

# Slipping under the radar: worsened health outcomes in semi-urban areas of New Zealand

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**P**ersistent inequities in health outcomes, morbidity and mortality exist between urban and rural regions, an area of research that has received a significant amount of attention both nationally<sup>1-4</sup> and internationally.<sup>5,6</sup> In contrast, far less research has been directed toward areas that lie in between these classifications, such as small towns.<sup>7</sup> Many health studies also adopt the simple dichotomy of urban-rural, yet this does little to address the full spectrum of urbanicity, overlooking or misclassifying small towns that have vastly different population and geographic properties. This is particularly relevant within New Zealand where small towns, classified as minor urban areas with a population of 1,000–10,000, are often surrounded by rural areas with limited service accessibility<sup>8</sup> and are subject to unique population dynamics such as declining populations, ageing, lack of employment opportunities and high proportions of ethnic minority groups.<sup>9</sup> This poses particular challenges for populations living in these areas<sup>7</sup> and may have a significant impact on health outcomes.

Indeed, research dating back as far as 1989 has demonstrated spatial variations in health outcomes for small towns in New Zealand, with such areas having a significantly higher mortality rate than larger urban areas,<sup>1</sup> yet it remains a field of study that is often overlooked. In turn, our understanding of population demographics and health in such areas is limited. By not having an in-depth understanding of such relationships, it is possible that resources are not being allocated in a way that adequately services small towns and their resident populations.<sup>8</sup> This is an important area of

research which lacks current empirical evidence in the New Zealand context. We also consider health outcomes for both children and adults in order to understand if there is variation based on population demographics. Key priorities for the New Zealand Ministry of Health in 2019/20 are child wellbeing, mental wellbeing, and better population health outcomes supported by a strong and equitable public health and disability system.<sup>10</sup> In this communication, we explored these topics with a particular focus on small towns in New Zealand, finding notable similarities in spatial patterns when disaggregated by urban-rural classification.

Our research used powerful nationwide and nationally representative datasets: pooled New Zealand Health Survey (NZHS) data (2013/14–2016/17) that contained both measured height and weight of children (2–14 years) and adults, self-rated health, and diagnosed mental health disorders for adults; the National Immunisation Register (NIR, 2006–2017) and pooled ambulatory sensitive hospitalisations (ASH, 2011–2017) from the National Minimum Dataset (NMDS).

Main urban areas are classified as areas with a population >30,000, secondary urban areas between 10,000–29,999, minor urban areas between 1,000–9,999 and rural areas with a population <1,000 in accordance with Statistics New Zealand Urban-Rural Classification.<sup>11</sup> There is a slow but steady increase in the percentage of the population living in main urban areas alongside a relative decline in secondary urban and rural areas (Table 1). This has important implications as previous research has demonstrated associations between population decline and negative health outcomes.<sup>12</sup>

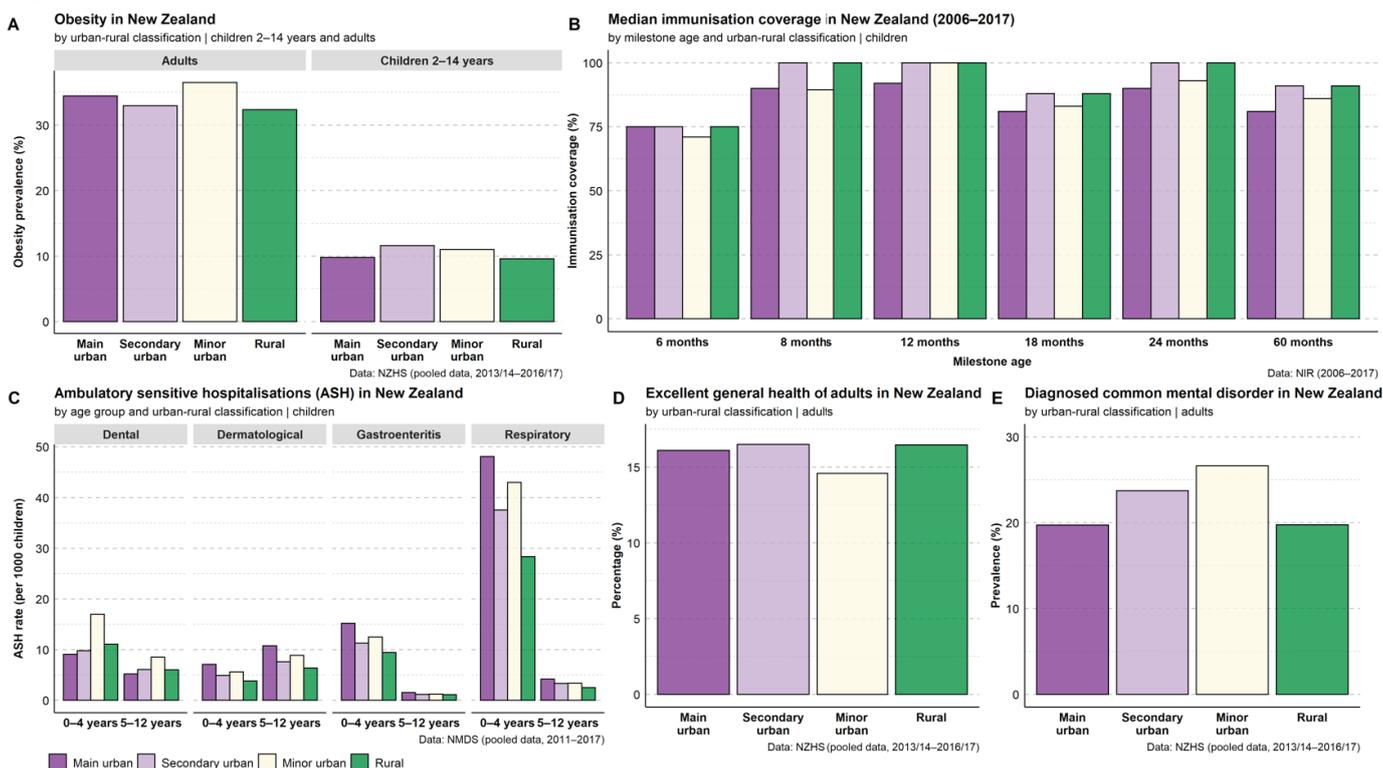
**Table 1:** Percentage of the New Zealand population by urban-rural classification (Data: Census 1991–2018).

Urban-rural	Percentage of the population					
	1991	1996	2001	2006	2013	2018
Main urban	69.6	70.2	71.0	71.8	71.9	72.2
Secondary urban	6.9	6.5	6.3	6.0	5.9	5.6
Minor urban	9.0	8.7	8.4	8.1	8.1	8.3
Rural (and other)	14.5	14.6	14.2	14.0	14.0	13.9

Adverse health outcomes were higher within minor urban areas than main urban or rural areas across nearly all outcomes. Prevalence of adult and childhood obesity was the highest for adults and the second highest for children in minor urban areas compared to secondary urban, main urban and rural areas (Figure 1A). Additionally, while immunisation coverage itself is not an adverse health outcome, low immunisation coverage certainly is, as areas with low immunisation rates can experience a higher occurrence of preventable diseases. Median immunisation coverage in minor urban areas was among the lowest

across all immunisation ages when split by urban-rural classification (Figure 1B). Furthermore, dermatological, respiratory and gastroenteritis ASH rates were highest in main urban areas and reduced gradually as rurality increased with the lowest rate seen in rural areas. Dental ASH rates were, however, highest in minor urban areas for children aged 0–4 and 5–12 years (Figure 1C). Finally, we complement our findings focused on children by also considering self-rated excellent health of adults (Figure 1D) and the prevalence of diagnosed mental health disorders in the adult population (depression, bipolar disorder and/or

**Figure 1:** Selected health outcomes in New Zealand differentiated by urban-rural categories.



anxiety disorder). Results show that adults living in minor urban areas have a lower percentage of self-rated excellent health (Figure 1D) and a higher prevalence of mental health disorders than those living in main urban, secondary urban or rural areas (Figure 1E), reflecting a similar pattern to health outcomes for children and exemplifying that minor urban areas experience worse health outcomes overall.

While it is difficult to explain these patterns with certainty, there are several plausible explanations. In the local context, we are not the first to report the adverse consequences of residing within minor urban or moderately populated areas.<sup>1,4</sup> While some small towns expanded in New Zealand, population of 40% of minor urban areas did not grow between 1981 and 2013<sup>7</sup> and there is still 8.3% of the New Zealand population (approximately 390,000 people in 2018) living in such areas (Table 1). Possible explanatory factors include low population growth and low growth in highly skilled employment, despite fairly high employment in minor urban areas overall.<sup>7,13</sup> This confirms earlier research that demonstrated a lower proportion of the population in minor urban areas had acquired tertiary qualifications.<sup>1</sup> This may suggest they are areas that struggle to attract and retain populations which may, in turn, be linked to the health outcomes.<sup>14</sup>

It is also plausible that a lack of connectedness in small towns may adversely affect population outcomes.<sup>15</sup> The success of a

minor urban area is said to be associated with the level of interaction that the area has with main urban areas.<sup>13</sup> A meta-analysis<sup>16</sup> confirmed the importance of social connectedness demonstrating that the influence of social relationships on risk for mortality were comparable with well-established risk factors for mortality such as smoking. While there is less evidence on social connectedness by urban-rural classification, those living in minor urban areas and small towns were more likely to report neighbourhoods as moderately fragmented.<sup>17</sup> These issues may be particularly important for minor urban areas not heavily influenced by main urban centres.<sup>15</sup> Policy programmes often focus on major urban regions or remote rural areas, and as a result of less public money being available for educational and health services, small towns may be disadvantaged.<sup>7,9</sup> The results presented here align with prior studies in New Zealand, suggesting a need to pay careful attention to the geographical context in which individuals and communities are situated.<sup>7,8</sup> A more explicit focus on small towns is needed to improve population health outcomes. A key response could focus on a more explicit regional policy with respect to health outcomes and geographical inequity in New Zealand. Recent policy developments establishing a provincial growth fund<sup>18</sup> have attempted such a response in an economic context, yet more work is required in social and health contexts to ensure equitable outcomes for populations living in small towns of New Zealand.

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