

Research Report



# The New Zealand Illicit Drug Harm Index 2023

## **Acknowledgements**

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## **Authors**

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## Project summary

| Aim                           | The 2023 Illicit Drug Harm Index (DHI 2023) provides a comprehensive evaluation of the costs of illicit drug use. Estimates of total harm and harm per kilogram of drugs consumed are included. Illicit drugs potentially include legal drugs (such as medication) diverted to the illicit drug market and/or the misuse of medications and excludes alcohol and tobacco.   |                                |                               |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
|-------------------------------|---|--------------------------------|-------------------------------|--------------------------------|----------------------------|------------------------|------------|------------|--------------|----------------|-----------|------------|------------|-------------|-----------|------------|------------|-----------------|----------|-----------|-----------|-----------|--------------------------|---------------------------|-----------------------|------------------------|--------|--------|-------|----------------|------|------|-----|-------------|-------|-------|------|---------------|-------|---|-------|----------------|------|------|-----|-----------------|-------|--------|-------|-------------------------------|-------|------|------|--------------|---------------|----------------|----------------|
| Method                        | The primary sources of data for the calculation of harm associated with illicit drugs were coronial findings, hospital admissions, willingness to pay estimates from research findings in New Zealand and elsewhere, crime statistics, and estimates of the street value of illicit drugs. There were two categories of harm: personal harm and community harm. Consumption of illicit drugs was measured primarily through wastewater analysis, supplemented by self-reported survey data.   |                                |                               |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
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| Drug type                     | Personal harm \$ per kilogram   | Community harm \$ per kilogram | Total harm \$ per kilogram    |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| <i>Methamphetamine</i>        | 546,321.04  | 501,890.02                     | 1,048,211.06                  |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| <i>Cocaine</i>                | 88,434.00   | 285,147.44                     | 373,581.44                    |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| <i>MDMA</i>                   | 91,828.77   | 117,596.15                     | 209,424.92                    |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| <i>Cannabis</i>               | 5,425.47  | 10,454.61                      | 15,880.08                     |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| Drug type                     | Personal harm \$ million  | Community harm \$ million      | Total harm \$ million         |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| <i>Methamphetamine</i>        | 451.26  | 413.65                         | 864.9                         |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| <i>Cocaine</i>                | 2.74  | 4.98                           | 7.7                           |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| <i>MDMA</i>                   | 22.41   | 17.52                          | 39.9                          |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| <i>Heroin</i>                 | 15.15   | *                              | 15.15                         |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| <i>GHB/GBL</i>                | 2.94  | 2.07                           | 5.0                           |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| <i>Cannabis</i>               | 325.1   | 658.60                         | 983.7                         |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| <i>Synthetic cannabinoids</i> | 25.11   | 0.00                           | 25.1                          |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| <b>Total</b>                  | <b>844.71</b>   | <b>1096.82</b>                 | <b>1941.53</b>                |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |
| Discussion                    | The DHI 2023 is a conservative measure of the harms associated with the use of illicit drugs in New Zealand. It can be extended to accommodate new and emerging drugs in the future. There were several changes incorporated in the DHI 2020 that have remained in place for the DHI 2023. The three most significant initiatives were the use of coronial data and hospital admission data in estimating harm, and the use of wastewater analysis to estimate consumption for methamphetamine, cocaine and MDMA. Cannabis consumption was estimated using 2020/21 New Zealand Health Survey (Health Survey) data due to technical issues interpreting the wastewater analysis. Reliable estimates of the consumption of GHB/GBL and synthetic cannabinoids were not available from any source.   |                                |                               |                                |                            |                        |            |            |              |                |           |            |            |             |           |            |            |                 |          |           |           |           |                          |                           |                       |                        |        |        |       |                |      |      |     |             |       |       |      |               |       |   |       |                |      |      |     |                 |       |        |       |                               |       |      |      |              |               |                |                |

## Introduction

### Drug harm

Drug harm can be defined as harm to individuals, whānau and/or communities resulting from the use of licit or illicit drugs. In this instance, 'harm' is a general term that encompasses negative effects on a person's wellbeing, mana, and health. This includes impacts on relationships, mental and physical health, culture, equity, employment, housing, education, finances, etc. In addition to harms experienced by the person using drugs, drug harm can also impact friends, whānau, iwi and hapū, and wider communities. It also can have an impact on health services and law enforcement.

### Drug harm measurement

Many aspects of the above drug harm definition are difficult to measure. Whether that is due to current measures of harm being limited by an inability to access or capture data, or the fact that some harms are unable to be accurately measured (e.g., culture, mental health, and wellbeing). Acknowledging these complexities, drug harm indices, do not capture all the harms that illegal drugs might possibly generate, but rather a subset of harm for which robust data is available.

Note this report did not consider one significant family relationship: children. There is insufficient information available to allow an estimate of the social cost borne by children of people who use drugs, and this is therefore excluded from this report.

The DHI 2023 retains the classification system of personal and community harms and their components, as first introduced in 2016.

Core components of the DHI that have remained the same through the various versions are:

- the identification of drugs of interest – these include all illicit drugs and legal drugs diverted to the illicit market (alcohol and tobacco are excluded)
- an estimate of the total harm to the community caused by illicit drugs, expressed in dollar terms (all dollars are New Zealand dollars unless otherwise stated)
- an estimate of consumption for each drug of interest
- the calculation of total dollar harm for each drug of interest
- the calculation of an average dollar harm per kilogram of each drug of interest.

## Drug harm indices

The first New Zealand illicit drug harm index was published in 2008 (Slack et al, 2008). It was developed to provide a metric of the social harm caused by illicit drug consumption in New Zealand. It followed on from other international drug harm indices, with the first developed in 2001 by the Australian Federal Police. Great Britain and the United Nations Office on Drugs and Crime released their own indices in 2005. The original DHI in 2001 was developed in a law enforcement context. However, its wider applicability was soon recognised in that a single index would be of value in tracking the total harm caused by illicit drugs.<sup>1</sup> This approach involves a weighted aggregate of key harm measures such as mortality, morbidity, and drug-related crime.

Drug harm indices provide law enforcement a way of reporting drug seizure activity in a single meaningful number that also represents the dollar value of its social impact on the community. Additionally, the notion of a single measure of drug harm, that can be used to measure the benefits of illicit drug policy and practice is highly appealing.<sup>2</sup>

## Revisions of the New Zealand DHI

The New Zealand Drug Harm Index was significantly revised in 2016. It is important to note that DHI 2023 does not include estimates for higher level government interventions in relation to illicit drugs. The measurement of the cost of interventions at any level is crucial to return-on-investment (ROI) studies that are often used in assessing the impact of specific interventions and programs. The costs associated with specific interventions need to be estimated separately. As noted in DHI 2016, the cost of interventions should not be construed as a form of harm.<sup>3</sup>

The DHI 2020 established the use of coronial findings as a measure for the number of deaths attributable to illicit drugs. These are now based on coronial reports rather than estimates provided through a UNODC report.

Another change is the use of expert opinion to estimate harm associated with specific drugs has been discontinued. In essence, both wastewater analysis and hospital admissions provide the necessary information on a range of illicit drugs. Please see Appendix One for further details on the conceptual framework used for the DHI 2023.

<sup>1</sup> McFadden Consultancy. 2016. Research Report: The New Zealand Drug Harm Index 2016 (2nd edn). Wellington: Ministry of Health.

<sup>2</sup> McFadden M, Bellamore L & MacDonald B. (2021). The New Zealand Illicit Drug Harm Index 2020: Research report. Wellington: Ministry of Health

<sup>3</sup> McFadden Consultancy. (2016). Research Report: The New Zealand Drug Harm Index 2016 (2nd edn). Wellington: Ministry of Health.

## Evolving response to drug harm

Since the publication of the first DHI in 2008, New Zealand's approach to drug harm has evolved. An inquiry into New Zealand mental health and addiction was established by the Government in early 2018.<sup>4</sup> This resulted in the publication of the He Ara Oranga report. In the report, there was a clear call from the public to adopt an approach to drug use that minimised harm. Minimising harm from drug use requires viewing use as a health and social issue that can be solved, or at least managed, by providing support, compassion, and access to treatment for people who use drugs. Part of the Government response to enabling a health response to mental health and addiction was amending the Misuse of Drugs Act 1975. The amendments included affirming Police discretion to prosecute for possession and use of controlled drugs, and consideration to whether a health approach is more beneficial. The use of non-court proceedings for personal drug possession and use increased from 66 percent of Police interactions in August 2019 to 82 percent in the first quarter of 2021, although it is worth acknowledging that there were higher rates of court proceedings for Māori during this period.

Acknowledging the evolving context in how drug harm is understood and approached in New Zealand, the limitations, and complexities in the application of the DHI 2023 should be revisited. The notion of a single measure of drug harm that can be used to measure the benefits of illicit drug policy and practice is highly appealing, however, Reuter (2009) suggested that any single measure was unlikely to capture the complexity of the environment within which drug markets operate.<sup>5</sup>

That being said, cost estimates of drug harm can provide a good basis for the development of drug policy, help inform investment decisions for government and government agencies, and improve the evidence base and understanding of the interaction between drug use and harm. In other words, although assigning an economic value does not capture the complex nature of drug harm, it does provide additional evidence for government and government agencies to make informed decisions in addressing this harm.<sup>6</sup> McFadden (2016) also noted that DHIs report results in dollar values, which assists interpretation by the general public and professional community alike. In short, they have a clear message.<sup>7</sup>

<sup>4</sup> New Zealand Government. (January 2018) *Inquiry to improve mental health services*. Retrieved January 2023, from Beehive.govt: <https://www.beehive.govt.nz/release/inquiry-improve-mental-health-services>

<sup>5</sup> Reuter P. (2009). Ten years after the United Nations General Assembly Special Session (UNGASS): assessing drug problems, policies and reform proposals, *Addiction*, 104: 510–517.

<sup>6</sup> Roberts M, Bewley-Taylor D & Trace M. (2006) *The Measurement of Drug-related Harm* Retrieved January 2023, from the Beckley Foundation: [https://www.beckleyfoundation.org/wp-content/uploads/2016/04/BF\\_Report\\_09.pdf](https://www.beckleyfoundation.org/wp-content/uploads/2016/04/BF_Report_09.pdf)

<sup>7</sup> McFadden Consultancy. 2016. Research Report: The New Zealand Drug Harm Index 2016 (2nd edn). Wellington: Ministry of Health.



## The New Zealand Illicit Drug Harm Index 2023

The DHI 2023 retains the basic underpinning of the DHI 2016 while including additional data sources that improve the accuracy of the estimation of personal and community harm (see Table 1). The DHI 2023 covers data from the period 1 January 2021 to 31 December 2021.

Table 1. Significant changes in data sources from DHI 2016

| Change              | Background   |
|---------------------|--|
| Wastewater analysis | Wastewater analysis is used to estimate consumption of major illicit drugs. This is timelier and more accurate than the previous method based on the Health Survey.  |
| Hospital admissions | Hospital admissions data are again timelier and more accurate than the Health Survey for our purpose. Estimates of serious and minor harm related to illicit drug use can now be estimated. These effectively replace the previous classification used in DHI 2016 of people who are dependent and people who use drugs casually although related the two classificatory systems are not equivalent. |
| Coronial reports    | Deaths attributable to illicit drugs are based on coronial reports rather than estimates provided through a UNODC report.  |

The DHI 2023 will provide an overview of drug use in New Zealand, followed by calculations of drug harm. The conclusion describes the output of the calculation and their implications.

### Illicit drug consumption in New Zealand

The extent of drug use in society is always difficult to ascertain. The most widely used technique is the nationally representative survey, participation in which is voluntary, and anonymity is guaranteed. Nevertheless, the sample survey may fail to reach a portion of people who use drugs, such as those experiencing homelessness and those in prison. The sample survey technique was used in DHI 2016 but is limited at measuring total volume of drug consumption as it relies on assumptions of average volume of use per person. DHI 2020 introduced analysis of wastewater to measure total volume of drug consumption. The use of wastewater analysis is timelier and more accurate than the previous method. This is a volumetric measure of consumption and avoids having to calculate the number of people who use drugs and their average consumption.<sup>8</sup>

The original New Zealand study to estimate illicit drug consumption was undertaken in Auckland in 2014 (Lai et al, 2017); it measured the metabolites of some illicit drugs in wastewater samples giving a volume of drug use within a specific catchment area. The New Zealand Police now publishes quarterly estimates of the consumption of methamphetamine, cocaine, MDMA, heroin, fentanyl, and methamphetamine precursors (ephedrine, pseudoephedrine) from 46 sites around New Zealand, covering wastewater catchment areas of up to 75% of the population.

<sup>8</sup> McFadden M, Bellamore L & MacDonald B. (2021). The New Zealand Illicit Drug Harm Index 2020: Research report. Wellington: Ministry of Health

Table 2 has estimates of the consumption of methamphetamine, cocaine, MDMA and cannabis. All estimates, apart from cannabis, are based on New Zealand Police wastewater consumption data. The cannabis estimates derive from the 2020/21 Health Survey due to the challenges of testing for cannabis in wastewater, compared to other drugs. The most significant challenge is that THC and THC-COOH (the psychoactive ingredients tested for) do not dissolve in wastewater as well as other drugs do and are known to adhere to surfaces, including sewer infrastructure, creating significant inconsistencies. In addition, the effect of wastewater on the extraction of cannabis compounds is far greater than for other drugs.

Table 2. Estimated annual consumption of illicit drugs in New Zealand 2021

| Drug type       | Total consumption (kg) |
|-----------------|------------------------|
| Methamphetamine | 826                    |
| Cocaine         | 31                     |
| MDMA            | 244                    |
| Cannabis        | 59,921                 |

While the above figures provide accurate volumes for the pure substance detected at wastewater sites, they are almost certainly an underestimation of total consumption. The above consumption figures do not include adjustments for the percentage of the population covered by wastewater testing and does not adjust for purity. Opportunities exist for further analysis of wastewater data which would provide a more accurate picture of illicit drug consumption in New Zealand.

Drug types included are those where sufficient traces were detected to allow a reasonable estimate of consumption to be made. Existing evidence for fentanyl and heroin suggests low levels of consumption and they have therefore been omitted from consumption estimates. Consumption of synthetic cannabinoids and GHB/GBL (both included in the overall estimated social cost of drug-related harm table) is unable to be estimated as these substances are not included in wastewater testing and were not included in the 2020/21 Health Survey.

**Personal harms**

Personal harms resulting from illicit drug use included in the report include harms related to premature death and harms related to a reduction in the quality of life. Although these are useful measures, they do not necessarily capture the extent of personal harm from illicit drug use. It is important to acknowledge that personal harm can include harms that do not always result in interaction with health services, such as lower-level effects on physical and mental health, adverse impacts on relationships, employment, and personal finances.

Harm calculations were made in relation to the illicit drug types described in Table 2.

As noted previously, harms were categorised as *personal* where they related to the people who use drugs themselves, and as *community* where they related to the impact on the wider New Zealand public.

## Premature death

Premature death relating to drugs was sourced by Coronial Services (Ministry of Justice). Information for drug related deaths were requested to provide details on drug-related deaths in 2021. A keyword search<sup>9</sup> was performed, with the data counting instances where keywords were recorded in *Medical Cause of Death 1*, *Medical Cause of Death 2*, *Medical Cause of Death 3*, *Provisional Cause of Death* and *Final Cause of Death*. There were 177 drug-related deaths in 2021.<sup>10</sup> This included active cases.<sup>11</sup>

It should be noted that this includes all deaths where drugs have been found to be a contributing factor, not just acute overdoses. This takes a broad view of drug-related harm and caution should be taken when using the below statistics to describe drug-related deaths.

To avoid double counting, where only one substance was recorded against a death this substance was counted as 1, where two or more substances were recorded against a death the substances are counted as an equal proportion of 1 (i.e., if four substances were recorded against a death these substances were counted as 0.25 each).

The total number of deaths related to a specific substance were then multiplied by the estimated value of a life: \$4,934,900 (Ministry of Transport, 2023, p.13). The total cost of premature death calculated as an estimated \$427.26 million, with the main contributor methamphetamine at \$256.61 million.<sup>12</sup> Details are provided in Table 3.

## Loss of quality of life

In DHI 2020 this was replaced by hospital admission National Minimum Dataset (NMDS) data, namely hospital admissions where the primary diagnosis was drug related. Hospital admissions of more than one day were considered a serious loss of quality of life and those of one day or less as a minor loss. This is consistent with the basis used by the Ministry of Transport to identify minor and serious injury in road crashes. Costs associated with a serious loss of quality of life were estimated at \$516,300 per person (admissions = 753) and for a minor loss at \$27,700 per person (admissions = 1,033). These dollar figures include loss of output due to temporary incapacitation, calculated using average hourly earnings as a proxy. Table 3 has details with the total cost of loss of quality of life at \$417.45 million with \$388.82 million relating to serious cases and \$28.63 million relating to minor cases.

Note that minor rounding errors will occur, largely because hospital admissions could be attributed to multiple factors, including alcohol and other drugs. Multiple cause admissions were distributed equally over known factors to avoid double-counting.

<sup>9</sup> Keywords searched: heroin (heroin, opium), fentanyl, cocaine, methamphetamine, GHB (GHB, fantasy, liquid ecstasy), MDMA (MDMA, ecstasy), Synthetic cannabinoid (synthetic cannabis, FUBINACA, Kronic), Drug toxicity (drug overdose, drug toxicity), Multi-drug (multi-drug, multi drug).

<sup>10</sup> Ministry of Justice, Coronial Services. (2023)

<sup>11</sup> Cases may still be under investigation by the coroner

<sup>12</sup> Ministry of Transport (2022) Social cost of road crashes and injuries.  
<https://www.transport.govt.nz/assets/Uploads/Social-Cost-of-Road-Crashes-and-Injuries-2021.pdf>

Using hospital admissions to measure loss of quality of life almost certainly underestimates the cost of drug harm. This data is unlikely to include people with life-long drug issues that never visit hospital, some long-term and chronic impacts, as well as wider harms experienced such as job loss, accommodation loss, and difficulties with mental health.

Table 3. Personal harms by drug type (\$ million)

| Drug type                     | Premature death<br>(\$ million) | Quality of life (\$ million) |              | Total personal<br>harm (\$ million) |
|-------------------------------|---------------------------------|------------------------------|--------------|-------------------------------------|
|                               |                                 | Serious injury               | Minor injury |                                     |
| <i>Methamphetamine</i>        | 256.61                          | 182.09                       | 12.55        | 451.26                              |
| <i>Cocaine</i>                | 1.63                            | 0.90                         | 0.21         | 2.74                                |
| <i>MDMA</i>                   | 14.80                           | 4.36                         | 3.24         | 22.41                               |
| <i>Heroin</i>                 | 14.80                           | 0.26                         | 0.09         | 15.15                               |
| <i>GHB/GBL</i>                | 1.23                            | 1.09                         | 0.62         | 2.94                                |
| <i>Cannabis</i>               | 113.50                          | 200.12                       | 11.48        | 325.10                              |
| <i>Synthetic cannabinoids</i> | 24.67                           | 0.00                         | 0.43         | 25.11                               |
| Total                         | 427.26                          | 388.82                       | 28.63        | 844.71                              |

## Summary and comment

The total cost of personal harm to people who use drugs in New Zealand is now estimated at \$844.71 million, with most of that cost relating to premature death at \$427.26 million. Of the illicit drugs included, methamphetamine caused the most harm at \$451.26 million.

## Community harms

Community harms can occur in several areas. First, there are specific harms that affect the family and friends of people who use drugs. Second, there are a variety of harms that follow drug-related crime, including acquisitive crime to fund drug purchases, and the reinvestment of the profits of drug trafficking. Normally, this investment is undertaken to diversify the income base of criminal enterprises. Third, there are harms caused by a reduced revenue base to the Government. The sale of illicit drugs is not subject to GST, and organised crime does not pay company tax on profits. The reduced tax base means fewer funds are available for services such as health, education, and infrastructure spending.

### Family and friends of people who use drugs

DHI 2016 introduced harm suffered by family and friends as a new measure of community harm. Past research had largely been concentrated in Nordic countries and some of the estimates, especially willingness-to-pay are transferred from these studies. Willingness-to-pay, as the phrase implies, is a technique to measure how much a community is willing to pay to support treatment. Melberg et al (2011) found that 14% of the public surveyed knew socially or were related to a person who uses drugs (i.e., family and friends). Family and friends of people who use drugs indicated they would be willing to spend between 500 and 13,000 euros to treat the person. This equates to an estimated 1,194 NZD.

Melberg et al (2011) conducted a representative survey of 3,092 adults in Copenhagen, Helsinki, Oslo, and Stockholm. Almost half of the respondents had at some time known and been concerned about the illicit drug use of a personal acquaintance (i.e., family or friend). In Oslo, 14% of respondents indicated they were willing to pay for the treatment of a friend. In fact, median responses across all respondents ranged from 500 euros for a friend to 13,000 euros for a child. It is argued the amount family and friends are willing to pay is related to the harm or distress that family and friends experience because of drug use. While a proportion of respondents willing to pay for treatment might be acting entirely from altruism, indications from the Melberg et al (2011) study indicate there are significant harms experienced by family and friends, with 6.5% reporting they had feared violence from the person using drugs and 22.5% acknowledging they had been worried in the past 12 months as a result of their family member or friend's drug use. From these figures, it appears that willingness to pay and incurred harm may be closely related.

As in the DHI 2016 and 2020, the DHI 2023 assumes the proportion of the adult population willing to pay for treatment for friend or family was the same in New Zealand as in Norway. This assumption is conservative, as New Zealand's adult population has a higher proportion of current people who use drugs than Norway's. It was also assumed the average willingness-to-pay figure for family and friends was 500 euros. Again, this was a conservative figure given the range of 500 to 13,000 euros in the Melberg study. Thus, the number of family and friends in New Zealand willing to pay the equivalent of 500 euros each was calculated as 14% of the adult New Zealand population (aged 15–64 years) in 2021 (3,334,900 people).<sup>13</sup> The number of affected people was estimated at 466,886. The total harm to the community as estimated by willingness-to-pay techniques is \$557.2 million.

In DHI 2016, it was assumed that significant harm to family and friends would be from people experiencing addiction. In DHI 2020 and now the DHI 2023, it was assumed the most likely to cause concern for family and friends would be when people who use drugs are admitted to hospital for more than one day, i.e., serious cases as previously defined. Total harm across drug types was distributed according to the number of serious hospital admissions for each drug type. The results are reported in Table 4.

### **Acquisitive crime**

Acquisitive crime as a means of funding illicit drug purchases has long been assumed and debated. Figures from Slack et al (2008) suggest that property losses accounted for 6.1% of the NZ DHI. There are obviously differences in method, but it is cautionary to observe that under two separate measures of drug harm the relative contribution of property crime can differ tenfold.

Acquisitive crime was separated into burglary (55,313 cases<sup>14</sup>) and theft (132,341 cases<sup>15</sup>), the average property cost per crime being \$5,104.95 for burglary and \$1,111.35 for theft. The proportion of arrestees who used drugs in the past 12 months and claimed to be dependent during that time

<sup>13</sup> Statistics New Zealand (2021, June 30). *National population estimates: At 30 June 2021*. Retrieved 8 March 2023, from Statistics New Zealand: <https://www.stats.govt.nz/information-releases/national-population-estimates-at-30-june-2021>

<sup>14</sup> New Zealand Police (2023) *Victimisations time and place*. Retrieved April 2023 from <https://www.police.govt.nz/about-us/publications-statistics/data-and-statistics/policedatanz/victimisation-time-and-place>

<sup>15</sup> New Zealand Police (2023) *Victimisations time and place*. Retrieved April 2023 from <https://www.police.govt.nz/about-us/publications-statistics/data-and-statistics/policedatanz/victimisation-time-and-place>

(30% of arrestees) was again used as an indicator of the extent of drug-related acquisitive crime (Wilkins et al 2016).

The estimated economic value of property lost due to acquisitive crime committed to fund drug use is \$182.64 million. See Table 4 for details.

### **Reinvestment into other crime**

Organised crime plays a significant role in drug production, importation, and distribution (excluding drug trafficking). This section is concerned with harms that extend beyond the harms traditionally associated with illicit drugs. Organised crime will attempt to lower the risk associated with activities. One strategy to reduce risk is diversification into other types of crime.

Drug crime is highly profitable but not all profits of crime are reinvested in crime. Research undertaken on behalf of the New Zealand Police suggests that 56% of the revenue from drug trafficking is reinvested in criminal activity<sup>16</sup>, while the remainder is used to support a lifestyle. The majority of reinvested profit will fund further drug trafficking; however, some will be invested in other activities such as extortion, fraud, and other trafficking.

Hughes et al (2015) provided a network analysis of the links between major drug crimes and other types of crime in Australia. They found that 28.5% of cases in the linked network were not drug-related and that most cases were associated with economic crime. There is insufficient information available to calculate the actual proportion of profits from drug trafficking reinvested in other crime. Based on the Hughes et al figures it is unlikely to exceed 28.5%. A conservative estimate of 20% was used in the model. Thus, the proportion of drug-related revenue reinvested in other crime is 20% of 56%, or approximately 11%. The results are provided in Table 4.

The preceding analysis and estimates relate to the reinvestment of drug trafficking profits into other illegal activities. There is a further threat posed by drug trafficking profits entering the legitimate economy as organised crime seeks to diversify further by investing in legitimate business. This is in addition to any money laundering activities, and it is not a new problem. Negative impacts of criminal profits being invested in the legitimate economy include<sup>17</sup>:

- undermining the private sector by subsidising legitimate business with drug profits, thereby creating a competitive advantage over honest businesses.
- undermining the integrity of financial markets by moving large sums of money through the international financial system.
- loss of economic control that the previous point entails, especially to developing economies.
- the economic damage that ensues from the perception that countries are corrupt and involved in the laundering of drug profits.

<sup>17</sup> McDowell J & Novis G (2001). *The Consequences of Money Laundering and Financial Crime*, Bureau of International Narcotics and Law Enforcement Affairs, US Department of State.

These threats are less likely to occur in countries with strong institutions, transparent government and appropriate checks and balances in place. They are nevertheless real and not accounted for in this report.

### Reduced tax base

A further aspect of the economic harm associated with the involvement of organised crime in drug trafficking is the loss to the tax base available to the government. Modern organised crime will seek to lower its risk through diversification and enhance its profitability by tax avoidance. Organised crime generally pays neither GST nor company tax. In doing so, reducing the governments overall tax income and limits the resources available to provide services to the people of New Zealand.

The basis of this measure was the income derived from drug trafficking, as it was for the estimate of reinvestment organised crime made into other crime. An accurate assessment of GST would be based on revenue less any GST credits. With an illegal enterprise such as drug trafficking, it is difficult to estimate the extent of GST credits. As an alternative and conservative estimate, GST was calculated against estimated profit, as company tax properly is. Tax avoided was calculated by multiplying estimated profit by income by the GST rate of 15% and by the company tax rate of 28%. McFadden (2015), using New Zealand Police data, estimated that drug-related revenue included 83% profit, with the remaining 17% reimbursing the costs of running the business.

Overall, \$284.22 million is lost to the tax base through the failure to pay appropriate taxes in relation to revenues and profit generated by illegal drug trafficking. This additional revenue could only be realised either by the legalisation of illegal drugs or by the diversion of this investment into legal forms of investment. Nevertheless, it remains a genuine social harm associated with illegal drug trafficking.

Table 4. Community harms by drug type (\$ million)

| Drug type                     | Harm to family and friends (\$ million) | Acquisitive crime (\$ million) | Reinvestment in other crime (\$ million) | Tax revenue foregone (\$ million) | Total community harm (\$ million) |
|-------------------------------|---|--------------------------------|--|-----------------------------------|-----------------------------------|
| <i>Methamphetamine</i>        | 261.16                                  | 85.59                          | 13.63                                    | 53.28                             | 413.65                            |
| <i>Cocaine</i>                | 1.30                                    | 0.42                           | 0.66                                     | 2.60                              | 4.98                              |
| <i>MDMA</i>                   | 6.25                                    | 2.05                           | 1.88                                     | 7.34                              | 17.52                             |
| <i>Heroin</i>                 | *                                       | *                              | *  | *                                 | *                                 |
| <i>GHB/GBL</i>                | 1.56                                    | 0.51                           | *  | *                                 | 2.07                              |
| <i>Cannabis</i>               | 287.01                                  | 94.06                          | 56.53                                    | 221.00                            | 658.60                            |
| <i>Synthetic cannabinoids</i> | 0.00                                    | 0.00                           | *  | *                                 | 0.00                              |
| Total                         | 557.27                                  | 182.64                         | 72.71                                    | 284.22                            | 1096.82                           |

\* Insufficient data for an estimate to be made.

In total, the cost to the community of harms associated with drug use was \$1096.83 million in 2021. Harm to family and friends of people who use drugs was the major contributing harm at \$557.07 million and cannabis the major contributing drug type at \$287.01 million.

## Conclusion

Estimates of harms per kilogram of illicit drug consumed are given in Table 5. These estimates underpin any attempt to calculate return-on-investment for interventions aimed at reducing or eliminating the consumption of illicit drugs in specific user populations.

Table 5. Summary of social harms (\$) per kilogram by drug type

| Drug type              | Personal harm<br>\$ per kilogram | Community harm<br>\$ per kilogram | Total harm<br>\$ per kilogram |
|------------------------|----------------------------------|-----------------------------------|-------------------------------|
| <i>Methamphetamine</i> | 546,321.04                       | 501,890.02                        | 1,048,211.06                  |
| <i>Cocaine</i>         | 88,434.00                        | 285,147.44                        | 373,581.44                    |
| <i>MDMA</i>            | 91,828.77                        | 117,596.15                        | 209,424.92                    |
| <i>Cannabis</i>        | 5,425.47                         | 10,454.61                         | 15,880.08                     |

Overall, the estimated harm resulting from the use of Illicit drugs is \$1,941.5 million (Table 6) This compares with the estimate of \$1,904.3 million in 2020.

Table 6. Summary of social harms by drug type (\$ million)

| Drug type                     | Personal harm<br>(\$ million) | Community harm<br>(\$ million) | Total harm<br>(\$ million) |
|-------------------------------|-------------------------------|--------------------------------|----------------------------|
| <i>Methamphetamine</i>        | 451.26                        | 413.65                         | 864.9                      |
| <i>Cocaine</i>                | 2.74                          | 4.98                           | 7.7                        |
| <i>MDMA</i>                   | 22.41                         | 17.52                          | 39.9                       |
| <i>Heroin</i>                 | 15.15                         | *                              | 15.15                      |
| <i>GHB/GBL</i>                | 2.94                          | 2.07                           | 5.0                        |
| <i>Cannabis</i>               | 325.10                        | 658.60                         | 983.7                      |
| <i>Synthetic cannabinoids</i> | 25.11                         | *                              | 25.1                       |
| Total                         | 844.71                        | 1096.82                        | 1941.53                    |

\* Insufficient data for an estimate to be made.



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## Appendix One:

### Conceptual framework

Personal harms include poor health, injury, psychological trauma, poor interpersonal relationships, loss of income, loss of lifestyle, arrest, and imprisonment. The fact these outcomes can be identified as separate harms does not necessarily mean they should be measured separately. Actual measures of personal harm used in this report included the cost of premature death and the cost of years of life lost through drug-related disability. Both these measures incorporate a range of personal harms (Ministry of Transport, 2022; Murray et al, 2012). As with Slack et al (2008), this report did not consider the potential personal benefits of illicit drug use due to the difficulties related to quantification.

The majority of DHIs have used a prevalence approach to calculating harms, as is common in burden of disease studies. The approach is explained by Slack et al (2008):

The prevalence approach estimates resource diverted in a given year due to the impacts of past and present illicit drug use. The costs estimated using the prevalence approach are then compared to a counterfactual situation, in this case where no illicit drugs were ever used. That is, in order to determine the harm avoided by reducing drug consumption we compare the current situation with drug use to a hypothetical case where there is no harmful drug use. (...) The prevalence approach has the advantage of using currently available health data, such as mortality and morbidity figures related to illicit drug use, to define what a counterfactual population would have looked like today. This is likely to result in more robust estimates than under the major alternative approach based on incidence.

Here, incidence is the preferred and adopted approach for calculating harms. This approach uses data from a defined period (normally a year) to estimate harm and answers the question 'How much harm is current drug use causing now and likely to cause in the near future?'. Making it of more interest to government, policy makers, practitioners, and the community. The prevalence approach is primarily a historical one and calculates the harm that could have been avoided had illicit drugs never existed; answering the question 'How much harm has historical illicit drug use caused?'.

In summary, the current method included the methodology used in the previous version of the New Zealand Drug Harm Index. Changes were minimal and were mainly related to improved data sources to underpin the analysis.