JUSTICE SECTOR

POPULATION REPORT

Executive Summary

This is the second population report from the justice sector. The report is based on a projection model, which provides an overview of the amount of future crime that is likely to be committed by distinct groups in the New Zealand population.

Information from the model is combined with international and New Zealand research to provide comprehensive evidence on the most effective ways to prevent crime in New Zealand.

Our model estimates the likelihood of future crime for different groups in New Zealand. The population is described in nine 'segments', which are grouped by age, service use, and risk of offending.

This segmentation supports a strategic view about the balance of activities to prevent crime and provides the big picture view to help support decisions about which groups to focus on in detail.

The segments and crime

There are four high risk, two medium risk, and three low risk segments which cover the entire resident population of New Zealand. Each person is in one, and only one, segment.

Only a very small portion of the population fall into one of the four high risk segments, but the average projected offending of people in these high risk segments is much higher than for the general population.

At the same time, most offending is projected to be committed by people in the medium and low risk segments. This is because the low risk groups are very large and so most offending will come from low risk groups.

This means that both universal and targeted approaches are needed to prevent crime.

The segments with the greatest risk of offending are also at the greatest risk of victimisation.

Identifying and intervening with people at risk of offending

How people interact with social services, as well as their social outcomes, are different across each segment. Considering that some people are grouped into segments according to specific social service interaction (e.g. 'high risk under-17s' have had a care and protection intervention) there remain stark differences in service interaction across segments.

Each time someone interacts with the social system, we have an opportunity to identify and/or connect with them, to offer access to support and services that are likely to reduce their risk of offending. For each social service interaction, a variety of interventions are available.

People in high and medium risk segments are much more likely than their peers to have received a benefit.

In this population report we see that high and medium risk segments are more likely to have received a benefit than their peers. Interaction with the welfare system may present an opportunity to provide services that help prevent crime, such as training and employment.

Adults with a high or medium risk of offending are more likely to have been NEET (not in Employment, Education, or Training) recently.

Employment has been shown to be a protective factor in preventing offending, yet people in high and medium risk segments are more likely to be out of employment, education, or training. This suggests a need for employment and training interventions with people at risk of committing crime. Effective interventions can include prisoner

education and employment programmes, and employment assistance programmes in the community.

People in high and medium risk segments are more likely to live in state and other social housing.

Living in social housing is more common for people in high and medium risk segments. While social housing doesn't appear to be a risk factor on its own, stable housing is a protective factor in preventing crime. Supporting people to gain adequate and stable housing is likely to reduce crime.

While most under-17s with a high risk of offending are still enrolled in school, many of them are truant or have been suspended.

While most under 17s with a high risk of offending are enrolled in school, the high proportion which are absent means that delivering programmes exclusively within schools will be insufficient to capture all high risk young people. Regardless a variety of behaviour management in schools programmes, family therapies, and kaupapa Māori initiatives have been shown likely to be beneficial in reducing crime among young people in education long-term.

People in high and medium risk segments who have already offended are much more likely to access addiction services than their peers.

Alcohol and other drug treatments have been shown to be effective in reducing crime for people at risk of offending. Additionally, Cognitive

Behavioural Therapy, drug courts, and drug-free transitional housing have been shown to be effective in reducing offending.

Mental health service use is more evenly spread across groups.

Research suggests that mental health issues do not cause crime, but instead co-occur with it. However, given the high rate of mental health diagnosis among people in prison, there is a clear need for mental health interventions in the justice system. Cognitive Behavioural Therapy and its variants are effective treatment options.

All under-17s with a high or medium risk of offending have a high rate of care and protection intervention.

There is a high rate of care and protection intervention among high and medium risk under 17s, even for the segments not grouped by care

and protection interventions. Reducing crime among young people with care and protection involvement can be achieved through youth mentoring, school-based and family-based behaviour programmes, therapeutic interventions, and outdoor programmes.

Together, the segmentation model and intervention evidence form an outline of known best practice for crime prevention in New Zealand. They support decisions about areas of focus and suggest areas of further investigation for investment.

We look forward to discussing the findings of this analysis widely with people involved in delivering, funding or designing crime prevention initiatives.

For more information, contact us at **sectorgroup@justice.govt.nz**.

How to read this document

This document consists of two different sections, for different purposes:

1. An overview of how service interventions may be targeted to different segments, organised by different areas of the social sector, such as education, social welfare, etc. (starting on page 17).

2. Detailed statistics about each segment, for reference (starting on page 33).

Many readers may find it unnecessary to read all the detailed statistics for every single segment in detail. After reading the background and overview of the segments, it is not necessary to read this document linearly from start to finish.

Readers with different interests should focus on different passages. For example, if the reader is interested primarily in how interactions with the

education system can be targeted to different segments, they should focus on the corresponding entry in the 'Social outcomes and service interactions' section. On the other hand, if a reader is interested in the demographics of a specific segment, such as 'H1 Serious Young Offenders', they should consult the corresponding entry in that section.

If the reader is interested in more technical information about the accuracy of our projection model, this is contained in an appendix. There are also further appendices on change in the segments over time and information on regional variation of the segments.

Contents

Background

We use the Integrated Data Infrastructure (IDI) to model offending

The Population Report is based on the results of a microsimulation model which projects future offending for all New Zealand residents, starting 1 January 2017. The model uses a range of data available on the IDI. The purpose of the model is to understand which population groups are most likely to be involved in crime in the future and support analysis about the potential impact of new policies or interventions to make crime less likely.

For more information about the model, including technical documentation, contact **sectorgroup@justice.govt.nz**

This analysis is based on the IDI, which is a system of linked data managed by Statistics New Zealand. The IDI has a central spine, the core list of people that all other datasets link to.

Inevitably data about individuals from external sources such as Justice sector agencies, do not always link perfectly to the spine. For justice datasets (Police, Court charges, Corrections), about 94% of the unique individuals were linked to the spine and about 2% were linked incorrectly (in the March 2017 'refresh' of the IDI). As a result, numbers reported here will not always align perfectly with similar numbers reported using agency databases.

How offences and victimisations are counted

This report presents information about modelled offences and victimisation against individuals. The model uses Police offence and victimisation data.

Unless otherwise stated, 'offences' means 'alleged offences that resulted in a Police proceeding, like a warning or charge, against a person'.

Specifically, proceedings are 'post-count' proceedings recorded by Police in Recorded Crime Offenders Statistics (RCOS). These count the number of days someone is proceeded against by court or non-court action. If multiple offences are processed on one day, one is selected as the principal offence.

'Victimisations' means 'victimisations recorded by Police'.

Specifically, victimisations are 'post-count' victimisations as recorded by Police in Recorded Crime Victims Statistics (RCVS). These count each victim once for each criminal incident reported on one day, for each division of the Australian and New Zealand Standard Offence Classification (ANZSOC).

Most victimisation isn't reported to Police. For some offence types (e.g. burglary), most recorded victimisations aren't resolved and don't result in Police proceedings against an offender. Therefore, the measures of offending and victimisation in this report substantially under-represent actual offences and victimisations.

Categories of offence in the model

The model provides separate projections for seven broad categories of offending referred to throughout this report. Table 1 defines these offence categories.

Table 1: Offence typology

Offence category	Offence types included in category
High seriousness personal offences (non-sexual)	Serious assault Robbery Homicide Arson Breach of protection order
High seriousness acquisitive offences	Burglary Fraud Car theft and other serious theft Blackmail and extortion
High seriousness proactively detected offences	Cannabis cultivation Drug manufacture, importation and supply
Less serious personal offences	Common assault Threats
Less serious acquisitive offences	Shoplifting Petty theft
Less serious proactively detected offences	Traffic offences Administrative offences Regulatory offences Public order offences Drug possession
Sexual offending[1]	All sexual offences

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1   Projections of sexual offending are less accurate than other offence types.

Ethnicity is not a risk factor for offending

Ethnicity is discussed in several places in this report. A person can have more than one ethnicity. Using the Integrated Data Infrastructure, multiple sources are used to gather ethnicity information including census, health records, birth records, and education records.

In the model ethnicity is not a risk factor for committing crime. Differences in ethnicity across the segments are explained by ethnic differences in other crime-related factors, such as deprivation.

Segmentation shows the model results

The segmentation analysis is the main way of understanding the overall results of the microsimulation model. Segmentation is a way of dividing the population up into mutually exclusive groups with common characteristics.

The segmentation shows the amount of crime that is estimated to be committed by different groups in the resident New Zealand population, and the distinctive features of these groups. Everyone in the population is in one segment, and everyone is in only one segment.

The segmentation is different from cohort analysis. Cohort profiles can support tactical decisions relating to a specific group of people. In contrast,

the segmentation supports a strategic view about the balance of all activities to prevent crime. This provides the big picture view to help support decisions about which cohorts to focus on in detail.

A segmentation analysis can be used to support:

- prioritising effort
- developing segment-specific strategies
- tracking changes in the risk composition of the population
- understanding each agency's span of influence
- informing population-specific policies
- co-ordinating crime prevention efforts.

How we're protecting privacy

Careful consideration has been given to the privacy, security, and confidentiality issues associated with using administrative and survey data in the IDI. To do this we follow Statistics New Zealand's `five safes':

- **Safe people** means that all our researchers in the IDI have passed reference checks and must follow privacy and security rules

- **Safe projects** means that we make sure we only use data for a research project that is in the public interest

- **Safe settings** means that we only access IDI data through our secure Data Lab environment.

- **Safe data** means that the data we use has no identifying variables, and we only access data relevant to our research

- **Safe output** means that any output does not contain results where a single person can be identified and is double checked by Statistics New Zealand

Only people authorised by the Statistics Act 1975 are allowed to see data in the IDI and the results in this paper have been confidentialised to protect people from being identified.

To protect confidentiality, data is rounded to a multiple of 3 and results with only a few people in them are suppressed. As a result, data in tables and figures may not add up exactly to the totals, and table totals may differ slightly throughout the report.

Overview of the segments

We have divided the NZ population into nine mutually exclusive segments, which are defined in Table 2. All segment sizes are counted over the year 2016.

Segment definitions

Table 2: Segment definitions

Age	Risk level	Segment name		Definition	People in segment
Under 17	High	H1: Serious young offenders		People under 17 who have been dealt with by Police for a serious offence in past five years	3,840
		H2: High risk under 17		Male, ever subject to a Oranga Tamariki care and protection intervention, currently supported by benefit, with no serious offence in last five years	11,913
	Medium	M1: Under 17 care and protection history		Young people ever notified to Oranga Tamariki for care and protection risk and not in a high risk segment	164,160
	Low	L1: Under 17 low risk		People under 17 and not in a high or medium risk segment	858,195
17 or older	High	H3: Prisoners		People who have spent time in prison in the past year as a sentenced prisoner	18,384
		H4: Under community management		People who have spent time in the management of Community Corrections in the past year under a sentence or order, but not as a sentenced prisoner	42,087
	Medium	M2: Recent offenders		People dealt with by Police in the past five years, but no time as a sentenced prisoner or under the management of Community Corrections in the past year	273,093
	Low	L2: 17-49 low risk		People aged 17-49 and not in a high or medium risk segment	1,860,762
		L3: Over 50 low risk		People aged 50+ and not in a high or medium risk segment	1,547,319

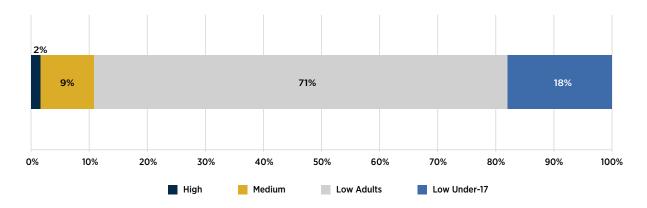The segments were defined using three main considerations:

- **Risk of future offending** – there are four high risk segments, two medium risk segments, and three low risk segments

- **Life stage** – the segments are divided by age in children/youth (under 17) and adults (17 and older) to reflect the different types of intervention offered at different life stages

- **Agency involvement** – the segments have been defined in a way that reflects the span of influence of each agency who delivers services that reduce crime.

Segmenting in this way allows us to understand the segments in terms of their involvement in crime and what options may be available to reduce crime for each segment.

Future offending by segments

This section outlines the risk of future offending of current members of the segments. Figure 1 shows the proportion of people in each risk level; high, medium, and low divided by age. It shows that most New Zealanders (89%) are in low risk segments.

Figure 1: Proportion of people in each segment risk level

Figure 2 shows the proportion of offending that is estimated to be committed by each risk group at 1 year, 5 year, and 15 year intervals. Table 3 breaks down the number and proportion of offences that each segment is estimated to commit over the next 15 years.
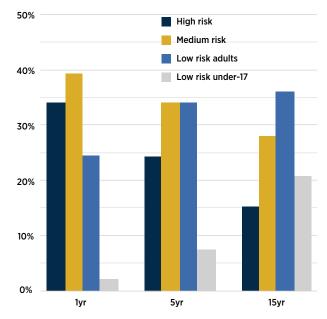
Most New Zealanders are at low risk of offending.

The four high risk segments make up just 2% of the population, but are estimated to commit 34% of the offences next year and 15% of offences over the next 15 years. The average projected offending of these high risk segments over their life course is much higher than for the general population. For example, each person in the serious young offender segment (H1) is estimated to offend 7.1 times on average over the next 15 years.

At the same time, most future offending is not estimated to be committed by those in the high risk segments. Most offending is likely to be committed by those in the medium and low risk segments. This is because there are many more people in these groups, even though these groups have lower probability of offending.

For example, 39% of the offending next year is estimated to be committed by the 9% of the population in one of the two medium risk

segments. On average, the people in these medium risk segments only pose a modest risk of offending; over the next 15 years, each person in the under 17 care and protection history segment (M1) is projected to offend 1 time on average and each person in the recent offender segment (M2) 1.2 times. Despite these low per-person rates, these two segments are expected to be the source of 28% of offending over the 15 years because there are many more people in these segments than in the high risk segments.

Figure 2: Proportion of future offences projected by segment risk level

Almost a third of the offending projected to be committed by the 2016 NZ resident population next year is projected to be committed by the 89% of people who are in one of the low risk segments. The people in these segments who will offend have no obvious risk characteristics that can be used to differentiate them from those who will not offend. As discussed later, much of the offending by these low risk segments is likely to be less serious, although there will occasionally be serious offending arising from these segments.

> (i) Because they are very large, low and medium risk segments are projected to commit the most offences.

Figure 2 also shows that the relative importance of the low and medium risk segments increases further into the future. Over the next year, 34% of offending (committed by the 2016 NZ resident population) is projected to be committed by people in the high risk segments, in comparison to 15% of offending over the next 15 years.

This reflects the fact that over a 15 year horizon many people who are currently high risk offenders will desist from a life of crime, and some people who are currently low risk will transition into medium and high risk segments. It also reflects the fact that projection is more difficult over a long time horizon.

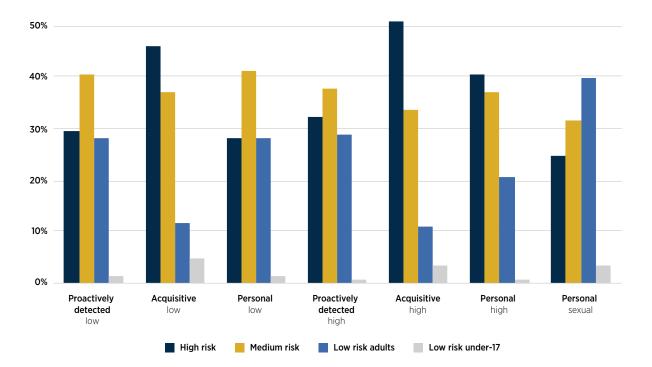**Table 3:** Future offending of segments (detailed 15-year view)

		Number of people	Proportion of people	Number of projected future offences (15 yrs)	Proportion of future offences (15 yrs)	Average future offences (15 yrs)
H1: Serious young offenders		3,840	(0.1%)	27,319	(1.6%)	7.1
H2: High risk under 17		11,913	(0.2%)	37,391	(2.2%)	3.1
M1: Under 17 care and protection history		164,160	(3.4%)	165,992	(9.6%)	1.0
L1: Under 17 low risk		858,195	(18.0%)	360,438	(20.8%)	0.4
H3: Prisoners		18,384	(0.4%)	78,399	(4.5%)	4.3
H4: Under community management		42,087	(0.9%)	120,583	(7.0%)	2.9
M2: Recent offenders		273,093	(5.7%)	316,924	(18.3%)	1.2
L2: 17-49 low risk		1,860,762	(38.9%)	531,191	(30.7%)	0.3
L3: Over 50 low risk		1,547,319	(32.4%)	90,924	(5.3%)	0.1
Total		4,779,753	(100%)	1,729,161	(100%)	0.4

Segment breakdown by offence type

Figure 3 and Figure 4 demonstrate that every segment differs from the others in the type and number of offences committed. For example, more than 50% of serious acquisitive offences (burglary, fraud etc.) next year are projected to be committed by people in the high risk segments, in comparison to over 25% of personal low-seriousness offences (assault, threatening behaviour, etc.).

In a practical sense, it also means that the type of offence we are most interested in preventing influences which segment to focus on.
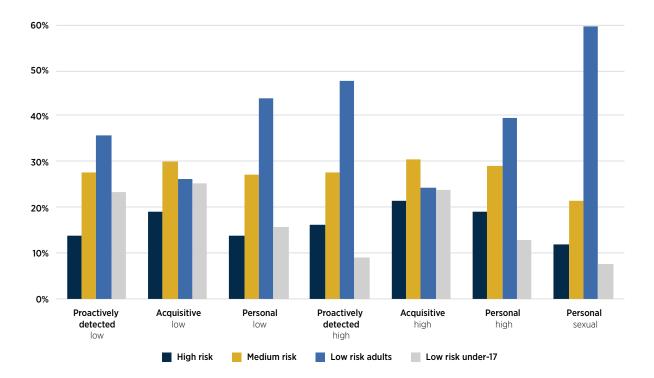

Figure 3: Offences projected over next 1 year attributable to each segment by offence type

It is important to bear in mind that that the data in the IDI allows us to more accurately estimate violent and property offending than it does sexual offending.

People in high risk segments are projected to commit 50% of serious acquisitive offences over the next year.

Figure 4: Offences projected in next 15 years attributable to each segment by type

Figure 5 and Figure 6 provide a more detailed breakdown of the offence composition projected for each of the nine segments, showing that each segment is quite different. All segments have a large portion of less serious proactively detected offending (primarily traffic offences). This type of offending makes up a high proportion of offending for the low risk and adult segments, largely because these groups tend not to commit more serious offences.

This highlights an overlap between frequency and seriousness. That is, the high risk segments are both more likely to offend frequently, and more likely to offend seriously.

The proportion of acquisitive offending projected is highest for the younger segments, with high seriousness acquisitive offending (burglary etc.) being a major part of the profile of the serious young offender segment (H1) in particular.
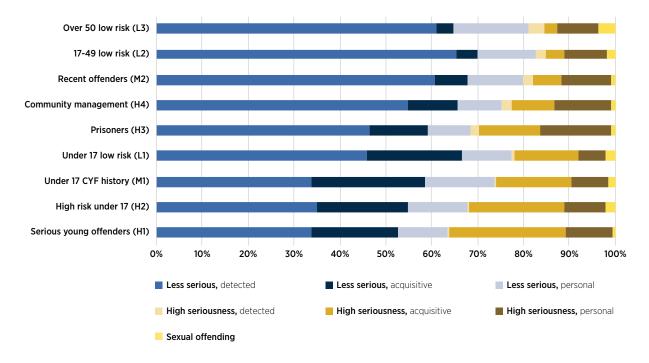
> **High risk segments are more likely to offend more frequently and more seriously.**

Serious violence is most prevalent among the adult segments, particularly the two segments currently under Corrections management (H3 and H4) but also the medium risk adult segment (M1).

The proportion of sexual offending being projected for all segments is very low. Differences in sexual

offending rates should be interpreted with care, as the model isn't able to accurately predict sexual offending at the individual level.

This shows that investment in each of the segments could potentially lead to quite different outcomes in terms of crime types prevented.

Figure 5: Projected offences in next year by type for each segment

Figure 6: Projected offences in next 15 years by type for each segment

Social outcomes and service interaction differ by segment

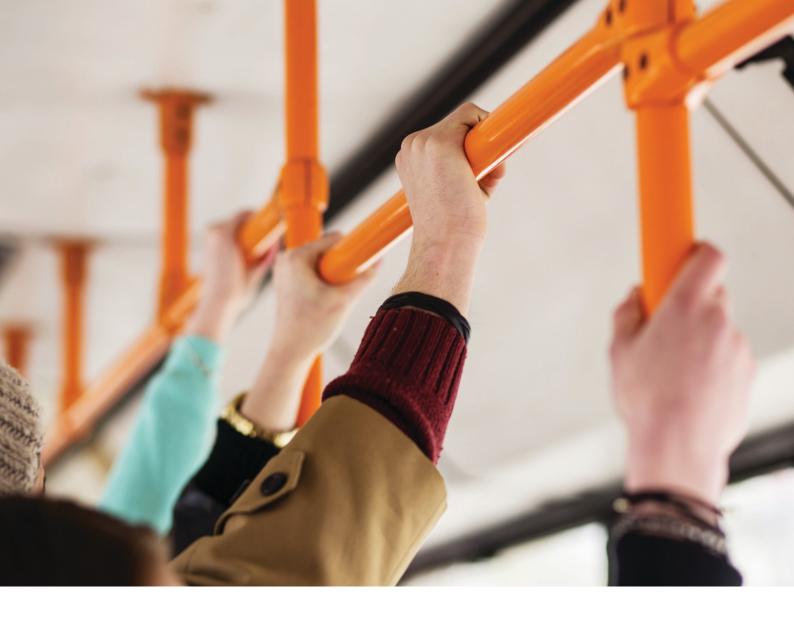Alongside the segment breakdown, the model outputs social service interactions and other social outcomes. These interactions help us understand the needs of people in different segments as well as opportunities to intervene with them to reduce crime.

Services for at-risk individuals are often reactive rather than preventative. Services tend to be offered at key crisis points, rather than targeting at-risk populations to prevent offending behaviour before it escalates. The segmentation analysis supports more preventative interventions, which are discussed here.

This section discusses social sector interactions and social outcomes across the segments and the New Zealand population. It highlights well-supported interventions for each arena.

Benefit receipt

There is a strong association between risk of offending and likelihood of receiving a main benefit. The people most likely to offend in the future are also most likely to receive benefits, both currently and in the future.

For example, Figure 7 shows that the high and medium risk groups have a much greater proportion of members who were supported by a benefit as a child[2].

Figure 7: Percentage of people in each segment supported by a benefit as a child

Adult with a high and medium risk of offending are more likely to receive benefits than their peers. Similarly, young people with a high risk of offending are more likely to be supported by benefit currently, or in the last 5 years, than their peers.

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2 Our definition includes all people supported by a main benefit as child, for any duration of time. For older people, there is no data on benefit support as a child

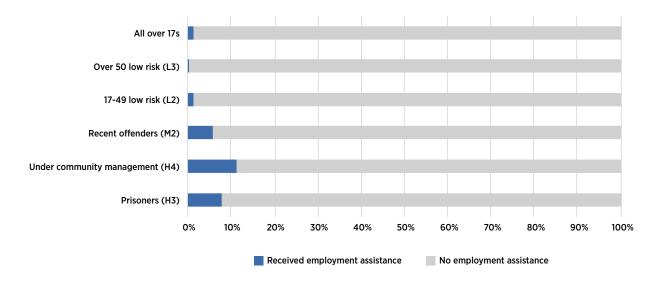Chart data (by segment): Current benefit (dark navy), Benefit last 5 years (blue), No benefit last 5 years (grey)

- Over 50 low risk (L3)
- 17-49 low risk (L2)
- Under 17 low risk (L1)
- Recent offenders (M2)
- Under 17 CYF history (M1)
- Under community management (H4)
- Prisoners (H3)
- High risk under 17 (H2)
- Serious young offenders (H1)

X-axis: 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Legend: ■ Current benefit ■ Benefit last 5 years ■ No benefit last 5 years

Figure 8: Percentage of people in each segment who have received a benefit within the last 5 years

It is known (for example, in the Christchurch longitudinal study[3]) that economic disadvantage increases the effect of other risk factors. This is likely to account for the association between benefit receipt and risk of offending displayed in the previous two graphs.

Conversely, the relationship between benefit receipt and risk of offending also highlights the fact that employment and job stability are known protective factors for reducing the likelihood of reoffending.

This is also highlighted by the fact that adults in the high risk segments are more likely to receive employment assistance, as shown in Figure 9. Employment interventions are discussed in detail in the next section.

Since benefit receipt is associated with risk of offending, this makes the welfare system a useful vehicle to identify those most at risk.

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3   Fergusson, D., Swain-Campbell, N., & Horwood, J. (2004). How does childhood economic disadvantage lead to crime? *Journal of Child Psychology and Psychiatry*, 45(5), 956-966.

Figure 9: People in each segment who received employment assistance in 2015

> There is a strong association between benefit receipt and risk of offending, making interaction with the welfare system an important opportunity to identify at-risk people for future interventions.

Employment and training

Employment is likely to be a protective factor[4] for people at risk of committing crime. However, adults in high risk segments are more likely than their peers to have been NEET (Not in Employment, Education, or Training) in the last five years.
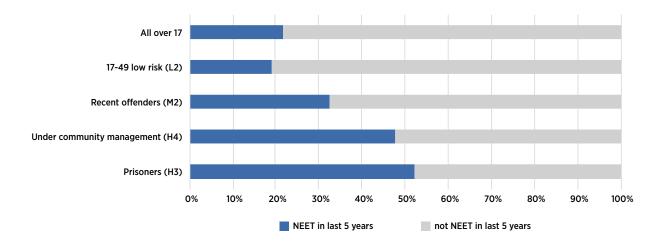

Figure 10: Proportion of 17+ segments NEET in last 5 years

Employment and training interventions

Many individuals in the community management (H4) and prisoner (H3) segments have been NEET in the last 5 years. As such, those in prison may benefit from:

• **Prisoner Education and Employment** programmes. There is strong evidence that such programmes reduce the likelihood of offending, as well as increase the likelihood of obtaining and maintaining employment upon release.

• **Prisoner reintegration programmes**, such as 'Out of Gate' and 'Release to Work' provide support in multiple areas of reintegration, including employment. There is New Zealand evidence that such programmes are effective at reducing the likelihood of reoffending. The Department of Corrections also works with organisations to provide a range of other services. Some of the supporting organisations are:
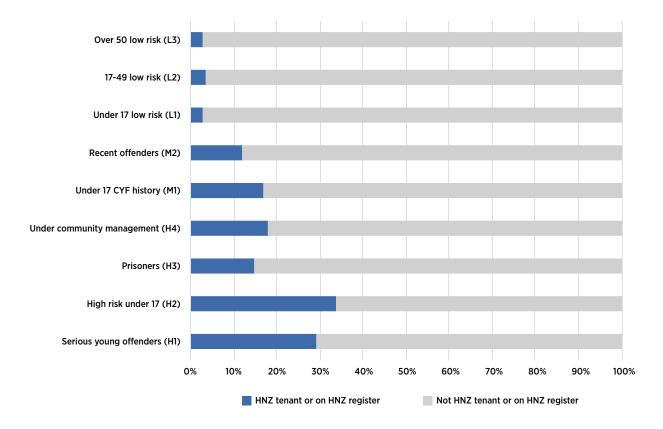
— The Prisoner's Aid and Rehabilitation Society (PARS) network
— Prisoner Fellowship New Zealand
— The Salvation Army
— Salisbury Street Foundation
— Arts Access Aotearoa
— National Urban Māori Authority.

• **Employment assistance programmes** may benefit community management and prisoner segments after release. There is some mixed evidence that employment assistance programmes reduce the likelihood of offending. The recent offender (M2) segment may also benefit from employment assistance programmes. An evaluation to find which are the most effective such programmes is currently underway by MSD.

See the MOJ 'Prisoner Education & Employment', 'Reintegration Services' evidence briefs.

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4   'Protective factors' are skills, strengths, resources etc. which helps an individual deal more effectively with stressful events and mitigate risk. In the context of the justice sector this means the individual is less likely to offend.

Social housing

People who are at higher risk of offending also tend to live in social housing[5] more often. However, this is not a causal association and housing interventions are likely to reduce crime in this group[6].

Both high and medium risk segments reside in social housing at higher rates than their peers. Rates of social housing receipt are shown in Figure 11.

Figure 11: Percentage living in social housing by segment

> People in high and medium risk segments are more likely to reside in social housing than people in low risk segments.

While risk of offending is associated with being in social housing, it is important not to confuse this association with causation. There is no evidence that being in social housing causes people to offend.

Instead, there is some evidence that social housing in New Zealand leads to better social outcomes for recipients, as opposed to those who did not receive social housing.

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5   Our data includes only state housing provided by Housing New Zealand, but not social housing from other providers.

6   See the transitional housing evidence brief for more information.

In general, stable housing is a protective factor that can reduce the likelihood of reoffending.

There is international evidence that transitional housing for people leaving prison (or other high risk individuals) can reduce the likelihood of reoffending, particularly among people who have committed a serious and violent offence.

Transitional housing may also be provided to people with community sentences who have accommodation needs.

However, permanent housing interventions will likely have a greater impact on reoffending than transitional housing interventions.

Prisoners (H3) and those under community management (H4) may benefit from permanent and transitional housing support.

7   Social Investment Agency. (2017). *Social housing technical report: Measuring the fiscal impact of social housing services.* Wellington: Social Investment Agency.

The education system

The younger high risk segments are less likely to be enrolled at school at age 16 than their peers. However, the majority of high risk individuals *are* enrolled (86% and 89%, respectively), which means that the education system is still a useful intervention point for targeting these segments.
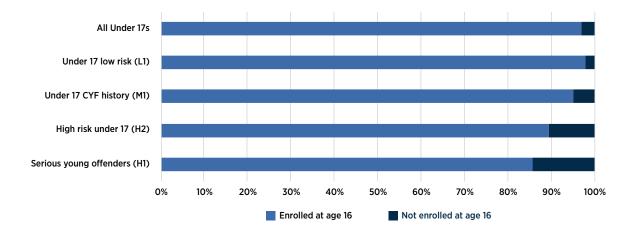
Figure 12 bar chart showing percentage enrolled at age 16 by segment:

- All Under 17s
- Under 17 low risk (L1)
- Under 17 CYF history (M1)
- High risk under 17 (H2)
- Serious young offenders (H1)

Legend: ■ Enrolled at age 16   ■ Not enrolled at age 16

Figure 12: Percentage of younger segments enrolled at school at age 16

> Since most young high risk individuals are still enrolled at age 16, the education system provides a key opportunity to identify high risk youth.

Stand down, suspended, and truant

Although high risk young people are often enrolled in school, they are less likely to be attending school.

People in the serious young offenders (H1) and under 17 high risk (H2) segments are much more likely than their peers to be stood down more than once or suspended, or to have a truancy intervention[8]. The majority (58%) of the serious young offenders segment have experienced a truancy intervention in the last 5 years.

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8   Our definition of 'truancy intervention' means a referral to the Attendance Service for either chronic non-attendance or non-attendance for more than 20 consecutive days.
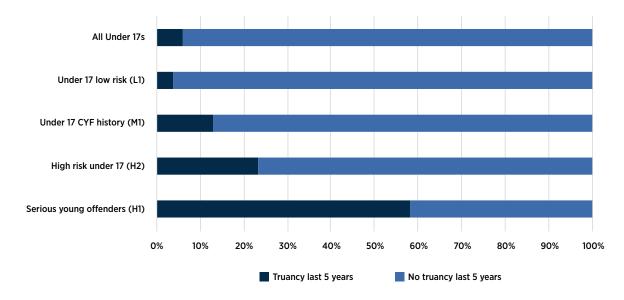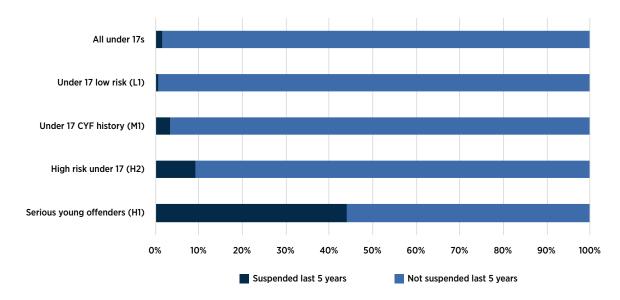
Figure 13: Proportion of younger segments with truancy in the last 5 years

Figure 14: Proportion of younger segments suspended in the last 5 years

Of serious young offenders, more than half have had a truancy intervention and almost half have been suspended in the last 5 years.

School-based and other interventions for under 17s

Because many high risk individuals are still enrolled at age 16, the education system is an important opportunity to identify people at risk of offending. When planning interventions focussed at high risk students, it is important to remember the high rate of truancy among this group. Interventions may need to be provided both in schools and in other locations.

Young, high risk offenders involved in truancy or suspensions may benefit from:

- **Functional Family Therapy (FFT), Multisystemic Therapy (MST), and other family-based interventions for teenagers.** These are family-based interventions that attempt to improve the parents' behavioural management skills, the general communication dynamics between family members, or both. Provision of family therapy in New Zealand depends on location. These services are typically provided by contracted organisations:

  — There are eight MST teams in the country, seven of which are in the North Island.

  — The Youth Horizons Trusts delivers FFT and Treatment Foster Care Oregon.

  There is strong evidence that such programmes reduce the risk offending among teenagers.

- **Behaviour Management in Schools** programmes for which there is clear international evidence of efficacy such as:

  — **Positive Behaviour for Learning (PB4L)** helps schools build a positive school-wide culture of shared values and behaviour expectations that support learning. PB4L is intended to complement individually-focused services. For these services schools refer to Resource Teacher, Ministry of Education Specialist behaviour service, and Ministry of Education Intensive Wraparound Service.

  — **Incredible Years Teacher.**

  — **Environmental interventions**, which are designed to change the school or classroom environment to directly reinforce positive behaviour. This may include establishing disciplinary mechanisms that lead to clear and consistent management of problem behaviour by all teachers. An example of this approach is School Wide Behaviour Support.

- **Kaupapa Māori-based initiatives**, such as Oho Ake. Oho Ake is a joint kaupapa Māori-based initiative administered as a partnership between Whakatane Police and Tūhoe Hauora. Oho Ake is designed to provide alternative options to address the attitudes, behaviours, and causes of offending.

For pupils under than 13 years of age it may be more beneficial to implement early intervention programmes, such as

- **Family Start**, an intensive home visiting programme for high risk families. It is run by contracted providers.

- **Well Child/Tamariki Ora**, a free health promotion and support service for children up to 5 years old which includes developmental and behavioural assessment.

- **Incredible Years Parent**, a targeted programme designed to enhance parenting skills. This service is provided by the Ministry of Education.

For very young individuals, there is evidence that high-quality Early Childhood Education (ECE) reduces the likelihood of future criminal behaviour and other negative social outcomes. See the MOJ 'Early Childhood Education', 'Behaviour Management in Schools', and 'Family-based interventions for teens' evidence briefs for details.
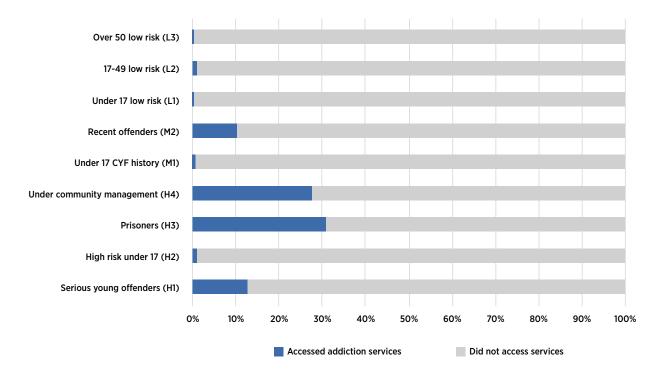
Substance abuse and mental health service use

People in high and medium risk segments are more likely to access mental health and/or addiction services than low risk segments. This measure of service use cannot capture unmet need or diagnosis across these groups, and should be interpreted carefully. Furthermore, it is important to remember that Justice has high rates of referral to mental health and addiction services. In 2013 61% of people accessing a mental health or addiction service were referred there by justice agencies.

Addiction services

With these caveats in mind, the first observation is that the serious young offenders (H1), prisoners (H3), those in community supervision (H4), and recent offenders (M2) segments use substance addiction services at much higher rates than the general population as illustrated by Figure 15.

The under 17 high risk (H2) and under 17 care and protection history (M1) segments have used these services at a similar rate to the general population.

Figure 15: Proportion of each segment who accessed an addiction service in years 2011-2014

Further analysis of addiction service use showed that 14% of people charged in court, 23% of people starting a community sentence, and 21% of people in prison in 2013 accessed addiction services 12 months either side of receiving their sentence.

While the level of unmet need is unclear in this data, it still suggests that substance abuse services may be a useful way to intervene with serious young offenders (H1) and recent offenders (M2). It also underlines the importance of Corrections' current programme of screening for alcohol and other drug problems for H3 and H4.

Interventions for people with addiction

- **Alcohol and Drug Treatment (AOD)** programmes based in prison or in the community have strong evidence of effectiveness at reducing the risk of reoffending for adults with a high risk of offending. This suggests that prisoners (H3) and those under community management (H4) are likely to benefit from this intervention. It is unclear whether AOD treatment for adolescent offenders reduces reoffending. Community-based AOD services (for the (H4) segment) are more effective when:

  — therapeutic communities are used

  — programmes are longer and have been delivered for more than a year

  — programmes are voluntary

- **Cognitive-Behavioural Therapy** has strong evidence showing it to be effective at reducing reoffending for all high risk segments. Cognitive-behavioural therapy is often implemented in conjunction with AOD treatment programmes.

- **Drug Courts** alternative sentencing programmes have international evidence supporting their effectiveness for high risk and high needs individuals, such as those in the high risk segments with serious addiction problems. A New Zealand evaluation of the efficacy of drug courts is in progress for 2018.

See the Ministry of Justice 'Correctional Alcohol and Drug Treatment', 'Cognitive-Behavioural Therapy', 'Drug Courts' and 'Transitional housing' evidence briefs for details and references.

Mental health services, excluding addiction

Mental health service use, excluding addiction service use, is much higher among the serious young offenders (H1) segment than the under 17 low risk (L1). It is also high among the prisoners (H3), community management (H4), and recent offenders (M2) segments, as illustrated by Figure 16.
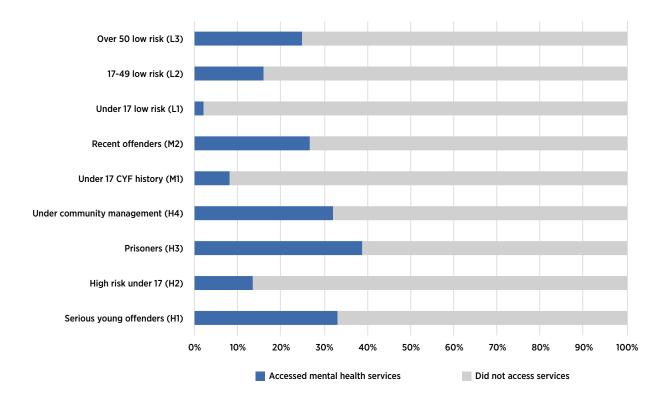
However, many individuals throughout the population have accessed such services – more than 20% of the over 50 low risk segment, for example – so, there is not a clear, population-wide association between risk of offending and accessing mental health services.

The literature suggests that there is a weak positive correlation between mental disorder and crime, but that mental illness causes crime only very rarely. In most cases it is more accurate to think of mental disorders as co-occurring with crime rather than causing it.

Additional analysis shows that mental health service use (excluding addiction service use) is similar for the general public (15%) and for people interacting with the justice sector 12 months either side of their interaction. The highest rate of service use was among people in custody, at 21%.

Of people charged in court in 2013, 18% accessed mental health services 12 months either side. Of those people who accessed mental health services, 24% were high users meaning that they accessed specialist services classified as severe, over a 2-year period, or were discharged from hospital with a diagnosis.

This data only reveals services people use, not their need or diagnosis. Corrections completed a survey in 2016[9], which showed that 91% of prisoners had a lifetime diagnosis of mental health or substance use disorder, with 62% receiving the diagnosis in the prior 12 months.

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9   Indig D, Gear C, Wilhelm K. (2016) Comorbid substance use disorders and mental health disorders among New Zealand prisoners. New Zealand Department of Corrections, Wellington.
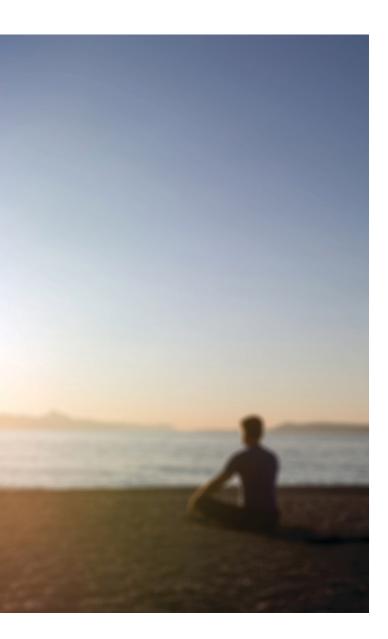
Figure 16: Proportion of each segment who accessed mental health services (not alcohol/drug related) 2011-2014

Many serious young offenders (H1) will interact with mental health services, which means such services can be an important intervention point for this segment.

Mental health interventions

- **Cognitive-Behavioural Therapy** programmes, mentioned above, may be an appropriate intervention with high and medium risk groups seeking mental health services. There is strong evidence that such programmes reduce the risk of reoffending. Various types of CBT are each effective at reducing reoffending, including Moral Reconation Therapy, Reasoning and Rehabilitation, Aggression Replacement Training, Relapse Prevention, Dialectical Behaviour Therapy, and CBT-informed anger management.
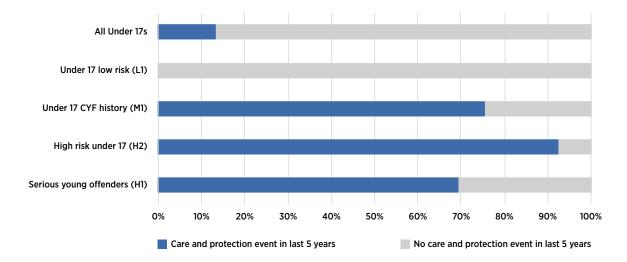

- Aspects that make CBT programmes more effective in reducing crime include:

  — Offering higher intensity programmes to higher risk offenders and targeting factors related to offending such as substance abuse

  — Using group as well as individual sessions

  — Including training in techniques for maintaining self-control and identifying triggers that arouse anger

  — Activities aimed at recognising and modifying the thinking distortions and errors that are particular to offending

  — For school-based CBT, providing the programme across the school rather than targeting individuals

  — Including motivated participants

- **Transitional housing** is supported by some evidence showing it can reduce the likelihood of offending for high-needs individuals who may have been homeless or in mental health facilities, see the Ministry of Justice 'Transitional Housing' evidence brief.

Care and protection involvement

By definition, two of the three high and medium risk youth have had an Oranga Tamariki (OT; formerly CYF) intervention. Such interventions include Family Group Conferences, Family Whanau Agreements, and legal care episodes. Legal care episodes of 28 days or more are considered placements.

Figure 17 and Figure 18[10] show the proportion of each segment who have had a care and protection intervention in the previous 5 years and before age 17 respectively Both figures show that the serious young offenders (H1) also have higher rates of OT intervention.

Figure 17: Proportion of younger segments who have had a care and protection event in last 5 years

While the high risk under-17 (H2) segment is defined by having had a care and protection event, for a small portion of this segment that event occurred longer than five years ago.

Young people with a high and medium risk of offending are much more likely to have a care and protection event in the last 5 years.
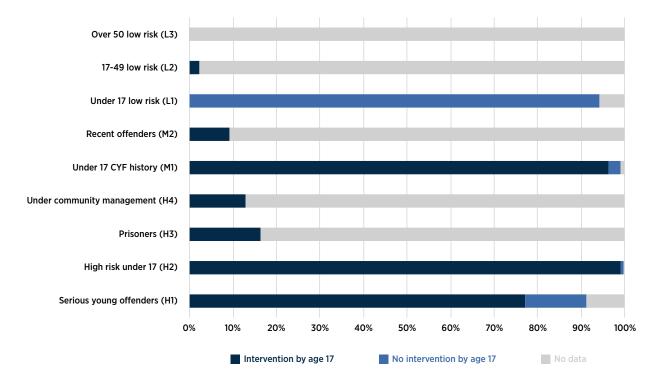
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10   The small proportion of (M1) and (H2) with 'no intervention' is due to data-counting issues.

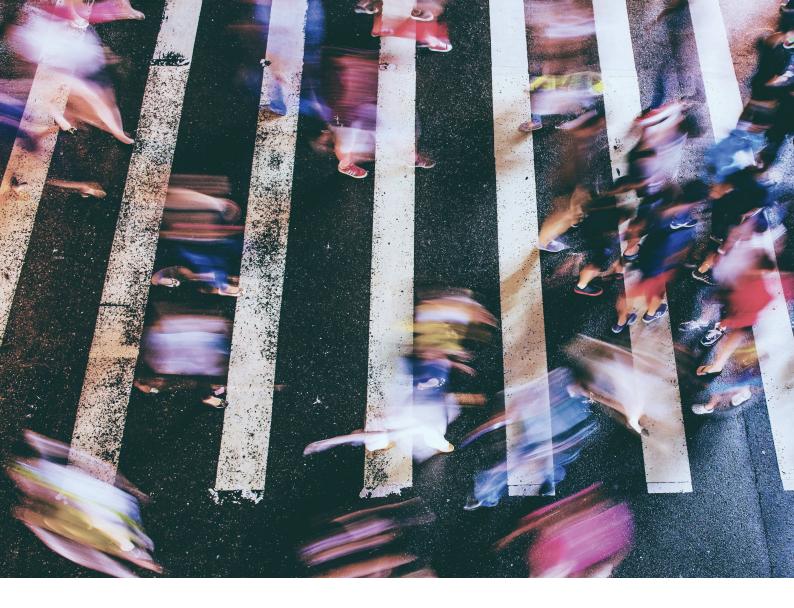# Interventions for people with care and protection involvement

Individuals from younger segments who are subject to Oranga Tamariki care and protection orders may benefit from:

- **Youth Mentoring programmes**; there is international evidence that such interventions reduce the likelihood of offending, especially for male youth, such as the high risk under 17 (H2) segment.

- **Early Start, Family Start and Positive Behaviour for Learning (PB4L)** which target children may benefit younger people in high risk segments (less than 13 years of age). There is international evidence that such early interventions for children under 13 can reduce teenage and adult offending.

- **Therapeutic interventions for young people exposed to intimate partner violence**, as well as therapeutic interventions for victims of intimate partner violence. There is international evidence that such interventions are effective in treating young people's traumatic stress symptoms. Such interventions are most effective when they:

— provide individual (rather than group) therapy
— tailor the intervention to the needs of IPV victims
— remove language barriers
— take victims' cultural beliefs and practices into account

- **Reducing Youth Offending** programme and other family-based programmes.

- **Multi-systemic therapy (MST)**, which is described in more detail on page 26.

- **Outdoor/wilderness programmes**, which aim to improve antisocial behaviour and social/psychological well-being through challenging physical and mental activities. There is international evidence that such programmes produce short-term reductions in criminal behaviour, and a range of other behavioural benefits.

Figure 18: Proportion of all segments who have had a care and protection event before age 17

Segment detailed descriptions

This section describes the segments in detail. It highlights demographic variables for each segment as well as their current rates of offending and victimisation. High risk segments are more likely to be victims of crime than their peers.

For each segment, this section also breaks down their projected offending over a one, five, ten, and 15-year horizon. This includes both prevalence and types of offending.

H1 | **Serious young offenders**

H1 segment detailed description

This segment is comprised of people aged 10-17 who have been dealt with by Police for a serious offence in the past five years.

The serious young offender segment is the smallest of the nine segments, with only 3,840 people or 0.1% of the New Zealand population, but they have the highest risk of future offending.

Table 6 provides detail as to the demographic profile of the segment.

Table 6: Demographic information for serious young offender segment (H1)

	Serious young offenders (H1)	All <17
Number of people	3,840	1,038,105
Proportion of all people	0.1%	21.7%
Male	78.9%	51.3%
Proportion aged 10-13	14.5%	22.5%
Proportion aged 14-16	85.5%	17.7%
Proportion attending schools in Decile 1-3[11]	45.7%	23.0%
Proportion attending Decile 10 schools	2.0%	15.3%
Proportion victimised	14.1%	0.8 %
Proportion with proved charge in the last 5 years	10.4%	0.1%

By definition, the serious young offender segment is older than the other three under-17 segments, with an average age of 14 and a half. Nearly 80% of the segment are male. High proportions of this segment attend a low decile school[12], and live in a deprived area[13].

Young people in this segment are nearly 18 times more likely to have been victims of crime and over 100 times more likely to have a charge proved in the youth court in the last five years than their peers.

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11   Deciles measure the socioeconomic position of a school's student community relative to other schools. Decile 1 is applied to schools with the most students from low socioeconomic communities with decreasing numbers up to decile 10, which has the smallest proportion of students from low socioeconomic communities.
12   A school with a decile rating of 1-3.
13   An area with an NZDep score of 7-10.

Figure 19 compares the serious young offender segment with all under-17s on demographic and offending variables.
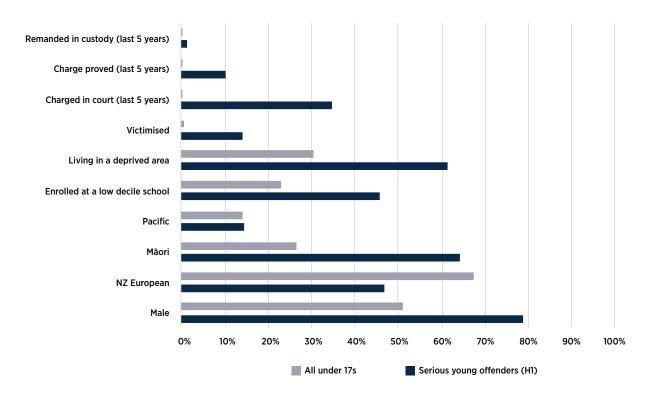

Figure 19: Comparison of serious young offender segment with broader group of all under 17s

Serious young offenders differ substantially from the broader population of under-17s on every demographic and offending measure.

Model projections for the segment

The microsimulation model projects future offending at the segment group level. Table 7 and Table 8 show the model estimates for the segment over the next one year and 15 years respectively.

The model projects a high level of offending for this segment, particularly in the next five years, with a high level of serious acquisitive crime such as burglary, in comparison to other segments.

Table 7: Next year summary of serious young offender segment (H1)

	Serious young offenders	All <17
Number of projected future offences (1 year)	5,662	16,128
Proportion of future offences (1 year)	4%	11%
Average future offences (1 year)	1.47	0.02

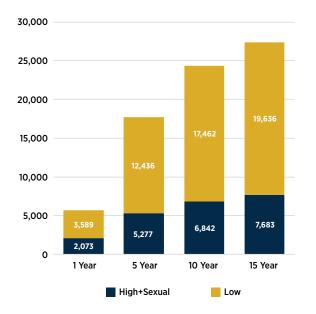**Table 8:** Next 15 years summary of serious young offender segment (H1)

	Serious young offenders	All <17
Number of projected future offences (15 years)	27,319	591,140
Proportion of future offences (15 years)	2%	34%
Average future offences (15 years)	7.11	0.57
Proportion projected to ever offend (15 years)	74%	19%

Figure 20 illustrates the future offending profile of the segment. Specifically, it highlights the number of high-seriousness and sexual violence crimes as well as the number of low-seriousness crimes estimated to be committed over the next 15 years.

Figure 21 further elaborates on this by showing the proportions of different crime types committed by members of the serious young offenders (H1) segment over the next 5 years.

A large amount of the offending committed by this cohort is projected to occur over the next 5 years.

Figure 20: Projected future offences by offence type for serious young offenders (H1)

Figure 21: Projected proportion of offence types for serious young offenders (H1)

H2 | **High risk under 17**

H2 segment detailed description

This segment is made up of people under 17 who have not yet offended seriously, but for whom a combination of risk factors suggests they are likely to offend in the future. The risk factors are being male, currently living in a family supported by benefit, and having a history of Oranga Tamariki intervention for a care and protection concern.

This segment is similar to the H1 segment but is younger and has not offended seriously in the last 5 years.

Table 9 provides detail as to the current circumstances of the segment. The segment is small, at 0.2% of the population.

Table 9: Description of high risk under 17 segment (H2)

	High risk under 17	All <17
Number of people	11,913	1,038,105
Proportion of all people	0.2%	21.7%
Male	100%	51.3%
Proportion aged 13 and younger	82.3%	82%
Proportion aged 14-16	17.7%	17.7%
Proportion attending schools in Decile 1-3	55.4%	23.0%
Proportion attending Decile 10 schools	1.8%	15.3%
Proportion victimised	4.8%	0.8 %
Proportion with proved charge in the last 5 years	0%	0.1%

Figure 22 compares the high risk under 17 segment with all under 17s on demographic and offending variables.
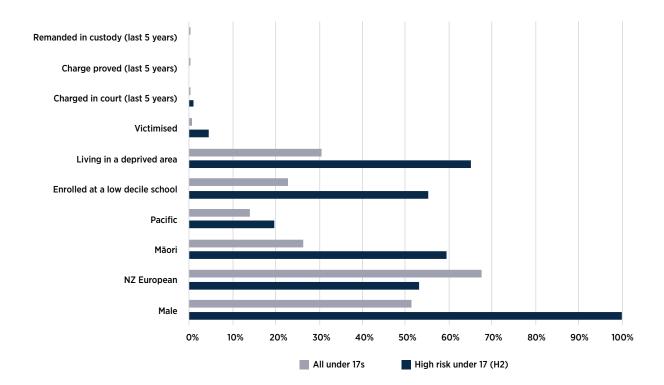
Figure 22: Comparison of high risk under 17 segment with broader group of all under 17s

High risk under 17s differ substantially from the broader population of under-17s on every demographic measure.

Model projections for segment

Table 10 and Table 11 show the model projections for the segment over the next one year and 15 years respectively.

The model estimates a moderate to high level of offending for this segment, particularly heading towards 15 years in the future. However, the offending rate is still half that of the previous segment. This segment has a high level of acquisitive crime such as burglary and shoplifting in comparison to other segments.

Table 10: Next year summary of high risk under 17 segment (H2)

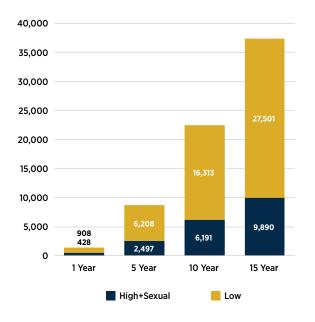|	High risk under 17 segment	All <17
Number of projected future offences (1 year)	1,336	16,128
Proportion of future offences (1 year)	1%	11%
Average future offences (1 year)	0.11	0.02

Table 11: Next 15 years summary of high risk under 17 segment (H2)

	High risk under 17 segment	All <17
Number of projected future offences (15 years)	37,391	591140
Proportion of future offences (15 years)	2%	34%
Average future offences (15 years)	3.14	0.57
Proportion projected to ever offend (15 years)	49%	19%

Figure 23 illustrates the projected future offence profile for the segment. In the next five years, the total offences committed is forecast to be less than the H1 segment.

Figure 24 shows the proportion of each offence making up the total offending in this segment, over the next 15 years. It is broadly similar to the equivalent information for H1.

Little offending is projected by high risk under-17s in the next five years, but much is projected in the ten years following that.

Figure 23: Projected future offences for high risk under 17 segment (H2)

Figure 24: Projected proportion of future offences for high risk under 17 segment (H2)

H3 | **Prisoners**

H3 segment detailed description

This segment is comprised of those people aged 17 and over who spent at least some time in prison in 2016, as a sentenced prisoner or on remand. Members are included in the segment regardless of whether their sentence was imposed in 2016 or an earlier year, and regardless of whether they were released in 2016.

The prisoner segment is larger in this refresh of the model because it now includes people in remand. However, it is still the third smallest segment, with only 0.4% of the population.

Members of this segment are much more likely to be male, Māori, and live in a deprived area.

Prisoners are over three times more likely to have been victims of reported crime than their peers.

Table 12 provides detail as to the demographic profile of the segment.

Table 12: Description of prisoner segment (H3)

	Prisoner segment	All 17+
Number of people	18,384	3,741,648
Proportion of all people	0.4%	78.3%
Male	90.9%	49.1%
Proportion aged 25-34	34.9%	13.8%
Proportion living in a deprived area[14]	52.3%	23.4%
Proportion Victimised	9.6%	2.9%

Figure 25 compares the prisoner segment with all over 16s on demographic and offending variables.

Members of this segment are more than twice as likely to live in a deprived area as their peers.
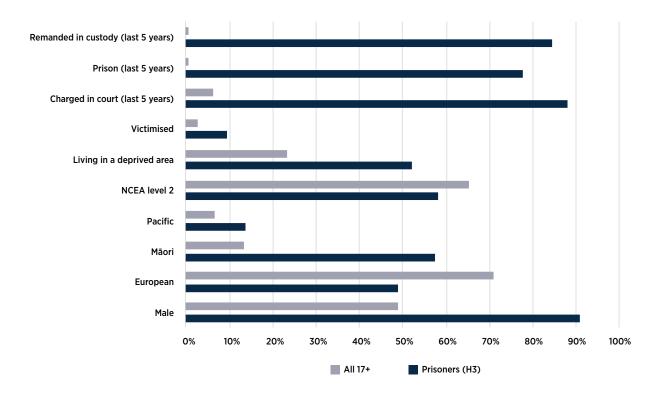
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14 NZDep score 7-10

Figure 25: Comparison of prisoner segment with broader group of all over 16s

In comparison to all those 17 and older, people in prison are more than 3 times more likely to have been victims of crime.

Model projections for the segment

Table 13 and Table 14 show the model projections for the segment over the next one year and 15 years respectively.

The model estimates a high degree of reoffending among this segment. Despite the segment being 0.4% of the population, 12% of offences next year are likely to be committed by people who spent time in prison in 2016 and were subsequently released.

Table 13: Next year summary of prisoner segment (H3)

	Prisoner segment	All 17+
Number of projected future offences (1 year)	17,807	136,314
Proportion of future offences (1 year)	12%	89%
Average future offences (1 year)	0.97	0.04

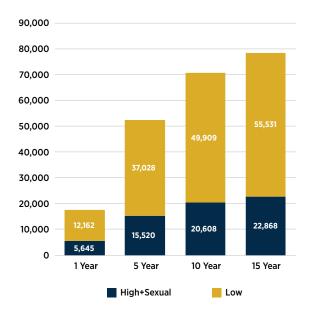## Table 14: Next 15 year summary of prisoner segment (H3)

	Prisoner segment	All 17+
Number of projected future offences (15 years)	78,399	1,138,021
Proportion of future offences (15 years)	5%	66%
Average future offences (15 years)	4.26	0.30
Proportion projected to ever offend again (15 years)	63%	11%

Figure 26 illustrates the projected future offence profile for the segment. A large amount of the offending committed by this cohort is likely to occur over the next 5 years.

Figure 27 shows the proportion of each offence making up the total offending in this segment, over the next 5 years. Half of all offences committed by this group are likely to be proactively detected low seriousness offences. Compared to other segments, the prisoners segment has slightly higher rates of personal high-seriousness crime at 15%.

Much offending by the prisoners segment will be committed over the next 5 years, and 30% will be high seriousness.

Figure 26: Projected total future offences by offence type for prisoner segment (H3)
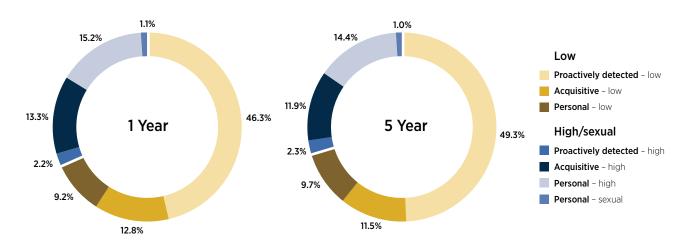

Figure 27: Proportion of type of projected offence for prisoner segment (H3)

H4 | **Community management**

H4 segment detailed description

This segment includes anyone aged 17 or more who has been managed by the Department of Corrections under a community sentence or order in 2016, but did not spend any time in 2016 as a sentenced prisoner or in custodial remand, i.e. is not in the prisoners segment (H3). This includes people who received sentences such as home detention, supervision, or are on parole or post sentence conditions.

This segment is small, with only 1% of the population. A high proportion is aged 24-34, similar to the prisoners segment.

Table 15 provides detail as to the demographic profile of the segment.

Table 15: Description of community management segment (H4)

	Community management segment	All 17+
Number of people	42,087	3,741,648
Proportion of all people	0.9%	78.3%
Sex	76.6% Male	49.1%
Proportion age 24-34	33.9%	13.8%
Proportion living in a deprived area	48.9%	23.4%
Proportion Victimised	11.6%	2.9%

Figure 28 compares the community management segment with all over 16s on demographic and offending variables.

Patterns of difference between over 16s generally and this segment are similar to the prisoners segment, with some exceptions. This segment is less male and less likely to have been in prison in the previous five years than the prisoners segment.
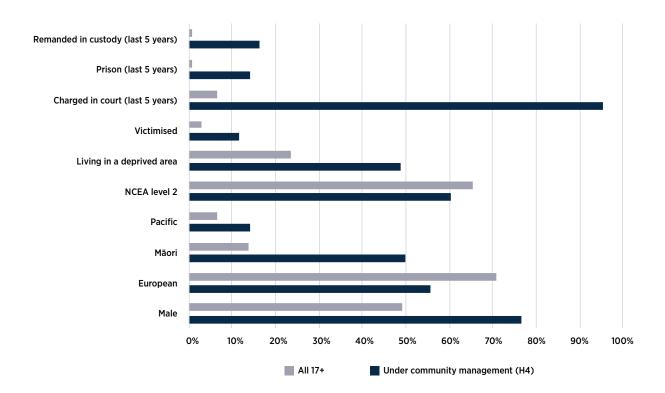
Figure 28: Comparison of community management segment with broader group of 17+

People under community management are 4 times more likely to have been victims of crime than the general population.

Model projections for the segment

Table 16 and Table 17 show the model projections for the segment over the next one year and 15 years respectively.

The model projects a similar level and type of reoffending among those in this segment as for prisoners. Despite being 0.9% of the population, 18% of offences next year are likely to be committed by people currently under community management by Corrections.

Table 16: Next year summary of community management segment (H4)

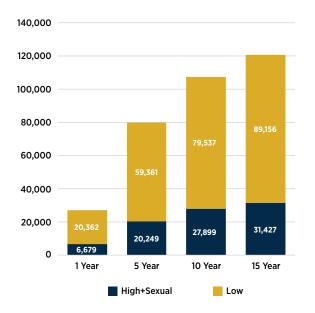|	Community management segment	All 17+
Number of projected future offences (1 year)	27,041	136,314
Proportion of future offences (1 year)	18%	89%
Average future offences (1 year)	0.6	<0.1

Table 17: Next 15 years summary of community management segment (H4)

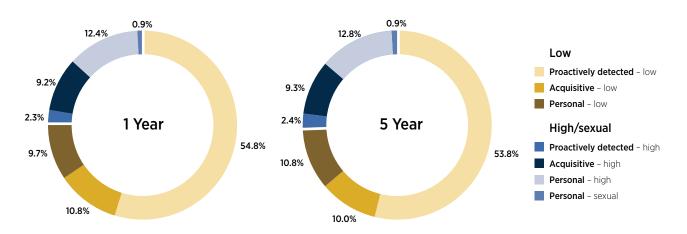|	Community management segment	All 17+
Number of projected future offences (15 years)	120,583	1,138,021
Proportion of future offences (15 years)	7%	66%
Average future offences (15 years)	2.9	0.3
Proportion projected to ever offend again (15 years)	51%	11%

Figure 29 illustrates the projected future offence profile for the segment. A large amount of this segment's projected low seriousness offending is expected to take place in the next five years.

Figure 30 shows the proportion of each offence making up the total offending in this segment, over the next 5 years. About 75% of future offending in this group is likely to be low seriousness.

The community management segment (H4) is likely to commit 12% of all offences over the next five years, a quarter of them high seriousness.

Figure 29: Projected future offences by offence type for community management segment (H4)

Figure 30: Proportion of type of projected offence for community management segment (H4)

M1 | **Under 17 care and protection history**

M1 segment detailed description

This segment is comprised of those people under 17 who have been notified to Oranga Tamariki for a care and protection concern at some point in their lives, apart from those who are in the serious young offender (H1) or high risk under 17 (H2) segments.
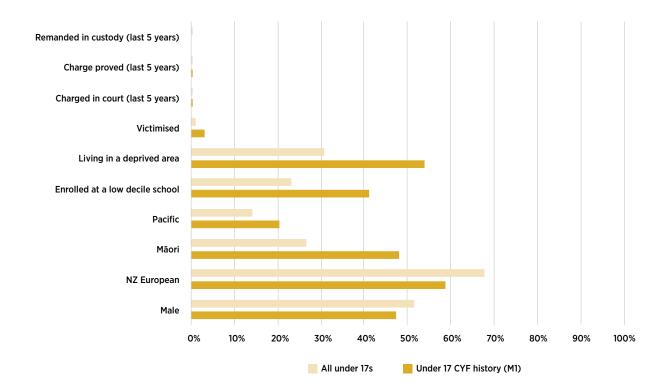
Table 18 provides detail as to the demographic profile of the segment.

Table 18: Demographic information for under 17 care and protection history segment (M1)

	Under 17 care and protection history segment (M1)	All <17
Number of people	164,160	1,038,105
Proportion of all people	3.4%	21.7%
Male	47.2%	51.3%
Proportion aged 10-13	28.1%	22.5%
Proportion aged 14-16	21.6%	17.7%
Proportion attending schools in Decile 1-3	41.1%	23.0%
Proportion attending Decile 10 schools	5.5%	15.3%
Proportion victimised	3.1%	0.8%

Figure 31 provides a detailed comparison of the under 17 care and protection history segment with the broader group of all those under 17.

Unlike the high risk under 17 segment, this segment is more likely to be female than under 17s generally. However other demographic variables show similar trends as high risk segments.

Members of the under 17 care and protection history segment are nearly four times more likely to have been victims of crime than their peers.

Figure 31: Comparison of under 17 care and protection history segment with broader group of all under 17

The under-17 care and protection history segment are more deprived than the broader group of under-17s.

Model projections for the segment

Table 19 and Table 20 show the model projections for the segment over the next one year and 15 years respectively. Figure 32 illustrates the offending profile of the segment over the next 15 years.

The model projects a modest level of offending on average for this segment. What offending there is likely to occur, occurs mostly 10 and 15 years in the future, reflecting the relatively young age of this segment. The projected offending is generally less serious such as traffic offending, but also includes some violence.

Table 19: Next year summary of under 17 care
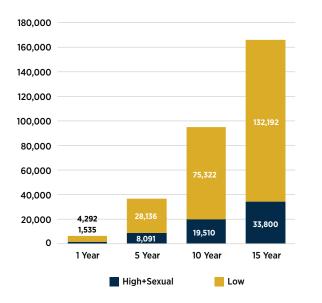and protection history segment (M1)

	Under 17 care and protection history segment	All <17
Number of projected future offences (1 year)	5,827	16128
Proportion of future offences (1 year)	4%	11%
Average future offences (1 year)	0.04	2%

Table 20: Next 15 years summary of under 17 care
and protection history segment (M1)

	Under 17 care and protection history segment	All <17
Number of projected future offences (15 years)	165,992	591140
Proportion of future offences (15 years)	10%	34%
Average future offences (15 years)	1.01	0.57
Proportion projected to ever offend (15 years)	27%	19%

Little offending is projected for this segment over the next
five years but offending is likely to increase over time.

Figure 32: Projected future offences by type for under 17 care and protection history (M1)

Figure 33: Projected proportion of future offence types for under 17 care and protection history (M1)

M2 | **Recent offenders**

M2 segment detailed description

The M2 segment is comprised of those people aged 17 and over who have been dealt with by Police for an offence in the past five years, but who have not been managed by the Department of Corrections in the past year.

The recent offender segment is a larger segment, with 5.7% of the population.

Table 21 provides detail as to the demographic profile of the segment.

Table 21: Description of recent offenders segment (M2)

	Recent offenders segment	All 17+
Number of people	273,093	3,741,648
Male	69.4%	49.1%
Proportion of all people	5.7%	78.3%
Proportion aged 25-34	27.3%	17.6%
Proportion living in a deprived area	38.3%	23.4%
Proportion victimised	7.9%	2.9%

Figure 34 compares the recent offender segment with all over 16s on demographic and offending variables. This segment shows similar patterns to the community management (H3) segment, but is more similar to over 16s generally.

Recent offenders are more likely to be from Māori or Pacific ethnicities. They are also slightly more likely to have NCEA level 2 than their peers.

Members of this segment are more than two and a half times more likely to be victims of crime than over 16s generally.
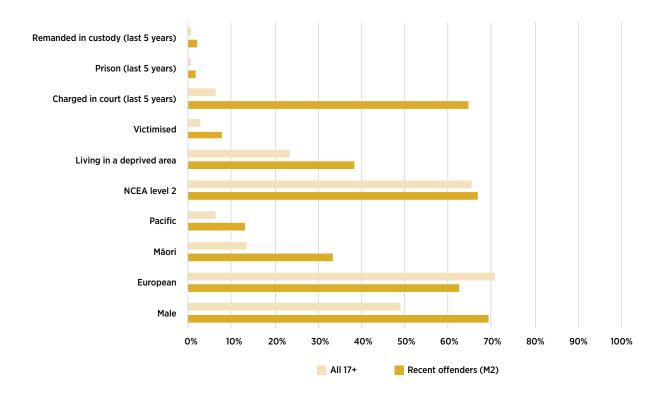
Figure 34: Comparison of recent offenders with broader group of all 17+

Recent offenders are more than 2.5 times more likely to have been victims of crime than their peers.

Model projections for the segment

Table 22 and Table 23 show the model projections for the segment over the next one year and 15 years respectively.

The model projects a modest level of reoffending among those in this segment, with a decreasing rate over the next 15 years and generally consisting of less serious offending, such as traffic offending.

Table 22: Next year summary of recent offenders segment (M1)
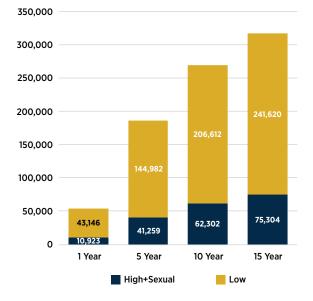
	Recent offenders segment	All 17+
Number of projected future offences (1 year)	54,069	136,314
Proportion of future offences (1 year)	35%	89%
Average future offences (1 year)	0.20	0.04

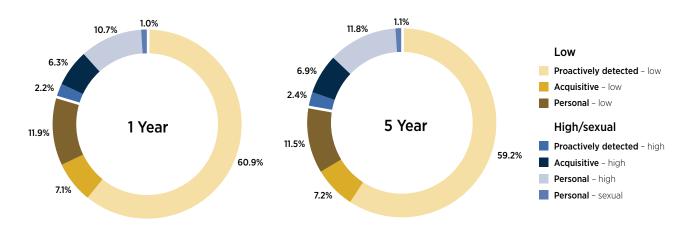**Table 23:** Next 15 years summary of recent offenders segment (M1)

	Recent offenders segment	All 17+
Number of projected future offences (15 years)	316,924	1,138,021
Proportion of future offences (15 years)	18%	66%
Average future offences (15 years)	1.16	30%
Proportion projected to ever offend again (15 years)	31%	0.11

Figure 35 illustrates the projected future offence profile for the segment. Figure 27 shows the proportion of that offending made up by each type of offence.

Figure 36 shows that the projected rate of offences reduces gradually over time.

Figure 35: Projected total future offences by offence type for recent offender segment (M2)

Figure 36: Proportion of type of projected offence for recent offender segment (M2)

L1 | **Under 17 low risk**

L1 segment detailed description

> This segment is comprised of those under 17 who do not fall into the high or medium risk segments. This means they have never been notified to Oranga Tamariki for a care and protection concern and have not been dealt with by the Police for a serious offence in the last five years.

The under 17 low risk segment is the largest of the under 17 segments.

The average individual offending rate is low in this group, however over 15 years members of this group are likely to commit more total offences than any of the high and medium risk under 17 groups.

Table 24 provides detail as to the demographic profile of the segment.

Table 24: Description of under 17 low risk segment (L1)

	Under 17 low risk segment	All <17
Number of people	858,195	1,038,105
Proportion of all people	18.00%	21.7%
Male	51.3%	51.3%
Proportion aged 0-13	83.4%	82.3%
Proportion aged 14-16	16.6%	17.7%
Proportion attending schools in Decile 1-3	18.1%	23.0%
Proportion attending Decile 10 schools	17.9%	15.3%
Proportion victimised	0.3%	0.8%
Proportion with proved charge in the last 5 years	0.0%	0.1%

Figure 37 compares the low risk under 17 segment with all under-17s on demographic and offending variables. Overall members of this segment are similar to their peers. They are slightly more likely to be New Zealand European and slightly less likely to live in a deprived area.
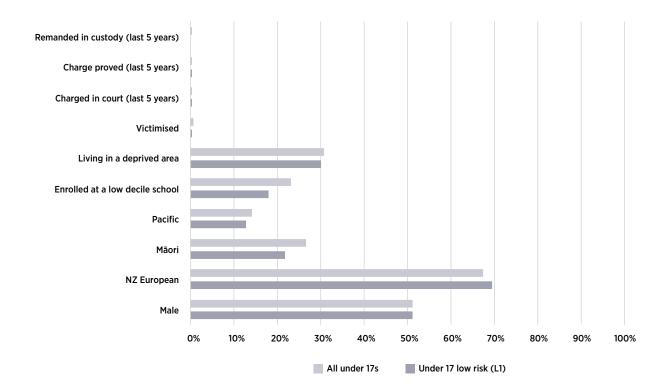
Figure 37: Comparison of under 17 low risk segment with broader group of all under 17s

The under 17 low risk segment is similar to all under 17s on most variables, with slight differences in ethnicity and deprivation.

Model projections for the segment

Table 25 and Table 26 show the model projections for the segment over the next one year and 15 years respectively.

The model projects a low level of average offending for this segment, particularly over the next 15 years. This suggests the model may be having difficulty in distinguishing between those who will and will not offend more than 15 years in the future.

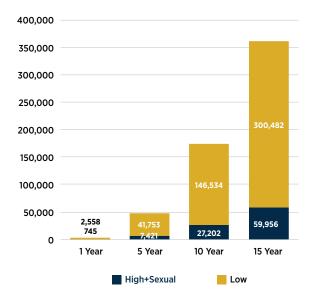**Table 25:** Next year summary of under 17 low risk segment (L1)

	Under 17 low risk segment	All <17
Number of projected future offences (1 year)	3,303	16,128
Proportion of future offences (1 year)	2%	11%
Average future offences (1 year)	0.00	2%

Table 26: Next 15 years summary of under 17 low risk segment (L1)

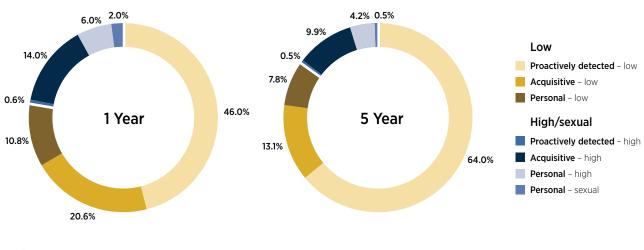|	Under 17 low risk segment	All <17
Number of projected future offences (15 years)	360,438	591140
Proportion of future offences (15 years)	21%	34%
Average future offences (15 years)	0.42	0.57
Proportion projected to ever offend (15 years)	16%	19%

Figure 38 illustrates the offending profile of the segment over the next 15 years. Specifically, it highlights the number of high-seriousness and sexual violence crimes as well as the number of low-seriousness crimes likely to be committed over the next 15 years.

The offending rate for this segment remains low for 10 years and then increases, and offence types are mostly less serious.

Figure 38: Projected future offences by offence type for under 17 low risk segment (L1)

Figure 39 presents the proportions of each type of offending for this segment over the next 15 years, most of which is low seriousness, similar to other segments.

Of offences likely to be committed by this segment over the next year, 2% are personal sexual offences.

1 Year

2.0%
6.0%
14.0%
0.6%
10.8%
20.6%
46.0%

5 Year

4.2% 0.5%
9.9%
0.5%
7.8%
13.1%
64.0%

Low
- Proactively detected – low
- Acquisitive – low
- Personal – low

High/sexual
- Proactively detected – high
- Acquisitive – high
- Personal – high
- Personal – sexual

Figure 39: Projected proportions of offence types for under 17 low risk segment (L1)

More than half of the offending from the under 17 low risk segment is projected to occur after 10 years.

L2 | **17-49 Low risk**

L2 segment detailed description

> This segment is comprised of those people aged 17 to 49 who have not been dealt with by Police in the past five years. This is the largest segment, including nearly two million people.

Table 27 provides detail as to the current circumstances of the segment.

Table 27: Description of 17-49 low risk segment (L2)

	17-49 low risk segment	All 17+
Number of people	1,860,762	3,741,648
Proportion of all people	38.90%	78.30%
Proportion aged 35+	44.5%	67.3%
Male	47.3%	49.1%
Proportion living in a deprived area	30.65%	23.4%
Proportion victimised	3.1%	2.9%

The segment is large, covering 39% of the population and of a similar average age (33) as the prisoners and community management segments.

Figure 40 provides a detailed comparison of the recent offenders segment with the broader group of all those 17 and older. The two groups are largely similar, with two exceptions. The 17-49 low risk segment are slightly more likely to have achieved NCEA level 2 or higher, and slightly less likely to be European than over 16s generally.
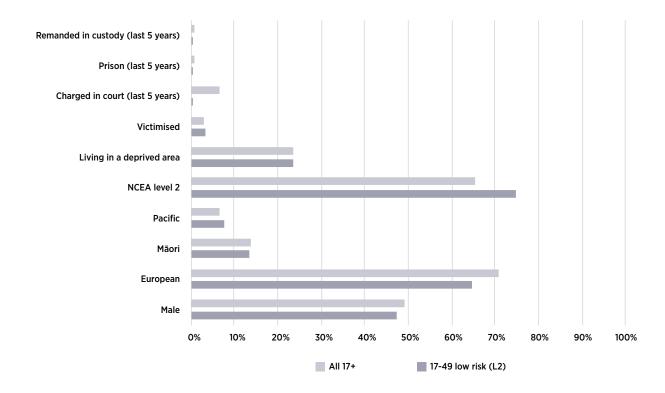
Figure 40: Comparison of 17-49 low risk segment with broader group of 17+

> The 17-49 low risk segment is similar to the broader group of all those aged 17 and over.

Model projections for the segment

Table 28 and Table 29 show the model projections for the segment over the next one year and 15 years respectively.

The model projects a low average level of reoffending among those in this segment, even when compared with all over-17s. However, because there are so many people in this segment they are projected to offend a lot in total, particularly 15+ years in the future. This may also reflect that the model is less strong at distinguishing between those who will and will not offend more than 15 years in the future.

Table 28: Next year summary of 17-49 low risk segment (L2)

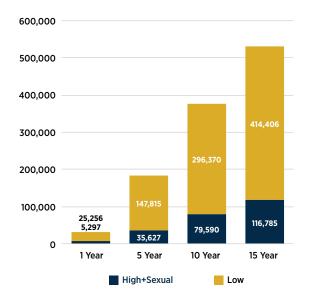|	17-49 low risk segment	All 17+
Number of projected future offences (1 year)	30,553	136,314
Proportion of future offences (1 year)	20%	89%
Average future offences (1 year)	0.02	0.04

Table 29: Next 15 years summary of 17-49 low risk segment (L2)

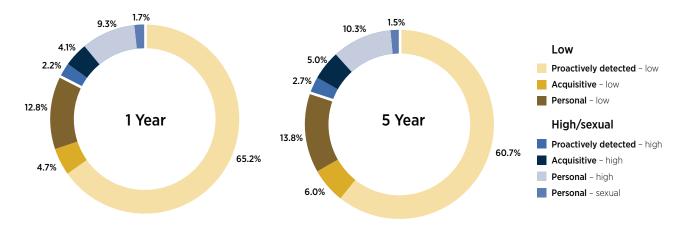|	17-49 low risk segment	All 17+
Number of projected future offences (15 years)	531,191	1,138,021
Proportion of future offences (15 years)	31%	66%
Average future offences (15 years)	0.29	0.30
Proportion projected to ever offend again (15 years)	13%	0.11

Figure 41 illustrates the projected future offence profile for the segment.

> Offending by the 17-49 low risk segment is likely to be predominantly less serious and mostly more than five years in the future.

Figure 41: Projected future offences
for 17-49 low risk segment (L2)

Figure 42: Projected proportion of future offences
for 17-49 low risk segment (L2)

L3 | 50+ Low risk

L3 segment detailed description

> This is the lowest risk segment. This segment is comprised of those people aged 50+ who have not been dealt with by Police in the past five years.

The segment is large, including 33% of the population, and on average is at retirement age.

Table 30 provides detail as to the demographic profile of the segment.

Table 30: Description of 50+ low risk segment (L3)

	50+ low risk segment	All 17+
Number of people	1,547,319	3,741,648
Proportion of all people	32.4%	78.3%
Male	46.5%	49.1%
Proportion living in a deprived area	19.8%	23.4%
Proportion victimised	1.5%	2.9%

Figure 43 provides a detailed comparison of the 50+ low risk segment with the broader group of all those 17 and older.

Members of this group are less likely than all over 16s to have been charged by Police in the last five years, to live in a deprived area, and are more likely to be of European descent than over 16s generally. They are also less likely to have achieved NCEA level 2 or higher.

The over 50 low risk segment is half as likely to be victims of crime as over 16s generally.
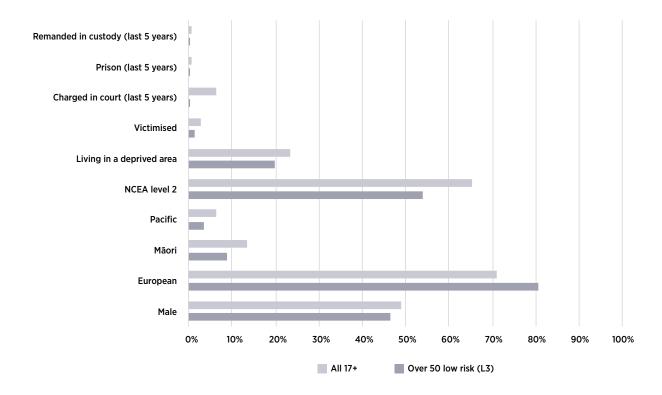
Figure 43: Comparison of 50+ low risk segment with broader group of 17+

In comparison to all those aged 17+, the 50+ low risk segment is more likely to be of European decent and half as likely to have been victims of crime.

Model projections for the segment

Table 31 and Table 32 show the model projections for the segment over the next one year and 15 years respectively.

The model projects very little offending among this segment, accounting for about 5% of all future offending.

Table 31: Next year summary of +50 low risk segment (L3)

	50+ low risk segment	All 17+
Number of projected future offences (1 year)	6,844	136,314
Proportion of future offences (1 year)	4.5%	89.4%
Average future offences (1 year)	0.00	0.04

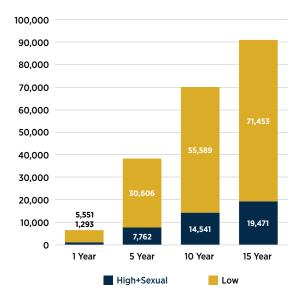**Table 32:** Next 15 years summary of +50 low risk segment (L3)

	50+ low risk segment	All 17+
Number of projected future offences (15 years)	90,924	1,138,021
Proportion of future offences (15 years)	5.3%	65.8%
Average future offences (15 years)	0.06	0.30
Proportion projected to ever offend again (15 years)	4%	11%

Figure 44 illustrates the projected future offence profile for the segment. Offending is likely to remain steady over the next 15 years.
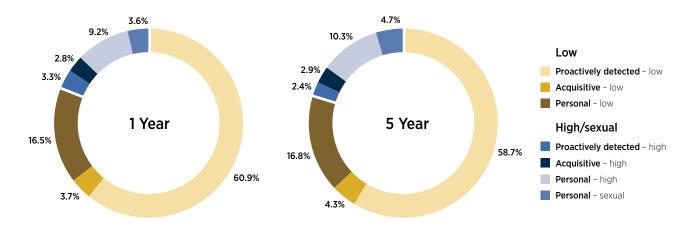
Figure 45 shows the proportion of each offence making up the total offending in this segment, over the next 15 years. About 80% of offending among this segment is low-seriousness.

Offending by the 50+ low risk segment will mainly involve less serious offending.

Figure 44: Projected total future offences by offence type for 50+ low risk segment (L3)
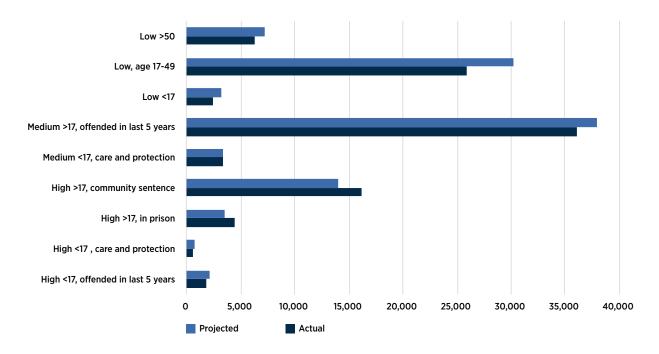

Figure 45: Proportion of type of projected offence for 50+ low risk segment (L3)
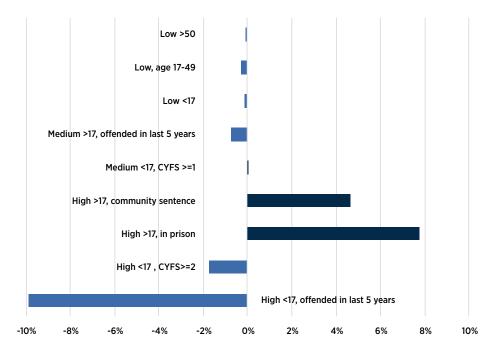
Appendix I:
Accuracy of the model

Projection vs. reality: testing the accuracy of the model

In the first year that the model was implemented, the population report included forecasts of offending for the year 2016. Now it is possible to look back and compare those forecasts with reality, to see the *actual* number of offences vs. the *projected* number of offences, as a way of testing the model's accuracy and usefulness as a decision making tool.

It is useful to group this information into the 9 segments.

Figure 46: Actual vs. projected: How many people offended at all in 2016
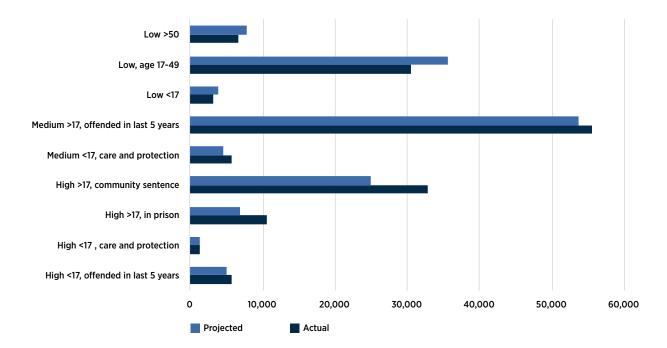
Some of the segments have a discrepancy between the projected number of offenders and the actual number of offences. To get better understanding of how important the discrepancy is, it is best to consider the ratio between the discrepancy and the *size of the segment population*.

For example: with a segment of a million people, if the model projected 50 offences, whilst the real number of offences was 40, it would be sensible to say that the model had performed well, even though a discrepancy of 10 is proportionally quite large compared to 40.

Figure 47: Size of error (actual-projected) divided by segment size

From Figure 47, we see that, because the medium and low risk populations are large, the slight overcount of people who offend in these segments is not very important. On the other hand, the model undercounts the number of people who offend in both the community sentence and prison segments.

It is also possible to compare the actual vs. projected total number of offences, shown in Figure 48.

Figure 48: Actual vs projected: Total number of offences 2016

Remarkably, as illustrated in Figure 48, the model *exactly* projected the total number of offences committed by H2: High risk under 17s in 2016.

Putting together the two results of Figure 47 and Figure 48 yields the following observations:

- Firstly, the model over-counts the number in the high risk segment who offended, but it under-counts the total number of offences. There may be a smaller group within H1 who are responsible for a large chunk of the overall crime in this segment, but since this group is numerically small, it is difficult to model exactly.

- The model consistently undercounts both the number of offences and, to a lesser extent, how many people offended for the H3 and H4 group. This may be because the model can only allocate simulated prison sentences in multiples

of a year; in actuality, many prison sentences will be shorter than a year, and so the model undercounts the actual number of offences.

- Lastly, the model accurately projected the large number of offences committed by the Low and Medium groups.

Implications for use

The model accurately measures both the total number of offences and the total number of offenders when forecasting one year into the future. The model is slightly less accurate at estimating the future offending of people that have a community sentence or a prison sentence.

As time progresses we will be able to compare actual results with the model's projections further into the future, and gain more insight into the long-term performance of the model.

Appendix II:
Movement between segments

Over a person's lifecourse, they may change from one segment to another. In order to establish the likelihood of change from one particular segment to another over time, it is useful to look at the real data from 2015 and 2016. Using this data, we gain insight into what sort of short-term changes between segments are likely to occur.

Table 33: Most likely change between segments 2015-2016

2015 segment	Proportion who remain in same segment	Most likely segment to transition into 2016	Proportion who will change to most likely segment
H1: Serious young offenders	59%	M2: Recent offenders	35%
H2: High risk under 17	75%	M1: Under 17 care and protection history	17%
M1: Under 17 care and protection history	91%	L2: 17-49 low risk	6%
L1: Under 17 low risk	93%	L2: 17-49 low risk	5%
H3: Prisoners	67%	H4: Under community management	26%
H4: Under community management	48%	M2: Recent offenders	39%
M2: Recent offenders	77%	L2: 17-49 low risk	13%
L2: 17-49 low risk	95%	L3: Over 50 low risk	3%
L3: Over 50 low risk	100%	NA	NA

From Table 33 it follows that, between 2016 and 2015:

- Most people remained in the same segment

- If individuals changed segment, they were most likely to change to a segment with the same or lower level of risk.

This reinforces the fact that many people who are currently at high risk of offending will desist from a life of crime.

Conversely, a small proportion of those who are currently low or medium risk will transition to the high risk segment. However, since the size of the low risk segment is very large, if even a small proportion of this segment transition to H1 (for example) that still means several hundred more high risk individuals. This means that both universal and targeted approaches are needed to prevent crime.

Table 34: Transition from low and medium segments to high risk

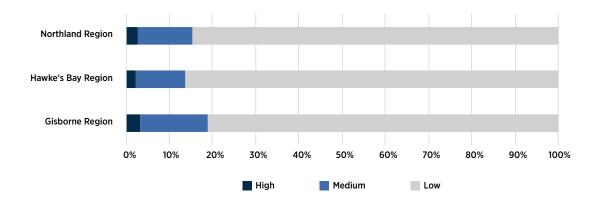| 2015 segment	2016 Segment			
	H1: Under 17, serious offenders	**H2: High risk under 17**	**H3: Prisoners**	**H4: Under community management**
M1: Under 17 care and protection history	867 (0.53%)	1,644 (1.01%)	12 (0.01%)	30 (0.02%)
M2: Recent offenders			3,090 (1.16%)	12,171 (4.56%)
L1: Under 17 low risk	465 (0.06%)	162 (0.02%)	<6 (<0.01%)	27 (<0.01%)
L2: 17-49 low risk			486 (0.03%)	2,616 (0.15%)
L3: Over 50 low risk			135 (0.01%)	699 (0.05%)

Appendix III:
Regional Variation

A further example of how to use the segmentation to support population-specific initiatives is using regional segment breakdowns. The risk composition of each region differs substantially.
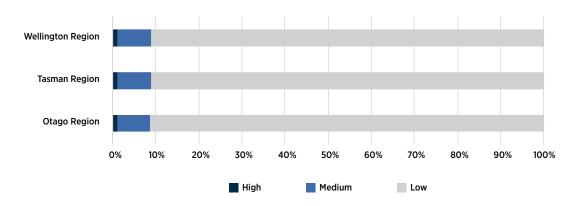
Figure 49 shows the breakdown of the three regions with the highest proportion of high and medium risk individuals. The following Figure 50 shows the breakdown of the three regions with the smallest proportion of high and medium risk individuals.

For example, Gisborne has a particularly high proportion of high risk people in its area. This suggests that a regional crime prevention strategy could be more effective in this region than in others. Additionally, interventions outlined in this report, which are focused at high and medium risk segments, could be beneficial starting points for this region.

By comparison, as there are few high risk people in Tasman, the relative importance of the medium and low risk segments is greater. A crime prevention strategy for Tasman could usefully take the generic strategies for the low and medium risk segments as its starting point.

Figure 49: Segment profiles of three regions with highest proportion of high and medium risk individuals

Figure 50: Segment profiles of three regions with smallest proportion of high and medium risk individuals

Some regions have more people with a high or medium risk of committing crime than others. Gisborne has the greatest proportion of high risk people and Tasman has the smallest proportion of high risk people.

Appendix IV:
Statistics New Zealand disclaimer

The results in this report aren't official statistics; they've been created for research purposes from the IDI managed by Statistics New Zealand. Access to the anonymised data used in this study was provided by Statistics NZ in accordance with security and confidentiality provisions of the Statistics Act 1975.

Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person, household, business or organisation and the results in this paper have been confidentialised to protect these groups from identification.

Careful consideration has been given to the privacy, security and confidentiality issues associated with using administrative and survey data in the IDI. Further detail can be found in the privacy impact assessment for the IDI available from **stats.govt.nz**.