

# Justice Sector Seriousness Score (2016 update): FAQs

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## What are seriousness scores?

Seriousness scores are a way of quantifying the relative seriousness of offences based on the sentences imposed for each offence. Users need to be aware that sentences are an imperfect proxy for seriousness because they take into account factors other than seriousness of the offence under consideration (eg, previous criminal history of the offender).

## Why do we have seriousness scores?

Uses for seriousness scores across the justice sector include:

- Helping to determine the 'most serious offence' which is useful to summarise a court case with multiple charges or an offender in remand with multiple charges. The most serious offence is often a key driver of how long a case takes, resources expended, and so on.
- Being an input to Risk of re-Conviction \* Risk of re-Imprisonment model (RoC\*RoI). The Department of Corrections developed the RoC\*RoI measure to help predict an offender's risk of conviction and likelihood of re-imprisonment.
- Monitoring effectiveness of interventions. For example, the Ministry of Social Development use seriousness scores to check whether seriousness of youth re-offending reduces after interventions.

## Why don't we use maximum penalties instead?

Maximum penalties prescribed in legislation provide only limited help in quantifying relative seriousness of offending. The maximum reflects Parliament's view of the appropriate sentence for cases where "the offending is within the most serious of cases for which that penalty is prescribed" (Sentencing Act 2002,

s8c). Hence the maximum penalty is only relevant for a very small proportion of offending, and there can be differences in seriousness for offences with the same maximum penalty. For example, burglary and injuring with intent to cause grievous bodily harm both have 10 years imprisonment as the maximum penalty, but sentences imposed by judges for the injuring offence are more severe on average. Hence there is a need for a measure of seriousness beyond maximum penalties in legislation.

## What are some illustrative seriousness scores?

The offences and scores in Table 1 show:

- Seriousness scores range from around 12,000 for murder to near-zero values for minor offences.
- Substantial differences in scores reflecting a sensible ordering of relative seriousness (eg, murder distinctly higher than attempted murder; violent offences distinctly higher than breaching a liquor ban); we warn against reading much into small differences in scores.
- Comparisons with the Seriousness Scale values using previous methodology.

**Table 1: Illustrative seriousness scores**

Offence description	Seriousness Score 2016	Seriousness Score 2012	Seriousness Scale (April 2010)	Offence Code
Murders (manually)	*12045	*12045	8073	1113
Attempts to murder (firearm)	3994	4058	5462	1121
Males rapes female over 16	3627	3848	3402	2653
Produce/manufacture/ methamphetamine and amphetamine	2684	2102	1389	5921
Aggravated robbery (firearm)	1583	1839	1956	1314
Injures with intent to cause grievous bodily harm (manually)	865	868	825	1423
Burgles (other property) estimated value \$500 to \$5000 by day	318	380	422	4122
Take/obtain/use doc for pecuniary advantage	221	246	282	4571
Assault person with stabbing/cutting weapon	227	185	177	1492
Unlawfully takes motor vehicles (motor cars/trucks etc)	177	167	170	4211
Computer fraud	101	100	0	4572
Drove while disqualified 3rd or subsequent	77	94	93	L230
Common assault (Crimes Act) manually	32	30	22	1593
Theft (under \$500)	25	23	17	4373
Driving while disqualified	12	13	6	L201
Breach of community work	11	12	8	9298
Drives reckless/dangerous no injury	11	11	0	8215
Breath alcohol level over 400 mcg per litre of breath	7.62	7.96	1.05	A518
Breach of liquor ban local government	1.42	1.65	0.00	3985
Parked in a clearway	0.19	0.19	0.00	P508

\* Higher values for murder in 2012 and 2016 than 2010 result from the decision to treat sentences of life imprisonment and preventive detention as equivalent to longer prison sentences than in earlier years (as discussed on page 3).

The comparisons in Table 1 with seriousness scores in use in April 2010 show many large differences (in relative terms) for low values because these are more affected by the inclusion of community work and fines in the 2012 revision (before 2012, only prison sentences were used to calculate seriousness values). In particular, the previous scale had many values of exactly 0 (resulting from non-imprisonable offences or

offences where no prison sentences were recorded); such offences now have non-zero seriousness scores. Differences between the methods used to calculate the 2012/2016 seriousness scores and earlier seriousness measurement are explained in the next sections.

The update of seriousness score for 2016 uses the same methodology as the 2012 revision. Differences between the two scores can largely be attributed to there being very little overlap of the offences used to calculate the scores (Seriousness score 2012 uses data predominantly from 2007-2011 while Seriousness score 2016 uses data from 2011-2015).

## How are seriousness scores calculated now?

Seriousness scores for an offence are an average of the prison days (or home detention days, or statistical equivalents to prison days in community work or fines) from sentences imposed by courts. Sentences used for the average are mainly from the previous five years available (2007-2011 for 2012 and 2011-2015 for 2016). Sentences from earlier years were included if fewer than 25 relevant sentences were found in the 5 year period; in particular, this ensures that seriousness scores are available for offence codes no longer in current use.

The major change in the 2012 revision is that seriousness scores now take into account community work and fines, not just imprisonment. To combine these different sentence types into a single score, the sector needed to set amounts of community work and fines statistically equivalent to a day in prison. No easy answers or established international precedents<sup>1</sup> for this were evident. For example, Lovegrove (2004, p59) refers to the “the vexed and yet-to-be-solved problem of how to scale sanction severity within and across non-custodial sanctions and between these and the sanction of imprisonment”. Hence a repeatable process seen as defensible was defined that can be updated consistently in future years by applying the same algorithm to the latest sentencing data.

The statistical equivalence values set in 2012 were:

1 day in prison  $\approx$  7.2 hours of community work  $\approx$  \$117 fines

There is, of course, no implication at all that the values above establish equivalence useful for purposes other than calculating seriousness score values (for example, there is no suggestion from these values that an offender should be able to exchange a day in prison for \$117 in fines).

Sentencing patterns change over time. So the algorithm may change these statistical equivalence values each time the seriousness scores are recalculated.

The 2012 revision also includes sentences of home detention. Home detention sentences were introduced in late 2007 and thus not available for seriousness score calculations developed before then. In the 2012 revision, home detention was included quite simply, by treating one day of a home detention sentence as equivalent to one day of a prison sentence.

Further details of the calculations, including formulae, are in the Appendix.

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<sup>1</sup> New South Wales did recently create a single seriousness scale encompassing 15 different types of punishment (MacKinnell, Poletti, & Holmes, 2010). But this did not establish equivalence values between different types of sentence. That is, it did not allow even very high levels of one type of punishment (eg, the very largest fine) to be rated as more serious than the lowest level of a type of punishment (e.g. community service order) classified as a more serious type. For example, because home detention was classed as a less serious type of penalty than full-time imprisonment, then two years of home detention would have a lower seriousness value than two months of prison.

## How did we measure seriousness before 2012?

Until 2012, seriousness was commonly estimated by the 'Seriousness of Offence Scale' developed by the Department of Justice in 1991 (Spier, Luketina & Kettles, 1991). That scale assigned to each offence the average number of days of imprisonment imposed on every offender convicted of that offence, where the average was taken over both imprisoned and non-imprisoned offenders.

For example, in the 2005 update to the scale, if between 2000 and 2004 there were 100 cases of offenders convicted of a particular offence, and 50 of these cases resulted in a custodial sentence, and the average length of the custodial sentences imposed on these offenders was 30 days, then the seriousness score for this offence is  $(30 \times 50/100)$ , or 15 (Morrison, Soboleva & Chong, 2008, p36).

Obviously, non-imprisonable offences all had a seriousness score of 0. Less obvious was how to score imprisonable offences for which there convictions but no custodial sentences. In 2005 such offences lacking any custodial sentences between 2000 and 2004 were given a seriousness value slightly lower than the least of the offences already assigned a value, that is, a score of 0.2 (Morrison, Soboleva & Chong, 2008, p36).

## Why was seriousness measurement revised in 2012?

The main motivation for the new seriousness scores was because the old method did not adequately distinguish between offences that had few prison sentences (which are the majority of offences). Including sentences of fines and community work in seriousness calculations addresses this issue.<sup>2</sup>

## What are main changes in the 2012 revision?

- Including community work and fines sentences as basis for seriousness scores, not just prison days (by establishing amounts of community work and fines treated as statistically equivalent to a prison day).
- Imputation of sentences where fewer than 25 convictions available for an offence code (further details in the section "What if there are too few sentences for a good average" in the appendix, page 8).
- New values for indeterminate sentences (life imprisonment and preventive detention).
  - These were given a value of 33 years (the maximum non-parole ever period handed down<sup>3</sup>); this results in a seriousness value of  $33 \times 365=12,045$ . The previous seriousness scale assigned a value of 1.5 times the non-parole period to life imprisonment and preventive detention; that resulted in lower seriousness values for murder (around 8000). However, some non-parole periods with preventive detention were quite short, and hence 1.5 times those periods was felt to understate the seriousness of the sentence.<sup>4</sup>
- Use of charge-based conviction and sentencing data instead of case-based data.

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<sup>2</sup> A secondary motivation for change was a suspicion that crimes committed by youth (14-16 year olds) could not be adequately ranked or graded because the seriousness score was derived from prison sentences only. However, the most common offences committed by 14-16 year olds are ones like theft, burglary, car conversion and wilful damage which all had clearly defined scores using the old method. Furthermore, the method as revised in 2012 does not try to address whether seriousness scores based on the sentencing of adults fairly reflect the scores that we would calculate for youth offenders (given the strong focus on diversionary approaches for youth).

<sup>3</sup> Statistics Canada seems to have taken a similar approach with seriousness measurement. In their case, the longest parole eligibility for an individual sentenced to life was 25 years (Wallace et al., 2009, p10).

<sup>4</sup> The original Seriousness Scale assigned a value of 3650 (10 years) to life imprisonment (Spier, Luketina & Kettles, 1991). Sentencing and parole law changes since then have lengthened such indeterminate sentences.

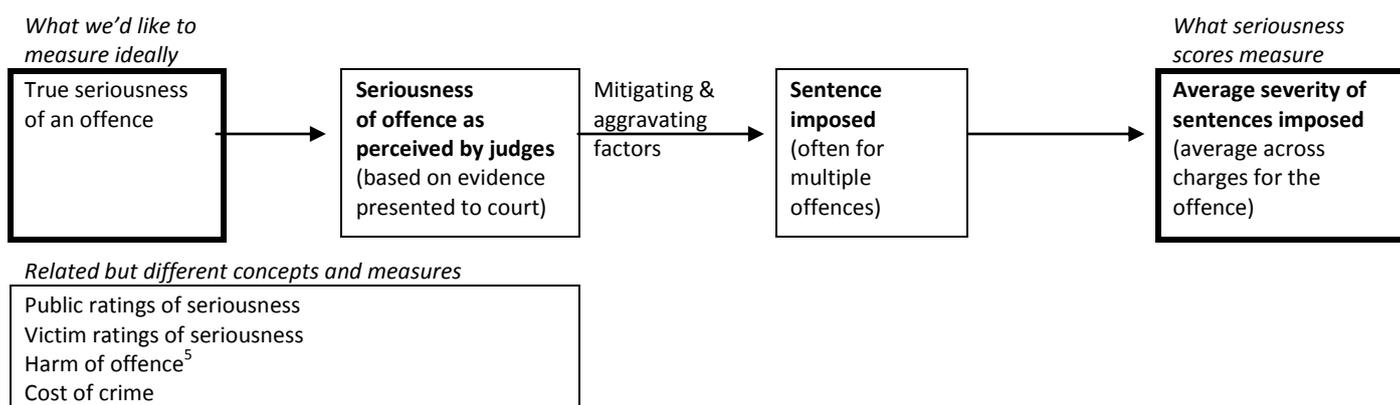
- The original seriousness scale used cases as the base unit of analysis for calculating seriousness, with each case represented by the offence which resulted in the most severe penalty (Spier, Luketina & Kettles, 1991, p17). A switch to basing seriousness scores on charges rather than cases had already been made some time before the 2012 revision, but that had not been widely communicated; hence we list it as a change here. The Canadian seriousness measure also uses charges as the base unit (Babyak et al., 2013).

## What are limitations that users should be alert to?

The main general limitation users need to be aware of is imprecision. Seriousness scores should **not** be seen as unquestionable and precise measures of the seriousness of one offence versus another. Rather, they are better seen as an **indicator** of the relative seriousness of an offence derived from severity of sentences imposed. Similarly, the original seriousness scale was presented as “a ranking of imprisonable offences which is approximately in order of seriousness as measured by the courts” (Spier, Luketina & Kettles, 1991, p11).

To understand reasons for imprecision and limitations in more detail we first need to identify several concepts related to seriousness and differences between them. Some limitations of seriousness scores are not obvious because it is easy to overlook differences between concepts related to seriousness. Hence Figure 1 introduces relevant concepts and measures. A major point of the diagram is that there is a substantial gap between seriousness scores and what we would like to measure ideally. In short, because we can't directly measure true seriousness of actual offences (not least because it's far from clear what that is), instead we measure severity of sentences imposed (as an indicator of seriousness).

**Figure 1: Conceptual framework about measuring seriousness**



The differences between true seriousness of offending and seriousness scores inevitably result in limitations and possible misinterpretation. Below are questions to help introduce limitations and to identify possible misinterpretations of seriousness scores.

<sup>5</sup> We see the framework published by Greenfield and Paoli (2013) as the most useful one defining harms of crimes. A key distinction commonly made between seriousness and harm (eg, Andersson, 2003; Law Commission, 2013) is that seriousness of offending must consider both the **harm** of the offence and the **culpability** of the offender. For example, harm done by manslaughter and a murder might well be very similar; but severity of sentencing (which we use to indicate seriousness) is typically much higher for murder. Nevertheless, note that the 'harm score' in the *Law Commission* report on maximum penalties actually aims to measure seriousness rather than harm because culpability is taken into account (Law Commission, 2013, 4.22).

QUESTION	ANSWER
Why don't seriousness scores directly measure true seriousness?	<p>True seriousness of an offence cannot be measured directly and precisely like length, weight, etc. "The task of assessing the seriousness of the offence is ... as complex and problematic as it is unavoidable and fundamental" (Ashworth, 2006, p39). "Seriousness is a very subjective concept" (Andersson, 2003, p3). "One great impediment to measuring crime seriousness has been the difficulty of defining it" (Carrington, 2013, p296).</p> <p>Different societies and cultures have different views on these issues, and views do not necessarily remain static. For example, in New Zealand offences involving homosexual acts and prostitution were decriminalised following shifts in public attitudes. Even within a particular culture, it is unrealistic to expect there will be a single view of how serious an offence is, and what its relative seriousness is to other offences. For example, a victim of a burglary may consider this offence to be far more serious than a person who has never been the victim of burglary.</p> <p>Furthermore, if one equates true seriousness with <i>society's view of seriousness</i>, and tries to measure that, then there are measurement difficulties. It is difficult to accurately communicate the large number of different offences in order to elicit views on seriousness from the public, and difficult for people to express their views precisely. Hence, ratings by the public of offence seriousness are of limited use.<sup>6</sup></p>
Why don't seriousness scores directly measure judges' perceptions of seriousness of offences?	Although it would be possible to ask judges directly to express their views purely on seriousness, this seems impractical given the very large number of different offences and diverse circumstances in which offences occur. Judges do not quantify the seriousness of each offence and record that for each charge. Rather they impose sentences. Using sentencing data recorded for administrative purposes enables us to calculate seriousness scores for over 6000 offence codes without requesting lots of extra information from judges.
Do more severe sentences always reflect more serious offending?	<p>No.</p> <p>"The main disadvantage of indexes based on sentencing practice is that factors other than offence seriousness (e.g. prior criminal record) can exert a strong effect on sentence severity" (MacKinnell et al., 2010). Sentences imposed take into account many factors other than seriousness of offending (mitigating and aggravating factors). Under the Sentencing Act 2002, mitigating factors may include the plea (whether and when they pleaded guilty), age, and remorse shown. Aggravating factors may include previous criminal history, premeditation, and whether the victim was a constable or prison officer. Note that several of these considerations relate to the offender and their later actions rather than the original offence. Effects of these can be substantial (eg, a guilty plea affects 80% of sentencing decisions and results in deductions of up to 25%; Law Commission, 2013, 4.51)</p>
Can seriousness scores change markedly even if there's no change in the actual offending?	<p>Yes.</p> <p>If courts change to penalising certain offences more heavily with more severe sentences (eg, because legislative changes require that), then seriousness scores will be higher (when they are updated to take account of the latest sentencing data) even if the actual offending behaviour has remained identical over time.).</p>
What effect do multiple offences in a single criminal case have?	Multiple offending complicates calculation and use of seriousness scores, particularly because some offence types typically have greater numbers of charges (eg fraud). In short, other charges in the same case may affect the sentence recorded for a particular charge (and hence influence the seriousness score for that offence). The effects of this on seriousness scores may also depend on how judges choose to use concurrent versus cumulative sentences.

<sup>6</sup> However, they are used in Australia as one **input** into seriousness scores. The Australian National Offence Index (NOI) is an ordinal ranking of ANZSOC offence categories developed by the Australian Bureau of Statistics in order to determine a principal offence for an offender with multiple offences (Andersson, 2003). A survey of public perceptions of seriousness was a major input to the NOI.

QUESTION	ANSWER
	There is no simple way of quantifying the portion of a sentence for multiple offences that relates to a single offence (the substantial complexities of quantitatively modelling sentences with multiple offences are outlined in Lovegrove, 2004).
Does the seriousness score for an offence code reflect the average sentence for a single offence of that type?	No. As explained above, sentences imposed can be affected by other charges in the same case. These charges may relate to more offences of the same type (eg, several burglaries) or even be quite different (eg, theft and rape). Hence seriousness scores will not reflect the average sentence for a single offence of a particular offence code (unless all the sentencing data happens to relate to sentences for single offences).
Do the equivalence values mean that an offender should be able to exchange a day in prison for 7.2 hours of community work or pay \$1170 and reduce their prison sentence by 10 days?	No, definitely not. The values used to combine sentences of prison days with sentences of community work hours or fines should not be treated as actual equivalents. They are merely statistical equivalents used for the purpose of estimating seriousness scores with no standing for any other use.

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## Appendix: Calculation of seriousness scores (details)

This is largely taken from the documentation (last saved 13 September 2012) stored with the underlying SAS code generating seriousness scores following completion of the 2012 revision process.

### Introduction

The precise numerical details are relatively complex to describe. Abbreviations needed are:

N(x)	number of x
S(x)	severity of sentence x (in days for imprisonment, hours for community work, \$ for fines)
EqL(x)	equivalent mean length of sentence x in prison days
pr	imprisonment
cw	community work

Next, as an introduction to using the abbreviations, consider the previous seriousness scale for an offence code:

$$SS_{old} = N(pr) * S(pr) / N(convictions) \quad (1)$$

The 2012 revision broadens this to:

$$SS = [N(pr) * S(pr) + N(cw) * EqL(cw) + N(fines) * EqL(fines)] / N(convictions) \quad (2)$$

### Details of EqL (statistical equivalence values)

The critical values determining equivalence values for a prison day in terms of community work or fines were defined as follows:

- Consider only offence codes that are imprisonable (ie, ignore non-imprisonable offences).
- Obtain the percentage of sentences that are fines, community work and imprisonment by maximum penalty specified in legislation (not by individual offence codes).
- Choose the penalty maxima where community work first becomes dominant and prison sentence first becomes dominant.
- For the 2012 run, we established that 3-month maximum penalty is where community work first becomes dominant. Equally, the 36-month maximum penalty is where prison first became dominant. These were based on sentencing between 2010 and 2005.
- For the offences where community work first becomes dominant (3-month maximum penalty), get the 80th percentile Fine and the 20th percentile community work values.
- For the offences where prison first becomes dominant (36-month maximum penalty), get the 80th percentile community work and the 5th percentile prison values.
- From these two relationships, we established the community work to prison and fine to prison equivalences. These equivalences were 1 day in prison  $\approx$  7.2 hours of community work  $\approx$  \$117 fines. Hence EqL(cw) in equation 2 above is calculated by  $S(cw)/7.2$ , and EqL(fines) was calculated by  $S(fines)/117$ . In summary:

$$SS = [ N(pr) * S(pr) + N(cw) * S(cw)/7.2 + N(fines) * S(fines)/117 ] / N(convictions) \quad (3)$$

### What if there are too few sentences for a good average?

To help make the final estimate more robust and suffer less from disruptive fluctuations over time (eg, when seriousness scores are updated in future to reflect the latest sentencing data), a minimum number

of sentences acceptable for a seriousness score was defined rather than simply accepting the number of sentences available over the last five years however small. The following procedure was used for the 2012 revision:

- a. Agreed on a threshold number of sentences as to determine robustness, 25. (The 1991 seriousness scale assigned seriousness scores wherever there were at least 10 custodial sentences over four years.)
- b. If the offence code had the threshold number of sentences (or more) within the window of examination (2007-2011 in 2012 run, 2011-2015 in 2016 run), then no further action was needed.
- c. If the offence code did not have the threshold number of sentences in the examination window, the window was extended until the threshold was met. So, if an offence had the following number of sentences from 2010 and before (2, 3, 5, 2, 3, 5, 3, 4, 5) then the window used was 2010 to 2003; that would allow 27 sentences to be used to calculate the seriousness score for that offence.
- d. If the offence code does not have 25 sentences, then an imputation routine provides a weighted estimate combining sentences for that offence (if available) with sentencing information associated with its ANZOC code. For example, if an offence code only has 3 sentences, the imputation routine would provide an imputed estimate that had a weight of 22 sentences. However, if the offence code had 21 sentences, then the imputed estimate would only have a weight of 4 sentences.
- e. The imputation is done by associating each offence code to its ANZSOC code and its maximum penalty allowed in legislation. Currently there are 184 ANZSOC codes, although 38 are not used. With maximum penalties, there are 12 'popular' prison terms – 3, 6, 12, 24, 36 months, 5, 7, 8, 10, 14, 20 years, Indeterminate sentence. For fines, we defined 7 bands. In total there were 618 imputation groups.

#### Further questions and answers about calculations

QUESTION	ANSWER
What sentence is used for an offence when there are several charges (potentially of different seriousness) in a case?	<p>The unit of analysis for the 2012 Seriousness Score is the <b>charge</b> (not the alternative of a <b>case</b>). That is, a sentence for an offence code is included in the average for the seriousness score if there is a conviction for a charge with that offence code and a sentence recorded for the charge. It does not attempt to correct for the extent to which other charges in the same case may have influenced the sentence for that charge.</p> <p>In contrast, the original seriousness scale in 1991 had cases as the unit of analysis (Spier, Luketina, &amp; Kettles, p17). A case-based method requires some method for selecting a single index charge to represent the case, and then assumes that the influence of other charges on the sentence for that index charge is small enough to be ignored.</p>
Is home detention included?	Yes, treated like a prison sentence. In future, the treatment of home detention may be refined. Because home detention is not subject to parole, a 6-month home detention may be seen as the equivalent of something more like a 12-month prison sentence.
Is intensive supervision included?	No.