A Guide to the
Practical Application of the
New Zealand Illicit Drug Harm Index 2020

Version 1.1

Contents

Background

The following is a guide to the practical application of the New Zealand Illicit Drug Harm Index 2020 (DHI 2020) which has replaced its predecessor, DHI 2016. There are some important changes in DHI 2020 including new measures:

- Drug-related deaths are based on coronial reports, while DHI 2016 used the UNODC submission.
- Quality of life measure is based on hospital admissions data rather than indexed against death statistics.
- Consumption was based on predominantly wastewater analysis rather than the New Zealand Health Survey.
- One implication of the above changes was that the broad drug groups used in the earlier report (amphetamine-type stimulants, cannabinoids, hallucinogenic & psychedelic, opioid & sedative) have been replaced by specific drug types (methamphetamine, cocaine, MDMA, heroin, cannabis, synthetic cannabinoids).

Three points should be noted.

- The DHI is a living document and the drug-types that comprise the Index and their estimated harm will change over time. The DHI 2020 may produce key estimates that may differ from those produced using DHI 2016 when used to evaluate interventions.

- The DHI 2020 was designed to provide a means of evaluation that is consistent across studies. It does not preclude the use of other forms of evaluation and, in fact, the use of alternative methods in addition to the DHI will result in more robust conclusions.

- The application and interpretation of the DHI involve judgement on the part of researchers and policy makers. In a complex environment, different sets of assumptions may be relevant in different circumstances. These assumptions should always be stated clearly.

Note: This guide is not intended as a primer for those attempting a formal evaluation for the first time. It assumes a good knowledge of and prior experience with evaluation techniques.

Measuring the personal and community cost of illicit drug use

The DHI 2020 provides a method for estimating the cost of illicit drug use in society as a whole or within sub-groups. Researchers must be quite clear about their aims. The following steps outline the development of estimates of personal and community costs.

Step 1. Specifying the personal and community harms of interest

The DHI 2020 consists of two categories of harm with six components and their total, as shown in the following table.

Category of personal and community harm	Components
Personal harm	- Premature death - Loss of quality of life
Community harm	- Family and friends - Acquisitive crime - Reinvestment into other crime - Reduced tax base
Total personal and community harm	All components

Past research has tended to concentrate on total personal and community harm, but the opportunity now exists to refine these figures further. At this point, it is possible to report at the component level. Details of the component level are available in the full report.

Step 2. Specifying drugs of interest

Drugs of interest were defined by the availability of data. The following table has details.

Drug Type	Harm data available	Consumption data available
Methamphetamine	Yes	Yes
Cocaine	Yes	Yes
MDMA	Yes	Yes
Heroin	Yes	Yes*
GHB/GBL	Yes	No
Cannabis	Yes	Yes**
Synthetic Cannabinoids	Yes	No

*Estimates of heroin consumption from wastewater are at such low levels (below the limit of quantification) they are unable to be reported.

**There are significant technical issues with estimating cannabis consumption from wastewater. On this occasion, data from the New Zealand Health Survey was used to produce an estimate.

Harm information is available for all drug types included in the DHI 2020. Two drug types did not have reliable consumption data available. Synthetic cannabinoids and GHB/GBL are not included in either the wastewater testing or the 2018/19 Health Survey. Certain harm types depend in part on estimating actual consumption. In the absence of consumption data, no estimate of specific harm is available. Thus, for synthetic cannabinoids and GHB/GBL, there is no estimate of harm related to organised crime and tax revenue avoided. The issues related to cannabis were noted in a previous footnote.

Step 3. Specifying measures of personal and community cost

The DHI 2020 includes two related measures of personal and community cost:

- The first estimates the total harm incurred over one year associated with illicit drug use.
- The second estimates the average harm associated with the consumption of one kilogram of an illicit drug.

In general, evaluations will use the second measure to estimate reduced harm following an intervention. Details of cost estimates by drug and harm type are provided in the following tables.

At this point, the researcher should be able to identify the cost estimates relevant to their requirements and calculate estimated costs based on their own data. Kilogram estimates are based primarily on wastewater analysis, the exception being cannabis. The number of illicit drugs included in the program is limited. Researchers considering the harm per kilogram for an illicit drug not included in current reporting should consider using data related to a similar drug, if available.

Estimated Harm per kg ($) by harm and drug type.[1]

Drug Type	Personal harm ($m per kilogram)		Community harm ($m per kilogram)				Total Harm ($m per kilogram)
	Loss of life	Loss of quality of life	Harm to family & friends	Acquisitive crime	Reinvestment into other crimes	Tax revenue foregone	Total
Methamphetamine	0.330	0.215	0.342	0.135	0.018	0.069	1.108
Cocaine	0.088	0.037	0.052	0.021	0.021	0.081	0.300
MDMA	0.042	0.020	0.024	0.009	0.009	0.034	0.139
Cannabis	0.002	0.003	0.004	0.002	0.001	0.004	0.016

[1]   All figures in the *Estimated Harm per kg ($) by harm and drug type* have been corrected apart from all totals for cannabis. Please see **Appendix Two** for the incorrect figures.

In general, the DHI has been used mainly to evaluate the success of programmes and specific interventions. Researchers interested in evaluation are advised to complete Steps 1–3 outlined previously as the first stage of their evaluation before proceeding.

Step 4. Estimating the extent of benefits related to an intervention

A distinction should be made between interventions that target drug-related harms broadly and those that are quite specific. The harm types to be included in an evaluation will depend on the specific aims of the intervention.

The calculation of the extent of benefits will also depend on the type of intervention involved. In the past, law enforcement has tended to assume that drugs seized are effectively eliminated from the community, and the full harm per kilogram applied. This was in line with expert advice at the time. However, it is now realised that illicit drug shortfalls may be temporary. It is recommended that law enforcement evaluations consider the likely period it takes to replace a volume of drugs seized.

In Australia, for example, it has been estimated that heroin importations tend to take three to six months from time of importation to the appearance of the drug on the streets. The time from the placement of the initial order will of course be longer. A more accurate assessment of the delay in replacing seized drugs would result in a more accurate estimation of the benefits of seizures. As a starting point, an effective benefit life of six to nine months is suggested for seasonal and imported drugs. A benefit life of three to six months is plausible for locally produced synthetic drugs. Local knowledge should be preferred to the broad estimates given here, but these should be fully documented. Please see **Appendix One** for an example scenario.

The situation for treatment and education programmes is equally critical, and equally obscure. A reasonable estimate of the likely benefit life of an intervention needs to be based on evidence. The available evidence on recidivism among drug users that successfully complete a treatment programme is critical to an overall assessment, as is an awareness of substituting another illicit (or licit) substance for the substance where the treatment program was "successful". In short, the benefit life of an intervention is a necessary component of any evaluation, and the responsibility of individual researchers to provide a plausible estimate of its value. As always, transparency is the key to good evaluation.

Step 5. Measuring the costs of interventions

In general, most evaluations involve some type of benefit–cost analysis, whereby the benefits of the programme are presented as a ratio to the costs. For example, "The programme returns $5.50 for every dollar invested in it". It is beyond the scope of this paper to define what should and should not be included in these costs. Costs should be precisely defined so that comparisons can be made between interventions or programmes. Given the DHI provides a level playing field for the comparison of benefits, a similar attempt at a uniform methodology for the estimation of costs is highly recommended. As far as government services are concerned, it would be useful to have advice from a central agency on this issue. In the absence of such advice, government agencies should at least adopt a uniform approach within their own sphere of activity. Some examples of evaluation interventions can be found in **Appendix One**.

Closing comments

In the end, an emphasis on clarity and transparency in evaluating programmes and interventions is essential if we wish to compare the cost effectiveness of various interventions and provide an evidence base for future policy development. The DHI itself should not be seen as a limiting factor. If better sources of the costs associated with drug harms become available, then the DHI should be updated accordingly (as has been done in the 2020 version). The emphasis is on development and the adaptability of our response to a constantly changing illicit drug market.

The main obstacle, both in New Zealand and globally, to the development of best practice interventions and evidence-based policy is the lack of available and valid data sets. It was the aim of the DHI 2020 to contribute to that evidence base. There are limitations, however, as the major restriction on any work in the area is that drug trafficking is illegal. Collecting information on drug prevalence is an attempt to gauge an illegal activity and, as with all illegal activities, there are obvious barriers to this collection. The measurement of specific harm is often beset with similar problems. As always, caution is advised in interpreting the results.

The DHI 2020 attempted to address these issues by using conservative estimates of key parameters and by verifying these, where possible, against other data sources. Every effort was made to ensure the new DHI is transparent. The 2020 DHI was constructed as a living document that can be updated according to need. As such, the development of the DHI will never be finalised so long as users, illicit substances and drug markets continue to evolve. It is hoped, however, that by managing a changing environment the DHI will maintain its relevance and value in the policy-making process.

Appendix One

The DHI 2020 can be used to conduct evaluations of specific interventions using methodologies familiar in social and health research. The typical study will generate a Return-on-Investment estimate being the ratio of estimated benefits of an intervention compared to its costs.

This can be done on several levels and, as noted above, will employ a variety of methods and techniques which can make direct comparison between studies difficult. The use of an agreed outcome measure such as the DHI resolves these difficulties at least at the output level. There remains a need to adopt a uniform method for assessing the cost of an intervention. Treasury has from time to time issued guidance on how to evaluate costs and such guidance should form the basis of cost estimates. If we wish to compare across studies, both benefits and costs must be based on a comparable methodology.

The below examples are separated into studies that look at the overall effectiveness of interventions and studies that measure the relative effectiveness of components of the intervention to the outcome.

Evaluations of overall effectiveness

Treatment services

This would involve a before- and after-treatment comparison, either following an actual episode of care (Example 1) or to compare potential / proposed treatment services (Example 2).

Example 1

1. X number of people start a treatment programme with methamphetamine as their main substance of concern.

2. ADOM collections could be used to determine consumption levels before treatment and after the treatment programme ended (recorded in ADOM collections as "days of use"). Alternatively, a separate survey could be used to collect information on consumption volumes before the treatment and after the treatment program started. Participants could be then contacted every 12 months for the next five years. Alternatively, previous reporting on drug consumption prior to treatment and consumption post-treatment could be used to provide data.

3. The reduction in harm is equivalent to ((Initial Consumption (kg) – Consumption Post Treatment (kg)) x DHI Social Cost of Methamphetamine-related Harm per Kilogram) adjusted for exposure time. The cost is the actual cost of the treatment program. The return on investment (ROI) is the harm reduction divided by the cost.

4. There may be various adjustments to be made for those who did not reach the end of their treatment episode, as well as for polydrug use. Traditional medical research would employ a treatment versus control group design. In the case of illicit drug use, there would be ethical considerations in adopting such a paradigm.

Example 2

1. A proposed treatment services has the capacity to treat X number of people.

2. Previous reporting on drug consumption prior to treatment and consumption post-treatment could be used to estimate consumption prior to and after the completion of treatment. This could be drug specific (if the treatment service is intended to be drug specific) or it could be distributed using ADOM start collections data.

3. The reduction in harm is equivalent to ((Estimated Initial Consumption (kg) – Estimated Consumption Post Treatment (kg)) x DHI Social Cost of Drug-related Harm per Kilogram) adjusted for exposure time. The cost is the estimated cost of the proposed treatment program. The return on investment (ROI) is the harm reduction divided by the cost.

4. This could be used to compare several proposed treatment services – for example, *Proceeds of Crime* bids. This method could also be used to inform Budget bids.

Supply reduction

Example 3

1. Police / Customs seize X kg of methamphetamine.

2. **First, adjustments need to be made for the temporary reduction in supply.** The time to replace the drug that has been seized will depend on whether availability is seasonal, and whether it is imported from overseas or manufactured locally. An appropriate estimate requires that some calculation of these factor needs to be made. As a starting point, a six to nine months replacement lag is suggested for seasonal and imported drugs, and a three to six-month replacement lag is plausible for locally produced synthetic drugs. Local knowledge should be preferred to the broad estimates given here, but these should be fully documented.

3. The DHI estimates the social cost of drug-related harm for a calendar year. The harm reduction for the above seizure is therefore equivalent to (Quantity seized (kg) x (DHI Social Cost of Methamphetamine-related Harm per Kilogram / Proportion of Year Temporary Reduction Experienced). The cost is the cost of resources devoted to the seizure. The return on investment (ROI) is the harm reduction divided by the cost.

It should be noted that this example assumes that the illicit drug market has not factored seizures into their supply model, and that people will not switch to another drug type in the absence of the one being seized.

Relative contributions to effectiveness

Supply reduction

Example 4

1. In 2019 there were X number of supply reduction related investigations in New Zealand. Investigation types includes Customs only investigations, investigations in partnership with other domestic law enforcement agencies, and investigations in partnership with international partners.

2. **By investigation type:** The quantity of illicit drug seizures made in these investigations can be used to estimate the harm reduction (benefits), with adjustments needing to be made for the temporary reduction in supply, as in <u>Example 3</u>. The DHI estimates the social cost of drug-related harm for a calendar year. The harm reduction for the above seizure is therefore equivalent to (Quantity seized (kg) x (DHI Social Cost of drug-related Harm per Kilogram / Proportion of Year Temporary Reduction Experienced). The cost is the cost of resources devoted to the seizures, by investigation type (Customs, domestic partner, international partner). The return on investment (ROI) is the harm reduction divided by the cost by investigation type.

3. This would allow for the evaluation of different strategic approaches (investigation types) for reducing supply at the border.

Treatment services

<u>Example 5</u>

1. During COVID-19 lockdown X people started a non-residential treatment programme with cannabis as their main substance of concern. Y of those people attended the programme face-to-face, while Z attended online / remotely.

2. ADOM collections could be used to determine consumption levels before treatment and after the treatment programme ended (recorded in ADOM collections as "days of use"). Alternatively, a separate survey could be used to collect information on consumption volumes before the treatment and after the treatment program started. Participants could then be contacted every 12 months for the next five years.

3. **By attendance type:** The reduction in harm is equivalent to ((Initial Consumption (kg) – Consumption Post Treatment (kg)) x DHI Social Cost of Cannabis-related Harm per Kilogram) adjusted for exposure time by attendance type. The cost is the actual cost of the treatment program. The return on investment (ROI) is the harm reduction divided by the cost.

4. There may be various adjustments to be made for those who did not reach the end of their treatment episode, as well as for polydrug use.

Appendix Two

Table with incorrect numbers previously published in this guide

Please note this information is provided for transparency and should not be relied upon for analysis.

Estimated Harm per kg ($) by harm and drug type

Drug Type	Personal harm ($m per kilogram)		Community harm ($m per kilogram)				Total Harm ($m per kilogram)
	Loss of life	Loss of quality of life	Harm to family & friends	Acquisitive crime	Reinvestment into other crimes	Tax revenue foregone	Total
Methamphetamine	1.430	0.934	1.487	0.563	0.018	0.069	4.501
Cocaine	0.385	0.163	0.226	0.086	0.021	0.081	0.961
MDMA	0.182	0.088	0.104	0.039	0.009	0.034	0.457
Cannabis	0.002	0.003	0.004	0.002	0.001	0.004	0.016