6	115.8	139.8	163.9	106.9	130.0	153.2	107.4	130.6	153.8	
Opoitiki District	87.1	251.3	415.4	90.2	251.7	413.1	78.4	226.3	374.1	51.0	184.5	318.0	38.6	160.4	282.2	33.0	149.0	265.0	27.5	137.5	247.5	38.2	158.7	279.1	62.7	193.5	327.9	81.9	221.7	361.4	
Orohanga District	22.2	147.0	271.7	16.8	135.9	255.1	-11.5	87.5	186.6	-11.2	85.3	181.9	-2.4	103.2	208.8	7.2	123.4	239.7	18.1	147.0	275.8	33.1	165.4	297.7	11.7	126.5	241.4	-6.6	89.7	186.1	
Palmerston North City	115.2	157.8	200.4	131.0	175.7	220.4	142.3	188.3	234.4	141.4	186.9	232.5	127.1	170.3	213.5	118.5	16														

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	176.0	196.5	217.1	178.0	198.8	219.6	174.9	195.5	216.1	176.6	197.5	218.4	181.6	202.8	224.0	189.8	211.6	233.4	197.8	220.2	242.5	191.9	214.2	236.4	185.8	207.8	229.9	184.4	206.6	228.8
Bay of Plenty	129.4	160.4	191.3	133.9	164.8	195.7	132.1	162.3	192.6	128.8	158.4	188.0	145.8	176.7	207.5	147.8	178.5	209.2	147.0	177.0	207.1	139.5	168.4	197.4	147.2	176.3	205.5	162.3	192.4	222.4
Canterbury	156.2	174.9	193.5	163.7	182.7	201.6	164.9	183.9	202.9	170.3	189.5	208.7	162.9	181.6	200.3	163.8	182.5	201.2	166.9	185.7	204.5	177.6	197.0	216.4	183.8	203.5	223.1	184.0	203.6	223.2
Capital and Coast	143.2	168.9	194.5	150.5	176.8	203.1	152.9	179.3	205.8	142.1	167.7	193.3	137.6	162.8	188.0	128.6	153.0	177.5	137.6	162.9	188.1	142.7	168.5	194.3	145.3	171.3	197.3	144.5	170.4	196.4
Counties Manukau	169.3	197.7	226.1	169.9	197.9	225.9	173.0	200.9	228.7	173.0	200.4	227.9	174.3	201.4	228.6	178.1	205.3	232.4	172.5	199.0	225.5	172.4	198.7	225.0	164.0	189.6	215.1	171.2	197.0	222.8
Hawke's Bay	127.1	157.1	187.0	133.0	163.5	194.0	138.8	169.8	200.8	140.5	171.5	202.6	137.5	168.1	198.7	140.8	171.6	202.3	150.8	182.4	214.1	150.9	182.5	214.1	161.3	193.8	226.3	160.1	192.4	224.7
Hutt Valley	153.8	188.8	223.8	157.0	192.4	227.7	149.6	184.3	219.0	158.4	194.0	229.6	156.8	192.2	227.6	169.6	206.2	242.7	172.0	208.9	245.8	181.5	219.4	257.4	176.7	214.3	251.9	168.9	205.8	242.7
Lakes	116.7	160.3	203.9	134.5	180.3	226.0	131.1	175.9	220.7	140.4	185.8	231.2	146.0	191.7	237.4	149.8	195.4	241.0	136.9	180.3	223.7	136.5	179.4	222.2	131.2	173.0	214.9	130.6	171.9	213.1
MidCentral	159.5	190.7	221.9	151.8	182.2	212.7	149.8	180.0	210.2	151.5	181.8	212.1	152.2	182.5	212.8	148.3	178.1	207.8	158.3	188.9	219.4	157.9	188.4	218.8	162.0	192.9	223.7	161.7	192.6	223.4
Nelson-Marlborough	108.3	140.0	171.6	111.5	143.3	175.2	128.5	162.1	195.6	125.5	158.5	191.5	143.7	178.4	213.1	138.7	172.8	207.0	128.6	161.4	194.1	115.1	146.0	176.9	117.1	148.0	179.0	118.7	149.6	180.5
Northland	130.4	163.5	196.6	127.0	159.4	191.8	130.4	163.0	195.6	141.8	175.4	209.1	150.7	185.1	219.5	143.2	176.6	210.1	143.1	176.1	209.1	148.7	181.9	215.1	159.7	193.7	227.7	163.1	197.1	231.1
Otago	147.3	173.8	200.3	156.7	184.0	211.3	161.7	189.5	217.2	176.9	205.9	234.9	181.8	211.2	240.6	180.5	209.9	239.3	182.4	212.0	241.6	181.9	211.5	241.0	187.6	217.6	247.7	178.7	208.0	237.4
South Canterbury	139.1	185.9	232.7	129.3	174.6	219.9	129.0	174.4	219.8	161.3	211.2	261.2	154.9	204.1	253.4	157.2	206.5	255.8	137.2	183.5	229.8	152.0	200.0	248.0	149.9	197.6	245.3	168.0	217.9	267.7
Southland	118.6	152.4	186.2	126.9	161.8	196.8	140.0	176.6	213.3	142.1	179.1	216.0	135.5	171.9	208.3	135.6	172.1	208.6	137.4	174.1	210.9	140.9	177.8	214.7	139.1	175.7	212.3	139.8	176.4	213.1
Tairāwhiti	137.4	196.6	255.8	125.7	182.9	240.0	132.8	191.4	250.0	139.4	199.5	259.6	157.0	220.1	283.3	148.6	210.3	271.9	142.1	202.7	263.3	142.3	203.0	263.6	159.0	222.3	285.6	150.9	212.9	274.8
Taranaki	135.7	170.6	205.4	136.2	171.1	206.0	137.4	172.4	207.4	133.6	168.1	202.7	134.6	169.3	203.9	147.2	183.2	219.2	152.9	189.4	225.9	150.1	186.2	222.4	135.5	170.0	204.6	127.1	160.6	194.2
Waikato	149.8	172.8	195.7	155.5	178.7	201.8	159.1	182.4	205.7	161.1	184.5	207.8	161.2	184.4	207.7	164.0	187.3	210.5	158.1	180.8	203.6	164.0	187.0	209.9	165.8	188.8	211.8	165.3	188.1	210.9
Wairarapa	123.1	184.6	246.0	127.4	189.6	251.8	127.2	189.4	251.5	112.1	171.1	230.1	109.6	168.2	226.7	117.9	178.1	238.2	117.0	174.5	232.1	117.3	176.3	235.3	124.6	184.7	244.7	136.6	198.3	260.1
Waitemata	153.2	175.9	198.6	157.4	180.1	202.7	159.5	181.9	204.4	165.2	187.8	210.3	166.1	188.6	211.0	164.9	187.0	209.2	169.5	191.7	213.9	167.1	189.0	210.8	171.5	193.4	215.3	161.5	182.6	203.7
West Coast	130.8	194.3	257.8	124.8	187.5	250.2	128.1	192.0	255.9	142.6	209.6	276.5	149.7	218.1	286.6	154.1	222.9	291.7	152.9	221.5	290.2	163.6	234.6	305.5	158.3	229.3	300.4	159.2	231.1	303.1
Whanganui	118.5	159.7	200.9	127.4	170.2	213.1	114.2	155.2	196.2	126.9	169.7	212.5	114.0	154.9	195.9	110.8	151.3	191.7	109.0	149.3	189.7	114.0	155.1	196.2	132.2	176.1	219.9	148.6	194.4	240.3
New Zealand	169.0	175.6	182.1	172.7	179.4	186.0	174.6	181.2	187.9	178.1	184.8	191.5	179.5	186.1	192.8	180.7	187.3	194.0	182.1	188.8	195.5	183.5	190.2	196.9	185.3	192.0	198.7	185.2	191.9	198.6

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Bay of Plenty	176.3	207.1	237.9	172.6	202.7	232.8	157.8	186.2	214.6	142.3	168.8	195.3	146.2	172.7	199.2	144.1	170.2	196.2	151.8	178.2	204.6	160.2	187.0	213.8	175.9	203.5	231.1	193.4	222.0	250.6
Canterbury	186.7	206.4	226.1	188.3	208.0	227.6	191.6	211.3	230.9	191.5	211.0	230.5	185.3	204.3	223.4	184.2	203.1	222.0	179.2	197.9	216.5	185.7	204.6	223.5	193.2	212.4	231.6	198.4	217.8	237.1
Capital and Coast	146.7	172.8	199.0	156.9	183.7	210.6	157.1	183.8	210.5	160.0	186.8	213.6	141.2	166.3	191.5	140.3	165.2	190.1	138.1	162.8	187.5	163.4	190.1	216.7	174.0	201.4	228.8	174.2	201.6	228.9
Counties Manukau	172.6	198.3	223.9	180.8	206.5	232.2	182.8	208.2	233.6	185.7	211.0	236.3	183.6	208.4	233.2	171.8	195.6	219.4	172.4	196.0	219.7	176.6	200.3	224.0	187.5	211.7	235.9	187.0	211.0	235.0
Hawke's Bay	165.9	198.7	231.4	155.4	187.0	218.6	157.7	189.4	221.0	151.3	182.2	213.0	154.6	185.6	216.6	156.6	187.6	218.6	182.1	215.3	248.5	198.7	233.2	267.8	207.5	242.6	277.8	188.2	221.7	255.3
Hutt Valley	158.6	194.6	230.6	154.9	190.5	226.1	150.5	185.6	220.7	168.8	205.8	242.8	175.3	212.9	250.4	177.3	215.0	252.7	168.4	205.2	242.1	177.3	214.9	252.4	194.2	233.3	272.5	199.9	239.5	279.1
Lakes	138.9	181.0	223.1	153.7	197.3	240.9	157.7	201.4	245.1	178.0	223.8	269.6	175.2	220.3	265.4	192.5	239.3	286.0	175.6	219.9	264.2	181.0	225.7	270.5	175.0	218.9	262.7	196.2	242.3	288.5
MidCentral	165.8	196.9	227.9	171.5	203.0	234.5	170.3	201.6	232.8	167.2	198.2	229.1	164.6	195.2	225.9	158.2	188.2	218.3	166.7	197.4	228.1	176.0	207.4	238.8	192.2	224.7	257.2	199.4	232.3	265.3
Nelson-Marlborough	122.0	153.1	184.1	114.7	144.6	174.5	113.8	143.2	172.7	118.9	148.6	178.3	121.8	151.6	181.5	131.2	161.6	192.1	121.9	151.2	180.5	140.7	171.7	202.7	156.3	188.5	220.7	173.2	206.7	240.1
Northland	153.0	185.6	218.3	154.8	187.1	219.5	156.1	188.2	220.3	159.2	191.2	223.3	155.2	186.6	218.0	159.5	190.9	222.3	168.7	200.7	232.7	188.7	222.2	255.8	202.5	237.0	271.4	211.6	246.6	281.5
Otago	185.8	215.7	245.6	185.6	215.3	245.1	192.9	223.1	253.3	184.3	213.8	243.2	185.0	214.4	243.8	186.2	215.6	245.0	184.4	213.8	243.1	190.8	220.6	250.4	186.6	216.1	245.7	196.9	227.3	257.6
South Canterbury	161.0	209.8	258.6	176.3	227.2	278.1	176.5	227.3	278.0	174.1	224.4	274.8	172.2	222.0	271.8	176.0	226.0	276.1	183.2	234.0	284.7	175.7	225.4	275.1	170.3	219.4	268.5	165.0	213.5	262.0
Southland	147.8	185.4	222.9	148.6	186.2	223.9	142.4	179.3	216.3	140.5	177.2	213.8	147.1	184.1	221.2	157.7	195.7	233.8	170.7	210.1	249.5	173.9	213.6	253.3	180.9	221.4	261.8	188.0	229.1	270.3
Tairāwhiti	146.1	207.4	268.7	134.2	193.4	252.5	146.1	207.4	268.7	144.2	205.3	266.4	154.2	217.2	280.2	155.2	218.7	282.1	153.4	216.4	279.3	158.0	221.8	285.7	167.2	232.9	298.5	183.7	252.2	320.8
Taranaki	145.1	180.6	216.2	163.2	200.5	237.8	170.5	208.3	246.2	172.7	210.6	248.6	160.0	196.6	233.1	152.9	188.5	224.2	147.5	182.5	217.5	159.8	196.1	232.4	181.7	220.1	258.5	190.9	230.1	269.4
Waikato																														

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	147.8	165.9	183.9	155.6	174.0	192.5	152.7	171.1	189.4	156.6	175.2	193.9	156.9	175.6	194.3	157.4	176.3	195.1	157.4	176.3	195.3	160.9	180.2	199.5	160.2	179.6	199.1	159.3	178.9	198.4
Bay of Plenty	90.1	117.8	145.5	95.4	123.2	151.0	102.2	130.4	158.6	114.6	143.8	172.9	115.3	144.1	172.8	115.1	143.5	171.9	109.8	137.3	164.8	129.2	158.5	187.7	139.3	169.0	198.6	149.2	179.3	209.4
Canterbury	133.3	150.1	166.8	134.7	151.5	168.2	135.1	151.8	168.5	135.3	152.0	168.7	135.3	151.9	168.5	141.8	158.7	175.6	144.7	161.7	178.7	148.9	166.1	183.3	151.0	168.3	185.5	151.7	168.9	186.2
Capital and Coast	120.1	143.3	166.5	125.6	149.2	172.8	114.0	136.6	159.1	120.3	143.4	166.6	113.9	136.5	159.0	113.7	136.3	158.9	111.9	134.4	156.8	120.3	143.5	166.6	129.3	153.3	177.3	131.9	156.1	180.3
Counties Manukau	142.8	169.0	195.2	141.4	166.9	192.5	150.3	176.1	202.0	141.0	165.8	190.6	143.2	167.9	192.7	155.9	181.4	206.8	151.7	176.4	201.1	152.9	177.4	202.0	147.4	171.3	195.2	147.2	170.8	194.4
Hawke's Bay	114.8	142.9	171.0	115.6	143.7	171.8	121.0	149.6	178.2	130.1	159.6	189.2	127.4	156.6	185.8	136.8	166.9	196.9	129.2	158.4	187.5	138.4	168.3	198.1	137.4	167.0	196.6	134.0	163.1	192.2
Hutt Valley	108.2	137.1	166.1	120.6	151.0	181.3	118.6	148.7	178.8	120.3	150.6	180.9	118.4	148.3	178.3	132.9	164.4	195.9	142.7	175.3	207.9	145.5	178.5	211.5	146.2	179.4	212.6	142.6	175.6	208.6
Lakes	109.4	153.5	197.5	127.1	173.1	219.1	124.1	169.2	214.3	119.0	162.8	206.6	122.1	166.1	210.1	117.4	159.9	202.4	140.0	185.3	230.6	128.8	171.9	214.9	141.3	185.8	230.3	132.3	174.9	217.5
MidCentral	129.4	157.8	186.1	136.8	165.7	194.7	134.9	163.7	192.4	147.1	176.9	206.7	143.4	172.7	202.0	149.3	178.9	208.6	145.8	175.0	204.2	142.7	171.7	200.6	140.6	169.2	197.9	142.8	171.7	200.5
Nelson-Marlborough	93.1	123.0	152.9	100.6	131.3	162.1	99.8	130.3	160.7	95.9	125.7	155.4	99.2	129.2	159.1	100.0	129.8	159.7	113.4	144.7	175.9	118.0	149.5	181.0	121.2	152.8	184.4	118.0	149.0	180.0
Northland	108.0	141.4	174.7	113.3	147.0	180.7	115.6	149.4	183.1	111.8	144.5	177.2	110.8	143.1	175.4	118.5	151.3	184.1	117.6	149.9	182.1	125.5	158.2	190.9	132.4	165.6	198.7	147.5	182.1	216.7
Otago	126.0	149.9	173.9	122.3	145.8	169.4	127.5	151.5	175.5	128.4	152.5	176.6	135.4	160.1	184.9	143.9	169.4	194.8	148.6	174.5	200.4	152.2	178.5	204.7	149.0	175.0	201.0	158.6	185.3	212.0
South Canterbury	105.6	146.2	186.7	121.7	165.1	208.4	118.3	161.1	203.9	119.3	162.4	205.4	116.8	159.1	201.4	138.0	183.4	228.8	146.0	192.3	238.6	150.9	197.9	244.8	148.7	195.2	241.7	145.8	191.7	237.6
Southland	112.5	146.1	179.8	105.5	138.2	170.9	110.8	144.1	177.4	121.2	155.8	190.3	122.2	156.9	191.6	131.9	167.8	203.6	128.1	163.4	198.7	130.7	166.2	201.7	120.3	154.4	188.6	114.9	148.2	181.5
Tairāwhiti	107.3	160.9	214.4	96.1	147.5	198.9	108.1	162.0	215.9	101.7	154.4	207.0	112.1	166.8	221.5	115.0	170.0	225.1	108.4	162.1	215.8	100.7	152.8	205.0	105.1	158.3	211.5	127.1	184.5	241.9
Taranaki	103.1	134.5	165.8	100.6	131.5	162.5	105.6	137.2	168.7	109.7	141.7	173.7	126.7	160.7	194.7	127.1	161.0	194.9	127.3	161.0	194.8	120.5	153.3	186.2	117.8	150.2	182.5	125.9	159.1	192.3
Waikato	131.0	153.6	176.1	125.7	147.5	169.3	129.7	151.6	173.5	124.4	145.8	167.1	126.3	147.6	168.9	127.5	148.7	170.0	133.9	155.5	177.0	136.3	157.8	179.4	139.6	161.2	182.9	138.1	159.5	180.9
Wairarapa	83.2	135.8	188.3	85.8	138.9	191.9	102.3	158.8	215.2	91.4	145.2	199.0	89.1	142.0	195.0	91.3	144.5	197.7	109.5	164.2	218.9	135.3	197.2	259.1	139.4	201.9	264.5	131.3	192.1	252.9
Waitemata	116.8	136.9	156.9	120.1	140.1	160.1	120.4	140.2	159.9	130.4	150.6	170.8	130.1	150.1	170.0	136.8	156.9	177.1	144.5	164.9	185.4	143.9	164.1	184.3	148.5	168.7	189.0	149.6	169.6	189.7
West Coast	81.5	138.5	195.6	89.5	148.5	207.5	86.4	144.8	203.1	101.6	163.8	226.0	100.9	162.6	224.2	115.0	179.7	244.3	114.7	179.2	243.7	113.9	178.5	243.1	119.0	184.7	250.5	118.1	183.9	249.7
Whanganui	106.3	146.0	185.6	114.0	154.8	195.5	111.6	151.8	192.1	112.3	152.8	193.3	110.5	150.7	190.9	108.8	148.7	188.6	102.7	141.4	180.1	107.9	147.3	186.8	117.2	158.0	198.8	133.6	176.7	219.9
New Zealand	141.5	147.5	153.5	145.1	151.2	157.2	146.3	152.4	158.4	148.8	154.8	160.9	149.4	155.4	161.5	154.9	161.1	167.2	157.4	163.5	169.7	160.6	166.8	173.0	162.2	168.4	174.6	164.1	170.3	176.5

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Bay of Plenty	128.8	156.5	184.2	119.5	145.8	172.0	115.8	141.3	166.8	127.3	153.5	179.6	129.9	155.8	181.8	123.9	148.9	173.8	128.7	153.7	178.7	129.3	154.1	178.9	145.3	171.1	196.9	142.5	167.8	193.0
Canterbury	154.2	171.5	188.8	150.2	167.2	184.2	153.0	170.1	187.1	152.1	169.0	185.8	163.6	180.9	198.3	159.2	176.2	193.2	160.8	177.8	194.8	161.3	178.3	195.3	168.1	185.3	202.6	166.3	183.4	200.5
Capital and Coast	127.1	151.0	174.8	121.1	144.3	167.4	114.6	137.0	159.4	112.6	134.7	156.8	118.0	140.4	162.8	124.5	147.3	170.1	134.9	158.5	182.0	134.5	157.9	181.4	140.9	164.8	188.7	144.4	168.5	192.6
Counties Manukau	147.5	170.9	194.2	144.4	167.2	190.0	148.7	171.5	194.4	155.9	178.9	201.8	157.4	180.1	202.8	163.1	185.9	208.7	165.1	187.9	210.7	163.1	185.5	207.9	153.7	175.1	196.6	151.2	172.3	193.3
Hawke's Bay	120.9	148.6	176.3	121.3	148.8	176.4	126.8	154.7	182.7	134.5	163.0	191.5	134.3	162.6	190.9	137.4	165.9	194.4	145.9	175.1	204.3	161.4	191.9	222.4	169.8	201.0	232.1	179.9	211.9	243.8
Hutt Valley	138.9	171.6	204.4	143.9	177.0	210.2	146.4	179.7	213.0	154.9	188.9	222.9	156.4	190.4	224.4	153.0	186.5	220.1	146.5	179.4	212.3	149.8	183.1	216.4	154.0	187.7	221.5	159.0	193.3	227.6
Lakes	138.4	181.6	224.7	145.5	188.8	232.1	153.1	196.9	240.7	164.0	208.6	253.3	161.2	205.1	249.1	155.6	198.4	241.1	150.0	191.7	233.5	148.0	189.1	230.2	169.8	213.3	256.8	180.2	224.7	269.2
MidCentral	154.0	183.8	213.6	161.7	191.9	222.2	151.5	180.7	209.9	149.3	178.2	207.1	148.4	177.0	205.7	155.8	185.0	214.2	155.3	184.4	213.4	158.4	187.7	216.9	158.6	187.8	216.9	162.1	191.6	221.0
Nelson-Marlborough	104.5	133.6	162.8	104.0	132.9	161.7	101.3	129.6	157.9	119.0	149.1	179.1	121.3	151.3	181.3	121.5	151.2	180.9	113.6	142.1	170.6	123.5	152.8	182.1	128.4	158.0	187.6	143.1	173.9	204.7
Northland	136.0	168.9	201.9	130.1	161.9	193.7	126.4	157.3	188.3	142.1	174.1	206.2	142.0	173.5	205.1	136.6	167.0	197.5	143.3	174.2	205.0	155.6	187.5	219.3	167.0	199.5	232.1	170.5	203.1	235.7
Otago	159.3	186.0	212.8	160.8	187.5	214.2	153.9	179.9	205.9	155.1	181.1	207.2	148.0	173.5	198.9	146.3	171.5	196.7	157.0	183.1	209.2	167.8	194.8	221.7	164.6	191.3	218.0	161.1	187.5	213.9
South Canterbury	147.5	193.5	239.5	141.2	186.3	231.4	149.5	195.7	241.8	141.2	186.0	230.8	140.5	185.1	229.8	136.9	180.8	224.8	144.7	189.8	234.9	141.0	185.4	229.8	140.5	185.0	229.5	161.2	208.1	254.9
Southland	103.7	135.5	167.3	108.4	140.7	172.9	119.5	153.1	186.6	129.1	163.7	198.2	130.8	165.4	199.9	125.8	159.6	193.3	133.6	168.4	203.1	142.4	178.1	213.8	151.4	188.1	224.7	158.2	195.4	232.7
Tairāwhiti	144.7	205.0	265.4	144.8	205.0	265.1	128.8	186.0	243.1	154.9	216.3	277.7	152.3	213.0	273.7	170.9	234.4	297.9	147.3	207.2	267.1	174.4	239.3	304.1	146.8	207.4	268.0	133.4	191.9	250.4
Taranaki	125.4	158.3	191.3	135.1	169.0	202.9	149.2	184.4	219.7	152.6	188.0	223.4	141.6	175.5	209.5	122.2	153.8	185.4	123.6	155.4	187.1	138.1	171.4	204.8	151.8	186.5	221.2	147.9	182.0	216.1
Waikato	134.6	155.																												

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000			
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	
Ashburton District	148.0	223.5	299.0	148.0	223.6	299.1	164.5	242.6	320.8	168.4	246.9	325.3	165.6	243.4	321.1	160.1	236.2	312.3	143.5	216.2	288.9	133.9	204.8	275.8	146.0	219.3	292.7	181.6	261.6	341.7	
Auckland City	204.6	226.5	250.5	206.1	230.2	254.3	211.4	235.7	260.1	211.4	235.8	260.1	212.5	236.9	261.2	200.1	223.7	247.4	195.0	218.3	241.7	189.7	212.8	235.8	192.6	215.8	239.1	192.6	215.9	239.1	
Banks Peninsula District	34.6	156.3	278.0	47.4	171.7	296.0	68.5	197.7	326.8	76.4	206.8	337.2	61.6	184.3	307.0	80.1	210.7	341.2	81.4	208.7	335.9	92.4	225.8	359.2	111.1	251.9	391.9	108.4	249.7	391.0	
Buller District	153.2	292.1	430.9	143.4	278.5	413.6	110.9	233.0	355.0	137.5	267.0	396.5	140.7	270.6	400.6	139.0	267.4	395.8	156.8	291.4	426.0	123.8	247.8	371.9	135.5	263.1	390.8	127.5	252.6	377.6	
Carterton District	56.4	204.3	352.1	33.0	165.2	297.4	38.6	174.6	310.5	48.4	186.6	324.8	120.4	294.4	468.3	82.3	237.3	392.3	113.8	278.3	442.7	72.3	216.4	360.5	110.9	271.2	431.4	69.7	208.5	347.4	
Central Hawke's Bay District	65.7	168.4	271.1	76.7	183.5	290.3	123.7	247.7	371.7	114.8	235.1	355.4	86.9	196.7	306.5	54.1	146.4	238.7	64.2	160.5	256.8	85.0	189.2	293.3	75.8	177.9	280.0	64.3	160.7	257.2	
Central Otago District	112.4	210.6	308.9	138.3	241.6	344.9	136.9	237.7	338.6	130.0	225.8	321.6	132.5	227.7	322.8	143.9	241.0	338.1	152.1	251.2	350.4	121.9	211.7	301.6	107.8	193.2	278.6	122.9	211.1	299.4	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	206.2	230.3	254.5	208.4	232.6	256.8	208.7	232.8	256.8	206.2	230.0	253.8	201.2	224.6	248.0	199.0	222.2	245.4	194.7	217.6	240.6	192.8	215.6	238.4	196.9	220.0	243.0	199.8	223.0	246.2	
Clutha District	98.1	183.9	269.6	77.2	156.4	235.5	112.7	203.4	294.1	132.4	228.8	325.1	124.1	218.1	312.1	101.6	188.9	276.2	101.1	189.4	277.8	117.0	209.0	302.2	111.0	201.8	292.5	99.6	186.5	273.5	
Dunedin City	195.3	235.1	274.9	196.4	236.3	276.2	199.7	239.9	280.1	194.6	234.4	274.0	195.1	234.8	274.5	202.9	243.4	283.9	198.1	238.2	278.3	199.7	240.0	280.3	195.5	235.5	204.3	245.3	276.3		
Far North District	160.3	217.9	275.5	154.0	209.5	265.1	160.5	216.4	272.2	166.0	221.8	277.6	168.2	223.2	278.2	178.2	233.2	288.3	176.1	230.6	285.2	185.9	247.1	297.6	179.0	233.8	288.6	195.2	252.0	308.8	
Franklin District	138.6	202.0	264.5	144.1	207.3	270.5	134.5	194.9	255.4	131.6	190.8	249.9	128.4	185.7	243.0	115.4	169.1	222.9	101.1	151.5	202.0	104.3	155.0	205.6	120.9	174.3	227.6	137.0	192.7	244.8	
Gisborne District	170.1	236.0	301.8	158.7	222.3	285.8	172.8	238.4	304.1	167.0	231.3	295.6	175.2	240.6	306.1	169.2	233.5	297.8	167.7	232.3	296.9	177.4	243.8	310.3	195.9	265.8	335.6	221.0	295.1	369.2	
Gore District	93.5	196.4	299.3	83.8	183.7	283.6	101.6	208.2	314.7	97.9	203.0	300.1	129.4	244.4	359.5	157.0	279.4	401.9	183.0	312.7	442.4	136.4	253.6	370.7	98.4	203.9	309.5	89.2	192.6	296.0	
Grey District	134.7	250.3	365.9	155.5	276.8	398.2	147.4	266.0	384.6	106.0	212.2	318.5	92.7	194.7	296.6	93.6	196.6	299.6	151.2	272.8	394.4	141.4	260.9	380.3	134.8	252.6	370.5	120.7	234.3	348.0	
Hamilton City	182.4	228.0	273.6	183.0	228.3	273.7	199.0	245.8	292.7	178.1	222.5	266.9	180.1	224.3	268.6	171.1	214.0	256.9	181.5	225.5	269.5	167.4	209.7	252.0	175.8	219.0	262.2	182.1	225.9	269.7	
Hastings District	164.1	216.1	268.1	153.2	203.3	253.4	160.7	211.4	262.2	151.5	200.7	249.9	160.4	210.4	260.5	157.9	207.3	256.7	191.1	244.7	298.4	199.2	253.7	308.3	206.5	261.8	317.2	180.1	232.1	284.0	
Hauraki District	177.3	290.4	403.5	173.2	284.8	396.5	150.9	255.2	359.5	117.1	204.4	297.1	101.2	189.7	278.1	94.9	180.8	266.8	141.7	240.8	340.0	166.3	271.2	376.2	183.6	292.6	410.6	142.3	240.6	339.0	
Horowhenua District	139.5	201.8	264.1	159.6	225.4	291.3	173.8	242.0	310.2	167.6	236.1	304.5	167.8	235.6	305.5	163.9	231.2	298.5	170.1	238.5	306.9	169.9	239.0	308.0	195.1	268.2	341.4	216.4	292.0	367.6	
Hurunui District	98.2	230.4	362.7	80.8	202.0	323.2	77.7	194.3	310.9	92.1	212.1	332.1	91.7	211.2	330.6	116.3	244.3	372.3	86.6	203.3	319.9	95.0	215.0	335.0	80.4	194.2	304.3	78.7	188.4	296.1	
Invercargill City	229.3	294.9	360.5	223.5	288.5	353.5	189.6	250.1	310.6	181.5	240.8	300.1	179.9	238.8	297.8	187.2	247.1	307.0	195.0	256.2	317.4	189.8	250.6	311.4	205.4	268.5	331.5	214.0	278.3	342.6	
Kaikoura District	31.0	251.0	471.1	21.1	227.5	433.9	11.9	204.1	396.3	54.3	272.0	489.6	28.9	234.3	439.7	3.6	178.5	353.4	0.0	113.1	258.2	28.7	232.6	436.5	131.2	392.5	653.9	122.2	380.8	639.3	
Kaipara District	105.2	195.6	285.9	122.3	216.3	310.3	137.1	234.2	331.3	154.7	255.6	356.4	151.6	250.5	349.3	143.7	239.5	335.3	157.9	256.5	355.0	198.1	304.8	411.5	183.7	287.0	390.3	164.3	262.8	361.3	
Kapiti Coast District	194.0	258.5	323.1	211.2	275.8	340.4	195.4	257.1	318.8	204.3	265.4	326.6	169.7	225.5	281.4	182.7	240.3	297.8	172.4	227.6	282.8	192.2	250.0	307.7	186.9	243.1	299.2	179.6	234.2	288.8	
Kawerau District	0.0	99.0	205.3	2.4	117.7	233.1	17.5	141.5	265.6	17.8	144.3	270.8	72.0	234.6	397.2	126.9	197.2	317.9	507.7	148.8	349.2	549.6	136.8	334.3	531.9	74.1	241.4	408.7	93.1	278.5	464.0
Lower Hutt City	168.2	211.5	254.9	173.5	217.6	261.6	173.6	217.7	261.9	185.9	231.5	277.1	182.2	227.4	272.5	174.1	218.4	262.7	158.0	200.7	243.4	167.8	211.6	255.5	187.4	233.6	279.7	205.7	253.9	302.1	
Mackenzie District	0.0	159.1	350.0	0.0	123.1	270.9	0.0	163.9	339.8	31.8	308.5	578.8	16.8	287.7	558.5	0.0	287.1	581.0	4.5	223.4	442.2	51.7	292.9	534.1	55.0	275.3	495.5	72.3	300.3	528.2	
Manawatu District	107.4	179.9	252.3	109.8	182.2	254.6	115.2	188.7	262.1	122.0	196.6	271.2	126.7	201.9	277.1	111.5	182.6	253.7	176.8	189.1	261.3	124.6	198.7	272.7	148.8	227.7	306.6	156.7	237.3	317.9	
Manauku City	169.9	194.9	229.0	182.6	212.5	244.2	187.4	217.6	247.4	189.3	218.8	248.4	188.4	216.7	246.7	174.9	202.7	230.5	199.0	235.0	183.1	211.1	239.1	193.9	222.4	257.0	192.0	232.0	270.7	249.0	
Marlborough District	151.9	215.2	278.6	135.9	195.5	255.1	135.2	193.5	251.7	155.1	215.9	276.8	156.6	217.2	277.7	183.4	247.5	311.5	155.4	214.7	274.0	167.5	228.1	288.8	152.6	210.5	268.5	171.4	231.8	292.2	
Masterton District	130.1	213.1	296.1	154.2	242.4	330.7	134.2	217.8	300.9	153.3	240.3	327.3	160.4	224.0	307.5	149.3	234.0	318.6	120.0	197.3	274.6	106.2	179.5	252.9	106.9	179.9	252.9	117.5	193.3	269.1	
Matamata-Piako District	157.3	235.7	314.2	169.9	250.2	330.5	158.4	235.8	313.2	149.4	224.5	299.6	139.0	211.6	284.2	132.0	203.1	274.3	140.2	212.8	285.4	131.7	202.1	272.5	136.5	207.1	277.8	142.4	214.0	285.0	
Napier City	186.4	243.6	300.8	166.4	220.5	274.5	161.6	214.8	267.9	151.1	202.6	254.2	166.9	218.1	271.3	171.9	225.6	279.4	196.6	253.5	310.4	203.1	261.1	319.0	206.6	264.9	323.2	179.5	234.3	289.6	
Nelson City	115.6	172.9	230.1	110.7	165.9	221.1	117.9	174.4	230.8	131.1	189.6	248.1	136.8	196.2	255.5	143.3	203.1	262.9	124.8	180.8	236.8	128.1	185.2	242.4	140.4	199.7	258.9	152.1	213.0	273.9	
New Plymouth District	175.5	226.3	277.0	201.8	255.4	309.1	203.5	257.0	310.5	196.2	248.5	300.8	180.3	230.2	280.1	176.0	225.0	274.0	160.1	208.1	255.2	168.7	216.7	267.4	182.5	232.1	281.7	185.1	234.8	284.5	
North Shore City	180.6	213.9	247.3	178.2	211.0	243.9	177.5	210.2	242.8	171.7	203.6	235.5	171.1	202.6	234.1	167.6	198.5	229.4	170.3	203.1	232.4	169.8	200.6	231.5	168.8	199.5	230.1	177.0	208.3	239.5	
Opaotiki District	125.9	239.0	454.1	137.8	301.8	465.9	104.8	250.7	396.7	102.0	244.2	386.4	97.1	237.3	377.5	123.5	270.5	417.6	131.6	284.1	436.5	104.2	244.5	384.8	69.1	192.7	316.4	57.1	170.8	284.5	
Otorohanga District	43.5	167.7	291.9	23.4	132.7	241.9	23.6	133.7	243.8	33.5	151.2	269.0	18.1	119.9	221.7	12.7	103.1	193.4	38.0	146.5	255.1	49.4	169.1	288.7	41.						

	1981		1982		1983		1984		1985		1986		1987		1988		1989		1990												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	86.1	152.4	218.6	85.1	150.5	215.9	92.1	159.0	226.0	101.6	171.1	240.5	111.6	182.8	254.0	103.3	172.1	241.0	93.8	159.4	225.0	73.7	133.9	194.1	146.5	208.7	91.5	154.7	217.9		
Auckland City	169.7	189.5	209.2	171.8	191.8	211.8	175.5	195.7	215.9	179.1	199.5	220.0	179.6	200.2	220.7	173.8	194.3	214.7	171.8	192.2	212.6	175.4	196.1	216.9	173.7	194.5	215.4	173.6	194.6	215.5	
Banks Peninsula District	32.4	183.5	334.5	56.3	217.1	378.0	47.4	196.9	346.4	18.0	246.0	274.0	7.6	129.6	251.7	0.0	112.7	228.0	0.0	104.0	221.7	0.0	67.8	161.8	0.0	101.6	205.6	0.0	92.0	186.1	
Buller District	54.9	158.3	261.7	51.7	154.8	257.8	29.2	121.2	213.3	55.7	160.6	265.5	55.7	160.7	265.7	79.2	193.6	308.1	60.3	168.3	276.3	55.4	159.7	264.1	75.2	188.1	301.0	102.8	225.3	347.8	
Carterton District	42.6	192.7	342.8	18.8	152.2	285.6	30.3	171.7	313.1	7.6	129.5	251.4	0.0	98.9	205.1	13.0	140.2	267.4	36.3	181.5	326.7	59.7	216.2	372.6	29.5	167.2	304.8	39.7	179.4	319.1	
Central Hawke's Bay District	142.2	288.0	433.7	125.6	260.4	395.2	139.6	279.6	419.5	101.5	226.0	350.5	70.7	181.2	291.7	64.6	169.9	275.2	97.2	216.4	335.6	92.1	208.4	324.7	108.8	231.6	354.4	78.9	188.9	298.8	
Central Otago District	46.1	132.9	219.7	32.2	110.3	188.4	48.2	134.3	220.5	47.4	132.1	216.9	68.5	160.7	252.8	78.8	172.6	266.4	94.4	193.3	292.2	83.6	177.9	272.3	67.8	156.2	244.6	82.2	175.0	267.7	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	152.8	173.0	193.1	144.4	164.1	183.8	153.8	173.9	194.0	153.2	173.2	193.2	153.2	173.2	193.2	152.4	172.3	192.3	158.1	178.4	198.6	164.6	185.1	205.7	167.9	188.7	209.5	167.6	188.4	209.2	
Clutha District	113.6	211.1	308.6	84.4	172.9	261.3	77.5	162.7	248.0	78.9	163.6	248.3	73.4	156.2	239.1	65.4	145.5	225.6	70.5	152.1	233.8	96.5	187.4	278.3	99.4	191.2	282.9	82.1	168.1	254.2	
Dunedin City	133.1	163.6	194.1	125.0	164.1	184.4	145.2	176.8	208.4	148.0	179.9	211.8	155.6	188.3	221.1	148.8	181.3	213.7	154.0	187.1	220.3	155.7	189.3	222.8	155.4	188.9	222.4	162.8	197.0	231.2	
Far North District	106.0	168.3	230.7	100.6	160.9	221.3	134.6	202.2	269.8	153.9	223.8	293.7	154.3	223.6	293.0	155.8	223.4	290.9	128.9	189.7	250.6	131.8	191.3	250.8	113.6	169.1	224.6	132.5	191.0	249.4	
Franklin District	103.9	170.1	236.4	113.8	181.4	249.0	115.5	182.8	250.2	119.6	186.9	251.5	105.8	169.9	234.0	136.3	206.4	276.4	115.5	179.8	244.2	109.3	171.8	234.4	108.0	169.7	231.5	111.8	174.2	236.5	
Gisborne District	131.7	189.8	247.8	105.5	158.5	211.5	118.1	173.8	229.6	121.8	178.5	235.3	137.3	196.8	256.3	140.4	200.2	260.0	133.8	192.5	251.1	121.3	177.8	234.3	124.7	181.7	238.8	143.8	204.1	264.4	
Gore District	55.6	142.4	229.2	48.4	131.0	213.6	94.0	194.9	295.8	91.5	192.2	292.8	96.2	199.5	302.8	83.3	182.6	281.9	81.1	177.7	274.2	91.5	192.1	292.8	77.5	172.5	267.5	78.5	173.9	269.7	
Grey District	76.2	175.4	274.7	78.5	177.7	276.9	93.4	198.8	304.2	72.6	170.4	268.1	75.9	174.8	273.7	79.0	178.9	278.7	118.3	232.0	345.6	101.2	209.9	318.5	97.7	205.1	312.6	49.3	137.5	225.7	
Hamilton City	137.0	177.7	218.4	130.7	170.2	209.6	129.6	168.8	208.1	121.4	159.4	197.4	124.7	162.8	200.9	119.7	156.7	193.6	136.8	175.6	214.4	138.0	176.8	215.6	149.8	189.7	229.7	142.3	181.2	220.1	
Hastings District	128.9	175.4	221.9	109.4	153.0	196.6	110.6	154.2	197.8	118.2	126.4	166.4	111.6	124.3	169.9	215.5	136.8	184.2	231.6	132.6	179.1	225.7	146.8	195.1	243.5	146.2	194.1	242.0	148.3	196.2	244.2
Hauraki District	90.8	190.6	290.5	104.0	208.1	312.3	135.0	249.0	362.9	118.0	227.0	336.0	97.7	200.1	302.5	66.8	156.2	246.6	87.3	183.4	279.4	98.3	196.9	295.4	137.5	246.4	355.3	112.8	213.2	314.6	
Horowhenua District	135.5	205.2	273.8	118.8	183.3	247.8	98.5	157.5	216.6	110.1	171.0	231.8	107.5	168.0	228.5	103.5	163.2	223.0	93.2	149.6	206.0	117.0	179.1	241.2	124.2	187.1	250.1	127.0	190.3	253.7	
Hurunui District	39.2	196.0	352.8	63.6	217.7	371.8	101.2	262.3	463.5	86.2	248.0	410.9	38.3	173.1	307.9	33.1	149.7	266.3	54.6	197.6	340.6	76.9	230.2	383.4	42.5	176.5	310.5	57.7	197.5	337.3	
Invercargill City	171.4	226.4	281.4	142.9	194.0	245.2	158.0	203.0	255.3	180.7	237.3	293.8	184.0	241.0	298.0	202.1	261.5	321.0	179.4	235.9	292.4	184.2	241.3	298.4	175.0	230.9	286.7	177.3	233.5	289.7	
Kaikoura District	0.0	160.0	381.8	0.0	128.5	323.7	0.0	145.7	332.7	0.0	151.9	334.3	0.0	235.5	472.6	0.0	233.4	472.3	0.0	231.6	468.7	0.0	189.8	391.5	0.0	151.2	332.7	0.0	199.7	414.1	
Kaipara District	48.1	134.1	220.1	43.9	126.7	209.6	50.5	136.5	222.6	65.0	155.6	246.1	88.0	187.3	286.6	90.2	187.0	283.9	92.8	190.2	287.5	90.8	185.9	281.1	74.8	164.0	253.1	71.7	159.6	247.5	
Kapiti Coast District	122.8	182.8	242.8	126.2	185.8	245.5	107.9	162.5	217.2	117.7	173.3	228.9	122.7	178.1	233.5	132.6	189.1	245.6	132.6	188.1	243.7	128.4	182.8	237.3	154.5	212.1	269.8	149.9	206.5	263.2	
Kawerau District	N/A	N/A	N/A	0.0	130.7	352.5	0.0	168.5	424.3	0.0	168.4	502.5	0.0	216.4	461.3	0.0	154.4	339.8	0.0	169.5	361.4	14.7	251.3	487.9	80.1	132.5	584.8	71.8	298.3	524.7	
Lower Hutt City	119.0	153.9	188.7	126.8	162.7	198.6	132.7	169.4	206.0	135.2	172.2	209.3	129.0	165.5	201.9	141.6	179.6	217.5	157.8	197.8	237.8	161.7	202.3	242.9	157.1	197.3	235.5	156.4	196.7	237.1	
Mackenzie District	0.0	45.4	134.4	0.0	121.3	289.3	0.0	139.6	318.8	0.0	122.2	291.6	0.0	127.7	304.6	0.0	141.2	355.5	0.0	224.7	479.0	0.0	237.8	493.0	5.1	253.2	501.4	0.0	226.2	469.1	
Manawatu District	81.9	152.2	222.4	53.7	114.3	174.9	93.0	165.5	238.0	116.2	194.6	273.1	133.2	215.6	297.9	125.2	205.0	284.8	109.5	185.3	261.0	85.3	153.8	222.4	90.8	160.6	230.4	107.9	181.5	255.2	
Manikau City	157.1	188.9	220.7	142.1	171.6	210.1	167.4	199.0	230.7	158.2	187.7	219.1	161.8	192.2	222.6	156.0	185.3	214.7	156.4	185.4	214.4	163.2	192.5	221.8	159.6	188.3	216.9	157.0	185.0	213.0	
Marlborough District	97.5	157.7	217.9	95.2	154.0	212.8	117.4	180.7	244.0	109.2	170.1	230.9	114.8	176.7	238.6	106.8	166.3	225.9	124.2	186.6	249.0	128.0	190.1	252.2	134.6	197.4	260.2	118.0	176.8	235.7	
Masterton District	84.5	157.1	229.6	80.0	151.2	224.4	101.4	178.2	255.0	82.5	153.4	224.3	87.5	159.1	230.6	68.0	133.2	198.5	89.5	161.5	233.5	94.3	167.9	241.5	111.1	188.9	266.6	99.1	173.2	247.3	
Matamata-Piako District	87.6	155.0	222.4	80.7	145.5	210.4	99.1	168.4	237.7	82.9	147.5	212.1	83.3	148.3	213.2	77.1	140.1	203.1	79.9	143.2	206.5	64.4	122.7	181.0	63.7	121.5	179.2	74.0	134.5	195.0	
Napier City	117.8	165.7	213.6	124.0	172.7	221.4	140.2	190.9	241.7	145.8	197.1	248.4	138.8	184.4	238.4	139.5	189.4	239.4	129.0	177.0	225.0	132.2	180.3	228.4	132.6	180.7	228.7	131.1	178.8	226.5	
Nelson City	116.6	172.4	228.1	118.1	174.6	231.1	118.6	175.0	231.4	106.9	160.7	214.5	110.9	165.1	219.3	103.1	155.4	207.6	122.7	178.5	234.2	114.4	168.4	222.4	112.3	166.1	219.8	94.8	145.1	195.4	
New Plymouth District	123.2	166.9	210.6	110.5	152.3	194.1	114.8	156.9	199.0	122.3	165.4	208.5	145.6	191.7	237.8	148.1	194.6	241.1	145.8	191.9	237.9	140.1	185.1	230.1	140.9	185.9	230.8	155.1	201.6	248.2	
North Shore City	120.3	148.4	176.5	119.9	147.6	175.3	126.2	154.3	182.3	133.8	162.2	190.7	134.0	162.3	190.6	136.2	164.4	192.6	141.1	169.7	198.4	143.7	172.4	201.1	153.9	183.5	213.0	167.5	198.1	228.7	
Opoitiki District	37.1	185.7	334.2	42.2	191.0	339.8	41.7	188.5	335.3	23.0	151.9	290.9	16.9	137.2	257.5	11.5	123.9	236.4	63.3	206.3	349.2	62.2	202.6	343.0	89.7	242.6	395.6	76.4	220.5	364.5	
Otorohanga District	22.6	183.0	343.4	0.0	105.0	217.7	30.0	169.6	309.2	28.6	161.8	295.1	58.5	211.8	365.0	28.0	158.6	289.2	33.9	169.7	305.4	60.0	205.4	350.8	76.4	228.6	380.9	65.2	212.3	359.5	
Palmerston North City	143.3	191.3	239.3	152.4	201.7	251.0	151.4	200.1	248.9	155.9	205.2	254.4	141.2	188.																	

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000			
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	
Ashburton District	88.3	150.1	211.9	87.3	148.4	209.5	100.1	163.9	227.7	175.5	241.7	122.6	191.5	260.4	131.8	202.2	272.7	159.4	234.7	310.0	172.8	250.5	328.1	162.3	237.9	313.6	131.2	200.7	270.3		
Auckland City	174.1	195.2	216.3	173.2	194.2	215.2	171.6	192.5	213.4	169.2	189.8	210.5	174.4	195.4	216.4	175.8	196.9	217.9	182.1	203.5	225.0	177.9	199.1	220.3	167.5	188.1	208.7	152.7	172.5	192.2	
Banks Peninsula District	6.8	116.3	225.7	0.0	73.3	161.2	2.2	109.3	216.6	15.9	128.7	241.6	2.1	139.3	257.4	6.8	115.8	224.9	0.0	95.7	193.7	153.3	129.8	232.4	32.9	148.8	264.7	27.8	139.0	250.2	
Buller District	123.5	252.9	382.3	124.3	254.7	385.0	111.0	236.3	361.6	94.3	213.3	332.3	87.2	204.6	322.0	105.8	231.8	357.8	89.5	210.0	330.5	80.4	196.6	312.7	43.6	141.8	240.1	43.5	141.5	239.6	
Carterton District	38.6	174.5	310.4	44.0	182.8	321.6	21.7	143.6	265.6	39.9	165.4	291.0	39.5	163.8	288.2	45.2	174.3	303.4	51.7	187.2	322.7	92.5	250.2	407.9	78.9	227.5	376.1				
Central Hawke's Bay District	78.9	188.8	298.7	48.7	145.7	242.7	58.5	158.2	257.9	65.2	167.1	269.1	68.8	172.0	275.3	43.2	134.4	235.7	39.6	129.0	218.5	42.1	131.2	220.2	56.0	151.4	246.8	72.4	173.2	274.1	
Central Otago District	104.4	204.6	304.9	114.2	215.8	317.3	99.3	240.7	390.1	97.0	190.3	283.5	77.2	162.0	246.9	69.4	149.8	220.2	101.4	191.6	281.7	126.2	226.4	323.3	122.6	216.8	311.0	82.4	163.2	244.0	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	171.6	192.6	213.6	166.9	187.5	208.1	169.7	190.4	211.1	167.6	188.1	208.5	181.3	202.4	223.5	175.0	195.7	216.3	170.7	191.1	211.4	167.7	187.8	208.0	172.5	192.9	213.2	174.3	194.7	215.1	
Clutha District	101.1	192.7	284.2	120.5	217.4	314.2	120.7	217.9	315.0	82.5	167.0	251.5	57.2	131.8	206.4	71.6	150.3	229.0	78.2	160.2	242.1	83.8	167.9	251.9	80.8	163.6	246.5	86.1	172.3	258.6	
Dunedin City	161.3	195.3	229.3	165.1	199.6	234.1	164.9	199.3	233.6	174.8	210.1	245.4	171.6	206.5	241.5	165.1	199.7	234.2	168.3	203.1	238.0	172.5	207.9	243.2	165.6	200.3	234.9	168.8	203.8	238.8	
Far North District	126.9	183.5	240.1	135.0	191.6	248.3	137.0	192.4	247.8	148.8	205.1	261.4	150.3	206.0	261.6	144.4	198.3	252.2	161.9	218.2	274.6	157.3	212.3	267.3	166.2	222.1	278.0	152.2	205.3	258.4	
Franklin District	129.8	183.9	247.0	138.0	167.1	225.9	114.2	172.9	231.6	131.6	192.2	252.8	141.6	202.9	264.3	157.0	220.1	283.3	165.9	207.0	267.4	139.7	198.3	256.9	122.9	177.7	232.6	111.6	169.9	216.2	
Gisborne District	166.2	230.0	293.7	172.4	237.1	301.7	151.6	212.6	273.6	175.7	240.5	305.2	165.2	228.0	290.8	184.7	250.3	315.8	162.8	225.3	287.7	197.2	265.3	333.4	168.9	233.1	297.3	151.6	213.2	274.8	
Gore District	57.6	144.1	230.5	44.8	125.1	205.4	61.7	150.9	240.1	78.2	174.1	270.0	104.6	209.3	314.1	95.0	194.6	294.2	109.3	214.3	319.3	112.0	219.7	327.3	129.8	243.3	356.7	129.4	242.4	355.5	
Grey District	42.6	127.5	212.3	63.5	158.8	254.1	73.3	172.1	270.9	87.1	190.8	294.5	52.0	140.7	229.5	78.5	177.7	276.9	92.0	195.8	299.6	130.9	247.3	363.8	122.8	236.2	349.6	101.6	208.0	314.5	
Hamilton City	137.5	175.6	213.7	131.6	168.7	205.7	138.9	176.5	214.1	151.5	190.1	228.8	154.7	193.4	232.1	149.5	187.2	224.9	150.2	188.0	225.7	152.6	190.5	228.4	156.0	194.1	232.3	154.7	192.6	230.4	
Hastings District	131.9	177.2	222.6	124.8	168.9	213.0	130.8	175.6	220.5	142.4	188.6	234.8	143.3	189.5	235.7	139.6	185.0	230.5	144.5	190.4	236.4	151.1	197.7	244.4	158.6	206.1	253.6	159.4	206.9	254.3	
Hauraki District	107.3	204.5	301.7	75.0	161.8	248.7	87.6	177.4	267.1	83.3	170.5	257.8	79.9	165.6	251.3	81.1	168.3	255.4	85.0	172.1	259.2	100.9	190.7	280.4	99.7	186.7	273.8	108.0	196.2	284.4	
Horowhenua District	123.8	185.2	246.5	144.3	209.6	274.8	143.6	208.0	272.5	148.8	214.1	279.3	151.2	217.1	283.1	154.9	222.0	289.1	151.3	218.8	286.3	164.1	233.3	302.5	173.2	242.6	312.0	180.4	250.3	320.1	
Hurunui District	49.4	179.0	308.5	52.5	179.6	306.7	35.5	145.7	259.5	31.3	141.6	252.0	82.1	215.9	349.7	84.2	215.8	347.7	141.8	253.1	394.3	50.4	164.2	277.9	63.1	149.9	300.8	36.2	139.8	243.4	
Invercargill City	172.7	228.5	284.4	164.7	219.3	275.9	166.4	221.2	276.0	157.4	210.7	264.0	153.7	206.5	259.3	141.2	192.2	243.1	152.4	204.8	257.2	152.0	204.3	256.6	157.9	210.8	263.7	151.4	203.6	255.9	
Kaikoura District	24.4	263.5	502.5	34.0	275.2	516.5	4.1	205.4	406.7	0.0	161.8	344.9	0.0	191.2	386.9	22.8	246.0	469.1	33.0	266.9	500.9	33.5	271.4	509.3	33.5	271.4	509.3	24.0	258.4	492.8	
Kaipara District	71.2	158.4	245.6	85.9	178.2	270.4	87.4	179.1	270.7	95.6	187.4	279.3	102.3	193.3	284.3	97.4	184.0	270.6	95.6	182.3	268.9	83.4	167.0	250.6	94.8	182.3	269.8	104.3	193.8	283.3	
Kapiti Coast District	153.0	208.9	264.7	136.2	188.9	241.6	128.7	178.9	229.2	139.0	190.9	242.8	141.7	192.8	243.9	153.5	205.5	257.5	151.7	201.8	251.9	154.4	204.2	253.9	150.2	198.2	246.1	156.6	206.0	255.3	
Kawerau District	31.5	208.3	385.1	0.0	168.2	340.4	0.0	159.6	323.0	46.5	232.9	418.8	54.1	224.7	395.3	62.0	239.2	416.4	27.1	178.9	330.7	43.4	217.3	391.1	36.8	208.3	379.8	22.2	180.0	337.8	
Lower Hutt City	159.8	200.7	241.5	159.3	200.0	240.8	155.1	195.2	235.3	159.6	200.2	240.7	166.2	207.3	248.5	158.4	198.6	238.9	145.7	184.6	223.5	140.8	179.4	218.0	137.0	175.4	213.7	146.3	186.0	225.6	
Mackenzie District	0.0	143.7	342.9	0.0	116.8	278.7	30.7	130.9	631.1	52.5	342.2	641.9	17.1	292.8	568.6	0.0	78.9	198.7	0.0	65.8	177.5	-40.5	78.1	196.8	-38.3	74.0	186.3	-36.5	94.6	225.8	
Manawatu District	131.9	211.0	290.1	133.5	212.8	292.2	110.2	183.7	257.3	103.2	174.5	245.9	102.9	174.0	245.2	104.0	174.9	245.9	99.8	169.6	239.5	79.4	143.2	207.0	80.0	143.4	206.8	86.5	151.1	215.8	
Manukau City	151.8	171.9	206.4	147.7	174.3	200.9	153.4	206.9	158.8	186.6	213.4	163.8	190.5	217.1	165.8	192.2	218.6	168.7	195.1	221.5	165.4	191.3	217.2	158.1	183.1	208.1	157.5	182.0	206.7		
Marlborough District	96.3	162.2	218.1	104.1	158.9	213.6	112.1	167.6	223.1	142.2	202.8	263.4	146.5	206.9	267.4	154.1	215.2	276.3	131.8	188.3	244.8	122.3	176.6	230.9	107.1	158.1	209.0	112.6	164.1	215.6	
Masterton District	104.6	166.3	238.0	90.1	171.2	243.4	112.9	188.1	263.4	111.8	187.3	262.8	109.3	183.1	256.8	115.5	190.0	264.4	139.5	218.5	297.6	143.1	222.8	302.5	152.0	232.7	313.3	136.9	213.8	290.8	
Matamata-Piako District	83.9	146.6	209.3	90.3	154.3	218.3	103.4	170.1	238.8	123.5	194.1	264.8	131.4	203.4	275.4	110.0	176.6	243.2	102.1	167.2	232.3	95.8	158.3	220.8	101.8	165.3	228.8	104.2	168.0	231.8	
Napier City	119.9	165.9	211.9	125.9	172.4	219.0	126.0	172.0	218.0	130.1	176.3	224.1	164.1	182.9	229.7	153.3	200.1	248.8	154.0	204.0	253.1	160.4	210.1	259.8	148.7	196.8	244.9	161.6	211.3	261.0	
Nelson City	90.7	140.4	190.1	95.0	145.4	195.8	121.7	176.7	231.7	147.4	206.2	264.9	148.5	206.8	265.1	134.6	190.2	245.8	120.6	173.5	226.4	130.1	184.7	239.3	125.2	179.1	233.1	137.8	194.1	250.4	
New Plymouth District	150.5	196.3	242.0	155.6	201.6	247.7	164.3	211.2	258.1	162.2	215.1	262.1	155.9	201.0	246.1	136.4	178.5	220.6	134.2	176.1	218.0	145.5	188.7	231.9	150.9	194.8	238.7	146.0	191.1	232.2	
North Shore City	168.8	199.5	230.2	165.2	195.2	225.3	145.3	173.3	201.3	147.5	175.4	203.2	145.5	172.9	200.4	143.4	170.4	197.4	140.2	166.8	193.5	135.0	161.0	187.0	140.6	167.0	193.4	145.1	171.8	198.5	
Opoitiki District	54.4	86.1	317.9	33.3	150.4	267.5	29.2	145.9	262.6	52.9	184.2	309.4	67.8	202.9	338.0	66.3	198.4	330.4	94.2	235.5	376.9	95.7	234.0	372.4	104.2	244.6	344.8	80.2	110.0	341.7	
Orohunga District	12.0	129.0	246.1	0.0	100.4	203.1	0.0	89.4	185.3	17.1	138.3	259.6	27.6	156.2	284.7	48.9	188.7	328.5	25.6	144.9	264.1	2.0	102.1	202.2	6.4	110.1	213.8	21.0	138.8	256.6	
Palmerston North City	142.7	190.0	237.3	153.0	201.5																										

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	43.4	54.1	64.9	43.0	53.8	64.5	46.0	57.1	68.1	48.3	59.8	71.2	51.1	62.9	74.7	51.4	63.3	75.3	53.1	65.3	77.5	50.4	62.4	74.5	45.5	57.2	68.9	44.0	55.6	67.2
Bay of Plenty	26.3	42.1	57.9	30.0	46.2	62.3	34.9	51.9	68.8	34.9	51.6	68.3	35.2	51.8	68.4	31.0	46.6	62.2	29.2	44.1	59.0	24.9	38.7	52.5	28.8	43.1	57.4	29.1	43.2	57.4
Canterbury	39.5	49.4	59.3	40.9	50.9	60.9	42.0	52.1	62.2	39.7	49.5	59.3	37.1	46.6	56.1	38.1	47.7	57.2	41.1	51.0	60.8	44.6	54.8	65.0	43.9	53.9	64.0	41.3	51.1	60.9
Capital and Coast	37.9	52.1	66.4	41.8	56.7	71.6	43.1	58.2	73.3	33.8	47.4	61.1	31.3	44.5	57.7	25.9	38.1	50.3	28.0	40.6	53.2	29.4	42.3	55.3	29.5	42.4	55.4	28.1	40.8	53.5
Counties Manukau	46.6	62.7	78.7	50.9	67.3	83.8	52.3	68.7	85.1	49.6	65.5	81.3	45.8	60.9	76.1	48.0	63.3	78.5	45.4	60.1	74.8	42.9	57.1	71.3	37.9	51.2	64.5	38.8	52.1	65.5
Hawke's Bay	23.3	38.0	52.7	24.2	39.1	54.0	30.9	47.3	63.7	31.5	48.0	64.4	29.6	45.6	61.5	30.5	46.6	62.6	30.1	46.0	62.0	31.4	47.5	63.7	30.3	46.1	61.9	36.9	53.9	71.0
Hutt Valley	39.5	59.3	79.2	41.7	62.0	82.2	39.7	59.5	79.2	36.6	55.7	74.8	32.3	50.4	68.6	34.5	53.1	71.7	38.4	57.9	77.3	40.8	60.7	80.6	36.3	55.4	74.5	34.6	53.4	72.2
Lakes	23.0	46.1	69.2	26.0	49.5	73.0	21.9	43.9	65.9	25.7	48.9	72.2	28.4	52.4	76.3	34.7	59.9	85.1	31.2	55.2	79.1	35.7	60.3	84.9	26.9	48.9	70.9	25.1	46.3	67.4
MidCentral	42.4	60.0	77.5	37.9	54.6	71.2	41.9	59.1	76.4	43.8	61.5	79.1	39.6	56.5	73.4	32.4	47.9	63.3	29.2	44.0	58.8	31.2	46.3	61.4	29.3	44.0	58.7	32.1	47.4	62.7
Nelson-Marlborough	20.1	36.0	51.9	19.8	35.5	51.2	26.6	43.9	61.2	24.5	41.3	58.0	26.1	43.1	60.1	21.7	37.4	53.2	17.3	31.6	46.0	16.1	29.9	43.7	15.5	29.1	42.6	17.1	31.0	44.9
Northland	25.6	42.4	59.2	29.1	46.6	64.1	27.0	43.8	60.6	31.6	49.4	67.2	31.5	49.3	67.0	30.0	47.3	64.6	32.7	50.3	67.9	36.9	55.1	73.4	43.1	62.3	81.6	42.4	61.3	80.3
Otago	36.5	50.7	64.9	39.4	54.2	69.0	40.1	55.0	69.9	44.9	60.6	76.2	49.0	65.2	81.5	46.8	62.9	78.9	44.9	60.7	76.5	37.9	52.7	67.5	38.4	53.3	68.1	37.0	51.6	66.2
South Canterbury	27.3	52.0	76.7	27.2	51.8	76.5	17.9	39.3	60.7	28.2	53.2	78.3	30.9	56.9	83.0	39.5	67.8	96.1	34.3	60.6	87.0	31.9	57.2	82.5	30.3	55.1	79.8	32.8	58.3	83.9
Southland	30.7	50.0	69.4	32.3	52.0	71.7	32.1	51.9	71.7	27.6	46.4	65.3	28.0	47.1	66.2	26.4	45.1	63.8	26.5	45.2	64.0	26.4	44.8	63.3	24.8	42.8	60.8	27.4	46.0	64.7
Tairāwhiti	21.0	51.3	81.6	27.7	60.7	93.6	34.8	70.4	106.0	32.6	67.7	102.7	30.4	64.8	99.1	26.9	59.9	92.8	28.0	64.4	94.7	30.2	64.4	98.5	31.2	65.4	99.7	25.4	57.6	89.7
Taranaki	24.9	42.3	59.7	27.8	45.9	64.1	35.7	55.5	75.4	33.3	52.8	72.2	30.8	49.7	68.5	31.3	50.2	69.1	31.7	50.7	69.7	26.7	44.4	62.2	21.8	38.3	54.8	19.7	35.5	51.3
Waikato	40.5	53.2	66.0	39.8	52.4	64.9	38.4	50.7	63.1	37.5	49.6	61.7	38.2	50.4	62.5	39.4	51.6	63.9	40.4	52.7	64.9	40.6	52.8	65.0	37.4	49.1	60.9	33.7	44.8	55.9
Wairarapa	20.0	52.5	85.0	16.3	47.0	77.7	16.4	47.2	78.0	5.3	29.8	54.2	8.4	35.0	61.5	14.0	43.5	73.0	19.6	51.6	83.6	20.6	52.7	84.8	13.5	42.2	70.8	18.8	49.3	79.9
Waitemata	36.9	48.8	60.8	37.1	48.9	60.7	39.4	51.3	63.2	42.8	55.0	67.2	40.9	52.7	64.6	37.7	49.0	60.3	39.0	50.3	61.7	35.2	45.9	56.7	37.6	48.5	59.5	33.3	43.6	53.9
West Coast	27.9	64.2	100.6	24.8	59.3	93.9	19.3	52.3	85.3	17.5	50.4	83.2	27.4	65.5	103.6	25.9	63.3	100.7	30.6	69.3	107.9	27.5	64.4	101.4	25.3	61.9	98.4	25.7	62.7	99.8
Whanganui	23.3	45.3	67.3	26.5	49.7	72.9	14.8	34.0	53.3	20.2	41.5	62.7	16.7	36.6	56.5	24.6	47.4	70.1	24.0	46.6	69.2	23.2	45.6	67.9	23.8	46.3	68.7	26.6	49.9	73.2
New Zealand	47.0	50.5	54.1	48.5	52.1	55.6	49.8	53.4	57.0	49.5	53.0	56.6	48.7	52.3	55.8	48.1	51.6	55.1	48.5	52.0	55.5	47.8	51.2	54.7	46.2	49.6	53.0	45.3	48.6	52.0

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	41.9	53.3	64.7	43.0	54.5	66.1	46.3	58.2	70.2	46.5	58.5	70.5	45.1	56.9	68.7	37.4	48.3	59.1	33.3	43.7	54.0	31.9	42.1	52.4	42.3	52.6	32.0	42.3	52.6	
Bay of Plenty	30.4	44.5	58.7	29.6	43.4	57.3	26.5	39.4	52.4	24.6	37.0	49.4	22.5	34.2	45.9	23.5	35.3	47.0	24.7	36.5	48.4	25.5	37.4	49.3	27.7	39.9	52.2	29.1	41.4	53.7
Canterbury	39.8	49.4	59.0	38.6	48.0	57.4	41.4	51.0	60.6	37.9	47.2	56.4	36.2	45.1	54.1	34.7	43.4	52.2	34.2	42.9	51.5	36.1	44.9	53.8	37.3	46.3	55.2	38.9	48.0	57.0
Capital and Coast	25.5	37.7	49.9	25.7	37.9	50.1	25.5	37.6	49.7	27.1	39.5	51.8	24.9	36.7	48.5	27.9	40.2	52.6	25.4	37.2	49.1	26.9	39.0	51.1	25.0	36.7	48.3	22.9	34.1	45.4
Counties Manukau	40.2	53.6	67.1	42.1	55.6	69.1	41.6	54.8	67.9	37.7	50.1	62.5	34.8	46.5	58.3	33.6	45.0	56.4	35.0	46.5	58.0	35.6	47.2	58.8	37.1	48.7	60.4	36.3	47.8	59.3
Hawke's Bay	37.5	54.7	71.8	36.0	52.8	69.6	33.1	49.1	65.2	30.5	46.0	61.5	26.6	41.2	55.8	23.8	37.7	51.5	28.1	42.8	57.6	34.6	50.7	66.7	37.2	53.7	70.2	33.8	49.7	65.5
Hutt Valley	34.1	52.9	71.7	33.1	51.7	70.3	26.4	43.4	60.4	27.6	44.8	62.1	28.8	46.3	63.8	33.5	52.0	70.5	32.5	50.9	69.3	33.6	52.2	70.7	35.5	54.5	73.4	31.0	49.0	66.9
Lakes	28.4	50.5	72.7	33.9	57.3	80.7	34.1	57.4	80.7	40.1	64.6	89.1	38.6	62.5	86.3	41.7	66.0	90.2	28.7	49.5	70.4	29.6	50.8	72.1	28.1	48.9	69.6	32.7	54.5	76.3
MidCentral	34.4	50.0	65.7	34.1	49.6	65.2	34.3	49.7	65.2	28.0	42.3	56.6	29.6	44.2	58.7	22.6	35.6	48.7	23.4	36.5	49.6	25.6	39.2	52.8	33.2	48.2	63.2	36.8	52.4	68.0
Nelson-Marlborough	16.5	30.2	43.9	17.7	31.6	45.4	18.3	32.2	46.0	21.0	35.4	49.9	20.8	35.1	49.5	20.7	34.8	48.9	18.9	32.4	46.0	18.6	31.9	45.3	21.4	35.4	49.3	23.3	37.5	51.8
Northland	34.7	51.9	69.1	33.9	50.7	67.5	32.3	48.5	64.8	32.6	48.7	64.7	31.9	47.6	63.3	33.8	49.7	65.5	35.5	51.6	67.7	38.9	55.6	72.3	38.8	55.3	71.8	42.3	59.3	76.4
Otago	40.3	55.5	70.6	38.2	53.0	67.8	39.7	54.6	69.6	35.3	49.4	63.5	37.0	51.4	65.8	36.5	50.8	65.0	39.2	53.9	68.6	37.0	51.3	65.6	36.5	50.8	65.1	39.2	53.9	68.7
South Canterbury	32.7	58.2	83.7	26.6	50.3	74.0	29.7	54.4	79.1	25.1	48.4	71.6	30.6	55.5	80.5	25.5	48.6	71.7	27.8	51.6	75.4	21.1	42.7	64.2	19.0	39.8	60.7	15.4	34.9	54.4
Southland	27.3	46.0	64.6	28.9	48.0	67.0	26.1	44.4	62.7	24.1	41.8	59.6	27.4	46.0	64.5	30.3	49.4	68.5	42.6	64.4	86.3	37.0	57.6	78.2	37.4	58.1	78.8	29.8	48.6	67.4
Tairāwhiti	23.4	54.8	86.3	19.1	49.0	78.9	18.9	48.5	78.0	19.0	48.6	78.2	20.3	50.9	81.4	26.0	58.9	91.8	19.3	49.6	79.8	17.1	46.3	75.4	16.2	45.1	74.1	22.7	54.4	86.2
Taranaki	33.4	52.5	71.7	36.6	56.3	76.0	40.2	60.5	80.9	30.8	49.2	67.5	26.0	43.1	60.2	23.4	39.9	56.3	22.9	39.2	55.4	24.3	40.9	57.6	25.3	42.2	59.1	25.3	42.2	59.0
Waikato	32.5	43.3	54.2	33.0	43.8	54.7	32.6	43.4	54.1	33.6	44.3	55.1	35.8	46.8	57.8	36.2	47.2	58.2	35.8	46.6	57.5	34.8	45.5	56.2	37.2	48.2	59.1	37.8	48.8	59.8
Wairarapa	16.1	45.0	73.9	17.1	46.2	75.3	9.6	34.8	59.9	20.0	50.1	80.2	38.6	75.0	111.3	39.0	75.1	111.2	28.5	60.6	92.7	15.7	42.5	69.3	12.7	38.1	63.5	10.7	34.7	58.8
Waitemata	33.1	43.3	53.4	29.7	39.2	48.8	32.8	42.7	52.5	35.3	45.4	55.5	34.5	44.3	54.2	34.2	43.9	53.5	35.8	45.6	55.4	37.0	46.9	56.7	32.6	41.8	51.1	31.5	40.5	49.

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	12.9	19.1	25.2	14.4	20.8	27.3	14.9	21.5	28.0	17.5	24.5	31.5	17.8	24.9	31.9	18.9	26.3	33.6	16.6	23.5	30.5	17.0	24.1	31.1	16.7	23.7	30.8	17.3	24.7	32.0
Bay of Plenty	4.0	13.1	22.2	3.5	12.1	20.6	3.4	11.8	20.1	6.4	15.9	25.5	7.6	17.4	27.3	8.0	17.8	27.6	10.0	20.4	30.9	11.6	22.5	33.4	11.6	22.3	33.0	8.4	17.7	26.9
Canterbury	7.6	12.4	17.1	8.6	13.6	18.6	8.7	13.6	18.6	7.9	12.8	17.6	9.2	14.3	19.4	11.0	16.4	21.8	13.1	18.9	24.7	14.0	19.9	25.9	13.7	19.6	25.5	14.3	20.3	26.3
Capital and Coast	9.2	17.2	25.3	9.2	17.3	25.3	7.0	14.4	21.8	6.8	14.1	21.5	6.8	14.2	21.5	6.8	14.1	21.4	7.8	15.4	23.0	11.3	20.0	28.6	13.1	22.3	31.4	12.6	21.6	30.6
Counties Manukau	10.8	19.8	28.9	13.9	23.7	33.4	15.0	24.9	34.7	8.9	17.0	25.0	7.2	14.7	22.2	9.3	17.3	25.2	11.4	19.8	28.2	14.6	23.6	32.6	14.5	23.4	32.2	17.2	26.5	35.7
Hawke's Bay	6.2	15.4	24.6	8.5	18.6	28.8	11.6	22.8	33.9	13.0	24.6	36.2	13.7	25.4	37.2	13.2	24.7	36.3	12.7	24.0	35.4	15.4	27.4	39.4	17.0	29.4	41.8	16.1	28.2	40.3
Hutt Valley	11.4	23.4	35.3	9.2	20.4	31.7	9.5	20.9	32.2	8.4	19.3	30.2	7.2	17.6	27.9	8.3	19.2	30.0	11.1	22.9	34.8	13.4	26.0	38.7	13.1	25.6	38.2	13.2	25.9	38.6
Lakes	6.8	24.4	42.1	5.7	22.0	38.3	7.1	24.3	41.5	5.6	21.6	37.6	7.6	24.8	41.9	4.7	19.7	34.7	6.6	22.6	38.6	9.3	25.9	42.5	11.2	28.6	46.1	14.3	32.3	50.4
MidCentral	8.8	18.5	28.3	8.8	18.5	28.2	8.5	18.1	27.6	9.8	19.8	29.8	10.6	20.8	30.9	11.8	22.3	32.7	11.6	22.0	32.4	14.7	26.0	37.2	14.6	25.8	37.1	16.6	28.3	40.1
Nelson-Marlborough	3.0	12.4	21.8	1.5	9.8	18.1	1.1	9.1	17.1	2.1	10.7	19.2	3.6	13.0	22.5	3.9	13.5	23.0	5.1	15.1	25.2	4.2	13.5	22.9	4.9	14.7	24.4	4.4	13.8	23.1
Northland	8.6	21.6	34.6	9.5	22.6	35.8	8.2	20.5	32.9	8.9	21.2	33.6	11.8	25.2	38.5	16.7	31.5	46.3	17.7	32.6	47.5	17.7	32.4	47.1	19.0	33.9	48.8	19.5	34.4	49.2
Otago	6.2	13.5	20.7	7.1	14.6	22.1	7.3	14.7	22.2	8.5	16.4	24.2	9.4	17.5	25.7	9.7	18.0	26.3	9.9	18.3	26.6	9.0	17.2	25.4	9.5	17.8	26.1	9.8	18.2	26.6
South Canterbury	0.0	10.7	21.7	0.0	7.7	16.9	0.2	11.5	22.8	1.3	13.9	26.6	1.9	15.3	28.7	3.6	18.1	32.5	3.5	17.3	31.1	5.1	19.8	34.4	3.9	17.7	31.5	4.5	18.8	33.1
Southland	4.1	14.8	25.6	2.8	12.7	22.7	3.2	13.4	23.5	2.4	11.9	21.4	3.2	13.3	23.3	3.2	13.2	23.3	4.9	15.8	26.8	3.1	13.0	22.9	2.7	12.3	21.9	3.5	13.5	23.5
Tairāwhiti	9.4	34.0	58.7	3.8	24.8	45.8	0.4	18.6	36.8	0.0	15.5	32.0	0.4	18.9	37.4	5.6	28.1	50.5	2.9	23.5	44.1	1.2	20.1	39.1	0.4	18.5	36.6	5.5	27.6	49.7
Taranaki	6.3	17.7	29.1	9.4	22.1	34.7	9.3	21.9	34.5	8.0	20.0	32.0	6.7	18.1	29.5	7.0	18.5	30.0	8.3	20.2	32.2	6.5	17.7	28.8	9.4	21.7	34.0	9.8	22.1	34.4
Waikato	10.1	17.9	25.6	7.8	14.8	21.7	9.9	17.3	24.7	9.2	16.3	23.4	9.9	17.1	24.4	8.7	15.6	22.5	11.6	19.2	26.8	12.4	20.1	27.8	14.3	22.3	30.3	13.9	21.7	29.6
Wairarapa	0.0	10.5	25.1	0.0	14.0	30.8	0.0	15.6	33.2	0.0	10.2	24.3	0.0	4.9	14.5	0.0	11.8	27.0	0.0	18.3	37.0	4.9	27.9	50.8	3.9	25.9	47.9	3.0	24.3	45.6
Waitemata	9.3	16.2	23.1	9.1	15.7	22.4	8.9	15.4	21.9	10.2	17.0	23.8	11.3	18.2	25.2	13.6	21.0	28.3	14.6	22.1	29.6	14.9	22.4	29.9	13.7	20.9	28.1	13.4	20.3	27.3
West Coast	0.0	6.7	19.9	0.0	12.7	30.2	0.0	14.0	32.0	0.5	24.0	47.5	3.7	30.3	56.9	2.7	29.0	55.3	3.8	31.2	58.5	1.6	26.8	52.0	9.8	40.6	71.4	7.4	36.8	66.3
Whanganui	2.3	15.1	27.9	5.7	20.7	35.7	3.9	17.8	31.7	5.1	19.7	34.3	2.8	15.7	28.7	7.9	23.8	39.6	6.1	20.9	35.7	7.3	22.7	38.1	3.3	16.4	29.4	5.1	19.6	34.1
New Zealand	14.6	16.6	18.6	15.0	17.0	19.0	15.3	17.3	19.3	15.4	17.5	19.5	16.0	18.1	20.2	17.4	19.5	21.7	18.5	20.7	22.9	19.7	21.9	24.2	20.0	22.3	24.5	20.4	22.7	25.0

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	16.7	24.0	31.3	17.0	24.4	31.8	16.9	24.2	31.6	18.0	25.5	33.0	17.0	24.3	31.6	19.1	26.8	34.5	19.1	26.8	34.5	18.8	26.5	34.2	16.3	23.6	30.8	14.2	21.1	28.0
Bay of Plenty	9.4	18.8	28.1	10.9	20.6	30.2	12.6	22.6	32.6	14.5	24.8	35.1	13.5	23.4	33.2	15.2	25.4	35.5	15.0	24.9	34.8	15.2	25.0	34.8	17.3	27.5	37.6	15.5	25.0	34.6
Canterbury	14.5	20.4	26.4	13.5	19.3	25.1	14.5	20.4	26.3	14.3	20.1	25.9	17.7	24.1	30.4	15.3	21.2	27.1	15.7	21.6	27.6	15.7	21.6	27.5	18.2	24.5	30.7	19.4	25.7	32.1
Capital and Coast	10.0	18.4	26.7	10.7	19.2	27.6	10.6	19.0	27.4	11.7	20.3	29.0	9.8	17.9	25.9	13.4	22.3	31.2	13.0	21.8	30.6	13.1	21.9	30.7	12.6	21.2	29.8	15.4	24.7	33.9
Counties Manukau	17.7	27.0	36.3	16.5	25.4	34.4	14.7	23.2	31.6	16.1	24.6	33.1	18.2	27.0	35.8	19.1	27.9	36.7	18.7	27.4	36.1	21.0	30.0	39.0	21.6	30.6	39.7	25.0	34.4	43.9
Hawke's Bay	12.6	23.6	34.6	11.1	21.6	32.1	12.4	23.2	34.0	14.9	26.3	37.7	15.3	26.8	38.3	18.9	31.3	43.6	16.6	28.3	40.0	16.9	28.7	40.5	14.7	25.9	37.0	17.2	29.0	40.8
Hutt Valley	12.8	25.4	38.1	12.3	24.7	37.1	11.5	23.6	35.6	11.4	23.4	35.4	13.0	25.5	38.0	11.7	23.7	35.6	10.5	22.1	33.6	12.9	25.4	37.8	16.6	30.2	43.8	19.6	34.0	48.4
Lakes	15.6	34.2	52.9	18.1	37.2	56.2	19.2	38.4	57.7	18.6	37.2	55.9	18.4	36.9	55.3	18.5	36.7	54.8	19.6	38.0	56.5	21.7	40.6	59.6	27.9	48.4	69.0	31.2	52.4	73.7
MidCentral	13.9	24.9	35.9	14.1	25.2	36.2	12.7	23.3	33.9	13.5	24.2	34.9	16.2	27.6	38.9	18.6	30.5	42.4	18.9	30.8	42.7	20.4	32.7	44.9	21.5	33.9	46.4	20.8	33.0	45.2
Nelson-Marlborough	6.3	16.6	26.9	6.8	17.1	27.4	3.9	12.8	21.6	3.4	11.7	20.0	4.0	12.6	21.1	6.7	16.4	26.1	7.7	17.7	27.8	7.9	17.9	27.9	8.5	18.6	28.7	9.4	19.8	30.2
Northland	15.8	29.3	42.9	12.9	25.3	37.8	14.7	27.5	40.3	18.4	32.0	45.6	18.2	31.4	44.7	18.4	31.5	44.5	24.4	38.8	53.3	27.8	42.9	57.9	27.2	42.0	56.7	26.7	41.2	55.7
Otago	13.0	22.2	31.4	12.9	22.0	31.1	13.6	22.8	32.0	13.8	23.0	32.2	15.0	24.4	33.9	16.5	26.4	36.3	18.2	28.6	38.9	21.5	32.6	43.7	19.5	30.1	40.8	19.9	30.6	41.3
South Canterbury	2.8	16.0	29.1	3.4	16.9	30.5	5.1	19.8	34.5	6.9	22.6	38.2	7.6	23.7	39.8	6.8	22.1	37.5	8.2	24.5	40.7	5.7	20.5	35.3	8.2	24.5	40.8	12.1	29.7	47.2
Southland	4.3	14.8	25.2	6.0	17.2	28.4	5.1	15.8	26.5	7.2	18.9	30.5	6.3	17.5	28.6	7.0	18.5	29.9	7.0	18.5	30.0	8.7	20.9	33.1	9.7	22.2	34.8	11.9	25.2	38.6
Tairāwhiti	10.3	35.1	60.0	8.3	32.0	55.7	12.1	37.8	63.4	16.2	43.7	71.3	15.0	41.8	68.7	9.1	32.9	56.7	6.3	28.5	50.7	15.2	42.5	69.8	18.5	47.4	76.3	15.4	43.0	70.5
Taranaki	13.6	27.3	40.9	13.6	27.2	40.7	16.1	30.5	44.9	15.1	29.1	43.0	12.7	25.7	38.7	10.9	23.2	35.4	14.7	28.2	41.8	18.3	33.0	47.7	17.4	31.9	46.4	12.3	25.1	37.9
Waikato	13.9	21.6	29.4	13.5	21.1	28.7	17.4	25.7	34.1	19.4	28.0	36.7	20.5	29.2	38.0	17.4	25.5	33.5	18.6	26.9	35.1	19.5	27.8	36.1	20.6	29.1	37.7	21.4	30.0	38.6
Wairarapa	3.0	24.1	45.3	2.9	23.7	44.5	5.7	28.4	51.1	6.5	29.4	52.3	8.3	31.9	55.6	4.4	25.0	45.6	7.0	29.0	51.0	8.7	31.5	54.3	14.3	39.9	65.5	9.5	32.4	55.4
Waitemata	14.8	21.9	29.1	14.7	21.7	28.7	15.9	23.0	30.2	15.8	22.8	29.8	14.5	21.1	27.8	15.3	22.0	28.6	13.8	20.1	26.5	17.0	23.8	30.6	15.2	21.7	28.2	18.3	25.3	32.2
West Coast	6.2	35.0	63.8	0.0	20.5	42.4	0.0	16.0	35.1	0.0	16.1	35.4	0.0	16.1	35.3	0.0	20.1	41.7	0.0	22.2</										

	1981		1982		1983		1984		1985		1986		1987		1988		1989		1990												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	24.9	67.4	109.9	12.8	49.6	86.3	17.7	57.5	97.4	16.2	55.6	94.9	19.1	59.4	99.7	12.2	46.9	81.6	16.3	53.2	90.1	13.4	48.6	83.7	22.0	61.5	101.0	14.7	50.4	86.1	
Auckland City	59.7	71.8	83.8	44.9	55.8	66.8	61.0	73.3	85.5	63.4	75.9	88.5	66.2	79.1	92.0	52.6	64.7	76.7	54.7	67.1	79.4	51.1	63.3	75.4	46.5	58.3	70.1	45.0	56.7	68.4	
Banks Peninsula District	0.0	25.0	74.0	0.0	38.8	104.6	0.0	88.0	187.6	0.0	79.3	174.5	0.0	102.5	207.5	0.0	46.0	109.7	0.0	56.3	128.5	0.0	31.1	83.9	0.0	33.9	91.5	0.0	31.6	93.4	
Buller District	10.9	88.2	165.4	1.2	59.7	118.2	33.3	128.5	223.7	52.6	157.3	262.0	76.6	191.5	306.4	33.2	120.1	207.0	29.1	112.2	195.4	9.8	79.5	149.3	13.0	86.0	159.0	20.0	100.3	180.6	
Carterton District	0.0	93.1	193.0	0.0	49.4	124.5	0.0	78.7	173.2	0.0	59.6	142.1	0.0	49.2	123.9	0.0	17.4	59.1	0.0	17.8	60.6	0.0	17.4	59.1	0.0	8.2	36.0	0.0	36.2	97.6	
Central Hawke's Bay District	0.0	43.7	104.2	0.0	62.7	130.1	7.5	81.3	155.1	17.1	96.7	176.4	7.2	78.2	149.1	7.1	76.3	145.6	1.3	66.1	130.9	4.2	71.8	139.4	0.0	54.0	111.9	0.0	54.6	113.3	
Central Otago District	0.0	13.9	41.2	0.0	44.6	92.5	28.6	103.5	178.4	33.7	109.9	186.0	27.1	98.3	169.4	10.4	68.5	126.6	5.4	58.1	110.9	0.0	40.2	83.3	0.0	31.8	70.0	0.0	31.2	68.7	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	56.5	69.9	83.2	42.0	53.7	65.4	60.3	74.0	87.7	57.8	71.2	84.6	54.6	67.7	80.7	41.1	52.5	63.9	44.4	56.3	68.1	48.8	61.1	73.4	47.5	59.6	71.8	48.8	57.8	69.7	
Clutha District	11.6	65.5	119.4	0.0	41.9	84.7	15.9	71.9	127.9	22.9	82.8	142.7	30.8	95.8	160.9	5.2	56.3	107.4	0.9	45.9	90.8	0.9	43.9	87.0	20.3	78.1	136.0	18.0	74.6	131.3	
Dunedin City	57.0	78.8	100.5	42.6	62.0	81.5	57.2	79.1	101.0	64.2	87.3	110.5	66.9	90.5	114.1	50.1	71.3	92.5	49.7	71.0	92.3	44.4	64.9	85.3	42.2	62.2	82.3	38.8	58.3	77.8	
Far North District	46.5	85.8	125.1	28.6	62.6	96.7	25.0	56.5	88.0	29.2	62.1	95.0	37.3	73.1	108.9	31.9	66.1	100.4	34.3	68.8	103.2	27.8	59.1	90.5	34.4	67.5	100.5	40.4	75.1	109.8	
Franklin District	37.3	82.9	128.6	24.4	62.4	100.5	42.3	87.8	133.2	39.2	62.4	125.5	45.2	89.5	133.8	24.7	61.7	98.7	20.3	54.9	89.4	12.6	43.3	73.9	11.1	40.1	69.2	14.6	45.5	76.4	
Gisborne District	37.7	73.9	110.2	28.9	62.3	95.8	55.6	97.2	138.8	53.5	94.6	135.7	53.5	94.6	135.7	31.4	66.0	100.5	33.7	69.1	104.5	32.6	67.5	102.5	35.8	71.7	107.6	31.1	65.3	99.6	
Gore District	1.1	53.2	105.4	11.0	72.7	134.5	3.5	59.3	115.1	6.1	65.5	125.0	1.1	56.8	112.4	0.0	47.0	97.6	0.0	38.7	85.2	0.0	51.3	103.9	6.1	66.1	126.0	3.6	61.5	119.4	
Grey District	42.2	131.6	220.9	5.7	61.2	116.8	7.2	78.0	148.8	7.5	81.1	154.7	17.0	96.1	175.2	3.7	63.5	123.2	8.5	68.9	129.3	3.4	58.1	112.9	0.0	52.6	106.4	0.0	53.9	109.1	
Hamilton City	43.5	69.9	96.2	32.8	56.3	79.8	48.1	75.4	102.7	47.3	74.4	101.5	50.0	77.7	105.3	27.5	49.3	71.1	31.8	54.6	77.5	27.2	48.7	70.3	30.1	52.2	74.4	24.7	45.2	65.7	
Hastings District	42.4	72.8	103.3	24.0	49.1	74.3	37.6	66.5	95.5	34.1	61.9	89.8	34.0	61.7	89.5	24.5	49.5	74.6	21.8	45.9	69.9	17.8	40.2	62.7	16.1	37.8	59.5	27.2	52.7	78.3	
Hauraki District	10.2	67.5	124.9	12.8	72.3	131.9	54.5	136.3	218.1	63.5	148.9	234.4	57.6	140.7	223.9	17.6	79.7	141.8	12.3	69.4	126.5	19.3	80.3	141.3	14.2	71.2	128.1	16.4	74.1	131.8	
Horowhenua District	34.1	69.9	105.7	25.1	59.0	92.8	32.5	67.4	102.3	32.7	67.8	102.8	29.7	64.2	98.6	16.5	46.1	75.6	8.9	34.2	59.5	9.7	35.2	60.7	14.1	42.3	70.5	16.3	45.6	74.8	
Hurunui District	0.0	38.1	95.9	0.0	20.0	59.1	0.0	52.9	126.2	0.0	57.8	132.0	0.0	62.3	137.0	0.0	27.4	73.9	0.0	20.5	63.0	0.0	21.9	64.7	0.0	27.1	73.1	0.0	34.3	86.3	
Invercargill City	58.8	96.2	133.7	33.9	64.1	94.3	76.0	117.6	159.3	76.1	117.8	159.5	74.9	116.6	158.3	38.9	71.7	104.5	38.9	71.7	104.5	41.2	74.3	107.5	37.0	68.8	100.6	45.0	79.1	113.2	
Kaikoura District	0.0	113.3	270.3	0.0	117.8	281.1	0.0	194.7	403.8	0.0	141.2	322.4	0.0	107.0	255.3	0.0	83.5	210.2	0.0	65.4	176.5	0.0	68.5	184.9	0.0	33.5	114.0	0.0	59.0	174.5	
Kaipara District	20.2	77.8	135.4	5.1	54.7	104.3	4.9	52.6	100.2	13.7	68.4	123.0	6.9	55.6	104.4	0.9	43.6	86.3	0.9	43.1	85.4	6.6	53.8	101.1	0.9	43.6	86.3	6.6	53.5	100.3	
Kapiti Coast District	34.0	68.8	103.6	31.1	63.7	96.3	59.5	99.7	139.9	49.9	87.2	124.5	53.2	91.9	130.6	23.7	52.0	80.2	32.4	63.5	94.6	28.7	57.4	86.1	25.8	53.4	81.1	23.7	49.7	75.8	
Kawerau District	0.0	42.2	124.8	0.0	44.7	132.4	0.0	351.9	839.6	0.0	351.7	839.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	290.7	693.7	0.0	22.3	215.9	0.0	71.9	212.7	
Lower Hutt City	60.1	87.7	115.4	41.1	64.6	88.1	60.4	88.0	115.6	56.5	83.4	110.3	57.9	85.0	112.2	40.8	64.3	87.8	46.2	71.1	95.9	41.9	65.8	89.8	36.1	58.9	81.7	33.3	55.6	77.8	
Mackenzie District	0.0	149.4	402.9	0.0	93.7	318.5	0.0	40.7	178.8	0.0	37.0	125.9	0.0	36.6	124.4	0.0	62.7	185.0	0.0	27.6	121.4	0.0	26.8	118.0	0.0	80.1	352.1	0.0	106.9	316.5	
Manawatu District	32.0	80.1	128.2	4.9	39.5	74.1	23.7	68.4	113.1	23.9	69.0	114.1	24.0	69.2	114.3	3.5	37.3	71.2	4.9	39.9	74.8	11.0	50.0	88.9	17.5	60.0	102.5	12.5	52.0	91.4	
Manukau City	59.5	81.8	104.2	51.9	72.1	92.3	77.3	101.4	125.4	70.7	93.5	116.3	65.4	87.1	108.7	47.7	66.2	84.7	47.3	65.5	83.6	46.0	63.7	81.4	39.3	55.6	72.0	41.3	57.9	74.4	
Marlborough District	20.9	56.7	92.4	17.5	50.5	83.5	33.2	72.8	112.3	32.5	71.3	110.0	29.0	65.5	102.1	12.0	41.2	70.3	6.3	31.5	56.6	9.4	36.1	62.8	15.6	44.9	74.3	19.7	50.5	81.2	
Masteron District	10.9	54.4	98.0	3.9	42.2	80.4	5.7	45.8	86.0	0.0	30.9	64.1	4.0	43.4	82.8	9.1	51.3	93.6	16.4	63.2	109.9	16.2	62.5	108.8	8.9	50.4	92.0	12.2	55.0	97.9	
Matamata-Piako District	20.8	62.4	103.9	5.7	37.6	69.5	31.3	78.2	125.2	34.7	83.1	131.4	40.1	90.8	141.4	14.2	51.4	88.6	9.7	44.1	78.4	6.9	39.1	71.2	1.7	29.4	57.0	2.9	31.6	60.3	
Napier City	18.5	42.7	66.9	15.0	38.5	62.0	42.1	74.4	106.8	46.3	80.0	113.6	45.2	78.6	111.9	23.3	48.9	74.4	24.3	50.3	76.3	30.0	57.7	85.4	32.4	60.7	88.9	36.8	66.3	95.9	
Nelson City	23.5	55.1	86.8	14.9	42.9	71.0	38.5	74.7	110.9	31.2	64.6	98.1	27.5	59.4	91.3	4.6	26.2	47.8	2.9	23.1	43.4	6.4	28.8	51.2	7.5	31.2	54.8	10.2	34.8	59.4	
New Plymouth District	34.4	60.1	85.8	27.2	51.5	75.7	52.3	81.9	111.6	53.2	83.2	113.1	52.2	81.9	111.5	38.4	65.6	92.8	37.7	64.7	91.7	32.3	57.9	83.5	25.6	49.2	72.8	22.4	44.8	67.3	
North Shore City	49.1	69.1	89.1	32.0	48.6	65.2	48.2	67.7	87.2	54.6	75.0	95.4	53.6	73.7	93.8	35.8	52.6	69.4	32.1	48.2	64.2	31.0	46.8	62.6	31.5	47.4	63.2	30.2	45.7	61.3	
Opotiki District	0.0	63.0	143.8	0.0	74.3	163.4	0.0	88.8	184.1	0.0	99.8	197.7	10.9	117.4	224.0	0.0	96.3	194.9	0.0	76.3	168.0	0.0	27.8	82.4	0.0	51.9	123.7	0.0	68.1	149.7	
Otorohanga District	0.0	183.7	391.5	0.0	36.5	98.3	0.0	108.7	239.3	0.0	147.8	299.1	0.0	131.7	273.2	0.0	109.6	227.3	0.0	50.8	127.8	0.0	89.1	190.0	0.0	76.6	168.6	0.0	92.2	191.2	
Palmerston North City	56.9	90.7	124.5	28.3	55.5	82.6	49.1	81.1	113.1	53.3	86.3	119.3	46.8	78.0	109.2	28.6	55.5	82.4	28.8	55.8	82.9	31.6	59.6	87.7	22.9	48.2	73.4	22.7	47.7	72.8	
Papakura District	69.0	141.4	213.8	26.1	78.1	130.1	34.2	89.9	145.7	47.3	107.1	166.9	41.6	97.5	153.5	37.0	88.5	140.1	25.1	70.1	115.0	19.7	61.4	103.2	23.6	68.2	112.8	22.3	66.6	110.9	
Porirua City	68.4	140.1	211.7	28.8	80.4	131.9	39.6	94.8	149.9	29.6	77.9	126.2	39.2	90.4	141.5	23.5	67.7	111.9	21.3	63.7	106.1	20.0	65.3	110.5	17.8	60.9	104.0	25.2	70.2	115.2	
Queenstown-Lakes District	0.0	88.0	187.5	0.0	39.3	106.1	0.0	53.0	133.4	0.0	42.9	115.8																			

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000			
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	
Ashburton District	10.6	44.0	77.4	5.3	35.0	64.8	8.9	40.3	71.7	14.0	47.9	81.8	13.8	47.2	80.5	22.0	59.6	97.1	16.5	51.5	86.5	15.2	49.6	83.9	14.8	48.3	81.7	21.3	57.6	93.9	
Auckland City	43.1	54.7	66.2	44.5	56.3	68.0	47.9	60.0	72.2	48.7	60.9	73.2	46.9	58.9	71.0	39.4	50.5	61.6	34.5	45.0	55.5	32.8	43.2	53.6	32.2	42.5	52.9	32.2	42.5	52.9	
Banks Peninsula District	0.0	55.9	140.8	0.0	55.6	132.6	0.0	48.9	116.6	0.0	36.7	92.5	0.0	26.3	70.9	0.0	45.4	103.6	0.0	54.3	119.5	0.0	54.8	120.5	0.0	48.9	111.7	0.0	49.0	118.8	
Buller District	13.9	91.9	170.0	4.4	75.5	146.6	0.0	39.6	90.5	0.0	27.5	69.4	0.0	38.4	87.6	0.0	36.8	84.0	0.0	47.7	101.7	0.0	31.6	75.3	1.3	64.3	127.3	0.0	54.8	113.6	
Carterton District	0.0	41.7	105.0	0.0	41.9	105.5	0.0	24.7	73.0	0.0	36.1	97.5	6.4	109.7	213.0	0.0	88.3	178.7	0.0	90.6	183.2	0.0	34.2	92.3	0.0	51.8	123.5	0.0	57.2	130.5	
Central Hawke's Bay District	0.0	48.7	103.7	0.0	61.8	125.1	1.3	63.3	125.4	0.0	45.8	97.7	0.0	34.1	78.0	0.0	18.6	50.2	0.0	28.6	68.3	0.0	28.8	68.8	0.0	29.1	69.4	0.0	35.5	81.0	
Central Otago District	0.0	31.2	68.6	0.0	41.9	84.8	2.7	46.9	91.0	8.2	54.5	100.8	10.1	56.9	103.8	11.6	58.2	104.7	13.7	61.7	109.8	4.0	43.4	82.8	4.2	45.2	86.2	13.0	59.0	104.9	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	44.6	56.4	68.2	43.0	54.6	66.2	43.1	54.6	66.1	38.5	49.4	60.3	36.7	47.3	58.0	34.1	44.4	54.6	33.1	43.3	53.4	33.6	43.7	53.9	35.9	46.3	56.8	37.4	48.0	58.6	
Clyde District	19.8	76.5	133.2	2.6	45.3	88.0	4.5	48.8	93.1	0.0	38.6	78.1	0.8	42.2	83.5	0.0	38.8	78.5	4.7	50.3	95.9	10.6	60.3	109.9	12.7	63.8	114.8	8.8	57.9	107.0	
Dunedin City	44.3	65.0	85.8	41.8	62.1	82.4	45.5	66.5	87.4	38.4	57.9	77.3	39.0	58.5	78.1	37.2	56.5	75.7	39.3	59.0	78.8	38.5	58.1	77.8	35.4	54.5	73.6	38.9	58.7	78.5	
Far North District	39.6	73.1	106.5	38.1	70.8	103.6	34.8	65.8	96.8	33.6	63.5	93.5	35.7	65.3	94.9	44.4	75.9	107.4	45.5	77.3	109.2	45.2	76.8	108.4	37.7	67.1	96.6	37.1	66.1	95.1	
Franklin District	21.5	55.1	88.6	23.3	57.0	90.7	21.7	54.4	87.0	13.5	42.0	70.4	10.1	36.7	63.2	10.4	35.6	60.8	12.0	37.4	62.8	12.0	37.4	62.9	17.0	44.8	72.5	20.9	50.1	79.2	
Gisborne District	31.3	65.7	100.1	23.5	55.2	86.9	22.2	53.1	84.0	23.4	55.0	86.6	24.9	57.3	89.7	29.5	63.7	97.9	19.4	49.6	79.9	21.4	52.4	83.4	22.8	54.7	86.5	33.4	69.3	105.2	
Gore District	1.1	57.4	113.6	0.0	50.7	102.6	3.6	60.8	118.1	1.1	55.3	109.5	11.3	74.5	137.8	3.5	59.3	115.1	11.0	72.8	134.6	0.0	44.5	92.2	3.4	58.5	113.5	1.1	55.1	109.1	
Grey District	26.1	100.8	175.5	30.7	105.2	179.7	28.0	101.3	174.6	8.4	68.2	128.0	8.4	68.2	127.9	8.4	68.4	128.3	8.5	68.6	128.8	3.5	60.5	117.5	0.0	47.0	97.4	0.0	48.7	101.0	
Hamilton City	33.0	55.5	78.1	33.4	56.0	78.6	37.2	60.7	84.2	29.0	50.4	71.9	28.1	49.2	70.2	27.7	48.3	69.0	28.4	49.1	69.8	25.9	45.8	65.8	31.7	53.0	74.4	34.4	56.4	78.4	
Hastings District	32.9	60.2	87.5	34.2	61.8	89.3	27.2	52.3	77.5	26.2	50.8	75.4	22.0	45.1	68.2	18.1	39.6	61.1	19.4	41.3	63.2	25.5	49.6	73.7	30.9	56.5	82.1	30.3	55.9	81.4	
Hauraki District	13.7	68.4	123.1	15.6	70.6	125.5	10.9	61.8	112.7	8.6	57.1	105.6	4.5	48.8	93.1	12.4	61.9	111.4	18.6	71.6	124.6	20.9	75.7	130.6	14.4	64.9	115.4	4.4	47.9	91.3	
Horowhenua District	22.7	54.3	85.9	17.1	46.2	75.3	22.5	53.9	85.3	17.1	46.3	75.5	21.0	51.4	81.8	10.1	34.4	58.8	10.3	35.2	60.1	12.6	39.2	65.7	24.4	56.1	87.9	35.3	70.6	105.9	
Hurunui District	0.0	48.3	110.3	0.0	35.1	88.4	0.0	53.0	110.3	0.0	45.2	99.5	0.0	52.1	111.1	0.0	41.8	95.5	0.0	43.6	99.4	0.0	49.6	109.2	0.0	36.0	86.0	0.0	30.8	77.4	
Invercargill City	38.0	70.0	102.1	36.4	68.2	99.9	26.6	55.2	83.8	30.5	60.3	90.2	33.4	64.3	95.1	39.3	72.0	104.7	47.4	82.4	117.4	38.3	70.7	103.1	35.2	66.5	97.8	26.6	55.2	83.8	
Kaikoura District	0.0	71.9	194.0	0.0	57.6	170.6	0.0	62.4	168.4	0.0	40.2	119.0	0.0	39.3	116.3	0.0	29.2	99.1	0.0	14.0	61.7	0.0	55.2	148.8	0.0	108.2	247.0	0.0	107.8	246.1	
Kaipara District	4.5	49.0	93.4	10.4	58.6	106.9	10.3	58.3	106.3	18.2	70.3	122.4	13.7	62.0	110.4	7.7	51.1	94.5	13.5	61.1	108.8	28.3	84.6	141.0	30.2	87.0	143.8	17.4	67.1	116.8	
Kapiti Coast District	20.7	46.2	71.6	18.5	42.0	65.4	14.4	35.9	57.4	18.1	40.9	63.7	19.9	43.6	67.3	26.1	51.7	77.3	22.3	45.7	69.1	24.7	48.8	75.0	18.5	40.5	62.5	18.1	40.3	62.5	
Kawerau District	0.0	19.3	85.0	0.0	17.5	76.8	0.0	8.9	39.1	0.0	28.4	84.2	0.0	81.4	179.0	23.0	186.5	350.0	9.4	161.4	313.4	0.0	103.6	228.0	0.0	29.1	86.2	0.0	98.8	235.7	
Lower Hutt City	37.3	60.8	84.3	36.2	59.6	82.9	29.3	50.8	72.4	24.4	44.6	64.9	26.9	47.8	68.8	27.1	48.2	69.3	25.9	46.8	67.6	23.1	42.9	62.8	26.8	47.7	66.2	23.0	42.7	62.5	
Mackenzie District	0.0	97.4	288.3	0.0	54.2	160.4	0.0	42.8	126.8	0.0	80.9	203.8	0.0	66.5	179.3	0.0	113.9	307.2	0.0	71.7	212.2	0.0	70.1	189.0	0.0	41.2	122.1	0.0	63.1	159.0	
Manawatu District	9.2	46.1	83.0	6.0	30.5	60.5	9.1	45.7	82.2	6.1	40.1	74.1	13.4	51.6	89.8	5.8	38.4	70.9	1.8	31.1	60.3	4.4	36.0	67.6	7.2	40.8	74.3	12.8	49.4	86.0	
Manukau City	39.1	55.2	71.3	42.8	59.2	75.6	40.6	56.4	72.2	39.0	54.3	69.5	37.2	51.8	66.4	35.9	50.1	64.3	36.4	50.5	64.6	36.4	50.5	64.6	37.9	52.2	66.4	36.3	50.2	64.1	
Marlborough District	17.2	46.6	76.0	17.7	46.6	75.5	20.3	49.6	78.9	25.9	56.8	87.7	22.4	51.7	80.9	28.2	59.3	90.3	22.9	51.8	80.6	20.4	47.9	75.4	14.5	39.3	64.0	16.1	41.2	66.4	
Masterton District	5.2	42.0	78.8	9.9	49.8	89.6	3.5	38.1	72.7	18.1	62.1	106.0	23.0	68.9	114.7	26.1	72.9	119.7	12.3	51.0	89.8	10.5	47.5	84.5	7.4	42.0	76.5	1.9	32.1	62.4	
Matamata-Piako District	8.0	40.1	72.3	12.1	46.5	81.0	10.5	43.8	77.0	6.5	36.9	67.3	6.4	36.5	66.6	9.0	40.6	72.2	18.4	55.1	91.8	18.3	54.7	91.2	19.2	55.5	91.8	11.1	43.0	74.8	
Napier City	33.0	61.3	89.6	26.6	52.7	78.8	24.4	49.4	74.5	20.4	44.0	67.6	19.5	42.8	66.1	18.4	41.0	63.6	24.6	49.2	73.9	29.4	55.6	81.8	31.1	57.8	84.5	24.5	49.1	73.6	
Nelson City	5.5	27.3	49.1	6.1	27.5	48.8	6.3	28.6	50.9	8.3	32.2	56.0	14.4	41.6	68.7	13.0	39.0	65.0	10.7	34.7	58.8	7.0	29.0	51.1	11.6	36.3	60.9	15.7	42.4	69.1	
New Plymouth District	37.5	64.1	90.6	40.8	67.9	95.1	42.4	69.7	97.0	28.4	51.9	75.5	19.0	39.4	59.9	18.2	38.2	58.2	17.3	36.8	56.4	19.2	39.4	59.5	19.0	38.9	58.8	18.9	38.6	58.4	
North Shore City	31.2	46.9	62.6	26.9	41.6	56.2	29.6	44.6	59.7	29.4	44.3	59.2	33.1	48.4	63.8	29.0	43.3	57.7	29.1	43.5	57.9	25.1	38.7	52.3	23.8	37.0	50.3	23.8	37.0	50.2	
Opoitiki District	0.0	89.3	180.8	5.9	101.7	197.5	0.0	73.6	152.7	0.0	71.3	147.9	0.0	49.9	114.0	0.0	77.1	156.0	0.0	70.9	147.1	0.0	72.2	149.8	0.0	58.3	128.2	0.0	43.9	104.7	
Otorohanga District	0.0	62.3	142.2	0.0	53.1	126.7	0.0	36.2	97.6	0.0	34.0	91.7	0.0	27.9	75.3	0.0	31.6	79.6	0.0	32.9	82.8	0.0	20.0	59.2	0.0	20.4	60.5	0.0	24.2	71.7	
Palmerston North City	28.7	55.7	82.7	33.8	62.3	90.8	34.9	63.8	92.7	23.7	49.1	74.5	21.9	46.6	71.3	13.7	35.2	56.6	16.7	39.1	61.6	15.9	38.1	60.2	18.0	40.8	63.6	13.9	34.8	55.7	
Papakura District	34.5	82.6	130.6	21.9	63.0	104.2	28.8	72.0	115.2	23.5	63.5	103.5	24.6	64.6	104.7	21.3	59.3	97.4	21.3	59.5	97.6	22.5	60.8	99.1	19.4	56.0	92.6	16.3	50.8	85.3	
Porirua City	27.3	71.8	116.4	41.1	90.1	139.1	35.0	83.7	132.4	25.3	68.5	111.7	10.4	47.2	83.9	4.5	36.7	68.9	6.8	38.3	69.8	18.0	56.2	94.3	21.2	59.3	97.3	25.4	66.8	108.2	
Queenstown-Lakes District	0.0	8.1	35.6	0.0	5.2	22.8	0.0	28.9	72.8	0.0	34.0	81.2	0.0	38.3	87.4	0.0	21.3														

	1981		1982		1983		1984		1985		1986		1987		1988		1989		1990													
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL											
Ashburton District	0.0	4.8	16.4	0.0	9.7	26.1	0.0	12.0	30.3	0.0	14.2	33.9	0.0	11.6	29.1	0.0	6.8	20.2	0.0	12.3	31.0	0.0	12.2	30.6	0.0	12.1	30.4	0.0	13.8	32.9		
Auckland City	13.4	19.6	25.9	14.7	21.2	27.8	15.2	21.8	28.4	18.1	25.2	32.3	18.5	25.7	32.9	19.5	27.0	34.4	16.7	23.7	30.7	17.0	24.1	31.1	16.8	23.9	31.0	17.8	25.2	32.6		
Banks Peninsula District	0.0	9.5	41.8	0.0	10.2	44.7	0.0	10.7	47.2	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	8.2	36.1	0.0	8.0	36.0	0.0	8.0	35.0	0.0	7.7	34.1		
Buller District	0.0	24.6	66.4	0.0	23.9	64.5	0.0	6.0	26.2	0.0	11.2	38.1	0.0	16.9	50.0	0.0	29.8	75.1	0.0	35.0	83.6	0.0	28.7	72.2	0.0	33.4	79.6	0.0	39.9	91.0		
Carterton District	0.0	10.6	46.5	0.0	10.6	46.4	0.0	20.5	69.7	0.0	19.9	67.7	0.0	19.7	67.1	0.0	9.8	42.9	N/A	0.0	N/A	0.0	29.5	87.2	0.0	29.3	86.8	0.0	48.6	122.4		
Central Hawke's Bay District	0.0	29.6	74.5	0.0	29.3	73.8	0.0	23.5	63.4	0.0	5.8	25.6	0.0	24.2	65.3	0.0	29.9	75.3	0.0	29.8	75.0	0.0	11.5	39.0	0.0	24.2	65.2	0.0	36.0	86.0		
Central Otago District	0.0	14.6	43.1	0.0	19.0	51.3	0.0	19.6	52.8	0.0	19.5	52.6	0.0	24.4	61.5	0.0	31.9	72.8	0.0	26.9	64.1	0.0	30.3	69.3	0.0	17.3	46.8	0.0	29.0	66.1		
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Christchurch City	8.5	14.2	19.9	9.0	14.8	20.6	8.9	14.7	20.5	7.9	13.4	18.9	9.4	15.2	21.0	11.5	17.8	24.1	13.7	20.4	27.1	14.8	21.8	28.7	14.4	21.3	28.1	14.8	21.8	28.8		
Clutha District	0.0	7.8	26.6	0.0	4.0	17.7	0.0	8.2	28.0	0.0	11.7	34.7	0.0	16.1	43.5	0.0	15.6	42.1	0.0	20.4	51.5	0.0	19.9	50.0	0.0	19.4	48.9	0.0	15.1	40.8		
Dunedin City	5.9	15.1	24.3	6.5	15.8	25.2	6.7	16.0	25.3	8.4	18.5	28.5	8.6	18.9	29.2	8.7	19.1	29.4	9.1	19.7	30.3	8.6	19.2	29.8	10.1	21.2	32.3	9.6	20.5	31.3		
Far North District	0.0	23.7	48.0	2.7	28.7	54.7	3.7	30.1	56.5	5.5	31.4	57.3	9.9	38.1	66.3	16.1	46.6	77.0	19.3	50.7	82.1	18.6	49.0	79.4	17.9	48.3	78.8	17.4	47.1	76.8		
Franklin District	0.6	27.8	55.1	4.2	34.2	64.1	3.0	31.9	60.9	0.0	22.3	46.2	0.0	15.6	35.6	0.0	14.7	33.7	0.0	12.5	29.8	0.0	15.6	34.4	0.0	21.4	43.2	1.4	23.2	45.0		
Gisborne District	12.4	38.7	65.0	4.7	26.4	48.1	0.4	18.6	36.8	0.0	17.0	34.5	1.2	20.5	39.8	6.6	29.7	52.9	3.8	25.1	46.4	2.9	23.3	43.7	2.0	21.6	41.2	6.5	29.2	51.9		
Gore District	0.0	5.2	22.9	0.0	4.2	18.5	0.0	13.1	38.8	0.0	18.0	48.6	0.0	22.7	57.2	0.0	13.4	39.5	0.0	12.9	38.3	0.0	4.3	18.9	0.0	4.5	19.6	0.0	9.4	32.1		
Grey District	N/A	0.0	N/A	0.0	10.6	36.1	0.0	19.3	52.0	0.0	19.0	51.3	0.0	28.8	68.6	0.0	25.3	63.6	0.0	40.5	89.0	0.0	30.9	73.8	0.0	40.0	87.9	0.0	29.7	70.9		
Hamilton City	2.5	14.4	26.2	0.6	10.9	21.1	0.2	9.8	19.4	1.5	12.0	22.5	2.4	13.3	24.3	2.3	13.1	23.8	5.1	17.4	29.8	5.0	17.2	29.4	6.4	19.2	32.0	7.9	21.4	34.9		
Hastings District	3.9	19.7	35.4	5.2	21.5	37.8	6.5	23.5	40.5	5.8	22.4	38.9	6.5	23.5	40.5	5.1	21.2	37.3	7.0	24.1	41.1	11.1	30.0	48.9	13.1	32.8	52.5	9.5	27.3	45.2		
Hauraki District	0.0	37.3	82.0	0.0	36.5	80.4	0.0	26.9	64.2	0.0	9.2	31.4	0.0	18.2	49.0	0.0	26.6	63.5	3.3	56.7	110.1	0.0	46.9	94.8	0.0	45.8	92.7	0.0	19.4	48.9		
Horowhenua District	0.4	21.9	43.3	0.4	21.3	42.1	0.0	20.4	41.2	0.4	22.4	44.3	0.0	20.4	41.3	0.0	19.6	39.7	0.0	16.1	34.4	1.3	23.0	44.7	2.3	24.4	46.6	4.1	27.0	49.9		
Hurunui District	0.0	8.2	36.0	0.0	24.9	73.7	0.0	16.2	55.1	0.0	15.5	52.6	N/A	0.0	N/A	0.0	7.1	31.0	0.0	7.1	31.3	0.0	21.0	62.2	0.0	13.7	46.5	0.0	25.8	76.4		
Invercargill City	4.9	22.0	39.1	0.9	15.1	29.3	0.9	15.0	29.2	0.9	15.3	29.6	1.5	16.6	31.6	5.7	23.7	41.7	5.7	23.6	41.5	8.7	28.4	48.1	5.0	22.4	39.8	4.3	21.4	38.6		
Kaikoura District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	19.9	87.3	0.0	19.1	83.7	0.0	18.4	80.9	0.0	N/A	0.0	N/A	0.0	18.2	80.0	0.0	34.9	118.6
Kaipara District	0.0	21.9	59.1	0.0	26.1	65.7	0.0	15.1	44.6	0.0	18.0	48.6	0.0	8.3	28.3	0.0	18.8	50.6	0.0	23.5	59.2	0.0	40.1	85.5	0.0	33.5	73.7	0.0	35.4	73.4		
Kapiti Coast District	1.1	18.9	36.7	0.3	16.8	33.2	1.0	17.6	34.1	0.3	15.3	30.3	0.0	12.5	25.9	0.0	11.5	24.5	4.5	22.6	40.7	5.9	24.4	43.0	9.7	30.1	50.5	5.4	24.6	43.7		
Kawerau District	N/A	N/A	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	18.1	79.5	0.0	16.5	72.5	0.0	62.9	213.9	0.0	48.6	213.4	0.0	50.0	219.7	N/A	0.0	N/A	N/A	
Lower Hutt City	9.2	22.5	35.8	6.0	17.8	29.7	6.9	19.3	31.7	7.4	20.1	32.7	7.5	20.3	33.1	7.9	20.9	33.8	10.5	24.6	38.7	12.5	27.5	42.4	12.1	27.0	41.8	14.4	30.3	46.2		
Mackenzie District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	22.5	98.8	0.0	54.7	185.9	0.0	82.3	221.9	0.0	60.3	178.6	0.0	60.7	104.3	0.0	30.7	104.3	
Manawatu District	0.0	14.2	35.7	0.0	8.7	25.7	0.0	19.9	45.5	0.0	31.1	62.8	5.1	41.7	78.2	5.1	41.1	77.1	0.6	32.0	63.4	0.0	28.9	58.6	0.0	28.8	58.4	0.0	25.8	53.5		
Manukau City	8.1	18.3	28.5	10.6	21.5	32.3	11.0	21.7	32.5	6.8	15.8	24.9	6.1	14.8	23.6	10.1	20.2	30.4	12.1	22.7	33.3	16.0	27.5	39.0	16.2	27.6	38.9	20.5	32.7	44.9		
Marlborough District	0.0	15.5	34.1	0.0	11.2	26.7	0.0	9.4	23.6	0.0	7.1	19.2	0.0	14.7	32.3	0.0	16.0	34.2	2.3	24.7	47.1	0.4	20.4	40.3	0.4	20.2	40.1	0.4	19.7	39.0		
Masterton District	0.0	11.3	30.6	0.0	17.1	40.8	0.0	16.8	40.1	0.0	8.3	24.6	0.0	2.6	11.5	0.0	11.0	29.8	0.0	21.8	48.1	0.0	24.2	51.7	0.0	23.8	50.8	0.0	18.7	42.7		
Matamata-Piako District	0.0	23.6	50.3	0.0	10.8	29.1	0.0	10.8	29.2	0.0	13.4	33.6	0.0	13.1	33.0	0.0	12.4	31.2	0.0	14.2	33.8	0.0	11.8	29.7	0.0	17.1	39.1	0.0	21.3	45.4		
Napier City	0.0	12.7	25.6	4.2	21.1	38.0	9.3	29.0	48.7	11.6	32.3	53.0	8.4	27.4	46.4	8.2	26.7	45.3	7.4	25.4	43.3	8.6	26.8	45.0	9.4	28.2	47.0	10.8	30.1	49.4		
Nelson City	0.0	17.1	34.7	0.0	16.9	34.2	0.4	18.3	36.2	0.4	17.8	35.2	0.0	14.9	30.9	0.0	14.7	30.4	0.0	12.9	27.5	0.0	11.3	24.8	0.0	13.5	28.8	0.0	10.9	24.9		
New Plymouth District	5.2	20.2	35.2	7.7	23.9	40.1	8.2	24.7	41.1	6.4	22.0	37.5	4.6	19.1	33.5	5.2	20.0	34.8	7.6	23.6	39.6	8.1	24.2	40.3	11.1	28.3	45.6	11.5	28.7	45.9		
North Shore City	4.6	12.8	21.0	4.5	12.6	20.7	4.8	12.9	21.1	6.9	15.8	24.7	7.4	16.4	25.5	10.1	19.9	29.8	9.6	19.3	29.0	11.8	22.0	32.3	10.7	20.5	30.4	12.1	22.3	32.6		
Opoitiki District	0.0	12.1	53.3	0.0	22.5	76.5	0.0	41.4	111.8	0.0	39.6	106.7	0.0	28.2	83.6	0.0	36.0	97.0	0.0	52.2	124.5	0.0	51.2	122.1	0.0	50.9	121.4	0.0	26.1	77.4		
Otorohanga District	0.0	7.7	33.6	0.0	7.8	34.2	0.0	39.1	105.4	0.0	31.1	91.9	0.0	40.6	109.5	0.0	9.5	41.9	0.0	29.1	99.1	0.0	27.4	93.3	0.0	25.5	86.7	0.0	18.0	61.3		
Palmerston North City	4.4	19.7	35.0	4.3	19.4	34.5	1.9	15.3	28.6	1.9	15.4	28.8	3.6	18.2	32.7	5.4	21.0	36.6	6.6	22.8	38.9	8.8	26.4	43.9	6.2	22.6	39.0	10.3	28.8	47.3		
Papakura District	0.0	23.9	52.5	0.0	25.4	54.2	2.1	36.1	70.1	0.0	24.0	51.2	0.0	21.4	47.0	0.0	19.2	42.2	3.1	33.4	63.7	4.2	34.1	64.0	0.0	25.0	50.6	0.0	15.1	34.4		
Porirua City	0.6	31.9	63.2	0.6	32.4	64.1	0.0	23.0	49.1	0.0	25.5	51.5	4.0	32.8	61.5	2.9	31.4	59.8	0.5	25.2	49.9	0.0	22.4	45.4	4.0	32.2	60.4	3.9	31.8	59.6		
Queenstown-Lakes District	0.0	12.0	52.7	0.0	11.4	50.2	N/A	0.0	N/A	0.0	9.4	41.2	0.0	21.1	71.9	0.0	20.0	67.9	0.0	10.5	46.3	N/A	0.0	N/A	N/A	0.0	N/A	0.0	8.1	35.5		
Rangitikei District	0.0	26.6	63.5	0.0	20.9	52.7	0.0	16.5	44.4	0.0	22.1	55.7	0.0	22.0	55.4	0.0	26.6	63.5	0.0	17.1	46.1	0.0	21.4	53.8	0.0	17.5	47.2	0.0	21.2	53.3		
Rodney District	5.7	32.3	58.9	2.2	23.9	45.7	0.0	14.9	31.8	0.0	13.9	29.6	1.1	19.5	37.9	1.8	19.															

	1991		1992		1993		1994		1995		1996		1997		1998		1999		2000												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	0.0	16.0	36.6	0.0	19.8	42.2	0.0	17.3	38.0	0.0	16.8	37.1	0.0	18.4	39.3	0.0	22.0	44.6	3.8	30.4	57.1	6.1	34.4	62.7	2.6	28.3	53.9	0.0	22.0	44.5	
Auckland City	17.3	24.7	32.2	17.6	25.1	32.6	17.2	24.6	32.0	18.1	25.6	33.1	17.0	24.3	31.6	19.1	26.8	34.5	19.1	26.8	34.5	18.9	26.7	34.4	16.6	23.9	31.3	14.6	21.7	28.7	
Banks Peninsula District	0.0	12.9	56.8	0.0	12.6	55.3	0.0	24.6	83.5	0.0	18.3	62.2	0.0	18.0	61.3	0.0	6.5	28.5	0.0	16.5	56.1	0.0	44.3	111.5	0.0	44.6	112.2	0.0	27.5	81.3	
Buller District	0.0	45.0	99.0	0.0	33.8	80.7	0.0	22.2	59.8	0.0	22.3	60.1	0.0	22.5	60.7	0.0	34.8	83.0	0.0	35.2	84.1	0.0	47.5	104.5	0.0	40.6	92.6	0.0	40.3	91.9	
Carterton District	0.0	35.4	95.4	0.0	35.4	95.5	0.0	17.3	58.9	0.0	27.4	81.1	0.0	43.2	108.9	0.0	51.9	123.9	0.0	41.7	105.0	0.0	42.0	105.8	0.0	49.8	118.9	0.0	40.9	103.0	
Central Hawke's Bay District	0.0	49.2	108.2	0.0	52.3	111.4	0.0	45.2	99.5	0.0	38.1	87.1	0.0	39.3	89.7	0.0	39.4	89.9	0.0	32.9	78.5	0.0	21.3	57.6	0.0	25.4	64.0	0.0	24.1	60.6	
Central Otago District	0.0	29.2	66.6	0.0	28.6	65.2	0.0	24.8	59.3	0.0	11.8	35.0	0.0	18.6	46.8	0.0	14.8	39.9	0.0	33.2	70.7	0.0	36.6	75.9	0.0	35.6	73.8	0.0	27.5	60.5	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	15.4	22.5	29.5	14.1	20.8	27.6	14.7	21.5	28.3	13.9	20.5	27.2	18.1	25.5	32.8	16.1	23.1	30.1	15.7	22.6	29.5	14.9	21.6	28.3	17.3	24.4	31.5	19.3	26.6	34.0	
Clutha District	0.0	30.3	66.7	0.0	39.2	81.3	0.0	31.1	68.5	0.0	15.6	42.0	0.0	7.0	23.6	0.0	28.3	62.3	0.0	39.4	79.8	0.0	39.5	80.0	0.0	21.4	51.0	0.0	14.1	38.1	
Dunedin City	11.2	22.4	33.6	10.0	20.8	31.5	11.3	22.4	33.5	14.8	27.0	39.3	16.3	29.0	41.8	17.3	30.7	44.0	16.0	29.1	42.2	18.3	32.2	46.0	16.7	30.0	43.2	19.5	33.4	47.4	
Far North District	18.1	47.5	77.0	12.9	38.6	64.4	9.8	33.4	57.0	9.2	31.6	54.1	14.6	39.4	64.2	22.8	50.8	78.8	35.2	67.6	100.1	34.9	66.5	98.1	34.6	65.4	96.1	29.2	57.4	85.5	
Franklin District	3.3	27.1	50.8	0.0	18.0	37.2	0.4	21.9	43.3	1.4	23.5	45.7	9.1	35.2	61.2	10.0	36.1	62.2	7.6	31.5	55.3	4.8	26.9	49.1	5.5	27.5	49.6	8.3	37.2	56.1	
Gisborne District	11.3	36.7	62.2	12.2	38.0	63.8	16.2	43.7	71.3	19.3	48.1	77.0	15.0	41.9	68.7	10.0	34.3	58.7	7.2	30.0	52.8	20.4	49.9	79.3	22.7	53.4	84.0	20.7	50.5	80.4	
Gore District	0.0	13.6	40.3	0.0	13.5	40.0	0.0	8.5	28.9	0.0	26.0	62.0	0.0	38.0	81.1	0.0	41.6	86.3	0.0	25.2	62.8	0.0	12.8	37.7	0.0	13.1	38.8	0.0	22.4	56.5	
Grey District	0.0	24.7	62.2	0.0	19.4	52.2	0.0	14.7	43.5	0.0	19.6	52.8	0.0	14.1	41.8	0.0	23.4	58.8	0.0	23.5	59.1	0.0	28.6	68.3	0.0	29.4	70.1	0.0	34.3	78.3	
Hamilton City	7.8	21.1	34.4	7.2	20.2	33.2	6.7	19.3	31.9	12.5	27.3	42.2	13.7	28.8	43.9	13.2	27.8	42.4	14.6	29.7	44.7	14.2	29.1	44.0	17.3	33.3	49.3	13.7	28.4	43.2	
Hastings District	5.5	21.1	36.7	4.8	19.9	35.0	9.2	26.6	44.0	11.8	30.3	48.7	13.6	32.6	51.6	13.5	32.4	51.2	12.8	31.4	49.9	8.9	25.6	42.4	6.9	22.6	38.2	7.4	23.2	38.9	
Hauraki District	0.0	23.2	55.3	0.0	23.8	56.7	0.0	27.6	63.0	0.0	26.6	60.8	0.0	27.1	61.8	0.0	30.5	67.1	0.0	30.5	67.2	0.0	38.7	78.4	0.0	30.8	65.7	0.8	39.4	78.0	
Horowhenua District	3.1	24.7	46.4	4.9	27.9	50.8	7.0	31.5	56.0	9.1	35.0	61.0	13.3	41.3	69.3	13.2	41.0	68.9	12.4	40.4	68.3	11.6	39.8	67.9	18.7	50.5	82.3	18.1	49.0	79.9	
Hurunui District	0.0	11.7	51.4	0.0	10.6	46.5	0.0	21.7	64.2	0.0	36.0	90.6	0.0	52.6	115.6	0.0	30.6	77.1	0.0	25.0	67.4	0.0	7.3	31.9	0.0	6.9	30.5	N/A	0.0	N/A	
Invercargill City	3.5	20.1	36.6	4.9	22.1	39.2	6.3	24.3	42.3	5.6	23.2	40.8	4.3	21.3	38.4	4.9	22.1	39.3	7.8	26.7	45.7	9.2	28.7	48.1	9.0	28.2	47.3	9.1	28.2	47.3	
Kaikoura District	0.0	33.5	113.8	0.0	16.9	74.1	0.0	32.2	109.4	0.0	51.4	152.2	0.0	50.8	150.3	0.0	38.1	129.7	0.0	35.3	119.9	0.0	52.8	156.2	0.0	34.8	118.3	0.0	48.0	141.9	
Kaipara District	0.0	24.7	59.0	0.0	45.9	92.9	3.2	55.2	107.2	3.2	54.9	106.6	1.0	47.9	94.9	0.0	41.6	84.1	4.7	50.2	95.8	0.0	40.2	81.3	0.0	25.4	58.1	0.0	27.8	63.4	
Kapiti Coast District	8.0	29.0	49.9	9.7	31.6	53.4	8.7	28.4	48.0	9.7	29.0	48.4	9.6	27.6	45.6	16.5	37.4	58.2	16.7	37.2	57.7	13.5	32.4	51.2	9.3	25.9	42.5	9.1	26.4	43.6	
Kawerau District	0.0	8.5	37.4	0.0	60.2	178.1	0.0	57.9	171.3	0.0	72.9	196.6	0.0	34.5	102.2	0.0	43.3	116.8	0.0	45.6	117.6	0.0	59.2	159.7	0.0	69.4	187.3	0.0	44.1	149.9	
Lower Hutt City	15.0	31.2	47.3	12.9	28.3	43.7	7.7	21.0	34.2	7.8	21.0	34.3	10.7	25.2	39.7	10.2	24.4	38.6	7.8	21.0	34.3	9.4	23.6	37.7	12.1	27.5	42.8	16.7	33.8	50.9	
Mackenzie District	N/A	0.0	N/A	0.0	15.2	67.0	0.0	38.3	130.2	0.0	56.4	167.0	0.0	58.5	173.2	0.0	35.7	121.3	0.0	17.6	77.1	N/A	0.0	N/A	N/A	0.0	N/A	0.0	23.7	104.2	
Manawatu District	0.0	20.3	44.8	0.0	12.6	31.7	0.0	20.6	45.2	0.0	28.0	56.7	6.2	40.8	75.4	4.6	37.5	70.4	0.6	30.2	59.9	0.0	19.6	43.1	0.0	22.4	47.7	0.0	22.0	46.9	
Manukau City	19.9	31.8	43.7	18.4	29.8	41.1	14.7	25.0	35.3	15.8	26.0	36.2	18.3	28.9	39.5	19.1	29.7	40.3	19.3	29.9	40.5	20.7	31.6	42.5	22.5	33.6	44.8	26.1	37.6	49.2	
Marlborough District	4.9	27.6	50.4	8.7	33.5	58.3	2.9	23.8	44.6	1.2	19.7	38.2	1.9	20.8	39.7	9.1	32.8	56.5	6.2	28.0	49.8	1.9	20.4	38.8	0.0	9.4	21.5	0.0	7.9	18.9	
Masterton District	0.0	18.4	42.1	0.0	13.3	33.6	0.0	26.5	55.0	0.6	31.2	61.8	3.3	35.6	67.8	0.0	21.5	45.8	3.1	33.2	63.3	5.8	38.3	70.8	13.0	50.1	87.2	4.4	35.7	67.0	
Matamata-Piako District	0.0	23.2	48.0	0.0	23.9	48.4	0.0	21.9	45.3	0.5	25.6	50.8	0.0	17.1	37.6	0.0	18.3	39.0	0.0	12.2	29.1	0.0	18.4	39.1	0.0	12.2	29.0	1.6	26.9	52.3	
Napier City	7.9	25.7	43.4	5.7	22.1	38.5	3.1	17.6	32.1	5.5	21.3	37.0	6.6	22.7	38.8	14.1	33.7	53.3	9.3	26.8	44.3	11.5	30.1	48.8	7.8	24.3	40.9	13.1	32.0	50.9	
Nelson City	0.0	14.1	30.1	0.0	10.2	23.3	0.0	14.6	30.2	1.8	19.4	37.0	1.8	19.5	37.2	2.5	20.5	38.5	2.6	20.8	39.1	5.9	26.6	47.3	5.9	26.7	47.4	6.7	28.0	49.3	
New Plymouth District	17.1	36.5	55.8	16.4	35.4	54.5	16.3	35.1	54.0	13.6	31.2	48.9	11.4	28.0	44.5	10.1	26.0	41.8	12.0	28.6	45.3	15.1	33.2	51.2	14.1	31.9	49.6	9.7	25.5	41.3	
North Shore City	13.5	24.0	34.5	12.9	23.1	33.3	16.7	27.8	39.0	14.9	25.5	36.1	14.3	24.6	34.9	9.4	18.0	26.6	7.6	15.7	23.8	9.8	18.6	27.4	10.2	19.2	28.1	13.8	23.8	33.7	
Opoitiki District	0.0	25.8	76.4	0.0	7.7	34.0	0.0	7.6	33.4	0.0	15.1	51.5	0.0	22.5	66.7	0.0	48.9	116.7	0.0	83.1	172.3	0.0	67.2	147.8	0.0	56.8	129.7	0.0	32.1	86.5	
Otorohanga District	0.0	17.3	58.7	0.0	17.9	61.0	0.0	17.2	58.6	0.0	7.6	33.6	0.0	7.4	32.4	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	7.7	34.0	0.0	14.8	50.5	
Palmerston North City	7.5	24.6	41.6	12.3	31.6	50.9	6.2	22.6	39.0	4.9	20.5	36.0	2.4	16.1	29.7	6.0	21.8	37.5	9.8	27.4	45.0	16.5	36.6	56.8	15.5	35.1	54.7	15.5	35.1	54.7	
Papakura District	0.0	19.9	42.3	0.0	21.5	44.5	0.0	24.4	49.3	2.8	30.0	57.3	2.7	29.5	56.3	2.6	27.9	53.2	1.4	24.5	47.6	10.0	38.6	67.2	8.6	35.8	63.0	8.6	35.9	63.1	
Porirua City	6.6	37.6	68.5	4.8	31.9	59.0	4.9	32.7	60.5	1.5	25.1	48.7	0.0	20.3	42.1	7.1	35.7	64.3	8.4	37.8	67.3	14.5	47.3	80.0	8.6	38.9	69.2	11.5	44.4	77.3	
Queenstown-Lakes District	0.0	7.5	33.0	0.0	7.4	32.4	0.0	11.7	51.4	0.0	10.7	46.9	0.0	25.8	76.4	0.0	15.0	51.1	0.0	13.8	47.0	0.0	4.7	20.8	0.0	8.6	29.2	0.0	8.3	28.2	
Rangitikei District	0.0	36.5	80.0	0.0	35.5	78.0	0.0	39.1	83.4	0.0	24.8	59.1	0.0	28.1	64.1	0.0	24.6	58.7	0.0	33.7	74.2	0.0	42.6	88.4	0.0	46.4	94.0				

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	21.3	29.2	37.1	19.9	27.7	35.5	18.9	26.6	34.3	18.4	26.1	33.7	19.6	27.4	35.2	20.7	28.7	36.7	22.5	30.9	39.3	22.8	31.3	39.8	21.0	29.3	37.6	21.1	29.5	37.9
Bay of Plenty	10.3	21.7	33.0	10.5	21.8	33.1	9.1	19.7	30.3	8.0	18.1	28.1	11.1	22.0	32.9	11.4	22.4	33.3	13.2	24.3	35.4	13.5	24.5	35.5	14.9	26.0	37.1	16.1	27.4	38.7
Canterbury	17.5	24.5	31.4	19.4	26.7	34.0	20.4	27.8	35.2	24.5	32.4	40.3	22.4	30.0	37.6	21.1	28.5	35.9	18.0	24.9	31.8	19.5	26.6	33.7	19.9	27.1	34.3	20.0	27.2	34.3
Capital and Coast	13.1	22.4	31.8	14.3	24.0	33.6	14.3	23.9	33.5	14.6	24.3	34.0	12.3	21.4	30.5	11.3	20.1	28.9	13.4	22.8	32.2	14.0	23.6	33.3	16.5	26.8	37.0	16.1	26.3	36.6
Counties Manukau	13.4	23.0	32.6	14.2	23.9	33.5	15.5	25.3	35.1	17.1	27.2	37.3	13.3	22.3	31.2	12.9	21.6	30.3	12.0	20.5	28.9	13.8	22.7	31.6	13.2	21.9	30.6	13.7	22.3	31.0
Hawke's Bay	14.7	27.1	39.5	14.3	26.5	38.8	14.6	26.9	39.2	13.1	24.9	36.7	14.5	26.7	38.9	13.3	25.1	36.9	12.8	24.5	36.1	10.6	21.5	32.3	13.7	25.5	37.3	14.7	26.7	38.8
Hutt Valley	15.4	28.9	42.3	11.6	24.0	36.4	13.0	26.1	39.2	14.2	27.5	40.9	15.3	28.9	42.5	14.9	28.3	41.8	14.8	28.4	42.1	13.7	27.1	40.5	14.5	28.1	41.7	13.5	26.7	40.0
Lakes	3.0	17.2	31.4	5.4	21.0	36.5	5.3	20.4	35.5	11.5	29.5	47.4	16.7	36.5	56.4	15.9	35.3	54.8	11.1	28.4	45.6	7.9	23.8	39.6	12.7	30.4	48.1	16.1	34.8	53.5
MidCentral	15.4	27.2	39.0	16.5	28.6	40.8	17.1	29.3	41.6	16.6	28.7	40.7	16.1	28.0	39.9	15.7	27.5	39.2	19.4	32.1	44.8	21.5	34.7	47.8	24.3	38.1	51.9	22.1	35.4	48.7
Nelson-Marlborough	10.9	23.9	37.0	13.7	27.7	41.7	16.7	31.6	46.5	15.7	30.2	44.7	16.7	31.4	46.0	15.9	30.3	44.7	14.4	28.2	42.0	10.8	23.2	35.7	11.4	23.9	36.5	14.1	27.3	40.6
Northland	7.9	19.3	30.6	11.1	23.5	36.0	13.6	26.9	40.2	14.7	28.4	42.0	15.8	29.6	43.4	14.0	27.1	40.3	16.1	29.6	43.2	14.1	26.9	39.6	13.4	25.8	38.2	13.6	26.0	38.3
Otago	17.2	27.8	38.5	17.2	27.9	38.5	19.6	30.7	41.9	25.0	37.4	49.7	24.2	36.4	48.7	23.8	36.0	48.3	21.7	33.5	45.2	26.8	39.6	52.4	29.4	42.8	56.2	26.9	39.8	52.7
South Canterbury	18.3	40.0	61.8	10.9	29.6	48.3	14.7	35.3	55.8	17.7	39.3	61.0	18.0	40.1	62.1	12.7	32.6	52.4	7.7	25.2	42.6	10.2	28.4	46.7	12.9	32.3	51.7	18.4	39.8	61.2
Southland	10.7	24.3	37.9	12.4	26.7	41.0	14.4	29.5	44.5	14.8	29.9	45.0	14.2	29.1	44.0	15.2	30.3	45.5	15.1	30.3	45.4	15.0	30.0	45.0	12.1	26.2	40.3	11.2	24.9	38.6
Tairāwhiti	1.2	20.3	39.4	1.2	20.2	39.3	2.0	21.8	41.7	4.7	26.7	48.7	3.8	25.3	46.7	2.9	23.4	44.0	2.9	23.3	43.8	2.0	21.9	41.9	2.0	22.0	42.0	1.2	20.4	39.7
Taranaki	18.8	34.4	50.0	16.0	30.8	45.6	18.4	33.9	49.5	19.1	34.9	50.7	18.5	34.1	49.7	16.9	32.0	47.1	14.4	28.5	42.6	13.9	27.9	41.9	12.6	26.2	39.7	13.1	26.8	40.6
Waikato	14.4	22.7	31.0	17.3	26.2	35.1	20.0	29.4	38.8	22.6	32.4	42.2	21.1	30.5	40.0	20.3	29.6	38.8	17.0	25.5	34.1	18.0	26.7	35.4	17.1	25.5	34.0	18.9	27.6	36.3
Wairarapa	4.4	28.8	53.2	4.3	28.1	52.0	2.3	24.7	47.1	0.4	21.0	41.6	1.4	23.1	44.9	2.3	24.5	46.8	9.4	36.3	63.3	4.1	27.2	50.2	6.0	30.2	54.3	5.0	28.4	51.7
Waitemata	15.9	24.3	32.7	16.3	24.6	33.0	15.4	23.4	31.5	15.9	24.0	32.1	16.7	24.8	33.0	14.6	22.2	29.9	14.1	21.5	29.0	16.3	24.2	32.0	17.7	25.7	33.6	20.5	28.9	37.3
West Coast	4.3	28.6	52.9	7.7	34.9	62.0	10.1	39.1	68.0	12.5	42.8	73.1	7.7	35.0	62.2	6.6	33.0	59.4	4.5	30.0	55.5	10.2	39.4	68.6	6.8	34.0	61.3	8.1	36.4	64.8
Whanganui	10.4	27.4	44.3	7.4	23.1	38.8	7.0	22.7	38.5	8.1	24.3	40.5	10.8	28.4	46.1	11.4	29.1	46.8	9.5	26.5	43.5	6.3	21.5	36.7	8.2	24.5	40.8	11.4	29.3	47.1
New Zealand	23.0	25.6	28.1	23.4	26.0	28.5	24.4	27.0	29.5	25.9	28.6	31.2	25.7	28.3	30.9	24.8	27.3	29.9	24.0	26.5	29.1	24.6	27.1	29.7	25.3	27.8	30.4	26.0	28.6	31.2

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	19.3	27.4	35.5	21.5	30.0	38.5	21.1	29.5	38.0	21.7	30.3	38.9	21.1	29.5	38.0	21.4	29.9	38.4	21.8	30.4	39.0	20.8	29.2	37.6	20.9	29.5	38.0	21.6	30.3	39.0
Bay of Plenty	16.8	28.1	39.5	15.8	26.8	37.7	14.2	24.5	34.9	13.0	22.7	32.4	14.6	24.5	34.5	13.6	23.1	32.7	15.3	25.2	35.1	13.4	22.7	32.0	17.8	28.0	38.2	21.2	31.9	42.7
Canterbury	24.4	32.2	39.9	26.1	34.0	42.0	26.9	34.9	42.9	24.3	31.9	39.5	22.0	29.2	36.5	22.6	29.9	37.2	22.1	29.2	36.4	24.1	31.5	38.9	26.4	34.1	41.8	27.8	35.6	43.5
Capital and Coast	16.5	26.8	37.1	14.9	24.8	34.6	14.8	24.5	34.3	14.7	24.4	34.0	13.0	22.3	31.5	11.1	19.8	28.5	12.9	22.0	31.2	16.4	26.3	36.3	19.3	29.9	40.4	18.8	29.3	39.8
Counties Manukau	16.2	25.3	34.5	17.3	26.5	35.7	19.7	29.2	38.8	18.7	27.9	37.1	20.3	29.6	39.0	17.0	25.6	34.1	17.0	25.6	34.1	18.1	26.8	35.5	17.9	26.5	35.1	17.9	26.5	35.0
Hawke's Bay	16.5	29.0	41.5	14.5	26.4	38.3	15.8	28.0	40.2	15.2	27.1	39.0	16.1	28.2	40.2	16.7	28.8	41.0	13.6	24.8	36.1	14.2	25.6	37.0	15.4	27.1	38.8	16.0	27.9	39.7
Hutt Valley	10.9	23.2	35.5	9.3	21.1	32.9	8.9	20.5	32.2	16.3	30.5	44.7	19.2	34.1	49.1	18.0	32.7	47.4	17.1	31.5	45.9	17.0	31.4	45.8	15.3	29.2	43.1	11.4	23.9	36.4
Lakes	17.0	35.7	54.4	12.3	28.8	45.3	11.4	27.2	43.1	12.7	29.3	45.9	14.9	32.2	49.4	15.1	32.0	49.0	13.4	29.4	45.4	11.2	26.4	41.5	10.4	25.4	40.5	11.4	26.7	42.0
MidCentral	17.6	29.7	41.8	15.4	27.0	38.5	15.3	26.7	38.1	17.1	29.0	40.8	18.1	30.1	42.2	17.5	29.4	41.3	20.6	33.2	45.8	19.8	32.2	44.5	18.3	30.2	42.1	17.3	28.9	40.6
Nelson-Marlborough	19.0	33.6	48.2	17.3	31.2	45.1	15.6	28.8	42.0	10.7	22.1	33.6	12.0	23.9	35.7	13.1	25.1	37.2	14.0	26.2	38.4	13.2	25.0	36.8	15.6	28.0	40.4	18.7	31.7	44.8
Northland	10.8	22.1	33.4	11.5	22.9	34.2	12.0	23.3	34.7	16.3	28.7	41.1	15.1	27.0	38.9	15.3	27.1	38.8	14.4	25.8	37.3	18.8	31.3	43.8	20.9	33.8	46.7	23.0	36.3	49.6
Otago	25.7	38.3	51.0	24.2	36.4	48.7	24.8	37.1	49.5	22.6	34.4	46.3	22.1	33.8	45.6	23.5	35.5	47.4	22.5	34.4	46.2	25.4	37.8	50.2	21.9	33.6	45.2	22.4	34.1	45.9
South Canterbury	16.4	37.0	57.7	23.0	46.0	69.1	24.4	47.9	71.3	30.3	55.5	80.6	26.7	50.5	74.3	25.3	48.6	72.0	22.0	44.1	66.1	16.3	36.3	56.3	13.6	32.6	51.6	11.2	29.4	47.5
Southland	16.6	32.2	47.7	20.8	37.8	54.7	21.8	39.1	56.3	17.3	33.4	49.4	14.9	29.7	44.6	17.0	32.4	47.7	15.8	30.7	45.6	19.3	35.3	51.3	16.8	32.0	47.2	20.2	36.5	52.8
Tairāwhiti	4.7	26.7	48.7	3.8	25.1	46.4	3.8	25.3	46.7	2.9	23.7	44.4	3.9	25.6	47.3	6.7	30.2	53.8	3.8	25.3	46.8	2.1	22.2	42.3	0.0	17.6	35.6	2.1	22.5	43.0
Taranaki	14.9	29.3	43.7	19.0	34.5	50.0	21.2	37.3	53.4	20.6	36.5	52.3	15.4	29.6	43.8	13.0	26.3	39.6	13.0	26.4	39.7	17.5	32.3	47.1	20.4	36.0	51.7	22.1	38.1	54.2
Waikato	20.5	29.5	38.5	22.3	31.5	40.7	24.2	33.6	43.1	21.8	30.8	39.9	23.0	32.2	41.3	23.7	32.9	42.1	24.3	33.5	42.8	22.3	31.2	40.1	20.7	29.3	37.9	22.3	31.1	39.9
Wairarapa	14.4	43.1	71.9	19.9	51.1	82.2	16.3	45.5	74.8	14.8	42.8	70.8	10.4	35.5	60.6	12.1	37.6	63.0	9.0	32.5	56.0	7.9	30.7	53.4	6.1	27.7	49.3	6.1	27.7	49.3
Waitemata	18.4	26.4	34.4	16.1	23.5	30.9	15.5	22.6	29.8	17.1	24.4	31.8	19.6	27.2	34.9	17.2	24.4	31.5	17.4	24.6	31.7	18.1	25.3	32.5	19.9	27.4	34.9	21.0	28.7	36.3
West Coast	1.5	25.1	48.8	3.5	28																									

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	22.3	29.8	37.3	22.4	29.9	37.4	21.1	28.4	35.7	19.1	26.1	33.2	20.9	28.3	35.6	21.6	29.1	36.5	23.2	30.9	38.6	20.0	27.3	34.6	19.9	27.3	34.7	19.3	26.6	34.0
Bay of Plenty	6.8	17.4	28.0	10.9	22.9	34.9	14.2	27.1	40.0	17.4	30.9	44.4	14.6	27.0	39.5	14.4	26.8	39.2	13.1	25.0	36.8	16.1	28.6	41.1	13.9	25.4	36.9	15.1	26.8	38.4
Canterbury	19.2	26.2	33.2	19.1	26.1	33.0	20.3	27.4	34.5	21.3	28.5	35.6	23.8	31.3	38.8	23.0	30.3	37.7	23.0	30.3	37.6	21.8	28.9	36.0	20.7	27.7	34.7	20.1	26.9	33.8
Capital and Coast	15.8	25.6	35.4	16.6	26.5	36.5	10.7	19.2	27.6	11.9	20.7	29.5	12.7	21.7	30.7	16.1	26.0	35.8	14.8	24.3	33.9	15.1	24.7	34.3	14.0	23.4	32.8	13.8	23.1	32.4
Counties Manukau	17.0	27.9	38.8	15.2	25.5	35.8	14.3	24.2	34.1	14.2	23.9	33.5	15.6	25.4	35.2	19.7	30.3	41.0	19.6	30.0	40.5	17.5	27.5	37.4	17.2	26.9	36.5	15.4	24.5	33.7
Hawke's Bay	13.9	25.8	37.7	15.3	27.6	39.9	16.7	29.4	42.1	14.2	26.1	38.1	12.3	23.7	35.0	15.1	27.3	39.4	16.4	28.8	41.2	19.8	33.1	46.3	19.3	32.3	45.3	18.7	31.5	44.2
Hutt Valley	13.8	26.4	39.1	11.4	23.3	35.3	9.9	21.3	32.7	7.2	17.6	28.0	9.4	20.6	31.9	11.3	23.2	35.1	13.0	25.5	38.1	13.5	26.2	39.0	16.4	30.1	43.7	16.1	29.7	43.3
Lakes	8.1	27.7	47.4	10.6	30.5	50.5	11.8	32.0	52.2	12.5	32.9	53.2	12.8	32.8	52.8	10.3	28.7	47.1	15.1	34.8	54.5	11.7	29.9	48.2	14.2	33.3	52.4	10.4	27.4	44.4
MidCentral	16.8	28.9	41.0	18.7	31.2	43.7	19.1	31.6	44.2	18.9	31.3	43.8	18.7	31.0	43.4	19.5	32.0	44.4	19.8	32.3	44.7	17.1	28.9	40.7	16.4	28.0	39.6	17.0	28.7	40.4
Nelson-Marlborough	13.8	28.3	42.8	16.5	31.7	47.0	12.9	26.8	40.7	10.0	22.7	35.3	7.3	18.6	30.0	7.5	18.9	30.2	11.6	24.4	37.2	15.3	29.2	43.1	17.3	31.6	46.0	18.3	32.8	47.3
Northland	14.2	29.8	45.5	13.9	29.2	44.5	14.0	28.9	43.9	11.3	24.8	38.3	9.3	21.8	34.3	9.7	22.3	34.9	10.3	22.9	35.5	11.5	24.2	36.9	12.0	24.6	37.2	15.7	29.7	43.7
Otago	18.4	28.8	39.2	17.4	27.6	37.8	17.0	27.1	37.2	19.1	29.7	40.3	21.0	32.0	43.1	21.4	32.6	43.8	21.0	32.1	43.2	23.0	34.6	46.1	22.7	34.2	45.7	25.1	37.1	49.0
South Canterbury	16.5	36.8	57.1	22.5	45.0	67.5	21.8	44.2	66.6	19.5	41.0	62.5	16.5	36.7	57.0	18.9	39.6	60.3	21.8	43.6	65.5	22.5	44.6	66.7	21.2	42.9	64.6	18.9	39.7	60.5
Southland	11.0	25.0	38.9	11.5	25.6	39.7	11.0	24.9	38.8	15.9	31.6	47.2	20.1	37.1	54.1	22.7	40.4	58.2	17.9	34.1	50.3	18.7	35.0	51.3	15.5	30.7	45.8	16.3	31.7	47.0
Tairāwhiti	2.9	23.7	44.5	5.7	28.4	51.1	8.6	33.0	57.5	6.6	29.7	52.8	6.5	29.5	52.5	6.5	29.4	52.4	4.6	26.2	47.7	2.8	23.0	43.1	0.4	18.4	36.5	2.0	22.0	41.9
Taranaki	14.0	28.4	42.7	17.4	32.8	48.3	19.7	35.9	52.0	15.8	30.8	45.7	15.7	30.4	45.2	15.0	29.5	44.0	14.9	29.2	43.6	16.6	31.4	46.2	15.2	29.5	43.8	16.9	31.7	46.4
Waikato	21.5	31.9	42.4	18.8	28.6	38.5	17.3	26.6	36.0	15.7	24.6	33.4	17.6	26.9	36.1	17.0	25.9	34.8	18.0	27.1	36.2	17.1	26.0	34.8	18.9	28.0	37.1	18.6	27.6	36.6
Wairarapa	10.7	38.7	66.7	9.6	36.9	64.2	7.3	33.0	58.7	2.2	24.0	45.8	3.1	25.2	47.2	7.1	32.0	57.0	10.2	36.8	63.4	13.3	41.4	69.6	9.2	35.4	61.7	9.2	35.3	61.5
Waitemata	16.4	25.1	33.8	18.9	28.1	37.2	16.0	24.3	32.6	15.8	24.0	32.2	14.1	21.7	29.4	15.4	23.2	30.9	18.1	26.2	34.4	19.1	27.3	35.5	16.7	24.4	32.1	16.5	24.1	31.8
West Coast	0.0	21.7	44.0	7.1	35.7	64.3	9.6	40.1	70.5	13.5	46.4	79.2	8.4	37.8	67.3	11.9	43.1	74.3	7.1	35.6	64.1	2.6	28.3	53.9	0.0	18.5	39.3	0.0	16.4	36.0
Whanganui	16.2	35.4	54.7	15.6	34.7	53.8	14.8	33.5	52.2	9.7	26.4	43.0	10.4	27.3	44.3	6.8	22.2	37.7	7.4	23.0	38.5	7.3	22.7	38.1	9.6	26.1	42.5	10.2	26.8	43.3
New Zealand	25.0	27.5	30.1	25.7	28.3	31.0	24.9	27.5	30.1	24.3	26.8	29.3	24.9	27.4	29.9	25.8	28.4	31.0	26.6	29.2	31.8	26.3	28.9	31.5	25.6	28.2	30.7	25.6	28.1	30.6

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	22.3	30.3	38.3	21.0	28.8	36.6	21.2	29.0	36.8	19.0	26.4	33.7	20.3	28.0	35.6	20.8	28.5	36.2	21.5	29.4	37.3	20.2	28.0	35.7	18.5	26.0	33.5	15.3	22.2	29.0
Bay of Plenty	9.7	19.3	29.0	11.8	22.0	32.1	10.4	19.9	29.4	14.0	24.3	34.7	12.1	21.6	31.2	12.2	21.7	31.2	12.0	21.3	30.7	12.8	22.3	31.7	18.1	28.6	39.1	17.0	27.1	37.2
Canterbury	20.5	27.3	34.2	20.7	27.6	34.4	20.7	27.5	34.3	19.6	26.3	32.9	19.1	25.6	32.1	17.1	23.3	29.5	18.6	25.0	31.4	19.5	26.0	32.5	21.5	28.2	34.9	21.0	27.6	34.2
Capital and Coast	13.4	22.6	31.9	15.3	24.9	34.5	14.8	24.3	33.7	14.3	23.6	32.8	12.0	20.6	29.3	12.2	20.8	29.5	15.6	25.0	34.4	15.3	24.6	33.9	18.0	27.8	37.7	17.1	26.6	36.2
Counties Manukau	17.8	27.4	37.0	15.1	24.0	32.9	16.8	25.9	34.9	15.6	24.1	32.7	15.9	24.4	32.8	17.0	25.6	34.2	17.0	25.6	34.2	16.1	24.4	32.8	15.0	23.0	31.0	15.6	23.5	31.5
Hawke's Bay	12.9	24.0	35.1	12.4	23.2	34.0	12.6	23.3	34.1	14.5	25.8	37.1	15.4	27.0	38.5	14.7	25.9	37.2	17.1	29.0	40.8	17.6	29.5	41.4	21.5	34.2	47.0	20.4	32.9	45.5
Hutt Valley	17.6	31.7	45.8	17.1	31.0	45.0	17.7	31.7	45.8	13.4	26.1	38.8	14.2	27.0	39.9	14.5	27.3	40.2	16.6	30.1	43.7	13.4	26.0	38.5	9.1	20.2	31.3	11.4	23.3	35.2
Lakes	14.0	32.3	50.5	15.6	34.2	52.9	20.2	40.5	60.7	21.7	42.1	62.6	19.0	38.5	57.9	14.2	31.5	48.9	9.4	24.7	40.1	9.1	23.9	38.6	9.6	24.6	39.5	13.7	30.0	46.4
MidCentral	22.2	35.1	48.0	23.7	36.8	50.0	22.1	34.9	47.6	20.3	32.6	44.9	21.5	34.0	46.5	21.0	33.4	45.8	20.2	32.4	44.5	20.7	32.9	45.1	18.7	30.4	42.1	19.1	30.8	42.5
Nelson-Marlborough	13.0	25.7	38.4	14.2	27.2	40.3	12.7	25.2	37.7	17.9	31.8	45.7	16.7	30.1	43.5	15.1	27.9	40.6	14.7	27.0	39.4	15.9	28.5	41.1	17.6	30.5	43.5	18.1	31.0	44.0
Northland	13.9	27.3	40.7	14.0	27.2	40.4	11.0	22.9	34.8	16.2	29.5	42.7	16.3	29.3	42.4	15.6	28.3	41.0	13.6	25.4	37.3	13.8	25.6	37.4	15.8	27.9	40.1	13.8	25.3	36.8
Otago	22.8	34.3	45.8	22.0	33.3	44.5	18.0	28.4	38.7	17.7	27.9	38.1	17.1	27.1	37.2	17.2	27.2	37.3	19.5	30.0	40.5	20.4	31.2	41.9	23.0	34.2	45.5	23.9	35.4	46.8
South Canterbury	19.6	40.7	61.7	23.2	45.5	67.7	25.0	47.7	70.4	22.4	43.9	65.5	18.1	38.0	57.9	15.5	34.5	53.5	14.7	33.3	52.0	17.9	37.5	57.2	21.2	42.1	62.9	27.6	50.5	73.5
Southland	9.6	22.5	35.4	11.9	25.7	39.5	17.1	32.5	48.0	23.3	40.4	57.5	23.5	40.7	57.8	20.0	36.1	52.2	15.3	29.9	44.6	19.0	34.9	50.7	21.3	37.7	54.0	26.4	44.1	61.7
Tairāwhiti	4.7	26.6	48.5	2.9	23.2	43.6	2.9	23.1	43.4	8.3	32.0	55.7	11.1	36.3	61.4	21.5	51.5	81.4	14.2	41.0	67.8	17.5	46.0	74.5	4.6	26.2	47.7	2.0	22.0	41.9
Taranaki	12.2	25.4	38.5	14.3	28.0	41.7	17.7	32.3	47.0	18.9	33.8	48.7	19.6	34.7	49.8	13.8	27.1	40.5	14.3	27.7	41.2	12.2	24.9	37.6	14.9	28.4	41.9	14.2	27.3	40.4
Waikato	16.3	24.7	33.1	14.4	22.4	30.4	12.3	19.7	27.0	13.1	20.6	28.0	14.1	21.7	29.3	15.8	23.7	31.6	17.3	25.4	33.5	18.4	26.6	34.9	17.7	25.8	33.8	18.3	26.4	34.5
Wairarapa	6.0	29.9	53.7	8.8	33.8	58.9	10.6	36.2	61.8	9.7	35.0	60.3	5.5	27.6	49.7	5.5	27.5	49.5	6.2	27.9	49.7	8.8	31.7	54.6	9.6	32.9	56.3	10.5	34.3	58.0
Waitemata	15.6	23.0	30.3	18.2	26.0	33.7	17.8	25.2	32.7	16.2	23.3	30.4	16.3	23.3	30.3	14.7	21.3	27.9	15.2	21.8	28.4	15.8	22.5	29.2	17.7	24.6	31.6	19.5	26.7	33.9
West Coast	0.0	14.2	32.4	0.0	14.2																									

	1981		1982		1983		1984		1985		1986		1987		1988		1989		1990												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	0.0	24.2	50.3	3.2	34.2	65.2	3.1	33.8	64.5	20.9	62.6	104.2	11.5	47.9	84.3	11.6	48.0	84.5	0.0	25.7	49.0	0.0	25.7	52.0	0.0	20.7	44.1	0.0	25.5	51.7	
Auckland City	23.1	31.5	40.0	21.7	30.0	38.4	20.8	29.0	37.2	20.2	28.4	36.5	21.3	29.6	38.0	22.2	30.7	39.2	23.9	32.8	41.7	24.6	33.7	42.7	22.8	31.7	40.6	23.2	32.1	41.1	
Banks Peninsula District	0.0	14.5	49.5	0.0	21.7	64.2	0.0	58.8	134.2	0.0	86.8	175.7	0.0	76.5	158.6	0.0	42.8	102.0	0.0	23.7	70.0	0.0	15.9	54.1	0.0	39.2	98.8	0.0	36.3	98.0	
Buller District	0.0	42.2	92.8	0.0	48.6	103.6	0.0	54.1	112.2	0.0	56.0	116.1	0.0	56.1	116.3	0.0	45.5	100.1	0.0	39.8	90.8	0.0	41.9	95.6	0.0	47.6	104.8	1.4	71.3	141.2	
Carterton District	0.0	20.2	68.7	0.0	40.5	109.4	0.0	40.1	108.1	0.0	39.9	107.5	0.0	39.1	105.6	0.0	50.0	126.0	0.0	42.7	115.2	0.0	21.6	73.3	0.0	9.4	41.3	0.0	18.1	61.5	
Central Hawke's Bay District	0.0	10.5	35.9	0.0	20.4	55.0	0.0	20.5	55.4	0.0	21.1	56.8	0.0	16.6	49.1	0.0	38.6	88.2	0.0	43.7	96.1	0.0	55.4	114.9	0.0	44.5	98.0	0.0	49.4	105.3	
Central Otago District	0.0	32.0	73.1	0.0	39.2	83.7	0.0	43.6	90.4	5.6	60.9	116.1	5.5	59.2	112.9	7.6	61.6	115.5	9.9	65.4	120.9	7.5	60.8	114.2	3.0	51.6	100.1	0.0	39.4	81.8	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	18.8	27.3	35.8	20.7	29.5	38.3	21.4	30.2	39.1	23.3	32.4	41.5	22.2	31.1	40.0	21.4	30.2	39.0	19.8	28.3	36.8	21.4	30.2	38.9	21.7	30.5	39.3	21.3	30.0	38.8	
Clutha District	0.0	30.7	65.4	0.0	28.4	62.4	0.0	26.4	60.3	0.0	37.2	77.1	0.0	33.5	71.5	0.0	34.8	72.2	0.0	31.3	66.7	6.5	52.4	98.2	6.6	53.4	100.3	2.7	45.7	88.6	
Dunedin City	15.5	29.1	42.7	15.7	29.4	43.1	17.8	32.2	46.5	21.8	37.4	53.1	19.5	34.5	49.4	20.5	35.9	51.2	15.6	29.4	43.2	20.2	35.4	50.7	22.8	38.9	55.1	23.8	40.2	56.7	
Far North District	1.3	21.5	41.7	2.1	22.8	43.5	3.0	23.9	44.9	4.7	26.6	48.5	16.4	44.4	72.4	16.2	43.9	71.7	19.8	48.5	77.1	11.4	35.5	59.7	9.2	31.6	53.9	8.1	29.2	50.4	
Franklin District	0.0	20.5	42.5	0.0	19.9	41.3	0.0	19.6	40.6	0.0	19.4	40.1	0.5	22.7	44.9	0.4	21.8	43.1	1.4	23.6	45.8	1.4	23.5	45.6	0.4	21.6	42.7	0.0	16.9	35.0	
Gisborne District	1.2	20.0	38.9	1.2	20.2	39.1	2.0	21.7	41.4	5.6	28.0	50.5	4.7	26.7	48.6	3.8	25.3	46.8	3.9	25.5	47.2	3.8	25.4	46.9	4.8	27.0	49.3	2.9	23.8	44.6	
Gore District	0.0	30.7	70.0	0.0	21.7	54.7	0.0	18.1	48.8	0.0	19.1	51.5	0.0	38.5	84.6	0.0	42.4	90.5	0.0	52.8	106.8	0.0	42.3	90.2	0.0	52.3	105.8	0.0	42.2	89.9	
Grey District	0.0	33.8	74.4	0.0	37.7	82.9	0.0	42.0	89.5	0.0	41.5	88.4	0.0	36.5	80.4	0.0	36.1	79.5	0.0	32.5	74.1	1.1	56.5	112.0	0.0	47.6	98.0	0.0	47.9	99.3	
Hamilton City	11.3	27.6	43.8	11.2	27.3	43.5	17.7	36.3	54.9	23.5	44.1	64.6	22.8	43.1	63.4	18.2	36.8	55.4	12.7	29.1	45.6	10.2	25.5	40.9	9.7	24.8	40.0	12.5	28.7	44.9	
Hastings District	9.7	29.2	48.6	12.9	33.8	54.8	12.9	33.8	54.8	12.0	32.4	52.8	10.4	30.1	49.8	6.8	24.5	42.2	6.7	24.4	42.0	4.6	20.9	37.1	9.5	28.4	47.3	8.1	26.3	44.5	
Hauraki District	0.0	37.9	80.8	0.0	37.9	80.8	0.0	33.6	74.0	0.0	34.2	75.2	0.0	30.6	69.9	0.0	26.0	62.1	0.0	8.8	30.0	0.0	20.3	51.2	0.0	35.7	76.2	0.0	35.0	74.7	
Horowhenua District	13.9	47.4	81.0	11.4	44.0	76.6	14.8	48.3	81.7	3.5	28.7	53.8	2.4	26.2	49.9	3.5	28.6	53.7	9.2	38.1	67.1	10.7	41.2	71.8	13.0	44.6	76.2	9.0	37.3	65.5	
Hurunui District	0.0	15.7	53.3	0.0	22.1	65.3	0.0	14.7	50.0	0.0	26.9	72.6	0.0	20.3	60.2	0.0	33.4	84.2	0.0	20.8	61.7	0.0	28.4	76.7	0.0	28.3	76.3	0.0	27.8	74.9	
Invercargill City	12.4	34.7	56.9	16.0	39.9	63.9	21.5	47.8	74.1	19.6	45.1	70.7	16.2	40.5	64.7	17.9	42.8	67.7	21.6	48.1	74.6	24.3	51.6	79.0	17.1	41.9	66.7	13.6	36.7	59.9	
Kaikoura District	0.0	53.8	159.3	0.0	71.5	192.9	0.0	51.3	151.8	0.0	35.1	119.3	0.0	15.3	67.3	N/A	0.0	N/A	0.0	14.5	63.5	0.0	14.2	62.5	0.0	14.2	62.6	0.0	29.8	101.2	
Kaipara District	0.0	27.3	62.2	2.9	49.7	96.6	2.9	50.1	97.4	2.9	49.4	96.0	0.0	40.8	84.6	0.0	40.0	81.7	2.9	49.9	96.8	0.0	39.9	80.7	0.0	32.2	68.6	0.0	31.6	67.3	
Kapiti Coast District	2.5	26.8	51.2	0.0	29.7	41.8	9.7	37.3	64.8	12.6	39.2	65.7	12.4	38.7	64.9	4.2	24.0	43.7	6.3	28.6	50.8	12.3	36.7	61.1	15.6	43.6	71.6	18.1	46.4	74.6	
Kawerau District	0.0	85.0	251.7	0.0	70.1	234.2	0.0	64.6	219.8	N/A	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	8.5	37.4	0.0	8.6	37.6	0.0	8.6	37.8	
Lower Hutt City	19.6	37.0	54.4	13.4	28.9	44.4	16.7	33.5	50.3	13.6	29.3	45.1	15.6	32.0	48.4	15.2	31.4	47.7	17.6	34.9	52.1	15.6	32.4	49.2	13.5	29.5	45.6	10.3	25.2	40.0	
Mackenzie District	0.0	65.0	221.0	0.0	56.7	192.9	0.0	11.1	49.0	0.0	26.1	88.8	0.0	27.3	92.7	0.0	13.0	57.3	0.0	14.7	64.7	0.0	32.7	111.1	0.0	46.8	138.5	0.0	31.0	105.3	
Manawatu District	0.6	32.2	63.8	0.6	31.6	62.5	0.0	29.6	59.8	0.0	29.4	59.4	0.0	27.2	56.5	0.6	32.4	64.1	2.0	34.2	66.3	2.0	33.5	65.0	0.0	25.7	53.2	0.0	27.9	56.4	
Manukau City	11.3	22.0	32.7	14.7	26.3	37.9	14.7	26.1	37.5	16.4	28.1	39.9	11.7	21.8	31.9	12.8	23.1	33.4	11.3	21.2	31.1	13.7	24.2	34.8	13.4	23.7	34.1	14.9	25.5	36.0	
Marlborough District	4.8	31.6	58.4	10.6	41.0	71.4	20.3	55.0	89.6	17.6	50.8	84.0	18.6	51.9	85.1	11.1	40.3	69.4	15.6	46.5	77.5	10.6	38.4	66.2	12.6	41.0	69.4	13.2	41.1	69.1	
Masterton District	0.0	30.7	63.7	0.0	27.5	58.6	0.0	28.1	60.0	0.0	21.7	49.4	0.0	27.4	58.3	0.0	20.9	47.7	3.9	41.6	79.4	0.0	32.4	65.7	2.2	37.5	72.8	0.0	28.4	58.8	
Matamata-Piako District	3.1	33.8	64.5	3.2	34.0	64.8	3.1	33.8	64.5	3.1	33.5	64.0	3.1	32.9	62.8	1.8	30.4	59.0	5.6	36.9	68.3	11.0	45.7	80.4	15.4	52.5	89.7	13.8	50.1	86.4	
Napier City	15.4	39.4	63.5	9.2	29.9	50.7	6.0	25.0	44.1	6.0	24.8	43.6	12.3	34.3	56.4	13.0	35.0	57.1	9.7	30.1	50.5	3.6	20.6	37.6	5.0	22.7	40.3	7.1	25.6	44.1	
Nelson City	3.1	25.1	47.2	6.1	30.4	54.7	9.2	35.4	61.6	5.1	28.9	52.7	12.1	39.5	66.9	13.4	41.7	70.1	10.1	36.7	63.3	2.1	23.1	44.0	2.9	23.5	44.1	3.9	25.7	47.4	
New Plymouth District	18.0	39.4	60.8	16.4	37.2	57.9	18.9	40.7	62.6	19.1	41.3	63.5	17.5	38.9	60.3	16.6	37.6	58.6	14.1	33.8	53.5	12.8	32.1	51.3	10.7	28.9	47.2	12.0	30.8	49.7	
North Shore City	16.9	29.9	42.9	15.2	27.7	40.1	14.2	26.1	38.1	14.7	26.7	38.7	15.6	27.8	40.0	10.9	21.6	32.3	10.8	21.4	32.0	12.6	23.6	34.7	15.4	27.3	39.2	20.2	33.3	46.4	
Opotiki District	0.0	16.0	54.6	0.0	15.2	51.8	0.0	15.9	54.0	0.0	9.0	39.6	0.0	7.9	34.9	0.0	17.8	60.5	0.0	26.3	77.7	0.0	26.0	77.0	0.0	16.5	56.1	0.0	22.0	65.1	
Otorohanga District	0.0	27.4	81.1	0.0	43.6	109.8	0.0	41.5	104.6	0.0	41.6	104.7	0.0	49.7	118.5	0.0	33.2	89.5	0.0	24.5	72.6	N/A	0.0	N/A	0.0	8.6	37.8	0.0	15.0	50.9	
Palmerston North City	4.9	22.4	39.8	8.6	28.0	47.5	7.8	26.7	45.6	11.6	32.4	53.2	11.6	32.4	53.2	9.2	28.8	48.3	14.7	36.7	58.6	16.2	38.7	61.2	21.9	46.6	71.3	17.7	40.7	63.7	
Papakura District	0.0	29.5	61.2	0.0	16.5	39.4	0.0	23.5	50.1	0.0	26.1	54.0	0.6	31.7	62.7	0.0	20.8	45.8	0.0	23.1	49.2	0.0	18.5	40.7	1.7	29.2	56.6	5.5	36.1	66.7	
Porirua City	2.9	30.9	58.9	2.9	31.5	60.0	0.0	16.1	34.2	0.0	20.9	43.4	0.0	20.6	43.9	0.0	22.7	47.1	0.5	25.0	49.4	1.4	24.2	47.0	3.8	30.9	58.0	0.0	21.4	44.3	
Queenstown-Lakes District	N/A	0.0	N/A	0.0	35.1	103.8	0.0	41.6	112.3	0.0	38.2	103.0	0.0	8.4	37.0	N/A	0.0	N/A	N/A	0.0	N/A	0.0	20.1	59.6	0.0	32.1	80.8	0.0	37.3	89.1	
Rangitikei District	0.0	33.8	72.1	0.0	30.8	67.8	0.0	38.1	79.1	0.0	38.6	80.0	0.9	45.6	90.4	0.0	34.2	72.9	2.9	50.3	97.7	7.1	57.7	108.3	9.3						

	1991		1992		1993		1994		1995		1996		1997		1998		1999		2000												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	8.2	40.9	73.6	8.2	41.1	74.0	13.7	49.7	85.6	10.9	45.3	79.7	12.2	47.0	81.7	9.1	41.1	73.2	5.2	34.1	63.1	2.8	30.1	57.5	4.0	32.3	60.6	7.8	38.8	69.9	
Auckland City	20.9	29.6	38.2	22.9	31.8	40.8	22.0	30.9	39.8	22.6	31.6	40.5	22.3	31.1	40.0	22.5	31.4	40.3	23.0	31.9	40.9	21.5	30.1	38.8	21.6	30.3	39.0	21.9	30.7	39.5	
Banks Peninsula District	0.0	46.1	116.0	0.0	38.8	104.7	0.0	32.1	86.7	0.0	36.5	92.0	0.0	21.2	62.7	0.0	21.0	62.2	0.0	22.1	65.4	0.0	38.4	96.7	0.0	37.9	95.4	0.0	50.1	114.3	
Buller District	0.0	60.3	125.0	0.0	57.9	120.0	0.0	38.4	87.6	0.0	42.5	93.5	0.0	32.5	77.6	0.0	22.3	60.3	0.0	21.6	58.3	0.0	31.9	76.0	0.0	54.2	112.4	0.0	48.9	104.3	
Carterton District	0.0	48.8	123.0	0.0	48.2	121.3	0.0	47.3	119.0	0.0	36.9	99.4	0.0	45.0	113.2	0.0	27.5	81.3	0.0	16.2	55.0	0.0	34.3	92.6	0.0	33.0	89.1	0.0	39.4	99.2	
Central Hawke's Bay District	0.0	26.9	67.7	0.0	21.5	58.0	0.0	16.8	49.8	0.0	32.1	76.5	0.0	26.8	67.4	0.0	24.7	62.3	0.0	14.8	43.8	0.0	24.6	61.9	0.0	30.3	72.4	0.0	30.2	72.1	
Central Otago District	0.0	43.6	88.1	0.0	43.0	87.0	0.0	26.8	61.2	0.0	14.3	38.6	0.0	20.8	49.7	0.0	38.1	77.1	2.5	43.4	84.2	2.6	43.7	84.8	0.0	37.0	74.9	0.0	37.7	76.4	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	25.1	34.4	43.8	27.6	37.2	46.9	28.1	37.8	47.5	25.3	34.5	43.8	23.6	32.5	41.5	24.4	33.4	42.5	24.6	33.7	42.7	25.7	34.9	44.1	27.8	37.3	46.8	28.7	38.4	48.0	
Clutha District	0.0	24.7	56.4	0.0	29.1	64.1	0.0	34.6	73.8	0.0	37.4	77.5	0.0	26.6	60.8	0.0	25.0	57.2	0.0	21.9	52.3	0.0	28.3	62.3	0.0	20.6	49.2	0.0	23.8	54.4	
Dunedin City	22.6	38.8	55.0	20.6	36.1	51.7	19.8	35.2	50.7	19.8	35.2	50.6	21.2	37.0	52.9	24.6	41.3	58.1	24.3	41.1	57.9	22.4	38.7	54.9	20.0	35.6	51.2	19.6	35.1	50.7	
Far North District	3.9	22.2	40.5	4.5	22.4	40.4	7.7	27.8	47.9	12.1	33.8	55.5	11.0	31.8	52.5	9.6	28.6	47.6	8.8	27.5	46.3	9.5	28.5	47.4	8.7	27.0	45.3	10.8	30.2	49.6	
Franklin District	1.2	21.0	40.8	2.1	22.5	42.9	4.0	26.2	48.5	1.3	21.5	41.7	2.9	23.6	44.3	2.8	22.7	42.6	5.3	26.6	47.8	6.0	27.1	48.2	6.8	28.2	49.6	5.9	26.5	47.1	
Gisborne District	6.7	30.4	54.0	5.7	28.5	51.4	7.6	31.5	55.4	5.6	28.1	50.5	6.4	29.1	51.7	7.4	30.6	53.9	4.7	26.5	48.3	2.9	23.7	44.5	1.2	20.8	40.3	4.8	27.1	49.4	
Gore District	0.0	51.7	104.6	3.6	62.3	121.0	3.6	61.8	120.0	1.1	56.9	112.8	0.0	48.7	101.0	6.2	66.4	126.6	3.7	62.6	121.5	0.0	53.9	109.1	0.0	30.3	72.2	0.0	39.9	87.7	
Grey District	0.0	27.3	65.1	0.0	32.4	73.9	0.0	32.0	73.2	0.0	13.4	39.6	0.0	27.9	66.5	0.0	33.5	76.6	0.0	47.5	98.5	0.0	38.9	85.5	0.0	38.6	84.9	0.0	38.7	85.2	
Hamilton City	21.8	41.2	60.5	22.1	41.5	60.9	22.6	42.0	61.4	16.0	33.1	50.2	19.2	37.3	55.4	19.3	37.1	55.0	21.0	39.3	57.6	18.5	36.0	53.4	15.2	31.5	47.8	14.7	30.9	47.0	
Hastings District	11.7	31.6	51.5	11.5	31.0	50.5	15.7	36.9	58.1	14.9	35.6	56.3	16.1	37.1	58.2	12.3	31.5	50.8	9.5	27.3	45.1	7.5	24.3	41.2	9.4	27.1	44.8	7.4	24.0	40.6	
Hauraki District	0.0	30.5	67.0	0.0	15.1	40.8	0.0	25.9	59.0	0.0	25.4	57.9	0.0	10.8	31.9	0.0	28.0	61.7	0.0	35.2	73.0	2.6	45.1	87.6	0.0	38.6	78.1	0.0	38.6	78.1	
Horowhenua District	5.1	29.1	53.1	5.0	28.6	52.1	6.0	30.2	54.3	9.3	36.0	62.7	13.1	42.6	72.1	17.3	49.9	82.5	19.5	52.7	85.9	11.6	39.6	67.7	10.2	36.9	63.6	11.2	38.2	65.3	
Hurunui District	0.0	26.0	70.3	0.0	29.7	74.8	0.0	29.0	73.0	0.0	34.1	81.3	0.0	17.1	50.6	0.0	30.0	75.7	0.0	18.0	53.2	0.0	17.3	51.3	0.0	21.7	58.5	0.0	21.4	57.8	
Invercargill City	24.4	51.9	79.4	28.3	57.3	86.3	29.2	58.6	87.9	18.0	43.2	68.3	15.2	39.0	62.8	16.2	40.6	65.0	14.5	38.1	61.8	14.5	38.2	61.9	12.9	35.9	58.9	18.2	43.7	69.1	
Kaikoura District	0.0	29.4	99.8	0.0	56.2	151.6	0.0	27.2	92.6	0.0	52.6	141.8	0.0	25.4	86.5	0.0	24.7	83.9	0.0	28.1	95.5	0.0	59.8	161.3	0.0	69.9	175.9	0.0	58.3	157.2	
Kaipara District	0.0	38.6	78.1	0.0	35.0	72.5	0.0	37.9	76.6	0.0	33.5	69.4	6.1	49.2	92.3	2.5	42.2	81.9	0.0	35.1	70.9	4.2	44.9	85.6	7.8	51.3	94.8	7.8	51.4	95.0	
Kapiti Coast District	18.9	48.5	78.1	20.0	47.8	75.6	11.7	34.9	58.2	10.8	32.2	53.7	7.5	25.8	44.1	10.4	29.9	49.4	13.3	34.1	54.9	17.4	40.8	64.1	14.8	37.0	59.3	12.0	32.6	53.1	
Kawerau District	0.0	17.9	60.8	0.0	27.0	79.8	0.0	27.4	81.0	0.0	19.5	66.4	0.0	39.2	105.6	0.0	56.1	133.9	0.0	57.1	136.2	0.0	28.8	85.1	0.0	19.3	65.6	0.0	9.9	43.5	
Lower Hutt City	7.7	21.4	35.2	8.3	22.4	36.5	8.3	22.3	36.4	15.6	32.7	49.8	18.4	36.4	54.5	16.7	34.2	51.7	13.3	29.7	46.1	14.5	31.3	48.0	14.0	30.7	47.4	12.9	29.3	45.7	
Mackenzie District	0.0	32.0	108.9	0.0	29.8	101.2	0.0	45.6	134.9	0.0	141.6	356.6	0.0	154.4	388.9	0.0	128.1	345.6	0.0	60.2	178.2	0.0	33.7	114.6	0.0	29.1	99.0	0.0	38.9	132.1	
Manawatu District	0.6	30.1	59.5	4.6	37.2	69.8	6.0	39.8	73.5	3.2	34.5	65.7	5.9	38.7	71.6	0.6	28.8	57.0	5.8	38.2	70.6	0.6	28.6	56.6	3.1	33.3	63.5	1.8	30.6	59.5	
Manukau City	16.6	27.5	38.4	17.2	28.0	38.9	19.7	30.9	42.2	18.7	29.5	40.4	20.3	31.3	42.4	16.4	26.3	36.2	15.8	25.5	35.3	16.6	26.4	36.2	16.5	26.4	36.3	17.2	27.2	37.1	
Marlborough District	19.8	50.8	81.8	17.3	46.7	76.2	14.6	42.1	69.6	5.4	27.0	48.5	9.1	32.9	56.7	9.8	33.6	57.3	14.5	40.4	66.4	12.0	35.8	59.7	11.0	34.2	57.4	14.2	38.4	62.6	
Masteron District	6.8	45.2	83.6	15.4	59.5	103.5	11.8	53.2	94.6	10.0	50.0	90.0	6.6	43.7	80.7	6.4	42.4	78.4	2.0	34.1	66.2	0.0	21.4	47.1	0.0	21.1	46.5	0.0	17.6	40.3	
Matamata-Piako District	6.8	38.4	70.0	8.1	40.4	72.7	10.7	44.3	77.8	13.3	48.2	83.0	14.5	49.7	84.9	14.6	50.1	85.5	13.3	48.1	82.9	5.3	34.8	64.3	0.0	21.2	44.0	0.0	18.5	39.5	
Napier City	10.3	30.7	51.2	10.3	30.7	51.1	10.9	31.3	51.8	10.5	30.2	50.0	10.2	29.5	48.9	15.0	36.7	58.3	10.4	29.9	49.5	11.1	31.0	51.0	9.3	27.7	46.2	11.5	31.0	50.6	
Nelson City	10.0	36.2	62.4	13.0	40.5	68.0	15.6	43.4	71.3	11.4	37.1	62.8	6.5	29.2	51.9	5.5	27.4	49.3	6.3	28.3	50.3	5.4	27.0	48.6	6.4	29.1	51.7	5.4	27.1	48.7	
New Plymouth District	17.0	37.8	58.7	23.5	46.6	69.6	26.2	49.9	73.6	21.5	43.4	65.4	15.6	35.2	54.9	11.8	29.4	47.0	10.5	27.5	44.5	13.8	32.0	50.8	12.8	31.3	49.7	18.1	38.4	58.8	
North Shore City	20.7	33.9	47.1	17.8	30.1	42.3	14.0	25.2	36.5	14.9	26.3	37.7	14.7	26.0	37.2	13.8	24.7	35.6	13.3	24.1	34.8	16.2	27.6	39.1	17.1	28.7	40.4	18.6	30.5	42.4	
Opotiki District	0.0	31.8	85.8	0.0	55.1	125.8	0.0	54.5	124.5	0.0	36.6	92.2	0.0	21.2	62.9	0.0	15.8	53.6	0.0	22.8	67.3	0.0	15.6	52.9	0.0	21.4	63.4	0.0	33.6	84.7	
Otorohanga District	0.0	14.7	50.0	0.0	15.0	51.1	0.0	14.7	50.1	0.0	23.1	68.5	0.0	14.8	50.4	0.0	21.2	62.9	0.0	48.4	110.5	0.0	49.3	112.5	0.0	36.7	92.5	N/A	0.0	N/A	
Palmerston North City	11.3	31.7	52.0	7.5	25.6	43.7	6.9	24.9	43.0	12.1	32.6	53.2	11.3	31.6	51.9	9.0	28.1	47.2	9.0	27.9	46.9	13.4	34.3	55.2	11.8	31.9	52.0	8.8	27.5	46.1	
Papakura District	5.4	35.9	66.4	1.7	29.6	57.4	0.0	21.9	45.3	0.5	26.1	51.6	4.9	32.2	59.6	6.1	34.6	63.1	4.8	32.1	59.3	3.7	30.3	56.9	6.0	34.0	62.1	6.0	34.2	62.4	
Porirua City	0.6	30.2	59.8	0.0	19.9	43.8	0.0	23.6	48.8	0.0	16.2	35.6	2.8	30.4	58.0	1.6	27.9	54.3	1.7	28.3	54.9	0.0	18.5	38.3	0.4	22.4	44.3	1.4	23.4	45.4	
Queenstown-Lakes District	0.0	18.4	54.4	0.0	35.8	85.5	0.0	38.7	88.3	0.0	48.1	102.6	0.0	20.2	54.5	0.0	10.3	35.0	0.0	4.4	19.1	0.0	17.6	47.4	0.0	34.7	76.3	0.0	38.1	81.1	
Rangitikei District	0.0	27.1	61.9	0.0	15.5	41.8	0.0	28.1	64.2	1.0	47.9	94.8	9.7	64.2	118.8	7.3	59.5														

	1981		1982		1983		1984		1985		1986		1987		1988		1989		1990													
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL											
Ashburton District	1.9	32.5	63.1	1.9	31.9	61.9	1.9	31.7	61.6	1.9	31.9	5.9	39.2	72.4	8.6	42.8	77.1	9.8	44.3	78.9	8.4	42.0	75.5	8.1	40.5	73.0	6.6	37.3	67.9			
Auckland City	25.6	33.9	42.1	25.2	33.4	41.5	23.8	31.7	39.7	21.0	28.7	36.3	23.2	31.2	39.2	24.5	32.7	40.9	26.1	34.6	43.1	22.3	30.3	38.3	21.9	30.0	38.0	21.6	29.6	37.7		
Banks Peninsula District	0.0	38.7	104.5	0.0	59.0	140.8	0.0	59.4	141.7	0.0	42.5	114.7	0.0	42.0	113.2	0.0	31.2	92.2	0.0	21.3	72.3	0.0	7.5	33.1	0.0	7.7	33.7	0.0	7.8	34.3		
Butler District	0.0	26.7	67.3	0.0	35.5	84.6	0.0	35.2	84.0	0.0	35.2	84.0	0.0	28.1	70.8	0.0	30.3	76.3	0.0	32.4	81.6	0.0	14.2	48.4	0.0	17.8	52.7	0.0	32.9	78.5		
Carterton District	0.0	91.1	194.2	0.0	61.0	145.5	0.0	60.9	145.2	0.0	29.4	86.9	0.0	18.5	63.1	0.0	38.3	103.4	0.0	59.0	140.8	0.0	58.1	138.6	0.0	19.8	67.3	0.0	10.4	45.7		
Central Hawke's Bay District	0.0	56.4	120.2	0.0	68.8	139.2	0.0	56.3	120.0	0.0	30.2	75.9	0.0	17.3	51.1	0.0	40.0	91.2	0.0	52.5	111.8	0.0	53.1	113.2	0.0	40.6	92.7	0.0	16.3	48.4		
Central Otago District	0.0	25.1	63.1	0.0	19.5	52.6	0.0	18.0	48.5	0.0	31.3	71.4	0.0	26.4	63.0	0.0	17.5	47.3	0.0	17.7	47.8	0.0	22.1	55.5	0.0	30.9	70.7	0.0	30.4	69.4		
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Christchurch City	19.4	27.4	35.4	19.4	27.5	35.5	21.0	29.3	37.5	23.0	31.5	40.1	25.7	34.6	43.6	24.8	33.5	42.3	23.8	32.4	40.9	22.1	30.4	38.7	21.1	29.2	37.3	21.8	30.0	38.2		
Clutha District	7.4	60.0	112.5	5.1	55.2	105.2	0.9	45.1	89.2	2.8	48.2	93.6	0.0	37.3	77.3	0.0	39.0	80.8	0.0	30.0	65.9	2.9	48.9	94.9	0.9	45.3	89.7	0.9	45.3	89.6		
Dunedin City	15.3	27.9	40.4	14.1	26.3	38.4	13.5	25.3	37.1	13.4	25.3	37.3	17.5	30.7	44.0	17.9	31.4	44.9	18.7	32.5	46.3	17.8	31.4	44.9	17.7	31.2	44.6	19.7	33.7	47.7		
Far North District	8.6	38.9	69.2	6.2	35.3	64.3	5.9	33.4	61.0	3.3	26.8	50.2	0.4	21.1	41.8	8.8	36.4	64.0	8.7	36.3	63.8	13.4	41.6	69.8	5.6	27.8	50.1	8.7	33.4	58.2		
Franklin District	0.0	22.6	46.9	0.0	23.0	47.7	0.5	27.1	53.6	0.5	26.7	52.9	2.8	30.3	57.9	13.0	47.1	81.1	15.3	49.9	84.4	12.7	46.0	79.3	7.5	37.4	67.3	6.1	34.3	62.5		
Gisborne District	4.7	26.3	48.0	7.5	31.3	55.1	11.6	37.7	63.9	9.7	35.0	60.3	9.6	34.6	59.7	10.6	36.2	61.9	7.5	31.0	54.5	4.7	26.5	48.3	0.4	18.5	36.7	2.0	21.6	41.3		
Gore District	0.0	18.8	50.8	0.0	14.3	42.3	0.0	18.3	49.4	0.0	13.5	40.0	0.0	17.6	47.4	0.0	50.7	102.6	5.9	64.1	122.3	5.9	63.9	121.8	0.0	44.8	92.9	0.0	37.2	81.9		
Grey District	0.0	13.4	39.6	0.0	32.5	74.3	1.1	56.9	112.6	3.7	62.5	121.4	3.6	61.7	119.8	1.1	56.9	112.6	0.0	42.7	91.0	0.0	29.4	70.1	0.0	20.0	53.9	0.0	14.9	44.2		
Hamilton City	19.2	38.5	57.7	18.5	37.4	56.3	13.8	30.7	47.6	11.3	27.0	42.7	11.7	27.4	43.1	13.2	29.3	45.5	16.9	34.2	51.5	16.2	33.2	50.2	16.5	33.4	50.3	15.2	31.6	47.9		
Hastings District	13.8	34.4	55.0	9.3	27.8	46.3	10.0	28.8	47.6	6.4	23.3	40.2	9.9	28.6	47.3	12.1	31.7	51.4	15.6	36.7	57.7	21.5	44.6	67.7	20.5	43.2	65.8	19.6	41.7	63.8		
Hauraki District	0.0	26.7	63.8	0.0	36.2	79.6	1.1	53.8	106.6	0.0	40.2	85.7	0.0	35.7	78.6	0.0	18.2	49.0	0.0	22.2	56.0	0.0	30.6	69.9	0.0	38.6	82.3	0.0	41.2	85.5		
Horowhenua District	4.3	28.5	52.7	5.4	30.6	55.9	4.4	28.9	53.5	6.4	32.0	57.6	2.3	25.2	48.0	2.4	25.6	48.8	1.4	23.5	45.6	6.7	33.3	60.0	9.9	38.1	66.3	7.6	34.5	61.4		
Hurunui District	0.0	63.3	151.0	0.0	69.4	158.4	0.0	62.2	148.5	0.0	38.6	104.2	0.0	8.8	38.7	0.0	7.2	31.5	0.0	7.0	30.9	0.0	6.8	30.1	N/A	0.0	N/A	0.0	N/A	0.0		
Invercargill City	11.8	32.8	53.9	12.6	34.0	55.5	13.3	34.9	56.5	25.9	52.5	79.1	33.0	61.8	90.6	33.2	62.2	91.1	20.0	44.5	68.9	19.9	44.4	68.8	17.5	41.1	64.7	21.9	47.2	72.6		
Kaikoura District	N/A	0.0	N/A	0.0	N/A	0.0	20.6	90.6	0.0	20.8	91.4	0.0	21.0	92.2	N/A	0.0	N/A	0.0	20.1	88.2	0.0	19.1	83.9	0.0	18.2	80.0	0.0	18.2	80.0	N/A	0.0	N/A
Kaipara District	0.0	31.7	75.5	0.0	21.1	56.8	0.0	46.1	98.3	0.0	44.8	95.5	1.1	56.9	112.6	0.0	34.4	75.7	0.0	40.4	83.9	0.0	40.6	84.2	0.0	43.4	87.8	0.0	25.2	60.1		
Kapiti Coast District	13.5	43.9	74.2	9.5	36.5	63.5	8.8	33.8	58.8	6.6	29.7	52.8	9.2	33.5	57.7	12.5	37.4	62.3	13.3	38.5	63.6	11.4	35.5	59.5	11.8	36.9	61.9	6.2	28.0	49.9		
Kawerau District	N/A	N/A	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	31.5	138.6	0.0	60.2	204.7	0.0	54.1	183.8	0.0	27.2	119.3	0.0	19.3	65.8	0.0	53.4	158.1	0.0	51.3	152.0		
Lower Hutt City	15.8	31.6	47.4	13.2	28.1	43.1	10.3	24.1	38.0	7.0	19.4	31.9	8.9	22.3	35.7	12.5	27.3	42.2	15.7	31.8	47.9	14.7	30.6	46.4	15.7	31.8	47.8	13.6	29.0	40.4		
Mackenzie District	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	30.8	104.8	0.0	55.1	163.2	
Manawatu District	0.0	25.7	54.7	0.0	31.0	62.7	0.7	32.9	65.2	0.0	29.9	60.4	0.0	29.5	59.6	0.0	23.8	50.8	0.0	23.9	51.0	0.0	18.6	42.5	0.0	26.3	54.5	14.1	54.5	94.9		
Manukau City	18.4	31.9	45.3	16.5	29.0	41.6	11.6	22.6	33.6	12.3	23.2	34.1	13.5	24.5	35.6	16.9	28.7	40.5	15.7	27.0	38.3	13.6	24.3	34.9	15.1	25.8	36.6	12.8	22.9	32.9		
Marlborough District	2.6	28.2	53.8	8.4	37.8	67.2	5.9	33.4	60.9	7.9	35.9	63.9	0.4	22.1	43.8	2.3	25.3	48.3	5.4	30.4	55.5	10.6	38.5	66.3	12.5	40.8	69.1	13.4	41.8	70.2		
Masterion District	0.0	26.3	56.2	0.7	35.1	69.5	0.7	34.5	68.2	0.0	28.5	59.0	0.0	27.2	56.4	0.0	27.3	56.6	0.0	27.7	57.4	0.0	30.3	61.3	2.1	36.2	70.4	2.1	35.3	68.6		
Matamata-Piako District	0.0	8.1	23.8	0.0	17.5	39.9	0.0	27.2	55.0	1.9	31.9	61.9	1.9	32.7	63.5	0.0	27.3	55.3	0.0	24.7	51.3	0.0	26.6	53.8	5.7	37.4	69.2	8.5	42.7	76.8		
Napier City	5.1	23.0	40.9	11.2	32.4	53.6	14.3	36.6	58.9	10.9	31.4	51.9	6.2	23.9	41.6	11.3	31.5	51.8	12.6	33.1	53.6	17.4	40.0	62.7	14.1	35.2	56.3	15.8	37.7	59.6		
Nelson City	11.4	37.3	63.1	12.6	39.3	66.0	6.7	30.4	54.1	2.0	21.5	41.0	4.4	25.0	45.6	6.9	28.8	50.6	11.5	35.8	60.2	11.5	35.8	60.2	11.5	35.8	60.2	10.7	34.8	58.9		
New Plymouth District	13.9	33.2	52.6	18.4	39.7	61.1	21.2	43.5	65.8	18.2	39.3	60.5	15.8	35.7	55.6	16.9	36.9	57.0	15.4	34.9	54.4	17.3	37.3	57.3	13.9	32.6	51.3	16.5	36.1	55.7		
North Shore City	19.6	32.8	46.0	19.6	32.6	45.7	14.5	26.0	37.5	13.2	24.3	35.3	12.8	23.7	34.5	12.3	22.9	33.4	15.8	27.2	38.7	17.5	29.3	41.2	17.3	29.0	40.7	16.8	28.4	39.9		
Otago District	0.0	19.8	67.2	0.0	47.3	119.1	0.0	27.6	81.8	0.0	27.3	80.7	0.0	8.4	36.9	0.0	8.1	35.6	0.0	33.6	90.6	0.0	25.6	75.7	0.0	25.6	75.8	0.0	7.6	33.2		
Otorohanga District	N/A	0.0	N/A	N/A	0.0	N/A	0.0	N/A	0.0	0.0	7.2	31.5	0.0	24.9	73.6	0.0	36.0	97.2	0.0	27.6	81.6	0.0	28.6	84.6	0.0	46.0	115.7	0.0	65.7	149.9		
Palmerston North City	11.3	30.6	49.8	14.8	35.4	56.0	11.1	30.0	48.8	11.0	29.7	48.5	13.1	32.7	52.3	18.0	39.4	60.8	18.6	40.2	61.8	13.5	33.0	52.5	8.6	25.8	43.0	6.7	23.0	39.3		
Papakura District	0.0	17.4	41.5	0.0	17.2	40.9	2.0	34.4	66.8	0.6	29.9	59.2	0.0	25.8	52.2	0.0	21.5	45.8	0.0	20.9	44.6	0.0	18.9	41.7	0.0	21.6	46.1	4.2	34.2	64.1		
Porirua City	0.0	31.0	66.0	0.0	35.2	71.2	2.1	35.8	69.5	3.1	33.8	64.5	1.8	31.4	60.9	0.0	22.3	46.3	0.0	20.6	43.9	0.0	22.9	47.6	0.0	27.1	54.7	0.0	20.5	43.7		
Queenstown-Lakes District	0.0	22.4	76.1	0.0	21.3	72.5	0.0	10.2	45.0	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	7.2	31.7	0.0	13.5	45.8	0.0	26.0	70.1	0.0	33.1	83.4		
Rangitikei District	0.0	35.5	78.0	0.0	34.8	76.6	0.0	29.3	66.9	0.0	21.1	53.0	0.0	24.4	58.3	0.0	19.7	49.7	0.0	20.1	50.7	0.0	24.7	59.0	0.0	21.5	54.0	0.0	21.4	53.9		
Rodney District	1.2																															

	1991		1992		1993		1994		1995		1996		1997		1998		1999		2000												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	4.0	32.1	60.2	0.5	25.6	50.6	5.2	34.2	63.2	2.8	30.0	57.1	7.8	39.0	70.3	1.6	27.9	54.3	8.7	39.2	69.8	9.4	39.0	68.6	14.4	47.0	79.5	10.7	41.5	72.2	
Auckland City	24.8	33.4	42.1	22.9	31.3	39.7	22.7	31.0	39.3	20.3	28.2	36.0	22.3	30.6	38.8	22.7	31.0	39.4	23.3	31.8	40.3	21.3	29.5	37.6	19.5	27.3	35.2	16.3	23.6	30.9	
Banks Peninsula District	0.0	23.0	78.2	0.0	22.7	77.1	0.0	34.5	102.3	0.0	33.5	99.2	0.0	42.8	115.4	0.0	30.7	90.7	0.0	20.0	68.2	0.0	10.3	45.1	0.0	10.4	45.6	0.0	6.8	29.8	
Buller District	0.0	33.0	78.8	0.0	27.6	69.6	0.0	16.5	48.8	0.0	27.9	70.4	0.0	33.8	80.7	0.0	45.6	100.3	0.0	34.3	81.9	0.0	34.7	82.9	0.0	23.5	63.5	0.0	41.6	95.1	
Carterton District	0.0	31.3	92.7	0.0	42.4	114.5	0.0	39.5	106.5	0.0	29.4	86.9	0.0	17.8	60.4	0.0	10.0	44.0	0.0	18.8	63.9	0.0	26.8	79.3	0.0	53.4	127.4	0.0	43.2	108.8	
Central Hawke's Bay District	0.0	16.6	49.1	0.0	18.2	53.8	0.0	29.4	73.9	0.0	28.1	70.9	0.0	21.4	57.6	0.0	15.3	45.3	0.0	10.4	35.4	0.0	20.7	55.8	0.0	40.6	89.4	1.2	61.7	122.1	
Central Otago District	0.0	42.7	88.6	0.0	41.2	85.5	0.0	40.5	84.0	0.0	39.0	80.9	0.0	37.7	78.1	0.0	28.1	61.8	0.0	28.1	61.9	0.0	27.6	60.8	0.0	24.1	55.1	0.0	13.8	37.1	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	22.3	30.6	38.8	22.7	31.0	39.2	21.6	29.7	37.7	20.8	28.7	36.7	19.7	27.5	35.3	17.6	25.1	32.5	18.4	25.8	33.3	19.3	26.9	34.5	21.0	28.9	36.7	21.3	29.1	36.9	
Clutha District	4.8	52.2	99.5	0.9	44.3	87.7	4.8	51.8	98.9	0.0	29.4	64.7	0.0	25.2	57.4	0.0	13.9	37.6	0.0	21.4	51.1	0.0	17.9	45.1	0.0	32.0	68.1	0.0	24.8	56.7	
Dunedin City	18.2	31.9	45.5	19.4	33.6	47.7	17.0	30.5	43.9	18.0	31.9	45.7	16.9	30.3	43.7	17.0	30.4	43.8	18.0	31.7	45.3	19.2	33.4	47.6	22.5	37.6	52.6	26.0	42.0	57.9	
Far North District	3.9	26.0	48.1	5.6	28.2	50.8	2.6	20.7	38.8	7.1	27.5	47.9	8.9	30.5	52.2	7.9	28.7	49.5	4.6	23.1	41.6	5.2	23.7	42.2	5.2	23.5	41.7	5.9	24.7	43.4	
Franklin District	10.4	40.3	70.2	7.8	35.1	62.4	8.6	35.6	62.6	2.1	22.4	42.7	0.4	19.1	37.9	2.1	22.2	42.4	1.2	20.7	40.2	3.8	25.3	46.8	2.9	23.4	43.9	7.3	30.2	53.2	
Gisborne District	6.4	28.9	51.3	5.5	27.3	49.2	7.3	30.2	53.0	11.9	37.2	62.5	13.9	40.0	66.2	22.1	51.8	81.5	14.1	40.6	67.2	18.4	47.0	75.7	6.4	29.0	51.7	3.7	24.5	45.2	
Gore District	0.0	27.8	66.4	0.0	27.8	66.2	0.0	46.7	96.9	1.1	55.8	110.4	0.0	46.7	96.8	0.0	26.7	63.6	0.0	18.8	50.8	0.0	22.6	56.8	0.0	50.7	102.7	8.4	68.0	127.7	
Grey District	0.0	9.8	33.4	0.0	9.9	33.5	0.0	15.0	44.3	0.0	29.8	71.1	0.0	33.8	77.2	0.0	48.0	99.6	0.0	48.2	99.9	0.0	47.3	98.1	0.0	41.1	87.6	0.0	41.2	87.7	
Hamilton City	13.9	29.6	45.3	12.7	27.8	42.9	10.5	24.7	38.9	11.4	25.8	40.2	13.6	28.6	43.6	13.8	28.6	43.4	16.2	31.8	47.4	17.2	33.0	48.8	15.5	30.7	45.9	14.6	29.6	44.6	
Hastings District	11.5	30.2	49.0	10.0	27.8	45.6	10.5	28.5	46.5	11.2	29.4	47.6	14.6	34.3	54.0	13.1	32.1	51.1	15.7	35.6	55.4	12.1	30.3	48.5	14.0	33.0	51.9	12.6	30.9	49.1	
Hauraki District	0.0	40.3	83.5	0.0	40.6	84.2	0.0	36.3	77.5	0.0	24.7	58.9	0.0	19.6	49.4	0.0	20.2	50.9	0.0	16.3	43.9	0.0	10.6	31.4	0.0	24.1	54.9	0.0	33.3	69.1	
Horowhenua District	12.4	40.4	68.4	13.3	41.5	69.7	13.2	41.0	68.9	6.9	31.3	55.7	7.5	34.0	60.4	7.4	33.6	59.8	5.3	29.9	54.6	7.7	31.9	56.1	8.6	33.3	57.9	12.5	39.0	65.5	
Hurunui District	0.0	8.1	35.4	0.0	16.1	54.7	0.0	35.3	95.2	0.0	32.4	87.5	0.0	42.4	101.1	0.0	40.6	96.8	0.0	58.7	125.1	0.0	39.1	93.3	0.0	39.1	93.3	0.0	14.3	48.6	
Invercargill City	12.1	33.8	55.4	13.4	35.3	57.2	14.2	36.5	58.8	20.9	45.9	70.8	22.7	48.2	73.8	21.8	47.0	72.2	14.2	36.4	58.5	16.6	39.7	62.8	13.8	35.4	57.0	16.2	38.9	61.5	
Kaikoura District	0.0	14.9	65.6	0.0	15.5	67.9	0.0	15.9	69.7	N/A	N/A	N/A	0.0	N/A	N/A	0.0	21.0	92.4	0.0	53.6	158.6	0.0	53.3	157.9	0.0	33.2	113.0	N/A	0.0	N/A	
Kaipara District	0.0	28.8	65.7	0.0	33.7	74.1	0.0	44.4	89.9	0.0	43.4	87.8	0.9	45.6	90.3	0.0	39.4	79.6	0.0	28.3	62.3	0.0	28.8	63.3	0.0	21.8	52.1	0.0	24.7	56.5	
Kapiti Coast District	5.8	26.0	46.3	0.9	15.2	29.6	2.8	18.8	34.7	5.7	23.5	41.3	6.9	24.9	42.9	5.8	22.3	38.9	11.2	30.4	49.5	11.7	30.8	49.9	16.4	37.2	58.0	12.8	31.9	51.0	
Kawerau District	0.0	29.3	128.6	N/A	0.0	N/A	N/A	0.0	N/A	0.0	23.1	101.4	0.0	22.7	99.9	0.0	22.0	96.5	0.0	19.2	84.2	0.0	42.1	124.6	0.0	39.7	117.5	0.0	23.9	81.2	
Lower Hutt City	18.7	35.9	53.2	16.7	33.4	50.1	18.8	36.1	53.4	12.8	28.0	43.3	13.7	29.2	44.7	11.6	26.3	41.0	12.8	28.0	43.2	8.3	21.8	35.3	4.5	16.2	28.0	4.9	16.9	28.9	
Mackenzie District	0.0	55.6	164.7	0.0	22.7	194.5	0.0	57.2	194.5	0.0	52.8	179.6	0.0	49.7	168.9	N/A	0.0	N/A	N/A	0.0	N/A	0.0	14.0	61.4	0.0	42.9	127.0	0.0	58.9	158.9	
Manawatu District	18.8	61.1	103.5	27.4	74.0	120.7	6.1	40.6	75.1	9.1	45.4	81.8	4.7	37.9	71.1	6.1	40.0	73.9	3.2	34.6	66.1	0.6	28.9	57.3	0.6	28.5	56.4	4.5	36.2	68.0	
Manukau City	14.0	24.4	34.8	11.8	21.4	31.0	14.0	24.0	34.1	15.3	25.4	35.5	17.4	27.8	38.2	17.5	27.7	38.0	17.0	27.1	37.3	15.5	25.2	34.9	14.5	23.8	33.0	14.0	23.0	31.9	
Marlborough District	10.1	36.4	62.7	7.9	32.8	57.8	1.2	20.8	40.3	10.4	35.6	60.7	10.0	34.3	58.6	12.7	38.1	63.4	10.5	34.3	58.1	9.4	32.1	54.9	10.2	33.1	56.1	9.2	31.4	53.6	
Masterton District	0.7	32.7	64.7	0.6	31.7	62.8	6.4	42.4	78.4	3.4	37.1	70.8	0.6	31.3	61.9	3.2	34.7	66.2	3.1	33.8	64.4	5.9	38.7	71.5	3.1	33.5	63.8	7.3	41.2	75.2	
Matamata-Piako District	4.3	35.0	65.7	0.0	22.2	47.3	0.0	26.4	53.5	0.0	26.4	53.4	4.2	34.3	64.5	0.5	26.7	52.8	1.7	28.8	55.6	3.8	31.1	58.3	5.0	32.9	60.8	4.9	32.1	59.4	
Napier City	8.7	27.1	45.6	9.4	28.1	46.7	7.0	24.0	41.0	8.4	26.3	44.2	9.1	27.3	45.6	9.1	27.2	45.3	9.5	27.4	45.3	9.3	26.7	44.2	11.9	30.6	49.3	12.1	31.1	50.1	
Nelson City	4.4	25.1	45.8	5.1	25.7	46.3	8.5	30.8	53.1	14.1	39.3	64.6	17.8	44.5	71.1	11.8	35.3	58.8	9.0	30.9	52.8	8.2	29.7	51.1	13.3	38.3	63.3	14.2	39.7	65.2	
New Plymouth District	13.0	31.2	49.3	14.7	33.3	51.9	17.2	36.6	56.1	17.0	36.2	55.5	18.3	38.0	57.7	12.4	29.7	47.1	13.2	30.9	48.6	10.0	26.4	42.7	12.2	29.3	46.3	10.8	27.0	43.2	
North Shore City	15.3	26.4	37.5	18.9	30.8	42.8	16.9	28.1	39.3	16.3	27.3	38.3	16.0	26.8	37.5	16.9	27.9	38.8	16.1	26.7	37.4	14.1	24.2	34.2	13.9	23.8	33.7	16.5	27.0	37.5	
Opotiki District	0.0	18.0	61.1	0.0	34.3	92.5	0.0	61.7	140.8	0.0	64.2	141.4	0.0	61.9	136.2	0.0	37.1	93.3	0.0	30.0	80.8	0.0	21.0	62.2	0.0	25.6	69.2	0.0	19.4	57.6	
Otorohanga District	0.0	46.9	118.1	0.0	29.2	86.4	0.0	20.7	70.5	0.0	40.9	110.3	0.0	31.1	92.1	0.0	36.0	97.1	0.0	16.3	55.4	0.0	16.1	54.9	0.0	34.5	93.0	0.0	33.8	91.1	
Palmerston North City	10.9	29.5	48.1	11.7	30.8	49.8	16.5	37.3	58.2	14.2	33.9	53.7	19.8	41.5	63.3	17.7	38.8	59.9	16.9	37.6	58.3	12.5	31.1	49.8	9.1	26.1	43.2	7.6	23.8	40.0	
Papakura District	10.6	44.1	77.5	5.3	34.9	64.6	2.7	29.6	56.5	2.7	29.5	56.2	1.5	26.5	51.4	2.6	28.6	54.5	2.6	28.1	53.5	3.6	28.8	54.0	5.7	32.3	58.9	7.5	34.0	60.5	
Porirua City	0.0	25.8	52.2	3.1	33.9	64.6	4.8	39.2	73.5	0.6	30.4	60.3	0.0	20.8	44.4	1.4	24.1	46.7	3.7	30.0	56.2	2.7	29.2	55.6	0.0	22.1	44.6	0.0	19.2	38.9	
Queenstown-Lakes District	0.0	38.3	91.3	0.0	30.8	77.7	0.0	37.6	85.9	0.0	35.6	81.2	0.0	40.0	88.1	0.0	33.8	77.3	0.0	23.0	57.9	0.0	23.3	58.6	0.0	14.9	44.1	0.0	17.5	47.3	
Rangitikei District	0.0	21.2	53.5	0.0	20.5	51.7	0.0	16.2	43.7	0.0	8.2	27.9	0.0	12.8	37.8	0.0	17.1	46.1	0.0	24.9	59.4	0.0	36.9	78.6							

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	23.7	31.8	39.9	26.1	34.5	43.0	25.3	33.7	42.1	25.9	34.4	42.8	25.0	33.4	41.7	25.3	33.8	42.3	29.0	38.2	47.3	30.7	40.1	49.6	30.6	40.0	49.4	26.0	34.8	43.7
Bay of Plenty	9.9	21.7	33.5	10.4	22.1	33.8	12.2	24.5	36.7	13.2	25.4	37.6	13.2	25.2	37.1	11.8	23.1	34.5	10.3	21.0	31.8	17.2	29.8	42.5	20.2	33.3	46.5	23.9	37.7	51.5
Canterbury	25.5	33.4	41.3	24.7	32.5	40.3	24.7	32.5	40.3	25.5	33.4	41.2	26.7	34.6	42.6	25.3	33.0	40.8	25.3	33.1	40.8	24.7	32.4	40.0	26.7	34.6	42.5	26.5	34.4	42.2
Capital and Coast	21.4	32.3	43.3	21.1	32.0	43.0	17.4	27.5	37.6	18.9	29.3	39.8	15.1	24.7	34.3	17.6	27.7	37.7	14.8	24.3	33.8	16.6	26.5	36.4	16.4	26.3	36.1	18.0	28.2	38.5
Counties Manukau	21.2	32.5	43.8	21.0	31.9	42.9	22.7	33.7	44.8	23.3	34.4	45.4	23.1	34.0	45.0	25.2	36.4	47.6	24.8	35.7	46.5	25.6	36.6	47.5	22.0	32.1	42.3	21.9	31.9	41.9
Hawke's Bay	13.3	25.1	36.9	8.9	19.3	29.7	11.0	22.0	33.0	13.8	25.6	37.4	15.9	28.3	40.7	18.0	31.0	43.9	17.5	30.3	43.1	15.9	28.2	40.4	12.9	24.2	35.5	10.7	21.1	31.6
Hutt Valley	12.5	24.7	36.9	16.0	29.4	42.7	16.9	30.5	44.0	14.4	27.3	40.1	14.0	26.7	39.4	18.0	31.8	45.6	19.6	33.8	48.1	18.9	33.0	47.1	17.5	31.4	45.2	16.4	30.0	43.6
Lakes	14.5	34.7	55.0	17.6	39.1	60.7	14.9	34.9	55.0	12.3	30.7	49.1	13.2	31.7	50.2	16.6	36.4	56.2	16.5	35.7	54.9	9.9	26.1	42.3	11.3	28.2	45.1	12.1	29.5	46.9
MidCentral	19.8	32.9	46.0	19.0	31.8	44.6	20.3	33.4	46.4	23.4	37.1	50.9	21.8	35.1	48.5	21.6	34.8	47.9	19.6	32.3	44.9	18.1	30.3	42.5	19.0	31.4	43.8	20.8	33.6	46.5
Nelson-Marlborough	10.7	23.8	36.9	12.5	26.2	39.9	13.7	27.7	41.7	9.2	21.6	33.9	9.5	21.8	34.1	9.8	22.1	34.4	12.5	25.6	38.7	14.9	28.7	42.5	18.7	33.6	48.4	19.5	34.4	49.4
Northland	10.8	24.5	38.1	10.4	23.6	36.8	13.7	28.3	43.0	13.8	28.3	42.8	14.2	28.7	43.2	11.8	24.8	37.8	10.5	23.1	35.6	10.9	23.4	36.0	12.5	25.6	38.6	12.6	25.4	38.3
Otago	14.7	24.4	34.1	14.8	24.5	34.2	17.3	27.6	37.9	16.9	27.1	37.2	20.3	31.3	42.2	23.6	35.3	47.0	24.7	36.7	48.7	24.9	37.0	49.0	22.6	34.2	45.7	22.8	34.4	46.0
South Canterbury	7.8	24.4	41.0	12.6	31.6	50.5	9.4	27.1	44.8	10.3	28.8	47.2	5.6	21.5	37.4	11.6	30.5	49.4	14.8	34.6	54.5	21.9	44.4	66.8	29.1	53.6	78.1	25.2	48.5	71.8
Southland	15.2	30.4	45.6	13.8	28.5	43.3	16.3	32.0	47.6	17.3	33.2	49.2	14.7	29.7	44.8	14.6	29.6	44.6	12.6	26.9	41.1	15.0	30.0	45.0	14.9	29.9	44.9	13.5	27.9	42.3
Tairāwhiti	5.5	27.4	49.3	2.0	21.2	40.5	2.0	21.4	40.8	0.0	14.1	30.0	2.9	23.1	43.4	6.4	29.0	51.5	11.3	36.9	62.4	6.5	29.6	52.6	8.6	33.1	57.6	11.5	37.4	63.3
Taranaki	12.7	26.8	40.8	9.5	22.3	35.1	8.1	20.2	32.4	10.8	24.0	37.2	12.1	25.8	39.4	18.2	33.8	49.5	19.9	36.0	52.0	19.4	35.2	51.0	13.6	27.5	41.5	13.1	26.8	40.5
Waikato	14.7	23.3	31.9	15.6	24.4	33.1	18.6	27.9	37.1	19.4	28.7	38.0	19.9	29.3	38.6	23.0	32.9	42.8	24.1	34.1	44.2	25.3	35.5	45.7	23.0	32.7	42.4	23.5	33.2	42.8
Wairarapa	3.3	26.6	49.8	4.3	28.2	52.1	7.4	33.4	59.4	5.2	29.5	53.8	5.2	29.5	53.8	3.2	25.9	48.6	4.2	27.4	50.7	7.3	33.1	58.8	10.5	38.0	65.5	9.3	36.0	62.7
Waitemata	15.3	23.5	31.7	16.6	24.9	33.1	15.3	23.2	31.1	19.1	27.7	36.3	18.0	26.3	34.5	20.7	29.4	38.0	20.5	28.9	37.4	21.8	30.4	39.0	25.5	34.5	43.6	23.8	32.4	41.1
West Coast	5.1	33.4	61.7	1.6	26.8	52.0	0.0	18.8	40.2	0.0	16.8	37.0	0.0	20.3	42.0	4.9	32.2	59.5	6.0	33.8	61.7	8.6	38.7	68.8	7.4	36.9	66.4	10.0	41.5	73.0
Whanganui	14.3	33.6	52.9	13.6	32.5	51.3	14.0	32.9	51.8	12.1	30.2	48.3	11.4	29.3	47.2	9.4	26.3	43.2	8.7	25.1	41.5	10.7	28.0	45.4	10.3	27.8	45.4	10.3	27.9	45.5
New Zealand	25.8	28.4	31.1	26.0	28.6	31.3	26.4	29.0	31.7	27.1	29.8	32.4	27.0	29.6	32.2	28.6	31.3	34.0	29.0	31.7	34.4	29.9	32.6	35.3	30.1	32.8	35.6	29.5	32.2	34.9

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	25.4	34.2	43.0	24.8	33.4	42.1	25.2	33.9	42.6	24.9	33.5	42.1	25.5	34.2	42.9	25.4	34.1	42.8	23.4	31.9	40.3	23.6	32.0	40.5	22.0	30.1	38.3	22.0	30.1	38.2
Bay of Plenty	15.3	26.8	38.3	11.6	21.8	31.9	11.6	21.5	31.5	14.8	25.5	36.2	15.9	26.8	37.7	14.4	24.6	34.8	16.7	27.2	37.7	18.8	29.8	40.7	21.0	32.3	43.6	20.8	31.9	43.0
Canterbury	26.0	33.7	41.5	24.9	32.5	40.1	24.8	32.3	39.8	25.4	33.0	40.5	27.7	35.5	43.2	26.9	34.5	42.0	24.6	31.9	39.1	22.9	30.0	37.0	24.5	31.7	38.9	26.0	33.4	40.8
Capital and Coast	17.3	27.3	37.4	14.8	24.2	33.7	14.6	24.0	33.3	13.2	22.1	31.0	16.0	25.4	34.9	14.2	23.2	32.1	15.5	24.7	33.9	17.7	27.3	37.0	20.1	30.2	40.3	21.4	31.8	42.1
Counties Manukau	19.0	28.2	37.5	20.2	29.5	38.9	18.8	27.8	36.7	23.3	32.8	42.4	24.3	33.8	43.3	27.5	37.4	47.3	28.2	38.1	48.0	26.1	35.6	45.1	22.4	31.1	39.9	18.6	26.7	34.7
Hawke's Bay	16.1	28.2	40.2	18.8	31.5	44.2	20.8	33.9	47.0	16.8	28.8	40.8	16.6	28.5	40.5	14.8	26.3	37.7	13.8	24.9	36.0	17.4	29.4	41.4	22.7	35.9	49.2	27.9	42.2	56.6
Hutt Valley	18.9	33.3	47.6	17.9	31.8	45.8	19.9	34.4	48.9	20.9	35.6	50.2	20.7	35.3	49.8	17.7	31.2	44.8	16.6	29.9	43.2	20.4	34.8	49.2	23.8	39.2	54.6	23.0	38.2	53.3
Lakes	11.4	28.5	45.6	10.6	26.4	42.3	9.2	24.3	39.4	17.4	35.7	54.0	21.2	40.8	60.4	23.2	43.0	62.9	17.2	34.7	52.3	10.0	24.5	39.0	10.4	24.9	39.3	10.9	25.5	40.1
MidCentral	24.1	37.7	51.3	23.2	36.5	49.8	20.6	33.2	45.8	19.7	32.0	44.3	23.2	36.3	49.4	21.8	34.5	47.2	20.4	32.7	45.1	16.8	28.2	39.7	18.6	30.4	42.2	21.5	34.1	46.6
Nelson-Marlborough	18.7	33.3	47.9	15.5	29.0	42.6	12.5	25.0	37.5	10.7	22.5	34.3	10.7	22.2	33.7	12.7	24.7	36.7	12.2	23.9	35.6	16.6	29.5	42.5	20.5	34.4	48.3	23.9	38.4	53.0
Northland	12.9	25.6	38.2	12.8	25.2	37.5	11.8	23.7	35.5	13.5	25.8	38.1	13.8	25.9	38.0	17.5	30.4	43.3	16.4	28.8	41.2	18.5	31.5	44.5	20.1	33.4	46.6	22.9	36.7	50.5
Otago	20.9	32.1	43.3	20.4	31.4	42.5	20.3	31.2	42.1	24.5	36.2	48.0	24.9	36.9	48.8	24.6	36.6	48.5	23.8	35.5	47.2	26.9	39.1	51.3	26.0	38.0	50.0	22.9	34.2	45.5
South Canterbury	23.2	46.0	68.8	16.8	37.5	58.1	18.9	40.1	61.4	16.5	36.6	56.8	17.4	38.1	58.8	16.5	36.6	56.8	17.0	37.8	58.5	12.2	31.2	50.2	5.8	22.2	38.7	11.4	29.9	48.4
Southland	12.5	26.6	40.7	10.9	24.4	37.8	12.7	26.7	40.7	12.6	26.5	40.3	14.4	28.8	43.3	14.3	28.6	42.8	13.3	27.3	41.2	11.5	24.9	38.3	13.0	26.9	40.8	13.5	27.6	41.8
Tairāwhiti	17.6	46.4	75.2	22.8	53.6	84.4	11.2	36.4	61.6	10.2	34.8	59.4	3.7	24.2	44.7	12.1	37.7	63.2	12.2	38.0	63.9	15.4	43.1	70.7	8.4	32.5	56.5	6.5	29.5	52.5
Taranaki	14.8	29.0	43.2	15.5	29.9	44.3	16.8	31.5	46.2	15.3	29.4	43.5	14.2	27.9	41.5	12.3	25.1	37.9	10.9	23.3	35.6	13.4	26.5	39.6	14.7	28.3	41.8	17.2	31.5	45.8
Waikato	21.9	31.1	40.4	19.6	28.3	37.1	18.3	26.8	35.2	19.2	27.8	36.3	23.3	32.6	41.9	25.3	34.8	44.3	25.7	35.3	44.8	21.9	30.8	39.6	22.1	30.9	39.7	20.5	28.9	37.4
Wairarapa	3.1	24.9	46.6	3.0	24.0	45.1	0.4	19.2	38.0	2.9	23.4	43.8	2.9	23.3	43.7	5.6	28.2	50.8	9.4	34.0	58.7	8.4	32.2	56.1	12.9	38.7	64.5	8.1	31.2	54.4
Waitemata	23.8	32.3	40.9	20.6	28.5	36.4	20.6	28.3	36.1	21.7	29.5	37.3	21.2	28.8	36.4	19.9	27.2	34.5	21.3	28.7	36.2	21.1	28.5	35.8	22.3	29.7	37.2	21.4	28.7	35.9
West Coast	2.7	29.5	56.2	0.5																										

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990			
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	
Ashburton District	5.8	38.2	70.7	0.6	29.3	58.0	4.5	36.2	67.9	7.2	40.9	74.5	16.1	55.0	93.9	8.5	42.7	76.9	8.4	42.1	75.7	0.0	26.3	53.2	0.0	21.0	44.8	0.6	27.9	55.2	
Auckland City	29.9	38.6	47.2	26.8	35.3	43.9	31.5	40.4	49.3	31.8	40.7	49.6	31.0	39.8	48.7	26.3	35.0	43.6	29.9	39.1	48.4	31.7	41.3	50.8	31.2	40.8	50.3	26.8	35.7	44.7	
Banks Peninsula District	0.0	41.7	112.6	0.0	46.5	117.1	0.0	60.4	144.2	0.0	58.5	139.5	0.0	59.4	141.6	0.0	39.1	105.4	0.0	52.3	131.8	0.0	23.2	79.0	0.0	31.3	92.5	0.0	24.0	70.9	
Buller District	0.0	53.2	113.4	0.0	17.6	52.2	0.0	6.0	26.2	0.0	10.5	35.5	0.0	10.5	35.5	0.0	21.3	57.4	0.0	29.0	72.9	0.0	52.5	111.9	0.0	65.9	133.3	0.0	64.3	130.2	
Carterton District	0.0	41.8	112.7	0.0	10.7	47.1	0.0	31.4	92.9	0.0	30.9	91.4	0.0	30.7	90.8	0.0	11.2	49.4	0.0	11.1	48.8	0.0	9.7	42.6	0.0	20.7	70.5	0.0	20.9	71.0	
Central Hawke's Bay District	7.8	84.0	160.2	0.0	11.5	39.2	0.0	59.5	123.4	14.7	96.8	179.0	11.3	91.9	172.5	0.0	47.4	104.2	0.0	21.6	58.2	0.0	21.9	59.1	0.0	45.4	99.9	0.0	52.8	112.6	
Central Otago District	0.0	9.6	32.7	0.0	9.5	32.3	0.0	15.9	47.1	0.0	10.8	36.9	0.0	23.9	60.2	0.0	26.5	63.3	0.0	35.4	77.8	0.0	43.7	90.5	0.0	39.0	83.2	0.0	38.2	81.3	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	35.7	46.0	56.2	25.3	34.3	43.2	33.2	43.1	53.0	33.5	43.4	53.3	34.6	44.6	54.6	25.4	34.3	43.1	26.4	35.4	44.4	27.2	36.3	45.4	30.1	39.6	49.0	29.2	38.6	48.0	
Clutha District	0.0	37.4	79.7	0.0	16.6	44.9	0.0	15.7	42.3	0.0	18.6	46.8	0.0	25.9	59.2	0.0	29.4	64.8	0.0	44.3	87.7	4.9	52.7	100.4	7.1	57.3	107.5	0.0	39.5	81.8	
Dunedin City	19.8	33.3	46.9	15.5	28.0	40.4	27.8	43.1	58.5	26.8	41.8	56.9	29.5	45.3	61.1	23.3	38.0	52.7	23.9	39.0	54.1	22.4	37.2	52.0	19.9	34.0	48.1	20.7	35.0	49.3	
Far North District	9.4	42.3	75.3	3.8	30.5	57.3	19.5	58.3	97.1	29.1	71.2	113.2	31.1	74.5	117.8	12.3	42.2	72.1	4.2	27.5	50.8	4.8	26.9	49.1	2.1	23.1	44.0	2.9	23.2	43.5	
Franklin District	10.9	45.3	79.8	5.3	35.0	64.6	0.0	23.5	47.5	2.7	28.7	54.8	0.0	22.2	45.0	7.3	36.6	65.9	7.0	35.0	62.9	10.6	40.9	71.1	5.8	32.7	59.6	2.6	28.0	53.4	
Gisborne District	14.4	41.4	68.5	3.7	24.3	44.9	5.5	27.6	49.7	3.8	24.9	46.0	10.4	35.5	60.6	11.2	36.6	62.0	16.5	44.7	72.9	10.5	36.0	61.5	12.7	39.6	66.4	13.6	40.6	67.6	
Gore District	0.0	41.8	89.1	0.0	41.5	88.5	5.9	63.2	120.5	0.0	45.0	93.3	0.0	49.9	100.9	0.0	23.9	60.2	0.0	17.7	47.7	0.0	31.8	72.7	0.0	40.6	86.5	0.0	40.4	86.1	
Grey District	3.9	66.6	129.3	0.0	34.3	78.3	0.0	35.5	81.1	0.0	25.2	63.4	0.0	34.3	78.2	0.0	37.8	83.1	0.0	42.6	90.9	0.0	34.3	78.2	0.0	20.2	54.4	0.0	15.4	45.5	
Hamilton City	18.6	37.7	56.8	14.4	31.5	48.6	23.9	44.5	65.1	21.1	40.6	60.2	24.2	44.4	64.5	21.0	39.7	58.4	23.0	42.1	61.3	22.8	41.8	60.7	26.0	45.6	65.3	28.7	49.0	69.3	
Hastings District	18.6	40.8	62.9	2.6	17.5	32.3	7.8	25.4	43.0	9.9	28.5	47.1	12.7	32.6	52.4	18.1	40.2	62.4	18.6	40.8	63.0	14.8	35.3	55.9	8.2	25.6	43.0	6.8	23.2	39.7	
Hauraki District	0.0	30.1	71.8	0.0	31.4	71.8	17.3	86.4	155.6	25.5	98.4	171.2	19.6	88.6	157.5	0.0	45.1	93.6	0.0	35.7	78.5	0.0	30.8	70.3	0.0	30.1	68.6	0.0	25.4	60.5	
Horowhenua District	10.2	39.5	68.8	2.5	27.3	52.1	4.3	28.2	52.1	2.3	24.4	46.5	4.3	28.4	52.5	4.4	29.0	53.6	5.3	29.9	54.6	7.4	33.5	59.6	4.3	28.2	52.1	8.6	35.6	62.6	
Huruni District	0.0	36.5	108.2	0.0	48.2	115.0	2.6	130.4	258.1	2.6	130.1	257.6	0.0	104.9	230.9	0.0	24.7	73.1	0.0	37.0	99.8	0.0	27.2	80.4	0.0	34.9	94.1	0.0	29.9	88.5	
Invercargill City	35.4	64.3	93.2	19.0	43.0	67.0	27.9	54.7	81.5	34.1	62.8	91.6	30.1	57.8	85.6	24.6	50.9	77.3	20.3	45.2	70.1	20.2	45.0	69.7	21.7	46.7	71.8	21.7	46.8	71.9	
Kaikoura District	0.0	66.1	195.8	0.0	22.0	96.6	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	20.9	91.8	0.0	20.1	88.2	0.0	36.9	125.5	0.0	17.0	74.6	0.0	33.9	115.3	
Kaipara District	0.0	9.0	30.6	0.0	23.0	58.0	0.0	28.1	67.1	0.0	44.5	92.3	0.0	34.6	76.2	0.0	36.9	78.6	0.0	25.0	59.6	0.0	26.3	62.8	0.0	22.1	55.7	0.0	30.3	69.1	
Kapiti Coast District	16.6	47.9	79.3	12.6	41.2	69.7	8.3	34.5	60.7	9.1	35.1	61.1	11.1	37.9	64.7	10.0	36.4	62.7	5.7	28.6	51.4	3.7	24.4	45.2	10.3	33.6	56.9	10.9	32.7	54.4	
Kawerau District	N/A	N/A	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	9.6	42.4	0.0	143.8	362.2	0.0	186.3	409.9	0.0	221.1	486.4
Lower Hutt City	16.0	31.8	47.5	16.2	32.1	48.0	23.3	41.3	59.2	21.8	39.3	56.8	20.8	38.1	55.4	19.1	36.1	53.2	23.0	41.2	59.4	20.4	38.0	55.5	20.2	37.8	55.5	19.9	37.5	55.2	
Mackenzie District	0.0	46.2	157.0	0.0	58.1	172.0	0.0	71.7	212.2	0.0	68.3	202.1	0.0	52.0	176.9	0.0	20.9	92.0	0.0	102.1	275.5	0.0	116.3	292.8	0.0	111.9	281.8	0.0	42.1	143.1	
Manawatu District	9.7	48.7	87.6	0.0	16.7	39.8	0.7	32.6	64.6	14.8	56.9	99.1	13.1	54.2	95.3	14.6	56.4	98.2	5.0	40.2	75.4	0.6	31.5	62.3	0.6	31.4	62.1	0.6	31.7	62.7	
Manukau City	33.5	50.6	67.7	24.5	38.7	52.9	47.0	66.0	85.0	44.3	62.6	80.9	44.2	62.3	80.3	27.0	41.0	55.0	28.3	42.3	56.3	27.8	41.5	55.3	24.0	36.7	49.4	24.1	36.6	49.2	
Marlborough District	5.9	33.7	61.4	3.6	29.2	54.7	8.1	36.7	65.2	3.6	29.2	54.7	4.6	30.3	56.1	1.4	23.7	46.1	2.3	24.9	47.5	6.3	31.6	56.8	16.4	47.2	78.1	14.0	43.5	73.0	
Masterton District	6.9	45.6	84.3	3.7	40.4	77.1	6.9	45.9	84.8	2.1	36.8	71.4	0.7	34.1	67.5	0.0	22.4	49.2	0.0	22.6	49.7	0.0	31.5	67.7	3.6	39.1	74.6	5.1	41.3	77.5	
Matamata-Piako District	0.0	23.1	49.2	1.9	32.7	63.5	0.6	30.3	60.0	0.0	24.6	51.1	0.0	22.1	47.1	3.3	35.6	68.0	3.3	35.2	67.1	1.9	32.3	62.8	0.0	19.8	43.6	0.0	12.0	30.3	
Napier City	9.6	30.0	50.4	8.8	28.7	48.5	10.2	30.5	50.8	13.2	34.7	56.2	15.5	37.9	60.3	13.8	35.3	56.8	10.6	30.7	50.7	8.9	27.8	46.6	7.4	25.3	43.2	7.1	24.4	41.6	
Nelson City	15.2	42.5	69.7	8.5	32.8	57.1	18.2	46.8	75.3	12.2	37.9	63.6	11.0	35.8	60.7	2.8	22.7	42.6	8.9	32.3	55.6	10.8	35.2	59.6	10.0	34.1	58.3	8.0	30.9	53.8	
New Plymouth District	18.6	39.6	60.6	10.1	28.0	46.0	13.0	31.7	50.5	15.9	35.9	55.9	18.6	39.7	60.7	20.8	42.6	64.4	23.3	45.8	68.2	21.7	43.5	65.3	16.7	36.6	56.4	15.9	35.3	54.8	
North Shore City	16.6	29.0	41.4	15.2	27.0	38.9	18.5	31.1	43.7	20.7	33.7	46.8	19.7	32.4	45.1	18.6	30.8	43.1	20.1	32.6	45.1	21.4	34.1	46.9	25.3	38.7	52.2	23.0	36.0	48.9	
Opoitiki District	0.0	57.1	143.7	0.0	20.6	70.2	0.0	11.1	48.9	0.0	10.9	47.8	0.0	8.4	36.9	0.0	16.3	55.4	0.0	34.6	93.4	0.0	44.3	111.5	0.0	42.3	106.5	0.0	41.8	105.3	
Otorohanga District	0.0	81.9	195.3	0.0	6.6	28.9	0.0	66.0	166.1	0.0	67.2	169.3	0.0	71.9	181.2	0.0	20.5	69.7	0.0	37.4	100.8	0.0	50.5	127.2	0.0	59.0	140.8	0.0	40.1	108.2	
Palmerston North City	27.2	51.9	76.5	19.9	42.4	64.9	31.3	57.2	83.2	32.9	59.3	85.7	25.8	50.1	74.4	13.8	33.7	53.6	14.4	34.5	54.6	15.1	35.4	55.7	15.3	35.8	56.4	16.1	37.0	57.9	
Papakura District	7.3	48.2	89.0	0.0	27.7	57.3	0.7	32.8	64.9	5.2	42.2	79.1	6.4	42.0	77.6	10.0	45.0	80.1	1.6	27.4	53.3	2.7	29.6	56.5	2.7	29.6	56.4	2.7	29.0	55.3	
Porirua City	20.3	63.1	105.9	3.1	33.1	63.2	1.8	30.8	59.7	8.6	43.2	77.8	9.8	44.4	78.9	12.5	45.2	77.8	3.9	31.7	59.5	5.1	33.9	62.7	0.6	28.7	56.8	3.0	32.3	61.6	
Queenstown-Lakes District	0.0	12.0	52.7	0.0	11.4	50.2	0.0	35.5	120.6	0.0	33.9	115.4	0.0	32.6	110.8	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	8.8	38.5	0.0	8.1	35.5	
Rangitikei District	9.0	72.8	136.7	1.1	57.5	113.8	0.0	52.0	105.3	0.0	38.4	84.5	0.0	33.8	77.1	0.0															

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000			
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	
Ashburton District	0.0	22.2	46.0	5.3	35.1	64.8	4.0	32.2	60.4	6.6	37.5	68.4	3.0	32.0	61.0	5.5	36.3	67.1	8.3	41.5	74.8	10.7	44.4	78.2	4.2	34.0	63.7	2.7	29.6	56.4	
Auckland City	25.9	34.8	43.7	25.6	34.4	43.1	25.9	34.7	43.5	25.7	34.4	43.2	26.0	34.8	43.6	26.0	34.8	43.6	23.8	32.3	40.7	23.7	32.2	40.7	22.0	30.1	38.3	22.1	30.3	38.4	
Banks Peninsula District	0.0	23.3	68.8	0.0	17.7	53.5	N/A	0.0	N/A	0.0	7.6	33.4	0.0	18.8	64.0	0.0	24.9	73.7	0.0	24.0	71.0	0.0	23.3	69.0	0.0	17.1	58.1	0.0	25.4	75.1	
Buller District	0.0	40.0	91.4	0.0	28.3	71.3	0.0	17.3	51.2	0.0	17.5	51.7	0.0	18.4	54.4	0.0	12.1	41.1	0.0	23.7	63.8	0.0	29.9	75.3	0.0	30.3	76.3	0.0	18.9	55.9	
Carterton District	0.0	22.7	77.3	0.0	11.8	52.0	0.0	11.4	49.9	N/A	0.0	N/A	0.0	17.0	57.9	0.0	17.1	58.0	0.0	16.9	57.3	0.0	8.6	37.6	0.0	16.3	55.4	0.0	24.9	73.8	
Central Hawke's Bay District	0.0	58.3	121.0	0.0	29.5	74.4	0.0	29.5	74.3	0.0	22.9	61.7	0.0	34.0	81.2	0.0	21.4	57.8	0.0	27.0	68.0	0.0	25.7	64.7	0.0	25.7	64.7	0.0	33.8	77.1	
Central Otago District	0.0	25.6	61.0	0.0	33.2	73.1	0.0	33.9	74.6	3.2	54.5	105.7	0.0	42.1	87.3	0.0	32.7	71.9	0.0	16.0	43.1	0.0	22.3	53.3	0.0	25.5	58.2	0.0	27.0	59.4	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	29.0	38.4	47.8	27.2	36.3	45.4	27.2	36.3	45.3	26.5	35.4	44.3	29.8	39.1	48.3	27.7	36.6	45.5	25.9	34.5	43.1	22.2	30.2	38.3	24.6	33.1	41.5	25.3	33.8	42.4	
Clutha District	0.0	38.3	81.6	0.0	35.4	75.5	0.9	46.6	92.3	0.0	37.0	76.6	0.0	33.2	70.7	0.0	32.7	69.7	0.0	25.4	57.9	0.0	29.7	65.3	0.0	30.4	66.9	0.0	34.6	73.8	
Dunedin City	20.6	34.8	49.0	18.7	32.2	45.8	18.7	32.2	45.6	22.1	36.7	51.4	24.9	40.4	56.0	25.3	41.0	56.8	25.8	41.3	56.9	28.0	43.8	59.7	25.7	41.0	56.2	20.8	35.0	49.2	
Far North District	0.4	17.8	35.2	6.0	27.2	48.3	6.7	28.0	49.3	8.4	30.4	52.4	8.2	29.6	51.0	13.8	37.3	60.8	18.2	43.5	68.9	19.0	44.6	70.2	18.4	43.9	69.5	13.4	36.4	59.3	
Franklin District	1.5	25.1	48.7	4.4	28.8	53.3	3.2	26.1	49.0	12.4	40.4	68.3	20.0	51.3	82.6	30.2	65.2	100.2	30.6	65.0	99.5	24.4	56.3	88.1	15.0	41.9	68.8	7.0	29.2	51.4	
Gisborne District	22.0	52.6	83.2	28.4	61.2	94.1	15.2	42.4	69.6	11.2	36.3	61.5	3.7	24.2	44.7	12.1	37.7	63.2	14.3	41.1	68.0	19.7	49.3	78.9	13.5	40.2	67.0	9.4	34.2	58.9	
Gore District	0.0	16.5	44.6	0.0	16.6	44.7	0.0	25.6	61.1	0.0	30.2	69.0	0.0	21.4	53.9	0.0	29.2	66.6	0.0	29.6	67.5	0.0	43.9	91.1	0.0	31.9	72.8	0.0	23.7	59.6	
Grey District	0.0	9.6	32.8	0.0	29.1	69.5	0.0	34.0	77.7	0.0	43.6	92.9	0.0	23.8	60.0	0.0	23.3	58.7	0.0	24.0	60.4	0.0	38.5	84.7	0.0	43.9	93.6	0.0	38.7	85.2	
Hamilton City	23.8	42.6	61.4	15.8	32.0	48.2	12.9	27.9	42.8	14.3	29.6	44.9	18.8	35.6	52.3	20.7	37.8	55.0	22.2	39.8	57.4	22.8	40.4	58.0	24.7	42.6	60.5	21.1	37.9	54.6	
Hastings District	12.8	32.1	51.3	15.6	36.0	56.3	15.5	35.7	55.9	12.5	31.3	50.1	9.8	27.3	44.8	13.0	31.7	50.4	12.3	30.7	49.1	16.2	36.1	56.0	19.7	40.8	61.9	24.5	47.2	69.9	
Hauraki District	0.0	34.8	76.6	1.0	50.2	99.3	3.1	53.2	103.4	0.0	40.3	83.6	0.0	19.9	50.2	0.0	26.4	60.3	0.0	29.4	64.7	0.0	36.0	74.7	0.0	31.7	67.6	0.0	30.5	64.9	
Horowhenua District	6.3	31.4	56.6	8.2	34.0	59.7	6.0	29.8	53.7	12.2	39.9	67.5	15.8	45.6	75.5	14.1	44.0	73.9	7.7	34.9	62.2	13.5	44.0	74.5	14.6	43.8	73.0	20.6	52.8	85.1	
Hurunui District	0.0	40.8	102.8	0.0	31.6	85.1	0.0	46.4	110.6	0.0	40.0	100.6	0.0	54.2	123.7	0.0	31.9	80.4	0.0	45.2	107.9	0.0	50.4	120.2	0.0	62.0	141.6	0.0	67.3	143.5	
Invercargill City	28.1	55.7	83.2	17.8	41.8	65.8	17.0	40.7	64.5	8.7	28.2	47.7	12.5	33.8	55.2	9.3	28.9	48.5	11.6	32.3	53.1	8.5	27.8	47.0	13.9	35.7	57.5	12.5	33.7	55.0	
Kaikoura District	0.0	16.7	73.6	0.0	32.5	110.5	0.0	15.3	67.2	0.0	76.1	205.4	0.0	76.3	205.9	0.0	111.8	266.7	0.0	49.2	145.7	0.0	52.1	154.1	0.0	39.7	134.9	0.0	42.6	144.9	
Kaipara District	0.0	28.2	64.4	0.0	24.7	58.9	0.0	13.5	39.9	0.0	25.2	60.2	0.0	32.0	70.4	0.0	30.8	67.7	0.0	23.0	54.9	0.0	23.3	55.6	0.0	34.0	72.4	2.9	49.3	95.7	
Kapiti Coast District	13.4	36.1	58.9	12.4	34.6	56.8	14.7	38.6	62.5	9.9	30.7	51.5	11.0	31.7	52.4	7.6	26.1	44.5	7.8	26.6	45.5	8.7	28.3	47.9	8.9	27.6	46.3	15.6	35.8	56.1	
Kawerau District	0.0	46.9	126.6	0.0	8.9	39.0	0.0	15.9	53.9	0.0	49.1	132.4	0.0	49.6	133.8	0.0	32.4	110.2	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	22.1	75.0
Lower Hutt City	24.7	43.9	63.1	21.1	39.2	57.3	21.5	39.7	57.8	19.7	37.2	54.7	23.4	41.9	60.4	18.7	35.7	52.7	18.4	35.4	52.4	17.6	34.6	51.5	19.0	36.6	54.1	19.2	36.9	54.6	
Mackenzie District	0.0	23.8	104.7	N/A	0.0	N/A	0.0	109.4	275.5	0.0	114.2	287.5	0.0	120.0	302.1	0.0	24.9	109.4	0.0	23.7	104.0	0.0	22.5	99.0	N/A	0.0	N/A	N/A	0.0	N/A	N/A
Manawatu District	10.9	49.5	88.0	6.2	41.2	76.2	4.7	38.2	71.7	0.0	20.3	44.6	0.0	22.3	47.5	0.0	24.7	51.3	0.6	29.6	58.6	0.0	22.3	47.5	0.0	17.0	38.8	0.0	21.6	46.1	
Manukau City	20.1	31.5	42.9	21.9	33.5	45.1	20.9	32.1	43.3	26.2	38.3	50.3	25.9	37.5	49.1	27.9	39.6	51.4	27.2	38.7	50.3	24.8	35.9	47.0	22.1	32.4	42.8	19.3	29.1	39.0	
Marlborough District	9.3	36.0	62.7	4.0	26.7	49.3	7.8	32.3	56.8	12.8	39.8	66.7	14.2	41.0	67.8	12.0	37.4	62.7	7.9	30.7	53.4	7.9	30.5	53.1	10.5	34.1	57.8	15.3	41.4	67.5	
Masterton District	0.0	29.4	59.4	0.0	29.5	59.7	0.0	18.9	43.1	0.0	26.3	54.6	0.0	25.5	52.9	2.0	34.3	66.5	3.4	36.6	69.8	0.6	31.1	61.5	4.5	36.2	67.9	0.0	26.6	53.8	
Matamata-Piako District	0.0	16.1	36.8	0.0	22.4	46.4	4.3	34.7	65.2	5.8	38.0	70.3	3.1	33.5	63.9	0.0	19.0	41.8	1.7	29.1	56.4	1.7	28.9	56.2	9.3	41.9	74.5	0.0	21.8	45.3	
Napier City	13.8	34.6	55.3	16.8	38.6	60.5	19.0	41.6	64.3	12.1	31.8	51.5	14.1	34.4	54.8	10.4	29.0	47.6	10.5	29.2	47.9	10.4	28.9	47.4	11.7	30.7	49.7	12.9	32.3	51.7	
Nelson City	10.8	35.0	59.3	11.8	36.6	61.5	11.0	35.8	60.6	5.4	26.8	48.3	3.4	22.8	42.1	8.4	30.3	52.2	10.2	33.2	56.2	15.8	41.6	67.4	11.2	35.0	58.7	10.3	33.6	56.8	
New Plymouth District	14.3	32.9	51.6	12.8	30.8	48.7	14.7	33.2	51.7	14.4	32.5	50.7	13.5	31.0	48.6	10.7	26.7	42.7	10.7	26.7	42.7	12.9	29.6	46.3	14.3	31.9	49.5	16.7	35.0	53.3	
North Shore City	21.9	34.5	47.2	18.6	30.3	42.1	18.7	30.2	41.8	19.0	30.5	42.0	18.8	30.1	41.4	16.1	26.6	37.1	19.3	30.5	41.7	16.7	27.3	37.8	20.0	31.2	42.5	17.7	28.4	39.0	
Opoitiki District	0.0	33.6	90.5	0.0	25.5	75.4	0.0	24.0	71.1	0.0	14.6	49.6	0.0	14.0	47.8	0.0	7.2	31.6	0.0	37.1	93.5	0.0	57.6	126.8	0.0	49.9	113.9	0.0	27.8	74.9	
Otorohanga District	0.0	26.2	77.5	0.0	17.9	60.9	0.0	17.6	59.8	0.0	26.7	78.9	0.0	35.4	95.4	0.0	43.7	110.1	0.0	36.7	99.0	0.0	26.0	77.1	0.0	26.4	78.1	0.0	25.2	74.5	
Palmerston North City	17.6	39.1	60.7	15.9	36.6	57.3	10.8	29.2	47.7	11.4	30.0	48.6	16.3	36.8	57.4	16.1	36.3	56.6	16.8	37.4	59.0	9.1	26.1	43.2	12.2	30.6	48.9	10.1	27.2	44.3	
Papakura District	4.9	32.3	59.7	1.5	26.4	51.4	2.6	28.5	54.4	2.6	27.7	52.8	2.5	26.5	50.6	5.5	30.9	56.3	5.4	30.4	55.4	5.5	30.9	56.3	8.7	36.3	63.8	7.7	34.7	61.8	
Porirua City	0.5	27.2	53.8	4.5	36.2	67.9	8.1	40.5	72.9	9.2	41.4	73.6	12.5	45.3	78.0	6.6	37.3	68.1	10.0	41.4	72.9	2.5	26.9	51.2	8.0	36.3	64.5	3.8	30.7	57.6	
Queenstown-Lakes District	0.0	15.0	51.0	0.0	13.3	45.3	0.0	18.0	53.3	0.0	10.3	35.2	0.0	4.8	21.0	0.0	16.2	48.0	0.0	28.6	72.0	0.0	36.0	82.2	0.0	24.4	61.6	0.0	37.7	83.0	
Rangitikei District	0.0	32.8	72.2	0.0	37.9	80.8	0.0	16.7	45.0	0.0	28.8	65.8	0.																		

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	12.9	19.0	25.1	13.1	19.3	25.6	12.5	18.6	24.6	11.7	17.7	23.6	12.8	19.0	25.2	14.3	20.8	27.4	16.9	24.0	31.1	14.0	20.6	27.2	13.7	20.3	26.9	14.3	21.1	27.9
Bay of Plenty	4.2	13.1	22.0	5.9	15.4	25.0	5.3	14.4	23.6	6.2	15.4	24.7	8.7	18.7	28.8	10.1	20.5	30.9	10.4	20.6	30.8	11.4	21.8	32.2	12.9	23.4	34.0	16.9	28.4	39.8
Canterbury	13.6	19.9	26.2	14.0	20.3	26.6	14.2	20.5	26.8	13.9	20.1	26.4	15.1	21.5	27.9	15.8	22.3	28.8	17.0	23.7	30.4	17.4	24.2	31.0	19.6	26.7	33.8	19.7	26.8	33.9
Capital and Coast	7.3	15.1	22.9	7.8	15.7	23.7	10.1	18.8	27.5	10.7	19.7	28.6	9.6	18.1	26.7	7.0	14.7	22.5	6.8	14.4	22.0	7.9	16.0	24.0	8.4	16.7	25.0	10.6	19.6	28.6
Counties Manukau	9.8	19.0	28.2	10.2	19.2	28.2	10.5	19.4	28.4	13.5	23.3	33.0	13.3	22.8	32.4	13.3	22.7	32.1	12.7	21.9	31.1	14.6	24.1	33.6	15.9	25.6	35.3	14.9	24.3	33.7
Hawke's Bay	3.6	11.7	19.8	3.9	12.2	20.4	6.2	15.5	24.7	7.8	17.7	27.6	6.7	16.1	25.5	6.0	15.0	24.0	9.1	19.4	29.7	9.7	20.2	30.7	10.7	21.5	32.3	9.9	20.3	30.7
Hutt Valley	6.8	18.0	29.1	6.4	17.4	28.3	3.3	12.6	21.9	5.2	15.4	25.7	5.5	15.8	26.1	9.1	20.9	32.7	11.7	24.6	37.5	13.2	26.7	40.2	12.9	26.3	39.8	11.5	24.6	37.6
Lakes	0.3	13.1	26.0	3.2	18.4	33.5	7.1	24.4	41.7	3.1	17.3	31.5	0.0	11.4	23.1	0.0	9.1	19.3	0.7	12.4	24.1	5.1	19.6	34.1	7.4	23.2	38.9	7.9	23.5	39.1
MidCentral	6.0	14.3	22.6	8.5	17.8	27.1	8.1	17.2	26.4	11.1	21.2	31.3	12.0	22.3	32.6	10.3	20.1	29.8	13.5	24.2	35.0	12.2	22.5	32.8	15.8	27.2	38.6	11.7	22.0	32.3
Nelson-Marlborough	7.3	18.6	30.0	6.9	18.1	29.3	8.0	19.6	31.1	7.5	18.8	30.1	9.0	20.7	32.4	8.5	19.9	31.2	8.8	20.2	31.7	7.5	18.3	29.1	7.4	18.0	28.7	7.6	18.3	28.9
Northland	5.5	15.8	26.2	4.2	13.7	23.3	3.8	13.1	22.4	5.7	15.8	26.0	7.5	18.3	29.2	11.9	24.4	37.0	10.4	22.2	34.0	11.0	22.9	34.7	8.1	18.8	29.4	8.7	19.4	30.1
Otago	6.5	13.8	21.1	7.0	14.6	22.2	10.0	18.6	27.2	12.0	21.2	30.3	12.9	22.4	31.9	10.4	19.1	27.9	9.6	18.1	26.6	9.0	17.3	25.6	8.8	17.1	25.4	9.6	18.2	26.7
South Canterbury	4.1	18.5	32.9	4.7	19.6	34.5	6.7	22.8	38.9	7.3	23.8	40.2	3.6	17.8	32.0	3.5	17.7	31.8	4.2	18.8	33.5	11.1	29.2	47.4	13.1	32.0	50.9	14.3	33.7	53.0
Southland	2.4	12.0	21.6	4.1	14.7	25.4	4.1	14.9	25.8	6.0	18.0	29.9	5.6	17.4	29.1	9.3	22.8	36.2	6.9	19.2	31.5	6.4	18.6	30.7	5.1	16.6	28.1	7.8	20.6	33.4
Tairāwhiti	7.5	31.2	54.9	0.0	15.5	32.0	0.0	16.9	34.2	0.0	17.2	34.8	1.2	20.4	39.5	0.0	14.2	30.3	0.0	7.8	19.7	0.0	12.6	27.6	1.2	20.1	38.9	5.6	28.1	50.5
Taranaki	3.5	12.8	22.1	2.5	11.2	19.9	4.8	14.9	24.9	6.8	17.8	28.9	6.3	17.1	27.8	8.8	20.6	32.4	9.2	21.2	33.1	12.3	25.5	38.7	9.7	21.9	34.2	9.3	21.5	33.6
Waikato	9.8	17.1	24.4	11.8	19.6	27.3	12.1	19.8	27.6	11.9	19.6	27.3	12.3	20.0	27.7	14.2	22.3	30.4	14.8	23.0	31.2	15.6	23.9	32.1	18.1	26.9	35.6	17.9	26.5	35.1
Wairarapa	0.0	19.2	38.8	0.0	17.6	36.4	0.4	21.1	41.7	2.3	24.9	47.5	0.4	21.6	42.8	0.0	16.9	35.9	0.0	10.6	25.2	0.0	10.6	25.3	4.1	27.2	50.3	6.1	30.8	55.4
Waitemata	12.2	20.0	27.7	14.0	22.1	30.2	14.3	22.3	30.3	15.4	23.5	31.6	15.1	23.1	31.1	14.7	22.5	30.3	13.5	21.0	28.5	14.7	22.3	30.0	14.5	21.9	29.4	13.6	20.8	28.0
West Coast	0.0	11.6	26.6	0.0	11.3	27.0	0.0	21.1	42.6	3.5	28.2	52.9	4.5	30.0	55.5	5.4	30.8	56.1	3.4	27.4	51.4	4.6	30.5	56.3	1.5	25.5	49.6	2.7	29.3	55.8
Whanganui	2.7	15.3	27.9	1.7	13.7	25.7	2.2	14.7	27.3	2.8	15.7	28.6	3.8	17.4	30.9	1.7	13.7	25.7	5.0	19.3	33.5	4.4	18.4	32.3	3.8	17.3	30.8	4.9	19.0	33.1
New Zealand	14.9	17.0	19.0	15.5	17.5	19.6	16.3	18.4	20.6	17.4	19.5	21.7	17.7	19.9	22.1	18.1	20.3	22.5	18.8	21.0	23.3	19.4	21.7	24.0	20.4	22.7	25.0	20.7	23.0	25.3

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	18.2	25.8	33.4	19.3	27.0	34.8	18.4	26.1	33.7	17.4	24.9	32.3	17.9	25.5	33.0	17.4	24.9	32.4	17.0	24.6	32.1	17.0	24.6	32.2	19.8	27.9	36.1	22.2	30.9	39.6
Bay of Plenty	18.0	29.5	40.9	18.0	29.2	40.4	16.3	26.9	37.4	15.5	25.6	35.7	14.5	24.1	33.8	12.6	21.6	30.6	11.9	20.6	29.3	15.2	24.7	34.2	17.7	27.6	37.6	22.0	32.8	43.6
Canterbury	19.3	26.3	33.3	16.8	23.4	30.0	19.6	26.5	33.4	21.1	28.2	35.3	23.3	30.6	38.0	21.3	28.3	35.3	20.0	26.8	33.6	19.9	26.7	33.5	20.4	27.2	34.1	19.4	26.0	32.6
Capital and Coast	11.8	21.1	30.4	15.8	26.0	36.3	16.4	26.8	37.2	18.5	29.3	40.2	16.1	26.2	36.4	16.5	26.7	36.9	14.2	23.9	33.5	13.9	23.4	32.8	15.1	24.8	34.5	13.7	23.0	32.4
Counties Manukau	12.9	21.7	30.5	13.1	21.8	30.4	13.6	22.2	30.9	15.9	25.0	34.0	16.1	25.1	34.1	17.8	27.0	36.2	19.6	29.1	38.6	20.8	30.4	40.0	20.7	30.2	39.7	20.3	29.7	39.1
Hawke's Bay	8.5	18.4	28.3	9.4	19.5	29.6	8.4	18.0	27.7	10.3	20.5	30.8	11.8	22.5	33.3	10.0	20.1	30.1	15.4	27.0	38.7	14.3	25.6	36.9	20.8	33.8	46.9	18.3	30.7	43.1
Hutt Valley	11.1	23.9	36.7	13.6	27.3	41.0	12.7	26.1	39.4	16.9	31.6	46.4	15.1	29.3	43.6	16.8	31.5	46.2	14.4	28.2	42.1	17.9	32.8	47.7	19.7	35.1	50.5	22.5	38.7	54.8
Lakes	6.7	21.7	36.8	8.9	24.7	40.6	11.8	28.8	45.9	17.5	36.3	55.0	17.7	36.2	54.7	21.8	42.0	62.1	20.7	40.1	59.6	22.2	42.0	61.7	20.2	38.8	57.4	19.0	37.3	55.6
MidCentral	17.4	29.2	41.1	18.6	30.7	42.8	21.1	33.8	46.5	16.4	27.8	39.3	15.7	26.9	38.2	17.3	29.0	40.6	18.1	29.9	41.7	17.3	28.9	40.5	16.6	27.9	39.2	15.6	26.7	37.8
Nelson-Marlborough	8.3	19.2	30.0	9.4	20.7	31.9	9.6	20.7	31.9	10.6	21.9	33.2	8.4	18.8	29.1	10.1	20.9	31.6	9.2	19.5	29.9	11.9	23.1	34.2	15.7	28.0	40.3	19.4	32.5	45.6
Northland	8.2	18.6	29.0	10.5	21.6	32.6	10.4	21.2	32.1	14.5	26.4	38.4	13.2	24.7	36.2	15.0	27.0	38.9	12.4	23.5	34.5	14.4	25.8	37.3	16.2	27.9	39.7	19.6	32.1	44.6
Otago	13.5	23.2	32.9	15.1	25.2	35.2	17.6	28.2	38.8	16.9	27.3	37.7	16.6	26.9	37.1	14.6	24.3	34.0	14.3	23.9	33.6	16.6	26.8	37.0	19.4	30.3	41.2	20.3	31.4	42.5
South Canterbury	11.0	28.8	46.7	15.0	34.6	54.1	13.5	32.3	51.1	12.1	30.3	48.4	5.1	19.5	33.9	9.8	26.5	43.2	9.7	26.3	42.9	16.1	35.3	54.5	10.3	27.1	43.9	12.1	29.7	47.2
Southland	10.2	24.0	37.8	9.8	23.4	37.0	10.2	24.0	37.7	12.7	27.5	42.3	12.6	27.2	41.7	10.2	23.9	37.7	7.6	19.9	32.2	8.1	20.8	33.5	9.9	23.2	36.5	13.7	28.4	43.2
Tairāwhiti	6.5	29.3	52.1	3.8	24.9	46.0	3.8	25.1	46.4	4.7	26.8	48.8	2.0	22.1	42.1	4.1	27.1	50.1	2.2	23.7	45.2	5.9	29.4	52.9	9.8	35.6	61.3	12.9	40.3	67.7
Taranaki	8.9	20.8	32.8	9.6	21.7	33.9	10.7	23.1	35.6	12.7	25.6	38.6	15.6	29.5	43.3	12.9	25.8	38.7	13.3	26.4	39.5	13.3	26.3	39.4	17.1	31.3	45.6	18.7	33.3	47.8
Waikato	17.7	26.3	34.8	16.1	24.2	32.3	18.0	26.4	34.9	19.1	27.6	36.2	20.1	28.8	37.5	20.2	28.9	37.6	20.1	28.8	37.4	22.2	31.1	40.0	23.0	32.0	41.0	25.8	35.2	44.6
Wairarapa	10.3	37.5	64.6	5.0	28.5	52.0	6.8	30.6	54.5	8.4	32.5	56.6	4.5	25.2	46.0	5.2	25.8	46.5	2.7	22.0	41.3	5.3	26.5	47.7	6.2	28.0	49.8	6.2	27.9	49.7
Waitemata	15.0	22.5	30.0	18.8	26.8	34.9	22.6	31.2	39.7	21.3	29.6	37.8	18.6	26.3	33.9	16.3	23.4	30.5	16.7	23.8	31.0	18.2	25.6	33.0	19.2	26.7	34.2	20.4	28.0	35.7
West Coast	1.5	26.0	50.5	8.2	37.2	66.2	2.5	26.5	50.6	2.5	26.7	51.0	0.0																	

	1981		1982		1983		1984		1985		1986		1987		1988		1989		1990												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	0.0	26.1	52.9	0.0	18.9	41.5	0.0	26.0	52.6	0.0	19.0	41.8	0.0	19.0	41.8	0.0	19.8	42.3	0.0	24.1	48.8	0.5	26.2	51.8	5.3	35.1	65.0				
Auckland City	13.3	19.5	25.7	13.4	19.7	25.9	12.6	18.7	24.8	11.9	17.9	23.9	13.3	19.6	25.9	15.0	21.7	28.3	17.3	24.5	31.7	14.4	21.1	27.8	13.9	20.6	27.3	14.6	21.5	28.3	
Banks Peninsula District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	9.7	42.4	0.0	18.1	61.5	0.0	24.4	72.4	0.0	35.3	95.2	0.0	35.9	96.9	0.0	27.4	81.0	0.4	8.4	36.7	
Buller District	0.0	5.0	21.9	0.0	8.1	35.5	0.0	7.9	34.7	0.0	23.8	64.3	0.0	23.9	64.4	0.0	27.9	70.3	0.0	39.4	89.9	0.0	43.4	95.4	0.0	37.9	86.6	0.0	28.8	72.5	
Carterton District	0.0	18.1	61.6	N/A	0.0	N/A	0.0	9.1	39.8	0.0	8.1	35.6	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	20.3	68.9	0.0	21.5	72.9			
Central Hawke's Bay District	0.0	10.0	33.9	0.0	10.0	34.0	N/A	0.0	N/A	0.0	11.8	40.3	0.0	16.8	49.6	0.0	16.6	49.2	0.0	15.1	44.6	0.0	15.1	44.7	0.0	19.9	53.7	0.0	10.3	35.1	
Central Otago District	0.0	13.2	39.0	0.0	8.8	29.8	0.0	8.8	29.9	0.0	4.3	19.0	0.0	9.0	30.6	0.0	17.2	46.4	0.0	28.9	65.9	0.0	24.0	57.2	0.0	16.2	43.7	0.0	12.2	36.1	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	14.8	22.3	29.8	14.0	21.3	28.7	13.6	20.8	28.0	13.2	20.3	27.4	16.0	23.7	31.4	16.7	24.5	32.3	17.4	25.2	33.1	17.0	24.8	32.6	20.1	28.5	36.9	21.2	29.7	38.2	
Clutha District	0.0	15.3	41.4	0.0	11.3	33.4	0.0	15.6	42.0	0.0	19.1	48.2	0.0	19.8	49.9	0.0	16.4	44.1	0.0	12.8	37.8	0.0	12.6	37.2	0.0	15.5	41.7	0.0	11.3	33.4	
Dunedin City	5.9	15.4	24.9	5.9	15.5	25.1	9.7	20.9	32.1	10.9	22.6	34.3	13.5	26.1	38.8	9.1	20.2	31.3	8.0	18.8	29.6	8.0	18.8	29.6	9.3	20.8	32.2	11.4	23.6	35.9	
Far North District	1.3	22.2	43.1	0.0	16.6	34.5	0.0	11.5	26.3	0.0	10.0	23.8	0.0	12.6	27.7	2.0	22.0	41.9	4.5	25.8	47.0	8.2	31.8	55.4	2.8	22.5	42.2	1.1	18.5	36.0	
Franklin District	0.0	18.3	40.2	0.0	23.1	46.8	0.0	14.0	32.0	2.6	27.5	52.5	0.5	23.0	45.6	1.4	24.7	47.9	1.4	24.4	47.3	5.6	31.6	57.7	5.6	31.7	57.9	4.7	31.0	57.2	
Gisborne District	8.5	32.8	57.0	0.4	18.7	36.9	1.2	20.1	39.1	2.0	21.9	41.8	2.9	23.6	44.3	0.0	15.8	32.8	0.0	7.8	19.7	0.0	14.2	30.2	2.0	21.7	41.4	7.5	31.3	55.0	
Gore District	0.0	14.5	42.9	0.0	24.3	61.3	0.0	19.6	52.8	0.0	9.9	33.6	0.0	23.6	59.5	0.0	33.8	77.1	0.0	33.9	77.4	0.0	10.2	34.5	0.0	4.8	21.0	0.0	4.7	20.8	
Grey District	0.0	11.8	34.9	0.0	12.0	35.5	0.0	29.0	69.1	0.0	33.4	76.3	0.0	33.4	76.3	0.0	26.2	62.4	0.0	13.4	39.8	0.0	21.4	57.8	0.0	21.0	56.8	0.0	33.9	80.9	
Hamilton City	3.1	15.6	28.0	6.3	20.6	34.9	6.3	20.5	34.7	6.3	20.4	34.6	5.7	19.4	33.1	6.7	20.9	35.1	7.7	22.2	36.6	11.5	27.6	43.7	14.9	32.2	49.4	13.0	29.4	45.8	
Hastings District	0.8	14.3	27.8	0.8	14.3	27.7	2.6	17.5	32.3	3.9	19.6	35.3	5.2	21.5	37.9	3.8	19.2	34.5	5.2	21.7	38.1	5.9	22.8	39.6	9.3	28.0	46.6	7.9	25.8	43.7	
Hauraki District	0.0	24.3	58.0	0.0	20.6	52.0	0.0	8.3	28.1	0.0	16.7	45.2	0.0	12.6	37.3	0.0	16.7	45.0	0.0	12.5	37.0	0.0	29.1	66.4	0.0	45.2	91.5	5.1	55.1	105.1	
Horowhenua District	2.1	22.3	42.5	2.1	22.9	43.8	0.0	16.2	33.7	0.0	17.7	35.7	0.4	18.8	37.3	0.0	15.7	32.5	8.3	31.9	55.5	8.1	31.3	54.5	12.9	38.7	64.5	3.6	24.0	44.4	
Hurumui District	0.0	26.3	77.9	0.0	43.7	110.1	0.0	25.5	75.4	0.0	32.6	87.9	0.0	7.6	33.3	0.0	29.4	79.3	0.0	38.5	96.9	0.0	63.3	139.2	0.0	48.7	116.1	0.0	47.5	113.2	
Invercargill City	3.7	20.8	38.0	3.0	20.0	36.9	4.5	22.5	40.5	7.8	28.1	48.5	5.5	24.8	44.0	7.1	27.4	47.8	3.9	22.2	40.4	6.2	25.9	45.5	7.9	28.5	49.1	12.0	34.7	57.4	
Kaikoura District	N/A	0.0	N/A	0.0	22.6	99.5	0.0	26.0	114.1	0.0	27.0	118.7	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A
Kaipara District	0.0	16.0	43.0	0.0	8.2	27.7	0.0	7.4	25.2	0.0	11.7	34.6	0.0	23.3	55.6	0.0	23.8	56.8	0.0	22.7	54.0	0.0	21.1	50.4	0.0	24.5	55.9	0.0	28.2	62.0	
Kapiti Coast District	0.0	12.2	25.9	1.0	17.5	33.9	6.3	26.0	45.8	3.9	21.8	39.8	4.3	21.7	39.1	1.5	16.6	31.7	5.8	23.9	42.0	6.3	24.1	42.0	12.3	33.4	54.5	11.2	31.4	51.5	
Kawerau District	0.0	19.3	84.7	0.0	82.4	280.1	0.0	134.2	590.0	0.0	139.3	612.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	32.8	111.5	N/A	0.0	N/A	0.0	N/A	0.0	N/A
Lower Hutt City	9.7	24.2	38.7	7.6	21.3	34.9	3.7	15.2	26.8	3.7	15.2	26.8	3.6	15.0	26.4	8.0	21.8	35.5	13.0	29.0	45.0	15.5	32.5	49.6	16.3	33.7	51.2	12.4	28.6	44.8	
Mackenzie District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	70.1	308.3	0.0	97.2	427.1	0.0	100.3	440.7	0.0	26.8	118.0	0.0	107.4	365.3	0.0	92.6	314.8
Manawatu District	0.0	13.2	33.3	0.0	12.9	32.6	0.0	13.1	32.9	0.0	20.7	45.5	0.0	20.8	45.7	0.0	18.0	41.1	0.0	13.1	33.1	0.0	16.1	38.3	0.0	15.7	37.5	0.0	20.9	46.0	
Manukau City	7.8	18.7	29.6	7.5	17.9	28.3	9.9	21.0	32.2	10.8	22.1	33.4	12.1	23.7	35.3	12.6	24.0	35.5	11.7	22.6	33.6	13.5	24.9	36.3	13.5	24.9	36.3	12.3	23.2	34.2	
Marlborough District	6.7	33.7	60.7	4.5	29.8	55.1	8.8	36.6	64.3	6.5	32.4	58.4	8.5	35.4	62.3	3.2	26.3	49.3	6.3	31.5	56.7	1.3	22.5	43.8	7.1	32.2	57.2	4.8	27.4	50.0	
Masteron District	0.0	20.5	46.9	0.0	18.1	43.1	0.0	21.3	48.7	0.0	30.5	63.2	0.0	30.7	63.7	0.0	28.6	60.9	0.0	15.4	38.7	0.0	12.4	33.4	0.0	29.1	60.3	2.2	37.9	73.6	
Matamata-Piako District	0.0	20.2	44.5	0.0	15.0	35.8	0.0	19.9	43.8	0.0	14.8	35.3	0.0	12.2	30.8	0.0	11.7	29.5	0.0	18.7	41.2	0.6	27.9	55.3	0.6	28.4	56.2	5.5	36.2	66.9	
Mt Cook District	0.9	15.8	30.6	0.3	14.3	28.3	3.6	20.1	36.7	4.2	21.2	38.3	2.8	18.8	34.7	1.5	16.0	30.5	4.1	20.7	37.3	5.5	22.8	40.1	6.8	24.7	42.5	8.7	27.1	45.5	
Nelson City	1.2	19.7	38.3	0.4	18.1	35.8	0.0	10.5	24.0	0.0	13.6	29.1	0.4	18.1	35.9	2.8	22.5	42.3	1.9	20.6	39.4	2.7	21.7	40.6	1.9	20.3	38.7	1.1	18.7	36.2	
New Plymouth District	2.7	15.4	28.1	2.7	15.6	28.4	5.0	19.4	33.8	7.5	23.2	39.0	6.7	22.0	37.2	8.6	24.7	40.9	10.4	27.4	44.4	13.8	32.5	51.1	11.7	29.2	46.8	11.9	29.8	47.7	
North Shore City	8.2	18.6	29.0	10.3	21.3	32.3	11.6	23.0	34.3	15.1	27.5	39.8	14.2	26.2	38.1	12.6	24.0	35.3	11.1	22.0	32.9	12.7	24.1	35.4	11.9	23.0	34.0	11.8	22.8	33.7	
Opoitiki District	0.0	13.3	45.2	0.0	24.2	71.6	0.0	25.5	75.5	0.0	26.5	78.4	0.0	17.4	59.2	0.0	20.8	70.7	0.0	29.7	88.0	0.0	27.5	81.5	0.0	38.6	97.1	0.0	54.1	123.5	
Otorohanga District	0.0	11.9	52.5	0.0	11.7	51.5	0.0	27.4	81.2	0.0	27.8	82.3	0.0	37.1	100.1	0.0	25.7	87.4	0.0	33.7	99.9	0.0	30.3	89.7	0.0	65.5	149.6	0.0	56.5	134.8	
Palmerston North City	0.8	13.9	27.0	3.3	18.9	34.4	2.1	17.1	32.2	8.1	26.5	44.9	8.8	27.5	46.2	7.2	24.7	42.2	5.3	22.0	38.8	4.6	20.8	37.1	8.2	26.7	45.2	7.5	25.6	43.7	
Papakura District	0.0	26.3	57.9	0.0	22.1	50.4	0.0	21.6	49.3	0.0	27.0	57.6	0.0	23.3	51.4	0.0	22.2	48.8	0.0	24.7	52.7	4.9	39.6	74.2	2.0	33.6	65.3	0.6	29.5	58.5	
Porirua City	0.0	34.6	73.7	0.0	31.6	67.5	0.0	24.9	54.7	0.0	26.7	56.8	0.0	18.6	42.4	0.0	19.6	44.8	0.0	17.7	42.3	0.0	26.6	58.5	0.0	23.7	54.0	0.0	31.9	67.9	
Queenstown-Lakes District	0.0	7.9	34.5	0.0	20.7	70.5	0.0	31.2	92.4	0.0	33.3	98.4	0.0	24.1	71.3	0.0	8.6	37.9	0.0	8.2	35.9	N/A	0.0	N/A	N/A	0.0	N/A	0.0	18.4	62.4	
Rangitikei District	0.0	18.1	45.7	0.0	10.7	31.8	0.0	7.2	24.4	0.0	3.7	16.2	0.0	3.8	16.7	0.0	4.2	18.5	0.0	12.1	35.7	0.0	19.4	48.8	0.0	21.7	54.6	0.0	18.1	48.7	
Rodney District	2.5	20.2	37.9	1.0	16.4	31.4	3.0	19.8	36.5	0.3	14.9	29.5	1.5	16.6	31.7	4.7	21.4	38.0	5.8	22.2	38.7	5.0									

	1991		1992		1993		1994		1995		1996		1997		1998		1999		2000													
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL											
Ashburton District	2.8	30.1	57.3	2.7	29.4	56.1	2.7	28.7	54.7	3.8	30.4	57.1	3.7	29.8	56.0	1.5	27.6	52.7	0.0	17.7	37.8	0.0	13.6	31.0	0.0	11.5	27.5					
Auckland City	18.2	25.8	33.4	19.4	27.2	35.0	18.9	26.7	34.4	17.9	25.5	33.0	18.2	25.8	33.5	17.4	24.9	32.4	17.0	24.6	32.2	19.9	28.1	36.3	22.4	31.2	39.9					
Banks Peninsula District	N/A	0.0	N/A	0.0	14.0	47.6	0.0	19.9	58.9	0.0	42.0	105.9	0.0	45.6	114.8	0.0	59.8	142.7	0.0	35.2	94.8	0.0	17.1	58.0	0.0	18.5	62.8	0.0	17.5	59.4		
Buller District	0.0	18.1	53.7	0.0	29.0	73.1	0.0	17.2	51.0	0.0	28.9	72.9	0.0	28.5	71.9	0.0	57.4	119.1	0.0	58.8	121.9	1.4	72.3	143.1	0.0	48.0	105.5	0.0	65.4	132.3		
Carterton District	0.0	22.2	75.4	0.0	11.6	51.1	0.0	10.5	46.3	0.0	18.2	61.7	0.0	7.7	34.0	0.0	15.8	53.7	0.0	18.1	61.5	0.0	18.4	62.4	0.0	29.2	86.3	0.0	18.9	64.3		
Central Hawke's Bay District	0.0	10.3	35.0	0.0	10.2	34.8	0.0	10.1	34.3	0.0	19.9	53.6	0.0	15.3	45.3	0.0	26.6	67.0	0.0	30.9	73.6	0.0	35.1	80.1	0.0	30.1	71.8	0.0	15.4	45.7		
Central Otago District	0.0	20.4	51.4	0.0	27.6	63.0	0.0	30.1	66.3	0.0	32.8	70.0	0.0	30.7	65.5	0.0	29.5	62.9	0.0	25.6	56.3	0.0	28.2	60.1	0.0	31.0	64.2	0.0	34.4	69.6		
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	21.9	30.5	39.1	18.1	26.0	33.9	21.0	29.3	37.6	21.7	30.1	38.5	24.2	33.0	41.7	21.5	29.8	38.1	19.8	27.8	35.8	19.9	28.0	36.0	20.0	27.9	35.9	17.9	25.4	33.0		
Clutha District	0.0	7.3	24.7	0.0	7.5	25.4	0.0	26.5	60.4	0.0	41.9	84.9	0.0	41.4	83.8	0.0	25.7	58.8	0.0	18.2	45.9	0.0	11.0	32.7	0.0	15.0	40.5	0.0	26.1	59.6		
Dunedin City	12.9	25.8	38.7	14.4	27.8	41.1	15.6	29.2	42.8	15.1	28.5	42.0	14.1	27.2	40.2	12.4	24.8	37.2	13.2	25.9	38.6	16.2	30.0	43.7	20.0	35.0	50.0	19.2	34.0	48.8		
Far North District	0.0	16.1	32.5	4.5	25.5	46.5	3.6	24.0	44.4	7.6	29.3	50.9	7.2	27.6	48.0	12.7	35.5	58.3	8.3	28.5	48.6	11.4	31.9	52.3	7.4	25.2	43.1	14.3	35.7	57.1		
Franklin District	3.7	29.9	56.2	5.8	32.8	59.9	2.4	25.4	48.4	8.4	34.9	61.4	7.2	32.7	58.2	10.1	36.6	63.0	6.0	29.8	53.7	6.8	30.5	54.3	2.1	22.3	42.5	2.9	23.3	43.8		
Gisborne District	9.4	33.9	58.4	7.5	31.2	54.9	7.6	31.4	55.3	6.6	30.0	53.3	4.7	26.4	48.2	6.9	31.1	55.2	6.0	29.8	53.6	7.9	32.6	57.4	15.1	43.6	72.1	20.6	51.6	82.5		
Gore District	0.0	9.3	31.8	0.0	9.2	31.5	0.0	28.1	67.1	0.0	27.6	65.8	0.0	27.3	65.2	0.0	27.2	65.0	0.0	31.9	72.8	0.0	31.7	72.4	0.0	18.0	48.6	0.0	18.0	48.5		
Grey District	0.0	29.2	69.8	0.0	50.4	102.0	0.0	44.6	92.5	0.0	36.3	79.8	0.0	13.1	38.8	0.0	15.6	42.1	0.0	34.7	76.4	0.0	36.1	79.5	0.0	51.5	104.1	0.0	48.1	99.8		
Hamilton City	11.7	27.5	43.3	10.0	25.0	40.0	13.7	30.0	46.4	10.3	25.2	40.1	12.9	28.7	44.5	14.1	30.3	46.6	15.5	32.2	48.9	13.3	29.1	45.0	13.2	28.9	44.7	15.9	32.5	49.1		
Hastings District	7.3	24.9	42.4	4.4	20.0	35.6	7.7	25.0	42.4	7.0	23.8	40.6	14.5	34.8	55.1	10.1	28.1	46.2	17.2	38.3	59.3	9.4	27.2	44.9	16.3	36.9	57.5	12.7	31.7	50.7		
Hauraki District	9.2	60.8	112.4	4.8	51.6	98.5	2.8	48.1	93.4	0.0	39.8	80.6	0.0	39.7	80.5	0.0	31.5	67.1	0.0	20.9	49.7	0.0	27.5	60.6	0.0	31.1	66.3	0.0	38.2	77.3		
Horowhenua District	5.4	27.1	48.8	6.3	28.6	50.8	7.2	29.8	52.4	5.4	27.0	48.6	3.6	24.1	44.5	3.7	24.6	45.5	5.4	27.2	48.9	2.8	22.5	42.3	1.9	20.3	38.7	1.1	18.8	36.4		
Huroni District	0.0	30.1	81.1	0.0	30.4	81.9	0.0	30.1	81.2	0.0	40.8	97.2	0.0	39.6	94.5	0.0	29.9	75.3	0.0	22.5	60.8	0.0	34.4	82.1	0.0	40.2	91.7	0.0	41.3	94.3		
Invercargill City	13.6	36.9	60.1	15.5	39.6	63.8	11.2	33.5	55.9	15.7	40.2	64.7	11.3	33.7	56.2	9.8	31.9	54.0	5.5	24.9	44.3	3.9	22.3	40.6	7.0	27.0	47.1	10.3	31.9	53.6		
Kaikoura District	N/A	N/A	N/A	N/A	0.0	N/A	0.0	15.2	46.7	0.0	15.0	46.0	0.0	37.5	127.4	0.0	23.3	102.4	0.0	22.0	96.8	0.0	14.7	64.6	0.0	62.7	169.2	0.0	59.5	160.6		
Kaipara District	0.0	22.3	53.3	0.0	14.8	39.9	0.0	18.1	45.7	0.0	20.9	49.8	0.0	25.0	57.1	0.0	32.3	68.9	0.0	34.8	72.2	0.0	37.5	76.0	0.0	20.1	47.9	0.0	16.9	42.5		
Kapiti Coast District	14.3	35.8	57.3	16.4	37.8	59.1	19.2	41.4	63.7	22.7	46.0	69.2	16.0	36.8	57.6	12.1	30.9	49.7	8.9	25.6	42.4	7.6	23.6	39.6	15.2	35.1	54.9	13.0	31.8	50.6		
Kawerau District	N/A	0.0	N/A	0.0	12.1	53.2	0.0	27.0	91.7	0.0	25.1	85.3	0.0	13.4	59.0	N/A	0.0	9.4	41.2	0.0	22.6	77.0	0.0	41.2	111.2	0.0	29.4	87.1	0.0	31.6	87.1	
Lower Hutt City	11.3	27.1	42.8	14.2	31.1	48.0	14.2	31.2	48.1	16.7	34.6	52.5	13.8	30.7	47.7	16.1	33.7	51.4	14.9	32.1	49.3	17.4	35.6	53.9	17.0	35.3	53.6	19.0	38.0	57.0		
Mackenzie District	0.0	56.7	249.3	N/A	0.0	N/A	0.0	24.0	105.5	0.0	96.6	328.5	0.0	97.5	331.7	0.0	134.1	455.9	0.0	56.4	191.7	0.0	106.8	288.2	0.0	83.0	224.0	0.0	94.1	236.9		
Manawatu District	0.0	23.8	50.7	0.0	23.5	50.1	0.0	23.4	49.9	0.0	25.4	52.7	1.9	32.7	63.4	10.3	46.7	83.1	10.2	46.1	81.9	5.8	38.6	71.3	1.9	32.1	62.2	0.0	27.6	55.9		
Manukau City	12.3	23.1	33.8	12.1	22.5	32.8	15.8	27.0	38.2	16.2	27.4	38.6	15.5	26.4	37.3	15.5	26.2	37.0	19.0	30.4	41.7	22.0	34.0	46.0	22.9	35.0	47.0	22.6	34.6	46.5		
Marlborough District	6.8	30.9	55.0	6.8	30.7	54.6	5.7	28.6	51.5	9.3	33.5	57.8	8.9	32.1	55.3	14.2	39.7	65.2	12.1	36.3	60.5	11.1	34.6	58.2	11.0	34.3	57.6	14.6	39.6	64.5		
Masterton District	7.1	47.2	87.2	2.2	37.7	73.2	3.6	38.5	73.4	6.3	41.9	77.4	0.6	30.4	60.1	1.9	32.0	62.0	0.0	22.2	47.2	3.2	34.2	65.2	3.2	34.5	65.8	7.3	41.3	75.3		
Matamata-Piako District	8.0	40.2	72.3	11.9	45.9	79.9	2.9	31.1	59.3	0.5	26.2	51.9	0.0	16.9	37.2	0.0	18.7	39.8	2.7	28.7	54.7	8.7	39.1	69.6	12.5	45.2	77.9	7.2	36.1	65.0		
Napier City	7.9	25.7	43.5	10.7	29.9	49.0	7.1	24.3	41.6	8.4	26.1	43.8	8.3	25.9	43.4	8.3	25.7	43.2	11.1	29.9	48.8	10.3	28.7	47.2	14.6	35.1	55.5	13.1	32.9	52.6		
Nelson City	0.4	18.0	35.7	3.5	22.9	42.3	5.2	26.1	47.0	7.8	30.1	52.4	3.4	22.8	42.1	1.8	19.3	36.8	0.0	12.1	25.7	0.0	13.3	27.5	1.7	17.9	34.2	3.1	20.7	38.2		
New Plymouth District	10.1	27.3	44.5	10.5	27.6	44.8	9.6	25.9	42.2	13.7	31.5	49.4	17.9	37.1	56.3	14.6	32.4	50.3	13.3	30.7	48.0	12.7	29.8	46.9	17.6	36.4	55.2	17.2	35.6	54.0		
North Shore City	14.8	26.6	38.3	19.0	31.7	44.4	22.5	35.8	49.1	20.6	33.4	46.2	17.0	28.7	40.4	16.1	27.5	39.0	16.5	28.1	39.6	16.4	27.8	39.2	16.5	28.0	39.5	18.1	30.0	41.9		
Opoitiki District	0.0	59.6	131.2	0.0	56.6	129.2	0.0	49.5	118.2	0.0	41.1	103.6	0.0	44.3	105.7	0.0	27.4	74.0	0.0	27.6	74.5	0.0	22.0	65.1	0.0	27.8	75.1	0.0	32.2	81.1		
Otorohanga District	0.0	47.2	118.9	N/A	0.0	N/A	0.0	8.3	36.6	0.0	14.4	49.0	0.0	14.3	48.5	0.0	6.4	28.2	N/A	0.0	N/A	0.0	25.5	75.4	0.0	36.0	97.1	0.0	57.5	137.2		
Palmerston North City	13.7	35.1	56.5	19.3	43.0	66.6	24.2	49.7	75.1	16.8	39.4	62.1	13.8	35.2	56.7	10.6	30.6	50.5	9.7	28.9	48.1	8.8	27.4	46.0	9.4	28.1	46.8	8.6	26.7	44.8		
Papakura District	0.0	18.8	41.4	0.0	21.3	45.4	0.0	14.5	34.5	0.0	16.3	37.2	0.0	23.1	47.8	5.6	36.8	67.9	6.8	38.5	70.2	1.6	28.2	54.8	0.5	25.2	49.9	2.7	29.2	55.6		
Porirua City	0.0	26.5	60.6	0.0	32.9	70.2	0.0	25.9	57.1	0.0	29.1	62.0	0.0	33.1	67.0	7.0	46.1	85.3	9.7	48.7	87.7	7.3	41.1	75.0	3.2	34.1	65.0	4.4	35.5	66.7		
Queenstown-Lakes District	0.0	16.4	55.8	0.0	16.2	55.1	0.0	16.0	54.4	0.0	39.6	99.7	0.0	61.0	134.3	0.0	48.5	110.8	0.0	29.4	74.1	0.0	25.1	63.2	0.0	36.6	83.6	0.0	37.1	84.7		
Rangitikei District	0.0	21.3	53.7	0.0	37.4	77.5	0.0	40.7	82.5	0.0	36.1	74.9	0.0	22.2	53.1	0.0	26.8	61.2	0.0	27.2	62.1	0.0	19.4	48.8	0.0	15.6	42.0	0.0	24.0	57.2		

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	21.1	28.7	36.4	23.0	31.0	39.0	25.3	33.6	42.0	29.0	38.0	46.9	29.3	38.2	47.1	28.1	36.9	45.7	23.2	31.3	39.4	22.1	30.1	38.1	23.9	32.2	40.6	25.2	33.9	42.5
Bay of Plenty	14.2	26.7	39.3	14.9	27.5	40.0	16.1	28.8	41.5	17.6	30.5	43.4	21.3	35.1	48.9	20.2	33.6	46.9	20.7	33.8	46.8	18.9	31.2	43.5	19.7	31.9	44.2	19.5	31.6	43.7
Canterbury	24.8	32.8	40.9	21.9	29.5	37.1	23.1	30.9	38.6	23.7	31.5	39.3	24.5	32.4	40.3	25.9	33.9	42.0	28.8	37.2	45.6	29.4	37.9	46.4	28.6	36.9	45.2	25.2	33.1	40.9
Capital and Coast	29.3	42.4	55.5	24.2	36.3	48.4	22.4	34.2	45.9	25.2	37.5	49.8	24.7	36.9	49.1	24.2	36.3	48.4	20.9	32.4	43.8	21.5	33.1	44.7	23.6	35.6	47.7	22.2	34.0	45.8
Counties Manukau	18.4	29.7	41.1	19.6	31.1	42.5	20.6	32.1	43.7	25.4	37.7	50.0	25.9	38.2	50.4	23.0	34.5	46.0	18.9	29.5	40.0	15.1	24.7	34.3	16.9	26.8	36.8	18.6	28.9	39.2
Hawke's Bay	20.9	35.0	49.1	20.4	34.3	48.2	21.0	35.1	49.1	24.7	39.5	54.4	28.0	43.5	59.0	23.7	38.2	52.7	19.3	32.6	45.9	14.4	26.3	38.2	16.1	28.5	40.9	16.7	29.3	41.8
Hutt Valley	26.5	44.1	61.8	23.9	40.8	57.7	24.1	41.0	57.8	21.6	37.7	53.8	18.4	33.7	49.0	24.4	41.2	58.1	30.5	49.0	67.4	33.8	53.0	72.2	27.6	45.4	63.3	19.4	35.0	50.6
Lakes	8.8	27.4	46.0	12.3	32.2	52.2	15.0	35.8	56.7	20.3	43.2	66.1	20.8	43.7	66.6	17.5	38.9	60.3	16.0	36.2	56.5	15.0	34.5	54.0	21.5	43.1	64.6	19.1	39.6	60.1
MidCentral	21.1	34.0	46.9	21.2	34.1	46.9	20.9	33.6	46.2	23.2	36.5	49.7	26.5	40.3	54.1	23.9	37.2	50.6	26.3	40.1	53.9	25.3	38.9	52.6	30.8	45.5	60.2	26.4	40.3	54.1
Nelson-Marlborough	17.0	31.9	46.8	16.9	31.7	46.4	16.6	31.2	45.7	16.1	30.4	44.7	16.8	31.1	45.5	20.1	35.4	50.6	22.9	38.7	54.6	22.1	37.6	53.1	20.6	35.5	50.5	18.3	32.6	46.9
Northland	15.4	29.4	43.4	15.0	28.9	42.8	15.8	29.9	44.0	20.0	35.2	50.4	18.1	32.6	47.2	15.4	29.1	42.7	12.9	25.6	38.3	13.4	26.1	38.8	13.1	25.5	37.9	16.5	29.8	43.1
Otago	34.5	48.2	61.9	30.2	43.2	56.3	29.5	42.6	55.6	30.3	43.5	56.7	32.2	45.8	59.3	33.5	46.3	61.2	29.0	42.0	55.0	25.1	37.4	49.6	22.5	34.3	46.0	23.6	35.6	47.6
South Canterbury	15.4	35.5	55.6	10.5	28.5	46.5	10.5	28.5	46.5	18.9	40.2	61.6	21.2	43.4	65.7	23.6	46.7	69.9	27.0	51.0	75.0	30.5	55.4	80.4	29.3	53.6	77.9	23.4	45.9	68.4
Southland	20.6	37.7	54.8	20.1	37.2	54.2	23.4	41.4	59.4	25.8	44.6	63.4	28.1	47.5	66.9	24.5	43.0	61.5	26.4	45.3	64.2	26.3	45.3	64.2	24.7	43.1	61.6	21.9	39.6	57.2
Tairāwhiti	14.6	42.2	69.7	8.5	32.8	57.1	9.5	34.3	59.2	13.5	40.5	67.4	9.4	34.0	58.6	15.3	42.7	70.0	11.3	36.8	62.3	18.7	48.0	77.3	14.6	42.1	69.6	14.6	42.0	69.4
Taranaki	13.8	27.6	41.4	12.1	25.4	38.8	10.7	23.4	36.1	13.3	27.0	40.6	11.4	24.3	37.2	15.9	30.3	44.7	13.1	26.6	40.0	20.4	36.1	51.7	18.4	33.5	48.5	17.6	32.4	47.2
Waikato	20.4	30.1	39.8	22.5	32.5	42.5	24.1	34.3	44.5	24.3	34.5	44.6	24.1	34.2	44.3	25.4	35.7	46.0	24.0	33.9	43.8	23.2	32.9	42.6	21.4	30.7	40.1	20.1	29.2	38.2
Wairarapa	14.0	43.6	73.3	17.4	48.6	79.8	15.1	45.1	75.1	26.3	61.8	97.2	22.9	57.3	91.8	26.9	63.0	99.2	16.6	47.8	79.1	22.2	55.5	88.9	21.9	54.8	87.7	20.4	52.2	84.1
Waitemata	13.9	22.1	30.3	12.5	20.2	27.9	13.9	21.8	29.8	15.3	23.4	31.6	16.2	24.5	32.8	18.3	27.0	35.6	16.1	24.1	32.1	16.0	23.9	31.8	13.4	20.7	28.1	13.3	20.5	27.7
West Coast	18.3	51.2	84.0	25.7	61.6	97.5	24.7	60.4	96.1	25.8	61.9	97.9	14.4	44.9	75.3	13.5	43.9	74.4	8.9	36.9	64.9	10.3	39.7	69.1	12.5	42.8	73.1	15.2	47.3	79.4
Whanganui	15.7	34.4	53.0	13.8	31.8	49.8	12.8	30.6	48.4	9.1	25.4	41.7	13.0	31.2	49.4	13.2	31.6	50.0	22.6	44.3	66.0	20.3	41.1	62.0	18.9	39.2	59.4	10.4	27.3	44.2
New Zealand	30.3	33.1	36.0	29.3	32.1	34.9	30.0	32.8	35.7	32.4	35.3	38.2	33.0	35.9	38.8	33.1	36.1	39.0	32.0	34.8	37.7	31.5	34.4	37.2	31.3	34.2	37.0	29.8	32.6	35.3

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	25.0	33.6	42.2	23.5	31.9	40.3	26.9	35.9	44.9	29.8	39.3	48.7	31.0	40.5	50.1	31.9	41.6	51.4	32.5	42.4	52.2	34.2	44.4	54.5	33.9	44.1	54.3	32.2	42.3	52.3
Bay of Plenty	17.1	28.4	39.7	21.4	33.4	45.5	20.8	32.4	44.0	19.8	30.9	42.1	14.5	24.1	33.7	17.0	27.1	37.3	15.4	24.9	34.5	20.3	30.8	41.4	23.1	34.2	45.4	29.2	41.3	53.4
Canterbury	28.5	36.8	45.1	29.6	38.0	46.3	30.7	39.1	47.5	29.9	38.2	46.5	34.3	43.1	51.8	35.7	44.5	53.3	36.9	45.8	54.7	32.9	41.3	49.7	32.2	40.5	48.8	32.0	40.3	48.6
Capital and Coast	22.8	34.8	46.7	21.2	32.7	44.2	21.8	33.3	44.9	18.8	29.7	40.5	21.7	33.2	44.6	22.8	34.4	45.9	25.2	37.3	49.3	28.1	40.6	53.1	27.2	39.5	51.8	26.8	39.0	51.2
Counties Manukau	21.2	31.9	42.6	21.7	32.4	43.0	22.8	33.5	44.1	25.9	37.0	48.1	26.4	37.4	48.5	27.4	38.4	49.5	24.1	34.5	44.8	25.4	35.8	46.2	25.6	36.0	46.4	29.1	40.0	50.9
Hawke's Bay	22.5	36.4	50.3	24.2	38.4	52.6	27.2	42.0	56.7	23.2	37.0	50.8	21.2	34.5	47.8	23.5	37.2	51.0	24.8	38.8	52.7	25.4	39.4	53.4	24.2	37.9	51.6	27.0	41.3	55.6
Hutt Valley	19.9	35.7	51.5	28.8	46.8	64.7	31.5	50.1	68.6	33.3	52.2	71.0	35.8	55.3	74.8	39.8	60.1	80.3	36.8	56.4	76.1	34.1	53.1	72.1	28.7	46.5	64.2	31.9	50.4	68.8
Lakes	14.0	32.3	50.5	6.4	20.9	35.4	8.3	23.3	38.2	12.9	29.6	46.4	25.5	46.7	67.9	27.6	49.5	71.3	25.0	45.8	66.6	21.7	41.3	60.9	23.8	43.8	63.9	34.7	57.8	80.9
MidCentral	26.1	40.0	53.8	23.3	36.6	49.8	26.0	39.7	53.5	28.8	43.1	57.4	30.5	45.0	59.6	25.9	39.5	53.1	20.6	33.0	45.3	23.1	36.0	48.8	31.0	45.5	59.9	33.6	48.6	63.5
Nelson-Marlborough	20.9	35.8	50.6	18.5	32.5	46.5	18.1	31.8	45.5	14.7	27.2	39.8	16.8	29.9	43.0	15.8	28.6	41.3	16.3	29.1	41.8	22.7	36.8	50.9	24.5	39.0	53.4	29.5	44.9	60.3
Northland	19.3	33.2	47.0	22.2	36.6	51.1	17.9	31.0	44.2	21.1	34.9	48.8	20.2	33.6	47.1	20.5	33.8	47.1	17.6	30.0	42.4	21.6	34.9	48.2	23.7	37.4	51.1	30.6	45.6	60.7
Otago	22.5	34.2	46.0	21.6	33.2	44.8	22.4	34.1	45.8	26.0	38.4	50.8	30.1	43.1	56.1	31.8	45.1	58.4	34.8	48.6	62.4	34.7	48.5	62.3	33.0	46.6	60.2	32.5	46.0	59.4
South Canterbury	20.5	41.9	63.4	24.1	46.7	69.4	23.1	45.3	67.5	20.8	42.1	63.4	18.0	38.3	58.6	15.9	35.5	55.0	13.2	31.5	49.8	12.9	30.9	48.9	17.6	37.4	57.3	23.3	45.3	67.3
Southland	18.1	34.4	50.8	19.1	35.7	52.4	22.1	39.5	57.0	20.1	37.1	54.1	22.4	40.1	57.8	23.0	40.9	58.8	29.5	49.0	68.5	29.5	49.0	68.4	27.3	46.1	65.0	31.2	50.9	70.6
Tairāwhiti	9.5	34.2	59.0	17.8	46.8	75.9	18.9	48.4	77.9	28.8	62.1	95.5	24.6	56.6	88.6	31.4	66.0	100.6	22.9	54.8	86.7	23.7	55.6	87.5	17.3	46.7	76.2	19.6	50.3	81.0
Taranaki	13.5	27.0	40.5	10.0	22.2	34.4	12.9	26.0	39.2	11.5	24.2	36.9	17.4	31.9	46.3	15.1	28.8	42.5	15.0	28.7	42.3	18.1	32.6	47.2	22.4	38.0	53.6	28.4	45.4	62.4
Waikato	21.8	31.0	40.3	22.8	32.2	41.6	24.8	34.5	44.2	25.9	35.6	45.3	28.3	38.4	48.4	30.1	40.3	50.5	31.2	41.6	51.9	31.6	41.9	52.3	32.7	43.1	53.6	34.8	45.5	56.2
Wairarapa	18.9	49.8	80.7	16.1	44.9	73.7	13.5	40.3	67.2	8.4	32.3	56.1	17.2	45.3	73.5	28.2	60.1	91.9	33.6	67.3	101.0	21.7	50.9	80.2	17.8	45.5	73.2	19.7	48.1	76.6
Waitemata	14.5	21.9	29.3	18.1	26.0	33.9	19.2	27.2	35.2	21.8	30.1	38.5	21.3	29.5	37.6	25.4	34.0	42.7	25.4	33.9	42.5	23.7	32.0	40.3	22.3	30.3	38.3	23.1	31.1	39.1

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	7.2	11.8	16.4	7.4	12.1	16.8	7.6	12.4	17.2	8.9	14.0	19.1	10.6	16.1	21.6	10.5	16.0	21.5	10.8	16.4	21.9	11.4	17.2	22.9	12.6	18.6	24.7	12.4	18.4	24.4
Bay of Plenty	0.8	8.7	16.6	3.8	12.9	22.1	3.6	12.4	21.2	5.9	15.4	25.0	5.5	14.9	24.4	7.4	17.3	27.2	7.7	17.5	27.3	8.4	18.2	28.0	11.2	21.8	32.3	10.3	20.3	30.4
Canterbury	5.4	9.5	13.7	5.6	9.8	14.0	4.8	8.8	12.7	6.8	11.3	15.8	7.4	12.0	16.6	7.5	12.1	16.7	7.6	12.2	16.8	9.3	14.2	19.2	11.9	17.4	22.9	12.2	17.8	23.3
Capital and Coast	3.5	9.5	15.5	4.6	11.1	17.6	6.5	13.8	21.0	9.5	17.7	25.8	10.0	18.3	26.7	9.5	17.7	25.9	9.1	17.1	25.2	10.9	19.5	28.2	11.5	20.3	29.1	12.5	21.6	30.7
Counties Manukau	1.8	7.4	13.0	2.5	8.4	14.4	4.1	10.8	17.5	8.4	16.6	24.8	9.2	17.6	26.0	9.6	17.9	26.1	7.0	14.4	21.7	8.4	16.0	23.5	8.7	16.3	23.9	11.4	19.6	27.8
Hawke's Bay	2.9	10.4	17.9	4.4	12.8	21.1	5.7	14.6	23.5	9.4	19.7	30.1	9.4	19.7	30.0	10.1	20.6	31.2	8.2	18.1	27.9	8.4	18.2	28.0	7.7	17.1	26.5	6.3	15.2	24.0
Hutt Valley	6.9	17.2	27.5	7.7	18.3	29.0	8.1	19.0	29.8	6.5	16.8	27.0	8.3	19.2	30.0	8.7	19.6	30.5	9.1	20.4	31.6	10.0	21.7	33.3	10.5	22.4	34.2	16.9	30.9	44.9
Lakes	1.4	15.0	28.6	1.4	15.2	28.9	1.4	15.1	28.8	3.3	18.7	34.2	6.0	23.0	40.0	9.4	28.2	47.1	7.1	24.2	41.3	5.1	21.1	37.0	6.5	22.3	38.1	10.9	28.6	46.3
MidCentral	0.8	6.6	12.3	0.8	6.4	12.1	1.3	7.1	12.9	3.6	10.8	18.1	5.3	13.4	21.4	5.7	13.8	22.0	4.2	11.7	19.3	5.0	12.9	20.7	8.0	16.9	25.9	9.5	19.0	28.5
Nelson-Marlborough	1.1	9.3	17.4	2.9	12.2	21.4	2.9	12.0	21.2	3.3	12.5	21.8	0.4	7.7	14.9	3.2	12.4	21.6	5.5	15.9	26.3	6.2	16.8	27.4	4.5	14.1	23.7	3.3	12.1	20.9
Northland	1.3	10.7	20.1	4.6	15.7	26.9	5.5	17.0	28.6	5.8	17.3	28.8	3.5	13.5	23.5	3.7	13.4	23.1	4.0	13.8	23.5	5.7	16.6	27.4	6.1	16.9	27.8	10.9	23.5	36.1
Otago	4.7	11.0	17.4	4.3	10.5	16.7	5.9	12.8	19.7	8.9	16.7	24.6	8.8	16.7	24.6	6.9	14.1	21.4	7.9	15.4	22.9	10.3	18.6	26.9	11.3	20.0	28.6	10.5	18.8	27.1
South Canterbury	0.0	7.6	16.8	0.0	7.6	16.7	0.0	9.4	19.4	0.0	10.4	21.1	0.0	10.4	21.1	0.0	10.6	21.4	1.2	13.1	24.9	1.7	13.9	26.0	2.2	14.5	26.9	1.2	12.7	24.1
Southland	2.8	12.7	22.6	0.5	8.7	17.0	0.5	8.7	17.0	0.5	8.7	16.9	2.8	12.8	22.7	4.5	15.4	26.3	3.6	13.9	24.2	4.4	15.1	25.8	3.1	13.0	22.9	4.4	15.0	25.6
Tairāwhiti	0.4	19.2	37.9	0.0	17.7	35.8	0.0	14.3	30.4	0.0	16.1	33.3	0.0	17.3	35.0	0.0	17.5	35.4	0.0	14.1	30.1	0.0	12.7	27.9	0.0	14.2	30.3	1.2	20.3	39.3
Taranaki	0.0	4.4	10.0	0.1	7.5	14.8	1.2	9.3	17.5	0.8	8.6	16.5	1.9	10.5	19.1	3.3	12.8	22.4	4.5	14.6	24.8	4.1	13.9	23.8	4.8	15.0	25.2	6.4	17.3	28.2
Waikato	6.0	12.5	19.0	6.4	13.0	19.6	7.9	14.9	21.9	7.6	14.4	21.2	7.3	13.9	20.5	6.3	12.5	18.7	7.6	14.1	20.7	10.0	17.2	24.3	12.2	19.8	27.4	13.1	20.9	28.6
Wairarapa	0.0	16.2	34.6	0.0	15.9	33.9	0.0	10.4	24.8	0.0	10.1	24.2	0.0	8.5	21.4	0.0	18.8	38.0	3.1	25.3	47.6	6.0	30.1	54.1	4.9	28.0	51.0	1.2	21.2	41.1
Waitemata	4.8	10.3	15.8	6.0	11.8	17.7	4.9	10.4	15.8	3.4	8.2	13.0	3.6	8.4	13.2	5.0	10.3	15.6	6.8	12.5	18.2	7.1	12.8	18.5	9.1	15.4	21.6	8.8	14.9	21.0
West Coast	0.0	11.9	28.5	0.0	7.7	20.7	0.0	11.4	27.3	0.0	20.0	41.4	0.5	23.9	47.4	0.0	21.8	44.2	0.0	15.8	34.7	0.0	11.8	28.2	0.0	16.1	35.5	0.0	20.3	42.1
Whanganui	0.0	8.0	17.0	0.0	9.9	19.9	0.0	9.0	18.6	0.0	9.0	18.6	0.0	8.8	18.2	3.2	15.9	28.6	6.5	21.2	36.0	9.6	25.8	42.1	7.7	23.1	38.4	3.8	17.1	30.4
New Zealand	8.9	10.5	12.1	9.7	11.4	13.1	10.2	11.9	13.6	11.9	13.7	15.5	12.5	14.3	16.1	13.2	15.1	16.9	13.4	15.3	17.2	14.7	16.7	18.7	16.1	18.1	20.2	16.9	18.9	21.0

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	12.1	18.1	24.0	14.6	21.1	27.5	14.4	20.8	27.2	17.9	25.0	32.0	19.7	27.1	34.5	24.6	32.8	41.0	23.2	31.2	39.2	24.5	32.6	40.8	23.1	31.1	39.1	23.5	31.6	39.8
Bay of Plenty	10.1	19.9	29.8	9.5	18.9	28.4	11.1	21.0	30.8	12.9	23.1	33.3	12.2	22.0	31.8	11.7	21.2	30.6	11.6	20.7	29.9	14.3	24.0	33.7	17.6	27.9	38.2	23.4	34.8	46.3
Canterbury	13.7	19.4	25.2	13.3	18.9	24.6	14.2	19.9	25.7	16.4	22.4	28.5	19.9	26.4	32.9	21.2	27.9	34.5	22.5	29.3	36.1	25.0	32.1	39.2	23.5	30.3	37.2	24.5	31.5	38.5
Capital and Coast	12.0	20.9	29.9	13.9	23.3	32.7	15.4	25.1	34.8	16.2	26.1	35.9	17.6	27.7	37.8	16.1	25.8	35.5	15.0	24.4	33.8	15.7	25.1	34.6	17.8	27.8	37.7	19.5	29.7	40.0
Counties Manukau	15.3	24.5	33.6	16.3	25.7	35.0	18.8	28.6	38.4	16.4	25.5	34.5	17.3	26.4	35.5	17.5	26.5	35.4	18.0	27.0	36.0	18.9	28.0	37.1	19.9	29.2	38.4	24.7	34.7	44.6
Hawke's Bay	7.8	17.2	26.5	12.3	23.1	33.9	15.5	27.2	38.8	18.4	30.7	43.0	18.6	30.8	43.1	20.4	33.0	45.6	21.0	33.7	46.4	22.6	35.6	48.7	22.5	35.5	48.5	24.5	37.9	51.3
Hutt Valley	16.7	30.8	44.9	23.5	39.3	55.1	19.0	33.5	48.1	20.8	35.8	50.8	18.2	32.3	46.5	20.9	35.8	50.6	18.9	33.2	47.5	21.4	36.4	51.4	19.2	33.6	48.0	23.0	38.4	53.7
Lakes	11.6	28.9	46.3	9.2	25.7	42.3	9.6	25.9	42.3	10.0	26.2	42.5	14.6	32.5	50.5	15.6	33.6	51.6	16.3	34.3	52.2	16.4	34.1	51.7	14.5	31.4	48.2	15.6	32.8	50.0
MidCentral	10.7	20.6	30.5	7.9	16.8	25.6	9.2	18.4	27.7	10.0	19.4	28.8	13.9	24.5	35.0	14.8	25.5	36.2	15.0	25.8	36.6	20.1	32.1	44.0	20.0	31.9	43.8	21.3	33.4	45.5
Nelson-Marlborough	5.4	15.1	24.8	4.9	14.2	23.5	6.7	16.7	26.7	5.5	14.9	24.3	7.9	18.3	28.7	6.7	16.4	26.0	8.0	18.2	28.3	12.6	24.2	35.8	15.3	27.7	40.0	19.5	32.8	46.1
Northland	9.3	21.1	32.9	10.7	22.8	34.8	9.3	20.7	32.1	17.8	31.7	45.7	16.9	30.5	44.1	21.5	36.0	50.5	16.9	30.1	43.3	18.1	31.2	44.3	12.7	24.2	35.7	17.3	30.0	42.8
Otago	9.6	17.6	25.7	11.2	19.7	28.2	11.4	19.9	28.4	13.9	23.0	32.1	17.8	27.8	37.7	21.7	32.4	43.1	23.0	33.9	44.8	24.3	35.5	46.7	28.0	40.0	51.9	28.9	41.1	53.2
South Canterbury	1.7	13.5	25.4	1.7	13.4	25.1	2.7	15.2	27.6	2.2	14.3	26.5	2.2	14.4	26.7	3.2	16.2	29.2	5.4	19.7	34.0	9.5	25.8	42.1	12.8	30.5	48.3	16.4	35.3	54.2
Southland	3.5	13.6	23.7	7.8	19.9	32.1	10.4	23.5	36.6	12.2	25.9	39.6	12.6	26.4	40.2	8.0	20.0	31.9	9.8	22.5	35.3	9.7	22.3	35.0	12.3	25.9	39.5	13.2	27.0	40.8
Tairāwhiti	3.7	24.7	45.6	4.6	26.1	47.6	0.4	18.2	36.0	0.0	13.6	29.0	2.8	22.4	42.0	6.3	28.3	50.4	11.0	35.9	60.7	9.2	33.2	57.2	10.3	35.2	60.1	12.4	38.7	64.9
Taranaki	8.7	20.5	32.3	8.2	19.7	31.1	10.2	22.4	34.6	6.9	17.7	28.5	5.7	15.8	25.9	3.7	12.6	21.6	6.6	16.9	27.2	14.0	27.0	39.9	18.1	32.1	46.2	22.7	38.1	53.4
Waikato	14.2	22.1	30.1	13.4	21.1	28.8	12.3	19.7	27.0	12.5	19.9	27.3	12.9	20.3	27.7	15.7	23.7	31.6	15.4	23.2	31.0	20.4	29.1	37.7	23.9	33.1	42.4	32.7	43.1	53.6
Wairarapa	2.1	22.4	42.8	1.2	20.6	40.1	5.6	28.0	50.5	5.6	27.9	50.2	12.3	38.3	64.3	9.3	33.6	57.9	21.0	50.2	79.4	16.5	43.3	70.2	19.1	46.7	74.3	8.5	30.7	53.0
Waitemata	9.7	16.0	22.2	9.1	15.1	21.0	11.5	17.8	24.2	13.5	20.1	26.8	17.1	24.4	31.6	19.5	27.0	34.6	19.5	26.9	34.4	18.7	26.0	33.3	16.9	23.8	30.8	23.6	31.5	39.4
West Coast	3.7	30.2	56.6	4.9	32.5	60.1	6.1	34.3	62.6	2.6	28.3	54.0	0.0	20.3	42.0	0.5	24.3	48.2	2.7	28.8	54.9	5.0	33.0	61.0						

	1981		1982		1983		1984		1985		1986		1987		1988		1989		1990												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	0.0	23.5	48.8	0.6	28.3	56.0	0.0	23.4	48.5	11.0	45.6	80.3	10.7	44.2	77.8	23.9	64.6	105.3	16.4	53.5	90.6	26.7	68.5	110.3	13.3	48.0	82.8	11.8	45.5	79.2	
Auckland City	22.7	30.9	39.0	24.3	32.8	41.2	26.7	35.5	44.4	31.1	40.6	50.1	31.7	41.2	50.8	30.8	40.3	49.8	25.4	34.2	43.0	24.2	32.9	41.6	26.1	35.1	44.1	27.5	36.8	46.2	
Bucks Peninsula District	0.0	15.7	53.3	0.0	15.7	53.4	0.0	15.7	52.9	0.0	7.7	33.9	0.0	7.7	33.7	0.0	15.4	52.5	0.0	32.3	87.0	0.0	23.9	70.6	0.0	31.5	85.0	0.0	23.6	70.0	
Buller District	1.3	64.1	127.0	0.0	52.0	107.8	0.0	51.1	105.9	18.7	93.7	168.8	25.5	106.0	186.4	27.9	107.5	187.1	3.9	66.9	130.0	9.9	79.9	150.0	4.3	72.8	141.3	1.3	67.3	133.3	
Carterton District	0.0	49.6	124.9	0.0	38.4	103.7	0.0	29.2	86.4	0.0	19.5	66.4	0.0	20.1	68.4	0.0	20.3	68.9	0.0	20.8	70.9	0.0	57.3	136.7	0.0	57.2	136.6	0.0	48.8	123.0	
Central Hawke's Bay District	0.0	51.0	116.4	0.0	43.2	98.5	0.0	52.4	111.7	0.0	62.1	125.6	0.0	50.2	107.1	0.0	33.5	79.9	0.0	11.1	37.6	0.0	16.2	47.9	0.0	10.6	36.0	0.0	27.2	68.4	
Central Otago District	0.0	43.0	89.1	5.6	60.1	114.6	0.0	42.8	88.8	0.0	30.4	69.5	0.0	26.6	63.5	0.0	35.3	77.7	0.0	29.9	68.3	0.0	24.7	58.8	0.0	19.8	49.8	0.0	31.5	69.4	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	28.9	38.7	48.6	24.2	33.4	42.6	25.1	34.4	43.7	24.9	34.1	43.3	26.6	36.1	45.6	26.6	36.0	45.5	29.3	39.1	48.9	28.5	38.3	48.0	29.6	39.5	49.3	27.3	36.8	46.4	
Clutha District	8.7	57.6	106.4	0.0	36.6	76.0	0.0	37.5	77.7	2.9	49.0	95.1	2.8	48.6	94.4	4.9	52.6	100.4	5.0	53.5	101.9	5.0	53.9	102.7	7.2	58.3	109.3	0.0	42.8	86.4	
Dunedin City	31.5	48.6	65.7	30.2	47.2	64.2	34.5	52.5	70.5	35.6	54.0	72.3	38.1	56.9	75.8	36.8	55.5	74.1	29.0	46.0	63.1	24.6	40.7	56.7	22.0	37.6	53.1	22.7	38.6	54.7	
Far North District	3.0	24.6	46.1	4.0	26.2	48.4	7.8	32.3	56.9	11.8	38.4	65.0	11.7	38.0	64.3	7.5	31.1	54.7	8.3	32.1	55.9	7.1	29.4	51.7	9.7	33.3	56.8	10.4	33.9	57.4	
Franklin District	2.7	29.3	55.9	11.1	42.6	74.2	7.2	35.9	64.6	18.2	52.6	87.0	8.1	36.6	65.0	5.7	32.2	58.7	1.4	24.5	47.6	2.4	26.1	49.7	3.4	27.7	51.9	3.4	27.3	51.3	
Gisborne District	17.8	46.9	76.0	12.5	39.1	65.6	15.8	44.0	72.2	19.0	48.8	78.6	13.7	40.9	68.1	17.9	47.2	76.5	12.6	39.4	66.1	20.2	50.5	80.8	14.9	42.8	70.8	14.9	42.9	70.9	
Gore District	0.0	45.3	93.8	0.0	51.2	103.7	0.0	47.9	99.4	0.0	43.6	92.9	0.0	34.2	78.0	0.0	24.2	60.9	0.0	33.2	75.8	0.0	23.2	58.5	0.0	28.0	66.7	0.0	18.7	50.3	
Grey District	0.0	42.8	88.8	10.6	70.3	129.9	15.6	77.8	140.1	10.5	69.2	128.0	0.0	34.2	75.3	0.0	21.9	55.2	0.0	17.8	48.1	0.0	18.1	48.8	0.0	31.6	72.2	0.0	44.9	93.2	
Hamilton City	11.7	28.5	45.4	15.9	34.3	52.7	18.3	37.6	56.8	16.2	34.6	52.9	15.5	33.5	51.4	10.6	26.5	42.4	12.9	29.7	46.5	13.9	31.0	48.1	14.9	32.3	49.6	17.7	35.9	54.0	
Hastings District	20.0	43.8	67.6	17.4	40.1	62.7	15.0	36.7	58.4	18.9	42.1	65.3	23.9	48.9	73.9	22.8	47.4	71.9	13.2	33.9	54.6	10.9	30.5	50.1	10.2	29.4	48.6	16.2	37.9	59.7	
Hauraki District	0.0	27.4	65.3	0.0	43.3	89.8	0.0	43.8	90.8	1.0	52.3	103.6	0.0	35.0	77.0	0.0	40.4	86.2	0.0	34.0	74.8	0.0	28.8	65.7	0.0	27.8	63.4	0.0	23.1	55.0	
Horowhenua District	12.5	42.9	73.3	24.4	59.6	94.8	22.3	55.8	89.2	25.6	61.3	96.9	21.2	54.4	87.6	19.7	51.9	84.1	25.4	58.5	91.6	24.2	56.9	89.5	33.4	69.3	105.2	24.1	56.5	88.9	
Hurunui District	N/A	0.0	N/A	0.0	7.2	31.6	0.0	22.3	66.1	0.0	21.9	64.7	0.0	14.8	50.3	0.0	6.8	29.9	0.0	19.7	58.4	0.0	26.8	72.3	0.0	20.5	60.6	0.0	15.6	53.0	
Invercargill City	25.8	53.6	81.3	25.2	52.9	80.6	30.9	60.6	90.1	37.0	68.7	100.5	41.3	74.6	107.8	36.3	68.5	100.8	37.3	69.9	102.5	36.9	69.1	101.3	35.5	64.5	95.4	25.7	53.9	82.1	
Kaikoura District	0.0	35.0	119.0	0.0	35.2	119.6	0.0	70.7	190.8	0.0	98.6	235.3	0.0	113.2	258.5	0.0	97.0	231.3	0.0	70.2	189.2	0.0	38.6	131.3	0.0	32.2	109.4	0.0	14.4	63.4	
Kaipara District	0.0	35.6	75.9	0.0	35.7	76.1	0.0	35.6	75.9	0.0	39.6	82.2	0.0	28.0	63.9	0.9	45.7	90.5	4.8	52.2	99.6	0.0	47.9	92.9	0.0	22.4	53.4	0.0	13.9	37.5	
Kapiti Coast District	15.7	42.6	69.4	11.9	35.7	59.4	16.2	42.6	69.0	16.4	42.0	67.6	21.0	47.4	73.9	14.1	36.1	58.1	16.8	40.1	63.4	11.5	33.1	54.7	12.1	33.7	55.4	13.2	34.8	56.4	
Kawerau District	N/A	0.0	N/A	N/A	0.0	N/A	0.0	9.8	42.9	0.0	8.9	39.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	16.4	72.1	0.0	23.7	80.5	0.0	43.1	127.7	
Lower Hutt City	26.4	46.4	66.4	24.1	43.4	62.7	25.1	44.8	64.4	22.9	41.8	60.8	19.1	37.0	55.0	28.0	48.6	69.3	33.7	55.9	78.1	35.2	57.9	80.6	26.2	46.7	67.2	15.2	32.3	49.4	
Mackenzie District	0.0	21.2	93.2	0.0	21.3	93.5	0.0	57.2	194.4	0.0	91.2	269.9	0.0	115.2	341.1	0.0	22.5	98.9	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	21.5	94.4	
Manawatu District	4.9	39.5	74.0	0.6	31.3	61.9	2.0	34.7	67.4	6.5	43.1	79.7	14.5	56.0	97.6	9.7	48.3	87.0	11.1	50.2	89.3	3.4	36.9	70.4	3.4	36.9	70.5	0.0	26.4	54.7	
Manukau City	15.6	28.5	41.5	15.8	28.5	41.2	19.0	32.5	46.0	20.2	33.8	47.4	23.5	37.8	52.2	20.4	33.8	47.2	19.1	32.0	44.9	13.8	25.0	36.3	16.5	28.4	40.4	17.7	29.9	42.1	
Marlborough District	13.3	43.2	73.2	11.0	39.9	68.9	19.4	52.4	85.5	22.1	56.5	91.0	26.2	62.8	99.4	23.6	59.1	94.5	23.6	57.8	91.9	22.9	56.1	89.2	18.0	48.6	79.2	14.2	42.6	71.0	
Masterton District	2.3	39.2	76.1	9.1	51.6	94.0	11.0	54.9	98.8	20.2	69.2	118.1	12.5	56.5	100.5	20.0	68.4	116.7	16.1	62.3	108.5	17.8	64.5	111.1	12.1	54.8	97.5	6.9	45.6	84.3	
Matamata-Piako District	0.0	16.3	37.3	0.0	9.8	26.4	0.0	24.4	50.6	0.0	24.0	49.9	0.0	23.5	48.7	0.0	11.6	29.2	0.0	25.8	52.1	3.0	32.4	61.8	11.1	46.3	81.4	5.5	36.4	67.2	
Napier City	8.3	28.5	48.7	11.6	33.5	55.3	16.2	39.6	63.0	17.9	41.9	66.0	20.9	45.7	70.5	17.6	41.2	64.9	20.6	45.0	69.5	14.1	36.1	58.1	17.9	41.2	64.5	14.6	36.6	58.5	
Nelson City	9.6	34.6	59.6	11.5	37.6	63.6	9.4	34.1	58.7	6.5	29.4	52.3	4.6	26.3	47.9	7.6	31.4	55.2	10.6	36.3	61.9	7.6	31.5	55.4	5.5	27.6	49.7	6.7	30.1	53.8	
New Plymouth District	13.2	32.2	51.2	12.5	31.3	50.1	11.1	29.2	47.4	9.2	26.6	44.0	5.3	20.3	35.4	8.6	25.6	42.7	10.5	28.4	46.3	21.7	43.9	66.2	21.3	43.2	60.5	19.9	41.4	62.5	
North Shore City	13.8	26.1	38.3	9.5	20.2	30.9	11.2	22.3	33.5	13.2	24.9	36.7	15.2	27.4	39.7	18.7	31.7	44.8	14.2	26.0	37.9	14.2	25.9	37.7	8.9	19.0	29.0	9.2	19.3	29.4	
Opotiki District	0.0	54.1	129.1	0.0	44.5	112.0	0.0	28.2	83.4	0.0	17.9	60.8	0.0	38.0	102.6	0.0	38.6	104.2	0.0	35.9	96.8	0.0	26.9	79.6	0.0	45.7	115.0	0.0	46.7	117.5	
Otorohanga District	0.0	19.5	66.1	0.0	31.6	93.5	0.0	39.2	105.7	0.0	55.7	132.9	0.0	54.8	130.7	0.0	44.9	113.0	0.0	17.6	60.0	0.0	28.0	83.0	0.0	51.2	122.2	0.0	48.7	116.2	
Palmerston North City	7.9	27.1	46.3	4.9	22.2	39.6	5.5	22.9	40.3	12.3	33.2	54.1	17.8	41.1	64.3	14.6	36.5	58.4	13.8	35.4	56.9	14.6	36.6	58.5	17.0	39.8	62.7	13.7	35.1	56.5	
Papakura District	3.9	42.0	80.2	0.0	27.4	58.5	0.0	27.5	58.7	5.4	43.5	81.5	8.4	47.4	86.5	9.5	47.6	85.7	0.0	28.0	56.6	0.6	29.6	58.6	3.3	35.6	67.9	6.2	41.1	75.9	
Porirua City	13.7	62.0	110.2	9.0	51.1	93.2	18.3	66.1	114.0	21.3	69.3	117.4	8.5	48.4	88.2	10.8	53.8	96.8	20.3	69.3	118.4	45.9	105.7	165.5	58.2	119.3	63.8	54.9	112.5	170.0	
Queenstown-Lakes District	0.0	42.5	107.0	0.0	41.5	104.5	0.0	25.2	74.7	0.0	31.8	85.8	0.0	24.0	71.1	0.0	23.6	70.0	0.0	15.1	51.3	0.0	6.4	28.1	0.0	7.2	31.8	0.0	21.1	62.5	
Rangitikei District	2.9	50.0	97.1	11.5	65.1	118.7	16.2	73.1	130.0	9.4	62.0	114.6	7.3	58.9																	

	1991		1992		1993		1994		1995		1996		1997		1998		1999		2000												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	6.3	35.9	65.5	7.5	37.4	67.3	6.2	35.2	64.2	7.4	37.2	67.0	17.8	53.3	88.9	19.1	55.2	91.2	30.1	70.6	111.1	20.2	56.3	92.5	20.1	56.1	92.1	6.0	34.0	62.0	
Auckland City	27.3	36.7	46.0	25.9	35.1	44.3	29.7	39.5	49.3	33.4	43.7	54.1	34.8	45.3	55.9	35.7	46.4	57.1	35.7	46.4	57.0	36.6	47.4	58.2	36.2	47.0	57.8	34.6	45.3	56.0	
Banks Peninsula District	0.0	23.9	70.7	0.0	21.6	64.1	0.0	19.5	57.6	0.0	32.5	81.8	0.0	25.5	68.7	0.0	24.5	66.2	0.0	21.0	62.2	0.0	21.9	64.8	0.0	22.9	67.9	0.0	41.9	100.0	
Buller District	0.0	28.4	71.5	0.0	21.2	57.3	0.0	54.4	112.7	4.1	69.7	135.3	13.0	86.2	159.4	6.9	74.4	141.9	13.0	86.2	159.3	1.3	64.2	127.1	4.1	69.6	135.2	0.0	59.4	120.2	
Carterton District	0.0	33.8	91.3	0.0	53.0	126.4	0.0	60.1	137.3	0.0	25.0	74.0	0.0	52.9	126.1	0.0	62.5	142.7	0.0	86.4	179.1	0.0	50.2	119.9	0.0	32.6	87.9	0.0	47.4	113.2	
Central Hawke's Bay District	0.0	26.4	66.6	0.0	36.3	82.9	0.0	25.1	63.2	0.0	26.1	65.8	0.0	26.2	66.0	0.0	34.8	79.4	0.0	40.4	89.0	0.0	40.6	89.3	0.0	35.0	80.0	0.0	19.5	52.6	
Central Otago District	0.0	26.9	61.4	0.0	22.6	53.8	0.0	10.8	31.9	0.0	21.3	50.8	0.0	30.5	65.1	2.5	42.5	82.6	0.8	38.6	76.4	0.0	34.7	70.3	0.0	35.3	71.5	0.8	38.7	76.5	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	31.8	42.0	52.2	32.0	42.1	52.2	33.3	43.5	53.7	31.9	41.9	51.9	35.7	46.1	56.6	37.1	47.7	58.3	36.7	47.3	57.8	34.2	44.4	54.6	33.5	43.6	53.7	34.7	45.0	55.2	
Clutha District	0.0	34.8	74.2	0.0	22.1	52.7	0.0	14.7	39.7	0.0	33.7	71.8	0.0	38.6	80.1	0.9	44.8	88.7	0.0	36.6	76.0	0.0	32.0	68.2	0.0	36.1	74.9	0.0	30.3	66.7	
Dunedin City	21.1	36.6	52.2	22.8	38.7	54.6	27.7	44.8	62.0	32.0	50.1	68.2	35.2	54.0	72.8	35.2	53.9	72.7	41.7	62.0	82.2	41.8	62.2	82.5	39.1	58.9	78.7	36.0	55.2	74.5	
Far North District	16.7	42.8	68.9	21.7	49.2	76.6	14.6	38.4	62.2	12.4	34.6	56.9	7.3	26.4	45.6	11.4	31.9	52.4	12.2	32.9	53.7	19.7	43.3	66.8	19.6	42.9	66.2	18.7	41.7	64.6	
Franklin District	0.4	22.0	43.6	0.0	18.0	37.2	0.0	17.0	35.9	6.1	30.7	55.3	15.7	45.2	74.7	22.5	55.1	87.6	17.2	46.5	75.8	18.9	48.5	78.1	15.4	42.9	70.4	12.2	38.0	63.7	
Gisborne District	9.7	35.0	60.4	19.0	48.6	78.3	21.0	51.4	81.7	32.1	66.5	101.0	27.2	59.7	92.1	34.8	69.8	104.7	26.1	58.2	90.2	26.8	59.6	92.4	18.2	47.9	77.5	21.9	53.6	85.2	
Gore District	0.0	23.1	58.1	0.0	13.3	39.3	0.0	14.0	41.3	0.0	29.0	69.2	0.0	43.0	91.6	0.0	51.9	105.0	0.0	46.8	97.0	0.0	50.9	102.9	3.5	59.6	115.8	16.2	81.1	146.1	
Grey District	3.4	58.2	113.1	0.0	40.3	85.8	0.0	45.8	95.1	0.0	51.7	104.6	11.5	76.3	141.0	14.4	81.7	149.0	11.5	76.2	141.0	11.4	75.5	139.6	8.7	70.5	132.3	11.6	76.6	141.6	
Hamilton City	18.1	36.3	54.4	22.5	42.1	61.7	21.6	40.8	60.0	21.5	40.7	59.8	20.5	39.1	57.7	19.2	37.3	55.4	20.8	39.2	57.7	20.6	38.9	57.3	24.7	44.2	63.8	26.7	46.7	66.6	
Hastings District	17.6	39.9	62.2	23.8	48.1	72.4	28.3	53.9	79.5	30.3	56.4	82.5	23.7	47.5	71.2	21.9	44.9	67.9	17.3	38.4	59.6	18.7	40.3	61.9	16.4	37.2	57.9	17.9	39.2	60.5	
Hauraki District	0.0	26.4	60.2	0.0	29.6	62.1	0.0	39.8	80.5	0.9	42.7	84.6	0.8	42.0	83.2	6.4	51.7	96.9	6.3	50.9	95.5	8.3	54.8	101.2	0.8	40.9	81.1	10.1	57.1	104.2	
Horowhenua District	19.7	50.5	81.3	16.5	46.0	75.5	21.9	53.5	85.1	27.1	60.3	93.4	29.3	63.2	97.1	24.3	56.0	87.6	23.7	54.6	85.5	15.5	43.1	70.8	20.6	51.6	82.5	22.7	54.4	86.0	
Hurunui District	0.0	28.0	75.6	0.0	48.1	109.9	0.0	61.1	130.3	0.0	67.5	139.9	0.0	72.0	145.8	0.0	62.2	128.9	1.4	70.6	139.9	0.0	50.5	107.8	0.0	50.5	107.8	0.0	37.2	85.0	
Invercargill City	19.2	45.0	70.8	23.9	51.7	79.4	34.3	65.3	96.4	31.3	61.3	91.3	29.1	58.3	87.5	27.0	55.4	83.7	37.8	69.7	101.6	38.1	70.2	102.3	27.3	56.0	84.7	27.4	56.2	84.9	
Kaikoura District	0.0	13.9	61.1	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	13.3	58.6	0.0	59.3	160.0	0.0	90.5	215.9	0.0	106.4	243.0	0.0	77.1	194.1	0.0	63.8	172.0	0.0	30.2	102.9
Kaipara District	0.0	14.3	38.6	0.0	21.5	51.4	0.0	39.2	79.4	10.3	58.5	106.7	10.1	57.4	104.7	2.4	41.9	81.4	0.0	26.4	58.1	0.0	26.9	59.2	0.0	30.8	65.6	6.0	48.4	90.8	
Kapiti Coast District	17.5	40.3	63.2	17.9	40.5	63.2	15.8	37.1	58.4	9.4	27.0	44.6	16.3	36.8	57.4	15.5	35.7	55.9	18.5	39.5	60.4	18.5	38.9	59.3	18.1	38.0	57.9	21.4	42.8	64.2	
Kawerau District	0.0	41.8	123.7	0.0	47.1	139.3	0.0	25.6	87.1	0.0	24.5	83.1	0.0	23.3	79.2	0.0	22.3	75.7	0.0	30.8	91.3	0.0	19.3	65.7	0.0	9.5	41.7	0.0	48.9	123.2	
Lower Hutt City	16.5	34.3	52.0	25.0	45.4	65.8	31.2	53.3	75.4	28.6	50.1	71.5	30.2	52.1	74.1	27.9	49.3	70.7	30.9	53.3	75.7	28.9	50.9	72.8	28.4	50.3	72.2	33.2	56.4	79.6	
Mackenzie District	0.0	73.0	216.1	0.0	68.4	202.6	0.0	119.7	354.2	0.0	88.3	300.2	0.0	88.7	301.7	0.0	12.4	54.4	N/A	0.0	N/A	0.0	28.4	124.9	0.0	37.4	127.2	0.0	45.8	135.6	
Manawatu District	0.6	31.1	61.5	0.6	30.2	59.8	10.5	47.5	84.5	16.8	57.6	98.4	18.2	59.4	100.6	4.5	36.8	69.0	0.0	24.1	50.0	3.1	33.7	64.3	10.0	45.3	80.7	11.5	47.7	83.9	
Manukau City	22.8	36.1	49.3	22.8	35.8	48.7	24.1	37.1	50.1	23.6	36.3	49.0	21.5	33.6	45.7	21.2	33.0	44.8	22.9	34.9	46.9	25.0	37.3	49.6	27.4	40.0	52.6	31.0	44.2	57.5	
Marlborough District	7.6	31.4	55.3	6.3	28.7	51.0	8.9	32.2	55.4	12.4	37.0	61.6	12.0	36.0	60.0	11.8	35.3	58.8	9.9	32.4	54.8	15.2	40.0	64.9	11.5	34.5	57.5	13.2	36.8	60.5	
Masterton District	6.8	45.1	83.3	0.7	32.8	64.9	0.0	29.8	60.3	0.0	26.6	55.2	2.0	33.8	65.5	12.3	50.9	89.5	16.8	57.4	98.1	12.0	49.9	87.7	13.7	52.9	92.1	13.7	52.9	92.1	
Matamata-Piako District	0.5	26.8	53.1	0.0	13.0	31.1	0.5	25.9	51.2	10.2	42.4	74.5	20.8	58.1	95.4	19.4	55.8	92.3	12.4	44.9	77.5	6.2	35.2	64.1	7.3	36.6	65.9	7.2	36.1	64.9	
Napier City	26.5	52.5	78.5	21.2	45.1	69.0	20.0	43.2	66.3	9.2	27.6	45.9	13.7	34.3	54.9	23.1	47.3	71.5	30.1	56.4	82.7	26.3	51.1	75.9	22.1	45.2	68.3	24.6	48.7	72.8	
Nelson City	20.9	51.0	81.2	21.9	52.3	82.8	18.0	46.2	74.4	7.1	29.6	52.0	13.6	39.4	65.1	12.5	37.5	62.5	15.1	41.0	66.8	12.0	36.0	60.0	15.9	41.7	67.5	18.2	45.6	72.9	
New Plymouth District	13.0	31.7	50.4	8.9	25.6	42.3	12.5	30.6	48.6	11.2	28.6	46.1	17.4	37.0	56.6	12.5	29.9	47.4	12.4	29.6	46.9	12.5	30.0	47.4	16.9	36.0	55.1	25.0	46.4	67.9	
North Shore City	13.3	24.8	36.2	17.3	29.7	42.0	21.9	35.3	48.7	23.8	37.5	51.3	23.6	37.2	50.8	26.4	40.5	54.6	24.5	38.1	51.8	21.3	34.2	47.1	19.1	31.5	44.0	19.7	32.3	44.9	
Opotiki District	0.0	35.1	94.7	0.0	31.7	85.4	0.0	29.4	79.4	0.0	35.2	88.6	0.0	34.6	87.0	0.0	53.3	117.2	0.0	39.8	94.9	0.0	47.9	109.3	0.0	43.1	102.7	0.0	49.5	113.0	
Otorohanga District	0.0	39.5	99.5	0.0	34.5	93.2	0.0	52.8	126.0	0.0	35.5	95.8	0.0	16.4	55.8	0.0	17.9	60.8	0.0	18.2	62.0	0.0	37.1	100.0	0.0	26.9	79.8	0.0	28.3	83.8	
Palmerston North City	13.8	35.3	56.8	15.4	37.7	59.9	15.4	37.6	59.9	17.0	39.8	62.7	20.2	44.2	68.3	20.1	44.0	68.0	11.2	31.2	51.2	13.3	34.2	55.0	18.8	41.8	64.7	21.0	44.7	68.5	
Papakura District	6.1	40.5	75.0	4.5	36.4	68.4	12.5	48.1	83.7	18.0	56.0	94.0	20.4	58.9	97.4	14.1	48.2	82.3	3.8	31.1	58.3	7.3	36.6	65.9	5.1	33.7	62.3	15.1	49.2	83.3	
Porirua City	48.6	103.5	158.4	38.1	89.4	140.6	31.8	79.5	127.2	17.3	56.3	95.3	12.9	46.8	80.7	13.6	46.5	79.4	18.9	54.7	90.4	18.2	52.4	86.7	15.5	50.3	85.2	11.4	43.9	76.5	
Queenstown-Lakes District	0.0	20.1	59.4	0.0	12.9	43.8	0.0	5.6	24.8	0.0	10.7	36.3	0.0	20.0	54.0	0.0	14.2	42.1	0.0	9.0	30.5	0.0	5.6	24.8	0.0	9.4	31.9	0.0	28.5	68.0	
Rangitikei District	0.0	37.4	77.6	0.9	45.4	89.9																									

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990			
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	
Ashburton District	0.0	7.3	21.7	0.0	12.1	30.6	0.0	9.8	26.4	0.0	12.0	30.2	0.0	9.4	25.3	0.0	9.4	25.4	0.0	4.9	16.6	0.0	11.6	29.3	0.0	13.2	31.6	0.0	22.3	46.2	
Auckland City	7.7	12.6	17.6	8.1	13.2	18.2	8.3	13.5	18.7	9.7	15.2	20.8	11.4	17.4	23.4	11.5	17.4	23.4	11.9	17.9	24.0	12.5	18.8	25.0	14.0	20.6	27.2	13.7	20.4	27.0	
Banks Peninsula District	0.0	14.8	65.1	N/A	0.0	N/A	0.0	8.7	38.2	0.0	8.7	38.4	0.0	25.7	76.0	0.0	41.4	104.2	0.0	42.2	106.4	0.0	26.7	79.0	0.0	8.7	38.1	0.0	21.1	71.6	
Butler District	0.0	5.2	22.7	N/A	0.0	N/A	0.0	22.3	60.0	0.0	36.2	86.4	0.0	49.4	108.7	0.0	46.1	105.2	0.0	35.8	85.4	0.0	22.9	61.9	0.0	18.4	54.5	0.0	29.4	74.0	
Carterton District	0.0	10.6	46.5	0.0	10.6	46.4	0.0	10.4	45.9	N/A	0.0	N/A	0.0	9.9	43.3	0.0	9.8	42.9	0.0	19.3	65.6	0.0	18.6	63.2	0.0	27.1	80.2	0.0	37.7	101.7	
Central Hawke's Bay District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	24.1	65.1	0.0	24.1	65.0	0.0	29.2	73.4	0.0	11.0	37.5	0.0	16.5	48.7	0.0	22.6	61.0	0.0	16.7	49.4
Central Otago District	0.0	14.6	43.2	0.0	9.5	32.3	0.0	4.8	20.9	0.0	10.0	33.9	0.0	15.0	44.4	0.0	14.7	43.5	0.0	10.0	33.9	0.0	13.6	40.2	0.0	13.4	39.6	0.0	17.2	46.5	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	6.1	11.1	16.2	6.2	11.3	16.3	5.1	9.8	14.5	7.5	12.8	18.2	8.0	13.5	19.0	8.2	13.7	19.3	8.6	14.3	19.9	10.3	16.3	22.3	12.9	19.4	25.9	12.1	18.4	24.8	
Clutha District	0.0	11.8	34.8	0.0	11.8	34.9	0.0	15.1	40.6	0.0	34.2	72.9	0.0	34.5	73.5	0.0	31.3	68.9	0.0	32.7	72.0	0.0	35.8	76.3	0.0	27.7	63.1	0.0	11.2	33.0	
Dunedin City	3.2	10.8	18.5	3.5	11.4	19.2	6.1	15.3	24.5	8.6	18.8	28.9	7.8	17.6	27.4	6.0	15.0	24.0	6.7	16.1	25.5	9.2	19.6	29.9	10.8	21.9	33.0	11.3	22.6	34.0	
Far North District	0.0	14.7	33.6	1.5	25.8	50.0	6.3	35.8	65.3	3.7	30.3	56.9	4.6	30.1	55.6	3.0	24.7	46.3	5.9	29.5	53.2	3.1	25.1	47.2	4.0	26.3	48.6	5.8	28.9	52.0	
Franklin District	0.0	6.9	20.4	0.0	6.8	20.1	0.0	4.6	15.7	0.0	4.4	14.9	0.0	6.5	19.1	0.0	8.4	22.7	0.0	8.5	22.9	0.0	8.7	23.4	0.0	8.5	23.0	0.0	14.7	33.7	
Gisborne District	0.4	18.7	37.0	0.0	17.3	35.0	0.0	13.9	29.7	0.0	15.7	32.6	0.0	17.2	34.7	0.0	17.6	35.6	0.0	15.8	32.8	0.0	14.1	30.0	0.0	15.3	31.8	1.2	19.8	38.4	
Gore District	0.0	18.2	49.0	0.0	9.4	31.9	0.0	4.8	20.9	0.0	4.7	20.8	0.0	4.7	20.7	0.0	9.4	32.0	0.0	4.6	20.2	0.0	18.1	48.9	0.0	13.3	39.5	0.0	22.4	56.3	
Grey District	0.0	15.3	45.2	0.0	9.0	30.8	0.0	13.8	40.8	0.0	14.4	42.6	0.0	15.0	44.3	0.0	20.0	54.1	0.0	19.4	52.4	0.0	18.9	51.1	0.0	28.8	68.8	0.0	39.6	87.1	
Hamilton City	0.0	8.4	17.4	2.0	13.3	24.5	4.9	17.9	30.8	5.3	18.2	31.1	3.3	14.8	26.3	2.3	13.2	24.1	2.3	13.0	23.7	4.1	15.7	27.3	5.9	18.3	30.8	4.9	16.7	28.6	
Hastings District	0.0	11.5	23.4	0.0	11.6	23.5	0.8	13.9	26.9	2.6	17.1	31.5	4.5	20.2	35.9	6.5	23.4	40.3	5.0	20.9	36.8	3.7	18.6	33.5	1.9	15.4	28.9	0.2	12.2	24.2	
Hauraki District	0.0	9.4	32.0	0.0	18.8	50.8	0.0	23.1	58.1	0.0	23.0	57.9	0.0	18.1	48.9	0.0	22.0	55.4	0.0	17.2	46.4	0.0	12.5	36.9	0.0	8.1	27.7	0.0	29.0	66.2	
Horowhenua District	0.0	10.3	25.8	0.0	7.8	21.0	0.0	5.8	17.2	0.0	6.2	18.3	0.0	14.7	32.4	0.0	20.5	41.5	0.0	17.9	37.1	0.0	12.7	29.0	0.0	14.0	30.8	1.4	23.4	45.4	
Hurunui District	N/A	0.0	N/A	N/A	0.0	N/A	0.0	12.7	56.0	0.0	21.3	72.3	0.0	21.8	74.2	0.0	7.1	31.4	N/A	0.0	N/A	N/A	0.0	N/A	0.0	6.5	28.5	0.0	24.9	73.7	
Invercargill City	2.8	18.7	34.5	0.9	15.1	29.3	0.9	15.2	29.5	0.0	10.4	22.3	2.2	17.4	32.7	4.2	21.0	37.8	4.2	21.1	38.1	3.6	20.2	36.8	2.2	17.8	33.4	3.5	19.9	36.3	
Kaikoura District	N/A	0.0	N/A	N/A	0.0	N/A	0.0	27.5	120.8	0.0	31.9	140.3	0.0	37.7	165.8	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	62.0	183.4	0.0	58.9	174.5	
Kaipara District	0.0	14.4	42.7	0.0	19.1	51.5	0.0	9.6	32.5	0.0	14.8	43.8	0.0	5.1	22.4	0.0	13.3	39.5	0.0	8.5	28.9	0.0	22.3	56.2	0.0	17.2	46.4	0.0	25.0	59.8	
Kapiti Coast District	0.3	17.1	33.8	0.0	8.5	20.3	0.0	11.2	24.7	0.0	12.1	25.8	0.0	12.9	26.7	0.0	12.4	25.7	0.9	16.2	31.4	4.4	22.2	40.0	2.9	19.4	35.8	4.1	20.7	37.3	
Kawerau District	N/A	N/A	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	8.9	39.2	0.0	23.8	81.0	0.0	23.1	78.5	0.0	13.7	60.1
Lower Hutt City	6.4	18.4	30.4	6.9	19.2	31.5	7.9	20.7	33.6	7.0	19.5	31.9	8.4	21.6	34.7	9.5	23.2	36.8	10.0	23.9	37.8	9.1	22.8	36.4	8.7	23.2	35.9	12.9	28.3	43.8	
Mackenzie District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A
Manawatu District	0.0	5.9	20.0	0.0	2.8	12.5	0.0	2.8	12.5	0.0	5.3	18.1	0.0	18.6	42.5	0.0	21.1	46.4	0.0	16.0	38.2	0.0	13.5	33.9	0.0	20.8	45.9	0.0	28.5	57.7	
Manukau City	1.4	8.0	14.6	1.7	8.4	15.2	3.8	11.9	20.0	9.0	19.2	29.3	9.8	20.1	30.4	10.6	20.9	31.1	8.0	17.2	26.5	10.0	19.6	29.2	10.2	19.8	29.4	11.9	21.8	31.7	
Marlborough District	0.0	11.7	28.0	0.0	11.2	26.8	0.0	11.2	26.6	0.0	10.7	25.5	0.0	10.7	25.5	0.0	12.2	27.8	0.0	12.6	28.8	0.0	15.7	33.5	0.0	12.1	27.6	0.0	8.3	20.8	
Masterton District	0.0	20.3	46.4	0.0	17.2	41.0	0.0	8.5	25.2	0.0	11.4	30.7	0.0	8.5	25.2	0.0	24.6	52.5	0.0	29.7	60.1	3.5	37.7	71.9	0.0	29.4	59.5	0.0	16.0	38.2	
Matamata-Piako District	0.0	10.2	27.5	0.0	10.0	27.0	0.0	7.5	22.1	0.0	10.7	28.9	0.0	7.7	22.8	0.0	12.4	31.3	0.0	9.6	25.8	0.0	9.2	24.7	0.0	13.8	33.0	0.0	13.7	32.6	
Napier City	0.0	11.3	23.4	2.1	17.3	32.4	4.1	20.5	37.0	9.0	28.1	47.2	7.5	25.5	43.6	8.2	26.7	45.2	4.6	21.0	37.4	6.6	23.9	41.2	6.5	23.6	40.7	5.8	22.5	39.2	
Nelson City	0.0	9.2	22.0	0.0	10.8	24.6	0.0	12.3	27.0	0.0	16.9	34.3	0.0	12.0	26.3	1.9	20.8	39.7	1.9	20.1	38.4	3.5	23.3	43.1	0.3	17.2	34.1	0.0	14.7	30.5	
New Plymouth District	0.0	2.9	8.6	0.0	5.7	13.7	0.0	8.5	18.1	0.0	10.3	20.9	0.0	10.2	20.6	0.0	10.3	20.9	0.7	12.0	23.4	1.7	14.0	26.3	3.3	16.6	29.9	5.0	19.1	33.3	
North Shore City	4.9	13.4	21.8	5.5	14.1	22.6	4.8	13.0	21.2	2.4	9.2	16.0	3.2	10.3	17.5	4.3	11.9	19.5	7.2	16.0	24.7	7.4	16.3	25.2	9.9	19.5	29.2	8.9	18.1	27.4	
Opoitiki District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	26.5	78.3	0.0	17.5	59.6	0.0	8.8	38.8	0.0	37.0	99.8	0.0	43.4	109.3
Otorohanga District	0.0	7.8	34.3	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	8.4	36.9	0.0	8.4	37.1	
Palmerston North City	0.0	4.2	11.3	0.0	7.1	16.3	0.0	10.3	21.3	1.9	15.3	28.7	0.2	12.3	24.3	0.0	10.3	21.3	0.0	9.4	20.0	0.8	13.4	26.0	3.7	18.3	33.0	2.5	16.3	30.2	
Papakura District	N/A	0.0	N/A	0.0	8.7	25.8	0.0	11.3	30.5	0.0	19.1	43.5	0.0	15.2	36.2	0.0	12.0	30.3	0.0	6.9	20.4	0.0	4.9	16.6	0.0	11.4	28.7	0.0	17.5	38.4	
Porirua City	0.0	19.1	45.5	0.0	21.1	46.4	3.1	33.2	63.2	1.7	29.4	57.1	3.0	32.3	61.7	3.7	39.6	75.6	8.9	50.3	91.8	25.7	76.8	128.0	24.3	72.6	120.9	27.2	73.7	120.2	
Queenstown-Lakes District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	7.6	33.4	0.0	7.1	31.0	0.0	6.5	28.7	0.0	7.5	32.9
Rangitikei District	0.0	9.5	32.3	0.0	23.7	59.6	0.0	23.6	59.4	0.0	19.1	51.4	0.0	4.9	21.4	0.0	9.0	30.8	0.0	11.8	34.8	0.0	16.0	43.3	0.0	16.1	43.5	0.0	12.3	36.5	
Rodney District	0.0	8.3	20.9	0.0	9.3	22.3	0.0	10.2	23.4	0.0	10.8	23.7	0.0	9.4	21.5	0.0	9.1	20.7	0.0	7.0	16.7	0.0	7.5	17.1	0.0	9.8	20.9	0.0	9.4	20.0	
Rotorua District	0.0	15.4	31.1	1.1	18.8																										

	1991		1992		1993		1994		1995		1996		1997		1998		1999		2000												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	0.0	17.7	38.9	0.0	17.4	38.2	0.0	10.3	25.9	0.0	16.1	35.5	3.7	29.7	55.7	3.6	29.0	54.4	0.0	21.3	43.1	0.0	13.2	30.0	0.0	13.2	30.0	8.0	36.3	64.6	
Auckland City	13.9	20.5	27.1	16.9	24.1	31.3	16.5	23.6	30.7	19.9	27.7	35.4	21.3	29.2	37.2	26.9	35.8	44.8	25.4	34.1	42.8	26.9	35.9	44.9	25.4	34.1	42.9	25.8	34.7	43.7	
Banks Peninsula District	0.0	27.9	82.5	0.0	19.2	65.2	0.0	16.6	56.3	0.0	10.0	43.9	0.0	9.9	43.5	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	
Buller District	0.0	40.5	92.5	0.0	45.5	100.2	0.0	45.7	100.5	0.0	39.9	91.2	0.0	23.2	62.5	0.0	28.5	71.7	0.0	22.8	61.6	0.0	28.3	71.3	0.0	34.2	81.6	0.0	63.0	127.5	
Carterton District	0.0	37.2	100.4	0.0	28.2	83.4	0.0	33.4	90.0	0.0	44.6	112.3	0.0	64.3	146.7	0.0	38.2	102.9	0.0	28.5	84.3	0.0	9.2	40.6	0.0	9.0	39.3	0.0	8.6	37.7	
Central Hawke's Bay District	0.0	17.6	52.1	0.0	23.3	63.0	0.0	34.7	82.7	0.0	43.1	94.9	0.0	47.4	101.1	0.0	46.6	99.2	0.0	37.5	85.5	0.0	31.9	76.1	0.0	26.2	66.0	0.0	26.2	66.0	
Central Otago District	0.0	13.1	38.7	0.0	20.6	51.9	0.0	16.0	43.1	0.0	19.3	48.6	0.0	20.1	50.7	0.0	22.5	53.6	0.0	24.2	55.3	0.0	30.5	65.0	0.0	34.6	71.7	0.0	31.5	67.1	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Christchurch City	13.4	20.0	26.7	13.7	20.3	26.9	15.7	22.7	29.7	18.6	26.0	33.5	21.2	29.0	36.9	23.1	31.2	39.3	24.5	32.7	40.9	28.0	36.7	45.4	25.5	33.8	42.1	25.4	33.7	42.0	
Clutha District	0.0	24.1	57.5	0.0	35.4	75.5	0.0	35.0	74.7	0.0	25.4	58.1	0.0	21.0	50.1	0.0	27.5	60.6	0.0	20.7	49.4	0.0	21.0	50.2	0.0	18.2	45.9	0.0	28.9	63.6	
Dunedin City	10.9	22.2	33.6	10.3	21.4	32.5	10.9	22.0	33.2	14.0	26.2	38.4	21.6	35.9	50.2	25.7	41.0	56.3	26.1	41.4	56.6	25.4	40.6	55.7	29.7	46.0	62.3	29.5	45.7	62.0	
Far North District	7.3	30.2	53.1	9.9	33.9	58.0	9.3	32.0	54.6	16.1	42.5	68.8	8.3	30.0	51.6	10.7	33.3	55.9	5.6	25.1	44.7	15.4	39.3	63.3	10.0	31.2	52.5	12.1	33.7	55.4	
Franklin District	1.6	26.6	51.6	3.7	29.7	55.7	2.4	26.3	50.2	0.0	14.7	32.2	0.0	15.8	33.7	0.0	10.7	23.3	0.0	4.9	27.8	50.8	6.8	30.8	54.8	11.8	38.4	65.0	23.0	55.0	87.0
Gisborne District	4.5	25.7	46.9	6.4	28.8	51.1	2.8	22.5	42.2	0.0	16.4	33.3	5.4	27.0	48.5	9.1	32.9	56.7	15.0	41.8	68.6	11.0	35.9	60.8	12.1	37.7	63.2	16.3	44.1	71.9	
Gore District	0.0	9.2	31.2	0.0	27.8	66.4	0.0	18.8	50.8	0.0	23.8	59.9	0.0	5.0	22.1	0.0	9.3	31.5	0.0	4.1	18.2	0.0	8.9	30.4	0.0	9.5	32.2	0.0	13.7	40.6	
Grey District	0.0	50.6	104.8	0.0	44.7	95.2	0.0	44.0	93.8	0.0	39.0	85.9	0.0	33.7	77.0	0.0	33.1	75.7	0.0	42.1	89.8	0.0	37.5	82.4	0.0	42.4	90.4	0.0	52.5	106.2	
Hamilton City	6.3	18.8	31.4	6.7	19.4	32.1	8.1	21.2	34.4	10.4	24.3	38.3	10.3	24.2	38.1	13.6	28.6	43.5	11.1	25.0	39.0	14.3	29.4	44.4	14.2	29.0	43.8	20.5	37.2	53.9	
Hastings District	3.6	18.0	32.5	7.9	24.7	41.5	10.5	28.5	46.4	11.1	29.2	47.4	9.7	27.1	44.5	14.3	33.5	52.7	14.2	33.2	52.3	13.4	32.1	50.8	10.0	27.1	44.2	13.3	31.8	50.2	
Hauraki District	0.0	36.2	77.3	0.9	47.2	93.5	0.0	30.9	67.9	0.9	46.6	92.2	0.0	39.1	81.1	0.0	34.4	73.4	0.0	10.4	30.9	0.0	10.4	30.9	0.0	35.5	73.7	10.4	58.9	107.5	
Horowhenua District	6.4	31.9	57.5	3.2	26.2	49.1	4.9	28.0	51.1	2.9	23.8	44.7	9.6	34.6	59.7	9.4	33.9	58.5	7.6	31.5	55.4	11.7	38.2	64.7	8.7	33.6	58.6	7.6	31.4	55.2	
Hurunui District	0.0	29.7	80.2	0.0	33.0	89.0	0.0	21.7	64.2	0.0	21.2	62.9	0.0	34.9	87.9	0.0	27.6	74.5	0.0	20.7	61.2	0.0	5.7	25.2	0.0	12.4	42.3	0.0	25.0	67.3	
Invercargill City	4.2	21.3	38.3	7.8	26.7	45.6	12.4	33.6	54.8	13.8	35.4	57.0	17.8	40.9	64.0	12.1	32.7	53.4	16.5	38.7	60.9	14.2	35.5	56.8	16.4	38.5	60.7	15.8	37.9	59.9	
Kaikoura District	0.0	89.3	224.8	0.0	33.3	113.3	0.0	49.0	145.2	0.0	16.0	70.2	0.0	15.3	67.4	0.0	14.4	63.1	0.0	31.9	108.4	0.0	66.1	178.3	0.0	50.7	150.0	0.0	37.7	114.8	
Kaipara District	0.0	11.7	34.6	0.0	12.9	38.1	0.0	8.9	30.4	0.0	8.7	29.7	0.0	12.5	36.9	0.0	26.8	61.1	0.0	37.7	78.3	0.0	32.4	69.2	0.0	26.1	59.5	0.0	36.1	74.9	
Kapiti Coast District	3.5	20.1	36.6	5.4	22.4	39.3	6.5	23.6	40.7	6.8	23.2	39.6	10.6	28.5	46.5	7.1	23.2	39.3	7.4	23.2	38.9	5.5	19.8	34.1	9.3	25.2	41.1	10.6	26.5	42.4	
Kawerau District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	9.4	41.1	0.0	31.1	105.6	0.0	47.9	141.7	0.0	71.2	192.0	0.0	61.9	166.8	0.0	42.2	124.9
Lower Hutt City	12.6	28.1	43.6	18.4	35.8	53.1	13.3	29.2	44.9	16.6	33.2	49.8	15.5	31.7	48.0	18.7	36.0	53.2	18.4	35.8	53.2	19.6	37.4	55.2	18.1	35.5	53.0	21.7	40.3	59.0	
Mackenzie District	N/A	0.0	N/A	N/A	0.0	N/A	0.0	15.2	66.9	0.0	13.0	66.1	0.0	15.0	66.0	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	32.7	143.6	0.0	33.1	145.3
Manawatu District	0.0	28.2	57.2	0.0	20.9	45.9	0.0	15.6	37.2	0.0	20.6	45.3	0.0	25.6	53.0	0.0	27.9	56.4	0.0	22.3	47.5	7.5	42.3	77.1	8.8	44.2	79.5	11.8	49.0	86.2	
Manukau City	14.5	25.3	36.0	14.7	25.4	36.0	18.8	30.4	42.0	17.7	28.8	40.0	18.8	30.0	41.2	18.7	29.7	40.6	17.4	27.9	38.5	18.4	29.1	39.7	18.7	29.3	40.0	21.4	32.5	43.5	
Marlborough District	0.0	9.6	22.8	0.0	10.9	24.8	0.4	18.3	36.3	0.0	15.1	31.2	4.4	25.0	45.6	0.3	16.9	33.5	0.0	15.5	31.3	0.0	14.2	29.5	1.1	18.3	35.6	8.4	30.3	52.2	
Masterton District	0.0	18.4	42.1	0.0	20.5	45.0	0.6	30.0	59.5	0.0	24.4	50.7	1.8	31.3	60.7	1.8	30.7	59.6	20.5	61.4	102.4	17.4	56.7	95.9	21.7	62.5	103.4	4.2	33.8	63.5	
Matamata-Piako District	0.0	11.1	28.1	0.0	6.6	19.6	0.0	8.7	23.4	0.0	10.6	26.8	0.0	15.0	34.2	1.6	27.0	52.4	3.8	31.0	58.2	10.0	41.5	73.1	6.2	34.9	63.6	9.8	40.8	71.7	
Napier City	5.1	21.2	37.3	8.3	25.7	43.2	11.5	30.3	49.2	17.8	38.9	60.1	16.3	36.8	57.4	17.6	38.5	59.5	18.2	39.3	60.3	23.2	45.9	68.6	25.1	48.3	71.4	23.1	45.8	68.5	
Nelson City	0.3	17.1	33.9	2.7	21.6	40.5	6.0	27.0	48.1	5.0	25.2	45.3	4.1	23.3	42.4	6.7	27.8	48.8	12.2	36.4	60.6	18.4	45.1	71.7	16.3	41.8	67.3	10.9	33.9	56.9	
New Plymouth District	7.7	23.1	38.4	9.0	25.1	41.1	9.5	25.6	41.7	5.9	20.1	34.3	2.5	14.2	25.9	2.0	13.3	24.6	3.5	15.8	28.0	11.9	28.5	45.0	13.6	30.8	48.0	17.9	36.7	55.4	
North Shore City	7.9	16.7	25.6	6.9	15.4	23.9	9.4	18.6	27.8	13.6	24.0	34.3	17.3	28.4	39.5	19.9	31.6	43.2	18.8	30.0	41.3	18.1	29.1	40.1	15.5	26.0	36.5	23.3	35.6	47.9	
Opoitiki District	0.0	60.5	138.0	0.0	46.5	111.0	0.0	31.4	84.6	0.0	22.1	65.3	0.0	15.8	53.7	0.0	15.2	51.8	0.0	20.6	61.0	0.0	38.2	96.2	0.0	44.4	106.0	0.0	39.4	99.2	
Otorohanga District	0.0	8.4	37.0	N/A	0.0	N/A	0.0	9.2	40.7	0.0	27.1	80.2	0.0	37.4	100.8	0.0	27.7	81.9	0.0	30.3	89.8	0.0	30.0	88.8	0.0	47.7	120.0	0.0	44.0	110.8	
Palmerston North City	1.3	14.4	27.5	0.0	11.2	22.6	1.8	14.9	28.0	4.8	19.7	34.7	6.1	22.1	38.1	6.1	22.1	38.1	6.6	22.8	38.9	8.3	24.9	41.4	8.9	25.8	42.6	11.3	28.8	46.4	
Papakura District	0.5	25.4	50.3	0.5	25.3	50.0	1.6	26.9	52.2	1.5	25.9	50.3	0.5	23.6	46.8	0.0	15.4	33.9	0.0	18.6	39.7	2.6	27.9	53.2	11.7	42.4	73.1	16.2	48.4	80.7	
Porirua City	18.6	60.6	102.6	16.6	56.7	96.9	18.4	60.0	101.5	14.6	52.8	91.1	14.1	50.9	87.8	3.0	32.4	61.8	0.0	23.6	47.7	5.0	32.9	60.9	11.6	44.9	78.1	12.7	46.0	79.3	
Queenstown-Lakes District	0.0	7.4	32.5	0.0	7.1	31.0	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A
Rangitikei District	0.0	28.9	65.9	0.0	28.3	64.6	0.0	40.9	84.8	0.0	28.1	64.2	7.6	62.0	116.3	7.7	62.5	117.2	7.8	63.0	118.2	0.0	36.9	78.7	0.0	32.4	71.3	0.0	46.8	94.8	
Rodney District	0.2	12.2	24.1	0.0																											

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	65.8	78.4	90.9	65.7	78.3	90.9	67.3	80.0	92.8	68.9	81.8	94.7	69.2	82.2	95.2	66.0	78.8	91.6	66.1	79.1	92.1	60.7	73.3	85.9	55.8	68.0	80.2	47.7	59.1	70.5
Bay of Plenty	45.5	65.5	85.4	42.2	61.2	80.3	33.7	50.8	67.9	34.6	51.5	68.4	37.6	54.9	72.1	42.9	61.0	79.0	40.4	57.6	74.8	40.1	56.9	73.7	38.1	54.2	70.3	37.5	53.3	69.0
Canterbury	62.3	74.5	86.6	64.2	76.5	88.8	62.9	75.0	87.1	63.7	75.8	87.9	55.6	67.0	78.3	52.3	63.3	74.4	52.2	63.2	74.2	53.4	64.5	75.5	53.1	64.1	75.1	48.0	58.5	68.9
Capital and Coast	49.2	65.3	81.4	46.9	62.7	78.6	45.9	61.6	77.4	40.8	55.8	70.8	40.2	55.0	69.9	39.3	54.0	68.8	37.6	52.1	66.6	36.9	51.4	65.8	39.7	54.6	69.4	41.3	56.4	71.5
Counties Manukau	48.5	65.3	82.1	41.8	57.2	72.5	42.9	58.3	73.6	37.9	52.3	66.7	40.3	54.8	69.3	37.3	51.2	65.0	44.2	59.0	73.7	46.0	61.0	76.0	47.9	63.0	78.1	44.6	59.0	73.4
Hawke's Bay	59.1	80.5	101.9	53.7	74.1	94.4	52.2	72.3	92.4	50.3	70.1	89.9	41.1	59.3	77.4	37.5	54.8	72.2	36.1	53.1	70.1	38.4	55.9	73.3	40.3	58.0	75.8	38.5	55.9	73.3
Hutt Valley	45.3	66.7	88.2	43.7	64.7	85.8	44.9	66.1	87.3	39.9	60.1	80.3	43.0	63.7	84.4	37.3	56.8	76.3	37.5	57.0	76.6	33.0	51.8	70.5	35.6	55.0	74.3	38.2	58.1	78.0
Lakes	43.2	74.2	105.2	34.6	62.8	91.0	28.2	53.8	79.4	29.0	54.3	79.6	32.1	57.9	83.7	33.0	58.8	84.6	37.7	64.4	91.1	35.7	61.7	87.7	34.0	59.3	84.7	28.2	51.6	75.0
MidCentral	53.0	71.7	90.4	50.9	69.3	87.7	42.5	59.5	76.5	45.8	63.2	80.6	49.1	66.9	84.7	54.3	72.9	91.6	52.5	70.9	89.3	46.8	64.4	81.9	42.1	58.8	75.6	42.6	59.5	76.4
Nelson-Marlborough	41.1	61.9	82.7	44.8	66.3	87.7	37.7	57.6	77.4	36.2	55.6	75.0	30.4	48.3	66.2	32.6	51.0	69.3	29.5	47.0	64.5	30.5	48.0	65.6	29.8	47.1	64.3	28.6	45.5	62.3
Northland	51.1	73.2	95.2	55.3	77.8	100.4	48.4	69.8	91.1	45.8	66.5	87.2	44.6	65.0	85.4	43.2	63.2	83.2	42.4	62.0	81.7	35.9	54.1	72.3	36.3	54.4	72.5	33.4	50.7	68.0
Otago	60.7	78.2	95.8	53.3	69.9	86.5	52.7	69.3	85.8	56.0	73.0	90.0	53.4	70.1	86.8	52.5	69.2	85.9	45.6	61.3	77.0	39.9	54.8	69.7	37.5	52.1	66.6	39.6	54.4	69.2
South Canterbury	41.2	69.3	97.4	51.7	82.4	113.2	49.6	80.0	110.3	53.1	84.4	115.7	40.4	68.7	97.0	35.2	62.3	89.4	28.4	53.3	78.1	20.5	42.5	64.6	22.2	44.5	66.8	22.0	44.1	66.1
Southland	35.0	55.7	76.5	33.7	54.3	75.0	31.8	52.1	72.4	38.4	60.3	82.3	38.2	60.1	82.0	37.1	58.7	80.3	32.5	53.1	73.6	30.9	51.0	71.1	32.7	53.1	73.5	37.7	59.2	80.8
Tairāwhiti	48.6	88.3	128.0	36.7	72.7	108.7	24.1	55.5	86.9	20.7	50.6	80.5	21.9	52.4	82.9	23.8	54.8	85.9	25.2	56.9	88.7	28.7	62.0	95.3	24.3	56.0	87.7	20.0	50.1	80.1
Taranaki	38.7	58.8	78.8	37.8	57.7	77.6	48.5	70.4	92.3	43.5	64.5	85.5	50.9	73.1	95.3	46.9	68.4	89.8	41.5	62.0	82.4	37.3	57.0	76.6	34.5	53.6	72.7	42.5	63.2	84.0
Waikato	55.5	70.2	84.9	53.3	67.6	82.0	51.6	65.7	79.9	54.4	68.8	83.2	50.7	64.5	78.4	53.7	67.9	82.1	49.9	63.5	77.1	50.1	63.6	77.1	44.8	57.5	70.3	44.0	56.6	69.2
Wairarapa	55.5	100.2	144.9	52.3	96.5	140.7	45.6	87.6	129.7	45.1	87.6	130.1	44.7	87.6	130.6	43.0	86.1	129.2	37.4	77.6	117.8	43.7	85.6	127.6	47.5	89.8	132.1	48.9	91.6	134.3
Waitemata	44.3	57.5	70.6	40.7	53.2	65.7	43.9	56.7	69.5	43.8	56.4	69.0	42.3	54.6	66.9	38.3	49.9	61.6	34.3	45.3	56.3	32.2	42.9	53.5	33.0	43.6	54.2	35.6	46.5	57.3
West Coast	32.6	72.5	112.4	32.1	71.5	110.8	31.4	71.2	110.9	43.2	86.5	129.8	43.2	86.5	129.8	41.3	83.6	125.9	23.0	59.0	94.9	23.1	59.2	95.2	20.4	55.3	90.2	17.9	51.7	85.4
Whanganui	33.7	57.9	82.1	41.3	67.6	93.9	40.1	66.3	92.5	32.0	56.3	80.6	26.3	49.2	72.2	31.7	56.4	81.1	33.7	58.8	84.0	31.8	56.2	80.7	28.7	52.2	75.7	34.9	59.9	84.9
New Zealand	66.0	70.1	74.3	64.3	68.4	72.4	62.6	66.6	70.6	62.3	66.3	70.3	60.3	64.2	68.2	58.9	62.8	66.6	56.7	60.5	64.3	54.6	58.3	62.0	53.4	57.0	60.7	52.2	55.8	59.4

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	47.4	58.8	70.3	49.8	61.6	73.4	48.0	59.5	71.1	45.6	56.9	68.2	43.1	54.0	65.0	48.0	59.6	71.2	49.9	61.8	73.7	52.6	64.9	77.2	52.5	64.8	77.2	51.7	64.0	76.4
Bay of Plenty	34.3	49.1	64.0	31.3	45.3	59.3	30.7	44.3	58.0	33.5	47.4	61.3	36.0	50.1	64.2	33.0	46.4	59.8	30.4	43.3	56.1	32.3	45.3	58.3	37.2	51.0	64.7	37.7	51.5	65.2
Canterbury	47.9	58.4	68.9	48.6	59.1	69.6	52.3	63.0	73.7	50.3	60.7	71.2	47.4	57.5	67.6	40.2	49.5	58.9	39.8	49.0	58.2	43.7	53.3	62.9	48.1	58.1	68.0	47.6	57.4	67.3
Capital and Coast	40.0	54.9	69.9	39.4	54.2	69.0	43.4	58.7	74.0	41.6	56.5	71.4	37.5	51.6	65.8	30.6	43.6	56.6	35.3	49.1	62.8	42.7	57.6	72.5	50.3	66.2	82.1	45.3	60.4	75.6
Counties Manukau	40.0	53.6	67.2	40.0	53.5	66.9	42.0	55.5	69.1	40.5	53.7	66.8	38.6	51.3	63.9	35.6	47.7	59.8	36.9	49.1	61.3	39.8	52.2	64.7	40.4	52.9	65.4	42.7	55.4	68.0
Hawke's Bay	41.5	59.4	77.2	37.8	54.9	72.0	35.8	52.4	69.0	34.1	50.2	66.3	34.1	50.1	66.2	36.3	52.6	68.9	34.7	50.6	66.6	42.6	59.9	77.2	42.7	60.0	77.3	51.6	70.3	89.0
Hutt Valley	36.4	56.0	75.7	32.6	51.4	70.2	32.9	51.8	70.8	32.6	51.4	70.2	39.7	60.0	80.3	40.4	60.7	81.0	39.7	59.8	79.9	32.2	50.6	69.1	26.7	43.8	60.8	32.2	50.4	68.7
Lakes	33.9	58.6	83.3	31.5	55.1	78.6	28.4	50.9	73.4	23.4	44.2	65.0	29.6	52.4	75.2	36.2	60.9	85.6	32.0	55.3	78.7	35.1	58.8	82.5	35.1	58.4	81.8	44.0	69.6	95.2
MidCentral	45.6	63.0	80.4	47.2	64.9	82.5	44.9	62.1	79.3	46.2	63.7	81.1	44.2	61.3	78.3	45.8	63.1	80.4	43.3	60.1	76.9	39.8	55.9	72.1	43.5	60.1	76.8	48.6	65.9	83.3
Nelson-Marlborough	28.4	45.2	61.9	25.0	40.7	56.5	27.8	44.0	60.2	28.7	44.9	61.2	33.2	50.2	67.2	28.9	44.9	60.9	25.2	40.2	55.1	26.6	41.7	56.8	31.5	47.5	63.6	38.6	55.8	73.1
Northland	34.9	52.3	69.6	35.1	52.4	69.7	35.8	53.1	70.4	34.8	51.7	68.5	30.2	46.0	61.7	28.1	43.2	58.3	31.3	46.9	62.5	37.0	53.6	70.2	36.1	52.4	68.7	31.7	47.1	62.5
Otago	40.2	55.2	70.1	39.9	54.8	69.6	44.0	59.4	74.8	45.6	61.1	76.7	45.9	61.4	77.0	41.3	56.1	70.9	41.5	56.3	71.1	40.2	54.8	69.4	39.9	54.6	69.2	39.7	54.3	69.0
South Canterbury	35.4	61.4	87.5	35.3	61.3	87.3	39.4	66.3	93.3	31.6	56.2	80.9	36.3	62.0	87.7	31.4	56.0	80.5	23.5	45.6	67.7	17.2	37.2	57.2	19.8	40.6	61.3	25.4	48.0	70.7
Southland	39.6	61.5	83.4	38.6	60.3	82.0	35.4	56.4	77.4	34.9	55.9	76.8	35.7	56.6	77.6	31.6	51.6	71.5	28.8	48.0	67.2	33.2	53.6	73.9	43.5	66.1	88.6	43.9	66.5	89.0
Tairāwhiti	13.6	40.7	67.9	22.1	52.8	83.5	25.6	58.0	90.4	29.5	63.8	98.0	33.4	68.4	103.4	28.6	61.7	94.8	28.1	61.5	95.0	22.9	54.9	86.8	31.1	66.1	101.2	27.5	61.2	94.9
Taranaki	38.1	57.9	77.6	43.2	63.9	84.6	41.2	61.4	81.5	40.0	59.9	79.7	39.2	58.8	78.4	34.1	52.5	70.9	30.0	47.4	64.9	27.5	44.4	61.2	32.9	51.1	69.3	36.9	55.9	75.0
Waikato	46.1	58.9	71.6	46.8	59.6	72.3	46.3	58.9	71.5	41.0	52.9	64.8	39.9	51.5	63.1	38.1	49.5	60.8	38.5	49.8	61.2	46.1	58.4	70.6	48.2	60.6	73.1	49.4	61.9	74.4
Wairarapa	40.7	80.7	120.7	32.8	69.7	106.7	29.2	64.1	98.9	30.6	65.1	99.5	27.2	59.6	92.1	24.0	54.3	84.6	23.2	53.4	83.6	21.1	50.4	79.7	22.4	52.5	82.7	19.1	47.7	76.3
Waitemata	40.6	51.9	63.3	39.6	50.6	61.7	40.4	51.4	62.3	37.9	48.4	58.9	37.4	47.8	58.1	33.6	43.3	53.0	31.1	40.4	49.7	33.								

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	105.3	119.3	133.4	101.5	115.5	129.4	101.0	114.9	128.8	100.2	114.1	128.0	99.0	112.9	126.7	93.3	106.8	120.3	89.2	102.6	116.0	85.3	98.5	111.7	81.9	95.1	108.2	79.4	92.5	105.5
Bay of Plenty	57.1	81.1	105.1	59.4	83.4	107.4	47.4	69.0	90.6	57.4	80.4	103.4	54.2	76.2	98.2	57.6	79.8	102.0	50.5	71.3	92.1	56.2	77.6	98.9	59.2	80.6	102.0	58.3	79.1	99.9
Canterbury	94.0	108.0	122.1	87.0	100.5	113.9	87.6	101.1	114.6	88.2	101.6	115.1	83.2	96.3	109.3	79.7	92.4	105.2	78.6	91.2	103.8	78.7	91.2	103.8	75.9	88.2	100.5	76.6	89.0	101.3
Capital and Coast	71.9	90.2	108.5	74.6	93.3	111.9	69.8	87.9	106.0	76.0	94.8	113.6	74.0	92.6	111.2	79.8	99.0	118.3	77.6	96.6	115.7	75.5	94.4	113.2	66.4	84.1	101.9	63.7	81.1	98.6
Counties Manukau	75.0	96.2	117.4	71.4	91.7	112.0	67.3	86.6	105.9	69.2	88.4	107.6	69.8	88.9	108.0	75.2	94.7	114.2	73.8	92.8	111.8	64.2	81.8	99.3	60.0	76.7	93.4	60.6	77.1	93.6
Hawke's Bay	70.4	92.8	115.3	65.1	86.8	108.6	68.4	90.6	112.8	69.0	91.3	113.6	67.0	89.0	111.1	65.5	87.3	109.2	60.7	81.7	102.6	57.1	77.3	97.5	54.3	74.0	93.7	53.3	72.7	92.1
Hutt Valley	74.0	98.8	123.5	69.8	93.9	118.0	77.8	102.9	128.1	78.1	103.2	128.2	84.8	110.7	136.5	79.1	104.0	129.0	78.4	103.5	128.6	69.9	94.0	118.1	60.6	83.6	106.5	60.5	83.7	106.8
Lakes	47.2	81.2	115.1	42.3	74.9	107.5	48.7	82.3	116.0	56.2	91.6	127.0	65.3	101.9	138.6	67.8	104.6	141.5	63.5	98.8	134.2	60.0	94.1	128.1	61.6	95.4	129.1	57.6	90.0	122.4
MidCentral	70.3	91.4	112.5	65.4	85.8	106.1	69.2	89.9	110.7	72.9	94.1	115.2	81.8	103.9	126.1	77.7	99.2	120.7	78.7	100.2	121.8	77.1	98.5	119.8	80.1	101.8	123.5	78.3	99.8	121.3
Nelson-Marlborough	74.6	101.9	129.1	67.7	93.6	119.6	64.2	89.4	114.6	62.7	87.4	112.2	54.3	77.5	100.7	50.7	73.0	95.4	59.1	82.7	106.3	68.2	93.0	117.9	69.7	94.6	119.4	59.6	82.7	105.7
Northland	62.5	90.2	117.9	60.4	87.5	114.6	63.0	90.3	117.6	56.8	82.7	108.5	59.7	85.8	111.8	57.5	82.7	107.9	63.4	89.4	115.5	69.1	95.8	122.4	75.9	103.5	131.0	75.9	103.0	130.1
Otago	83.7	102.9	122.2	77.2	95.9	114.5	77.3	96.0	114.7	78.0	96.8	115.5	72.8	91.0	109.2	68.3	86.0	103.7	66.2	83.6	101.0	68.1	85.7	103.4	70.2	88.1	106.0	67.0	84.7	102.3
South Canterbury	70.6	104.6	138.6	58.6	89.9	121.2	58.7	89.9	121.0	54.7	84.9	115.1	56.0	86.5	116.9	60.4	91.7	123.0	65.9	98.1	130.3	59.3	90.1	120.8	56.6	86.5	116.5	51.3	80.2	109.0
Southland	63.9	90.6	117.4	66.1	93.3	120.6	63.1	89.8	116.5	61.8	88.3	114.7	59.8	85.9	112.0	66.1	93.2	120.4	71.7	99.6	127.5	60.3	86.2	112.1	52.5	76.9	101.2	50.5	74.4	98.3
Tairāwhiti	73.8	120.9	168.0	84.0	133.5	182.9	61.1	104.9	148.7	55.9	88.3	140.7	42.0	80.1	118.1	40.8	78.5	116.1	35.0	70.9	106.7	39.9	77.5	115.1	39.6	76.9	114.2	34.7	70.2	105.8
Taranaki	63.5	88.9	114.2	62.8	87.9	113.0	57.8	82.0	106.3	53.8	77.3	100.8	61.6	86.4	111.1	69.2	95.2	121.2	66.3	91.6	116.9	54.8	78.1	101.3	49.2	71.3	93.4	47.8	69.5	91.2
Waikato	81.5	100.4	119.4	81.2	99.9	118.5	77.6	95.7	113.8	77.0	94.9	112.7	77.8	95.6	113.4	73.5	90.7	108.0	63.6	79.6	95.6	63.1	78.9	94.7	65.0	80.8	96.6	69.9	86.0	102.2
Wairarapa	98.6	154.5	210.4	80.9	132.5	184.1	73.3	122.7	172.1	56.5	101.3	146.1	57.5	102.3	147.1	66.2	113.1	160.1	72.4	120.7	168.9	73.5	122.0	170.4	55.9	99.6	143.2	54.3	97.3	140.3
Waitemata	74.4	91.4	108.4	69.5	85.9	102.2	66.9	82.7	98.5	66.2	81.7	97.3	65.6	80.9	96.3	60.5	75.1	89.8	59.0	73.2	87.4	55.6	69.3	83.0	59.1	72.9	86.8	60.9	74.7	88.5
West Coast	71.6	126.6	181.6	56.5	106.8	157.1	43.3	88.7	134.1	49.1	96.3	143.5	55.7	105.3	154.9	61.5	112.5	163.5	51.3	99.6	148.0	45.5	92.1	138.8	46.1	93.3	140.5	48.0	96.1	144.2
Whanganui	56.3	86.0	115.6	50.4	78.7	107.0	48.3	76.1	104.0	53.2	82.0	110.9	61.6	92.1	122.6	64.2	95.4	126.5	63.8	95.0	126.1	61.7	92.5	123.3	67.7	99.7	131.7	68.2	100.2	132.2
New Zealand	96.2	101.2	106.1	91.7	96.5	101.4	89.9	94.7	99.5	90.3	95.0	99.8	89.8	94.5	99.2	88.3	92.9	97.6	86.1	90.7	95.2	83.4	87.9	92.4	81.6	86.0	90.4	80.4	84.8	89.2

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	74.1	86.8	99.5	77.9	90.9	104.0	76.8	89.8	102.9	80.3	93.6	106.9	75.4	88.4	101.3	75.8	88.8	101.8	73.0	85.8	98.7	74.8	87.7	100.7	74.5	87.4	100.4	82.7	96.4	110.1
Bay of Plenty	53.3	72.9	92.5	53.7	72.9	92.1	51.8	70.3	88.8	49.5	67.3	85.1	46.7	63.7	80.7	48.4	65.3	82.3	44.7	60.8	76.9	51.8	68.7	85.6	57.5	74.8	92.2	68.2	86.7	105.2
Canterbury	79.0	91.4	103.9	80.2	92.6	105.0	80.1	92.4	104.7	76.8	88.8	100.8	75.5	87.4	99.2	73.8	85.4	97.0	70.5	81.8	93.1	71.6	83.0	94.3	72.3	83.7	95.1	73.0	84.4	95.8
Capital and Coast	62.9	80.4	97.8	65.7	83.4	101.1	62.8	80.1	97.3	61.9	78.9	95.9	55.8	71.9	88.1	57.7	74.0	90.2	54.8	70.6	86.5	61.4	78.0	94.6	60.5	76.9	93.4	65.6	82.6	99.7
Counties Manukau	67.1	84.3	101.5	67.3	84.2	101.2	65.2	81.7	98.2	61.7	77.6	93.4	58.2	73.5	88.9	55.6	70.5	85.3	54.1	68.6	83.1	58.4	73.3	88.2	55.5	69.9	84.4	60.2	75.1	90.0
Hawke's Bay	57.7	77.7	97.6	69.5	91.0	112.4	71.5	93.0	114.5	65.2	85.7	106.1	52.5	71.0	89.5	49.4	67.3	85.2	54.1	72.8	91.4	63.6	83.5	103.4	66.1	86.4	106.7	69.1	89.8	110.5
Hutt Valley	57.5	80.4	103.2	70.0	94.7	119.3	66.9	90.9	114.9	77.9	103.4	129.0	67.0	90.7	114.5	70.8	95.0	119.3	61.8	84.6	107.5	62.7	85.7	108.7	55.1	76.9	98.6	54.9	76.6	98.2
Lakes	57.3	89.0	120.7	51.5	81.5	111.5	53.7	83.7	113.6	51.0	80.1	109.3	50.6	79.4	108.1	41.8	68.2	94.5	39.6	65.1	90.6	46.2	73.2	100.1	55.4	84.0	112.7	64.1	94.2	124.3
MidCentral	71.4	92.0	112.6	74.6	95.5	116.4	71.5	91.9	112.4	71.4	91.7	112.0	68.9	88.7	108.6	71.2	91.3	111.3	72.3	92.5	112.6	69.7	89.5	109.3	67.0	86.4	105.8	68.2	87.7	107.2
Nelson-Marlborough	58.5	81.2	103.8	59.1	81.6	104.1	57.7	79.8	102.0	55.6	77.2	98.8	54.7	76.0	97.3	53.0	73.8	94.6	51.4	71.7	92.0	56.8	77.8	98.7	66.2	88.3	110.4	79.5	103.2	126.9
Northland	60.2	84.6	108.9	55.7	78.9	102.0	51.4	73.5	95.5	62.8	86.4	110.1	53.7	75.6	97.6	54.6	76.4	98.2	47.0	67.1	87.3	52.6	73.3	94.1	53.2	73.9	94.5	53.6	74.1	94.6
Otago	69.6	87.5	105.4	65.3	82.6	99.9	62.0	78.7	95.4	50.7	65.8	80.9	50.7	65.7	80.7	53.1	68.3	83.5	66.4	83.3	100.1	70.3	87.7	105.0	78.6	96.9	115.2	78.8	97.2	115.6
South Canterbury	60.4	91.3	122.1	55.8	85.9	115.9	59.7	90.6	121.5	58.1	88.7	119.3	56.4	86.6	116.8	48.7	77.4	106.0	43.6	70.8	98.0	44.4	71.5	98.7	40.5	66.3	92.2	41.0	66.8	92.7
Southland	61.2	86.8	112.5	64.2	90.3	116.4	62.1	87.7	113.4	64.1	90.0	115.9	67.1	93.4	119.7	61.7	87.1	112.4	51.5	74.9	98.3	51.6	75.0	98.3	55.0	78.9	102.7	66.7	92.5	118.2
Tairāwhiti	30.9	64.8	98.7	43.7	81.8	119.9	50.4	90.3	130.2	56.1	97.4	138.7	53.2	93.5	133.9	53.0	93.2	133.4	44.3	82.3	120.3	43.4	81.3	119.3	42.4	80.1	117.7	42.7	80.6	118.6
Taranaki	46.1	67.3	88.5	48.6	70.1	91.5	48.3	69.5	90.7	57.0	79.7	102.3	50.9	72.4	93.9	46.5	67.1	87.6	44.0	63.9	83.8	49.8	70.7	91.6	60.2	82.8	105.4	64.0	87.0	110.1
Waikato	66.9	82.5	98.2	63.6	78.7	93.9	62.3	77.2	92.1	58.6	73.0	87.5	59.9	74.4	88.8	60.1	74.5	88.8	66.2	81.0	95.8	71.8	87.0	102.2	73.4	88.7	103.9	69.6	84.4	99.2
Wairarapa	52.6	94.9	137.2	66.5	112.5	158.5	68.5	114.7	160.9	73.7	120.8	167.8	59.3	102.4	145.5	64.2	108.5	152.9	48.1											

	1981		1982		1983		1984		1985		1986		1987		1988		1989		1990												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	33.7	80.7	127.6	40.3	89.7	139.1	40.5	90.0	139.6	42.6	93.4	144.2	29.5	75.5	121.5	22.3	64.3	106.3	19.9	59.6	99.3	17.8	55.5	93.2	23.6	63.8	104.0	16.0	52.0	88.0	
Auckland City	67.5	80.2	92.9	67.4	80.2	92.9	69.6	82.6	95.5	71.8	85.0	98.2	72.3	85.5	98.8	68.4	81.4	94.5	68.3	81.5	94.7	62.7	75.4	88.2	57.9	70.3	82.7	49.7	61.3	72.9	
Banks Peninsula District	0.0	60.5	144.2	0.0	67.0	152.9	0.0	52.7	125.8	0.0	55.0	125.6	0.0	46.2	110.2	0.0	66.6	146.5	0.0	52.9	126.2	0.0	64.8	147.9	0.0	59.4	141.8	0.0	63.5	151.5	
Buller District	0.0	40.2	88.4	0.0	49.8	103.2	0.0	61.2	123.9	19.8	99.3	178.7	27.3	113.4	199.5	32.8	118.6	204.4	12.9	85.4	157.9	13.3	87.6	162.0	0.0	62.8	127.1	7.4	80.3	153.1	
Carterton District	0.0	62.1	141.7	0.0	74.5	163.9	0.0	85.7	182.6	0.0	97.3	201.7	0.0	99.0	205.3	0.0	81.0	178.3	0.0	59.9	143.0	0.0	72.8	166.3	0.0	78.8	173.5	0.0	90.4	192.6	
Central Hawke's Bay District	70.6	185.6	300.7	59.8	166.9	274.0	45.6	142.0	238.4	33.6	121.5	209.4	13.4	88.6	163.7	13.1	86.5	159.8	29.1	112.4	195.7	26.1	108.3	190.4	10.5	84.9	159.3	0.0	59.1	122.6	
Central Otago District	20.3	91.9	163.4	8.4	68.4	128.4	17.7	79.9	142.2	1.0	49.4	97.9	0.0	39.2	81.3	0.0	35.5	78.1	3.2	55.2	107.3	7.6	61.4	115.3	3.0	51.6	100.2	5.1	54.5	104.0	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	66.4	80.7	95.0	66.1	80.4	94.6	65.0	79.1	93.1	66.4	80.6	94.8	60.6	74.2	87.8	57.2	70.5	83.7	57.2	70.4	83.6	58.2	71.5	84.8	57.2	70.3	83.5	51.4	63.9	76.5	
Clutha District	40.6	109.9	179.2	43.6	114.6	185.6	49.7	124.2	198.8	28.9	94.1	159.4	16.7	75.6	134.5	19.1	79.1	139.2	23.1	83.5	143.9	20.6	79.4	138.1	15.3	69.3	123.4	0.0	41.1	83.1	
Dunedin City	60.5	82.7	104.9	51.7	72.5	93.2	48.6	68.8	89.1	53.3	74.5	95.6	52.2	73.2	94.2	51.5	72.5	93.6	41.3	60.7	80.1	37.5	56.3	75.1	35.9	54.5	73.1	40.3	59.8	79.4	
Far North District	47.1	87.6	128.1	49.0	89.6	130.3	49.2	90.0	130.9	41.2	79.2	117.2	31.0	65.1	99.2	35.7	70.7	105.7	39.1	75.2	111.3	33.6	68.1	102.5	33.5	67.8	102.1	36.0	70.5	105.0	
Franklin District	24.9	63.9	102.9	23.1	60.7	98.4	25.5	63.7	102.0	30.4	70.1	109.7	32.8	72.9	113.1	28.2	66.1	104.0	23.7	59.3	94.9	23.8	59.5	95.3	26.4	63.3	100.1	35.1	75.7	116.4	
Gisborne District	54.7	96.2	137.7	40.4	77.7	115.0	31.0	65.1	99.1	29.8	63.5	97.2	32.1	66.6	101.1	33.1	67.8	102.5	35.5	71.2	106.8	39.3	76.3	113.3	32.3	67.0	101.7	23.4	55.0	86.5	
Gore District	1.1	55.3	109.5	1.1	56.0	110.9	1.1	56.0	110.8	16.9	84.6	152.4	20.3	91.9	163.5	23.8	98.8	173.8	27.1	104.7	182.3	20.9	94.7	168.5	12.1	80.0	147.9	9.6	78.0	146.3	
Grey District	35.8	116.6	197.4	18.3	91.7	165.1	3.9	66.4	129.0	14.3	81.2	148.1	28.8	104.2	179.6	35.3	115.0	194.7	11.8	77.8	143.9	1.2	57.7	114.3	0.0	48.4	98.0	0.0	34.7	76.4	
Hamilton City	58.1	87.6	117.0	53.3	81.6	109.8	45.6	72.1	98.7	50.3	77.8	105.4	44.5	70.6	96.8	42.9	68.6	94.4	39.7	64.5	89.2	39.0	63.4	87.7	35.1	58.2	81.3	34.9	58.0	81.0	
Hastings District	47.4	79.4	111.4	47.5	79.1	110.8	47.2	78.7	110.2	42.9	73.3	103.8	35.0	63.2	91.3	30.6	57.3	84.1	33.7	61.3	88.8	40.7	70.3	100.0	45.5	76.3	107.0	47.3	78.5	109.7	
Hauraki District	17.9	80.9	143.9	3.3	55.8	108.3	1.0	51.8	102.6	0.0	42.6	88.2	0.0	43.6	90.3	10.7	70.4	130.2	25.7	93.1	166.5	24.9	90.0	155.1	14.4	72.0	129.6	9.6	63.4	117.1	
Horowhenua District	23.2	56.8	90.4	26.9	62.1	97.2	27.6	62.4	97.2	31.6	66.3	101.0	34.8	69.6	104.5	38.0	73.9	109.7	45.5	84.0	122.4	42.1	79.6	117.0	45.9	84.7	123.5	35.8	70.8	105.9	
Hurunui District	0.0	41.8	105.3	6.5	110.5	214.5	2.0	98.6	195.2	15.0	121.8	228.6	0.0	63.2	139.1	1.8	90.4	179.1	0.0	68.9	146.8	0.0	78.5	162.8	0.0	76.0	157.6	0.0	80.7	163.4	
Invercargill City	56.1	92.2	128.4	50.3	85.1	119.9	59.3	96.7	134.0	59.1	96.8	134.5	55.9	93.2	130.5	49.0	84.7	120.3	45.7	80.3	114.9	49.4	84.8	120.2	48.1	83.1	118.0	53.3	89.8	126.2	
Kaikoura District	0.0	57.9	171.2	0.0	19.4	85.4	0.0	53.0	156.9	0.0	33.1	112.5	0.0	49.2	145.7	0.0	31.1	105.7	0.0	30.6	103.9	0.0	32.1	109.2	0.0	73.1	197.2	0.0	102.2	243.9	
Kaipara District	18.5	77.0	135.4	23.4	84.6	145.9	23.3	84.2	145.2	27.8	90.7	153.5	35.9	103.7	171.4	30.8	96.1	161.3	30.2	94.0	157.9	13.2	66.1	119.1	9.0	59.5	109.9	2.8	48.6	94.3	
Kapiti Coast District	46.1	84.4	122.6	35.4	69.3	103.3	27.5	57.0	86.5	21.7	48.3	75.0	22.8	50.0	77.2	24.4	51.9	79.4	26.7	54.6	82.6	34.1	63.4	92.7	30.3	58.4	86.4	34.8	63.6	92.8	
Kawerau District	0.0	14.4	49.1	0.0	78.8	233.4	0.0	165.2	445.6	0.0	161.6	478.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	190.0	478.6	0.0	153.6	414.2	0.0	83.8	248.1	
Lower Hutt City	47.0	72.1	97.2	48.3	73.7	99.1	48.2	73.5	98.9	44.3	68.7	93.2	47.9	73.0	98.2	42.3	66.3	90.3	41.5	65.5	89.5	32.6	54.6	76.7	31.7	53.7	75.6	33.3	55.8	78.3	
Mackenzie District	0.0	117.7	296.3	0.0	82.9	245.5	0.0	114.8	309.8	0.0	138.7	349.2	0.0	127.6	344.2	0.0	122.7	363.3	0.0	15.5	68.2	0.0	17.9	78.6	0.0	27.3	120.0	0.0	40.4	137.5	
Manawatu District	22.1	66.1	110.2	34.8	85.2	135.5	29.5	77.6	125.7	29.6	78.0	126.3	17.6	60.1	102.7	16.0	57.9	99.7	15.8	57.0	98.3	15.8	57.1	98.4	19.2	62.6	106.1	12.7	52.9	93.0	
Manukau City	47.6	67.9	88.3	43.0	61.9	80.8	45.6	65.1	84.6	36.7	54.1	71.6	36.7	53.6	70.6	35.3	51.7	68.2	44.1	62.1	80.0	48.1	66.7	85.3	48.3	66.8	85.2	44.6	62.0	79.5	
Marlborough District	31.5	71.2	111.0	37.9	79.5	121.2	34.3	74.0	113.8	27.5	64.5	101.6	22.1	56.6	91.1	20.8	54.7	88.6	16.7	48.1	79.4	29.6	65.9	102.3	31.4	67.7	104.1	26.0	59.8	93.6	
Masterton District	55.1	119.1	183.0	49.5	112.0	174.6	41.1	100.4	159.7	37.7	96.7	155.7	31.9	89.9	146.0	28.0	83.9	139.8	22.7	74.0	125.3	24.7	77.1	129.4	38.2	95.5	152.8	39.3	98.3	157.4	
Matamata-Piako District	35.9	86.0	136.1	18.5	60.3	102.1	14.9	54.1	93.2	27.9	73.5	119.1	32.8	80.1	127.5	41.7	92.8	143.9	28.9	74.2	119.4	33.5	80.1	126.8	25.1	67.9	110.7	32.9	78.7	124.5	
Napier City	49.4	83.6	117.8	39.5	70.9	102.2	40.5	72.2	103.8	41.5	73.4	105.3	40.4	71.9	103.5	40.5	71.6	102.7	39.5	70.3	101.0	38.2	68.4	98.7	35.5	65.0	94.5	30.6	58.4	86.1	
Nelson City	42.1	79.6	117.1	44.1	82.0	119.9	34.3	68.7	103.1	33.8	67.6	101.5	26.0	56.9	87.9	27.3	59.0	90.7	23.8	53.9	83.9	26.7	57.7	88.6	26.6	57.4	88.2	32.5	65.7	99.0	
New Plymouth District	41.6	68.8	95.9	41.8	69.0	96.2	52.3	81.8	111.2	47.0	75.1	103.3	55.6	85.4	115.1	51.8	80.7	109.5	45.4	73.0	100.5	40.6	67.0	93.4	35.8	61.1	86.5	44.8	72.5	100.2	
North Shore City	41.1	59.7	78.3	33.8	50.8	67.8	35.4	52.5	69.7	40.1	58.0	75.9	39.9	57.6	75.4	38.3	55.6	73.0	35.4	52.1	68.8	32.9	49.1	65.3	30.7	46.3	62.0	29.8	45.3	60.7	
Opotiki District	15.3	123.6	231.9	36.4	164.5	292.6	41.9	174.1	306.3	25.6	145.1	264.3	31.8	159.2	286.6	32.6	163.2	293.8	55.1	199.5	343.9	11.1	119.3	227.5	34.0	153.9	273.7	10.3	110.7	211.1	
Otorohanga District	0.0	95.7	218.6	0.0	98.1	224.0	0.0	109.0	232.3	0.0	98.1	209.1	0.0	94.1	206.0	0.0	101.1	209.7	0.0	76.9	169.1	0.0	61.8	141.1	0.0	72.1	158.7	0.0	62.0	141.6	
Palmerston North City	46.8	78.7	110.7	43.5	74.7	105.9	36.2	65.3	94.4	41.7	72.0	102.3	50.7	83.0	115.4	55.4	88.9	122.4	46.2	77.7	109.3	36.0	65.0	94.0	29.0	55.7	82.4	30.8	58.3	85.7	
Papakura District	25.2	82.0	138.8	18.9	68.4	118.0	10.8	54.0	97.2	10.4	52.0	93.7	15.6	60.2	104.8	15.1	58.3	101.4	33.0	84.4	135.9	19.6	63.7	107.8	24.0	69.2	114.4	15.3	55.6	95.8	
Porirua City	24.3	70.2	116.1	32.7	86.0	139.4	32.1	89.7	147.2	28.7	85.7	142.8	20.7	71.0	121.3	21.1	68.8	116.5	22.4	69.6	116.9	40.5	99.1	157.7	48.1	108.9	169.7	51.6	113.0	174.4	
Queenstown-Lakes District																															

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000			
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	
Ashburton District	14.3	49.0	83.7	6.3	35.6	64.8	15.3	49.8	84.4	19.0	54.8	90.7	14.5	47.2	79.9	2.5	27.1	51.7	3.6	29.4	55.2	20.7	56.1	91.4	28.7	67.3	105.9	30.2	69.5	108.8	
Auckland City	49.3	60.9	72.5	52.5	64.6	76.6	50.7	62.5	74.4	48.7	60.4	72.0	45.2	56.4	67.6	49.5	61.3	73.0	51.1	63.1	75.1	53.5	65.9	78.3	53.2	65.6	78.0	51.8	64.2	76.5	
Bucks Peninsula District	0.0	42.8	107.7	0.0	33.6	90.6	0.0	45.4	108.2	0.0	53.9	128.5	0.0	60.2	137.4	0.0	43.4	109.2	0.0	31.1	83.9	0.0	18.5	54.7	0.0	12.7	43.3	0.0	23.7	70.0	
Buller District	0.0	52.8	112.6	0.0	58.4	121.1	0.0	41.5	94.7	0.0	47.6	104.7	0.0	48.8	107.3	0.0	55.1	117.3	0.0	65.0	131.6	4.3	73.1	142.0	1.4	68.6	135.9	0.0	70.4	142.4	
Carterton District	0.0	67.5	154.1	0.0	51.5	129.6	0.0	48.7	122.6	0.0	66.8	152.4	0.0	62.6	143.0	0.0	51.8	123.5	0.0	60.0	137.0	0.0	59.3	135.5	0.0	58.8	134.3	0.0	31.9	86.1	
Central Hawke's Bay District	14.0	92.2	170.5	37.5	128.5	219.4	36.0	123.2	210.4	28.4	109.5	190.6	18.2	91.2	164.1	11.8	78.3	144.8	6.2	67.4	128.5	1.2	58.6	116.1	3.6	62.2	120.8	3.7	63.4	123.1	
Central Otago District	7.3	59.5	111.7	4.8	52.2	99.6	0.0	40.6	82.1	4.7	50.6	96.4	4.6	49.4	94.2	7.9	52.4	96.9	0.0	27.8	59.3	4.0	43.6	83.1	5.7	46.3	87.0	15.0	62.4	109.7	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	52.1	64.7	77.3	55.2	68.0	80.8	58.6	71.7	84.8	55.0	67.7	80.3	51.5	63.7	75.9	45.0	56.4	67.8	45.0	56.4	67.7	46.9	58.4	70.0	50.9	62.8	74.7	49.7	61.4	73.2	
Clutha District	0.0	39.6	80.2	0.0	37.5	77.7	4.9	52.3	99.8	7.0	57.0	106.9	0.9	45.7	90.4	2.9	49.8	96.7	0.0	42.8	86.5	0.0	41.9	84.7	0.0	29.7	65.3	0.0	37.2	77.1	
Dunedin City	39.2	58.6	78.0	40.1	59.6	79.1	46.1	66.7	87.3	47.1	67.8	88.4	47.5	68.1	88.8	40.6	59.9	79.3	42.8	62.6	82.4	40.0	59.2	78.5	37.2	56.0	74.8	34.8	53.2	71.7	
Far North District	41.0	77.4	113.9	41.2	76.6	112.0	37.5	71.4	105.4	37.1	69.5	101.9	21.3	47.5	73.6	17.1	41.0	64.9	16.3	39.9	63.5	27.4	55.4	83.4	24.2	50.9	77.5	24.7	51.3	77.9	
Franklin District	31.7	70.5	109.4	35.5	75.5	115.6	29.6	66.9	104.3	25.4	60.8	96.2	20.2	53.2	86.1	11.8	40.5	69.2	18.9	49.8	80.6	20.4	51.1	81.7	28.8	62.3	95.7	23.2	54.4	85.5	
Gisborne District	16.9	45.7	74.4	30.1	64.0	97.9	33.8	69.2	104.7	37.8	74.9	112.0	39.6	76.9	114.2	37.4	74.0	110.7	35.5	71.8	108.1	26.4	59.8	93.1	34.6	70.9	107.2	31.0	65.9	100.9	
Gore District	15.4	87.2	159.0	18.0	90.0	161.9	17.3	86.6	156.0	19.9	89.9	159.8	16.2	81.3	146.4	10.3	68.4	126.4	15.6	78.1	140.6	29.6	101.5	173.3	24.6	94.9	165.2	1.1	56.5	111.9	
Grey District	0.0	30.3	69.3	0.0	20.0	53.9	0.0	34.0	77.7	0.0	50.3	101.8	3.5	59.6	115.6	8.4	67.8	127.3	16.6	83.2	149.8	19.6	88.5	157.4	14.1	80.1	146.0	0.0	53.2	107.7	
Hamilton City	35.3	58.3	81.2	37.6	61.0	84.5	34.5	57.0	79.6	33.6	55.8	77.9	33.5	55.5	77.6	35.0	57.3	79.7	32.3	53.8	75.3	39.6	62.6	85.7	37.3	59.7	82.1	40.0	62.9	85.8	
Hastings District	43.1	73.3	103.5	38.5	67.2	96.0	39.4	68.1	96.7	34.0	60.9	87.8	34.0	60.5	87.1	30.3	55.4	80.6	29.5	54.4	79.2	37.4	64.6	91.8	36.8	63.9	90.9	45.6	74.9	104.3	
Hauraki District	16.2	73.4	130.5	23.3	84.4	145.4	27.7	90.1	152.5	24.8	84.8	144.8	19.4	74.8	130.3	4.6	49.2	93.8	4.6	49.5	94.5	74.2	69.2	121.7	23.1	79.0	135.0	21.4	77.4	133.4	
Horowhenua District	41.1	78.4	115.7	40.6	77.4	114.2	40.8	78.6	116.3	50.2	90.5	130.8	45.7	85.0	124.2	48.0	87.3	126.5	35.8	71.0	106.1	27.4	59.3	91.1	34.0	68.1	102.2	31.3	64.1	96.9	
Hurunui District	0.0	71.7	148.6	0.0	53.2	117.1	0.0	39.1	93.2	0.0	45.6	104.1	0.0	40.0	95.5	0.0	48.0	109.5	0.0	52.4	115.2	0.0	58.3	124.2	0.0	60.7	125.9	0.0	52.4	111.8	
Invercargill City	53.7	89.9	126.2	56.1	93.0	130.0	48.5	83.8	119.1	39.7	72.7	105.7	35.8	67.6	99.4	27.9	57.2	86.4	24.9	53.1	81.2	28.7	58.2	87.7	43.4	77.3	111.2	50.3	85.9	121.5	
Kaikoura District	0.0	97.3	232.1	0.0	78.6	197.9	0.0	47.8	141.6	0.0	34.1	116.0	0.0	31.4	106.7	0.0	31.3	204.7	0.0	79.8	200.8	0.0	49.0	145.1	0.0	17.3	76.0	0.0	15.8	69.6	
Kaipara District	4.8	51.8	98.9	4.6	49.6	94.6	2.6	45.1	87.5	0.0	38.2	77.3	0.8	42.1	83.3	6.3	51.2	96.0	12.2	61.2	110.2	12.3	61.4	110.5	11.9	59.4	106.9	6.0	48.8	91.5	
Kapiti Coast District	24.0	49.1	74.3	28.6	54.1	79.6	29.9	55.5	81.1	33.0	59.1	85.2	27.8	52.1	76.4	22.3	44.7	67.0	23.3	45.7	68.1	26.3	49.4	72.4	33.2	57.6	82.1	32.3	56.4	80.6	
Kawerau District	0.0	47.7	162.0	0.0	115.1	340.6	0.0	82.4	244.0	0.0	174.4	416.1	0.0	119.5	285.2	0.0	110.9	279.4	0.0	28.9	85.6	0.0	29.1	86.1	0.0	20.2	68.6	0.0	10.7	47.0	
Lower Hutt City	33.7	56.5	79.3	30.6	52.6	74.6	33.3	56.0	78.7	30.8	52.9	75.0	40.4	64.8	89.3	41.2	65.8	90.5	38.6	62.7	86.8	29.7	51.6	73.5	22.5	42.2	61.9	37.7	61.5	85.3	
Mackenzie District	0.0	87.5	236.1	0.0	77.6	209.2	0.0	59.3	175.6	0.0	64.1	218.0	0.0	156.4	463.1	0.0	146.4	433.5	0.0	51.4	174.9	N/A	0.0	N/A	N/A	0.0	N/A	0.0	12.9	56.5	
Manawatu District	14.5	56.1	97.6	10.7	48.6	86.4	13.8	53.3	92.8	9.0	44.9	80.9	5.9	38.9	72.0	7.1	40.3	73.4	11.5	47.8	84.0	20.8	62.3	103.8	24.2	67.5	110.8	33.2	81.1	129.0	
Manukau City	40.3	56.9	73.4	38.9	55.0	71.1	40.6	56.8	73.0	38.4	53.8	69.3	38.1	53.3	68.5	37.2	52.0	66.8	38.2	53.1	68.0	43.0	58.6	74.2	42.7	58.2	73.6	48.3	64.4	80.5	
Marlborough District	14.5	43.3	72.1	18.6	49.0	79.4	37.3	74.0	110.6	45.5	84.0	122.4	42.1	78.8	115.5	33.8	67.7	101.7	20.6	49.2	77.9	22.0	50.6	79.2	19.8	47.3	74.9	27.0	56.8	86.5	
Masterton District	41.7	102.0	162.3	32.3	87.5	146.2	28.4	79.2	130.0	23.3	69.6	116.0	20.8	64.8	108.8	18.4	59.9	101.3	13.6	52.3	91.0	12.0	49.9	87.8	15.3	55.5	95.7	20.0	62.3	104.6	
Matamata-Piako District	47.6	98.7	149.8	41.5	89.6	137.8	34.3	79.0	123.7	20.4	58.8	97.3	20.3	58.6	96.9	24.3	64.0	103.7	14.1	48.4	82.6	28.0	68.4	108.9	25.1	64.4	103.7	30.5	71.6	112.7	
Napier City	35.3	64.2	93.0	30.5	57.6	84.7	25.1	50.2	75.3	28.6	54.4	80.3	34.3	61.8	89.4	42.2	71.7	101.3	34.5	61.7	89.0	33.8	60.5	87.3	28.1	53.0	78.0	36.9	64.4	91.9	
Nelson City	32.4	65.7	98.9	26.6	57.4	88.2	17.1	43.9	70.7	17.5	43.7	69.9	22.3	50.5	78.7	24.0	52.7	81.3	29.7	60.8	91.9	32.8	64.9	97.1	35.8	68.8	101.9	28.8	59.0	89.1	
New Plymouth District	39.4	65.3	91.3	44.6	71.6	98.6	44.0	70.6	97.2	42.5	68.8	95.0	41.6	67.5	93.5	34.8	58.9	83.0	29.1	51.5	73.9	26.7	48.2	69.7	30.6	53.4	76.3	32.0	55.3	78.6	
North Shore City	33.5	49.7	65.9	36.7	53.2	69.7	40.8	57.7	74.6	39.7	56.2	72.6	37.5	53.4	69.3	33.0	47.9	62.8	31.0	45.4	59.8	34.8	49.9	65.1	35.5	50.7	66.0	33.5	48.6	63.6	
Opoitiki District	29.2	145.9	262.7	0.0	92.2	186.5	0.0	64.0	140.8	0.0	79.8	165.5	5.8	99.2	192.6	5.9	102.1	194.8	0.0	57.3	126.0	0.0	50.0	114.1	0.0	67.7	144.4	0.0	62.9	138.4	
Otorohanga District	0.0	81.7	174.1	0.0	72.6	159.8	0.0	75.5	160.9	0.0	65.2	143.5	0.0	53.1	121.2	0.0	61.3	135.0	0.0	47.0	112.1	0.0	41.4	104.2	0.0	51.9	123.8	0.0	67.6	154.2	
Palmerston North City	36.1	65.1	94.1	38.7	68.5	98.2	37.2	66.6	96.0	40.7	71.2	101.7	38.9	68.7	98.6	40.5	70.7	100.9	35.2	63.5	91.8	30.6	57.4	84.2	31.8	58.6	85.4	38.0	66.4	94.9	
Papakura District	21.4	63.9	106.4	22.0	63.5	105.1	23.2	64.8	106.4	23.5	65.6	107.7	28.3	72.4	116.6	26.8	70.5	114.2	28.6	71.5	114.4	20.3	58.6	96.9	15.8	51.3	86.9	16.9	52.7	88.6	
Porirua City	38.8	91.1	143.4	31.3	80.2	129.1	44.9	100.0	155.1	42.3	95.7	149.2	43.2	97.8	152.5	29.8	76.4	123.0	29.9	76.7	123.4	43.9	96.2	148.5	44.7	99.5	154.2	42.4	99.4	156.5	
Queenstown-Lakes District	0.0	38.4	91.5	0.0	30.4	76.5	0.0	36.5	87.																						

	1981		1982		1983		1984		1985		1986		1987		1988		1989		1990												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	59.0	116.9	174.9	69.1	129.5	189.9	85.3	150.0	214.7	87.4	151.8	216.3	84.6	147.8	211.0	59.7	114.9	170.1	54.4	107.8	161.2	29.1	72.8	116.6	29.0	72.5	116.0	27.2	69.6	112.1	
Auckland City	117.3	132.7	148.0	115.0	130.4	145.7	116.2	131.7	147.2	116.0	131.6	147.2	115.1	130.7	146.3	109.6	124.9	140.2	105.4	120.6	135.8	100.6	115.6	130.6	95.6	110.4	125.2	91.6	106.2	120.7	
Banks Peninsula District	0.0	103.6	214.9	0.0	120.6	244.0	0.0	122.4	247.6	2.7	133.9	265.1	0.0	76.2	174.1	0.0	71.6	170.7	0.0	34.8	103.0	0.0	74.4	169.8	0.0	94.6	201.5	0.0	87.3	192.2	
Buller District	14.5	95.7	177.0	4.6	78.4	152.3	1.4	69.5	137.6	31.0	119.8	208.5	39.0	133.6	228.1	54.2	156.3	258.4	31.2	120.3	209.4	30.8	118.8	206.9	20.2	100.9	181.7	16.6	94.3	171.9	
Carterton District	13.3	143.2	273.1	0.0	102.4	212.3	0.0	82.0	180.4	0.0	50.6	127.4	0.0	79.5	174.9	0.0	87.0	185.4	0.0	97.4	201.9	0.0	51.2	128.9	0.0	52.5	132.2	0.0	64.4	153.5	
Central Hawke's Bay District	42.2	144.6	246.9	22.7	113.4	204.1	22.7	113.6	204.5	26.6	120.2	213.7	25.7	116.2	206.7	40.1	137.3	234.5	44.2	144.1	243.9	40.9	140.0	239.1	29.6	122.9	216.2	36.8	133.0	229.3	
Central Otago District	15.7	88.8	161.9	15.2	86.2	157.2	30.5	110.6	200.6	29.2	105.6	182.0	31.9	109.3	186.6	11.0	72.8	134.5	8.6	69.7	130.7	10.9	72.2	133.5	19.0	85.8	152.6	18.9	85.3	151.6	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	99.9	115.9	131.9	89.3	104.5	119.6	88.0	102.9	117.9	88.1	103.1	118.1	85.0	99.7	114.4	83.2	97.8	112.3	84.7	99.3	113.9	86.1	100.8	115.5	82.9	97.3	111.7	84.5	99.1	113.6	
Clutha District	50.3	125.7	201.1	56.1	134.3	212.4	61.7	142.2	222.6	62.8	144.6	226.5	55.0	134.5	213.9	41.3	115.3	189.4	27.5	94.1	160.8	14.6	73.2	131.8	17.1	77.2	137.2	16.7	75.5	134.2	
Dunedin City	80.9	104.2	127.5	73.6	96.0	118.3	74.8	97.4	119.9	74.5	97.1	119.7	70.2	92.4	114.5	68.6	90.5	112.4	67.8	89.6	111.3	69.8	91.9	114.0	72.4	94.8	117.2	69.7	91.8	114.0	
Far North District	47.2	96.7	146.2	51.8	103.7	155.7	64.7	119.4	174.0	64.4	117.9	171.4	60.6	111.8	163.0	57.5	106.9	156.3	57.1	105.2	153.4	63.2	111.8	160.5	60.1	107.8	155.4	62.5	110.5	158.5	
Franklin District	43.9	94.7	145.5	47.9	99.4	150.9	42.2	91.0	139.9	36.5	82.5	128.6	30.6	74.9	119.2	47.9	98.1	148.3	58.9	112.2	165.5	50.7	100.4	150.1	42.2	88.5	134.9	31.9	73.4	115.0	
Gisborne District	80.8	129.8	178.8	95.4	147.6	199.9	72.0	118.9	165.8	68.5	114.7	160.9	52.7	94.4	136.1	56.8	99.8	142.9	48.4	88.6	128.8	57.2	99.9	142.6	52.6	93.6	134.6	49.7	89.7	129.7	
Gore District	32.2	104.8	177.5	34.9	108.6	182.4	21.0	87.3	153.6	40.6	117.1	193.6	37.5	112.1	186.7	47.0	127.3	207.5	50.7	133.3	216.0	32.5	106.0	179.4	26.1	94.6	163.1	18.1	81.8	145.6	
Grey District	72.6	170.4	268.1	55.1	145.0	234.9	41.9	125.4	208.8	43.0	128.8	214.6	43.3	129.7	216.0	43.1	128.8	214.6	26.9	103.8	180.8	15.1	85.2	155.4	15.1	85.2	155.4	15.1	85.2	155.4	
Hamilton City	81.6	115.5	149.4	74.1	106.2	138.3	68.6	99.4	130.3	76.8	108.8	140.8	78.5	110.7	143.0	72.0	102.9	133.8	57.9	85.8	111.6	65.2	93.9	122.6	60.3	87.9	115.5	58.6	85.6	112.5	
Hastings District	65.1	99.6	134.1	66.8	101.7	136.6	74.2	110.8	147.3	70.2	106.0	141.8	65.4	100.4	135.3	60.5	94.6	128.6	62.3	96.5	130.6	53.9	85.9	117.9	55.7	87.9	120.0	61.6	94.8	127.9	
Hauraki District	30.8	105.4	180.0	19.3	87.1	155.0	19.2	86.9	154.7	16.5	82.7	149.0	22.0	91.4	160.9	16.5	82.7	149.0	5.8	62.7	119.6	5.8	62.1	118.4	15.6	78.2	140.8	28.3	96.7	165.2	
Horowhenua District	46.7	89.0	131.3	51.4	94.8	138.2	64.6	112.2	159.8	73.0	123.5	173.9	68.8	117.5	166.3	53.0	97.1	141.1	50.0	92.3	134.5	53.9	97.3	140.7	59.6	104.7	149.8	59.1	104.5	149.9	
Hurunui District	0.0	76.6	182.7	0.0	44.0	118.8	0.0	46.0	124.1	0.0	48.3	130.3	0.0	36.1	106.8	0.0	47.5	128.0	0.0	35.6	105.5	0.0	98.5	210.0	0.0	124.4	251.8	8.5	144.8	281.2	
Invercargill City	85.6	126.2	166.9	84.1	124.3	164.5	87.9	128.9	169.8	87.1	128.0	168.9	88.5	129.8	171.0	93.3	135.5	177.7	92.9	134.9	176.9	80.3	119.7	159.2	70.6	108.1	145.5	71.2	108.7	146.2	
Kaikoura District	0.0	184.3	405.4	0.0	245.1	508.2	0.0	260.7	527.5	0.0	200.1	440.2	0.0	119.0	299.6	0.0	77.3	208.5	0.0	59.0	174.7	0.0	52.2	154.4	0.0	34.0	115.5	0.0	59.9	177.2	
Kaipara District	55.3	149.5	243.8	38.3	124.6	211.0	12.3	81.3	150.3	18.5	92.8	167.1	12.5	82.5	152.5	31.5	113.9	196.3	21.7	98.2	174.7	18.3	91.7	165.0	17.3	86.5	155.7	38.2	118.9	199.6	
Kapiti Coast District	46.1	84.9	123.8	48.9	87.1	125.2	40.6	75.5	110.4	37.9	71.0	104.1	36.9	69.2	101.4	36.9	68.5	100.1	42.1	74.9	107.8	41.7	74.3	106.8	34.5	64.2	93.8	34.0	63.1	92.3	
Kawerau District	N/A	N/A	N/A	0.0	113.6	306.5	0.0	70.2	189.4	0.0	55.3	188.1	0.0	17.0	57.9	0.0	54.3	184.8	0.0	58.9	174.4	0.0	46.4	157.7	0.0	8.6	37.6	N/A	0.0	N/A	
Lower Hutt City	86.4	116.6	146.8	83.4	113.3	143.1	93.4	124.8	156.2	95.5	127.3	159.1	101.4	134.1	166.8	90.4	121.6	152.8	88.2	119.1	150.0	80.3	110.1	140.0	69.7	97.9	126.1	66.1	93.8	121.6	
Mackenzie District	0.0	185.3	466.6	0.0	146.9	396.1	0.0	64.2	218.3	N/A	0.0	N/A	0.0	N/A	0.0	36.2	159.1	0.0	119.5	322.3	0.0	185.2	442.0	0.0	192.3	458.9	0.0	155.4	391.2		
Manawatu District	11.9	53.6	95.4	24.1	72.2	120.3	34.8	86.9	139.1	57.4	117.5	177.7	54.6	113.3	171.9	60.0	120.0	180.1	50.3	107.0	163.8	53.9	111.8	169.7	46.3	101.4	156.5	46.1	101.0	156.0	
Manukau City	73.1	97.7	122.3	72.1	96.1	120.1	68.2	90.9	113.7	73.8	97.1	120.3	73.2	96.0	118.8	76.8	99.9	122.9	73.2	95.5	117.7	65.2	86.0	106.8	61.8	81.8	101.0	64.7	84.7	104.7	
Marlborough District	67.8	120.8	173.7	39.1	82.2	125.2	40.8	83.6	126.5	35.2	74.9	114.6	46.8	90.0	133.2	40.7	81.4	122.2	53.4	97.7	142.1	62.7	108.9	155.1	74.7	123.4	172.1	59.0	103.1	147.2	
Masterton District	86.5	158.3	230.2	69.1	135.4	201.8	59.8	122.4	185.1	55.1	115.7	176.3	46.5	103.4	160.4	55.7	115.4	175.2	57.6	117.9	178.3	71.3	136.0	200.6	53.0	111.4	169.1	51.0	108.6	166.2	
Matamata-Piako District	43.3	98.0	152.7	41.5	95.6	149.7	41.3	95.1	148.8	54.7	113.3	172.0	52.1	109.5	166.8	53.6	111.2	168.8	44.1	98.1	152.2	46.1	101.0	156.0	31.0	79.5	128.0	39.9	91.9	143.8	
Napier City	82.9	123.2	163.4	71.6	109.3	146.9	73.7	111.6	149.5	72.7	110.1	147.5	73.0	110.3	147.5	71.8	108.4	145.0	62.3	96.8	131.2	55.6	88.3	121.0	49.2	80.2	112.1	51.3	82.7	114.0	
Nelson City	75.5	120.3	165.1	78.0	123.5	169.0	67.7	110.4	153.1	76.1	121.0	165.8	59.8	100.6	141.4	66.5	108.9	151.3	64.8	106.6	148.4	70.7	114.0	157.2	69.8	112.9	156.1	68.2	110.7	153.3	
New Plymouth District	63.8	96.2	128.5	63.4	95.5	127.6	55.3	85.6	115.8	54.1	84.0	113.8	70.9	103.9	137.0	77.7	111.9	146.2	71.7	104.7	137.7	53.5	82.8	112.1	49.0	77.3	105.6	62.2	81.3	110.4	
North Shore City	73.8	96.7	119.5	73.8	96.3	118.9	69.3	91.0	112.7	66.6	87.6	108.6	63.6	84.0	104.3	56.6	75.8	94.9	57.6	76.8	96.0	57.4	76.5	95.6	63.3	83.1	103.0	66.1	86.3	106.5	
Opoitiki District	0.0	86.6	190.6	0.0	111.5	225.7	36.8	184.0	331.3	66.1	226.2	386.3	53.2	205.3	357.3	40.2	181.8	323.4	29.5	166.8	304.2	29.2	165.2	301.1	12.4	133.7	255.0	0.0	85.2	181.7	
Otorohanga District	23.9	193.2	362.5	29.9	146.4	289.8	0.0	92.7	203.9	0.0	70.1	167.3	0.0	74.4	177.5	0.0	113.3	241.5	0.0	83.5	190.6	0.0	89.0	195.8	0.0	98.5	204.3	7.2	123.1	239.0	
Palmerston North City	72.4	107.7	143.1	66.8	100.9	135.0	61.4	94.2	127.1	60.5	93.1	125.6	73.8	109.1	144.4	74.4	109.6	144.7	78.0	113.8	149.7	77.6	113.4	149.1	82.2	118.8	155.5	83.4	120.4	157.5	
Papakura District	34.8	94.2	153.6	23.0	75.0	126.9	38.5	96.3	154.1	28.6	79.7	130.9	36.0	90.0	144.0	26.9	75.0	123.2	22.8	68.1	113.4	13.6	52.5	91.3	11.8	49.0	86.1	23.5	65.6	107.8	
Porir																															

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000			
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	
Ashburton District	30.0	73.4	116.7	35.2	79.7	124.1	23.9	62.7	101.6	23.2	60.9	98.7	28.2	67.4	106.7	33.1	73.7	114.4	37.2	79.2	121.2	28.5	66.9	105.2	24.2	60.6	97.0	21.5	56.5	91.5	
Auckland City	84.6	98.7	112.8	88.1	102.5	116.9	86.2	100.5	114.8	90.2	104.9	119.5	84.9	99.2	113.5	85.2	99.5	113.9	81.7	95.9	110.0	83.4	97.8	112.1	83.4	97.8	112.2	92.7	108.0	123.3	
Banks Peninsula District	0.0	69.2	165.1	0.0	41.4	111.6	0.0	72.6	165.8	0.0	67.2	153.5	0.0	68.8	157.1	0.0	81.7	179.8	0.0	95.8	204.2	0.0	104.1	215.8	0.0	60.7	144.7	0.0	48.6	122.4	
Buller District	4.1	70.9	137.7	20.6	103.0	185.3	39.3	134.6	229.9	35.8	129.4	223.1	20.9	104.4	187.9	7.4	79.5	151.7	10.5	85.2	159.9	0.0	57.5	119.2	0.0	59.0	122.4	4.5	77.2	149.8	
Carterton District	0.0	95.3	203.2	0.0	90.8	193.6	0.0	89.8	191.5	0.0	84.4	179.8	0.0	73.9	162.6	6.6	113.3	220.0	2.1	105.0	207.9	11.2	121.3	231.3	0.0	76.4	162.8	0.0	66.3	145.8	
Central Hawke's Bay District	51.4	153.7	256.1	42.8	139.4	235.9	27.9	115.9	204.0	32.0	123.4	214.8	24.8	111.9	199.1	35.7	129.1	222.5	35.1	127.0	218.9	41.8	136.2	230.6	22.9	103.4	184.0	1.3	62.5	124.7	
Central Otago District	18.5	83.6	148.7	5.6	60.0	114.5	3.1	53.2	103.3	3.1	53.8	104.4	12.0	68.1	124.2	14.4	71.8	129.3	16.1	72.6	129.1	15.6	70.7	125.8	22.0	79.6	137.2	19.1	73.8	128.5	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	88.0	102.8	117.6	89.7	104.5	119.3	90.1	104.9	119.7	87.7	102.2	116.7	86.3	100.6	115.0	84.0	98.1	112.1	78.6	92.2	105.8	77.9	91.4	104.8	79.5	93.1	106.6	80.3	93.9	107.5	
Clutha District	16.7	75.4	134.2	5.0	54.3	103.5	9.4	62.0	114.5	4.9	53.2	101.6	7.1	57.9	108.6	9.2	60.7	112.2	15.6	70.5	125.4	17.8	74.1	130.3	32.9	98.6	164.2	36.2	104.4	172.7	
Dunedin City	72.6	95.3	117.9	70.7	93.2	115.7	70.0	92.4	114.7	60.2	81.0	101.9	57.2	77.5	97.9	58.2	78.7	99.3	71.8	94.4	117.0	76.9	100.3	123.6	83.9	108.3	132.6	81.7	105.8	129.9	
Far North District	49.8	93.4	136.9	52.1	95.4	138.7	43.0	82.0	120.9	57.3	99.5	141.7	48.7	87.3	125.9	57.8	98.2	138.6	45.0	81.3	117.5	52.8	90.7	128.5	49.9	86.6	123.4	49.7	85.8	121.9	
Franklin District	40.8	85.8	130.7	36.3	78.4	120.5	37.0	78.7	120.5	33.2	72.8	112.3	28.9	66.5	104.1	25.7	61.6	97.5	28.5	64.6	100.6	33.1	70.4	107.8	36.6	75.0	114.4	36.5	74.7	112.9	
Gisborne District	44.6	82.9	121.2	56.0	97.3	138.6	67.4	111.3	155.2	67.7	111.4	155.1	65.9	108.8	151.8	67.9	111.1	154.4	61.7	103.8	145.9	58.8	100.5	142.2	46.5	85.1	123.7	51.9	92.4	132.9	
Gore District	38.1	114.0	189.9	52.0	133.3	214.5	63.9	149.9	235.9	68.9	155.9	242.9	58.7	140.4	222.2	35.3	105.5	175.8	35.3	105.5	175.8	38.5	111.2	183.8	44.5	120.4	196.3	34.0	105.8	177.7	
Grey District	15.2	86.2	157.2	9.2	74.8	140.4	29.6	107.0	184.5	32.3	110.7	189.1	23.2	96.1	169.1	6.2	66.4	126.7	20.1	90.9	161.7	31.9	109.2	186.5	14.2	80.6	147.0	3.6	61.2	118.9	
Hamilton City	51.0	76.3	101.6	50.7	75.6	100.6	51.4	76.1	100.9	45.4	68.7	92.0	45.2	68.1	91.0	63.1	65.3	87.4	46.9	69.8	92.6	51.8	75.6	99.4	54.2	78.4	102.6	50.8	74.3	97.8	
Hastings District	75.0	110.6	146.2	92.7	131.4	170.1	86.9	124.4	161.8	89.3	127.0	164.7	73.0	107.5	142.0	70.7	104.5	138.4	66.2	99.0	131.9	69.7	103.0	136.4	67.6	100.4	133.1	66.4	98.8	131.2	
Hauraki District	40.7	113.6	186.5	46.0	120.9	195.9	48.3	123.8	199.2	21.4	82.5	143.6	7.1	57.7	103.3	16.7	75.5	134.3	41.1	111.1	181.2	55.2	129.4	203.7	31.1	92.9	154.8	21.6	78.1	134.5	
Horowhenua District	52.1	96.0	140.0	62.7	108.9	155.1	59.9	104.7	149.5	56.4	99.8	143.2	57.5	101.6	145.8	51.2	93.7	136.3	56.6	100.2	143.7	48.6	88.9	129.2	53.0	94.4	135.7	62.8	106.8	150.8	
Hurunui District	0.0	99.8	219.5	0.0	67.4	160.8	0.0	99.2	211.4	0.0	99.6	201.6	0.0	93.2	188.6	0.0	59.5	130.9	0.0	46.4	110.8	0.0	66.4	141.5	0.0	50.5	115.2	0.0	58.0	127.6	
Invercargill City	83.1	122.9	162.7	91.5	132.6	173.7	92.3	133.4	174.6	93.3	134.4	175.6	89.4	129.8	170.2	74.5	112.0	149.4	56.3	89.8	123.3	47.8	79.0	110.1	47.6	78.6	109.6	60.5	94.6	128.6	
Kaikoura District	0.0	42.8	145.6	0.0	65.7	194.6	0.0	38.8	132.1	0.0	35.4	120.4	0.0	36.8	125.3	0.0	35.4	120.4	0.0	21.3	93.5	0.0	38.2	129.9	0.0	72.8	196.3	0.0	71.9	193.8	
Kaipara District	30.9	105.8	180.6	24.9	96.0	167.0	1.1	52.5	104.0	7.7	62.5	117.2	0.0	44.7	90.6	4.9	52.5	100.2	2.8	47.2	91.6	10.9	61.7	112.4	0.9	43.2	85.6	9.1	60.3	111.4	
Kapiti Coast District	40.2	70.7	101.2	50.1	82.5	114.8	51.0	82.5	114.0	48.5	78.7	109.0	41.7	69.8	97.9	39.0	66.3	93.6	34.9	60.3	85.7	38.0	63.7	89.3	37.3	61.9	86.5	44.6	70.6	96.6	
Kawerau District	N/A	0.0	N/A	0.0	23.8	104.5	0.0	32.9	111.7	0.0	87.2	219.6	0.0	84.4	212.4	0.0	91.1	217.3	0.0	51.4	138.7	0.0	32.3	95.5	0.0	69.9	176.0	0.0	68.9	173.6	
Lower Hutt City	55.4	81.2	107.0	65.7	93.4	121.1	56.4	82.3	108.3	70.7	99.1	127.6	64.9	92.5	120.0	75.8	105.1	134.4	61.8	88.9	116.1	60.8	87.8	114.8	51.4	76.9	102.3	58.3	85.2	112.2	
Mackenzie District	0.0	92.8	274.7	0.0	82.5	244.2	0.0	27.5	120.7	0.0	25.1	110.4	0.0	47.4	161.2	0.0	65.2	193.1	0.0	68.0	214.4	0.0	22.6	99.2	N/A	0.0	N/A	N/A	0.0	N/A	
Manawatu District	49.7	105.7	161.8	56.8	115.1	173.3	56.7	114.9	173.0	51.1	107.3	163.6	42.1	95.2	148.4	43.9	97.6	151.4	29.1	76.6	124.1	23.6	68.2	112.7	21.7	64.9	108.1	35.4	84.7	134.0	
Manukau City	69.5	90.1	110.7	70.7	91.2	111.6	68.9	88.8	108.7	66.6	85.9	105.3	61.8	80.2	98.6	58.4	76.2	94.0	54.8	71.9	88.9	61.2	78.9	96.5	59.0	76.3	93.6	67.6	86.0	104.3	
Marlborough District	59.4	103.2	147.0	51.2	92.4	133.6	49.6	90.1	130.6	41.4	79.0	116.5	41.7	78.9	116.0	42.7	79.3	115.9	45.5	82.6	119.8	42.5	78.4	114.3	52.8	91.8	130.7	61.9	102.7	143.6	
Masterton District	47.2	103.5	159.8	67.8	130.5	193.1	75.9	139.9	204.0	72.6	134.9	197.2	52.3	107.2	162.0	42.3	92.7	143.0	33.0	78.9	124.9	36.0	83.0	129.9	30.9	75.5	120.1	32.4	77.6	122.8	
Matamata-Piako District	37.2	87.3	137.4	36.3	85.3	134.2	37.0	85.3	133.5	38.3	86.6	135.0	46.1	96.8	147.5	28.4	71.0	113.6	39.6	85.5	131.4	52.4	102.7	153.0	62.9	116.0	169.1	52.4	101.8	151.2	
Napier City	57.8	90.6	123.4	66.8	101.4	136.0	71.6	106.9	142.1	55.6	87.2	118.8	47.8	77.3	106.9	43.6	72.0	110.4	47.2	76.4	105.6	51.9	82.1	112.4	47.8	77.0	106.2	50.6	80.4	110.2	
Nelson City	66.3	108.1	149.9	65.6	107.1	148.5	68.2	109.9	151.6	70.8	112.8	154.8	68.3	109.3	150.3	59.2	97.8	136.4	53.7	90.8	127.8	62.8	102.0	141.3	65.2	104.7	144.2	74.1	115.3	156.6	
New Plymouth District	55.1	84.8	114.5	60.7	91.1	121.6	59.7	89.7	119.7	68.8	100.3	131.8	58.5	87.7	116.9	52.8	80.5	108.3	48.8	75.6	102.3	54.7	82.6	110.5	67.1	97.3	127.4	70.0	100.5	131.0	
North Shore City	73.3	94.4	115.4	65.6	85.3	105.0	64.8	84.1	103.4	62.2	80.8	99.5	70.3	89.8	109.2	69.4	88.5	107.5	63.5	81.9	100.2	59.6	77.4	95.3	59.3	77.1	94.9	67.0	85.7	104.4	
Opotiki District	0.0	103.6	209.5	0.0	72.0	158.5	0.0	96.9	196.0	0.0	86.4	179.1	0.0	84.6	175.4	0.0	81.0	168.0	0.0	83.2	168.3	0.0	74.5	154.5	0.0	58.5	128.8	0.0	43.6	104.0	
Otorohanga District	16.8	135.9	255.1	0.0	101.1	204.7	0.0	92.6	192.0	0.0	49.2	124.0	0.0	59.6	142.2	0.0	55.9	133.4	0.0	75.6	166.3	0.0	77.3	170.1	0.0	77.8	171.2	0.0	58.9	140.0	
Palmerston North City	67.5	101.5	135.4	69.0	102.9	136.9	61.7	93.9	126.1	70.6	104.4	138.1	71.1	104.6	132.2	80.5	115.5	150.6	80.8	115.8	150.8	74.4	108.3	142.1	66.0	98.0	130.0	60.1	91.0	121.9	
Papakura District	40.7	89.3	137.8	44.1	92.7	141.3	40.4	87.3	134.2	41.3	87.9	134.5	46.2	94.6	142.9	43.4	90.0	136.6	37.6	81.2	124.8	33.8	75.1	116.5	48.4	94.0	139.6	45.5	89.3	133.0	
Porirua City	49.4	108.2	167.0	59.9	124.1	188.4	52.0	113.9																							

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	7.3	12.5	17.7	7.9	13.3	18.6	7.2	12.4	17.5	5.6	10.3	15.0	1.7	5.0	8.3	5.2	9.9	14.7	5.4	10.3	15.2	4.6	9.3	14.0	4.3	8.9	13.4	5.2	10.2	15.2
Bay of Plenty	3.9	12.7	21.5	3.4	11.8	20.2	2.5	10.3	18.2	2.7	10.3	18.0	0.2	5.8	11.5	3.7	11.4	19.2	3.6	11.2	18.8	5.0	13.2	21.4	6.9	15.7	24.5	6.4	14.7	22.9
Canterbury	5.5	10.0	14.4	6.2	10.8	15.4	5.0	9.2	13.5	5.8	10.3	14.8	1.9	5.0	8.1	6.0	10.4	14.9	5.3	9.5	13.8	5.3	9.5	13.8	6.3	10.8	15.3	6.1	10.6	15.0
Capital and Coast	3.7	10.0	16.3	2.1	7.6	13.1	2.1	7.5	12.9	3.0	8.9	14.8	0.7	5.3	9.8	4.1	10.6	17.1	4.3	10.9	17.4	4.1	10.5	16.8	2.5	8.1	13.7	1.6	6.7	11.9
Counties Manukau	8.3	16.3	24.4	7.7	15.3	23.0	6.5	13.6	20.7	6.7	13.8	20.9	1.6	6.6	11.5	6.5	13.5	20.5	6.0	12.7	19.3	4.9	10.9	16.9	5.3	11.3	17.4	5.9	12.2	18.6
Hawke's Bay	2.7	10.4	18.1	2.1	9.4	16.8	5.3	14.3	23.4	4.6	13.2	21.8	0.5	6.5	12.6	3.5	11.5	19.4	4.8	13.4	22.0	4.1	12.4	20.6	2.9	10.5	18.1	3.8	11.8	19.8
Hutt Valley	4.2	13.8	23.4	3.8	13.0	22.1	2.1	10.3	18.5	1.7	9.9	18.0	0.0	5.7	11.8	3.7	12.8	21.8	2.7	11.2	19.8	1.1	8.5	16.0	2.1	10.6	19.0	2.4	10.9	19.4
Lakes	0.3	12.6	24.9	0.2	12.4	24.5	2.9	16.6	30.3	4.6	19.0	33.5	0.0	7.5	16.6	0.0	9.5	19.6	0.0	10.3	20.9	2.1	14.2	26.2	3.8	17.0	30.3	3.1	15.7	28.3
MidCentral	2.9	9.9	16.8	0.6	6.0	11.5	0.0	4.8	9.8	0.0	3.5	7.8	0.0	2.6	6.1	0.8	6.3	11.8	1.0	6.7	12.4	1.0	6.8	12.5	1.5	7.7	13.8	3.1	10.2	17.2
Nelson-Marlborough	1.1	9.1	17.1	1.1	8.9	16.8	0.4	7.6	14.8	0.8	8.1	15.5	0.0	3.8	8.8	1.4	9.3	17.1	2.0	10.2	18.4	3.1	11.8	20.6	3.3	12.0	20.7	1.3	8.5	15.8
Northland	5.0	15.0	25.1	3.5	12.7	21.9	2.0	10.1	18.2	3.4	12.3	21.2	0.1	6.7	13.2	4.4	13.7	23.0	5.8	15.6	25.4	4.9	14.1	23.3	6.2	15.9	25.6	4.0	12.5	21.0
Otago	4.4	11.0	17.6	4.9	11.8	18.7	3.8	10.3	16.7	3.3	9.5	15.7	0.5	5.0	9.5	5.6	12.8	20.1	5.6	13.0	20.3	4.6	11.5	18.4	2.2	7.8	13.5	2.8	8.8	14.8
South Canterbury	0.2	12.1	24.0	2.4	15.9	29.5	1.9	15.0	28.2	1.9	15.1	28.3	0.0	6.0	14.3	2.4	16.0	29.5	1.3	13.9	26.6	0.0	10.9	22.0	0.0	10.0	20.8	0.0	10.9	22.1
Southland	1.2	9.8	18.4	2.0	11.1	20.2	0.5	8.5	16.5	1.2	9.9	18.6	0.0	4.4	10.2	1.3	10.2	19.2	0.0	7.5	15.3	0.5	8.9	17.2	1.3	10.3	19.3	2.1	11.6	21.2
Tairāwhiti	0.0	17.2	34.8	0.4	18.6	36.9	0.4	18.9	37.4	0.4	18.9	37.3	0.0	6.3	17.0	0.0	17.3	34.9	0.4	18.9	37.4	1.2	20.4	39.7	0.0	15.8	32.8	0.0	11.1	25.4
Taranaki	1.1	9.3	17.4	3.3	12.9	22.4	3.3	12.8	22.3	5.4	16.1	26.8	0.3	7.6	15.0	4.1	14.0	23.9	0.8	8.3	15.8	0.0	6.0	12.5	1.8	10.2	18.6	5.6	16.3	26.9
Waikato	6.8	13.1	19.4	6.8	13.1	19.4	4.2	9.6	15.0	5.7	11.6	17.5	1.5	5.6	9.7	7.7	14.1	20.4	7.2	13.3	19.5	9.4	16.2	22.9	9.1	15.8	22.4	8.9	15.4	21.9
Wairarapa	0.0	14.4	31.6	0.0	19.6	39.6	0.0	19.4	39.2	0.0	16.0	34.2	0.0	4.4	13.7	0.0	7.4	20.0	0.0	12.4	28.3	0.0	12.4	28.3	0.0	16.8	34.9	1.3	21.8	42.3
Waitemata	2.2	6.5	10.8	2.5	7.0	11.5	1.8	6.0	10.1	2.1	6.3	10.5	0.5	3.6	6.7	3.6	8.2	12.8	3.2	7.6	12.1	2.5	6.7	10.8	1.9	5.7	9.5	3.5	7.9	12.3
West Coast	0.0	7.1	19.1	0.0	9.3	23.3	0.0	9.4	23.6	0.0	9.3	23.3	0.0	2.6	10.0	0.0	6.9	18.6	0.0	8.8	22.2	0.0	7.2	19.4	0.0	9.2	23.1	0.0	10.2	25.6
Whanganui	0.0	8.2	17.6	0.0	8.0	17.0	0.0	6.2	14.1	0.0	9.7	19.7	0.0	6.4	14.5	0.7	11.8	23.0	0.0	9.1	19.0	0.0	8.4	17.9	0.7	12.0	23.4	1.2	13.2	25.2
New Zealand	9.6	11.3	13.0	9.6	11.3	13.0	8.6	10.2	11.8	9.0	10.6	12.2	8.9	10.5	12.1	9.5	11.1	12.7	9.2	10.8	12.4	9.0	10.6	12.2	9.2	10.8	12.4	9.7	11.3	12.9

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	5.5	10.6	15.8	6.1	11.4	16.7	6.7	12.1	17.5	7.9	13.6	19.3	8.4	14.2	20.1	7.4	13.0	18.6	8.2	14.0	19.8	9.1	15.1	21.2	12.5	19.3	26.1	13.4	20.5	27.6
Bay of Plenty	5.7	13.6	21.5	4.6	11.8	19.1	6.2	14.0	21.8	6.6	14.4	22.2	6.2	13.7	21.3	7.9	15.9	23.9	10.6	19.2	27.9	11.1	19.8	28.5	12.8	21.9	31.0	12.0	20.9	29.8
Canterbury	6.6	11.2	15.7	5.1	9.3	13.4	4.5	8.4	12.4	4.6	8.5	12.5	5.9	10.1	14.4	7.6	12.3	17.0	8.4	13.2	18.0	9.2	14.2	19.2	8.6	13.4	18.2	9.4	14.4	19.3
Capital and Coast	1.2	6.2	11.2	2.5	8.3	14.0	1.9	7.2	12.5	3.4	9.4	15.4	5.9	13.0	20.0	10.3	18.7	27.1	10.9	19.4	27.9	10.5	18.8	27.2	11.0	19.4	27.8	13.9	23.1	32.4
Counties Manukau	7.9	14.9	21.8	9.2	16.4	23.6	9.8	17.1	24.3	11.1	18.5	26.0	11.7	19.2	26.8	11.0	18.3	25.6	13.3	20.9	28.5	14.2	21.9	29.6	17.6	26.0	34.4	17.9	26.4	34.9
Hawke's Bay	4.1	12.2	20.2	7.9	17.5	27.1	8.5	18.3	28.1	9.7	20.0	30.2	8.0	17.5	27.1	8.9	18.7	28.5	9.8	19.9	30.0	10.8	21.3	31.7	11.1	21.6	32.0	11.2	21.7	32.2
Hutt Valley	1.7	9.8	17.9	1.6	9.3	17.0	2.4	10.7	19.1	3.4	12.2	21.1	3.1	11.9	20.8	4.4	13.8	23.3	7.9	19.0	30.0	10.3	22.2	34.2	9.5	21.1	32.7	7.9	18.9	30.0
Lakes	3.5	16.0	28.5	4.9	17.8	30.8	3.4	15.3	27.2	2.4	13.7	24.9	3.9	16.1	28.2	9.4	24.2	38.9	12.1	27.9	43.6	11.9	27.5	43.0	16.2	33.2	50.1	18.8	36.4	54.1
MidCentral	3.4	10.5	17.7	3.4	10.5	17.7	3.4	10.5	17.6	2.0	8.3	14.6	3.9	11.1	18.4	5.2	13.1	20.9	6.9	15.4	23.9	6.3	14.6	22.9	9.7	19.2	28.7	11.8	22.0	32.1
Nelson-Marlborough	1.6	8.9	16.3	0.0	4.7	10.1	0.0	5.7	11.5	0.0	3.5	8.0	0.9	7.5	14.0	1.2	7.8	14.5	3.6	11.6	19.6	2.3	9.6	16.9	3.5	11.3	19.2	3.5	11.5	19.4
Northland	6.3	15.8	25.2	6.8	16.3	25.7	8.7	18.7	28.8	8.2	18.0	27.8	11.2	21.9	32.7	14.6	26.2	37.8	19.6	32.3	45.1	25.5	39.5	53.4	23.4	36.8	50.2	22.2	35.3	48.3
Otago	2.8	8.8	14.8	4.5	11.3	18.0	3.0	9.1	15.2	2.8	8.7	14.6	3.0	8.9	14.8	4.9	11.6	18.4	8.2	16.2	24.2	11.5	20.6	29.6	12.6	21.9	31.2	10.2	18.8	27.4
South Canterbury	1.3	13.8	26.4	0.0	10.7	21.6	0.0	9.0	19.1	1.2	13.4	25.6	2.3	15.4	28.5	4.0	17.9	31.8	5.2	20.0	34.8	6.4	21.9	37.5	5.9	21.2	36.6	5.3	20.5	35.7
Southland	0.2	8.3	16.4	0.0	7.6	15.3	0.2	8.1	16.0	0.9	9.4	18.0	2.4	11.9	21.4	1.6	10.4	19.2	3.9	14.3	24.6	6.1	17.6	29.1	9.3	22.4	35.4	9.7	22.7	35.7
Tairāwhiti	0.0	9.7	23.1	0.0	11.0	25.2	0.0	15.7	32.6	1.2	20.4	39.5	1.2	20.5	39.7	4.8	27.1	49.4	2.9	23.9	44.8	4.9	27.5	50.1	6.7	30.5	54.3	10.8	37.1	63.3
Taranaki	8.1	19.8	31.5	8.0	19.6	31.2	7.9	19.3	30.7	6.6	17.4	28.2	6.3	16.9	27.6	2.8	11.6	20.4	2.9	11.9	20.9	3.5	12.8	22.1	5.9	16.4	26.9	10.2	22.4	34.6
Waikato	6.4	12.1	17.9	6.9	12.8	18.6	7.4	13.3	19.3	8.0	14.0	20.1	7.6	13.5	19.5	7.2	13.0	18.8	11.2	18.0	24.8	14.2	21.6	29.0	18.4	26.6	34.8	15.5	23.1	30.8
Wairarapa	4.0	26.6	49.1	2.1	22.9	43.7	0.0	14.6	31.2	0.0	12.4	27.3	0.0	16.6	33.5	1.1	19.0	36.8	4.4	24.8	45.3	4.4	25.2	45.9	1.1	19.0	37.0	4.4	24.8	45.2
Waitemata	4.4	9.1	13.8	4.7	9.5	14.2	4.3	8.9	13.4	3.9	8.2	12.5	5.4	10.0	14.7	5.0	9.5	14.0	6.5	11.4	16.3	6.7	11.6	16.5	7.4	12.4	17.5	7.1	12.0	16.9
West Coast	0.0	13.9	31.8	0.0	14.0	31.9	0.0	11.3	27.0	0.0	16.9	36.1	0.0	11.2	26.8	0.0	9.3	23.5	0.0	10.0	25.1	0.0	18.0	38.3	0.5	23.9	47.3	0.0	19.1	39.5
Whanganui	1.7	13.9	26.1	1.2	12.9	24.6	1.7	13.4	25.1	2.7	15.5	28.3	4.3	18.0	31.7	5.6	20.1	34.7	3.8	17.3	30.7	6.9	22.4	38.0						

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	3.8	7.5	11.3	4.3	8.1	12.0	5.8	10.2	14.6	5.3	9.6	13.8	5.5	10.0	14.4	6.7	11.5	16.4	8.2	13.3	18.4	8.8	14.1	19.4	7.8	12.8	17.8	6.5	11.3	16.0
Bay of Plenty	2.4	10.9	19.3	3.1	11.9	20.7	4.0	13.1	22.3	4.9	14.2	23.5	4.4	13.1	21.8	2.7	10.3	17.9	2.9	10.4	18.0	3.9	11.7	19.5	6.3	15.0	23.8	6.7	15.5	24.3
Canterbury	7.3	11.9	16.6	6.6	11.0	15.5	6.3	10.6	15.0	6.2	10.5	14.8	6.3	10.6	15.0	7.6	12.3	16.9	7.2	11.7	16.3	6.8	11.2	15.6	4.9	8.9	12.8	4.1	7.8	11.4
Capital and Coast	2.6	8.2	13.7	1.2	5.9	10.5	2.6	8.1	13.6	2.0	7.1	12.3	3.2	9.0	14.8	3.2	9.0	14.8	3.0	8.7	14.4	2.2	7.5	12.9	1.8	6.9	12.0	2.0	7.2	12.5
Counties Manukau	7.5	16.0	24.5	6.4	14.2	22.0	3.8	10.2	16.6	4.6	11.1	17.7	6.3	13.5	20.6	6.0	13.0	20.0	6.1	13.1	20.0	5.8	12.5	19.2	6.8	13.8	20.8	6.4	13.1	19.7
Hawke's Bay	3.8	12.0	20.1	4.8	13.3	21.9	4.7	13.2	21.7	4.7	13.2	21.7	5.1	13.7	22.3	2.6	9.9	17.2	2.5	9.8	17.0	1.1	7.3	13.6	2.8	10.0	17.3	1.9	8.6	15.3
Hutt Valley	4.0	13.0	22.1	2.9	11.3	19.7	3.3	11.8	20.4	3.9	12.6	21.4	2.9	11.0	19.2	2.5	10.5	18.5	1.0	8.1	15.1	0.0	5.8	11.8	0.0	5.3	11.0	0.4	7.0	13.6
Lakes	2.9	19.2	35.4	4.3	21.4	38.6	1.5	16.2	30.8	0.8	14.4	27.9	0.0	9.0	19.2	0.7	11.6	22.6	3.3	16.6	29.9	6.3	21.4	36.6	6.4	21.9	37.3	5.1	19.8	34.5
MidCentral	3.5	10.8	18.2	1.6	7.8	14.1	1.3	7.1	13.0	1.5	7.6	13.6	2.8	9.8	16.7	3.7	11.1	18.5	3.1	10.1	17.2	4.5	12.3	20.0	5.7	13.9	22.1	6.2	14.6	23.0
Nelson-Marlborough	1.9	10.5	19.2	0.0	6.2	12.8	1.1	9.2	17.3	1.5	9.7	17.9	1.1	8.9	16.7	1.1	8.8	16.5	0.0	6.3	12.8	1.4	9.1	16.8	0.4	7.3	14.2	1.7	9.5	17.2
Northland	4.0	14.3	24.7	3.0	12.5	22.0	2.3	11.5	20.6	2.7	12.2	21.6	3.5	13.4	23.4	3.4	13.1	22.8	4.1	13.9	23.7	3.3	12.7	22.1	7.3	18.2	29.2	5.6	15.5	25.5
Otago	5.4	12.0	18.7	3.4	9.1	14.9	4.3	10.5	16.7	4.6	11.0	17.3	5.1	11.6	18.2	5.1	11.7	18.2	5.8	12.8	19.7	4.2	10.6	17.0	3.1	9.1	15.0	1.8	6.9	12.1
South Canterbury	0.2	11.8	23.4	0.0	10.1	21.0	0.0	8.1	17.9	0.0	9.5	19.8	2.8	15.7	28.7	3.8	17.3	30.7	4.5	18.9	33.2	2.3	15.1	27.9	1.2	13.3	25.3	0.2	11.2	22.2
Southland	2.9	13.1	23.3	0.9	9.6	18.3	1.2	10.1	19.0	2.4	12.1	21.9	2.0	11.5	21.0	3.2	13.5	23.7	1.6	10.8	20.0	2.4	12.0	21.6	2.4	12.0	21.5	2.8	12.5	22.2
Tairāwhiti	7.6	31.4	55.2	2.8	22.9	43.0	2.0	21.6	41.1	0.4	18.6	36.8	0.0	17.0	34.3	0.0	10.7	24.4	0.0	7.5	19.0	0.0	9.2	21.9	0.0	9.2	21.8	0.0	12.2	26.9
Taranaki	2.3	11.3	20.3	1.9	10.6	19.4	2.2	11.2	20.1	2.2	11.1	20.0	3.4	12.9	22.5	1.1	9.2	17.4	3.0	12.3	21.6	1.8	10.4	18.9	1.8	10.3	18.8	0.0	6.6	13.4
Waikato	8.2	15.6	22.9	5.0	11.0	17.1	4.5	10.4	16.3	5.9	12.2	18.4	7.8	14.6	21.4	7.3	13.8	20.4	5.8	11.7	17.6	5.7	11.6	17.5	8.3	14.9	21.4	7.2	13.4	19.6
Wairarapa	0.0	9.1	22.9	0.0	5.4	16.1	0.0	6.9	18.5	0.0	10.2	24.4	0.0	10.1	24.0	0.0	8.5	21.4	0.0	6.9	18.5	0.0	3.4	11.6	0.0	8.4	21.0	0.0	13.3	29.2
Waitemata	4.0	9.4	14.8	2.6	7.2	11.7	2.4	6.8	11.3	1.8	5.8	9.8	2.3	6.5	10.7	2.7	7.0	11.3	3.2	7.7	12.2	3.5	8.0	12.6	2.8	7.0	11.2	2.6	6.6	10.6
West Coast	0.0	16.4	36.2	0.0	14.6	33.3	0.0	16.0	35.1	0.0	19.9	41.3	0.0	21.4	43.3	0.0	20.1	41.7	0.0	10.2	25.8	0.0	4.3	14.6	0.0	10.1	25.4	0.0	16.6	36.6
Whanganui	2.7	15.3	27.9	3.3	16.3	29.3	2.2	14.5	26.8	0.7	11.6	22.6	0.0	10.7	21.2	0.0	9.8	19.8	0.0	10.0	20.2	1.7	13.7	25.8	2.8	15.6	28.4	4.3	18.0	31.7
New Zealand	10.1	11.8	13.5	8.7	10.3	11.9	8.8	10.4	12.0	9.0	10.6	12.2	9.6	11.2	12.9	9.6	11.2	12.8	9.5	11.2	12.8	9.4	11.0	12.6	9.6	11.2	12.8	9.1	10.7	12.2

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000		
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL
Auckland	6.1	10.8	15.5	7.4	12.5	17.7	8.0	13.2	18.4	6.1	10.9	15.7	5.1	9.6	14.1	5.9	10.6	15.4	10.1	16.0	21.8	12.4	18.8	25.1	13.3	19.9	26.5	11.3	17.4	23.6
Bay of Plenty	6.0	14.4	22.8	4.3	11.8	19.2	4.4	11.6	18.8	4.9	12.2	19.5	6.7	14.6	22.6	6.6	14.5	22.3	7.8	15.8	23.8	7.2	14.8	22.4	8.6	16.6	24.6	8.9	16.9	24.9
Canterbury	4.7	8.5	12.3	5.2	9.1	13.1	6.3	10.5	14.7	4.7	8.5	12.2	4.1	7.6	11.1	4.6	8.2	11.8	5.8	9.7	13.7	8.3	12.8	17.3	9.6	14.4	19.1	10.8	15.8	20.7
Capital and Coast	2.4	7.9	13.3	1.8	6.8	11.8	2.6	8.0	13.4	4.5	10.7	17.0	7.2	14.5	21.7	8.9	16.6	24.3	9.1	16.8	24.6	9.9	17.9	25.8	12.4	21.0	29.5	11.2	19.4	27.7
Counties Manukau	5.9	12.2	18.5	7.4	14.0	20.7	8.9	15.8	22.8	10.2	17.5	24.7	13.3	21.2	29.1	13.5	21.3	29.2	14.2	22.1	30.1	13.1	20.8	28.5	15.3	23.4	31.5	14.4	22.2	29.9
Hawke's Bay	2.2	8.9	15.7	3.0	10.1	17.3	3.8	11.3	18.8	6.1	14.7	23.2	7.3	16.2	25.1	7.8	16.9	26.0	10.9	21.0	31.1	12.2	22.6	33.1	13.4	24.2	34.9	11.1	21.2	31.3
Hutt Valley	2.6	10.8	19.0	2.6	10.7	18.8	2.5	10.6	18.6	3.9	12.8	21.6	6.0	15.9	25.7	8.6	19.5	30.3	7.5	17.9	28.3	7.8	18.4	29.0	7.1	17.4	27.7	9.4	20.7	31.9
Lakes	4.5	18.8	33.1	1.7	13.8	26.0	2.1	13.8	25.6	2.1	13.8	25.5	3.5	15.6	27.8	2.9	14.5	26.1	5.2	17.9	30.6	6.4	19.8	33.3	11.2	26.8	42.5	12.2	28.1	44.0
MidCentral	3.3	10.3	17.3	3.0	9.7	16.5	4.9	12.5	20.1	6.8	15.2	23.5	6.7	15.0	23.3	7.9	16.5	25.2	7.2	15.6	24.0	7.1	15.3	23.6	5.6	13.2	20.7	8.8	17.7	26.5
Nelson-Marlborough	2.4	10.6	18.9	2.0	9.8	17.7	1.9	9.6	17.2	0.7	7.3	13.8	2.1	9.7	17.2	3.4	11.5	19.7	3.3	11.3	19.2	4.5	13.0	21.6	3.9	12.0	20.1	5.0	13.6	22.2
Northland	7.8	18.6	29.4	5.4	15.2	24.9	7.9	18.6	29.3	9.5	20.2	30.8	12.1	23.6	35.0	16.4	28.9	41.5	13.5	25.2	37.0	17.5	30.1	42.8	16.5	28.9	41.3	21.7	35.2	48.7
Otago	3.3	9.3	15.2	4.6	11.0	17.5	5.2	11.8	18.4	3.8	9.8	15.7	3.6	9.5	15.3	3.1	8.7	14.3	5.0	11.2	17.5	5.9	12.5	19.1	8.7	16.4	24.0	10.7	19.0	27.2
South Canterbury	0.0	9.4	19.6	0.0	9.5	19.6	0.0	9.8	19.9	1.2	12.6	24.0	0.7	11.8	22.9	1.2	12.7	24.2	3.2	16.1	29.0	4.2	17.6	31.0	6.5	21.3	36.1	5.4	19.4	33.5
Southland	2.3	11.7	21.1	0.8	9.0	17.2	1.9	10.9	19.9	4.3	14.6	25.0	3.8	13.9	24.0	4.6	15.1	25.6	4.6	15.1	25.6	6.3	17.6	28.8	6.7	18.1	29.5	6.6	17.9	29.3
Tairāwhiti	1.2	20.2	39.2	5.5	27.4	49.3	8.2	31.8	55.3	3.6	23.5	43.5	3.6	23.9	44.2	4.5	25.5	46.6	7.4	30.8	54.2	10.4	35.7	61.0	9.4	33.9	58.4	10.4	35.4	60.5
Taranaki	0.8	8.3	15.8	0.8	8.2	15.6	2.1	10.4	18.7	3.5	12.6	21.7	5.7	15.9	26.1	6.8	17.3	27.9	5.6	15.5	25.5	5.5	15.4	25.3	8.1	19.1	30.1	12.9	25.5	38.1
Waikato	7.7	14.0	20.3	6.3	12.1	17.9	7.1	13.1	19.0	6.8	12.6	18.5	9.8	16.5	23.1	11.2	18.2	25.1	13.7	21.2	28.6	12.1	19.1	26.2	14.3	21.8	29.3	13.5	20.7	28.0
Wairarapa	0.0	16.6	34.4	0.0	14.5	31.0	0.0	11.0	25.1	0.0	9.1	21.8	0.0	5.9	15.8	0.0	9.2	22.0	3.6	23.8	44.0	8.0	30.7	53.5	6.9	28.5	50.1	0.3	16.9	33.5
Waitemata	2.9	7.0	11.1	4.0	8.4	12.8	5.0	9.7	14.4	4.8	9.3	13.8	4.6	8.9	13.2	4.2	8.4	12.5	5.2	9.6	14.0	5.6	10.2	14.7	6.7	11.5	16.3	6.6	11.4	16.1
West Coast	0.0	23.2	47.0	0.0	16.7	36.8	0.0	16.2	35.5	0.0	16.2	35.5	0.0	18.0	38.5	0.0	14.3	32.6	0.0	10.3	25.9	0.0	19.2	41.0	0.0	21.4	44.5	0.5	25.7	50.9
Whanganui	3.8	17.0	30.2	2.1	14.0	25.9	3.1	15.7	28.3	2.1	13.9	25.6	3.1	15.3	27.5	2.0	13.4													

	1981		1982		1983		1984		1985		1986		1987		1988		1989		1990													
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL											
Ashburton District	0.0	11.6	29.3	0.0	16.1	36.7	0.0	16.1	36.8	0.0	13.8	33.0	0.0	18.4	40.5	0.0	18.3	40.2	0.0	20.0	42.7	0.0	8.8	23.7	0.0	17.9	39.4	0.0	15.6	35.6		
Auckland City	7.5	12.7	17.9	8.2	13.6	19.0	7.4	12.5	17.7	5.9	10.7	15.4	5.7	10.5	15.3	5.9	11.0	16.0	6.0	11.1	16.2	5.0	9.7	14.5	4.3	8.9	13.4	5.8	11.0	16.2		
Banks Peninsula District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	7.5	32.9	0.0	8.6	37.8	0.0	9.7	42.7	0.0	11.1	48.9	0.0	11.1	48.9	0.0	10.8	47.4	
Buller District	0.0	15.5	45.9	0.0	21.5	58.0	0.0	17.0	50.5	0.0	23.7	63.9	0.0	12.7	43.2	0.0	6.7	29.6	N/A	0.0	N/A	N/A	0.0	N/A	0.0	5.7	25.0	0.0	5.6	24.4		
Carterton District	0.0	19.4	66.0	0.0	36.0	97.1	0.0	45.9	115.5	0.0	37.8	101.8	0.0	10.2	45.0	N/A	0.0	N/A	0.0	8.1	35.5	0.0	8.4	37.1	0.0	19.4	65.9	0.0	19.8	67.2		
Central Hawke's Bay District	0.0	4.6	20.1	0.0	10.5	35.8	0.0	15.7	46.6	0.0	10.5	35.8	0.0	4.9	21.4	0.0	5.6	24.7	0.0	5.7	25.1	0.0	5.8	25.5	N/A	0.0	N/A	N/A	0.0	N/A		
Central Otago District	0.0	8.1	27.7	0.0	4.5	19.9	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	3.2	14.0	0.0	7.2	24.5	0.0	7.3	24.9	0.0	3.9	17.3	N/A	0.0	N/A	0.0	3.7	16.4	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christchurch City	4.7	9.7	14.7	5.7	11.1	16.4	4.6	9.5	14.5	6.2	11.6	17.1	5.7	10.9	16.1	6.1	11.5	16.9	5.1	10.1	15.2	5.3	10.3	15.4	5.4	10.5	15.5	5.4	10.4	15.4		
Clutha District	0.0	26.8	61.1	0.0	11.3	33.5	0.0	7.7	26.1	0.0	8.2	27.7	0.0	19.8	49.9	0.0	28.1	64.3	0.0	19.9	50.0	0.0	11.5	34.1	0.0	6.6	22.3	0.0	11.5	36.3		
Dunedin City	2.8	11.0	19.1	4.6	13.7	22.8	3.6	12.5	21.3	2.6	10.7	18.9	2.6	10.8	19.1	4.8	14.4	23.9	6.1	16.4	26.7	5.7	15.9	26.0	3.1	11.8	20.6	3.0	11.7	20.3		
Far North District	0.4	19.6	38.8	1.2	21.3	41.3	0.0	17.3	35.1	1.2	20.3	39.5	1.2	20.1	38.9	1.1	19.7	38.2	0.4	17.8	35.2	3.4	22.2	41.1	6.6	27.3	48.1	7.2	27.7	48.3		
Franklin District	0.0	14.2	32.4	0.0	14.1	32.3	0.0	15.9	35.1	0.0	15.7	34.4	0.5	23.1	45.7	0.0	18.7	38.7	0.0	20.3	41.1	0.0	12.4	28.4	0.0	10.6	25.3	0.0	8.6	21.7		
Gisborne District	0.4	18.8	37.1	2.0	21.8	41.6	1.2	20.5	39.7	1.2	20.5	39.7	1.2	20.5	39.7	0.4	18.9	37.3	1.2	20.5	39.8	2.0	22.0	42.0	0.0	15.8	32.8	0.0	12.7	28.0		
Gore District	0.0	4.4	19.3	0.0	4.9	21.5	0.0	9.1	30.9	0.0	14.1	41.6	0.0	14.3	42.3	0.0	15.2	45.0	0.0	15.5	46.0	0.0	10.5	35.5	0.0	20.6	55.7	0.0	20.9	56.3		
Grey District	0.0	9.0	30.7	0.0	4.5	19.7	0.0	4.4	19.4	N/A	0.0	N/A	0.0	4.1	18.2	0.0	8.4	28.6	0.0	12.6	37.3	0.0	8.5	28.8	0.0	8.7	29.7	0.0	4.7	20.7		
Hamilton City	3.1	15.3	27.5	0.0	9.3	18.8	0.0	4.2	10.5	0.0	9.2	18.7	0.2	10.0	19.8	0.6	10.9	21.1	0.0	8.3	17.3	1.9	12.9	23.8	3.3	15.1	26.9	3.8	15.8	27.9		
Hastings District	0.0	6.7	16.0	0.0	9.0	19.8	0.3	13.5	26.7	2.1	16.7	31.4	0.8	14.4	27.9	0.8	14.2	27.5	1.4	15.2	29.0	2.6	17.2	31.7	0.8	14.0	27.2	0.3	12.8	25.3		
Hauraki District	0.0	21.5	54.1	0.0	25.8	61.5	0.0	17.1	46.2	0.0	30.1	68.8	0.0	29.7	67.8	0.0	34.1	75.1	0.0	33.5	73.6	0.0	36.7	78.3	0.0	43.4	87.8	0.0	30.8	67.7		
Horowhenua District	0.0	7.5	18.8	0.0	9.4	23.6	0.0	9.3	23.5	0.0	6.2	18.5	0.0	3.6	12.1	0.0	6.2	16.7	0.0	7.5	19.0	0.0	7.2	18.2	0.0	7.4	18.8	0.0	9.0	21.5		
Hurunui District	0.0	13.8	47.0	0.0	13.7	46.5	0.0	6.5	28.8	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	7.8	34.0	0.0	15.3	52.2	0.0	22.3	66.1	0.0	14.7	50.1		
Invercargill City	1.6	17.0	32.5	1.6	17.3	32.9	0.3	14.9	29.6	1.6	17.7	33.8	0.0	12.8	26.5	0.0	13.0	27.0	0.0	5.0	13.6	0.0	11.3	24.2	0.0	10.2	22.3	0.0	13.9	28.1		
Kaikoura District	0.0	55.2	163.5	0.0	54.0	159.9	0.0	20.3	89.4	N/A	0.0	N/A	N/A	0.0	N/A	0.0	32.4	142.4	0.0	30.1	132.2	0.0	28.2	124.1	N/A	0.0	N/A	N/A	0.0	N/A		
Kaipara District	0.0	23.4	55.8	0.0	15.6	42.1	0.0	11.8	35.0	0.0	8.0	27.3	0.0	4.0	17.7	N/A	0.0	N/A	N/A	0.0	N/A	0.0	3.7	16.2	0.0	3.6	15.6	0.0	3.4	15.2		
Kapiti Coast District	0.0	5.2	13.9	0.0	3.8	11.3	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	1.2	5.4	0.0	3.5	10.2	0.0	6.3	15.8	0.0	7.1	17.9	0.0	5.9	15.9	0.0	9.7	23.2	
Kawerau District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	29.3	128.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	N/A	N/A	0.0	7.7	34.0	0.0	8.1	35.4	
Lower Hutt City	3.5	14.7	25.9	1.8	11.7	21.6	0.2	8.9	17.6	0.2	9.1	17.9	1.8	11.9	21.9	2.2	12.5	22.7	1.0	10.4	19.8	0.0	8.3	16.8	1.9	12.4	22.9	1.9	12.3	22.8		
Mackenzie District	0.0	19.9	87.5	0.0	24.9	109.4	N/A	0.0	N/A	0.0	23.2	102.0	0.0	23.1	101.5	0.0	22.5	98.9	N/A	0.0	N/A	0.0	17.8	78.2	0.0	16.6	72.9	0.0	15.4	67.5		
Manawatu District	0.0	10.1	27.3	0.0	7.8	23.2	0.0	8.2	24.4	0.0	5.4	18.3	0.0	8.2	24.2	0.0	10.9	29.4	0.0	10.8	29.2	0.0	5.3	17.9	0.0	2.6	11.5	0.0	7.9	23.5		
Manukau City	8.3	18.4	28.6	7.6	17.2	26.8	5.7	14.2	22.7	4.3	12.1	19.9	3.2	10.5	17.8	4.6	12.5	20.3	5.6	13.7	21.9	5.8	13.9	21.9	5.7	13.7	21.7	5.7	13.6	21.4		
Marlborough District	0.0	5.4	16.1	0.0	3.7	12.5	0.0	5.4	16.1	0.0	10.8	25.9	0.0	9.2	23.1	0.0	11.2	26.8	0.0	5.7	16.7	0.0	5.5	16.3	0.0	10.0	23.9	0.0	8.1	20.5		
Masterton District	0.0	9.4	27.7	0.0	6.0	20.5	0.0	6.1	20.6	0.0	6.1	20.6	0.0	6.1	20.6	0.0	9.6	28.4	0.0	15.8	39.8	0.0	18.8	44.8	0.0	17.6	42.0	0.0	19.7	45.0		
Matamata-Piako District	0.0	14.7	35.2	0.0	7.3	21.6	0.0	7.2	21.3	0.0	10.1	27.2	0.0	17.1	38.9	0.0	16.8	38.3	0.0	11.3	28.6	0.0	11.1	28.1	0.0	15.7	35.8	0.0	13.4	32.0		
Napier City	0.3	14.7	29.0	0.0	13.8	27.8	0.9	15.9	30.8	0.0	13.5	27.4	0.9	15.9	30.8	0.0	12.2	25.3	0.0	13.4	27.1	0.0	8.4	19.1	0.0	7.0	16.7	0.0	5.6	14.0		
Nelson City	0.0	12.5	27.5	0.0	15.5	32.2	0.0	12.2	26.8	0.0	10.6	24.2	0.0	7.4	18.6	0.0	7.7	19.4	0.0	14.7	30.5	0.0	14.5	30.1	0.0	12.6	26.8	0.0	7.0	17.7		
New Plymouth District	0.0	8.6	18.4	2.4	15.5	28.7	2.9	16.4	30.0	4.1	18.5	32.9	1.8	14.4	27.0	1.3	13.5	25.8	0.0	8.5	18.2	0.0	6.7	15.3	0.0	8.4	18.0	3.4	17.3	31.1		
North Shore City	0.0	4.8	9.9	0.1	5.7	11.3	0.4	6.3	12.3	0.6	6.7	12.8	1.7	8.5	15.4	1.7	8.4	15.1	1.9	8.8	15.7	1.4	7.9	14.3	1.1	7.4	13.7	2.2	9.1	15.9		
Opotiki District	0.0	26.1	77.2	0.0	24.4	72.2	0.0	25.0	74.1	0.0	8.0	35.2	0.0	7.5	32.9	0.0	15.8	53.6	0.0	16.1	54.6	0.0	8.6	37.9	0.0	7.8	34.3	0.0	23.2	68.7		
Otorohanga District	0.0	9.4	41.4	0.0	9.6	42.2	0.0	9.7	42.8	N/A	0.0	N/A	0.0	17.7	60.3	0.0	16.9	57.6	0.0	35.0	94.5	0.0	28.3	83.8	0.0	27.6	81.6	0.0	18.5	63.0		
Palmerston North City	0.0	12.6	25.5	0.0	5.5	13.9	0.0	3.0	9.0	0.0	3.2	9.5	0.0	4.1	11.2	0.0	5.5	13.9	0.0	5.6	14.2	0.0	9.2	20.2	0.0	11.4	23.6	0.0	12.4	25.1		
Papakura District	0.0	11.6	31.2	0.0	9.2	27.1	0.0	14.7	37.1	0.0	31.0	62.7	0.0	24.7	52.7	0.0	18.3	41.9	N/A	0.0	N/A	N/A	0.0	N/A	0.0	7.2	21.4	0.0	17.2	39.3		
Porirua City	0.0	8.0	23.7	0.0	5.6	19.2	0.0	7.8	23.1	0.0	21.5	47.4	0.0	17.3	39.4	0.0	17.6	40.3	0.0	15.1	36.1	0.0	14.9	35.6	0.0	13.8	34.9	0.0	11.2	33.1		
Queenstown-Lakes District	0.0	10.4	45.7	0.0	17.7	60.1	0.0	7.7	33.9	0.0	14.7	49.9	0.0	6.6	28.9	0.0	6.2	27.2	N/A	0.0	N/A	0.0	7.7	33.7	0.0	7.2	31.8	0.0	6.9	30.2		
Rangitikei District	N/A	0.0	N/A	0.0	8.7	29.5	0.0	12.4	36.7	0.0	12.7	37.6	0.0	3.8	16.7	N/A	0.0	N/A	0.0	7.1	24.0	0.0	11.1	32.8	0.0	14.7	39.7	0.0	14.7	39.7		
Rodney District	0.0	11.3	25.9	0.0	8.5	20.3	0.0	3.7	11.1	0.0	1.3	5.9	0.0	3.4	10.0	0.0	3.2	9.6	0.0	4.1	11.2	0.0	4.9	12.2	0.0	5.7	13.5	0.0	7.5	16.5		
Rotorua District	0.0	13.6	29.1	0.0	11.4	25.0	1.1	18.7	36.4	1.9	20.3	38.8	0.4	17.6	34.9	0.0	11.8</															

	1991		1992		1993		1994		1995		1996		1997		1998		1999		2000												
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL										
Ashburton District	0.0	13.3	31.8	0.0	6.3	18.5	0.0	4.2	14.2	0.0	11.6	29.3	0.0	13.3	31.8	0.0	15.8	36.2	0.0	10.6	26.6	0.0	14.9	34.0	0.0	12.1	28.8	0.0	15.9	35.0	
Auckland City	6.6	12.1	17.5	7.2	12.8	18.4	7.2	12.7	18.2	8.2	13.9	19.7	9.0	15.0	21.0	8.2	14.0	19.8	8.9	14.9	20.8	9.4	15.6	21.7	12.8	19.7	26.6	13.6	20.6	27.7	
Banks Peninsula District	0.0	9.9	43.7	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	5.9	26.0	0.0	6.1	26.6	0.0	6.2	27.1	N/A	0.0	N/A	0.0	N/A		
Buller District	0.0	5.4	23.7	0.0	11.2	37.9	0.0	16.9	50.2	0.0	29.1	73.3	0.0	18.8	55.7	0.0	17.1	50.6	0.0	11.2	38.0	0.0	16.1	47.7	0.0	10.4	35.4	0.0	4.8	21.2	
Carterton District	0.0	47.5	119.7	0.0	36.8	99.2	0.0	27.2	80.6	N/A	0.0	N/A	N/A	0.0	N/A	0.0	8.5	37.4	0.0	8.3	36.4	0.0	8.1	35.5	0.0	8.0	35.1	0.0	8.0	35.1	
Central Hawke's Bay District	0.0	4.8	21.2	0.0	15.3	45.3	0.0	24.6	62.0	0.0	19.8	53.3	0.0	14.7	43.5	0.0	15.6	46.2	0.0	25.4	63.9	0.0	24.7	62.2	0.0	24.9	62.7	0.0	14.8	44.0	
Central Otago District	0.0	11.3	33.5	0.0	18.3	46.1	0.0	17.9	45.0	0.0	10.6	31.5	0.0	9.7	28.8	0.0	9.7	28.2	0.0	16.3	41.1	0.0	18.9	45.1	0.0	28.4	62.6	0.0	25.3	57.9	
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Christchurch City	6.5	11.9	17.3	5.8	11.0	16.2	5.2	10.2	15.2	5.2	10.1	15.1	6.5	11.9	17.2	8.2	14.0	19.7	9.2	15.1	21.1	9.4	15.3	21.3	9.4	15.3	21.3	9.6	15.6	21.5	
Clutha District	0.0	24.6	56.2	0.0	21.4	51.1	0.0	18.2	45.9	0.0	15.7	42.3	0.0	15.6	42.1	0.0	22.5	53.7	0.0	10.6	31.5	0.0	17.4	43.7	0.0	13.6	36.7	0.0	29.0	63.7	
Dunedin City	2.0	10.1	18.2	3.0	11.7	20.4	1.3	8.8	16.3	1.7	9.4	17.2	2.3	10.4	18.4	3.7	12.6	21.6	7.5	18.4	29.3	10.7	22.8	34.9	11.5	23.8	36.1	7.0	17.5	27.9	
Far North District	9.8	31.8	53.8	8.5	29.1	49.7	8.3	28.6	48.8	7.4	27.0	46.5	10.5	31.5	52.5	14.8	37.1	59.3	19.7	43.1	66.5	29.2	55.6	82.0	27.8	53.5	79.2	23.7	48.1	72.4	
Franklin District	0.0	7.1	19.2	0.0	13.4	30.6	0.0	16.3	34.8	0.0	20.3	41.2	1.4	23.2	45.0	0.4	21.1	41.8	2.0	21.9	47.7	0.4	17.5	34.7	1.9	20.6	39.3	0.0	16.5	33.5	
Gisborne District	0.0	11.3	25.7	0.0	12.6	27.8	0.0	15.7	32.6	2.9	23.5	44.2	3.8	25.2	46.6	7.7	31.9	56.0	3.9	25.5	47.1	5.8	29.1	52.3	9.8	35.3	60.9	16.1	45.0	73.9	
Gore District	0.0	20.9	56.4	0.0	10.3	35.0	0.0	9.5	32.4	0.0	18.3	49.4	0.0	18.2	49.0	0.0	13.6	40.4	0.0	13.5	40.1	0.0	8.9	30.1	0.0	18.7	50.4	0.0	13.9	41.3	
Grey District	0.0	9.6	32.5	0.0	8.9	30.3	0.0	13.6	40.3	0.0	22.4	56.5	0.0	18.4	49.6	0.0	14.0	41.5	0.0	13.3	39.4	0.0	23.3	58.7	0.0	33.2	75.9	0.0	23.7	59.6	
Hamilton City	2.4	13.5	24.7	1.9	12.8	23.7	1.9	12.8	23.7	3.8	15.8	27.7	6.2	19.4	32.5	4.6	16.8	28.9	5.5	18.0	30.5	7.3	20.5	33.6	11.4	26.3	41.1	10.8	25.2	39.7	
Hastings District	0.0	10.7	22.2	0.3	12.8	25.3	0.3	12.8	25.2	0.8	13.6	26.4	2.5	16.4	30.4	3.7	18.4	33.1	6.8	23.3	39.8	6.8	23.3	39.8	8.1	25.2	42.3	8.7	26.1	43.5	
Hauraki District	0.0	22.6	53.9	0.0	15.3	41.2	0.0	22.0	52.5	0.0	22.2	53.1	0.0	17.8	44.9	0.0	14.7	39.6	0.0	31.1	66.3	0.8	41.6	82.3	4.5	48.4	92.2	0.0	31.0	66.1	
Horowhenua District	0.0	10.6	24.1	0.0	12.0	26.4	0.0	16.0	33.1	0.0	14.7	31.3	0.0	16.6	34.4	1.2	20.6	40.0	3.7	24.6	45.4	4.8	27.4	50.0	6.0	30.3	54.5	7.3	32.8	58.3	
Hurunui District	0.0	6.4	28.3	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	5.8	25.5	0.0	5.7	25.1	0.0	5.6	24.8	0.0	6.9	30.2	0.0	6.6	29.1	0.0	11.5	39.0	
Invercargill City	0.0	7.5	18.0	0.0	11.4	24.4	0.0	12.8	26.6	0.0	14.3	28.9	3.1	20.5	37.9	1.0	16.8	32.7	2.4	19.2	36.1	1.7	18.0	34.3	3.8	21.6	39.4	6.1	25.3	44.6	
Kaikoura District	0.0	22.7	99.7	0.0	21.8	95.9	0.0	42.1	143.3	0.0	20.4	89.6	0.0	36.3	123.4	0.0	32.3	109.9	0.0	31.4	106.9	0.0	15.6	68.7	N/A	0.0	N/A	N/A	0.0	45.4	
Kaipara District	0.0	7.2	24.4	0.0	14.0	37.9	0.0	20.3	48.4	0.0	20.9	49.9	0.0	20.9	49.9	0.0	20.6	49.2	0.0	19.2	45.7	0.0	18.9	45.1	0.0	25.4	55.9	0.0	21.2	48.3	
Kapiti Coast District	0.0	11.0	24.1	0.0	11.9	25.4	0.0	9.0	19.8	0.0	7.3	16.7	0.0	9.8	20.4	1.2	13.2	25.1	2.9	16.6	30.3	4.7	19.6	34.4	3.2	18.3	33.4	3.7	18.3	33.0	
Kawerau District	0.0	8.4	36.9	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	26.7	90.9	0.0	73.9	199.3	0.0	66.6	174.7	0.0	69.4	179.6	0.0	30.5	90.3	
Lower Hutt City	1.5	11.8	22.2	1.0	10.7	20.4	0.6	10.1	19.6	1.0	10.6	20.2	1.0	10.9	20.7	4.3	16.5	28.8	7.9	22.0	36.1	10.0	25.1	40.1	9.9	24.7	39.6	8.9	23.4	37.9	
Mackenzie District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	16.8	74.0	0.0	14.6	64.0	0.0	51.7	153.1
Manawatu District	0.0	11.0	29.8	0.0	10.4	28.1	0.0	5.0	17.0	0.0	4.9	16.6	0.0	12.5	31.5	0.0	22.3	47.5	0.0	24.4	50.6	0.0	21.8	46.4	0.0	17.2	39.3	0.0	21.7	46.3	
Manukau City	6.7	14.9	23.1	7.7	15.9	24.1	9.0	17.6	26.3	10.1	19.0	27.8	11.1	20.1	29.2	9.7	18.1	26.6	12.4	21.4	30.4	14.8	24.4	33.9	19.5	30.1	40.8	21.5	32.7	43.8	
Marlborough District	0.0	8.0	20.2	0.0	1.5	6.5	0.0	4.8	14.2	0.0	4.7	13.8	0.0	14.8	30.6	0.0	15.5	31.3	1.9	20.2	38.5	0.0	10.1	23.1	0.0	11.0	24.1	0.0	10.0	22.8	
Masterton District	0.0	19.5	44.4	0.0	20.0	45.6	0.0	14.5	36.6	0.0	16.4	39.1	0.0	20.6	45.4	0.0	22.4	47.6	1.9	32.0	62.2	0.6	30.1	59.5	0.0	22.2	47.4	0.6	29.5	58.5	
Matamata-Piako District	0.0	15.9	36.4	0.0	15.7	35.7	0.0	17.6	38.7	0.0	19.7	42.1	0.0	23.9	48.4	0.0	23.9	48.3	2.8	30.5	58.2	0.5	25.9	51.3	1.6	27.6	53.5	0.0	19.0	40.4	
Napier City	0.0	8.8	19.4	2.6	17.4	32.2	6.0	23.1	40.3	7.3	25.1	42.9	3.9	19.6	35.3	4.5	20.3	36.1	2.5	16.8	31.0	4.5	20.3	36.0	2.0	16.1	30.1	2.7	17.6	32.6	
Nelson City	0.0	8.7	20.8	0.0	7.1	17.8	0.0	7.0	17.6	0.0	5.8	15.6	0.0	7.1	18.0	0.0	7.1	17.8	0.0	12.2	26.0	0.0	14.0	29.1	0.0	15.8	31.9	0.0	14.6	30.2	
New Plymouth District	7.0	22.7	38.4	8.7	25.2	41.7	7.3	22.8	38.4	6.1	20.9	35.7	5.0	19.3	33.5	1.7	13.5	25.3	1.2	12.9	24.5	0.2	10.5	20.8	1.6	13.1	24.7	6.8	21.3	35.8	
North Shore City	2.2	9.0	15.9	2.4	9.3	16.2	1.3	7.5	13.6	1.8	8.3	14.7	3.1	10.1	17.1	3.6	10.8	18.0	3.3	10.3	17.2	2.0	8.1	14.3	2.5	9.0	15.5	3.3	10.3	17.3	
Opotiki District	0.0	34.3	92.6	0.0	32.8	88.4	0.0	24.4	72.2	0.0	14.2	48.4	0.0	22.9	67.6	0.0	30.3	81.7	0.0	44.2	105.4	0.0	35.2	88.6	0.0	35.2	88.5	0.0	49.5	113.0	
Otorohanga District	0.0	29.2	86.4	0.0	57.3	130.9	0.0	55.5	126.8	0.0	37.2	93.7	0.0	17.4	59.0	0.0	9.8	43.2	0.0	17.5	59.6	0.0	8.3	36.4	0.0	18.3	62.2	0.0	9.7	42.8	
Palmerston North City	0.0	11.3	23.4	0.0	10.3	21.9	0.0	11.3	23.5	0.0	8.9	19.5	0.0	12.3	24.8	0.0	11.2	23.2	0.0	11.1	23.0	0.0	8.5	18.8	1.4	14.8	28.3	3.2	18.0	32.7	
Papakura District	0.6	28.5	56.4	0.6	27.8	55.0	0.0	19.5	41.5	0.0	18.7	39.9	0.0	16.3	35.8	0.0	23.2	47.0	0.0	21.1	43.7	0.0	22.5	45.6	0.0	20.0	41.4	0.0	21.6	43.6	
Porirua City	0.0	14.1	38.1	0.0	13.7	34.6	0.0	15.6	35.6	0.0	22.1	44.7	1.7	29.2	56.7	6.6	37.3	68.0	6.7	37.9	69.2	8.1	40.5	73.0	6.5	43.1	79.7	17.9	64.7	111.5	
Queenstown-Lakes District	N/A	0.0	N/A	0.0	6.2	27.4	0.0	6.0	26.6	0.0	5.8	25.6	N/A	0.0	N/A	N/A	0.0	N/A	0.0	12.4	42.2	0.0	24.3	65.5	0.0	35.5	84.8	0.0	21.9	59.1	
Rangitikei District	0.0	15.0	40.4	0.0	11.3	33.5	0.0	4.1	18.1	0.0	11.8	35.0	0.0	19.5	49.1	0.0	19.7	49.6	0.0	7.7	26.3	0.0	11.4	33.6	0.0	27.0	61.5	0.0	35.0	74.6	
Rodney District	0.0	9.2	19.2	1.7	14.0	26.2	2.7	15.4	28.0	1.1	12.3	23.4	0.0	7.1	15.2	0.0	4.4	10.5	0.0	7.7	16.0	1.9	12.4	23.0	1.8	12.2	22.6	0.6	9.7		

	1981			1982			1983			1984			1985			1986			1987			1988			1989			1990				
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL		
Ashburton District	0.0	22.2	47.2	0.0	19.6	43.2	0.0	19.5	42.9	0.0	14.6	34.9	0.0	16.9	38.5	0.0	21.2	45.2	0.0	13.7	32.7	0.0	11.2	28.3	0.0	6.7	19.8	0.0	8.9	24.0		
Auckland City	4.0	7.8	11.7	4.6	8.6	12.5	6.2	10.7	15.1	5.4	9.7	14.0	5.8	10.3	14.8	7.2	12.2	17.2	9.0	14.3	19.6	9.5	15.0	20.4	8.2	13.2	18.3	6.8	11.7	16.5		
Banks Peninsula District	0.0	19.3	65.8	0.0	19.9	67.7	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	21.7	73.7	0.0	20.8	70.8	0.0	28.7	84.9	0.0	7.5	33.1	0.0	7.7	33.7	N/A	0.0	N/A	
Buller District	0.0	29.3	73.7	0.0	13.1	44.5	0.0	34.9	83.3	0.0	34.7	82.7	0.0	34.4	82.0	0.0	13.1	44.6	0.0	12.8	43.7	0.0	7.1	31.3	N/A	0.0	N/A	0.0	6.2	27.4		
Carterton District	0.0	22.1	75.2	0.0	11.4	50.1	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	9.3	40.0	0.0	8.8	38.7	0.0	9.4	41.4	N/A	0.0	10.6	N/A	0.0	10.6	46.7	0.0	10.4	45.7
Central Hawke's Bay District	0.0	5.9	25.8	0.0	5.9	25.8	0.0	17.4	51.5	0.0	17.2	50.8	0.0	17.0	50.3	0.0	5.6	24.5	0.0	18.0	53.4	0.0	17.7	52.3	0.0	17.3	51.1	N/A	0.0	N/A		
Central Otago District	0.0	5.9	26.0	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	9.4	32.1	0.0	13.5	40.1	0.0	13.3	39.5	0.0	4.3	18.9	N/A	0.0	N/A		
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Christchurch City	6.5	11.6	16.8	6.2	11.2	16.2	6.3	11.3	16.2	6.4	11.4	16.3	6.0	10.9	15.7	7.1	12.3	17.4	6.8	11.9	16.9	6.5	11.4	16.4	4.9	9.4	13.8	4.2	8.4	12.7		
Clutha District	0.0	41.1	85.3	0.0	28.7	65.6	0.0	8.3	28.2	0.0	11.8	34.8	0.0	3.4	15.1	0.0	3.4	15.1	0.0	7.9	26.7	0.0	12.1	35.9	0.0	12.1	35.8	0.0	4.3	18.8		
Dunedin City	3.3	10.9	18.5	2.2	9.0	15.9	3.7	11.5	19.3	3.7	11.6	19.4	3.4	11.1	18.7	3.7	11.5	19.3	4.7	13.0	21.4	3.5	11.5	19.4	2.7	10.2	17.8	1.5	8.4	15.3		
Far North District	3.5	28.7	53.8	2.4	25.7	49.0	5.9	33.4	60.9	3.7	30.0	56.4	4.9	32.2	59.6	0.0	20.6	41.8	0.0	16.7	35.7	0.0	10.9	26.0	1.2	21.1	41.0	0.4	18.4	36.4		
Franklin District	0.0	19.6	43.1	0.0	11.8	29.7	0.0	10.4	26.2	0.0	12.4	29.5	0.0	12.0	28.7	0.0	6.2	18.4	0.0	6.3	18.8	0.0	17.7	39.0	0.5	26.4	52.4	0.0	23.5	47.6		
Gisborne District	10.6	36.2	61.8	5.5	27.7	49.9	5.6	28.1	50.5	1.2	20.3	39.4	0.4	18.7	37.0	0.0	10.7	24.4	0.0	7.5	19.0	0.0	9.2	21.9	0.0	10.7	24.4	0.0	13.8	29.3		
Gore District	N/A	0.0	N/A	N/A	0.0	N/A	0.0	14.0	41.5	0.0	18.2	49.0	0.0	22.5	56.7	0.0	22.5	56.7	0.0	22.6	56.9	0.0	22.4	56.3	0.0	13.3	39.4	0.0	18.5	49.9		
Grey District	0.0	9.5	32.3	0.0	14.1	41.6	0.0	14.2	42.1	0.0	25.0	63.0	0.0	30.5	72.8	0.0	25.6	64.4	0.0	10.8	36.6	N/A	0.0	N/A	0.0	21.3	57.5	0.0	31.7	75.7		
Hamilton City	5.4	19.5	33.6	1.1	12.2	23.2	2.6	14.8	27.0	1.1	11.8	22.5	2.0	13.1	24.2	0.0	8.7	17.5	1.0	10.6	20.2	2.8	13.8	24.8	6.5	19.6	32.6	5.4	17.7	29.9		
Hastings District	1.4	14.8	28.2	1.4	15.0	28.6	2.6	16.9	31.2	1.9	15.8	29.6	2.0	15.8	29.7	0.3	12.8	25.4	1.4	14.7	28.1	0.8	13.4	26.1	0.8	13.2	25.7	0.0	8.1	17.8		
Hauraki District	0.0	13.2	39.2	0.0	26.6	63.5	0.0	22.6	57.0	0.0	18.2	49.2	0.0	14.4	42.5	0.0	18.9	50.9	0.0	22.8	57.4	0.0	18.0	48.6	0.0	8.5	28.9	0.0	17.7	47.8		
Horowhenua District	0.0	7.7	20.7	0.0	5.4	16.1	0.0	1.6	7.2	0.0	3.7	12.7	0.0	7.2	19.4	0.0	18.2	37.6	0.4	20.8	41.1	1.3	23.0	44.7	0.0	16.0	34.1	0.0	14.3	31.5		
Hurunui District	0.0	8.8	38.9	0.0	8.5	37.2	N/A	0.0	N/A	0.0	7.7	34.0	0.0	7.4	32.7	0.0	7.1	31.4	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A		
Invercargill City	7.6	25.9	44.2	4.8	21.5	38.2	2.1	16.7	31.4	2.7	18.0	33.3	0.3	13.5	26.6	1.5	25.8	30.0	0.0	11.4	23.5	0.0	11.4	23.7	0.3	13.5	26.7	0.3	13.6	26.9		
Kaikoura District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	15.1	110.2	0.0	25.8	113.2	0.0	26.5	116.3	N/A	0.0	N/A	N/A	0.0	N/A		
Kaipara District	0.0	11.0	37.3	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	3.8	16.6	0.0	17.6	47.4	0.0	29.3	69.8	0.0	28.6	68.2	0.0	19.5	52.7		
Kapiti Coast District	0.0	5.6	15.2	0.0	4.1	12.3	0.0	4.0	12.0	0.0	6.7	18.0	0.0	9.5	22.7	0.0	6.8	18.2	0.0	5.2	14.0	0.0	5.9	14.9	0.0	9.4	20.6	0.0	8.3	18.9		
Kawerau District	N/A	N/A	N/A	0.0	38.4	168.6	0.0	37.4	127.2	0.0	33.8	114.8	0.0	30.8	104.7	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	9.9	43.3	0.0	24.4	82.9	0.0	37.6	111.3	
Lower Hutt City	2.8	12.9	22.9	2.1	11.6	21.2	3.3	13.6	24.0	5.0	16.2	27.4	4.5	15.5	26.5	3.3	13.6	24.0	0.5	9.1	17.6	0.0	5.6	12.2	0.0	4.9	11.3	0.0	6.5	13.9		
Mackenzie District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	15.2	66.9	0.0	16.1	70.6	0.0	17.1	75.0	N/A	0.0	N/A	
Manawatu District	0.0	16.8	40.1	0.0	13.9	35.1	0.0	13.7	34.6	0.0	10.9	29.3	0.0	10.5	28.2	0.0	7.7	22.7	0.0	5.1	17.2	0.0	10.1	27.3	0.0	18.0	41.0	0.0	20.6	45.2		
Manukau City	6.2	16.3	26.4	6.9	17.0	27.0	4.0	12.4	20.9	4.8	13.4	22.0	5.3	14.0	22.7	5.8	14.5	23.2	5.9	14.5	23.1	5.2	13.2	21.3	5.0	12.9	20.7	4.6	12.1	19.6		
Marlborough District	0.0	15.2	33.4	0.0	11.8	28.0	0.0	17.4	37.1	0.0	20.3	41.1	0.0	16.1	34.2	0.0	17.7	36.7	0.0	10.6	25.2	0.0	17.0	35.2	0.0	13.6	29.9	0.0	15.1	32.2		
Masterton District	0.0	5.7	19.5	0.0	5.5	18.5	0.0	5.5	18.7	0.0	5.5	18.7	N/A	0.0	N/A	0.0	2.7	11.8	0.0	5.4	18.4	0.0	5.4	18.2	0.0	10.8	29.1	0.0	13.3	33.6		
Matamata-Piako District	0.0	10.4	28.0	0.0	10.4	28.1	N/A	0.0	N/A	0.0	8.0	23.7	0.0	8.0	23.8	0.0	8.0	23.8	N/A	0.0	N/A	0.0	5.2	17.5	0.0	9.4	25.4	0.0	14.5	34.6		
Napier City	0.0	9.2	20.3	0.0	10.1	21.6	0.0	9.9	21.0	0.0	8.7	19.1	0.0	9.9	21.1	0.0	8.9	19.5	0.0	6.7	15.9	0.0	3.3	9.9	0.0	7.6	17.4	0.0	9.8	20.8		
Nelson City	0.0	11.3	24.9	0.0	8.5	20.3	0.0	6.9	17.4	0.0	5.6	15.1	0.0	5.7	15.4	0.0	6.9	17.4	0.0	7.4	18.6	0.0	6.9	17.3	0.0	5.6	15.2	0.0	5.0	13.5		
New Plymouth District	0.0	9.2	19.0	0.0	9.2	19.1	1.2	12.8	24.5	1.2	13.1	24.9	1.7	14.1	26.5	0.0	10.4	21.1	1.2	13.0	24.9	1.2	13.0	24.9	1.2	13.1	24.9	0.0	9.2	19.1		
North Shore City	3.4	11.2	19.0	1.6	8.2	14.8	1.3	7.6	13.9	0.0	4.9	9.9	0.8	6.5	12.2	1.0	6.8	12.5	2.0	8.3	14.6	1.7	7.8	13.9	1.5	7.5	13.5	1.5	7.4	13.3		
Orohunga District	0.0	21.5	73.2	0.0	11.2	49.3	0.0	18.3	62.3	0.0	17.6	59.8	0.0	36.0	97.1	0.0	18.5	62.8	0.0	27.3	80.7	0.0	8.6	37.8	0.0	26.2	77.7	0.0	44.2	111.2		
Palmerston North City	N/A	0.0	N/A	N/A	0.0	N/A	0.0	9.6	42.3	0.0	9.2	40.4	0.0	18.6	63.2	0.0	19.8	67.2	0.0	19.8	67.2	0.0	18.0	61.2	0.0	41.7	104.9	0.0	48.8	116.4		
Papakura District	0.2	11.9	23.6	0.0	8.2	18.1	0.0	8.1	17.7	0.0	8.1	17.9	0.0	10.3	21.3	0.0	9.3	19.8	0.0	9.2	19.5	0.0	9.8	20.4	1.3	13.7	26.2	0.7	12.5	24.3		
Porirua City	0.0	17.6	42.0	0.0	10.0	29.7	0.0	3.3	14.7	0.0	3.2	13.8	0.0	13.1	33.1	0.0	12.6	31.7	0.0	12.2	30.7	0.0	4.3	14.7	0.0	7.0	20.8	0.0	12.0	30.3		
Rangitikei District	0.0	22.0	50.2	0.0	13.1	35.3	0.0	18.1	43.1	0.0	13.1	35.4	0.0	10.9	29.4	0.0	14.4	36.2	0.0	10.3	27.8	0.0	8.3	24.7	0.0	5.6	19.0	0.0	15.3	36.6		
Queenstown-Lakes District	0.0	12.1	53.3	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A		
Rangitikei District	0.0	9.4	31.9	0.0	14.2	42.0	0.0	19.2	51.8	0.0	15.3	45.4	0.0	15.9	47.2	0.0	10.8	36.6	0.0	5.7	25.0	N/A	0.0	N/A	0.0	4.9	21.4	0.0	4.8	21.1		
Rodney District	0.0	6.0	17.8	0.0	5.6	16.5	0.0	2.2	9.8	0.0	1.6	7.0	0.0	1.6	6.9	0.0	3.3	11.4	0.0	11.4	26.1	0.3	16.3	32.3	0.3	15.6	30.9	0.0	11.1	23.0		
Rotorua District	0.0	12.2	27.8	0.0	13.9	30.6	0.0	8.6	21.6	0.0	8.1	20.3	0.0	8.5	20.4	0.0	11.8	25.2</														

	1991			1992			1993			1994			1995			1996			1997			1998			1999			2000						
	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL	LL	ASMR	UL				
Ashburton District	0.0	11.2	28.2	0.0	11.0	27.8	0.0	10.6	26.7	0.0	8.1	21.9	0.0	12.0	28.7	0.0	14.3	32.6	0.0	11.7	25.5	0.0	11.7	27.8	0.0	15.1	33.3	0.0	16.9	35.9				
Auckland City	6.3	11.0	15.8	7.8	13.0	18.2	8.4	13.7	19.0	6.8	11.8	16.8	6.0	10.7	15.4	6.7	11.6	16.6	10.8	16.8	22.8	12.8	19.2	25.7	13.5	20.1	26.7	11.3	17.4	23.6				
Banks Peninsula District	N/A	0.0	N/A	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	14.0	47.6	0.0	24.5	72.5	0.0	24.1	71.5	0.0	9.7	42.7				
Buller District	0.0	13.0	44.2	0.0	13.8	47.0	0.0	18.7	55.4	0.0	23.2	62.7	0.0	34.5	82.2	0.0	31.5	79.2	0.0	30.7	77.3	0.0	44.9	102.5	0.0	43.2	98.5	0.0	42.5	97.0				
Carterton District	0.0	10.1	44.3	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	17.3	59.0	0.0	16.9	57.6	0.0	16.7	56.7	0.0	16.3	55.4				
Central Hawke's Bay District	N/A	0.0	N/A	0.0	5.4	23.7	0.0	5.2	23.0	0.0	20.8	56.1	0.0	20.9	56.4	0.0	25.6	64.6	0.0	20.3	54.8	0.0	25.6	64.4	0.0	20.8	56.0	0.0	16.3	48.3				
Central Otago District	N/A	0.0	N/A	0.0	13.5	40.1	0.0	13.2	39.2	0.0	17.5	47.2	0.0	4.6	20.2	0.0	4.6	20.3	0.0	7.4	25.1	0.0	7.2	24.6	0.0	10.9	32.4	0.0	7.8	26.5				
Chatham Islands District	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Christchurch City	4.9	9.4	13.9	5.5	10.1	14.7	6.6	11.5	16.4	4.8	9.1	13.5	3.7	7.6	11.5	4.2	8.3	12.4	5.7	10.2	14.6	8.5	13.6	18.8	9.5	15.0	20.4	10.7	16.3	22.0				
Clutha District	0.0	3.4	15.0	0.0	7.2	24.4	0.0	26.2	59.9	0.0	26.3	60.1	0.0	22.5	53.8	0.0	3.8	16.6	N/A	0.0	N/A	0.0	7.2	24.6	0.0	10.7	31.6	0.0	29.7	65.4				
Dunedin City	3.6	11.8	19.9	4.2	12.6	21.0	4.4	12.7	21.0	2.5	9.7	16.8	3.8	11.8	19.8	3.4	11.2	18.9	5.6	14.3	23.0	5.9	14.8	23.6	8.7	18.8	28.9	9.8	20.3	30.9				
Far North District	0.0	16.8	34.0	0.0	10.0	23.9	3.6	23.9	44.2	10.1	32.9	55.7	13.6	37.9	62.1	11.1	33.3	55.4	8.8	30.1	51.3	16.4	41.1	65.8	17.5	42.7	67.9	22.3	48.8	75.4				
Franklin District	0.0	12.3	29.4	0.0	7.5	20.3	0.0	13.4	30.6	0.0	14.7	32.3	0.0	20.0	40.5	0.0	16.3	34.8	0.0	19.9	40.3	0.0	16.4	34.9	0.0	17.7	36.7	0.0	11.6	26.5				
Gisborne District	2.0	21.7	41.4	5.5	27.4	49.4	8.2	31.8	55.3	4.4	25.0	45.7	6.2	28.2	50.2	7.2	29.8	52.3	11.2	36.5	61.7	12.4	38.6	64.8	11.3	36.9	62.4	10.4	35.5	60.6				
Gore District	0.0	14.0	41.4	0.0	13.6	40.2	0.0	8.5	28.9	0.0	30.4	69.5	0.0	25.7	61.2	0.0	21.2	53.5	0.0	4.0	17.6	0.0	8.4	28.7	0.0	21.1	53.1	0.0	21.2	53.4				
Grey District	0.0	32.1	76.7	0.0	14.9	44.1	0.0	10.0	33.9	0.0	9.9	33.6	0.0	14.7	43.5	0.0	10.0	33.9	0.0	10.0	33.8	0.0	10.0	34.1	0.0	15.6	46.1	0.0	26.1	65.6				
Hamilton City	3.9	15.1	26.3	2.1	12.1	22.0	0.9	9.8	18.7	0.5	8.9	17.4	2.5	12.3	22.1	5.5	17.0	28.6	6.3	18.3	30.2	5.4	16.7	28.1	5.8	17.4	29.0	8.5	21.2	33.9				
Hastings District	0.0	8.0	17.6	0.2	11.9	23.5	1.3	13.7	26.1	3.5	17.5	31.5	5.3	20.3	35.3	6.4	22.1	37.7	8.3	24.7	41.1	8.2	24.5	40.8	10.0	27.0	44.1	9.3	25.9	42.5				
Hauraki District	0.0	16.9	45.7	0.0	25.4	60.5	0.0	29.1	66.5	0.0	28.2	64.3	0.0	23.3	55.7	0.0	11.5	34.0	0.0	22.2	53.0	0.0	25.4	58.0	0.0	25.4	58.0	0.0	14.8	40.0				
Horowhenua District	0.0	8.5	21.3	0.0	11.2	25.6	0.0	13.2	29.0	0.0	17.7	35.8	0.0	17.5	35.4	0.4	19.2	38.0	0.0	16.1	33.5	0.0	14.5	31.0	0.0	9.0	21.5	2.0	21.1	40.2				
Hurunui District	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	11.3	49.6	0.0	10.5	46.2	0.0	9.8	43.2	0.0	13.1	57.4	0.0	12.6	55.5	0.0	12.2	53.8
Invercargill City	2.1	16.7	31.3	0.3	13.3	26.3	2.7	17.6	32.5	1.4	15.3	29.3	1.4	15.4	29.4	2.7	17.5	32.4	6.6	23.9	41.3	6.5	23.7	40.8	5.1	21.1	37.2	2.5	16.6	30.7				
Kaikoura District	N/A	0.0	N/A	0.0	24.4	107.2	0.0	38.8	132.1	0.0	52.7	156.1	0.0	50.7	150.0	0.0	33.6	114.3	0.0	17.8	78.1	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	N/A			
Kaipara District	0.0	24.9	59.3	0.0	32.7	72.0	0.0	28.5	65.2	0.0	15.7	42.3	0.0	3.9	17.3	0.0	13.6	40.1	0.0	12.7	37.6	0.0	15.8	42.7	0.0	13.5	36.3	0.0	10.1	29.9				
Kapiti Coast District	0.0	7.0	16.8	0.0	3.4	10.1	0.0	7.5	17.2	0.0	9.4	20.1	0.0	11.1	22.4	3.4	17.1	30.8	2.7	15.2	27.7	2.6	14.7	26.9	0.0	6.8	14.9	0.0	8.3	17.3				
Kawerau District	0.0	26.1	88.7	0.0	12.8	56.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	8.3	36.6	0.0	41.6	141.5	0.0	53.4	158.1	0.0	43.5	147.9	0.0	9.8	43.2	0.0	10.2	45.0			
Lower Hutt City	0.9	10.1	19.2	1.3	10.7	20.1	1.3	10.6	19.9	2.2	12.3	22.4	4.4	15.8	27.3	7.2	20.1	33.0	5.8	18.0	30.2	7.8	21.1	34.4	6.9	19.9	32.8	8.5	22.3	36.2				
Mackenzie District	N/A	0.0	N/A	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	34.0	149.3	0.0	32.7	143.7	0.0	30.1	132.1	N/A	0.0	N/A	0.0	N/A	0.0	15.5	68.0	0.0	12.5	63.6				
Manawatu District	0.0	10.4	28.1	0.0	2.6	11.6	0.0	10.1	27.2	0.0	10.1	27.3	0.0	12.7	31.9	0.0	12.1	30.4	0.0	14.5	34.7	0.0	21.9	46.8	0.0	19.9	43.9	0.0	22.6	48.3				
Manawatu City	5.8	13.6	21.4	8.2	16.7	25.3	9.3	18.0	26.6	9.8	18.6	27.3	12.7	22.1	31.4	12.8	22.2	31.5	13.7	23.2	32.7	14.3	23.9	33.5	17.4	27.7	38.1	17.2	27.3	37.4				
Marlborough District	0.0	17.0	35.2	0.0	15.0	32.0	0.0	14.6	31.1	0.0	7.8	19.7	0.0	7.5	18.9	0.0	12.3	27.0	0.0	13.5	28.7	0.0	15.1	31.3	0.3	17.5	34.6	1.1	18.2	35.3				
Masterton District	0.0	18.6	42.6	0.0	15.4	36.7	0.0	12.5	31.5	0.0	9.8	26.4	0.0	4.8	16.2	0.0	10.3	27.8	0.6	29.2	57.9	7.2	40.9	74.5	7.0	39.8	72.5	0.0	21.1	45.0				
Matamata-Piako District	0.0	21.6	45.9	0.0	23.9	49.5	0.0	25.6	51.9	0.0	15.7	35.9	0.0	17.6	38.7	0.0	12.8	30.5	0.0	15.4	35.1	0.0	10.8	27.1	0.0	12.7	30.4	0.0	14.9	34.1				
Napier City	0.0	11.7	23.6	0.0	11.6	23.6	0.8	13.5	26.1	0.8	13.4	25.9	1.8	14.5	27.1	1.2	13.2	25.2	5.2	20.2	35.1	5.3	20.3	35.4	6.5	22.2	38.0	2.3	15.3	28.3				
Nelson City	0.0	3.9	11.5	0.0	5.3	14.2	0.0	5.4	14.6	0.0	7.0	17.5	0.0	10.7	23.6	0.0	13.3	27.5	0.0	14.7	29.8	1.8	19.3	36.8	0.3	16.7	33.0	1.7	18.8	35.9				
New Plymouth District	0.0	8.9	18.4	0.0	7.0	15.4	0.0	8.4	17.4	1.1	11.7	22.3	4.0	16.5	29.0	4.9	17.9	30.9	3.9	16.2	28.5	2.4	13.6	24.9	2.9	14.6	26.2	5.9	19.3	32.7				
North Shore City	1.5	7.3	13.2	2.4	8.6	14.9	2.8	9.2	15.6	3.0	9.3	15.6	2.2	7.9	13.7	1.9	7.3	12.7	1.3	6.3	11.3	1.7	7.0	12.3	2.4	8.1	13.9	3.8	10.2	16.6				
Opoitiki District	0.0	43.4	109.4	0.0	25.3	75.0	N/A	0.0	N/A	0.0	16.5	56.2	0.0	23.9	70.7	0.0	23.1	68.3	0.0	38.5	97.0	0.0	50.9	116.2	0.0	66.9	142.5	0.0	53.0	121.0				
Otorohanga District	0.0	40.8	102.7	0.0	7.5	33.2	N/A	0.0	N/A	0.0	9.7	42.5	0.0	17.6	59.7	0.0	17.0	58.0	0.0	7.7	33.9	0.0	8.6	37.7	0.0	8.6	38.0	0.0	15.9	54.2				
Palmerston North City	0.0	10.6	21.5	0.7	12.7	24.6	4.1	18.7	33.3	6.6	22.5	38.5	4.1	18.5	32.9	3.5	17.4	31.4	2.2	14.8	27.3	2.2	14.3	26.5	2.6	14.6	26.6	4.3	17.9	31.4				
Papakura District	0.0	17.3	39.4	0.0	22.7	47.1	0.0	22.2	46.0	0.0	23.5	47.5	0.0	21.9	45.3	0.0	25.2	49.9	0.0	23.1	46.8	0.0	19.9	41.3	0.0	21.0	42.5	0.0	18.5	38.4				
Porirua City	0.0	21.3	45.5	0.0	19.8	42.2	0.0	12.5	28.6	0.0	16.9	36.0	0.0	20.5	42.4	3.1	33.5	64.0	6.9	39.0	71.1	13.9	50.4	86.9	17.2	53.7	90.2	15.1	51.7	88.3				
Queenstown-Lakes District	0.0	7.5	33.0	0.0	7.4	32.4	0.0	7.2	31.7	0.0	8.7	38.4	0.0	8.1	35.5	0.0	7.5	33.0	N/A	0.0	N/A	N/A	0.0	N/A	N/A	0.0	N/A	0.0	6.2	27.2				
Rangitikei District	0.0	9.1	31.1	0.0	9.0	30.5	0.0	12.6	37.2	0.0	8.0	27.2	0.0	16.8	45.3	0.0	24.8	59.1	0.0	29.1	66.4	0.0	16.6	44.7	0.0	21.3	53.6	0.0	25.5	60.8				
Rodney District	0.0	9.5	20.8	0.0	11.8	23.8	0.2	12.2	24.2	0.0	9.5	19.8	0.0	7.0	15.5	0.0	7.5	16.6	0.0	8.8	18.3													

