

THE IMPACT OF COVID-19 ON ILLICIT DRUG TRAFFICKING IN NEW ZEALAND

A dissertation submitted in fulfilment of the requirements for the degree of
Master of Criminal Justice at the University of Canterbury

Alana Quinlivan

University of Canterbury

Department of Criminal Justice

22,000 words

2022

Acknowledgements

First and foremost, I would like to thank my supervisor Dr. Neil Boister for your continued support and wisdom throughout this entire research process. I feel privileged to have worked and learnt under your guidance. I will forever appreciate the interesting conversations we have had.

I'd like to extend a special thank you to those who agreed to participate in the interviews I completed throughout this dissertation. Your knowledge has proven to be invaluable, and I am so lucky to have had the opportunity to speak to you all.

To all of the staff at the University of Canterbury who have helped me along the way, thank you. Dr. Jarrod Gilbert, your work with the University has truly ignited my passion in the field of Criminal Justice, and for that, I am so grateful.

Finally, thank you to my mother and father for your endless support and encouragement through what has been a challenging few years. Without you both, I wouldn't be where I am today. Brenna, thank you for always believing in me. I am so proud to call you my twin sister. To my brother Thomas, your intellect has truly inspired me and pushed me to work harder every day.

Abstract

Illicit drug trafficking requires stable supply chains, which depend on social stability generally. In turn, the trafficking, supply, and harms associated with drug consumption can quickly change alongside disruptions to everyday functioning and subsequent illicit drug markets. COVID-19 is a global pandemic that has put a strain on all aspects of life both in New Zealand and internationally, provoking government interventions to close borders and restrict social interactions worldwide. These changes have caused unprecedented disruptions to social, economic, and political functioning throughout society. Therefore, the stability required to operate efficient illicit drug supply chains has collapsed, making an impact on global and local illicit drug trafficking as a result.

Although there has been some effort put in place to understand new trends regarding drug trafficking and manufacture, the handful of research we have is limited. There is a clear lack of emphasis placed on the implications surrounding an inability to bring drugs from overseas. In summary, there is a need for a better understanding of how illicit drug markets are working in a new environment where COVID-19 is prominent, and a structured approach to enforce laws surrounding this as a result.

Using a comprehensive analysis of many different sources this dissertation outlines the impacts of COVID-19 on international drug trafficking, dealing, manufacture and consumption, before providing a comparison to a New Zealand national context. Basing its conclusions on both

qualitative and quantitative data, this dissertation argues that illicit drug markets were heavily disrupted shortly after the implementation of COVID-19 related restrictions, however such markets and groups were identified as adaptable, with many already beginning to recover.

TABLE OF CONTENTS

INTRODUCTION.....	9
CHAPTER 1: REVIEW OF LITERATURE	13
1.1 INTRODUCTION.....	13
1.2 IMPACTS OF PREVIOUS GLOBAL CRISES ON ILLICIT DRUG MARKETS.....	13
1.3 COVID-19’S IMPACT ON ILLICIT DRUG TRANSPORTATION NETWORKS	17
1.4 THE NEW ZEALAND CONTEXT.....	20
1.5 IMPACTS ON DRUG SAFETY AND PURITY	21
1.6 IMPACTS ON PRICING AND DRUG-RELATED VIOLENCE.....	23
1.7 CONCLUSION.....	24
CHAPTER 2: METHODOLOGY.....	25
2.1 RESEARCH DESIGN.....	25
2.2 IN-DEPTH INTERVIEWS	26
2.2.1 ETHICAL CONSIDERATIONS	27
2.3 INTRODUCTION TO DATA ANALYSIS.....	30
2.3.1 ARREST & APPREHENSION DATA FOR ILLICIT DRUG OFFENCES.....	30
2.3.2 WASTEWATER SAMPLING	31
2.3.3 STREET PRICES FOR ILLICIT DRUGS	33
2.3.4 ILLICIT DRUG CONSUMPTION SAFETY DATA	34
RESULTS CHAPTER 3: THE NATURE OF NEW ZEALAND’S ILLICIT DRUG MARKETS PRE- AND POST- COVID-19.....	35
3.1 PRE-PANDEMIC ILLICIT DRUG MARKETS IN NEW ZEALAND.....	35

3.2 CHANGES TO THE STAFFING AND RESOURCE OF MONITORING ILLICIT DRUGS IN NEW ZEALAND.....	37
3.3 CHANGES IN ARRESTS AND APPREHENSIONS FOR ILLICIT DRUG RELATED OFFENDING	39
RESULTS CHAPTER 4: IMPACTS OF COVID-19 ON NEW ZEALAND ILLICIT DRUG MARKETS	41
4.1 INITIAL DISRUPTIONS	41
4.2 CHANGES TO THE WAY ORGANISED CRIME GROUPS WORK.....	42
4.3 NEW METHODS OF SUBVERTING COVID-19 SYSTEMS	44
4.4 CHANGES TO LOCAL ILLICIT DRUG MANUFACTURING	45
4.5 ILLICIT DRUG CONSUMPTION LEVELS.....	48
4.5.1 METHAMPHETAMINE	50
4.5.2 MDMA.....	51
4.5.3 COCAINE	52
4.6 ILLICIT DRUG PRICES.....	53
4.6.1 METHAMPHETAMINE	54
4.6.2 MDMA.....	55
4.6.3 COCAINE	57
4.7 CHANGES TO THE COMPOSITION & PURITY OF ILLICIT SUBSTANCES	58
4.7.1 METHAMPHETAMINE	61
4.7.2 MDMA.....	62
4.7.3 COCAINE	65
4.7.4 OTHER DRUG ADULTERATION AND CHANGES.....	66

4.8 CHANGES TO ILLICIT DRUG RELATED HARM	66
RESULTS CHAPTER 5: ADAPTABILITY AND RESILIENCE	68
5.1 INTRODUCTION.....	68
5.2 THE HISTORY OF ILLICIT DRUG TRAFFICKING HAS HELPED GROUPS REBOUND	68
5.3 DIFFERENCES BETWEEN THE FIRST AND SECOND WAVES OF LOCKDOWN.....	69
RESULTS CHAPTER 6: IMPACTS OF COVID-19 ON INTERNATIONAL ILLICIT DRUG MARKETS ...	70
6.1 INTRODUCTION.....	70
6.2 CHANGES TO THE WAY ORGANISED CRIME GROUPS WORK.....	71
6.3 ILLICIT DRUG MANUFACTURE.....	72
6.4 ILLICIT DRUG CONSUMPTION LEVELS.....	74
6.5 ILLICIT DRUG PRICES.....	77
6.5.1 INTRODUCTION	77
6.5.2 METHAMPHETAMINE	78
6.5.3 MDMA.....	78
6.5.4 COCAINE	79
6.6 CHANGES TO THE COMPOSITION & PURITY OF ILLICIT SUBSTANCES	80
CHAPTER 7: DISCUSSION.....	81
7.1 INTRODUCTION.....	81
7.2 INITIAL CHANGES BECAUSE OF COVID-19 LIKELY CAUSED DISRUPTIONS IN THE ILLICIT DRUG SPACE	82
7.3 METHAMPHETAMINE	86
7.4 MDMA.....	90

7.5 COCAINE.....	94
7.6 ADAPTABILITY AND RESILIENCE.....	96
CHAPTER 8: CONCLUSION.....	99
8.1 CONCLUSION.....	99
8.2 LIMITATIONS OF THE STUDY.....	104
8.3 RESEARCH IMPLICATIONS.....	105
BIBLIOGRAPHY.....	107

Introduction

COVID-19 is a severe acute respiratory disease caused by a coronavirus named SARS-CoV-2 (Ciotti et al., 2020). This disease was first discovered in China in the year 2019, and can damage one's lungs, airways, and other organs (Ciotti et al., 2020). After COVID-19 was declared a global pandemic by the World Health Organisation on March 11, 2020, the whole world began to change in many ways. As a response to COVID-19, countries were locked down and international borders were closed in an attempt to prevent further spread.

It is important to note that the reactions to and impacts of COVID-19 differed greatly in many different countries worldwide. Almost all countries worldwide closed their borders and international travel routes to some degree following the spread of the pandemic in 2020, however the severity of local pandemic-related restrictions differed depending on the country and government they were operating under (Van Damme et al., 2020). New Zealand's response of COVID-19 elimination in 2020 has been considered successful compared to other countries (Balmford et al., 2020; Pearce et al., 2020). In contrast, many countries overseas did not take sufficiently stringent action or didn't react quickly enough. In turn, areas such as Europe and North America saw much more severe impacts of the pandemic, with a slower rate of recovery and higher death rates being observed as a result (Balmford et al., 2020). States' individual responses and reactions to COVID-19 can make a significant difference to the implications for a country's illicit drug markets, as such markets change regularly depending on context and

situation (UNODC, 2020). It is therefore important to consider such contexts when comparing the impact of COVID-19 on New Zealand's illicit drug markets with the situation in other States.

Illicit drugs are trafficked across national borders from 'producer states' to 'consumer states' where they are consumed. It follows that there is a real possibility that COVID-19 has had a great impact on illicit drug markets. It is known that the closing of borders and implementation of lockdown measures caused great disruption to many different aspects of normal life. There has, however, been little emphasis placed on these COVID-19-related disruptions in the space of illicit drug markets and organised crime. In New Zealand, the networks used to import drugs are quite limited, as the country is not surrounded by land borders in the same way many countries overseas are. This means that New Zealand is in a unique position when it comes to measuring the way in which COVID-19 has impacted drug trafficking, supply, manufacture, and consumption.

This study explores the extent to which the New Zealand experience of COVID-19 on illicit drug trafficking adheres to the general global trend (if one can be said to exist) or is partly or wholly unique. Further, this research aims to examine illicit drug trends and usage in New Zealand and global contexts to determine whether the safety and quality of illicit drugs may have been impacted because of the pandemic. There is currently a lack of research surrounding the impact of COVID-19 on illicit drug trafficking at both a New Zealand and international level. This dissertation will plug gaps in other literature surrounding this idea. This study's purpose is to

determine whether COVID-19 has had an impact on illicit drug trafficking between countries, and the implications this may have for illicit drug quality and consumption safety.

Research Questions

This dissertation will address the following research questions:

1. Has the COVID-19 pandemic impacted illicit drug trafficking globally?
2. To what extent has COVID-19 impacted New Zealand drug trafficking in comparison to the overall global situation?
3. What methods are being used to distribute and manufacture illicit drugs in the environment of a pandemic?
4. Is the quality and safety of illicit drugs worse than it was before COVID-19?

Understanding the way that illicit drug trafficking normally operates supports the hypothesis that COVID-19 has in fact made a difference in this realm. Lockdown restrictions and border closures would appear to make it highly likely that COVID-19 has a restrictive impact on illicit drug trafficking and availability in some way (Dietze & Peacock, 2020; Degenhardt et al., 2005; Degenhardt et al., 2006; Enns et al., 2020; Giommoni, 2020). Restrictive changes in the supply and availability of drugs because of these restrictions may in turn affect drug consumption behaviours. This would tend to reinforce the hypothesis that the quality and safety of drugs is worse than it was before the onset of COVID-19.

Structure of the dissertation

At the outset, an in-depth understanding of the overall international illicit drug market and trafficking system is essential to gain information on how these networks operate and how they may be impacted by COVID-19 as a result. Chapter one of this dissertation examines the literature on the nature of illicit drug markets in the context of global crises and COVID-19 to determine the initial assumptions for this research. Chapter two of this dissertation will outline the methodology of the research and related analyses. Chapters three to six will be the 'results' sections for each topic area. In chapter three, the nature of New Zealand's illicit drug markets and trafficking methods will be discussed, before revealing the key changes to national enforcement and prevention strategies within the space of illicit drug monitoring following the pandemic and related lockdowns. The New Zealand context, themes, and implications of COVID-19 in relation to these drug markets will then be analysed in chapters four and five. Moreover, chapter six will examine the international context of illicit drug trafficking in the environment of COVID-19 to comprehend how New Zealand's situation differs from other countries and the rest of the world. These key points of focus will allow the dissertation's discussion in chapter seven to draw conclusions on the extent to which COVID-19 and related responses have impacted illicit drug markets both in New Zealand and internationally.

Chapter 1: Review of literature

1.1 Introduction

COVID-19 is a relatively new phenomenon, meaning there is currently little information on its impact on illicit drug trafficking. Determining the pandemic's impact on illicit drug trade and consumption must thus be based on a small pool of literature written about the pandemic so far in combination with literature written about the impact that previous global crises have had on illicit drug markets both globally and nationally. The significant global crises that have shown some similarities to how COVID-19 operates include major hurricanes, opioid crises, and economic crises. Although the nature of the pandemic differs slightly to the crises we have observed in the past, it is important to use these limited sources to provide some indication of how illicit drug traffickers respond to large disruptions.

1.2 Impacts of previous global crises on illicit drug markets

Major hurricanes in the United States have obstructed transportation networks and even impaired some drug markets in the past, which is similar to what has been observed with COVID-19 so far (UNODC, 2020; Zolopa et al., 2021). For example, research on Hurricane Katrina, which occurred in New Orleans in 2005, found that the disaster disrupted many everyday functions in the same way that COVID-19 has (Dunlap et al., 2007). Agencies such as the police and health systems were severely impacted by the flooding and evacuations that

accompanied the hurricane (Dunlap et., 2007). As a result, the illicit drug markets in New Orleans suffered from similar disruptions (Dunlap et al., 2012; Zolopa et al., 2021).

Because an early warning system was in place prior to the hurricane, it was found that many New Orleans locals stockpiled illicit drugs for use following the expected disaster (Dunlap et al., 2007). This meant that drug use was at a heightened level shortly after the hurricane, adding to the dangerous amounts of illicit drug harms that were already prevalent in the state of New Orleans (Dunlap et al., 2007). Alongside this change, illicit drug markets were almost destroyed through supply restrictions competing with demand increases (Bennett et al., 2011). Moreover, because of these disruptions, drug prices, drug use, and the risk of violence associated with illicit drug markets increased and have only recently started to improve (Dunlap et al., 2012; Zolopa et al., 2021). It will be interesting to see if such linear results were true elsewhere, as the effects of Hurricane Katrina seemed to collapse the New Orleans drug market and create a range of negative effects on every aspect of substance use (Dunlap et al., 2012; Zolopa et al., 2021).

The ‘Taliban cutback’ occurred in Afghanistan in the year 2000 following the Taliban ban of opium in the country, which led to a sharp drop in illicit substance supply at the time (Eligh, 2020; Giommoni, 2020). The Taliban cutback is another key example of a global event that can aid in predicting how COVID-19 may impact worldwide illicit drug markets. At the time, Afghanistan was supplying a vast majority of the world’s opium, however this changed drastically following the cutback (Eligh, 2020). After the Taliban regime banned opium poppy cultivation, production

ceased to less than 10% of the production levels they were achieving just one year prior (Eligh, 2020; Giommoni, 2020). This disruption caused major changes in the global opium trade, as prices increased while purity decreased (Eligh, 2020).

In addition, the Australian heroin shortage which resulted from the 'Taliban cutback' in 2001 provides some indication as to what the effects of drug supply shortage may have on New Zealand, as both countries are more vulnerable to external shocks because of their remote geographical location (Degenhardt et al., 2005; Degenhardt et al., 2006; Giommoni, 2020). Following the Australian heroin shortage, heroin overdoses decreased by up to 15%, the price of heroin increased, and the purity decreased (Eligh, 2020). Evidently, no research has pointed to any changes in drug market-related violence, potentially alluding to the fact that this aspect of operation remained stable following opium supply shortages. This pattern is different from what was observed following Hurricane Katrina, causing widespread supply, use, and quality collapses while observing pricing spikes at an international scale (Eligh, 2020). It is likely that the impact of the 'Taliban Cutback' on illicit drug users differed to that of Hurricane Katrina because the starting event was more remote and not so easily anticipated by consumers in non-producer countries like Australia. However, some similarities between the effects of these crises were observed, with illicit drug traffickers making structural adaptations to their methods of operation to reduce their impact and maintain market stability to some degree (Eligh, 2020).

With expectations of extreme global economic disruptions resulting from the COVID-19 pandemic, economic crises may be another interesting model to focus on to predict these

implications before they happen. The global economy was predicted to contract by 3% in 2020 prior to COVID-19, which is far more than the degree to which it contracted during the financial crisis of 2008 (UNODC, 2020). The global recession in 2008 did, however, have several different effects on drug markets worldwide (Eligh, 2020; UNODC, 2020), with illicit drug use increasing and drugs becoming cheaper throughout this time (UNODC, 2020). It is known that financial crises directly impact both employment and the drug market, as demand for more expensive drugs is likely to decrease with more people not being able to afford to pay for such substances (Zolopa et al., 2021). Furthermore, with socioeconomic disadvantage closely tied to criminality, the increased risk of unemployment due to economic crises may increase the risk of involvement in activities relating to illicit drug manufacture or trafficking (UNODC, 2020). With the increased rates of unemployment coinciding with COVID-19, in combination with the inevitable economic downturn, it is clear to see that similar, if not worse, implications may be demonstrated following the pandemic. Again, the effects of the global recession in 2008 saw a slightly different pattern than what was observed in the past crises identified above. Based on modelling from this global event, it seems that an economic downturn may decrease the price of illicit substances due to a decrease in high-priced substance demand. Further, trouble within drug markets may be likely to increase because of unprecedented unemployment rates following an economic recession.

These crises used to model future disruptions in drug markets can provide insight into how drug trafficking organisations can adapt to change; however, it has been argued that they are likely not applicable to today's world's situation (Eligh, 2020; Giommoni, 2020; Zolopa). It is

conceivable that the impacts that COVID-19 has had on drug markets are possibly more complex and multifaceted than modelled studies can portray (Enns et al., 2020; Giommoni, 2020; Rhodes, 2009). This seems likely when considering the impacts of global crises that have occurred in the past, as each event that could model aspects of pandemic-related effects have yielded slightly different outcomes for illicit drug markets at a local and international level. Past information on global crises can, however, exemplify the resilience of drug trafficking organisations in a way, with all actors in the illicit drug market adapting quickly alongside changes in their environments (Eligh, 2020; Namli, 2021; Tzvetkova et al., 2016).

1.3 COVID-19's impact on illicit drug transportation networks

With COVID-19 closing borders and limiting international travel, illicit drug transportation networks are guaranteed to be impacted to some degree (Dietze & Peacock, 2020; Degenhardt et al., 2005; Degenhardt et al., 2006; Enns et al., 2020; Giommoni, 2020). Travel restrictions will not only impact passenger imported drugs but will also impact any air freight coming in, as passenger crafts also carry freight and mail that have the potential to conceal more of these substances (Dietze & Peacock, 2020). In addition, supply chains of illicit drugs were shown to be highly disrupted by the pandemic in much of the literature prior to COVID-19 and its implications (Degenhardt et al., 2005; Degenhardt et al., 2006; Dietze & Peacock, 2020; Enns et al., 2020; Giommoni, 2020; UNODC, 2020; Zolopa et al., 2021). Few studies have measured the impacts of COVID-19 on illicit drug trafficking. However, the results that have been published

suggest that these impacts increase the seizure of illegal substances at the border (Namli, 2021; Palamar et al., 2021; UNODC, 2020).

On the other hand, reports have been released to suggest that in some countries, the context of a global pandemic may actually help illicit drug trafficking and supply (Eligh, 2020; UNODC, 2020). The recognition of the impacts of COVID-19 on illicit drug markets as dependent on individual contexts shows that results will be seen as different throughout the world (UNODC, 2020). For example, Eligh (2020) found that the capacity of law enforcement and border screening can be debilitated due to the illness of frontline staff or the refocus on pandemic related duties and responsibilities over illicit drug enforcement. This debilitation has been portrayed through the police force in New York (Eligh, 2020). It was found that in one day in April 2020, 18.5% of the uniformed force were on sick leave, with another 1775 uniformed members having already tested positive for COVID-19 (Eligh, 2020). Border security in many countries has switched to a focus on identifying and preventing those with COVID-19 from entering their territories rather than detecting drug smuggling as they had previously (Eligh, 2020). These relegations can potentially provide opportunities for those involved in illicit drug markets to capitalise on these vulnerabilities. However, it is unclear whether the drug suppliers felt the same strains of COVID-19, as they may have become sick and unable to carry out their business in the same way that illicit drug detection agencies did.

Reports are beginning to suggest that COVID-19 and the measures implemented to prevent its spread have impacted illicit drug markets, trends, and consumption (Eligh, 2020; European

Monitoring Centre for Drugs and Drug Addiction [EMCDDA], 2020a; UNODC, 2020). In one study using an online survey of adult illicit drug users, a reduction in illicit drug consumption was identified, with respondents citing a drop in drug availability and reduced access to sources of drug supply as critical factors for this reduction specifically (EMCDDA, 2020a). Similarly, issues surrounding the acquisition of illicit drugs through crypto markets were identified in self-reported surveys of illicit drug users in the United States (Bergeron et al., 2020). Before the enforcement of lockdowns in the US, the amount of 'problematic orders' from illicit drug crypto markets stood at around 20% of all reports, however this spiked to 36% just six days after the country went into lockdown (Bergeron et al., 2020). These problems were not seen as permanent. A decrease in such issues and customers not receiving packages was observed whilst still holding lockdown measures, suggesting the high levels of adaptability accompanying illicit drug markets (Bergeron et al., 2020). Increases in the use of the dark web for illicit drug trade have been identified post-COVID-19, again suggesting the ability of those involved in illicit drug markets to evolve alongside changing circumstances (EMCDDA, 2020a). The idea that the market is adaptable has, however, only been suggested in one piece of research so far, in the form of a 2% increase reported by self-reported survey respondents (EMCDDA, 2020a).

The legitimacy of findings in these studies may come into question because of their inherent limitations, which are primarily the result of the current nature of research surrounding COVID-19. Although Palamar et al.'s (2021) findings favoured the hypothesis that COVID-19 has had a significant impact on illicit drug trafficking, this research was restricted to United States illicit drug seizure statistics. Other research focusing on a single country's experience also restricted

itself to only using qualitative self-reported data by locals who either used or sold illicit drugs within the past year (Bergeron et al., 2020; Namli, 2021). On the other hand, Eligh (2020) and UNODC (2020) could be seen as much more successful in their research, utilising recent data from a diverse range of sources. These sources included information from government authorities, the media, and evidence from intelligence agencies in individual countries worldwide (Eligh, 2020; UNODC, 2020). Similarly, the EMCDDA (2020a) employed a trend spotter methodology, which involved various approaches and data collection from numerous qualitative and quantitative sources. These research tactics increased the viability and specificity of results to draw more reliable conclusions.

1.4 COVID-19's impact on illicit drug transportation networks: The New Zealand context

It seems likely that New Zealand's legal restrictions and law enforcement response to COVID-19 will confirm the results of studies from elsewhere and show an increase in illicit drug seizures. UNODC (2020) identified that law enforcement strategies toward COVID-19 play a significant role in determining whether interceptions of drugs will increase or decrease. On the one hand, lockdown measures may reduce staffing for intelligence work; however, an increase in efforts to enforce these lockdown measures may aid in the interception, monitoring and control of drugs coming in through the borders (UNODC, 2020). New Zealand has also followed a similar law enforcement response to other States, strictly imposing lockdown rules and the use of staff (Henrickson, 2020). This again demonstrates the importance of external factors relevant to an individual country when determining the effects a pandemic will have on illicit drug trafficking.

Restrictions on air passenger transport may also have a greater impact on New Zealand's illicit drug markets because of its isolated geographical location. Several studies have identified impacts on Australia's drug supply chains, connecting major disruptions resulting from COVID-19 and Australia's geographical remoteness from source countries (Dietze & Peacock, 2020; Degenhardt et al., 2005; Degenhardt et al., 2006; Giommoni, 2020). Because countries like Australia and New Zealand predominantly get their drugs imported from overseas, shocks to illicit drug supply routes are likely to disproportionately impact these countries by reducing supply and availability in non-producer countries, while increasing illicit drug stockpiles in manufacturing States (Dietze & Peacock, 2020).

1.5 Impacts on drug safety and purity

The risk of drug contamination may be heightened as a result of market disruptions, as manufacturers could be more compelled to put additional substances in their products due to limited supply (Beletsky & Davis, 2017, Dietze & Peacock, 2020; Eligh, 2020; Enns et al., 2020; Friedman et al., 2008; Rhodes, 2002; Zolopa et al., 2021). In normal circumstances, research suggests that the adulteration of substances is rare in a functioning drug market, as reputation is an important aspect of illicit drug trade (Coomber & Maher, 2006). This means that purity can therefore act as an indicator of market disruption (Coomber & Maher, 2006).

Previous studies have shown that most drug users do not test their products before or after purchasing (Coomber & Maher, 2006; Decorte, 2001), increasing the risks and dangers associated with taking illicit drugs in the global setting of the pandemic. Concerns about deadly adulterants such as fentanyl being added to illicit drugs within the environment of COVID-19 seemed to be a common theme throughout the literature (Dietze & Peacock, 2020, Enns et al., 2020; Zolopa et al., 2021). In June 2020 during the height of COVID-19, for example, the highest number of illicit drug toxicity-related deaths was recorded in British Columbia, alongside an increase in the number of cases that involved large levels of fentanyl (Enns et al., 2020). A lack of supply may also lead to withdrawal symptoms and desperation, leading people to feel okay with putting unknown substances in their bodies (Dietze & Peacock, 2020).

It is evident that drug purity is likely to be impacted by implications stemming from the COVID-19 pandemic, as exemplified through recent texts, and when studying crises that have occurred in the past (Beletsky & Davis, 2017, Dietze & Peacock, 2020; Eligh, 2020; EMCDDA, 2020a; Enns et al., 2020; Friedman et al., 2008; Rhodes, 2002; Zolopa et al., 2021). Although illicit drug markets have been identified as resilient and susceptible to change, the purity of a drug is likely to stand as a lasting impact, taking a much longer time to rebound compared to other aspects of the market (Eligh, 2020).

Of the research reviewed for the purposes of this dissertation, only one study found no quality changes in the drugs participants were encountering (Namli, 2021). This, however, may be a direct result of the nature of their study, as it involved a small sample size surrounding

qualitative self-reports in Germany alone (Namli, 2021). It is important to note that COVID-19 is a complex issue that uniquely impacts each country depending on their response and individual contexts. This means that conclusions surrounding the global picture of illicit drug markets must not be drawn based on one country's research alone.

1.6 Impacts on pricing and drug-related violence

Four studies have looked at the impacts that COVID-19 might have on the pricing of illicit drugs (Eligh, 2020; EMCDDA, 2020a; Namli, 2021; UNODC, 2020). Although expert interviews conducted in the EMCDDA (2020a) briefing alongside data collected by UNODC (2020) indicated an increase in drug pricing at a local level, neither of the other two studies found that prices fluctuated in the drug market (Eligh, 2020; Namli, 2021). It was found, however, that an increase in the number of "rip off cases" compared to what was observed pre-COVID-19 occurred, in which participants of a study acknowledged that they were given less of a drug than what they had paid for (Eligh, 2020). These results again portray the complexity of the issue at hand. Each country is impacted differently, with significant disruptions identified at a retail level rather than at an international scale (Eligh, 2020; EMCDDA, 2020a; UNODC, 2020). Research on past crises has shown that illicit drug markets have been quick to bounce back from marketplace shocks regarding pricing specifically, with illicit drug prices expected to return to pre-COVID-19 levels fairly quickly (Eligh, 2020).

Similarly, there is a dearth of research on the potential impacts that COVID-19 may have on illicit drug-related violence. As identified by Tzvetkova et al. (2016), this could be because violence has been identified to be much less of a concern than society thinks, with drug trafficking organisations often working alongside each other to avoid law enforcement and increase their profits. Conflicts and violence around these organisations are not overly important in the eyes of an illicit drug trafficker, as being caught or even noticed by the police is of much greater concern to them (Tzvetkova et al., 2016). Further, one research study showed no change in violence reported by participants or by any news outlets following the introduction of COVID-19 (Namli, 2021). Neither of these studies can thoroughly verify the impacts that COVID-19 can have on drug-related violence, as both were restricted self-report based qualitative studies with small sample sizes (Namli, 2021; Tzvetkova et al., 2016). On the other hand, EMCDDA and Europol (2020) have found that drug-related violence has been reportedly increasing throughout Europe, notably through specific local conflicts.

1.7 Conclusion

The literature surrounding past global crises and our current situation regarding COVID-19 supports the conclusion that the pandemic is likely to affect illicit drug markets and the safety of drug consumption to a degree. It is important to note that a global crisis like COVID-19 has not been witnessed in the last century, meaning the modelling provided by looking at the past or less severe crises will not guarantee the same effects now. Ultimately, the research on past global crises does portray how resilient and adaptable illicit drug markets are – suggesting that

although there may be change as a result of COVID-19, such markets are anticipated to survive. Overall, the literature did give support to the hypothesis that illicit drug markets will be impacted at both a global and New Zealand national level. These changes will likely become more apparent as research continues.

Chapter 2: Methodology

2.1 Research design

It was decided in this study to limit the principal focus of the research to the implications of COVID-19 on methamphetamine, MDMA, and cocaine, because they were considered New Zealand's three main problem illicit drugs by experts in the field during the initial stages of this research. All three substances are classed as either 'high risk' or 'very high risk' in the Misuse of Drugs Act 1975. The specific implications of COVID-19's impact on illicit drug trends and safety revolved around the quantity, quality and availability of these substances. Illicit drug trafficking was also discussed at a more general level, with some smaller scale substances mentioned.

These factors were researched in the context of the current COVID-19 era, in comparison to the years leading up to the official declaration of the global pandemic by the World Health Organisation on March 11, 2020.

A mixed methods approach was used to gain information for this dissertation, relying on qualitative and quantitative data. This data was gathered in the form of in-depth semi-

structured interviews with experts in the illicit drug field as well as data sourced through Official Information Act requests and publicly available information. The purpose of this design is to present supporting data from different sources on the same overall research questions, with both qualitative and quantitative results compared and contrasted (Turner, Cardinal & Burton, 2017). The rationale for using mixed methods is that both qualitative and quantitative methods have their limitations and are not adequate by themselves to express the complex trends and issues surrounding the situation (Turner, Cardinal & Burton, 2017). Additionally, COVID-19 is a relatively new global phenomenon that does not have a wide range of data currently available, especially in a New Zealand context, meaning both forms of data were utilised to fill any gaps in the current data space.

2.2 In-depth interviews

The expert interview as a method of qualitative research aims to collect data about a specific field of interest by developing individual opinion based on social realities (Doring, 2021).

There are many ways to conduct expert interviews (Doring, 2021). The versatility of the method meant that this research sought to answer questions in its own style. The qualitative data analysed in this research was provided by several in-depth semi-structured interviews with experts in illicit drug trafficking, monitoring, and harm prevention spaces. These interviews were conducted in accordance with a set of questions designed to highlight the participants' views of New Zealand's illicit drug markets in the context of COVID-19 compared to what they had observed prior to the onset of the pandemic. While the method chosen was exploratory in

nature, the interviews answered some questions that could not be addressed by other forms of data, as it proved difficult to gain access to some aspects of knowledge due to the covert nature of illicit drug trafficking and detection (Bogner & Menz, 2009).

The interview participants (n = 6) were selected individuals from organisations and in private practice in several cities in New Zealand, including Wellington, Auckland, and Tauranga.

Participants consisted of experts from organisations such as the National Drug Intelligence Bureau, the New Zealand Police's National Organised Crime Group, the New Zealand Drug Foundation, the New Zealand Customs Service, and one Defence Lawyer specialising in illicit drug trafficking. Initially, connections were established through publicly available email addresses of illicit drug experts that had previously spoken to the media in relation to illicit drug trafficking and harm prevention. From there, a snowball sample was obtained, in which further contacts were developed from initial connections and expert guidance on suitable participants to aid in the research. The interviews were conducted from September to November 2021. All participants' names were made confidential throughout this research due to the sensitive nature of their work in crime prevention, but labels were used in the analysis to describe their specific field of expertise.

The interviews sought out both technical knowledge about the construction and processes of illicit drug trafficking, as well as process knowledge about how illicit drug trafficking might have impacted the ways in which illicit drug traffickers operated and maintained business (Bogner & Menz, 2009). Participants also disclosed their personal interpretations of illicit drug trafficking

in the context of a pandemic by comparing their past experiences and knowledge of such organisations with the present. A broad set of questions were used as a guide to address different aspects of the changes in illicit drug trafficking prior to and following the outbreak of COVID-19. The questions focused on the changes in availability, distribution methods, and harms observed in relation to illicit drugs both before COVID-19 existed, and in the current situation of the pandemic. It was predicted that these questions would facilitate an open-ended discussion rather than a stricter and more specific 'question-answer' interview structure (Doringer, 2021).

The usual time limit for each interview took approximately 45 minutes, however this varied depending on the interviewee, with some only lasting 20 minutes and others stretching to one hour. Due to the current situation with COVID-19 and a decreased ability to travel, only two of the six interviews were conducted in-person. Additionally, three interviews were conducted using Zoom with online video and audio features, and two were conducted over the phone. All interview participants consented to recording, which was carried out using the researcher's personal recording device. The aim was to ask all participants similar questions tailored to their field of expertise, however the interviews often departed from the set of prepared questions, as follow-up questions were asked based on the replies of the participant.

In-depth qualitative data was analysed to show multiple perspectives and depths surrounding the research topic in question. The qualitative data was analysed thematically, in which answer themes were grouped together to consolidate any evidence given (Evans & Lewis, 2018). There

are several steps in thematically analysing in-depth interviews. Firstly, the transcripts were read, with notes being made on each important point, before being coded and divided into themes. These themes were then linked to results from other interviews and compared, to portray the information gathered and to attempt to address the research questions with answers substantiated by evidence. Because the number of in-depth interviews was small, with only eight conducted overall, no software was needed.

2.2.1 Ethical considerations

Because there was some form of human interaction through in-depth interviews within the research, approval by the University of Canterbury Ethics Committee was required and obtained. Psychological risks and personal or sensitive issues may be of some concern in this research, as questions could bring up negative experiences that participants may have witnessed in the field of illicit drug monitoring. To avoid harm in this regard, participants were advised that they could withdraw from the interview at any time and were given a list of the interview questions and written project information before the interview started. The participants involved were not intrinsically vulnerable in any way and were all able to give informed consent. Although the investigation of illegal behaviours was being looked at, there was no opportunity for participants to disclose specific details on any cases or disclose their own criminality. Interview participants could be anonymous if requested, however the organisation they were from was recorded.

2.3 Introduction to Data Analysis

Alongside the qualitative methods, data was also obtained from official records in both New Zealand and through agencies such as the United Nations Office on Drugs and Crime [UNODC], the European Monitoring Centre for Drugs and Drug Addiction [EMCDDA], the Australian Criminal Intelligence Commission [ACIC], and the Drug Enforcement Agency [DEA] in the United States. The quantitative data utilised in this research focused on five aspects of change in local and international drug environments, including arrests and apprehensions for illicit drug offences, drugs detected in wastewater, illicit drug prices, illicit drug purity levels, and illicit drug-related hospitalisations. This information was largely used to provide a contextual picture of illicit drug trafficking in the environment of a pandemic, with interviews filling in details that could not be obtained quantitatively. Further, data sourced from international organisations was also used to paint a comparative picture of how New Zealand's drug scene was impacted when compared to the impact in other States.

2.3.1 Arrest and apprehension data for 'illicit drug' offences

Data on the proceedings against offenders for illicit drug-related offending was obtained through an Official Information Act Request to the New Zealand Drug Intelligence Bureau [NDIB]. A proceeding in this sense counts each separate occasion when the police deal with an alleged offender for one or more offences. Proceedings for official statistics are usually classified according to the most serious offence the offender is dealt with on that occasion,

therefore the figures studied for the purpose of this research only included the most severe category of offending a person was subject to, if their offending was included in more than one category. This dataset was analysed and categorised by year for the years 2017-2020 inclusive, to show whether 2020 had seen a significant difference in offending compared to the years prior to the pandemic.

2.3.2 Wastewater sampling

Wastewater samples were obtained through publicly available information published by the New Zealand Police, the ACIC, and the EMCDDA. Wastewater testing is a modern and important tool to enable the police and other agencies to understand the pattern of drug consumption and movement within different communities (Institute of Environmental Science and Research [ESR], n.d.). Human waste contains a proportion of ingested products and their metabolites, meaning that the metabolites that are excreted by individuals following drug consumption can be measured within our urban wastewater to act as a marker for drug consumption estimation (Hahn et al., 2021). In the context of this research, drug metabolite levels in wastewater samples provided some indication of drug supply and availability, as consumption is bound to decrease if people are unable to obtain substances in the first place.

The New Zealand Police have been running a wastewater testing programme to estimate National drug consumption patterns alongside the ESR since November 2018 (National Drug Intelligence Bureau [NDIB] & New Zealand Police, 2021). This information is publicly released

online by the NDIB and the New Zealand Police for each quarter of the year. The purpose of analysing wastewater samples is to indicate approximate consumption levels for the three key illicit drugs - methamphetamine, MDMA, and cocaine. In this study, the most up to date wastewater data was used to analyse monthly consumption rates between January 2020 and June 2021.

International sources of wastewater data were limited and difficult to obtain. Again, the illicit drugs of focus for international wastewater consumption rates were restricted to methamphetamine, MDMA and cocaine. This data could only be found to be representative of Australian capital cities and a select number of cities in Europe.

Australian wastewater data was only representative of 47.9% of Australia's total population, as all other Australian cities other than capital cities do not test their wastewater for illicit drug metabolites regularly. This data was obtained from 20 sites in the Australian Capital Territory, Northern Territory, and all six states in Australia. Each capital city's consumption was recorded by the Australian Police in milligrams per 1000 people per day. I then found the mean from the combined total of each city's consumption levels to determine an approximate representation of all capital cities in Australia.

European data on wastewater consumption levels for methamphetamine, MDMA, and cocaine were published and generally analysed in the EMCDDA's (2021) report. This was presented in the same format as the Australian data: with the mean number of milligrams per 1000 people per

day. Further information on international consumption rates and illicit drug availability was highlighted in the UNODC World Drug Report 2021.

2.3.3 Street prices for illicit drugs

Estimates of street-level drug prices in New Zealand were obtained through an Official Information Act request to the NDIB. Prices were requested for three illicit drugs of interest, over the period of two years between 2019 until the end of 2021. The dataset provided for cocaine pricing was limited, with only the lower and upper pricing limits recorded in many points in the data given. I therefore had to calculate the median between the lower and upper limits of this substance. Methamphetamine and MDMA pricing had adequate published data on the ‘typical price’ calculated by police. I decided to only calculate the median of cocaine pricing, leaving data on the typical price for methamphetamine and MDMA, as this data is likely more reliable than the limited cocaine medians I had calculated myself. Therefore, data on cocaine pricing was likely not as reliable as the values provided for methamphetamine and MDMA. This information again provides some form of indication of illicit drug availability, supply, and demand. An increase in pricing is indicative of increased demand or decreased supply, with decreased pricing showing the opposite – that demand is low, or supply is high (UNODC, 2020).

International sources of information about different countries’ street prices for illicit drugs were predominantly sourced from the UNODC’s (2021) World Drug Report. This excludes the data presented on the Australian and United States’ drug pricing, which was found through publicly

available information published online by each country's relevant intelligence units. Australian illicit drug pricing data was published online by the ACIC's (2021) Illicit Drug Data Report. This study only used data available to represent the median price per gram for the three drugs of concern: crystal methamphetamine, MDMA, and cocaine. To represent United States' illicit drug pricing, the DEA's (2021) reflections that they published in their National Drug Threat Assessment were used.

2.3.4 Illicit drug consumption safety data

To determine whether COVID-19's impacts expanded to the purity or composition of illicit drugs themselves, a number of different sources of data were utilised. To support the New Zealand national impacts of COVID-19, information on the purity and composition of illicit drugs presented to the non-governmental drug checking agency 'Know Your Stuff' was used. This information was publicly released in the form of percentages, separated into four categories: 'illicit drug consistent with presumed substance', 'partially consistent with presumed', 'inconsistent' and 'testing inconclusive'. Graphs were created in Microsoft Excel to present this information clearly. To determine if there had been an increase in synthetic drugs or other substances since COVID-19 restrictions were introduced, data from 'Know Your Stuff' surrounding the types of drugs people were bringing in to get tested was also used. Similar data from overseas sources was sourced through publicly released information online by the EMCDDA and the ACIC. These were presented in the form of purity percentages, which were then converted into graphs using Microsoft Excel.

Hospitalisation data was also used to determine the effect of illicit drug-related damage following COVID-19 restrictions. New Zealand information was sourced through an Official Information Act data request to the Ministry of Health and included any data between 2015/16 and 2020/21. I used hospitalisation data for the category of 'poisoning' only, as this was most relevant to my research questions. It is important to note that this data only included publicly funded discharges. Unfortunately, there was a dearth of information on illicit drug-related hospitalisations overseas. The only public information I could find was on illicit drug-related overdose deaths in the United States of America, published by the DEA (2021). The EMCDDA (2020) mentioned overall trends in drug-related deaths and emergency presentations to some degree in a limited number of European countries.

Chapter 3: The nature of New Zealand's illicit drug markets pre- and post-COVID-19

3.1 Pre-pandemic illicit drug markets in New Zealand

New Zealand was commonly identified as a desirable country to import illicit substances to, due to the high profit and low risk nature of our markets and enforcement systems. This was specifically mentioned by four experts in the field of illicit drug monitoring: two from the New Zealand Police's National Organised Crime Group [NOCG], one from Customs, and one from their work in illicit drug defence law. As one of the respondents said:

For New Zealand, such a small market... It's a small risk because the amount of drugs that are sent here satisfy the small market, but the returns are so high.

National Organised Crime Group (2).

Because of this, one expert noted that New Zealand has shifted from predominantly being under the control of local drug dealing outfits in the early to middle 2000s, to a market that is largely influenced by an international nexus, with most illicit substances now imported from overseas (NOCG, 2).

Although New Zealand is a lot more isolated compared to the general international picture because it does not share land borders with other countries, two experts identified that our country's illicit drug market is not necessarily unique in the sense that organised crime groups are doing the same things in New Zealand as they are internationally (Customs., NOCG, 2). A lack of land borders in New Zealand, however, was identified as a pressure point in terms of the capacity to smuggle substances into the country during the pandemic by experts (NDIB., New Zealand Drug Foundation), as shipping and air freight seemed to have been disrupted much more than land importation.

As identified by experts above, New Zealanders typically source most of their illicit substances from overseas, revealing a clear reliance on transnational organised crime and illicit drug trafficking within the country's local drug markets. In combination with this, New Zealand is

unique in the space of illicit drug trafficking, due to the country's geographic situation and the high-profit low-risk nature of the drug market environment.

3.2 Changes in the staffing and resource of monitoring illicit drugs in New Zealand

New Zealand has heavily relied on officials from organisations such as Customs and the police to enforce enacted lockdown measures throughout the pandemic, meaning that changes in the number of staff monitoring illicit drugs in the country in response to COVID-19 were inevitable. Several experts identified key changes within their own workforces and those around them. However, one expert from the line of illicit drug related defence law stated that their staffing level stayed consistent throughout the pandemic and related lockdown measures.

Customs was identified as being most disrupted by COVID-19 during New Zealand's 2020 lockdown, with four participants (NOCG., NDIB., & Customs) stating that the organisation lost a lot of staff to lockdown-related monitoring activities. An expert from Customs stated that the first lockdown was challenging for their organisation in terms of illicit drug monitoring, as most of their staff were commissioned to the management of quarantine facilities for individuals coming into New Zealand. It is important to note, however, that this expert (Customs) stated that their staffing has quickly bounced back, as they have not seen such a distraction in New Zealand's 2021 lockdown.

Similarly, two experts (NOCG) identified that they too lost resources to COVID-19. An expert (NOCG, 2) noted that in Auckland, this was especially prominent in New Zealand's 2021 lockdown, as officials found it harder to monitor organised crime because they could not go out into the field every day. They gave an example of how their staffing was impacted by COVID-19, stating that family harm and domestic violence went up during lockdown, and that as a result, resources were shifted in some districts to combat this. Another expert (NOCG, 1) noted that during the first lockdown in 2020, an entire team in Canterbury's National Organised Crime Group were tasked with doing child protection files and investigations in response to issues caused by COVID-19, taking their attention away from monitoring crime in the illicit drug field.

Referring to the diversion of police resources to the enforcement of COVID-19 restrictions, three experts (New Zealand Drug Foundation., NOCG, 2., & NDIB) stated that ironically, New Zealand's strict lockdown measures may have aided in catching illicit drug-related offenders. These experts explained that this was because of an increased police presence on the streets, as well as the fact that such offenders were more likely to be the ones breaking lockdown rules, meaning they were therefore easier to identify during routine checkpoints and road stops.

In terms of the volume of human resources dedicated to monitoring acute drug harm, two experts (NDIB., & NZDF) identified that the effects of COVID-19 may have aided in the increase in resourcing for this line of work. For example, a 'drug early warning system' was an approach set up by the NDIB during the pandemic to send alerts in response to observed drug-related harm. However, this system was not set up in response to COVID-19. The timing of

implementation was identified as perfect by both participants, who stated that it has proven to be an effective system to combat the increase of drug adulterations following the implementation of lockdown measures. In combination with this, the expert from the NZDF identified that the acute drug harm network has continued to be funded, with the government announcing the allocation of just under 1 million dollars to fund drug checking for adulteration. This expert stated that such allocations and an increase in work and resourcing were likely due to the increased perception that there was a need following COVID-19-related illicit drug safety issues.

COVID-19 and related lockdown restrictions impacted different departments engaged in illicit drug monitoring in New Zealand in different ways. Overall, the impact of these changes appears to have been mixed, with staff shortages permitting drug suppliers to capitalise on weakness, whilst also providing more front-line interceptions leading to the suppression of illicit drug supply.

3.3 Changes in arrests and apprehensions for illicit drug-related offending

To determine any changes in local illicit drug trafficking and related offending, published data from the New Zealand Police on proceedings against offenders for 'illicit drug offences' was analysed and is presented in the form of a table below.

Table 1:

Proceedings against offenders for 'illicit drug offences' from 1st May 2019 – 31st August 2021

Offence category	2017	2018	2019	2020
Import or export illicit drugs	120	158	90	99
Deal or traffic in illicit drugs	2851	2769	2359	3237
Manufacture or cultivate illicit drugs	1625	1555	1333	1645
Possess and/or use illicit drugs	6921	7518	8454	8504
Other illicit drug offences	4947	5025	5714	5517
Total	16464	17025	17950	19002

The data presented in Table 1 shows a significant increase in the total amount of illicit drug-related offending in the year 2020. This increase of total offending is mostly because of the spike in offending related to dealing/trafficking of illicit drugs in 2020 compared with previous years, with this offence category increasing by approximately 37% between 2019 and 2020. Although these figures show an increase in offences related to illicit drug manufacture and cultivation in 2020 compared to 2019, data from past years can show that 2020's value is similar to what has been observed in the past. The difference in the observed value in 2020 can

likely be attributed to a lower value represented in 2019 compared with previous years, rather than a spike in 2020. Further, all other offence categories' increases and decreases in 2020 do not seem to correlate with any big pandemic-related events, as the changes to the observed offence numbers are not significant enough to draw conclusions on. Overall, these figures can provide some insight into the impacts of the changes in staffing and resource of monitoring crime as mentioned above and can further aid in the analysis of organised crime developments.

Chapter 4: Impacts of COVID-19 on New Zealand illicit drug markets

4.1 Initial disruptions

To gain a full understanding of COVID-19 and its associated restrictions' impact on illicit drug trafficking, the initial disruptions (i.e., disruption that occurred immediately after COVID-19 restrictions were imposed) must first be studied to determine any change in the markets compared to pre-COVID-19 times. When asked whether transport difficulties caused by COVID-19 restrictions at both the border and local levels had an impact on the availability of drugs in New Zealand, all six experts agreed that there was some degree of disruption to the illicit drug market initially. Three experts from different fields in the NDIB, NOCG (2), and New Zealand Customs stated that these disruptions happened immediately after lockdown measures were implemented.

Obviously under alert level 4, nobody could move... So very quickly into that first alert level 4 lockdown we saw prices steeply increase in the South Island, we saw availability really dry up within a week in the South Island.

National Drug Intelligence Bureau.

An expert from the NDIB also suggested that illicit drug markets in New Zealand may have been impacted in different ways depending on their geographical situation in the country. One participant who works in illicit drug related defence law partially agreed, stating that they believed methamphetamine supply would likely be impacted much more detrimentally in the Southern parts of the country.

4.2 Changes to the way Organised Crime Groups work

With COVID-19 putting a strain on international and domestic travel through the implementation of lockdown measures, it is important to measure whether these strains spilled over to the illicit drug trafficking world. As identified earlier, organised crime groups use a range of different measures to move illicit substances into and around New Zealand.

Three experts in this study identified several disruptions to licit freight travel routes because of COVID-19. These individuals were from Customs, NOCG (2), and one defence lawyer involved in illicit drug trafficking cases. All three stated that sea freight was most disrupted by COVID-19 on

a general level, with the expert from Customs also identifying that COVID-19 completely took out drug couriers in the air passenger space.

Three experts from Customs, NDIB, and NOCG (2) observed that following COVID-19, the mail system and smaller consignments were used more commonly than larger consignments.

Although the use of the mail system and smaller consignments to import substances meant that fewer drugs were coming through at a time, one expert from Customs stated that we should not underestimate the impact of such importations because of the cumulative effect they have on our markets. The same expert stated that the emergence of people's familiarity with using online platforms to order legitimate goods because of COVID-19 has also made an impact in the space of illicit goods. Two experts from the NDIB and Customs noted that they had observed a rise in the online purchasing of illicit substances since the imposition of COVID-19 restrictions. Because more people were ordering licit products online with the shutdown of in-store shopping and public anxiety to leave the house, mail systems were overloaded with product, meaning that illicit substances were more likely to slip through the cracks.

In contrast, one expert from NOCG (1) suggested that New Zealand might have seen an increase in larger consignments at less frequency because of COVID-19. This participant attributed the increase in large amounts of substances being used to the fact that organised crime groups are unable to move as often due to lockdown restrictions.

4.3 New methods of subverting COVID-19 systems

Legal and physical restrictions caused by COVID-19 and related lockdowns have pushed organised crime groups to come up with new ways to subvert systems to distribute illicit substances throughout the country. One expert from NOCG (1) anecdotally reported that organised crime groups have infiltrated systems through getting false COVID-19 exemption letters, allowing them to travel through known supply routes with ease.

We've seen them breaching, we've seen them getting false letters, we've seen a number of activities that they're subverting known supply routes and they're getting through... So they can move around, get on a ferry, hire a car... You can move around with not much footprint. Essentially you can move, and they do.

National Organised Crime Group, (1).

Additionally, this same expert from NOCG (1) mentioned that the gangs in New Zealand have become more involved with each other due to the strain that COVID-19 has placed on organised crime groups. Although it was stated that gangs have typically worked together in the illicit drug world for more than 15 years, COVID-19 has seen an increase in such alliances, especially internationally, as connection is key in the landscape of a pandemic.

They have to work together. I suspect that has probably risen up a little bit, because some of them that aren't so well connected would've had to work with others or they would've dropped out of business.

National Organised Crime Group, (1).

Further, one expert from the New Zealand Customs Service discussed concerns surrounding the possibility of an increased risk of corruption by organised crime groups of legitimate systems. Because COVID-19 has put pressure on these systems, this expert stated that some vulnerabilities could have been revealed, allowing organised crime groups to capitalise on these weaknesses.

They're gonna manipulate people in systems. And COVID will have put pressure on the system and people that will have identified other vulnerabilities within the system. So we've gotta keep looking and changing what we're doing.

New Zealand Customs Service.

4.4 Changes to local illicit drug manufacturing

When asked about whether there had been any changes in illicit drug manufacturing or distribution in New Zealand following COVID-19 related lockdown measures, two experts from the NDIB and NOCG (2) suggested there was a push towards local methamphetamine

manufacture after the first lockdown in March 2020. Both said they observed an increase in methamphetamine clandestine laboratories when the pandemic first hit, with one expert from the National Drug Intelligence Bureau stating that the number of labs found by the police went from 43 to 88 between 2019 and 2020.

Funny enough, in 2020 when COVID hit, we had a surge in clandestine labs being located around the country, which sort of reflected the problem with trying to get meth in as a finished product.

National Organised Crime Group, (2).

Interestingly, both participants provided different reasons as to why this was the case. Although both agreed that restrictions on the availability of methamphetamine in New Zealand would have had some impact on the increase in clandestine laboratories, one expert from the NDIB stated that it was likely this was not the only reason for the increase. As stated previously, lockdowns likely exacerbated crime reporting rates due to more people being at home, with this participant stating that the cause of an increase in clandestine laboratories was likely a mixture of a higher frequency of reporting and availability restrictions. This expert stated that it was unlikely that availability restrictions would cause an increase in local manufacture on its own, as the precursor chemicals used to manufacture methamphetamine often come from the same place as the finished product.

Part of me says, you know to get the precursor chemicals you need to domestically manufacture methamphetamine... they're coming from the same place that the finished product is. So unless there was a reasonable supply of that already in New Zealand prior to lockdown, it is hard to see how, because you might want to cook, but you're not going to have the ingredients you need, and that's always a problem. So yeah, I think there's a balance between the two.

National Drug Intelligence Bureau.

Alternatively, one expert from the National Organised Crime Group (2) stated that the reason for an increase in the number of clandestine laboratories observed following lockdown was because the supply lines for precursor products were not as badly impacted as those for the finished product of methamphetamine.

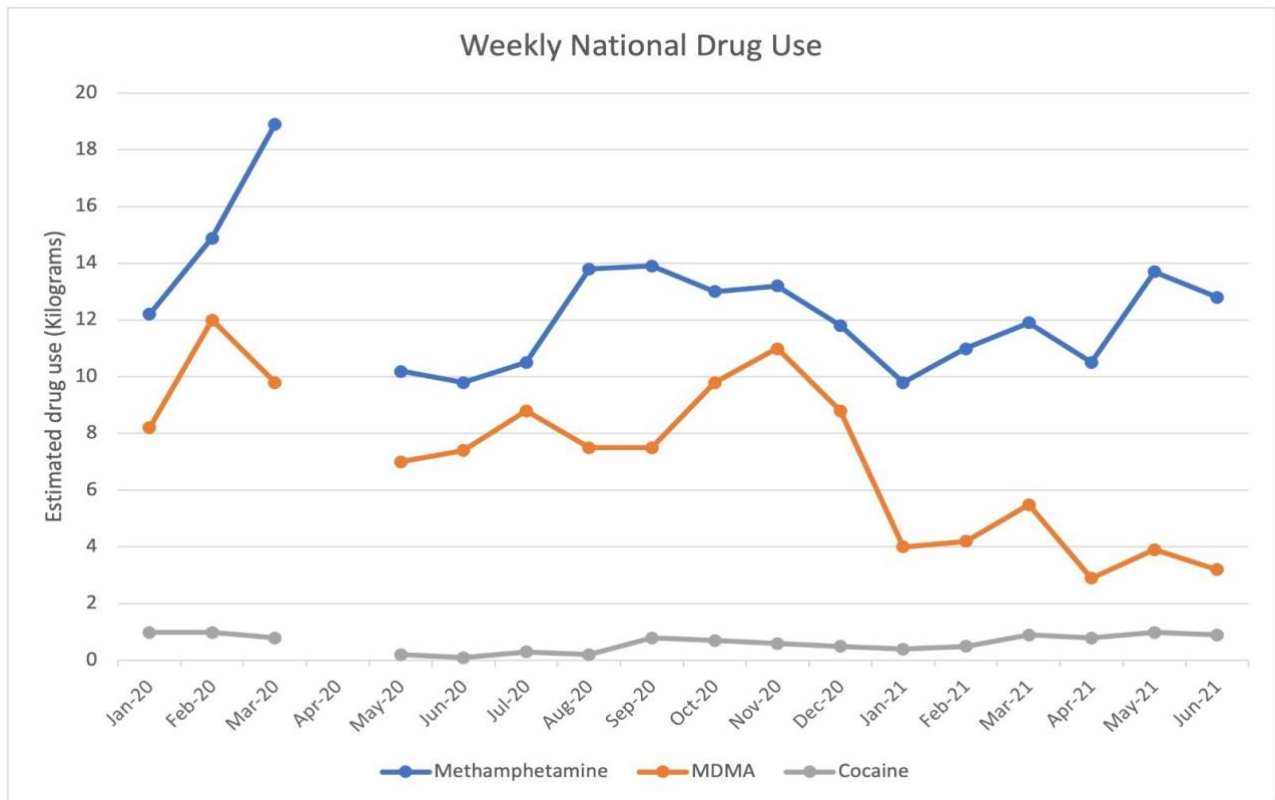
There is little recorded quantitative data on which countries both the methamphetamine precursors and the finished product in New Zealand originate from. Because New Zealand is a desirable illicit drug trafficking destination due to the high-profit low-risk nature of the country's markets, methamphetamine and precursor supply cannot be linked to just one country alone.

4.5 Illicit drug consumption levels

Illicit drug consumption levels can serve as a key indicator to determine drug availability, as identified by the EMCDDA (2020), with reductions in consumption often linked to a reduction in supply. When asked about the disruptions to illicit drug markets following the implementation of COVID-19 lockdown measures, five out of the six experts interviewed referenced drug consumption levels to explain availability disruptions. Three experts from the NDIB, Customs, and NOCG (2) identified significant drops in general illicit drug consumption in the months following the implementation of National lockdown measures. One expert from the NDIB explicitly mentioned drops in Methamphetamine and MDMA consumption levels. The data shown in Figure 1 portrays similar results.

Figure 1

Weekly National Drug Use in New Zealand from January 2020 – June 2021.



Note. Adapted from *Wastewater Drug Testing in New Zealand: National Overview Quarter One 2021*, New Zealand Police & NDIB, 2021a.

One expert from the New Zealand Police’s National Organised Crime Group (1), however, stated that high wastewater consumption levels indicated that COVID-19 hasn’t made an impact on illicit drug markets in New Zealand. When asked to reflect further, the expert

identified that during the two most significant COVID-19 related lockdowns in New Zealand, wastewater consumption levels hit an all-time high both times.

In fact, in the first lockdown we had our highest wastewater reading that we'd had in some time... I have no doubt it got a bit lumpy, but we've seen a dent in this cycle of wastewater. August was high, the second highest for wastewater, and September is going to be higher... With wastewater all over New Zealand up, that means the supply chain hasn't been broken at all.

New Zealand Police, National Organised Crime Group (1).

Unfortunately, due to the timing of this research, quantitative data on wastewater levels based on the most recent lockdown of New Zealand in 2021 have not yet been published by the New Zealand Police and ESR. Two participants in NOCG (1) and the NDIB, however, have both confirmed that wastewater consumption levels for the months of August and September 2021 have reached the highest levels they have observed in the programme since 2018.

4.5.1 Methamphetamine consumption

In reference to the peak in New Zealand's wastewater consumption levels during the height of the pandemic, four experts cited they observed a spike in methamphetamine consumption specifically. This peak can also be found in figure 2 above, with methamphetamine consumption levels hitting unprecedented numbers in March 2020. Although

methamphetamine consumption rates were high in both 2020 and 2021 following national lockdown restrictions, these figures do not necessarily mean that illicit drug availability hadn't been impacted by COVID-19 in some way. Three participants from NDIB, NOCG (2), and the New Zealand Drug Foundation explained the sharp rise in methamphetamine consumption by stating that it is likely individuals were stockpiling methamphetamine in preparation for lockdown and then ended up bingeing on the substance early on.

As pictured in figure 2, methamphetamine consumption hit unprecedented levels in March 2020, likely as a result of the surge in use following the implementation of New Zealand's first lockdown that month. Shortly after, in just two months, methamphetamine wastewater consumption levels decreased rapidly, reaching levels far lower than what was observed prior to the lockdown.

4.5.2 MDMA consumption

In terms of the substance MDMA, one expert from NDIB specifically cited a decrease in consumption levels shortly after COVID-19 related restrictions were implemented in New Zealand. This expert stated that this drop was quite significant, as they believed that trends prior to COVID-19 were showing a possibility for MDMA consumption rates to surpass those of methamphetamine in New Zealand.

By sort of February, March last year, it was rapidly closing in on methamphetamine. My prediction actually was, before COVID became a thing, that actually by the end of last year we would've seen MDMA consumption overtake methamphetamine consumption. And COVID came along and just took out the supply lines of MDMA, dried it up significantly.

National Drug Intelligence Bureau.

Another expert from the New Zealand Customs Service stated that they too had seen a significant rise in MDMA consumption levels before the COVID-19 pandemic. This expert stated that in the preceding year prior to the first lockdown, MDMA consumption rates had increased by 850%.

One expert from NDIB attributed the decreases in MDMA consumption to the specific nature of the environments that the substance is consumed in. They stated that unlike methamphetamine, MDMA is a social party-type drug. Because lockdown prevented social events from occurring, this participant believed MDMA demand likely decreased due to the nature of this specific drug taking environment.

4.5.3 Cocaine consumption

The observed cocaine consumption rates recorded by the New Zealand Police and ESR have remained much lower than substances like methamphetamine and MDMA. Figure 2 above shows that cocaine consumption levels dropped significantly in May 2020, shortly after lockdown restrictions in New Zealand were imposed. These figures remained low until

September 2020, where consumption levels were shown to have increased back to pre-COVID-19 levels.

4.6 Illicit drug prices

Data on MDMA and cocaine prices in New Zealand was extremely limited compared to that of methamphetamine. The New Zealand Police provided this data in the form of ‘lower limits’, ‘upper limits’, and the ‘typical price’ of each substance separated by the quantity in which individuals were buying. Because the lower and upper limits of some substances and quantities were so different in some cases, only the ‘typical price’ will be looked at, meaning some data has had to be excluded where no typical price information was given. There was no record of ‘typical price’ for cocaine in the New Zealand Police’s data, therefore I had to calculate the median of the lower and upper pricing limits for the substance. This means that cocaine pricing data for our New Zealand drug markets may not be as accurate as the data for methamphetamine and MDMA.

To determine the effects of COVID-19 on a range of different aspects of New Zealand’s illicit drug markets, the ‘typical’ reported price of methamphetamine and MDMA, and the median price of cocaine will be looked at from two different quantity perspectives. To examine the extent in which the pandemic impacted personal illicit drug markets, the prices of a gram of the particular substance will first be examined. Then, to determine the impact on the larger organised crime market, the prices of substances per kilogram will be examined.

4.6.1 Methamphetamine prices

From November 2018 until October 2019, the typical gram price of methamphetamine in New Zealand stayed consistent at \$400. As shown in Table 1, during the midst of New Zealand's first lockdown, the typical gram price rose to \$500 in the period of the 1st of November 2019 to the 30th of June 2020, then reaching an all-time high of \$400-\$600 from the 1st of July to the 31st of December 2020, before going back to \$500 until the 31st of August 2021.

Kilogram prices show similar results, as methamphetamine prices per kilogram were shown to be decreasing between May 2018 and October 2019. During the height of New Zealand's first pandemic from the 1st of November to the 30th of June, however, methamphetamine kilogram prices rose from \$140,000 to \$200,000 – the highest they had ever been. Methamphetamine kilogram prices have decreased since then, remaining quite high in the second half of 2020, before almost returning to pre-COVID-19 levels in the first half of 2021.

Table 1

'Typical' methamphetamine prices for the period of May 2019 – August 2021

Time Period	Gram Price	Kilogram Price
1 st May 2019 – 31 st October 2019	\$400	\$140,000
1 st November 2019 – 30 th June 2020	\$500	\$200,000
1 st July 2020 – 31 st December 2020	\$400-\$600	\$180,000
1 st January 2021 – 31 st August 2021	\$500	\$150,000

Note. Adapted from *Pricing information for MDMA, cocaine, and methamphetamine through to 31 August 2021*. National Drug Intelligence Bureau, 2021b.

4.6.2 MDMA prices

Data on the 'typical price' of MDMA per gram and kilogram was more limited than that of methamphetamine. As no 'typical price' of MDMA per gram was presented from the 1st of November 2019 until the 30th of June 2020, this year has had to be excluded from determining

the impact of personal MDMA markets. Kilogram data from the second half of 2020 has been excluded for the same reason.

Table 2

'Typical' MDMA prices for the period of May 2019 – August 2021

Time Period	Gram Price	Kilogram Price
1 st May 2019 – 31 st October 2019	\$300	\$55,000
1 st November 2019 – 30 th June 2020		\$65,000
1 st July 2020 – 31 st December 2020	\$200	
1 st January 2021 – 31 st August 2021	\$200	\$70,000

Note. Adapted from *Pricing information for MDMA, cocaine, and methamphetamine through to 31 August 2021*. National Drug Intelligence Bureau, 2021b.

As shown in Table 2, since April 2019, MDMA prices have dropped significantly and have stayed relatively stable since, going from \$300 per gram to \$200 per gram in recent years.

Unfortunately, it is unclear what the typical MDMA gram price was in the period of the 1st of November 2019 until the 30th of June 2020. Since then, gram prices of MDMA have remained stable at \$200 in the second half of 2020 and the first half of 2021.

The price of MDMA per kilogram, however, has seen an increase since the second half of 2019. From the 1st of May 2019 until the 31st of October 2019, the typical price per kilogram of MDMA was \$55,000, increasing to \$65,000 in the six months prior, during New Zealand’s first lockdown. Unfortunately, data for the second half of 2020 was unavailable for the kilogram price of MDMA. In the first half of 2021, however, kilogram prices have remained high, reaching \$70,000 per kilogram.

4.6.3 Cocaine prices

Because data on the price of cocaine in New Zealand was so limited, the median based on the ‘lower’ and ‘upper’ limits recorded by the New Zealand Police was taken as an estimate of the price for a gram and kilogram of cocaine.

Table 3

Median cocaine prices for the period of May 2019 – August 2021

Time Period	Gram Price	Kilogram Price
1 st May 2019 – 31 st October 2019	\$325	\$162,500
1 st November 2019 – 30 th June 2020	\$275	\$160,000
1 st July 2020 – 31 st December 2020	\$400	\$160,000

1 st January 2021 – 31 st August 2021	\$450	\$195,000
---	-------	-----------

Note. Adapted from *Pricing information for MDMA, cocaine, and methamphetamine through to 31 August 2021*. National Drug Intelligence Bureau, 2021b.

The data shown in Table 3 portrays a dramatic increase in the median prices of a kilogram of cocaine in the first half of 2021 following a reasonably steady range of prices since the second half of 2019. Similarly, the price of cocaine grams sharply increased in the second half of 2020, after a steady decrease between 2019 and the first half of 2020. The data shows that in turn, the median prices of cocaine grams and kilograms reached peak levels in the first half of 2021.

4.7 Changes to the composition and purity of illicit substances

Illicit drug adulteration is at a heightened risk because of market disruptions, with manufacturers and dealers often adding additional substances into their products to make limited supplies go further (Beletsky & Davis, 2017, Dietze & Peacock, 2020; Eligh, 2020; Enns et al., 2020; Friedman et al., 2008; Rhodes, 2002; Zolopa et al., 2021).

When asked if they knew of any changes to the purity or composition of illicit substances since the imposition of COVID-19 related lockdown restrictions, four out of five eligible experts stated that some level of drug adulteration had occurred. These experts were from NOCG, the NDIB, Customs, and the New Zealand Drug Foundation. Most experts highlighted specific substances

only when speaking on illicit drug adulteration. However, one participant from the New Zealand Drug Foundation stated that drugs in general have been adulterated more frequently as a direct result of COVID-19.

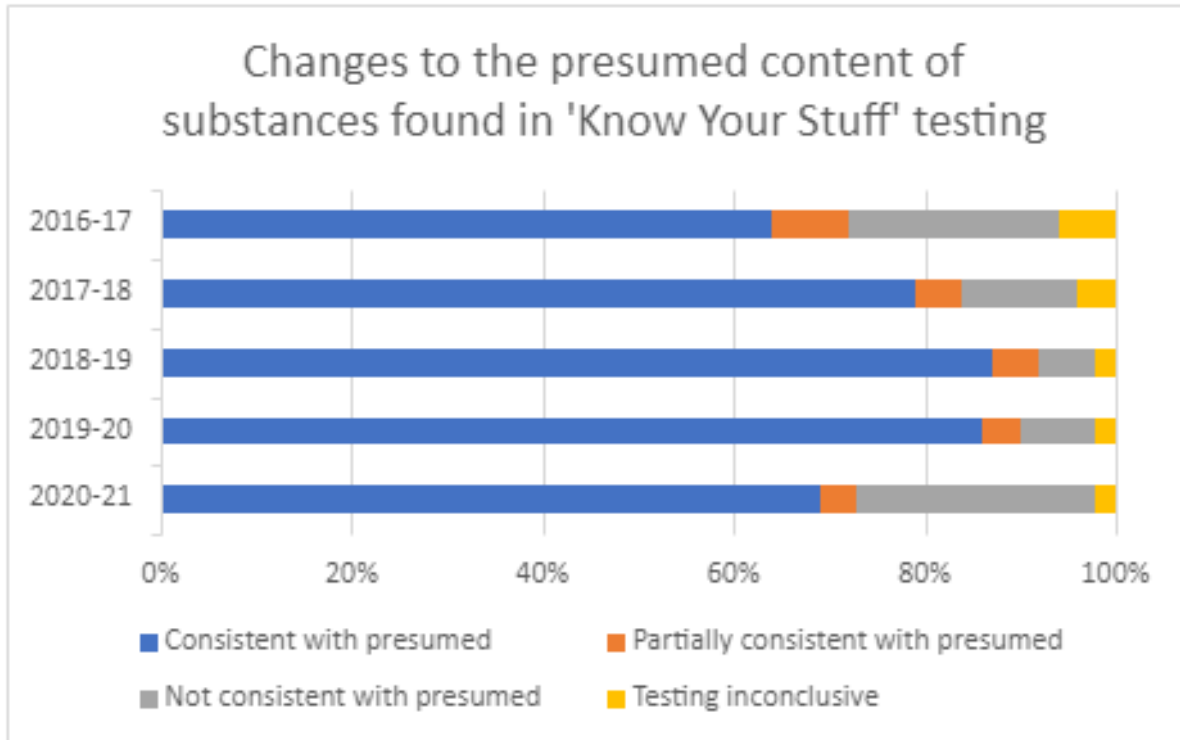
I think in general I would quite confidently say that for most drugs, especially for recreational drugs, recreational party drugs, that we're at a stage now where you cannot assume that a drug is what you think it is. Because COVID has affected our drug market internationally so much.

New Zealand Drug Foundation.

Data sourced from drug testing agency 'Know Your Stuff' shows a similar result in Figure 2, with substances found in their tests declining in consistency rapidly in 2020-21 compared with previous years. This data was referenced by an expert from the NDIB, who stated that drug checking clinics found that 37% of what was presented to them as MDMA were found to be a synthetic cathinone replacement in 2020. This was in comparison to consistency levels of 90% MDMA in 2019.

Figure 2

Changes to the presumed content of substances found in 'Know Your Stuff' testing.



Note. Adapted from *Testing Report. Know Your Stuff*, by Double, K. & Know Your Stuff, 2021.

(<https://knowyourstuff.nz/our-results-2/testing-results/testing-reports/2020-2021-testing-report/>).

One expert, however, stated that they had not seen any increase in substance adulteration since the imposition of COVID-19 related lockdown measures (NOCG, 1). This expert agreed that New Zealand had observed some degree of illicit drug related harm and adulteration after

COVID-19 lockdown measures were implemented but thought, however, that this was nothing out of the ordinary when compared to other years.

The reality is nothing's ever changed in society, where you get collections of young people experimenting taking drugs, what we know now is it goes bad for them.

New Zealand Police, National Organised Crime Group (2).

4.7.1 Methamphetamine adulteration

Two experts from the National Drug Intelligence Bureau and the New Zealand Drug Foundation mentioned some anecdotal reporting of quality and adulteration issues with methamphetamine after the first New Zealand lockdown in 2020. As identified by both experts, these reports were not widespread and didn't persist for a very long time.

I think back in this period where things sort of dropped, we had some anecdotal reporting that the quality of meth was low and was being adulterated. And again, that kind of makes sense if your supply's not as strong, drug dealers will cut it or adulterate it to make it go a bit further, so you might lose your purity levels, and there was some reporting of that. But certainly, at the moment there is a strong supply coming into the country, it's good quality finished product. There's so much available I think.

National Drug Intelligence Bureau.

As identified by an expert from the NDIB, no adulteration was observed following the 2021 lockdown, as availability quickly recovered. This expert attributed this lack of adulteration to the nature of New Zealand's methamphetamine market specifically. Because New Zealand's methamphetamine market is so prominent, any adulteration today would be detrimental to those supplying it, as users can now easily access the substance through different drug dealers.

4.7.2 MDMA adulteration

The most common substance cited as being adulterated following the implementation of COVID-19 local and border restrictions was MDMA. All four participants who stated there had been some changes to the purity and composition of illicit substances following COVID-19 mentioned that they saw a rise in synthetic cathinones being used to replace MDMA specifically.

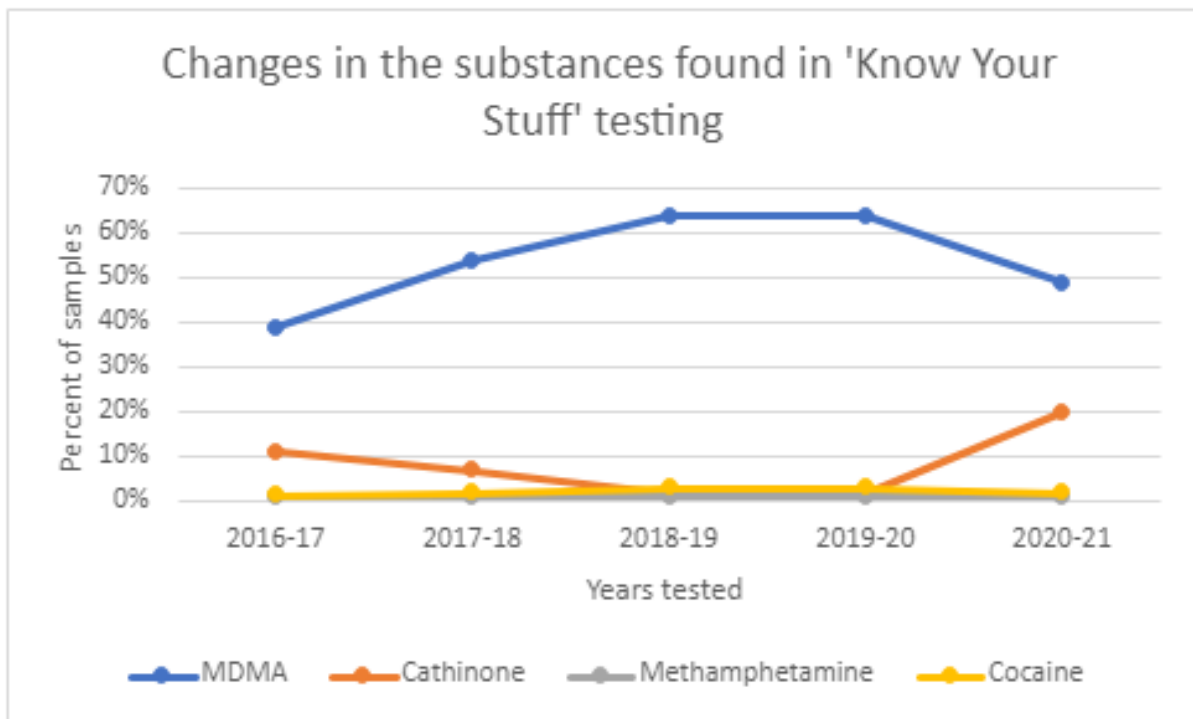
So you've got your synthetics and your new novel psychoactive substances, they are certainly making an impact, and we're seeing them appear in domestic seizures of drugs being sold as MDMA.

New Zealand Customs Service.

The data presented in Figure 3 shows a significant rise in cathinones being presented in 2020-21 compared to previous years. During the same time period, the number of substances consisting of MDMA presented to the agency decreased after a steady rise in previous years.

Figure 3

Changes in the substances found in 'Know Your Stuff' testing



Note. Adapted from *Testing Report. Know Your Stuff*, by Double, K. & Know Your Stuff, 2021. (<https://knowyourstuff.nz/our-results-2/testing-results/testing-reports/2020-2021-testing-report/>).

Two experts from the National Drug Intelligence Bureau and the New Zealand Drug Foundation mentioned eutylone as the key synthetic cathinone they had observed in New Zealand following the implementation of COVID-19 lockdown measures. No other specific synthetic cathinones were identified by any other experts.

In the past year we've had eutylone which is a reasonably.. It's not a reasonably new drug but it is a reasonably newly kind of like, it never used to be something we'd come across in any widespread at all. It was like a rare known research chemical, but now it's sort of become the main thing that's adulterating our MDMA. You know at some clinics I've drug checked at, up to 50% of our MDMA is eutylone.

New Zealand Drug Foundation.

Synthetic cathinones are classified as New Psychoactive Substances (NPS) and are often used as a substitute to imitate the effects of substances such as MDMA, cocaine or methamphetamine (Karila et al., 2015). These substances are typically produced in Chinese and Southeast Asian covert laboratory environments (Karila et al., 2015). As identified by an expert from NDIB, it is likely that the observed rise in synthetic cathinones to replace MDMA during and prior to the pandemic can be linked to these countries of origin, as China was one of the first international countries to recover from COVID-19 quickly, whereas MDMA manufacturers in other countries were still struggling.

Synthetic cathinones are much more harmful to drug users' health than the substances they typically replace (NDIB). Cathinones are especially harmful due to the high potency of the substance compared to drugs such as MDMA (Know Your Stuff, 2021). In combination with this, these substances often have mild euphoric effects, pushing users to increase their dosage to achieve the desired effects they are expecting with MDMA (NZ Drug Foundation; NDIB). Increasing dosage rates of cathinones is especially dangerous due to the high potency of the substance, which can in turn lead to dangerous symptoms like hallucinations, seizures, psychosis, and in some cases, death (Know Your Stuff, 2021).

4.7.3 Cocaine adulteration

Cocaine adulteration was only mentioned specifically by one expert from the New Zealand Drug Foundation. It was stated that although cocaine in New Zealand is almost always adulterated, incidences of cocaine adulteration doubled after COVID-19 lockdown measures were implemented.

Cocaine is almost always cut with other stuff, and the cocaine is just getting worse and worse in New Zealand, you know it's like gone from maybe 1 in 5 cocaine samples being pure to maybe 1 in 10. And again, that could be availability.

New Zealand Drug Foundation.

4.7.4 Other drug adulteration and changes

Only one expert from the New Zealand Drug Foundation identified changes in the purity or composition of other substances in New Zealand following the implementation of COVID-19 lockdown restriction measures. This expert stated that they had seen increases in novel benzodiazepines such as flualprazolam being sold dishonestly as Xanax bars after the first lockdown, and ketamine adulteration and other analogues being sold in replacement of pure ketamine hydrochloride.

4.8 Changes to illicit drug related harm

Illicit drug adulteration and decreases in purity are likely to increase the risk of drug consumption-related harms, especially if they are being sold dishonestly as another substance.

The data shown in Table 4 presented similar results.

Table 4*Number of drug-related poisonings in New Zealand hospitals*

Primary diagnosis grouping	2017/18	2018/19	2019/20	2020/21
Poisoning by cocaine	4	6	5	4
Poisoning by methylamphetamine	75	84	78	75
Poisoning by MDMA	63	66	84	78
Total poisonings	142	156	167	157

Note. Adapted from *Publicly funded hospital discharges, with an illicit drug primary diagnosis code, 2017/18-2019/20*, by the Ministry of Health, 2021.

As depicted in Table 4, the only illicit substance that has seen poisoning-related hospitalisations increase in the period of COVID-19 related lockdown restrictions in 2019-20 is MDMA.

Poisoning hospitalisations then decreased retrospectively in the period of 2020-21 for this substance. Alternatively, both cocaine and methamphetamine poisoning-related hospitalisations decreased slightly in both 2019-20 and 2020-21.

Chapter 5: Adaptability and resilience

5.1 Introduction

One of the most predominant themes mentioned in expert interviews concerned the adaptability and resilience of organised crime groups and drug traffickers. Five out of six participants highlighted this feature of such groups, stating that they are smart, diverse, and adaptable (Customs., NDIB., NOCG., & NZDF).

5.2 The history of illicit drug trafficking has helped groups rebound

The nature of illicit drug trafficking makes it easier for organised crime groups to quickly rebound, with an expert (NOCG, 1) stating that this adaptability relates to the fact that organised crime groups are historically accustomed to changing their drug trafficking methods each time they get caught by authorities. The ability of organised crime groups to quickly adapt to changing situations is especially prominent in the context of COVID-19, as two participants (Customs., & NOCG, 1) stated that such groups may find it easier to operate through pandemic-related restrictions, as they don't need to worry about legitimate trade or abiding by the laws in the first place.

And so globally we know that they will rebound probably quicker than we do, because they don't have to worry about the challenges of legitimate trade and opening borders

and focus on getting people through airports and worrying about COVID, versus I can just fly below the radar.

New Zealand Customs Service.

5.3 Differences between the first and second waves of lockdown

All five experts who mentioned this theme used a comparative model to explain how adaptable organised crime groups are. This was achieved by comparing New Zealand's 2020 lockdown to the 2021 lockdown to explain how such groups might've learned and overcome any challenges. As identified by an expert (NDIB), there has been no reporting of a decrease in supply, quality or consumption of illicit drugs in New Zealand's 2021 lockdown. In fact, two experts (NDIB, & NOCG, 1) reported that methamphetamine consumption levels in the wastewater have hit unprecedented levels in August and September 2021, during the most recent lockdown of New Zealand. Additionally, the expert from NDIB mentioned that methamphetamine prices specifically have bounced back since then.

Certainly I think we are now, 18 months after the pandemic sort of first hit us, we're returning to those quite cheap prices. Good availability here in New Zealand for overseas finished methamphetamine.

National Drug Intelligence Bureau.

It is important to note that the nature of New Zealand's second major lockdown was very different from the first. An expert from the NDIB highlighted this when discussing the high wastewater consumption rates they observed in New Zealand's 2021 lockdown. High wastewater consumption levels in New Zealand's 2021 lockdown had been confined to the fact that illicit drug availability has stayed consistent throughout restrictions. Stockpiling was deemed impossible by this expert (NDIB), because of the short notice the government gave before locking the country down. On top of this, this expert (NDIB) reported that New Zealand's 2021 lockdown was not as stringent as the first one, with more people able to move around and do things, providing organised crime groups with an opportunity to continue with their business largely uninterrupted.

Chapter 6: Impacts of COVID-19 on international illicit drug markets

6.1 Introduction

The global impacts of COVID-19 on everyday functioning are severe, especially in the space of travel and movement. For example, the UNODC (2021) reported an approximately 70% decrease in international air passenger traffic from March to April 2020, shortly after COVID-19 lockdown measures were implemented globally. Because organised crime groups rely heavily on licit travel movements to facilitate the movement of illicit substances, these disruptions were likely to spill over into the illicit drug trafficking space.

In all regions observed by the UNODC (2021), the number of illicit drug-related seizures at the border significantly declined in the second quarter of 2020. Seizures quickly resumed to similar or increased levels shortly after lockdown restrictions eased. The UNODC (2021) attributed the drop in seizures to reduced trafficking or changes in law enforcement capacity as a result of the pandemic. It was reported that in countries such as Thailand, Azerbaijan, Kazakhstan, Tajikistan and Turkmenistan, the implementation of restrictions in response to COVID-19 saw a rapid decline in drugs seized at the border (UNODC, 2021). Shortly after, however, these countries returned to normal, with the number of illicit drug seizures in Thailand often exceeding their pre-pandemic levels (UNODC, 2021).

6.2 Changes to the way organised crime groups worked

The UNODC (2021) reported that air and land modes of illicit drug-related transportation were most disrupted by COVID-19. With maritime routes being the least disrupted by the pandemic, international sources reported an increase in large-scale sea-borne importations of illicit substances, as organised crime groups seemed to use the waterway routes more often than they had before COVID-19 restrictions were implemented (UNODC, 2021). For example, the Islamic Republic of Iran saw a 36% increase in the weight of illicit substances seized at their border in the first half of 2020, even though the number of reported seizure operations decreased by 16% (UNODC, 2021). This suggests that larger drug shipments were being sent compared to what they had observed pre-COVID-19 (UNODC, 2021). Similar trends were exemplified in Pakistani seizures of heroin and illicit morphine (UNODC, 2021). Stephany et al

(2020) attributed changes in drug trafficking methods to the increase in the use of corruption by organised crime groups, stating that COVID-19 has provided traffickers with infiltration opportunities because of the poor position that some licit companies have found themselves in. This means that such companies may be more susceptible to corruption as a result (Stephany et al., 2020).

For some drugs and regions, however, an increase in trafficking by mail was observed (UNODC, 2021). Although Europe saw similar trends related to an increase in large-scale shipments of cocaine during the pandemic and lockdown measures, individual seizure data analysis conducted by the UNODC (2021) shows that Europe saw a sharp increase in small-scale mail and land seizures at the same time.

6.3 Illicit drug manufacture

Most sources reported that global illicit drug manufacture remained largely uninterrupted through the pandemic and related lockdown restrictions. However, some substances and countries of origin were impacted in the initial stages of COVID-19 (Drug Enforcement Agency [DEA], 2021; UNODC, 2021). It is important to note that these production lines recovered shortly after COVID-19 restrictions were eased in each impacted environment (UNODC, 2021).

Reporting from the DEA (2021) and the UNODC (2021) shows that COVID-19 related restrictions saw decreases in methamphetamine manufacture due to a lack of precursor chemical

availability in leading methamphetamine producing countries. This lack of availability was attributed to mobility restrictions specifically, with limited supply being observed predominantly in North America and Europe (UNODC, 2021). Seizure reports and the identification of clandestine laboratories in East and Southeast Asia, however, showed that precursor availability remained largely unaffected, meaning that methamphetamine manufacture in those subregions continued without any COVID-19-related interruptions (UNODC, 2021). The DEA (2021) reported that globally, transnational organised crime groups were impacted by precursor supply issues, although these impacts were short-lived, as the methamphetamine production and supply chains have now returned to their pre-pandemic status.

The status of cocaine availability and manufacture is sensitive to local changes in a select number of countries, as its production is geographically concentrated in Bolivia, Colombia, and Peru (UNODC, 2021). Although coca leaf production was not directly impacted by the pandemic, the supply chains were impacted, as buyers in manufacturing countries like Colombia and Peru could not enter areas of production to retrieve the product due to lockdown restrictions (UNODC, 2021). Interviews with Bolivian coca leaf harvesters suggest that cocaine manufacture continued shortly after these issues were overcome, as traffickers simply adapted to the change in circumstances as a result of the pandemic (UNODC, 2021).

MDMA manufacture was not impacted directly by COVID-19 (UNODC, 2021). Reporting shows that although supply and the ability to produce MDMA remained largely uninterrupted, the

issues that organised crime groups faced in regard to this substance specifically related to reductions in demand (UNODC, 2021). These demand reductions occurred following the closure of bars, nightclubs and music festivals, where MDMA is predominantly consumed (NDIB, 2021; Price et al., 2022; UNODC, 2021). As a result, an expert from the NDIB identified that the Netherlands stopped the manufacture of MDMA, causing a spillover effect in terms of availability, as 90% of the world's MDMA is produced there.

Basically, because the demand across the world stopped, because MDMA is a very social party type drug, because there were no raves, no festivals and no nightclubs, there was no demand for the drug anymore.... So the producers in the Netherlands didn't want to be sitting on large quantities of ecstasy because that's a real risk for them, and of course you have to pay to manufacture all of these things, so international reporting has certainly told us that production slowed right down because there wasn't the demand for it.

National Drug Intelligence Bureau.

6.4 Illicit drug consumption levels

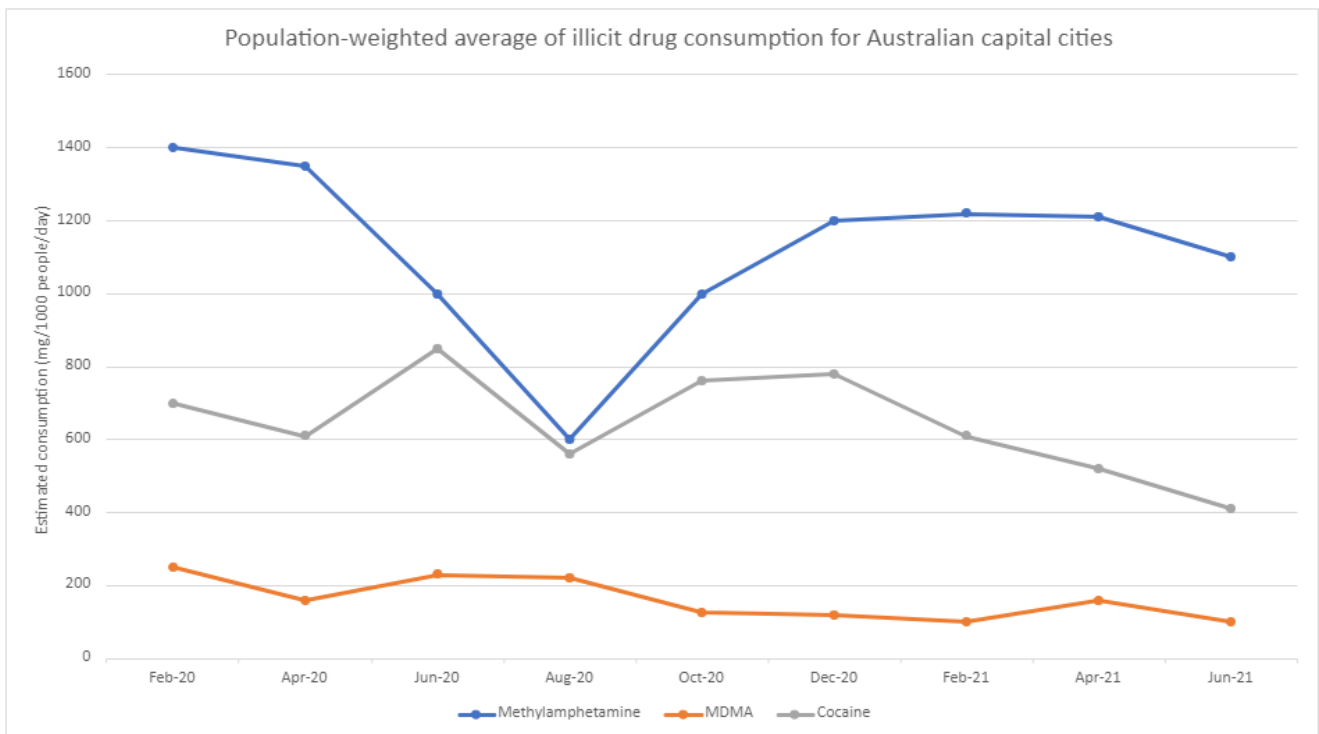
International reports from the EMCDDA & Sewage Analysis Core Group [SCORE] (2021) and the Australian Criminal Intelligence Commission [ACIC] (2021) identify drops in consumption rates for all substances directly after COVID-19 related lockdown measures were implemented.

Australian data on the consumption rates of all three substances of interest is presented in figure 4 below. This shows a sharp decline in methamphetamine and cocaine consumption and a slight decrease in MDMA consumption in August 2020, in the middle of Australia’s first and second waves of COVID-19 lockdowns (ACIC, 2021; Stobart & Duckett, 2021).

Methamphetamine and cocaine consumption rates quickly increased shortly after restrictions were eased in Australia, while MDMA consumption continued to decrease to the lowest recorded levels until February 2021 (ACIC, 2021; Stobart & Duckett, 2021).

Figure 4

Population-weighted average of illicit drug consumption for Australian capital cities.

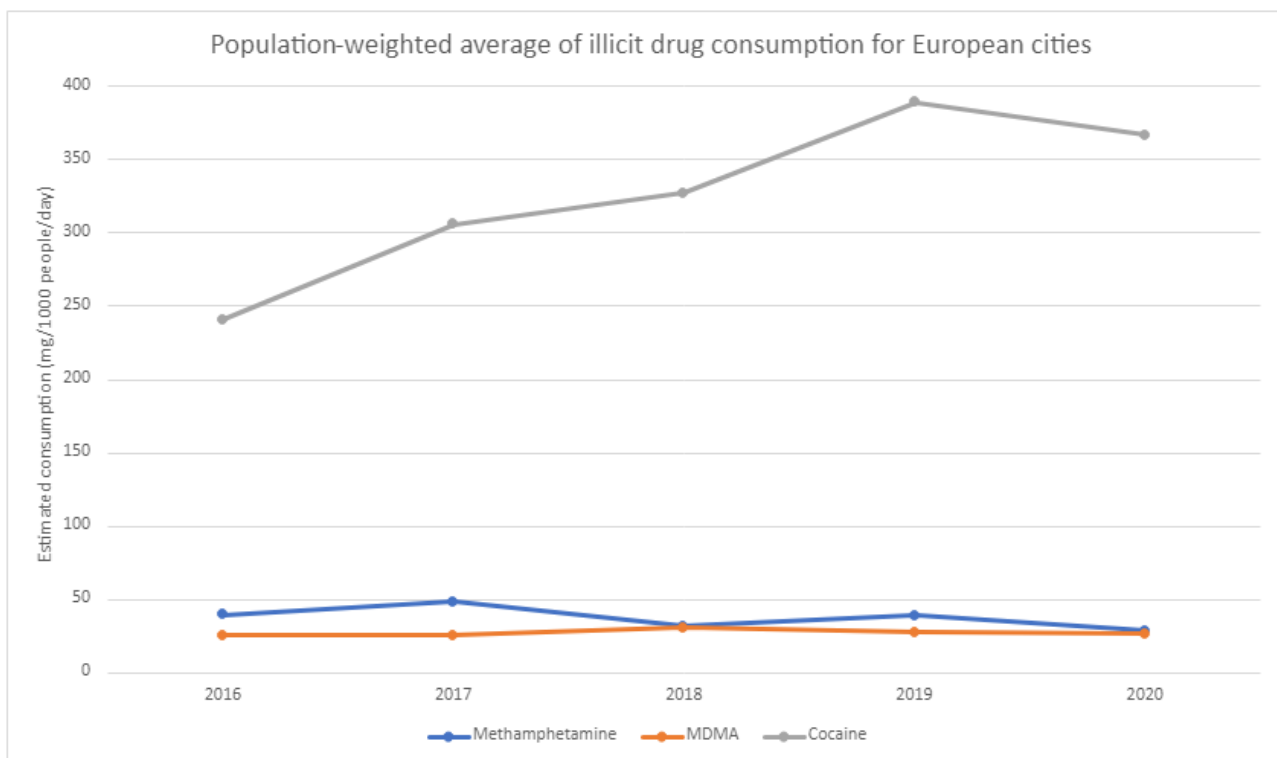


Note. Adapted from *Illicit drug data report 2019-20*, by Australian Criminal Intelligence Commission, 2021. (https://www.acic.gov.au/sites/default/files/2021-10/IDDR%202019-20_271021_Full_0.pdf).

Data portrayed in Figure 5 shows a similar trend for the decrease in methamphetamine and cocaine consumption in 2020 (EMCDDA & SCORE, 2021). The decreases in consumption rates for the European cities with data available shows a minor change in the use of these substances, while no significant change in consumption was observed for MDMA (EMCDDA & SCORE, 2021).

Figure 5

Population-weighted average of illicit drug consumption for European cities



Note. Adapted from *Wastewater and drugs: A European multi-city study*, by EMCDDA & SCORE, 2021. (https://www.emcdda.europa.eu/publications/html/pods/waste-water-analysis_en#usage-notes).

Further information provided by the EMCDDA (2021) highlighted specific trends in the European drug-taking environment. Analysis of weekly European methamphetamine consumption in 2020 revealed that methamphetamine use was distributed more evenly throughout the week, possibly reflecting an increase in regular consumption of the substance (EMCDDA, 2021).

6.5 Illicit drug prices

6.5.1 Introduction

The impact of COVID-19 on the global pricing of illicit substances differed quite significantly depending on the country and type of drug. Most price data came from intelligence reports by the ACIC and the DEA to represent Australia and the United States of America, with some general global reporting found in UNODC's (2021) World Drug Report.

6.5.2 Methamphetamine prices

Two international sources in Australia and the United States of America had publicly available reporting on methamphetamine prices in pre-pandemic and post-pandemic timeframes. Both countries reported methamphetamine price increases in 2020, with crystal methamphetamine prices in Australia rising from a median of \$385 per gram in 2018-19 to \$450 per gram in 2019-20 (ACIC, 2021). The USA saw similar price increases, with the DEA (2021) reporting that the methamphetamine market had been disproportionately impacted by COVID-19 in terms of pricing. It is important to note that the DEA (2021) stated that they believed transnational criminal organisations were already looking to increase methamphetamine prices prior to the pandemic. This suggests that such organisations have used the pandemic as an opportunity to increase their profits in a similar fashion to what many licit businesses have done with high-demand COVID-19 related products like face masks and hand sanitisers (Cabral & Xu, 2021; Fung & Roberts, 2021; Soares et al., 2020; Taunton, 2022; Zymler et al., 2020).

6.5.3 MDMA prices

Several global differences were found in the prices of MDMA depending on geographic location. For example, in manufacturing countries like Western and Central Europe, wholesale prices dropped by more than 20% in the second quarter of 2020 (UNODC, 2021). The UNODC (2021) did report, however, that prices had begun to increase in Europe again by the end of 2020. Alternatively, Algeria saw a sharp increase in MDMA prices in 2020, indicating a possible

supply disruption in the Middle East and North Africa (UNODC, 2021). Further, Australian data saw MDMA prices decrease from \$200 per gram in 2018-19 to \$175 per gram in 2019-20 (ACIC, 2021).

6.5.4 Cocaine prices

In manufacturing countries throughout the world, UNODC (2021) reported several disruptions in coca leaf prices from the first to the second quarter of 2020, during the midst of the pandemic. In Colombia, Bolivia, and Peru, coca leaf prices declined by approximately 50% between January and May 2020, coinciding with mobility restrictions in these areas (UNODC, 2021). After the initial lockdown periods in the first half of 2020, however, prices of coca products recovered, returning to similar levels to what was observed prior to the pandemic by the end of 2020. In the USA and Australia, price fluctuations were recorded during the space of COVID-19 restrictions (ACIC, 2021; DEA, 2021). Despite the initial increases in the USA, the DEA (2021) remained confident that prices would stabilize after the early stages of COVID-19 and related restrictions. Australian prices of cocaine per gram increased from \$250 in 2018-19 to \$412.50 in 2019-20 (ACIC, 2021).

6.6 Changes to the composition and purity of illicit substances

Globally, the limited data published has revealed that the observed purity levels and chemical compositions of illicit substances remained relatively stable throughout the pandemic and lockdown periods (EMCDDA, 2021; Namli, 2020; UNODC, 2021).

Data published by the EMCDDA (2021) has shown no significant change in European acute drug toxicity presentations of methamphetamine in 2020 compared to 2019, with such presentations decreasing slightly compared to pre-COVID-19 levels.

Although the manufacture of synthetic cathinones in Southeast Asia may have increased in 2020 (UNODC, 2021), limited data gathered by the EMCDDA (2021) found that the purity of MDMA remained high in Europe due to high levels of availability to meet demand following lockdowns in each city.

Cocaine purity levels measured in Europe by drug checking services in 2020 were also similar to their 2019 values, although testing in the Spanish sites they attended, which account for approximately 60% of EMCDDA testing data, showed significantly lower purity levels than usual (EMCDDA, 2021). Interestingly, data published by the DEA (2021) revealed that cocaine-related overdose deaths increased by 26% following the imposition of COVID-19 restrictions, although it is uncertain whether this could be attributed to purity or adulteration specifically.

Overall, COVID-19's impacts on the purity and adulteration of illicit substances seemed to differ based on the substance and country of focus. Although there was a sharp increase in overdose and drug-related deaths recorded in the US, Canada, and Finland shortly after the pandemic (DEA, 2021; EMCDDA, 2021), other European countries such as Italy and Portugal observed a decline in such events during and after lockdown restrictions (EMCDDA, 2021).

Chapter 7: Discussion

7.1 Introduction

The aim of this study was to investigate changes in illicit drug markets and consumption patterns in New Zealand associated with COVID-19 and related restrictions in comparison to the shifts that have been observed internationally. This study examined such changes by drawing upon expert opinion in key professions like the National Drug Intelligence Bureau, the New Zealand Police's National Organised Crime Group, Customs, The New Zealand Drug Foundation, and defence lawyers. To support the information presented by these key stakeholders, data on consumption and offending rates, price, purity, and adulteration was collected and reviewed from several organisations, representative of local and global trends.

This research supports the theory that COVID-19 and related lockdown measures had a range of impacts on illicit drug trafficking both globally and in New Zealand. Further, analysis shows that although most COVID-19-related impacts on New Zealand illicit drug markets were similar

to those identified overseas, New Zealand's local disruptions for some substances were, in fact, unique to the country. The evidence points towards the adaptability of illicit drug traffickers and organised crime groups in the context of a pandemic, as slight changes to the way such groups worked to adapt to the new environment were reported at a local and global level. While these findings are tentative and will need to be replicated due to the exploratory nature of the research, early evidence points to several common themes that have been found elsewhere. Although the findings in this dissertation's previous chapters were presented in the form of common themes found throughout the research, this chapter will outline two predominant themes surrounding the general illicit drug market space, alongside the key changes that occurred in regard to the specific substances subject to the research as a result of COVID-19 and its related restrictions.

7.2 Initial changes because of COVID-19 likely caused disruptions in the illicit drug space

As identified by the UNODC (2020), each country's specific context and in particular the peculiar nature of its illicit drug market had an impact on the severity of pandemic-related implications. This means that the general impacts of COVID-19 are likely to vary between countries and substances based on drug market cultures, geographic situation, and law enforcement strategies in reaction to the pandemic. The findings in this research reinforce these ideas, as it was found that in some cases, New Zealand experienced changes in its illicit drug market distinct from those in other countries.

Law enforcement strategies and individual country responses to COVID-19 probably played a significant role in determining the extent to which illicit drug trafficking and markets will be impacted by the pandemic (UNODC, 2020). As the monitoring of COVID-19 and the enforcement of related lockdown measures relies on the same organisations that are attempting to prevent illicit drug trafficking and harms from occurring, changes to the staffing and resource of such organisations are likely to have impacted the illicit drug scene in some way (Eligh, 2020). In New Zealand, these findings showed that key stakeholders within the New Zealand Police and Customs lost resources because of COVID-19. Although the loss of drug intelligence resources will probably have worked in organised crime groups' favour to some degree, we have not yet seen any significant impacts of this within the illicit drug harm and consumption spaces. In fact, the diversion of police resources towards street-level monitoring may have aided in catching offenders within the illicit drug space. The UNODC (2020) stated that an increase in efforts to enforce lockdown measures may aid in the interception, monitoring, and control of drugs coming through the borders. These results have been replicated in New Zealand, with arrest and apprehension data for illicit drug-related offences rising significantly in 2020 compared to previous years. Similarly, several experts in this study cited that anecdotally, law enforcement officers felt as though they were able to find illicit drug offenders much easier, as these lawbreakers were still moving around whilst the rest of New Zealand were staying at home and adhering to the rules.

Further, apprehension data and expert opinion has suggested that New Zealand saw an increase in the establishment and operation of local methamphetamine clandestine

laboratories throughout the year 2020. It is unclear whether this increase was solely due to an increased visibility of illicit drug-related offenders as described above, or whether this was because of supply restrictions stemming from external supply chain disruptions. As cited in research conducted overseas, although some countries saw supply disruptions surrounding precursor chemicals, East and Southeast Asia remained largely unaffected (UNODC, 2021). Southeast Asia has been identified as a large global market for methamphetamine precursors, as Chinese suppliers are considered to be partially responsible for New Zealand's precursor supply (International Narcotics Control Board [INCB], 2021; UNODC, 2014). This means that the increase in local methamphetamine manufacture identified in New Zealand can probably be attributed to both an increased visibility to police and methamphetamine supply restrictions.

Because COVID-19 and related lockdown restrictions put pressure on organised crime groups and illicit drug traffickers, these findings suggest that such groups had to alter their ways of operating. Although no substantial evidence pointed to an increase in the corruption of officials in New Zealand, overseas literature suggests that this is a real possibility in the wake of the pandemic, as the increased risk of general unemployment due to economic crises may increase the risk of involvement in activities relating to illicit drug manufacture or trafficking (UNODC, 2020). New Zealand was already beginning to see the effects of corruption at a small-scale level prior to COVID-19, however an expert within the field of border control has expressed concern about an increase in local corruption following the severe impacts that businesses will experience post-COVID-19. On top of this, with the findings suggesting that gangs are now working together more because of the added pressures they are facing in the wake of the

pandemic, it is clear to see that individuals involved in the illicit drug space are adapting to new environments and overcoming the strains that the pandemic has caused so far.

In regard to the international illicit drug trafficking space, several experts cited that New Zealand's sea freight and air passenger space were most disrupted after COVID-19 and related lockdown measures, and this spilled over into the illicit drug trafficking scene by disrupting these modes of importation. Internationally, however, UNODC (2021) reported that air and land modes were most disrupted, with maritime trafficking methods remaining steady in most countries during and post-pandemic. It is likely that New Zealand's illicit drug routes faced different impacts in this regard due to the geographic situation of the country, as published research has connected geographical remoteness with major disruptions to illicit drug trafficking methods and availability (Dietze & Peacock, 2020; Degenhardt et al., 2005; Degenhardt et al., 2006; Giommoni, 2020). Because New Zealand does not share land borders with any other country or province, it is likely that the limited modes of illicit drug trafficking were impacted to a much greater extent, as there were not many alternative options to turn to in the wake of such disruptions.

The findings of this research suggest that because of sea freight and air passenger disruptions following COVID-19 and the implementation of related restrictions, increased use in the mail system and smaller consignments of illicit substances were observed. This is likely to have occurred alongside the change in legitimate habits because of COVID-19, as more people were using online platforms to order goods via the mail system due to shop closures and lockdown

restrictions. Because of this, New Zealand's mail systems were overloaded with products, meaning that illicit substances were more likely to be delivered unnoticed, something that organised crime groups probably noticed and took advantage of. Although most of the data points to an increased use in smaller consignments to transport substances throughout New Zealand, one participant suggested that organised crime groups might have turned towards the use of larger consignments at less frequency because their movements were restricted by lockdowns. This view has support from evidence in other countries, with the UNODC (2020) reporting that organised criminal groups in some countries adapted to this approach, whilst others moved towards the mail system as noted above. It seems, however, that an increased use of larger less frequent consignments in New Zealand is unlikely, as the results show that lockdown restrictions did not restrict organised crime groups' ability to move their products in the normal fashion. It was noted that such individuals still moved throughout New Zealand without much notice of their legal obligations, subverting systems and coming up with new ways to get around the country. Because of this, it is probable that although larger consignments of illicit drugs at lower frequencies may have occurred to some degree during the pandemic, the use of smaller consignments at higher frequencies was a more widespread change seen in New Zealand.

7.3 Methamphetamine

Methamphetamine is a highly addictive synthetic stimulant that has long-lasting effects on a user's central nervous system (National Institute on Drug Abuse [NIDA], 2019). Due to the

highly addictive nature of the substance, any decreases in methamphetamine consumption rates during the COVID-19 pandemic can be attributed to changes in availability specifically, as methamphetamine is used in a range of different environments at any time. In contrast, substances such as MDMA were often used in party or rave scenarios only, meaning that the effects of COVID-19 lockdowns on the closure of clubs and festivals may have also been a factor in relation to that particular substance. Ultimately, international research on the impact of COVID-19 on methamphetamine markets and consumption rates has aligned with the findings presented in this research.

Academic literature has shown that drug users tend to stockpile and use substances more often in the wake of a crisis (Dunlap et al., 2007). Anecdotal evidence and wastewater analysis of methamphetamine consumption has tended to confirm this theory, as the findings of this research portrayed an unprecedented increase in methamphetamine consumption in the month that New Zealand's lockdown was announced. These findings depict the perfect image of a failed methamphetamine stockpile in New Zealand, which led to binges in the use of the substance, before consumption decreased as New Zealanders exhausted their supply. This aligned with early predictions cast by the UNODC (2020), stating that COVID-19 was likely to lead to a stockpile of substances during lockdown measures and related restrictions worldwide.

The impacts of COVID-19 on methamphetamine availability were indicated at both a New Zealand and international level through this research and in other global reports.

Methamphetamine consumption rates decreased rapidly in New Zealand and Australia since

April 2020, shortly after lockdown measures were implemented in both countries (ACIC, 2021; New Zealand Police & NDIB, 2021). Further, the reported price of methamphetamine in New Zealand, Australia, and the USA sharply increased shortly after COVID-19 impacted each country, reflecting availability restrictions and the willingness of organised crime groups to increase prices to capitalise on these issues (ACIC, 2021; DEA, 2021; NDIB, 2021b). These variables portray a clear picture of a decrease in methamphetamine availability shortly after COVID-19 and related lockdown measures were implemented both in New Zealand and internationally. These disruptions coincide with international reporting of restriction on the availability of methamphetamine precursors in several countries (DEA, 2021; UNODC, 2021). It is important to note, however, that methamphetamine supply in East and Southeast Asia remained unaffected (UNODC, 2021), which may have been a contributing factor to the short-lived repercussions surrounding the decreased supply of methamphetamine globally.

Although there was some anecdotal reporting of methamphetamine adulteration in New Zealand, overseas literature found no change in the purity or composition of the substance following the implementation of COVID-19 related restrictions. Hospitalisation data derived from New Zealand and European sources both show no significant change in methamphetamine poisoning-related presentations in either region (EMCDDA, 2021; Ministry of Health, 2021), possibly pointing to the idea that the substance has not seen any major increase in adulteration with harmful chemicals. In fact, both sources found that acute drug toxicity presentations of methamphetamine slightly decreased in 2020 (EMCDDA, 2021; Ministry of Health, 2021).

The impacts of COVID-19 on methamphetamine availability did not last long both in New Zealand and internationally. Illicit drug markets have been identified as resilient towards change, with past global crises having little long-term impact on these factors as a result (Eligh, 2020; Namli, 2021; Tzvetkova et al., 2016). Anecdotal evidence supplied by several experts in New Zealand's illicit drug and organised crime prevention space suggested a swift recovery in national methamphetamine supply, with reported wastewater consumption levels reaching an all-time high in the second half of 2021. Further, the reported price of methamphetamine per kilogram and gram has begun decreasing to similar values observed prior to the pandemic, with kilogram prices recovering at a faster rate than the smaller quantity of a gram (NDIB, 2021b). This could suggest more stability in the wholesale market but some temporary disruption of retail, which would align with the experience of the pandemic. Data recovered from Australian and USA sources show similar results in terms of their methamphetamine drug markets, as both countries have reported the recovery of production and supply to almost pre-pandemic levels shortly after their lockdown measures eased (ACIC, 2021; DEA, 2021). The DEA (2021) reported that it is likely that methamphetamine price increases prior to COVID-19 were a direct result of drug dealers capitalising on the poor environment surrounding the pandemic. This may serve as another explanation of why we are seeing discrepancies in the gram and kilogram prices of methamphetamine in New Zealand.

This research shows that although it is likely that worldwide methamphetamine availability was impacted by COVID-19 and related restrictions, methamphetamine markets seemed to have

bounced back quite quickly since then. Interestingly, although data presented by New Zealand, Australian, and US sources all show disruptions to methamphetamine markets, no significant level of adulteration was observed anywhere worldwide. It is likely that the lack of observed purity changes for methamphetamine can be attributed to the minimal disruptions that the market saw following COVID-19, with many countries including New Zealand already detecting the recovery of methamphetamine consumption and prices since 2021.

7.4 MDMA

MDMA shares the same properties as methamphetamine in the sense that the substance is another synthetic stimulant (NIDA, 2020), although the drug is less addictive, and the environment in which it is taken is vastly different than that of methamphetamine. Because of this, in combination with several other factors, the pandemic and related lockdown restrictions have impacted MDMA markets differently in New Zealand and internationally.

The implications that the MDMA markets faced in New Zealand differed significantly to what had been found overseas. Demand reductions for the substance, however, were observed worldwide (ACIC, 2021; UNODC, 2021), as MDMA is a party-type drug, often taken at bars, nightclubs, and music festivals (Price et al., 2021). With COVID-19 and related lockdown restrictions resulting in the closure of these environments, the demand and consumption of MDMA dropped worldwide shortly after the pandemic initially hit (ACIC, 2021; New Zealand Police & NDIB, 2021; Price et al., 2021; UNODC, 2021). Because of these demand reductions,

manufacturing countries such as the Netherlands halted their production of MDMA to avoid the risks associated with stockpiling large quantities of the substance. Reflective of low demand, UNODC (2021) reported significant decreases in the wholesale price of the substance in manufacturing countries in Western and Central Europe, with prices only beginning to recover by the end of 2020, once lockdown restrictions had eased. The purity of MDMA remained high in Europe (UNODC, 2021), showing that the issues they faced were simply attributed to a lack of demand.

Since the disruptions to MDMA supply solely related to a decrease in demand for the substance, the New Zealand market for MDMA was disproportionately impacted compared to other regions. New Zealand was one of the first countries to eliminate the first strain of COVID-19 in 2020 after a short and strict lockdown period in the first quarter of the year (Unite Against COVID-19 [UAC], 2021). By June 2020, New Zealand had returned to normal, allowing the opening of bars, nightclubs, and festivals in the country again (UAC, 2021). Because these drug-taking environments had reopened in New Zealand, demand for MDMA increased once again. With the rest of the world still struggling with the pandemic, manufacturing countries were not sending New Zealand sufficient supply to meet demand. In an attempt to meet the increasing demands associated with the substance, these findings showed that New Zealand saw large increases in the replacement of MDMA with synthetic cathinones. The increase in synthetic cathinones can further be attributed to the geographic logistics of COVID-19 and its impacts on external supply chains. Because China is the predominant country of origin for synthetic cathinones, and their swift recovery from COVID-19 coincided with New Zealand's, such

substances found it easier than MDMA to penetrate the country's borders, leading to an increase in observed synthetic cathinones being sold as MDMA in New Zealand as a result. This suggests that COVID-19 impacts more on external than internal supply chains. Given the provenance of certain drugs is more remote countries, interference with certain supply chains can have quite dramatic impacts on the domestic supply and on public health.

Several authors have pointed to the increased risks of adulteration and dangerous drug consumption levels following supply shortages, as manufacturers could be more compelled to put additional substances in their products to satisfy demand issues (Beletsky & Davis, 2017, Dietze & Peacock, 2020; Eligh, 2020; Enns et al., 2020; Friedman et al., 2008; Rhodes, 2002; Zolopa et al., 2021). This can be especially dangerous, as it is evident that most drug users do not test their products before or after purchasing (Coomber & Maher, 2006; Decorte, 2001). Poisoning-related hospitalisations, data sourced from drug testing agencies, and anecdotal reporting surrounding MDMA purity clearly portrayed the dangers associated with the heightened adulterations coinciding with lockdowns in New Zealand. After a relatively stable increase in MDMA-related poisoning hospitalisations from 2017 until 2019, an increase of more than 20% occurred in 2020 following the implementation of lockdown measures in New Zealand (Ministry of Health, 2021).

Although international literature has pointed out the correlation between illicit drug price increases and availability restrictions (Eligh, 2020), no significant changes in the price of MDMA per gram or kilogram were observed in New Zealand in the months following COVID-19 and

subsequent lockdown measures (NDIB, 2021b). With the findings ultimately concluding that the trafficking and supply of MDMA in New Zealand was heavily disrupted following COVID-19 and related lockdown measures, it is unusual for price to not be reflective of similar results. As the research suggests, MDMDA was still technically being sold in New Zealand throughout 2020 and 2021, however most of it was being adulterated with synthetic cathinones to meet supply and demand issues. Because of this, the perceived availability of the substance may have allowed illicit drug traffickers and dealers to sell their product for the same price as they had been prior to the pandemic. The synthetic cathinones that replaced MDMA may well have been significantly cheaper than the original substance because of where they are sourced – China - and thus adulteration could have led to significant profits in the sale of ‘MDMA’. Unfortunately, due to a lack of pricing information on MDMA during key dates in 2020, no true conclusion can be drawn in this regard.

As portrayed throughout these research findings, New Zealand’s MDMA markets may have been impacted differently than what was observed internationally. For example, countries in the Middle East and North Africa saw a sharp increase in MDMA prices in 2020 (UNODC, 2021), however Australian and European pricing data showed the opposite (ACIC, 2021; UNODC, 2021). This again can suggest that external environment-specific factors such as demand and MDMA drug-taking cultures have played a part in the reported differences in impact severity for each country. One issue is whether this adulteration will persist, and how long it will be before consumers wake up that they are being sold a substance that is not what they presume it is.

7.5 Cocaine

Cocaine is another stimulant-type substance that is highly addictive in nature (NIDA, 2021). The findings throughout this research have identified that the cocaine market in New Zealand is quite small compared to that of methamphetamine and MDMA, meaning that limited local data could be gathered to portray any changes post-COVID-19 as a result.

The findings suggest that cocaine markets in New Zealand were impacted by COVID-19 to some extent, with pricing data portraying a sharp increase in gram prices shortly after lockdown measures were implemented, rising to record highs in the first half of 2021 (NDIB, 2021b). The prices of cocaine per kilogram took longer to increase, remaining relatively stable from 2019, before skyrocketing in the first half of 2021 (NDIB, 2021b). Similarly, wastewater consumption data shows that cocaine consumption decreased shortly after lockdown restrictions were imposed in August 2020 (New Zealand Police & NDIB, 2021). The implications of this to date are more difficult to fully understand, as cocaine consumption levels in New Zealand were already low. However, these consumption levels matched the same trends we saw in both methamphetamine and MDMA, showing that there is likely a correlation between the timing surrounding New Zealand's first lockdown and the drop in consumption levels. The combination of pricing increases and consumption decreases in New Zealand's cocaine markets shortly after lockdown measures were implemented show that availability probably decreased after COVID-19.

International data on the disruptions to cocaine markets in 2020 show similar results to those seen in New Zealand. Australian data was homogenous with the data gathered in this study, with cocaine consumption rapidly decreasing in their capital cities from August 2020, during the midst of their first and second waves of COVID-19 lockdowns (ACIC, 2021; Stobart & Duckett, 2021). Australian and US cocaine prices also rapidly increased in 2019-2020 compared to their 2018-2019 levels (ACIC, 2021; DEA, 2021). Mobility restrictions and local lockdown measures had a great impact on coca leaf supply chains, as buyers in manufacturing countries like Colombia and Peru could not enter areas of production to retrieve the product in the early phases of the pandemic (UNODC, 2021). As a result, coca leaf prices declined significantly (UNODC, 2021). It is likely that these disruptions led to the availability restrictions that were observed in New Zealand and all over the world, as the finished product of cocaine was probably difficult to obtain during this time.

It is unclear whether cocaine suffered from an increased level of adulteration both in New Zealand and internationally. Because New Zealand doesn't have a large cocaine market, data from drug testing agencies and hospitalisation admissions were insufficient to allow for any significant conclusions to be drawn in this sense. One expert from the New Zealand Drug Foundation, however, stated that incidences of cocaine adulteration doubled after COVID-19-related lockdown measures were implemented. This would make sense, given that all other findings in this research, and internationally, found that the external supply lines of cocaine were impacted to some degree following COVID-19 and related restrictions. With academic

literature stating that supply issues often lead to an increased risk of drug adulteration (Eligh, 2020; Enns et al., 2020), it is likely that this anecdotal report supports this, although only in a quantitatively unverified way. Similarly, European data found that cocaine purity in Spain decreased to levels lower than usual. Overall, however, purity levels in the entire continent remained largely unchanged (EMCDDA, 2021).

It is likely that COVID-19 and related restrictions put a strain on cocaine trafficking and the substance's markets in New Zealand and worldwide. With local lockdown restrictions in coca leaf production countries preventing manufacturers from obtaining the product shortly after COVID-19, many countries worldwide saw a pause in cocaine availability. This could be indicated through a change in cocaine prices and consumption levels in New Zealand, and in other countries such as Australia and the US. Limited data on cocaine purity shows that some level of adulteration may have occurred in some parts of the world, like Spain and New Zealand, however this seemed to be short-lived. Following the relaxation of lockdown restrictions in cocaine countries of origin, the specific substance markets are likely beginning to recover already.

7.6 Adaptability and resilience

Organised crime groups and drug traffickers are resilient by nature, as they find it easy to adapt alongside changing situations within their field of work (Eligh, 2020; Namli, 2021; Tzvetkova et

al., 2016). In the context of COVID-19, these findings and international research tends to confirm this resilience.

As identified previously, these findings suggest that changes to licit modes of transportation and disruptions in the space of illicit drug monitoring pushed organised crime groups towards new ways of operating. In New Zealand, this was portrayed in the form of changes to illicit drug trafficking routes, increases in local manufacture of methamphetamine, and the subversion of COVID-19 systems through obtaining false exemption letters and travelling under a false name throughout the country. Internationally, reporting showed that manufacturers easily adapted to changing situations for each substance in different ways. For example, it was found that MDMA manufacturers quickly responded to reductions in demand following the implementation of lockdown measures worldwide, halting supply to avoid any risks associated with being caught with the substance (UNODC, 2021).

Interestingly, because the world has now gone through two major events surrounding COVID-19 in 2020 and 2021, the adaptability of organised crime groups can be portrayed by comparing the implications observed in each subsequent year. In New Zealand, most experts interviewed as part of this research said that they have seen no decrease in the supply, quality, or consumption of illicit drugs during the latest 2021 COVID-19 lockdown. In fact, these markets have proven to be resilient, with reported methamphetamine consumption in New Zealand hitting unprecedentedly high levels in August and September 2021. This can relate to the recovery of methamphetamine manufacture and supply chains overseas, with the DEA (2021)

reporting that such markets have now returned to their pre-pandemic status worldwide.

Further, international reporting has shown that cocaine and MDMA manufacture has continued since slight disruptions in 2020 following the implementation of COVID-19 restrictions (UNODC, 2021).

Although illicit drug markets have been identified as resilient and adaptable to change, the purity of a drug is likely to stand as a lasting impact, taking a much longer time to rebound compared to other aspects of the market (Eligh, 2020). This may be of concern, especially due to the high levels of MDMA adulteration that were observed in New Zealand during 2020. With the findings suggesting that such adulteration was restricted to New Zealand, it is unlikely that we will see the lasting implications of COVID-19 in this regard, as globally no significant levels of adulteration were recorded. Because it is probable that the adulteration of New Zealand's MDMA was merely adapting to supply issues that did not fit the demand, purity levels will likely return to normal when manufacturing countries begin to operate again. As stated by experts within the illicit drug field, MDMA adulteration has already decreased in New Zealand following the ease of lockdown restrictions and related COVID-19 disruptions. However, it is important to note that some drug traffickers may continue to try to peddle cheaper synthetic cathinones as ecstasy because they can make more money in the short term. The only risk now is the damage to their market reputation, as the pandemic's effects on drug supply are now beginning to wear off, meaning that adulterated substances are less likely to be accepted as they were during the height of COVID-19.

The adaptability and resilience of organised crime groups and drug traffickers has been suggested in these findings and similar research conducted overseas. With research on past global crises and their impact on illicit drug trafficking and markets pointing towards the emergence of this theme (Eligh, 2020), it is unsurprising that this research has observed similar trends.

Chapter 8: Conclusion

8.1 Conclusion

The COVID-19 pandemic has altered many aspects of social life, pushing many countries, including New Zealand, to implement stringent measures to conserve public health. In turn, such measures caused major disruptions of the everyday functioning of society. Our illicit drug markets were no exception. At the beginning of this dissertation, several questions were posed to address the overarching aim of the research: to determine whether COVID-19 has made an impact on illicit drug trafficking and markets both in New Zealand and worldwide. The results point to some disruption of illicit drug trafficking and their consequent markets probably attributable to the pandemic. This is not surprising due to the clear reliance that illicit drug traffickers and subsequent markets have on societal cohesion and licit market functionality. The interesting thing about these findings is precisely in regard to which drugs were impacted and how.

The overarching question in this research sought to answer whether the COVID-19 pandemic impacted illicit drug trafficking globally. These findings suggest that illicit drug trafficking and the subsequent substance markets worldwide experienced severe disruptions shortly after COVID-19 became widespread. Specifically, the illicit drug world saw disruptions to their drug trafficking routes and manufacturing capabilities due to travel restrictions and enforcement strategies to prevent the spread of the virus. In turn, many countries including New Zealand saw a substantial change in the price, availability, and consumption rates of three illicit drugs of concern: methamphetamine, MDMA, and cocaine. These impacts, however, were not long-lasting, with many illicit drug supply chains recovering shortly after organised crime groups and drug traffickers found new ways to adapt to the environment of COVID-19.

As suggested throughout the findings of this research, it is likely that COVID-19 impacted New Zealand illicit drug trafficking and markets in different ways than those observed at a general global level. This may be for several reasons including New Zealand's geographical situation in the world, the country's reaction to COVID-19, and the subsequent law enforcement strategies that were followed. Firstly, because New Zealand doesn't share a land border with any other country, it is likely that the country's sea freight and air passenger spaces were most disrupted by COVID-19. This pushed the transportation of illicit substances in New Zealand to the mail system in high frequency low volume consignments. Although one anecdotal report mentioned the possibility of low frequency high volume consignments increasing post-pandemic, the mail system seemed to be much more widespread in terms of increased use during the COVID-19 outbreak. Internationally, air and land modes of transport were most disrupted by COVID-19. It

is important to note that each country faced slightly different implications surrounding the trafficking of illicit substances in this sense, as some regions saw increases in trafficking by mail in the same way that New Zealand did, while others saw the appearance of larger consignments at lower frequencies.

Illicit drug supply chains were disrupted in manufacturing countries worldwide following COVID-19 and related lockdown measures. This meant that each illicit drug market was impacted in a similar way throughout the world. Data on the price, availability, and consumption of illicit substances both in New Zealand and internationally reflected the initial disruption of drug markets during the pandemic. Further, no significant change in purity was observed on a global scale. These factors remained relatively stable for methamphetamine, MDMA, and cocaine markets worldwide. It must be noted, however, that the substantial increase in MDMA adulteration in New Zealand was not observed in overseas data. The findings of this research point to New Zealand's swift recovery from COVID-19 as an explanation for this discrepancy, as MDMA supply issues worldwide are wholly related to a lack of demand for the substance. While in New Zealand, MDMA demand bounced back due to the country's swift recovery from COVID-19 and the opening of drug-taking environments, supply from Europe remained restricted while global demand remained disrupted. This research clearly exemplifies how similar illicit drug markets and trafficking techniques are all over the world, with individual external factors likely to be the main reason that different implications are observed in the environment of a pandemic.

Ultimately, no new 'breakthrough' techniques of illicit drug distribution and manufacture have been found in this research. As mentioned previously, COVID-19 merely acted as a hurdle for organised crime groups, pushing them to use different strategies that they may not have been using as often prior to the pandemic. This can be seen in the changes to illicit drug trafficking distribution methods, with some countries taking advantage of the mail systems, and others slowing distribution by sending illicit substances at larger volumes. Further, in New Zealand, the adoption of techniques to subvert new COVID-19 systems and work alongside different gangs was observed by several experts. Finally, there was an observed increase in the local manufacture of methamphetamine in New Zealand during and prior to COVID-19-related lockdown measures. It is likely that this was a byproduct of both an increased visibility of illicit drug-related offenders due to law enforcement strategies imposed by the government, as well as a decrease in methamphetamine availability stemming from overseas manufacturers.

Overall, the pandemic-related impacts on the quality and safety of illicit substances worldwide seemed to largely depend on the specific drug itself. For example, although methamphetamine likely remained relatively stable in terms of composition, some countries cited a decrease in the quality of cocaine and MDMA in 2020, during the height of COVID-19. This again portrays each illicit drug market as largely dependent on external factors, as although cocaine adulteration was not so common in Europe as a whole, Spanish sites observed a decrease in purity in 2020 compared to the year prior. Further, New Zealand data likely points towards an increased risk in cocaine consumption and adulteration in 2020. As mentioned previously, MDMA purity and adulteration remained steady worldwide, except for in New Zealand, where the adulteration of

MDMA with synthetic cathinones turned into a significant issue for the country. Again, this is likely to be attributed to external factors that the country faced as a result of the pandemic, as local MDMA supply did not meet demand at the time. It is important to note that although drug adulteration may have increased during the pandemic and months prior to lockdown restrictions, there have been no new reports to suggest that the quality and safety of illicit drugs will be detrimentally impacted in the long-term.

Throughout this research, the similarities and differences between illicit drug markets worldwide have been identified to explain how and why COVID-19 has impacted various countries and substances. Although New Zealand faced slight differences in the changes to illicit drug purity and trafficking methods compared to other countries, the impacts that such markets faced were generally homogenous worldwide. Due to the adaptable nature of organised crime groups and illicit drug traffickers, the impacts that have been portrayed following the pandemic have either rebounded already or are likely to rebound shortly. It is therefore clear to see that COVID-19 has merely put a strain on organised crime groups in the same way that many of us faced in our regular lives, forcing us, and them, to adapt to changing circumstances. Decisions made by traffickers and manufacturers about whether to continue to supply substances appear to have been dictated more by sensitivity to market demand than by state-imposed restrictions or logistical hurdles that had accompanied the prevention of COVID-19 spread.

8.2 Limitations of the study

Due to the covert nature of illicit drug trafficking and monitoring, the main limitation in this study was that surrounding the access to information. Fortunately, information on New Zealand's illicit drug markets was reasonably useful, with many organisations sharing adequate data either publicly or through official information act requests. Even though the information shared by interview participants was reliable and worthwhile, there may be some unrevealed information regarding current illicit drug monitoring due to the sensitive nature of the experts' work. The most prominent limitation in this sense was that the experts interviewed were not able to reveal substantial empirical data to accompany their answers to some questions.

Further, data on international illicit drug trafficking and subsequent markets was difficult to obtain, as this study had to rely on limited and predominantly generalised information published online. Because COVID-19 is a relatively new phenomenon, previous studies on the topic were limited, meaning this research had to rely on literature on past global crises as a result. In the future, a much wider scale research project that uses the same methodology for New Zealand and international implications of COVID-19 is needed to further understand the depth of the topic.

This research was produced on a small-scale and short timeframe as a part of a master's qualification at the University of Canterbury, meaning that the sample size of interview experts was limited. Although the sample was fairly representative of New Zealand organisations within

the field of illicit drug monitoring and harm prevention, future studies may aim to complete research on a larger scale with more participants including drug users and suppliers. A larger sample size could have therefore generated more accurate results, as in some cases, experts disagreed with each other on important points. On top of this, because the research was conducted during a nationwide lockdown in 2021, only two out of the six interviews were conducted in-person, with the rest being either over the phone or via video conference. Although little empirical research has been conducted on the efficiency of both interview techniques compared to one another, it was felt that much more useful information was gained out of the in-person interviews.

8.3 Research implications

Tools that monitor illicit drug trafficking, consumption, and related harms are important both within and outside of the context of COVID-19. This study provides a useful background on the nature of illicit drug trafficking and how to detect changes in related markets through the analysis of a wide range of factors including anecdotal experience, consumption levels, illicit drug pricing, hospitalisations, and drug-related arrests/apprehensions. Although there is a considerable body of research internationally that focuses on trend analysis surrounding illicit drug trafficking and its implications on consumption safety, little open-source research can be found in New Zealand, with those available predominantly quantitative in nature.

Operating within the environment of a pandemic is complex, therefore it is important that more attention is placed on the impact this has had on illicit drug trafficking and subsequent drug markets. In the future, researchers should look to replicate the methodology presented in this dissertation on a larger scale to compare pre and post COVID-19 data once available. This is especially useful in aiding officials to determine the most effective enforcement strategies they should use in the wake of the pandemic. To be successful in preventing organised crime, illicit drug trafficking, and subsequent illicit drug consumption harms, officials must be aware of any changes made in the illicit drug scenes both in New Zealand and internationally as a result of COVID-19 or related crises.

With this research pointing towards the diversity of illicit drug markets based on the environments and countries in which they are situated, enforcement strategies should look towards the development of specific techniques based on these factors. Similarly, comparative research conducted on a New Zealand local basis to determine the impacts of a pandemic and related crises would be of undeniable value to portray differences in implications dependent on situation within the country. It will aid in the resourcing of police and other drug harm prevention organisations to target the areas most in need.

Bibliography

Australian Criminal Intelligence Commission (2021). *Illicit drug data report 2019-20*.

https://www.acic.gov.au/sites/default/files/2021-10/IDDR%202019-20_271021_Full_0.pdf

Balmford, B., Annan, J.D., Hargreaves, J.C., Altoe, M., & Bateman, I.J. (2020). Cross-country comparisons of COVID-19: Policy, politics, and the price of life. *Environmental and Resource Economics*, 76(4), 525-551.

Beletsky, L., & Davis, C. S. (2017). Today's fentanyl crisis: Prohibition's iron law, revisited. The *International Journal of Drug Policy*, 46, 156-159. <https://doi.org/10.1016/j.drugpo.2017.05.050>

Bennett, A.S., Golub, A., & Dunlap, E. (2011). Drug market reconstitution after Hurricane Katrina: Lessons for local drug abuse control initiatives. *Justice Research and Policy*, 13(1), 23-44.

Bergeron, A., Décary-Héту, D., & Giommoni, L. (2020). Preliminary findings of the impact of COVID-19 on drugs crypto markets. *The International Journal of Drug Policy*, 83, 102870. <https://doi.org/10.1016/j.drugpo.2020.102870>

Bogner, A., & Menz, W. (2009). The theory-generating expert interview: Epistemological interest, forms of knowledge, interaction. In A. Bogner, B. Littig, & W. Menz (Eds.), *Interviewing experts*, (pp. 43-80). Palgrave Macmillan UK.

Cabral, L., & Xu, L. (2021). Seller reputation and price gouging: Evidence from the COVID-19 pandemic.

Economic Inquiry, 59(3), 867-879.

Ciotti, M., Ciccozzi, M., Terrinoni, A., Jiang, W.C., Wang, C.B., & Bernardini, S. (2020). The COVID-19

pandemic. *Critical reviews in laboratory sciences*, 57(6), 365-388.

<https://doi.org/10.1111/ecin.12993>

Coomber, R., & Maher, L. (2006). Street-level drug market activity in Sydney's primary heroin markets:

Organization, adulteration practices, pricing, marketing and violence. *Journal of Drug*

Issues, 36(3), 719-753. <https://doi.org/10.1177/002204260603600310>

Decorte, T. (2001). Quality control by cocaine users: Underdeveloped harm reduction

strategies. *European Addiction Research*, 7(4), 161.

Degenhardt, L., Reuter, P., Collins, L., & Hall, W. (2005). Evaluating explanations of the Australian

'heroin shortage'. *Addiction (Abingdon, England)*, 100(4), 459-

469. <https://doi.org/10.1111/j.1360-0443.2005.01000.x>

Degenhardt, L., Day, C., Gilmour, S., & Hall, W. (2006). The "lessons" of the Australian "heroin

shortage". *Substance Abuse Treatment, Prevention and Policy*, 1(1), 11-

11. <https://doi.org/10.1186/1747-597X-1-11>

Dietze, P. M., & Peacock, A. (2020). Illicit drug use and harms in Australia in the context of COVID-19 and associated restrictions: Anticipated consequences and initial responses. *Drug and Alcohol Review*, 39(4), 297-300. <https://doi.org/10.1111/dar.13079>

Doringer, S. (2021). 'The problem-centred expert interview'. Combining qualitative interviewing approaches for investigating implicit expert knowledge. *International Journal of Social Research Methodology*, 24(3), 265-278. <https://doi.org/10.1080/13645579.2020.1766777>

Double, K. (2021). *2020-2021 Testing Report*. Know Your Stuff. <https://knowyourstuff.nz/our-results-2/testing-results/testing-reports/2020-2021-testing-report/>

Drug Enforcement Administration (2021). *2020 National Drug Threat Assessment*. Drug Enforcement Administration Strategic Intelligence Section, US Department of Justice. https://www.dea.gov/sites/default/files/2021-02/DIR-008-21%202020%20National%20Drug%20Threat%20Assessment_WEB.pdf

Dunlap, E., Graves, J., Benoit, E. (2012). Stages of drug market change during disaster: Hurricane Katrina and reformulation of the New Orleans drug market. *International Journal of Drug Policy*, 23(6), 473-480. <https://doi.org/10.1016/j.drugpo.2012.04.003>

Eligh, J. (2020). Crisis and Opportunity: Impacts of the coronavirus pandemic on illicit drug markets.
www.globalinitiative.net

Enns A, Pinto A, Venugopal J, et al. Substance use and related harms in the context of COVID-19: a conceptual model. Consommation de substances et méfaits connexes dans le contexte de la COVID-19 : un modèle conceptuel. Health Promot Chronic Dis Prev Can. 2020;40(11-12):342-349. doi:10.24095/hpcdp.40.11/12.03

European Monitoring Centre for Drugs and Drug Addiction. (2020a). Impact of COVID-19 on patterns of drug use and drug-related harms in Europe. Publications Office of the European Union, Luxembourg. doi:10.2810/830360

European Monitoring Centre for Drugs and Drug Addiction (2020b). *EU4MD Special Report: Emerging evidence of Afghanistan's role as a producer and supplier of ephedrine and methamphetamine*. <https://www.emcdda.europa.eu/system/files/publications/13410/emcdda-methamphetamine-in-Afghanistan-report.pdf>

European Monitoring Centre for Drugs and Drug Addiction (2021). *European Drug Report 2021: Trends and Developments*. Publications Office of the European Union, Luxembourg. doi:10.2810/18539

European Monitoring Centre for Drugs and Drug Addiction & Europol. (2020). EU Drug Markets: Impact of COVID-19. Publications Office of the European Union, Luxembourg. 13.

<https://doi.org/10.2810/19284>

European Monitoring Centre for Drugs and Drug Addiction & Sewage Analysis Core Group (2021, June).

Wastewater and drugs: a European multi-city study.

https://www.emcdda.europa.eu/publications/html/pods/waste-water-analysis_en#usage-notes

Evans, C., & Lewis, J. (2018). Analysing semi-structured interviews using thematic analysis: exploring voluntary civic participation among adults.

https://wiserd.ac.uk/sites/default/files/documents/Overview_1.pdf

Friedman, S. R., Rossi, D., & Braine, N. (2008). Theorizing “Big events” as a potential risk environment for drug use, drug-related harm and HIV epidemic outbreaks. *The International Journal of Drug Policy*, 20(3), 283-291. <https://doi.org/10.1016/j.drugpo.2008.10.006>

Fung, S.S., & Roberts, S. (2021). Covid-19 and the role of a competition authority: The CMA’s response to price gouging complaints. *Journal of European Competition Law & Practice*, 12(10), 734-745.

<https://doi.org/10.1093/jeclap/lpab054>

Giommoni L. (2020). Why we should all be more careful in drawing conclusions about how COVID-19 is changing drug markets. *The International Journal of Drug Policy*, 83, 102834.

<https://doi.org/10.1016/j.drugpo.2020.102834>

Glaze, J. A. (2007). *Opium and Afghanistan: Reassessing US counternarcotics strategy*. ARMY WAR COLL STRATEGIC STUDIES INST CARLISLE BARRACKS PA.

Hahn, R.Z., Augusto do Nascimento, C., & Linden, R. (2021). Evaluation of illicit drug consumption by wastewater analysis using polar organic chemical integrative sampler as a monitoring tool.

Frontiers in Chemistry, 9, 65.

Henrickson, M. (2020). Kiwis and COVID-19: The Aotearoa New Zealand response to the global pandemic. *The International Journal of Community and Social Development*, 2(2), 121-133.

<https://doi.org/10.1177/2516602620932558>

Institute of Environmental Science and Research (n.d.). *About ESR: Our science in action - Drugs in wastewater*. <https://www.esr.cri.nz/home/about-esr/our-science-in-action/drugs-in-wastewater/>

International Narcotics Control Board (2021). *Precursors and chemicals frequently used in the illicit manufacture of narcotic drugs and psychotropic substances*. United Nations Office at Vienna.

https://www.incb.org/documents/PRECURSORS/TECHNICAL_REPORTS/2020/AR_with_Annexes/Precursors_with_annex_E_eBook_final_rev.pdf

Karila L, Megarbane B, Cottencin O, Lejoyeux M. (2021). Synthetic cathinones: a new public health problem. *Curr Neuropharmacol.* ;13(1):12-20. doi:10.2174/1570159X13666141210224137

Know Your Stuff (2021). *Know Your Cathinones*. Harm Reduction info.

<https://knowyourstuff.nz/2021/01/08/know-your-cathinones/>

Ministry of Health (2021). Publicly funded hospital discharges, with an illicit drug primary diagnosis code, 2017/18-2019/20. (Obtained under Official Information Act 1982 request to the Ministry of Health).

Misuse of Drugs Act 1975.

<https://www.legislation.govt.nz/act/public/1975/0116/latest/whole.html#DLM436190>

Namli, U. (2021). Behavioral Changes among Street Level Drug Trafficking Organizations and the Fluctuation in Drug Prices Before and During the Covid-19 Pandemic. *American Journal of Qualitative Research*, 5(1), 1-22. <https://doi.org/10.29333/ajqr/9691>

National Drug Intelligence Bureau (2021a). All proceedings against offenders for 'illicit drug' offences from January 2017 to June 2021. (Obtained under Official Information Act 1982 request to the New Zealand Police). Ref: IR-01-21-23121.

National Drug Intelligence Bureau (2021b). Pricing information for MDMA, cocaine and methamphetamine, through to 31 August 2021. (Obtained under Official Information Act 1982 request to the New Zealand Police). Ref: IR-01-21-34945.

New Zealand Police & National Drug Intelligence Bureau (2021). *Wastewater Drug Testing in New Zealand: National Overview Quarter One 2021*.

<https://www.police.govt.nz/sites/default/files/publications/wastewater-results-quarter-1-2021.pdf>

National Institute on Drug Abuse (2019). Methamphetamine Drug Facts. Retrieved from <https://www.drugabuse.gov/publications/drugfacts/methamphetamine> on January 23, 2022.

National Institute on Drug Abuse (2020). MDMA (Ecstasy/Molly) Drug Facts. Retrieved from <https://www.drugabuse.gov/publications/drugfacts/mdma-ecstasy-molly> on January 23, 2022.

National Institute on Drug Abuse (2021). Cocaine Drug Facts. Retrieved from

<https://www.drugabuse.gov/publications/drugfacts/cocaine> on January 23, 2022.

National Drug Intelligence Bureau., & New Zealand Police (2021). *Wastewater Drug Testing in New Zealand: National Overview Quarter One 2021*.

<https://police.govt.nz/sites/default/files/publications/wastewater-results-quarter-1-2021.pdf>

Palamar, J. J., Le, A., Carr, T. H., & Cottler, L. B. (2021). Shifts in drug seizures in the United States during the COVID-19 pandemic. *Drug and Alcohol Dependence*, 221, 108580-

108580. <https://doi.org/10.1016/j.drugalcdep.2021.108580>

Pearce, N., Lawlor, D.A., & Brickley, E.B. (2020). Comparisons between countries are essential for the control of COVID-19. *International Journal of Epidemiology*, 49(4), 1059-1062.

Price, O., Man, N., Bruno, R., Dietze, P., Salom, C., Lenton, S., & Peacock, A. (2022). Changes in illicit drug use and markets with the COVID-19 pandemic and associated restrictions: findings from the Ecstasy and Related Drugs Reporting System, 2016–20. *Addiction*, 117(1), 182-194.

Rhodes, T. (2002). The 'risk environment': A framework for understanding and reducing drug-related harm. *The International Journal of Drug Policy*, 13(2), 85-94. [https://doi.org/10.1016/S0955-3959\(02\)00007-5](https://doi.org/10.1016/S0955-3959(02)00007-5)

Rhodes, T. (2009). Risk environments and drug harms: A social science for harm reduction approach. *The International Journal of Drug Policy*, 20(3), 193-201. <https://doi.org/10.1016/j.drugpo.2008.10.003>

Soares, M.D., Estevao, A.C., & Luciano Jr, P.C. (2020). CADE's responses to price gouging and excessive pricing in the context of the Covid-19 pandemic. *Competition L. Int'l*, 16, 91.

Stephany, F., Stoehr, N., Darius, P., Neuhäuser, L., Teutloff, O., & Braesemann, F. (2020). Which industries are most severely affected by the COVID-19 pandemic? A data-mining approach to identify industry-specific risks in real-time.

Stobart, A., & Duckett, S. (2021). Australia's response to COVID-19. *Health economics, policy, and law*, 1-12. <https://doi.org/10.1017/S1744133121000244>

Taunton, E. (2022, January 27). *Covid-19: Retailer criticised after P2 mask price increases by 170 per cent*. Stuff. <https://www.stuff.co.nz/business/127601593/covid19-retailer-criticised-after-p2-mask-price-increases-by-170-per-cent>

Turner, S. F., Cardinal, L. B., & Burton, R. M. (2017). Research design for mixed methods: A triangulation-based framework and roadmap. *Organizational Research Methods*, *20*(2), 243-267. <https://doi.org/10.1177/1094428115610808>

Tzvetkova, M., Pardal, M., Disley, E., Rena, A., Talic, S., & Forberger, S. (2016). Strategies for a risky business: How drug dealers manage customers, suppliers and competitors in Italy, Slovenia and Germany. *The International Journal of Drug Policy*, *31*, 90-98. <https://doi.org/10.1016/j.drugpo.2016.04.012>

Unite Against COVID-19 (2021). About our COVID-19 response: History of the COVID-19 alert system. <https://covid19.govt.nz/about-our-covid-19-response/history-of-the-covid-19-alert-system/>

United Nations Office on Drugs and Crime (2014). *Global Synthetic Drugs Assessment: Amphetamine-type stimulants and new psychoactive substances*. United Nations Publication.

https://www.unodc.org/documents/scientific/2014_Global_Synthetic_Drugs_Assessment_web.pdf

United Nations Office on Drugs and Crime (2020). COVID-19 and the drug supply chain: from production and trafficking to use.

https://www.unodc.org/documents/islamicrepublicofiran//2020/05/Covid-19-and-drug-supply-chain-May_2020.pdf

United Nations Office on Drugs and Crime (2021). *World Drug Report 2021*.

Van Damme, W., Dahake, R., Delamou, A., Ingelbeen, B., Wouters, E., Vanham, G., & Assefa, Y. (2020).

The COVID-19 pandemic: diverse contexts; different epidemics – how and why? *BMJ Global Health*, 5(7), 7-9.

Zolopa, C., Hoj, S., Bruneau, J., Meeson, J., Minoyan, N., Raynault, M., Makarenko, I., & Larney, S.

(2021). A rapid review of the impacts of “Big events” on risks, harms, and service delivery

among people who use drugs: Implications for responding to COVID-19. *The International Journal of Drug Policy*, 103127- 103127. <https://doi.org/10.1016/j.drugpo.2021.103127>

Zymler, M., Murphy, F.M., & Christoforou, J. (2020). The UK Competition Authority opens investigations against four pharmacies and convenience stores for suspected breaches of antitrust rules by charging excessive and unfair prices for hand sanitiser products during the COVID-19 outbreak. *E-Competitions Bulletin*. Retrieved from <https://www.concurrences.com/en/bulletin/news-issues/june-2020/the-uk-competition-authority-opens-investigations-against-four-pharmacies-and>