



Social outcomes modelling

Results pack – as at 30 September 2018

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October 2019

DRAFT

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Disclaimer

The results in this pack are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI), managed by Statistics New Zealand.

The opinions, findings, recommendations, and conclusions expressed in this sheet are those of the author(s), not Statistics NZ.

Access to the anonymised data used in this study was provided by Statistics NZ under the 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 sheet have been confidentialised to protect these groups from identification and to keep their data safe.

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 Integrated Data Infrastructure available from www.stats.govt.nz.

The results are based in part on tax data supplied by Inland Revenue to Statistics NZ under the Tax Administration Act 1994. This tax data must be used only for statistical purposes, and no individual information may be published or disclosed in any other form, or provided to Inland Revenue for administrative or regulatory purposes.

Any person who has had access to the unit record data has certified that they have been shown, have read, and have understood section 81 of the Tax Administration Act 1994, which relates to secrecy. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes, and is not related to the data's ability to support Inland Revenue's core operational requirements.

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Key themes

Key themes

This pack contains a wealth of information related to the output of the modelling, across a range of topics. We have identified 8 key themes that we think are important for operational considerations.

Key
themes

1. Variation in wellbeing

2. Supporting recent exits

3. Broader support and wrap-around services

4. Young Māori

5. Early entry to the benefit system

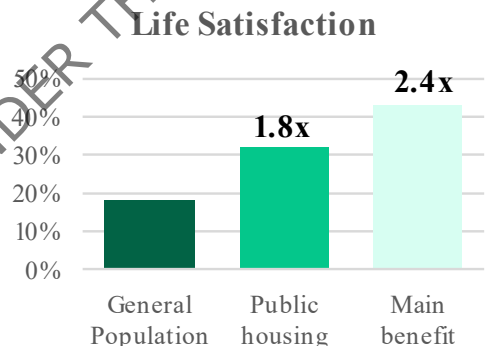
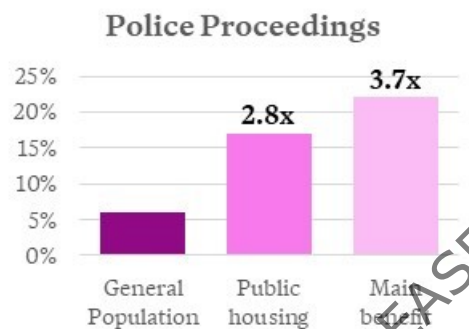
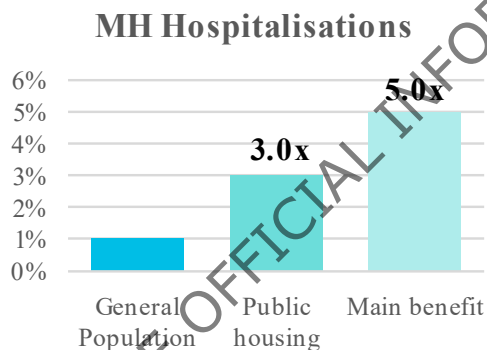
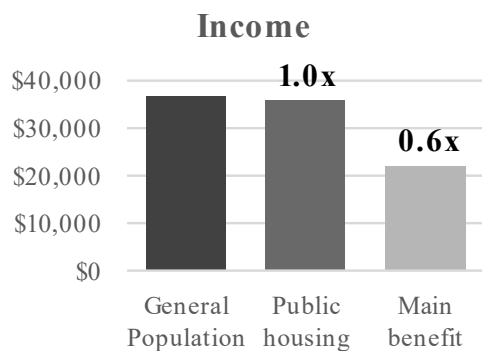
6. Effective boost to income from public housing

7. Defining groups for targeted intervention

8. Older work-ready beneficiaries

1. Variation in wellbeing

- Based on the measures used in this pack, wellbeing is lower across all domains for main benefit clients and 16-64-year-olds in public housing compared to the general 16-64-year-old population. See section 5.
- Main benefit system clients score worse than the public housing and general 16-64-year-old populations on 9 of the 12 measures discussed in this pack. These include:



Considerations

- Wellbeing needs of benefit system clients extend well beyond the Ministry's core focus of employment, income and housing.
- Reducing barriers to employment, increasing income and improving housing outcomes may require improvements in other wellbeing domains to be successful.
- Analysis on how different wellbeing domains influence each other may be worthwhile.

Income Total personal income (earned income, benefits, Working For Families tax credits and the effective boost to income from income related rent subsidy) - Median over year

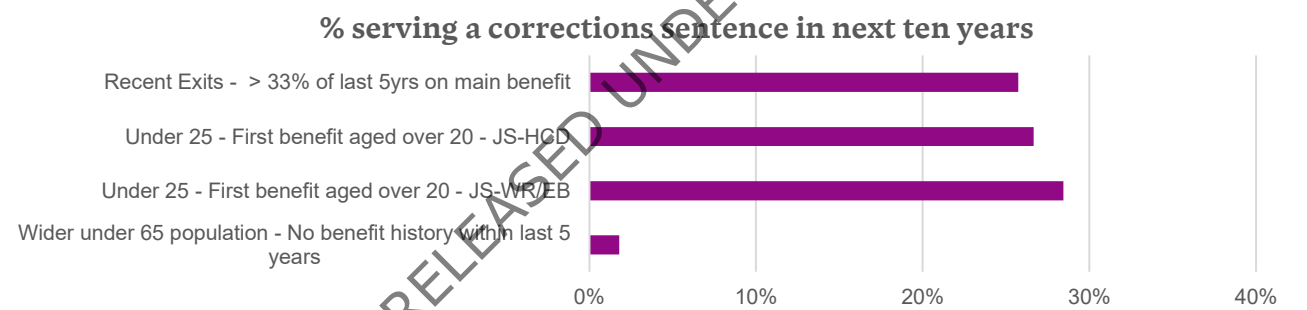
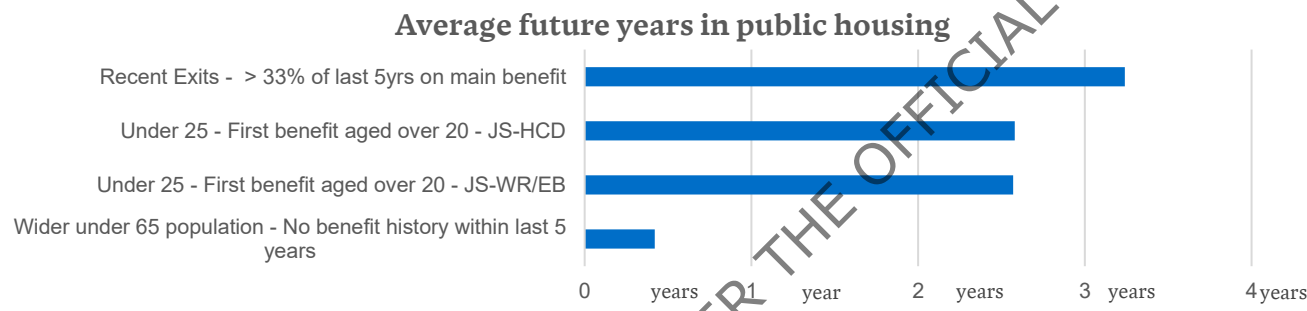
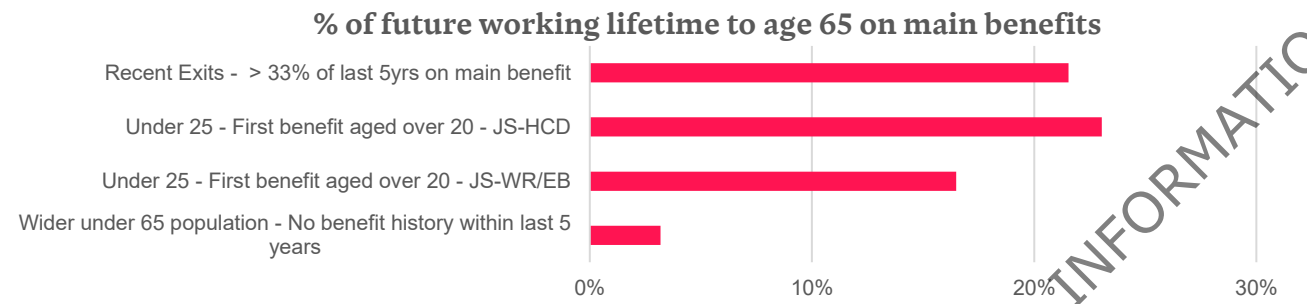
MH Hospital admissions % who have had a mental health related hospital discharge in the last 3 years

Police proceedings % who have had a police proceeding against them in the last 3 years

Life Satisfaction % who rate their overall level of satisfaction as 6 or below (1-10 scale) - General Social Survey

2. Supporting recent exits

- Some recent exits from the benefit system are estimated to have as much future benefit receipt and public housing use as some on-benefit segments. See section 3 for more details.



Considerations

- The broader welfare needs of people who have recently exited from the benefit system do not necessarily end when they exit the benefit system.
- Exiting the benefit system usually results in an end to any Ministry-financed training and broader support.
- Focusing on short-term employment may not result in the best long-term outcomes. Continued support beyond exit may be needed to help sustain employment, particularly for recent exits who have relied on the benefit system a lot in the past.

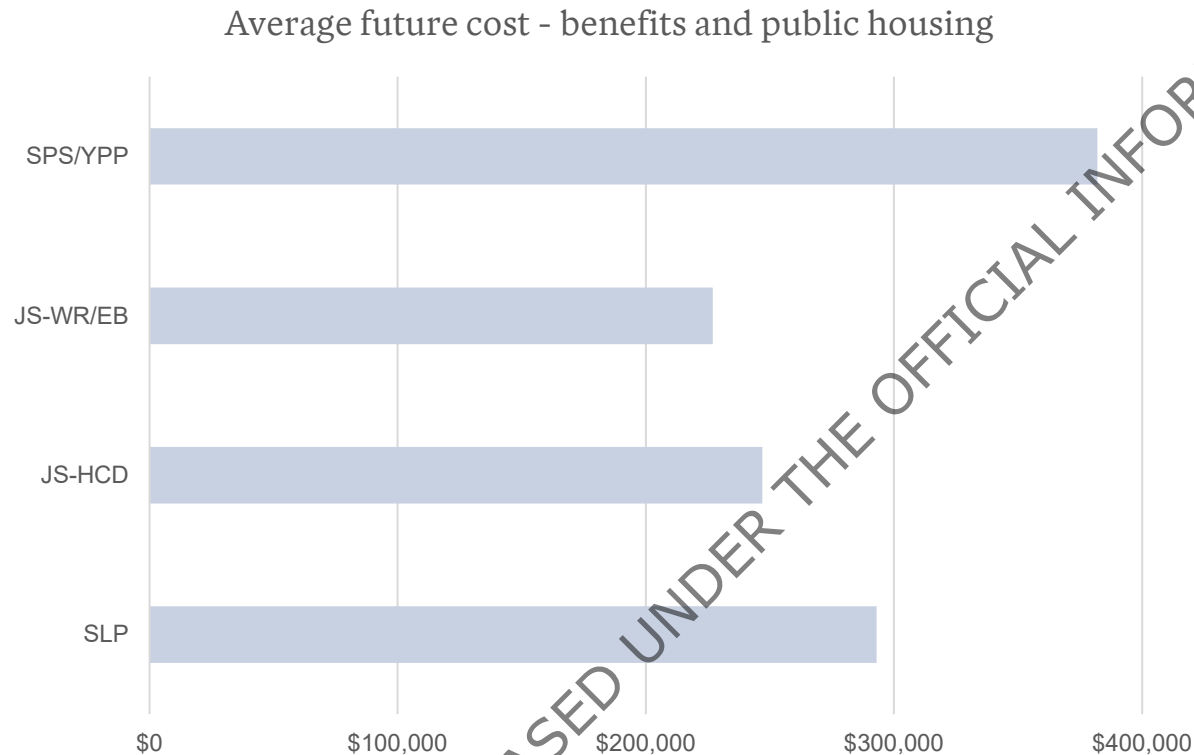
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3. Broader support and wrap-around services

- A wellbeing lens highlights the potential value of broader support and wrap-around services for key client groups. A good example is Sole Parent Support clients, who have the highest combined estimated future benefit and public housing payments. See Section 3 for more details.

Considerations

- Sole Parent Support families are likely to also be receiving health and educational support for both the parent and children.
- Given the potential impact of future outcomes, there may be a case for broader wrap-around services and/or greater coordination between financial, housing, employment, health and educational supports.



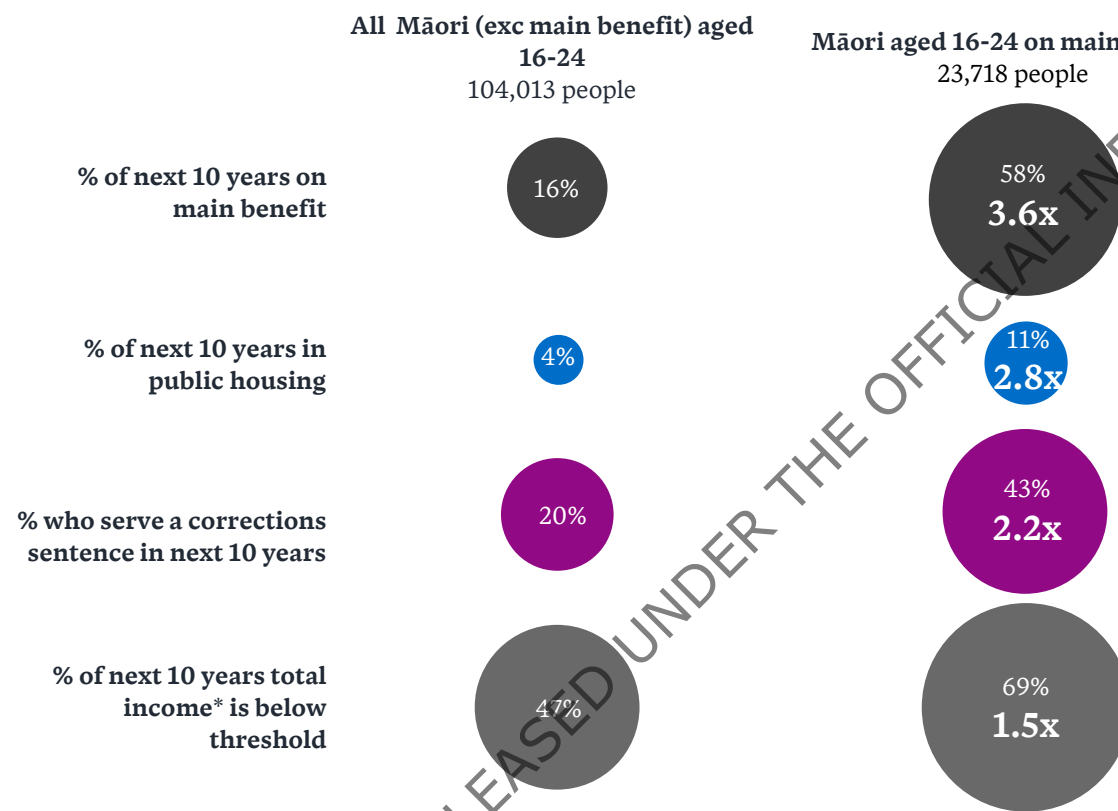
SPS/YPP Sole Parent Support/Young Parent Payment
 JS-WR/EB Jobseeker Support – Work Ready/Emergency Benefit
 JS-HCD Jobseeker Support – Health Condition and Disability
 SLP Supported Living Payment

4. Young Māori

- We've compared young Māori (aged 16-24) on a main benefit to young Māori not on a main benefit across a number of measures.
- The group on main benefit score higher on all measures, even though the level for other young Māori is relatively high in some cases.

Considerations

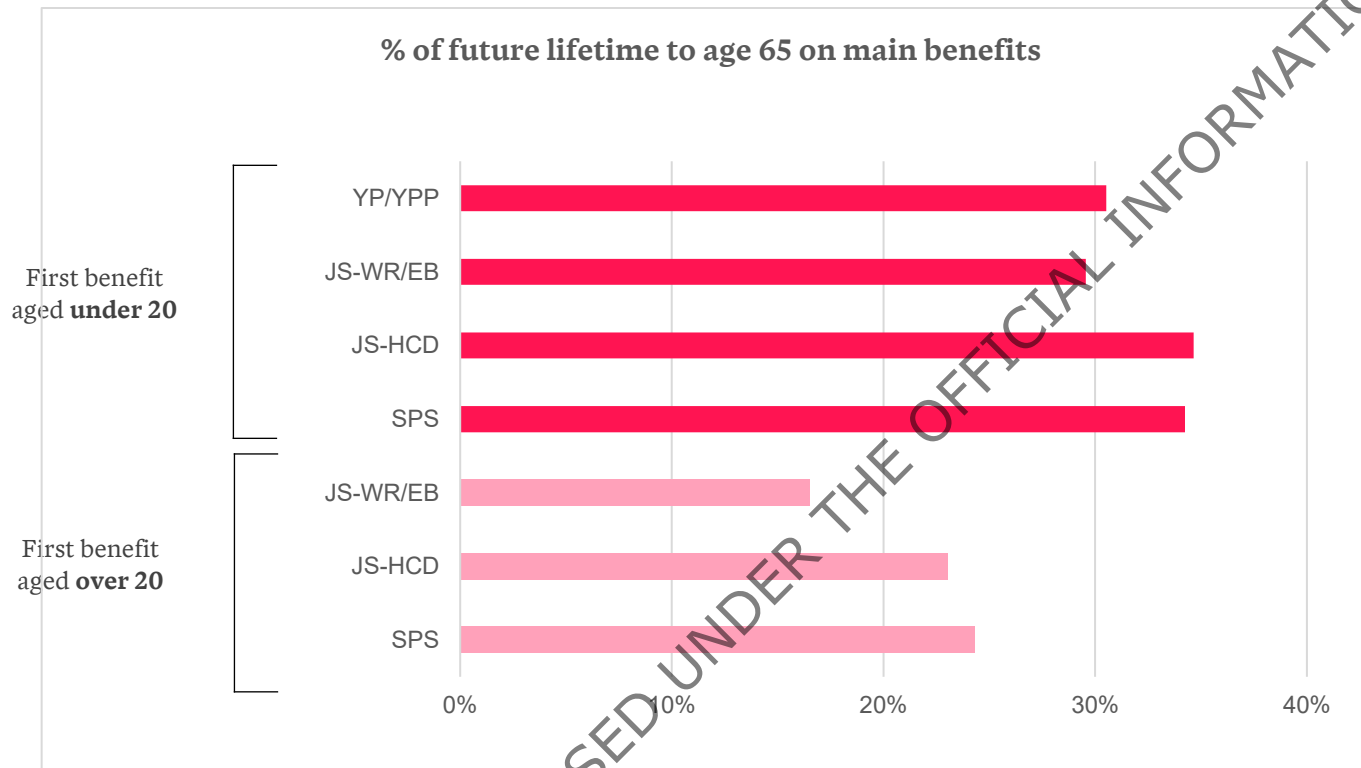
- Young Māori not currently on a main benefit are estimated to spend 16% of the next 10 years receiving a main benefit. 20% are estimated to serve a corrections sentence in the next 10 years. These measures are high compared to other ethnicities.



* Income includes earned income, benefits, Working For Families tax credits and the effective boost to income from Income Related Rent Subsidy. Threshold based on 52 weeks at 40 hours per week at minimum wage (increased with CPI) - \$34,320 p.a. in 2018.

5. Early entry into the benefit system

- estimated future time on main benefit and in public housing is materially higher for young people who first received a benefit in their teens.
- Likelihood of serving a corrections sentence in the future is also much higher.



Considerations

- These results support the Ministry's continuing focus on interventions aimed at people entering the benefit system in their teens.

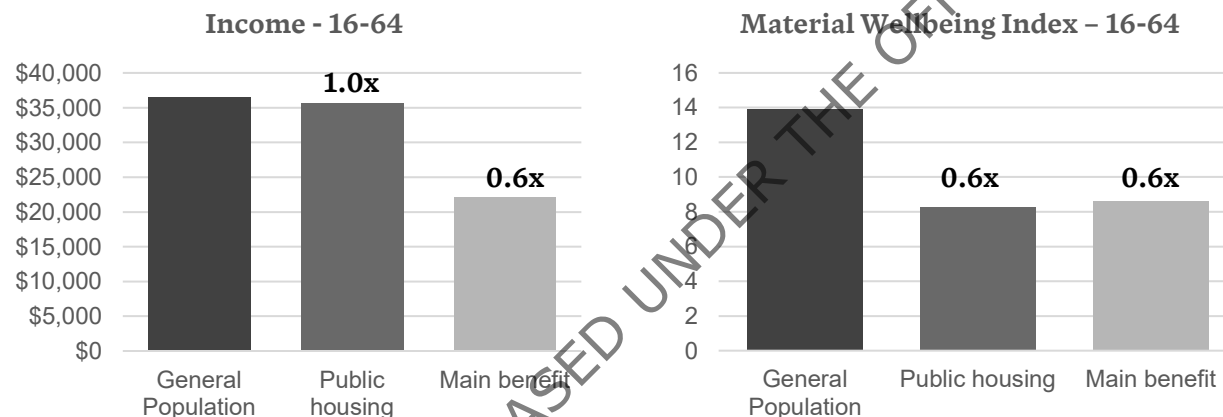
YP/YPP Youth Payment/Young Parent Payment
 JS-WR/EB Jobseeker Support – Work Ready/Emergency Benefit
 JS-HCD Jobseeker Support – Health Condition and Disability
 SPS Sole Parent Support

6. Effective boost to income from public housing

- The Income-Related Rent Subsidy (IRRS) is paid to public housing landlords, to cover the balance between what a public housing tenant pays in rent and the market rent for the property.
- Income Related Rent Subsidy (IRRS) averages about \$260 per week per household (or equivalently \$13,500 a year), providing a large effective boost to incomes.
- Individual income for public housing tenants is much higher than the main benefit population. IRRS plays a large role in this.
- Despite this, these two populations appear to have similar levels of material wellbeing.
- See section 5 for more details.

Considerations

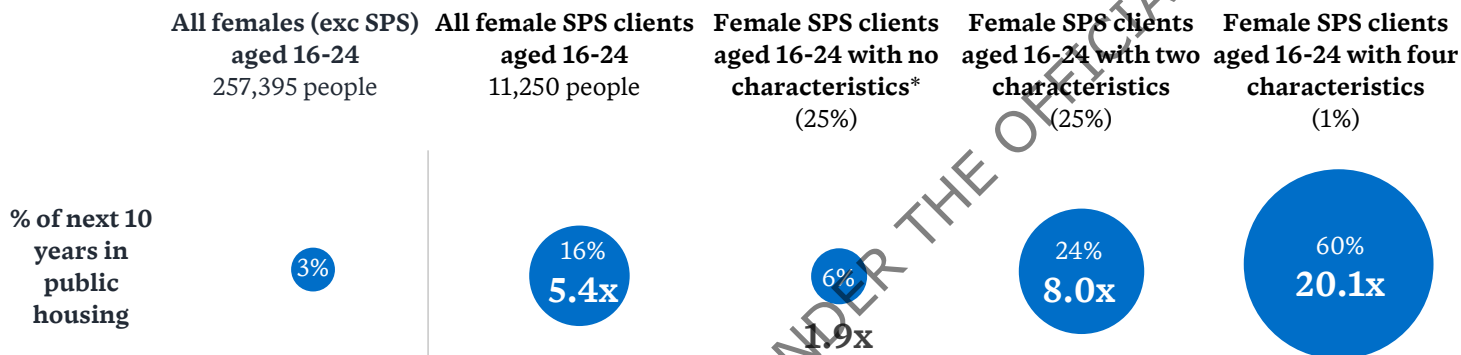
- Material wellbeing is more related to household income than individual income. And this may explain why these two wellbeing indicators tell a different story.
- Developing a ‘household’ view is an option for 2019 model development work.



* Income is median individual income and includes earned income, benefits, Working For Families tax credits and the effective boost to income from Income Related Rent Subsidy. The material wellbeing index is a score based on answers to questions about household’s non-monetary standard of living, access to necessities, access to non-essential things that could be expected in a typical household and capacity to cope with unexpected demands on finances.

7. Defining groups for targeted intervention

- Many previous or existing targeted interventions have been targeted at groups based on broad definitions of people’s current state e.g. Young SLP trial, Flexible Childcare Assistance.
- In Section 6 of this pack we show there can be as much variation in estimated outcomes *within* a broadly defined population of interest, as there is between that population and the general population. As an example, we show below differences in ‘% of next ten years predicted to be spent in public housing’ for all females (exc SPS) aged 16-24, versus female SPS clients aged 16-24 with different characteristics:



*Characteristics are: in public housing, prior criminal sentence, educational level < NCEA 2, and CYF/OT history.

Considerations

- It may be worthwhile considering defining groups for targeted intervention based on estimated outcomes (or factors that correlate with those estimated outcomes), rather than descriptions of their current state.
- For example, young clients with a high likelihood of serving a corrections spell in the future.

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8. Older work-ready beneficiaries

- Disparity in estimated outcomes between JS-WR clients aged 50-54 and the general population of people aged 50-54 is high. This is partly because the general population has low estimated future levels of benefit receipt and public housing use.
- We show below how the estimated % of the next 10 years on main benefit measure varies within the JS-WR aged 50-54 group and compared to all people aged 50-54.
- See section 6 for more details.



*Characteristics are: in public housing, prior criminal sentence, zero earned income in Sep 18 quarter and more than 50% of the last 5 years on main benefit.

Considerations

- Older work-ready clients may be strong candidates for targeted intervention because:
 - They may need retraining support and face other age-related barriers to employment.
 - They have limited remaining time to accumulate wealth in support of their retirement. Living off NZ Super alone does not afford a high level of material wellbeing.

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Introduction

Background

What does the model do?

The functional purpose of the model is to:

1. Estimate people's wellbeing
2. Estimate people's service use
3. Estimate the payments associated with service use

What do we mean by wellbeing?

An interim wellbeing framework was developed to support the work. See **Appendix A** for details.

Almost exclusively, the indicators in the framework that are estimated by the model are based on service use.

Other indicators, such as survey-based subjective wellbeing measures, are not estimated by the model, but are important to help understand current wellbeing.

What services are estimated?

The model estimates use of a range of services for all resident New Zealanders aged 16 and over.

See **Appendix B** for details of the services covered.

How long do we estimate future outcomes for?

We estimate outcomes over people's whole future lifetimes (i.e. until death).

What's the purpose of this pack?

What this pack does

1. Presents some baseline modelling results
2. Describes current and estimated wellbeing for people in the context of the interim wellbeing framework developed for this work
3. Signals the future direction of the modelling work

What this pack doesn't do

This pack is not intended to be exhaustive. We have presented some of the most interesting findings.

There is a wealth of other information that can be drawn from the modelling. There are various ways the information can be interrogated and presented.

Separate pieces of analysis by Taylor Fry and MSD's internal actuarial team will look at some of the richness of the insights in more detail.

Current status of income modelling

Income has been modelled as a stochastic variable that is also a function of other variables (welfare, housing, education, justice etc). However, income is not currently a predictor of other outcomes (like part-time work income predicting higher rates of welfare exit). For this reason there are limitations to the income estimates, found as part of our validation testing:

- Average levels and aggregate transition patterns in income over time appear reasonable
- There is too much reversion to the mean visible for estimated income distribution for some cohorts; for groups that start materially below (or above) average income, their estimated income after 10 years is closer to average than past data implies.

The results presented are fit-for-purpose to show comparisons and general trends, but we expect specific numbers attached to income estimates to be improved in 2019 work, where more inter-dependence is modelled.

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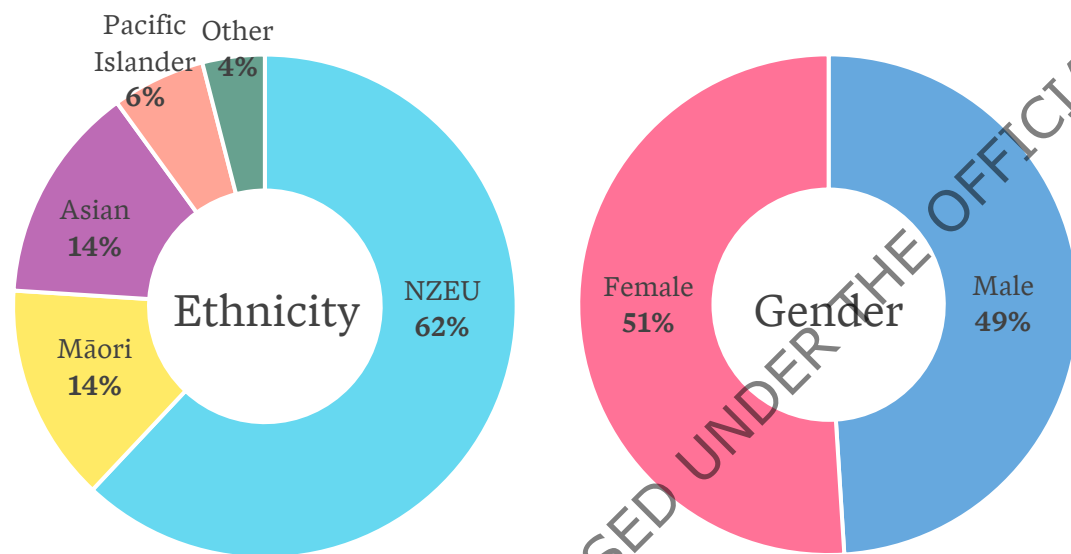


Future service use

The population at a glance

Who are we looking at?

- Our model looks at all New Zealand residents aged 16 and over as at 30 September 2018.
- We refer to this population as 'adult New Zealanders'
- That's **3,875,000** New Zealanders



* Here, ethnicity is the person's prioritised ethnic group.

What does the future look like for them?

The model forecasts that adult New Zealanders will spend a total of 6.4 million future years receiving a main benefit

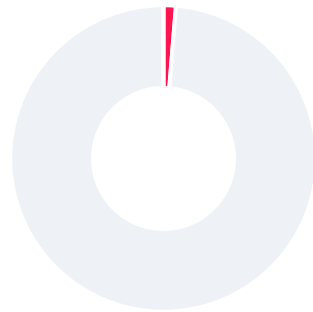
	Males	Females	Adult New Zealanders
Total number of people	1.9m	2.0m	3.9m
Average future years on main benefit to age 65	1.5 years	1.8 years	1.7 years
Average future years in public housing	0.6 years	1.1 years	0.8 years
Total future benefit payments to age 65	\$45.6bn	\$70.2bn	\$115.9bn
Total future housing payments	\$27.6bn	\$49.4bn	\$77.0bn

* Future payments are discounted to the present day

Results for the population as a whole – Benefit system

Most people contribute relatively little to the total number of estimate future years receiving a working-age benefit for the adult New Zealanders. Future benefit receipt is highly concentrated:

1.3% of adult New Zealanders make up



25% of the total future years receiving a main benefit to age 65



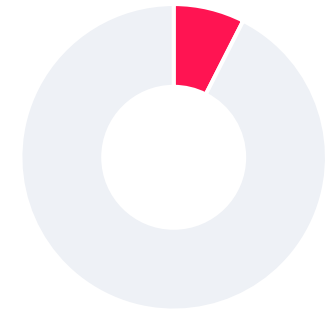
3.6% of adult New Zealanders make up



50% of the total future years receiving a main benefit to age 65



7.6% of adult New Zealanders make up



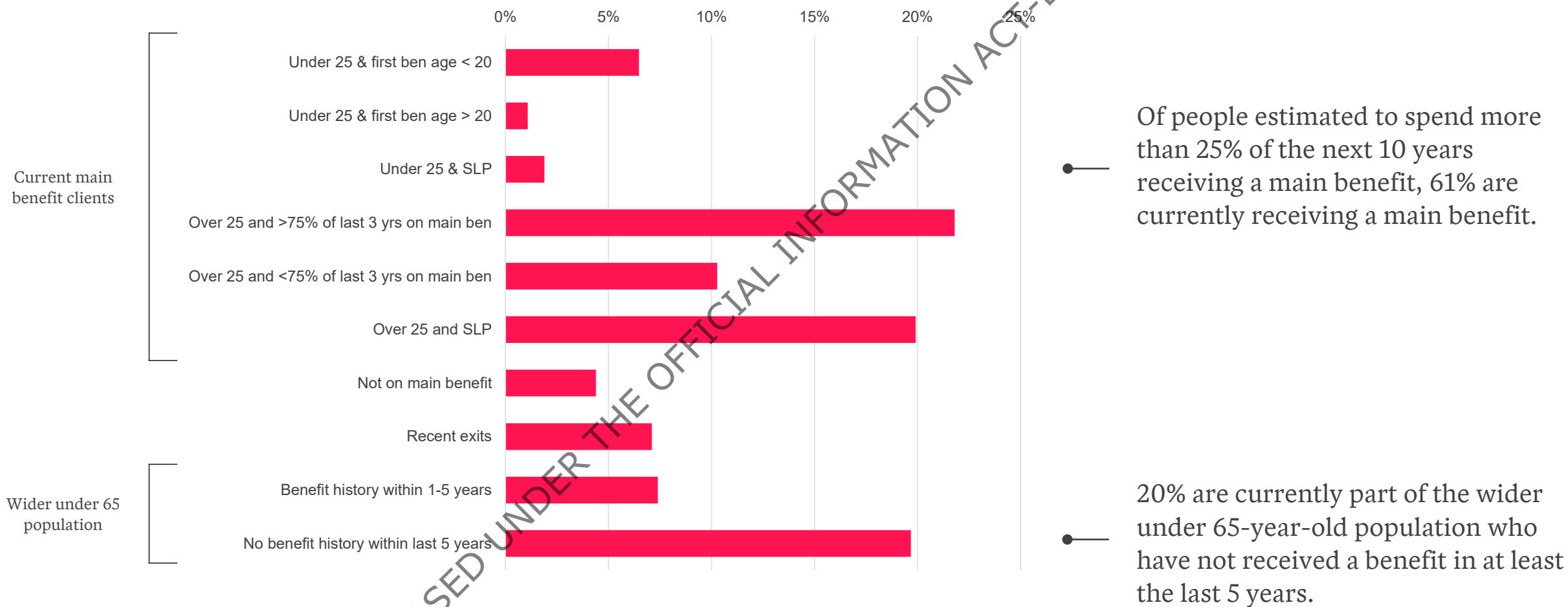
75% of the total future years receiving a main benefit to age 65



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Benefit receipt over next 10 years

People estimated to spend at least 25% of next 10 years on main benefit*



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* Measured as receiving a main benefit in at least 10 quarters of the next 10 years

Results for the population as a whole – Public housing

Public housing use is even more concentrated than the benefit system (partly due to public housing being a limited resource over the short-to-medium term):

0.4% of adult New Zealanders make up



25% of the total future years in public housing



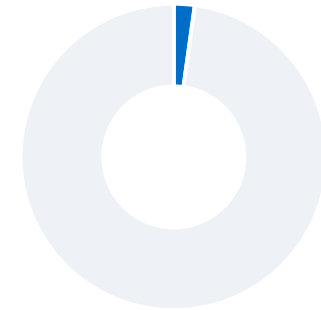
1.1% of adult New Zealanders received a



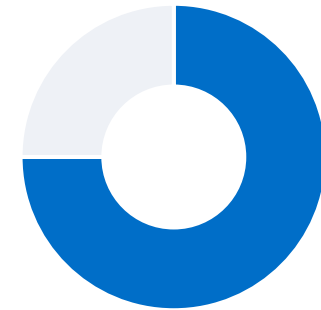
50% of the total future years in public housing



2.2% of adult New Zealanders make up

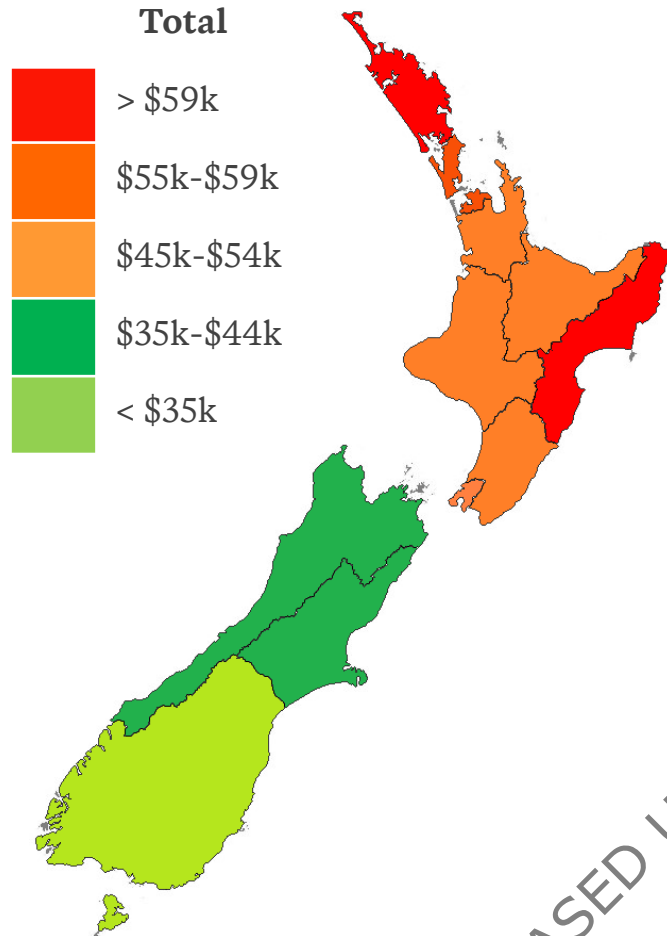


75% of the total future years in public housing



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Regional view - Average future payments per head of population



	Benefits to age 65	Lifetime public housing	Total
Northland	\$41k	\$20k	\$61k
Auckland	\$28k	\$27k	\$55k
Waikato	\$34k	\$17k	\$51k
Bay of Plenty	\$34k	\$16k	\$50k
East Coast	\$41k	\$21k	\$62k
Taranaki	\$35k	\$15k	\$50k
Central	\$33k	\$14k	\$47k
Wellington	\$28k	\$21k	\$49k
Nelson	\$25k	\$13k	\$39k
Canterbury	\$25k	\$16k	\$41k
Southern	\$24k	\$11k	\$34k

Despite high public housing payments in Auckland, the East Coast and Northland regions have the highest estimated combined benefit and public housing payments per head of population.

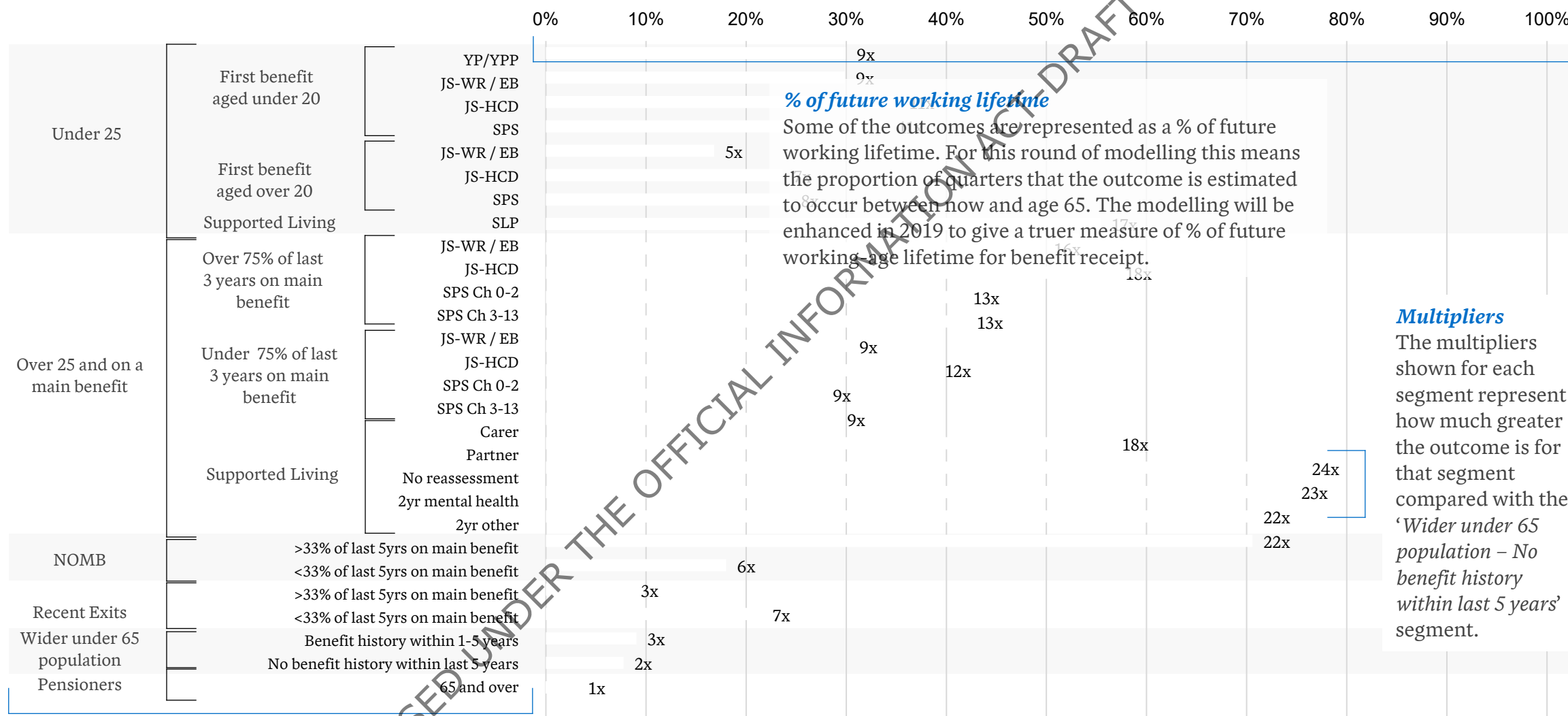
* Future payments are discounted to the present day

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How to read the segment results

Outcome

The outcome being shown is included in the title of the slide



% of future working lifetime

Some of the outcomes are represented as a % of future working lifetime. For this round of modelling this means the proportion of quarters that the outcome is estimated to occur between now and age 65. The modelling will be enhanced in 2019 to give a truer measure of % of future working-age lifetime for benefit receipt.

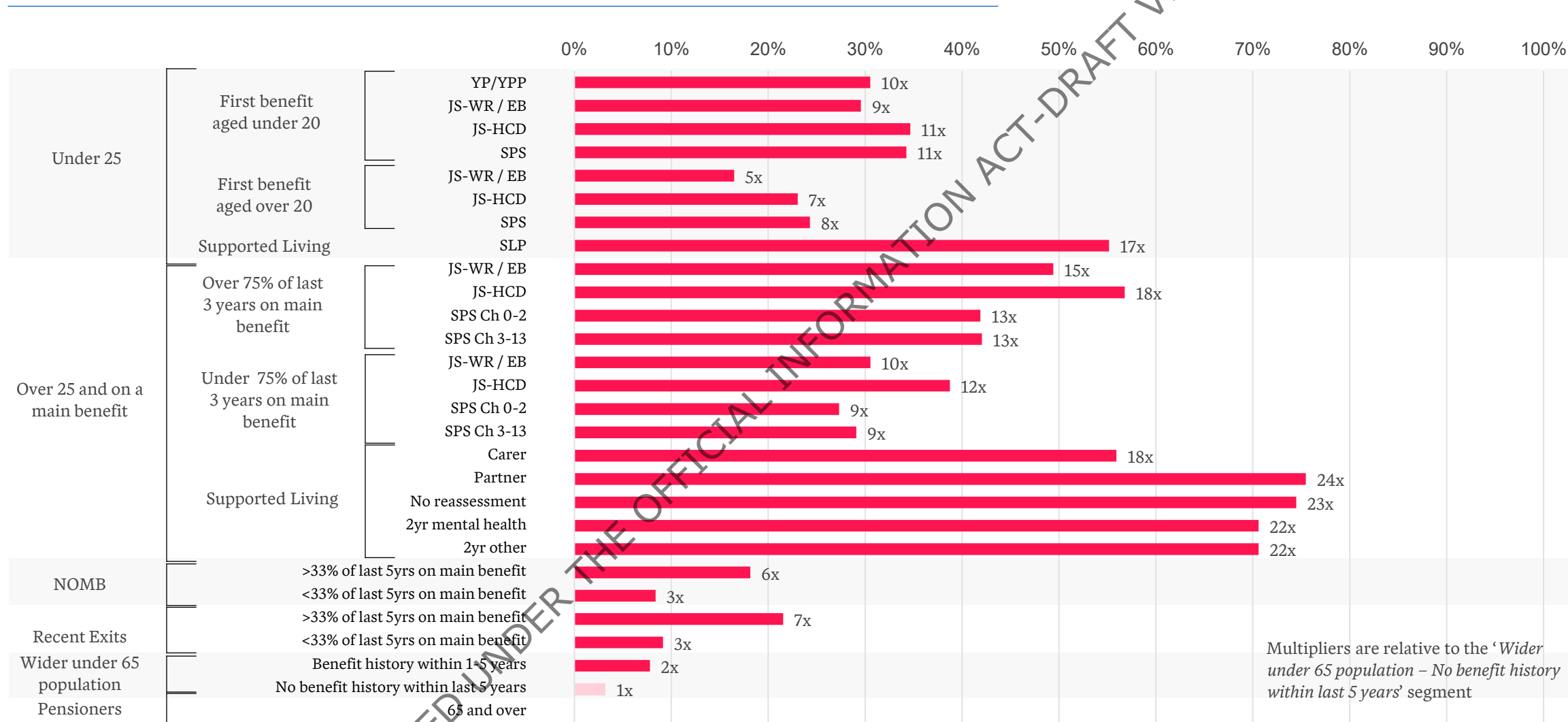
Multipliers

The multipliers shown for each segment represent how much greater the outcome is for that segment compared with the 'Wider under 65 population - No benefit history within last 5 years' segment.

Segments

Results are split using the segmentation structure for prior benefit system reporting. Additional segments have been added to capture the wider population not previously captured by the model.

Segmentation – % of future lifetime to age 65 on main benefits*



Multipliers are relative to the 'Wider under 65 population – No benefit history within last 5 years' segment

* Measured as number of quarters in which a person is estimated to receive a main benefit divided by quarters to 65

Segmentation - % of future lifetime to age 65 on main benefits

Key results

- Future time on main benefit is materially higher for young people who first received a benefit in their teens.
- The multiplier (i.e. how many times greater each segment is than the 'Wider population under 65 – no benefit history within the last 5 years segment) across all 'on-benefit' segments is 14x (average age is very similar to the comparison group).
- SLP clients have the highest estimated % of future working lifetime on main benefits.
- Recent exits and Not on main benefit segments with greater than 33% of the last five years receiving a main benefit have a relatively high estimated proportion of future working lifetime on main benefits.

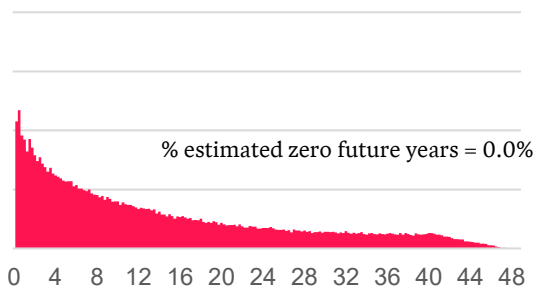
Implications

- Early entry to the benefit system remains a strong guide to future use.
- Given the length of time SLP clients are estimated to remain a client of MSD, it is worthwhile thinking about their wellbeing even if employment is not an option.
- The Recent exit and Not on main benefit segments with greater than 33% of the last five years receiving a main benefit arguably warrant as much attention as some of the on main benefit segments.

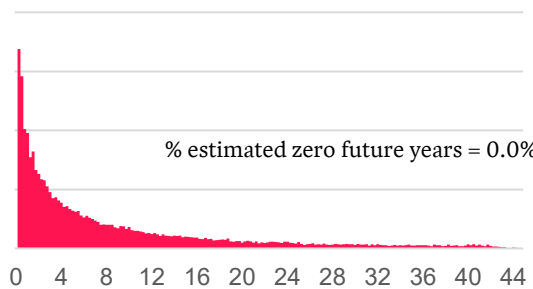
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Distribution of estimated future years to age 65 on main benefit*

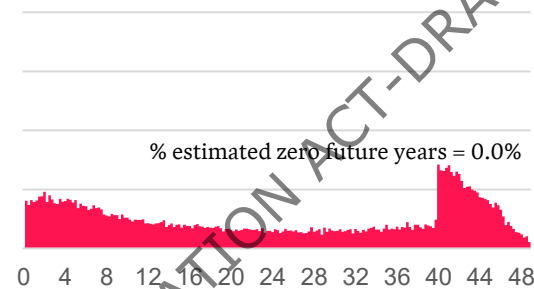
Main benefit – Under 25 – First benefit under 20



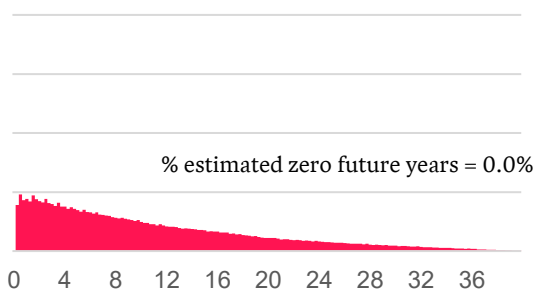
Main benefit – Under 25 – First benefit over 20



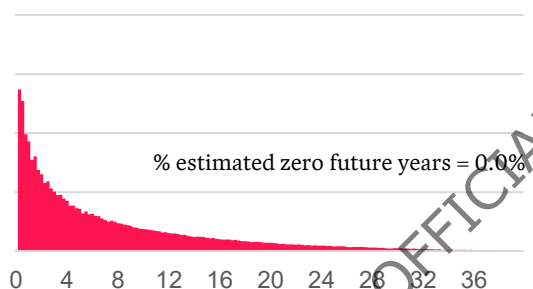
Under 25 - SLP



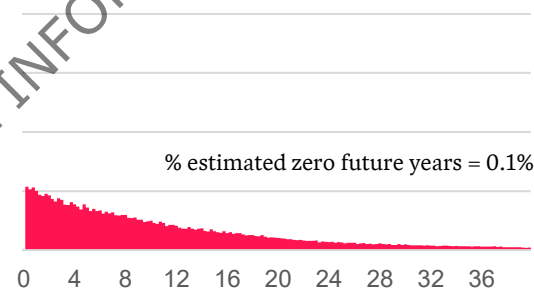
Main benefit – Over 25 – >75% of last 3 yrs on main benefit



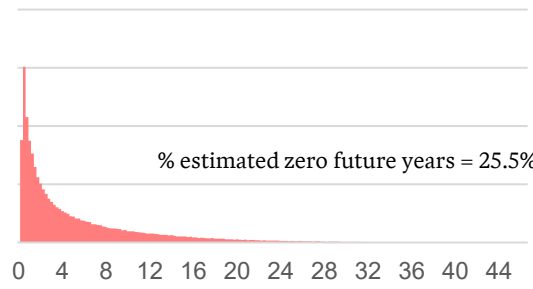
Main benefit – Over 25 – <75% of last 3 yrs on main benefit



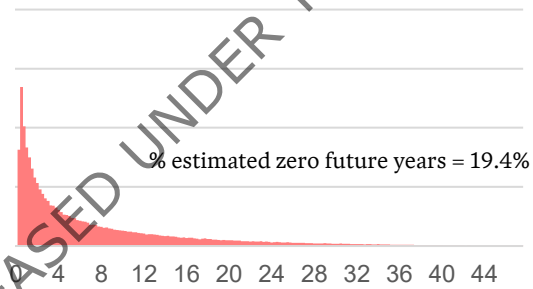
Over 25 - SLP



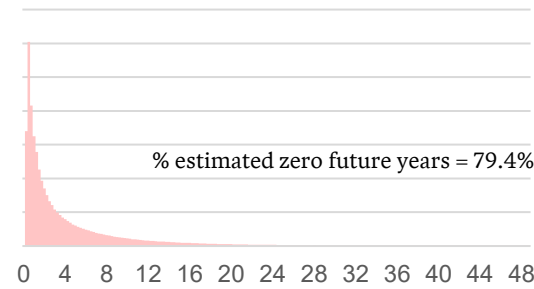
Not on main benefit – Supp only/OB



Recent Exits



Wider under 65 population

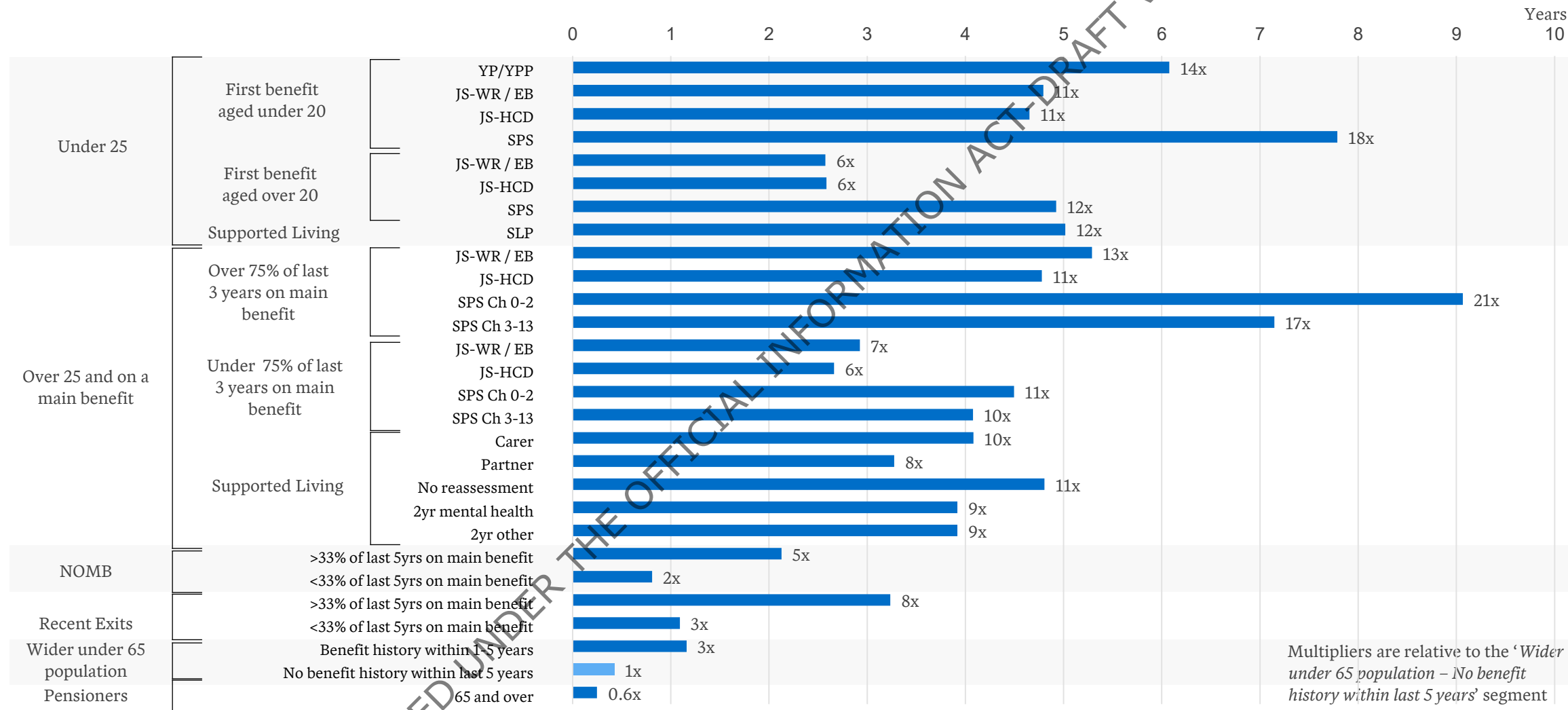


These charts show the distribution of estimated future years to age 65 on main benefit for each high-level segment. They give a sense of range of estimated benefit receipt.

- A high proportion of SLP clients remain on benefit until age 65 (see spike from 40 years in ‘Under 25 – SLP’ chart).
- 30.8% of the whole under 65-year-old population are estimated to receive a main benefit at some point in their future lives.
- This shows that while future main benefit receipt is concentrated (see slide 19), a broad range of people will need to rely on a main benefit at some point in their future lives.

* Distribution of those with non-zero estimated future years on main benefit. Measured in quarter years. % with zero estimated future years on main benefit also shown in writing.

Segmentation – Average future years in public housing



Multipliers are relative to the 'Wider under 65 population – No benefit history within last 5 years' segment

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Segmentation - Average future years in public housing

Key results

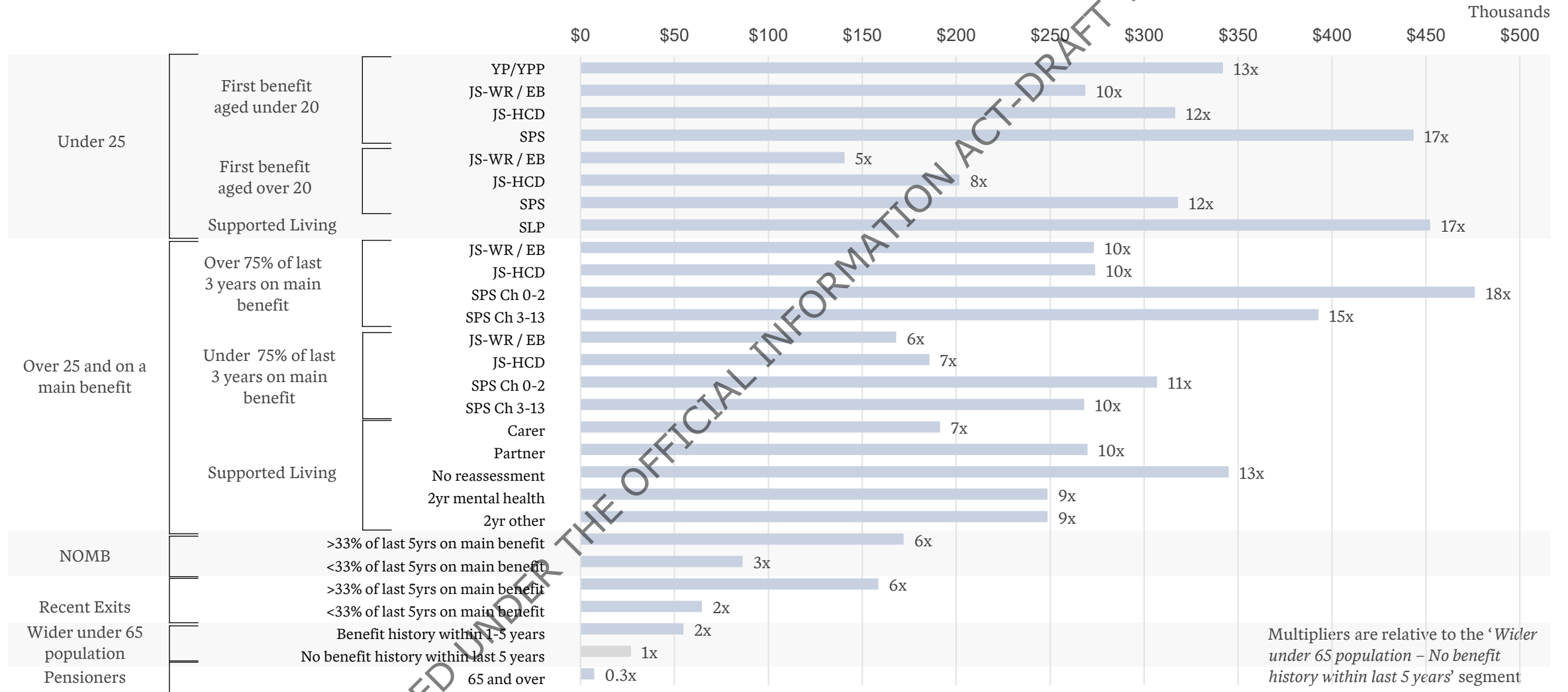
- Sole Parent Support clients have the greatest estimated future use of any benefit segment, highlighting the broader welfare needs of people who are looking after children on their own.
- Recent exits with greater than 33% of the last five years receiving a main benefit have high relative future public housing use.

Implications

- This highlights the broader welfare needs of people who are looking after children on their own and the role the Ministry plays in the wellbeing outcomes of both parent and child. There may be a case for broader wrap around services for SPS families and/or greater coordination between financial, housing, employment and early childhood education support.
- Recent exits' broader welfare needs do not necessarily end when they exit the benefit system. Support options beyond benefit exit may be worth considering.

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Segmentation – Average future payments – benefits and public housing



Multipliers are relative to the 'Wider under 65 population – No benefit history within last 5 years' segment

* Future payments are discounted to the present day

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Segmentation – Average future payments – benefits and public housing

Key results

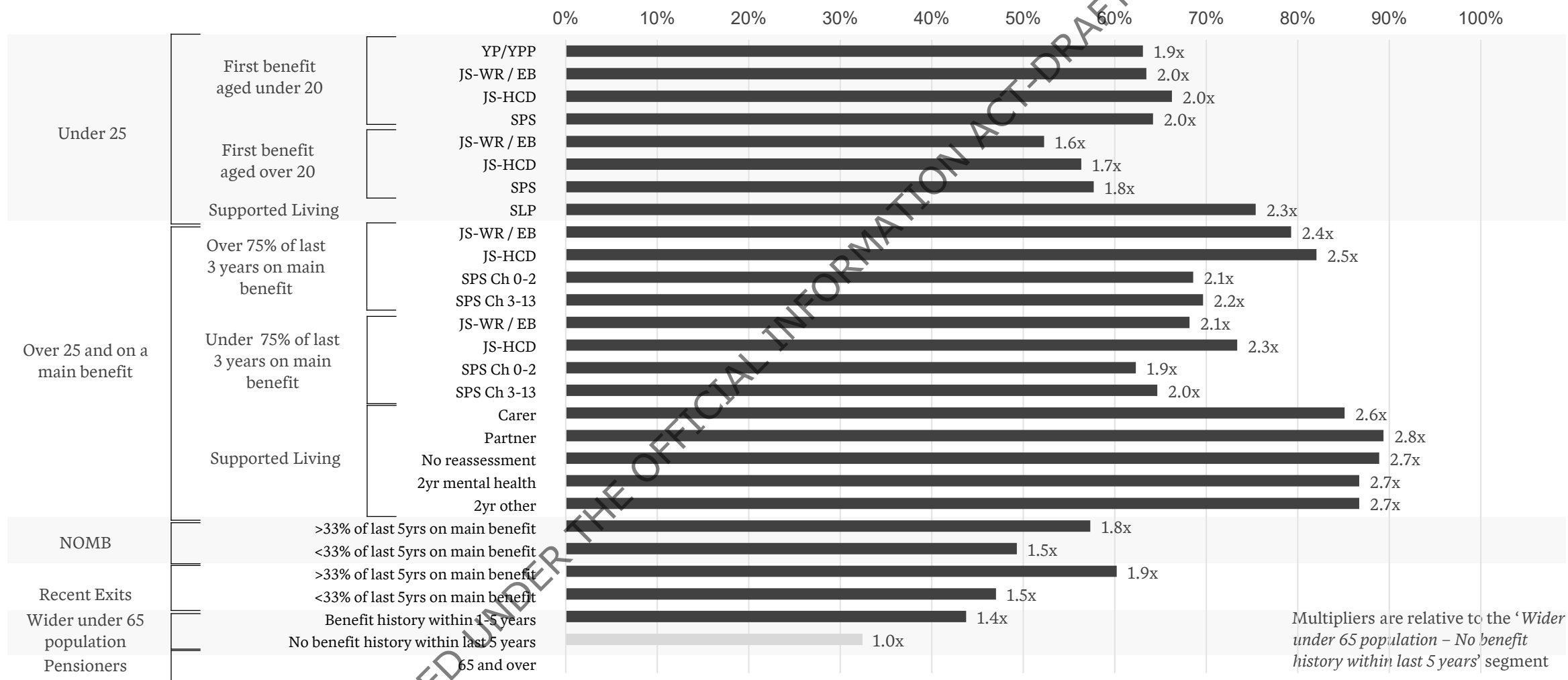
- SPS and young SLP clients have the highest estimated average future payments across both benefits and public housing. This reflects relatively high estimated future benefit receipt and public housing use.
- There is a large difference between under 25-year-old JS-WR/EB clients who first received a main benefit under the age of 20 and those that didn't. Those that did, have estimated average future payments about two and half times higher than those that didn't. In fact, average estimated payments for under 25-year-old JS-WR/EB clients who didn't receive a main benefit under the age of 20 are lower than for the 'Over 25 – Under 75% of the last three years on main benefit' segment.

Implications

- Given the extent to which the Ministry is estimated to support SPS and young SLP clients, the ability to influence the wellbeing of these clients and their families is high. In the context of WEAG considerations, this may be as much about caring and volunteering as it is about earning and learning.

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Segmentation – % of future lifetime to age 65 below income threshold*



* Measured as number of quarters in which a person is estimated to have income less than income threshold divided by quarters to 65. Income includes earned income, benefits, Working For Families tax credits and the effective boost to income from income related rent subsidy. Threshold based on 52 weeks at 40 hours per week at minimum wage (increased with CPI) - \$34,320 p.a. in 2018.

Segmentation – % of future lifetime to age 65 below income threshold

Key results

- For all on-benefit segments, estimated average % of future lifetime to age 65 below the income threshold is over 50% i.e. on average we estimate these people's incomes to be lower than the threshold most of the time.
- The % of future lifetime to age 65 below the income threshold for each segment is much higher than the equivalent figures for % of future lifetime to age 65 on main benefits. Up to 3.2x higher (Under 25 JS-WR/EB – first main benefit over age of 20 segment).
- Compared to other segment slides the multipliers are much lower because the comparison segment has a higher % on this measure.

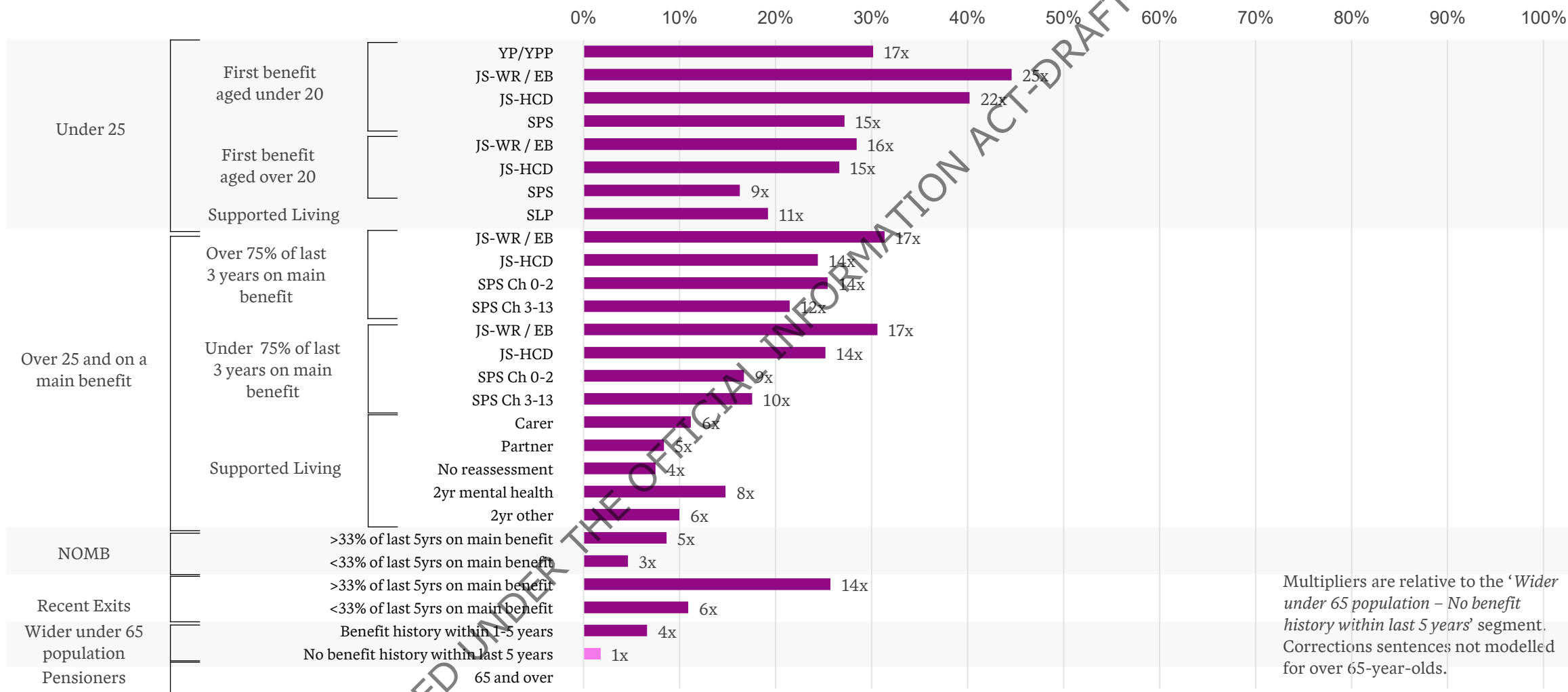
Implications

- Beneficiaries' material wellbeing is likely to be relatively low for a large part of their future lifetime to age 65, even when not receiving a benefit.
- Most on benefit segments are estimated to spend over 50% of their working lifetimes earning below the income threshold. While labour for low skilled work will always be needed, ideally people progress earnings over time with experience and skill development. However, this highlights that many people do not progress their income materially. Exiting clients may benefit from continued support to develop their knowledge and skills.

Note

- Personal income does not capture income and financial support from a person's broader household/family/whānau e.g. partner's income. Household income is a better measure of financial capability and material wellbeing.

Segmentation – % serving a corrections sentence in next ten years



Multipliers are relative to the 'Wider under 65 population – No benefit history within last 5 years' segment. Corrections sentences not modelled for over 65-year-olds.

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Segmentation – % serving a corrections sentence in next ten years

Key results

- Offending rates are highest among young age groups and particularly males. This reflected in the segment chart with the under 25 segments having the highest estimated % serving a corrections sentence in the next ten years. Segments with a relatively high proportion of males (e.g. JS-WR and JS-HCD) have the highest estimated % amongst these.
- For under 25-year-old JS-WR/EB clients who first received a benefit under the age of 20, 45% are estimated to serve a corrections sentence in the next ten years.
- Note the elevated levels for recent exits. This partly reflects prior off-benefit outcomes research findings¹ – that a portion (about 2.5%) of people exiting the benefit system go into prison.

Implications

- This further highlights the significance of early entry into the benefit system as an indicator of poor future outcomes and likely constrained wellbeing. ‘Young males who first entered the benefit system under the age of 20’ is a strong candidate for a target group for intervention, with health, education/skills and employment needs all likely to be important.

¹ What happened to people who left the benefit system during the year ended 30 June 2014, E Judd & J Sung

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4

Income estimation

Income estimation – introduction

Income estimation is new to the modelling this year

Income captures a number of sources including wages and salaries, benefits, Working for Families tax credits and the effective boost to income from Income Related Rent Subsidy.

Income has a clear relationship to material wellbeing

Understanding income pathways for different groups of people is an important wellbeing consideration.

Current status of income modelling

- Income has been modelled as a stochastic variable that is also a function of other variables (welfare, housing, education, justice etc). However, income is not currently a predictor of other outcomes (like part-time work income predicting higher rates of welfare exit). For this reason, there are limitations to the income estimates, found as part of our validation testing:
 - Average levels and aggregate transition patterns in income over time appear reasonable.
 - There is too much reversion to the mean visible for estimated income distribution for some cohorts.

- The results presented are fit-for-purpose to show comparisons and general trends, but we expect specific numbers attached to income estimates to be improved in 2019 work, where more inter-dependence is modelled.

In the next slides we show estimates of income for two example groups

We show earned income and total income across all sources.

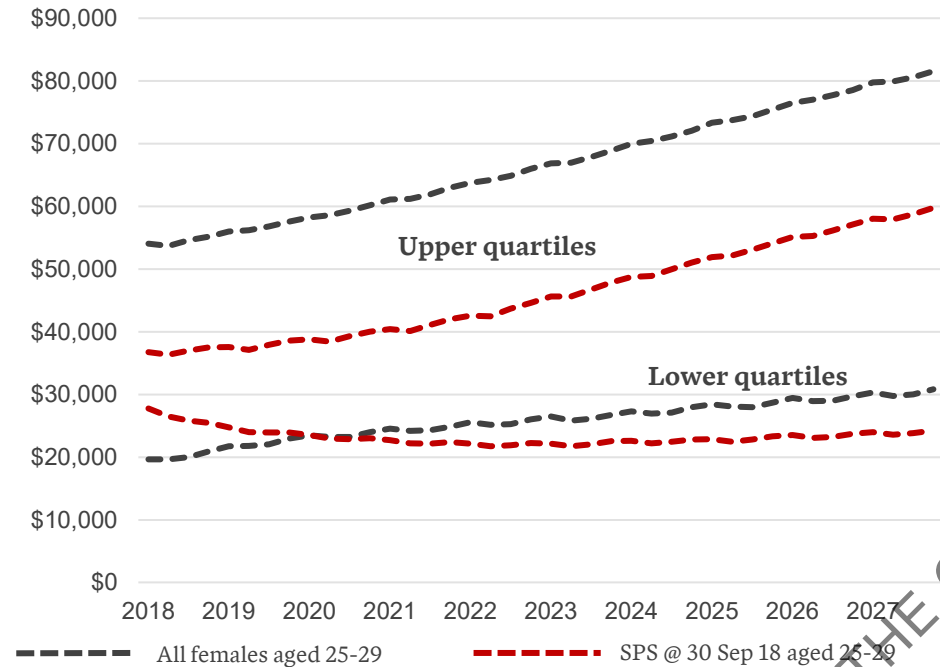
Interquartile range is used to highlight income variation within the example groups

In this section we refer to percentiles and interquartile range:

- Percentiles – The xth percentile is the level below which x% of the population falls.
- The interquartile range – is the middle 50% of the population (between the 25th and 75th percentiles, or upper and lower quartiles).

Total Income – SPS aged 25-30

Estimated total income* – Interquartile range



- On a total income basis, the SPS cohort’s income compares reasonably well with all females in this age bracket. Total incomes are lower, but not to the same extent as the second example group.
- Upper quartile income is estimated to be about \$22k less by 2028 and lower quartile income about \$7k less.
- There is more disparity at higher income levels, with about a \$35k difference in the 90th percentiles (\$80k vs. \$115k).
- Note that many females aged 25-29 are supported by partners and so this comparison is not necessarily a good comparison of material wellbeing.

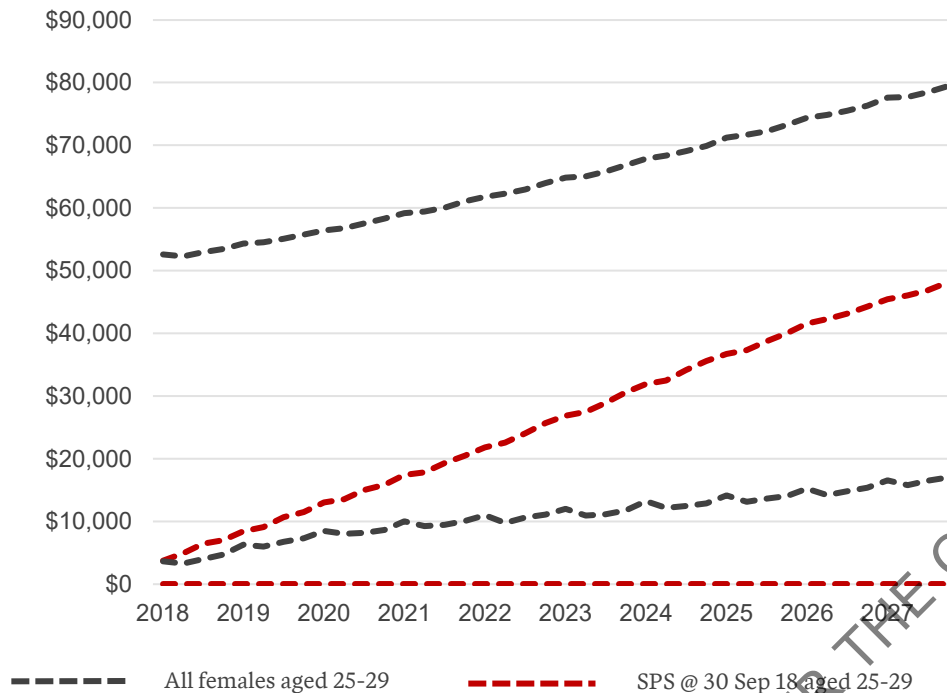
SPS clients’ total income appears to compare reasonably well with all females in this age bracket. However, it is hard to draw firm conclusions about material wellbeing because the extent to which people in these groups are financially supported by partners/family is not clear.

* Total income includes earned income, benefits, Working For Families tax credits and the effective boost to income from Income Related Rent Subsidy. Expressed as quarterly income times four, on a nominal basis.

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Earned Income – SPS aged 25-30

Estimated earned income – Interquartile range



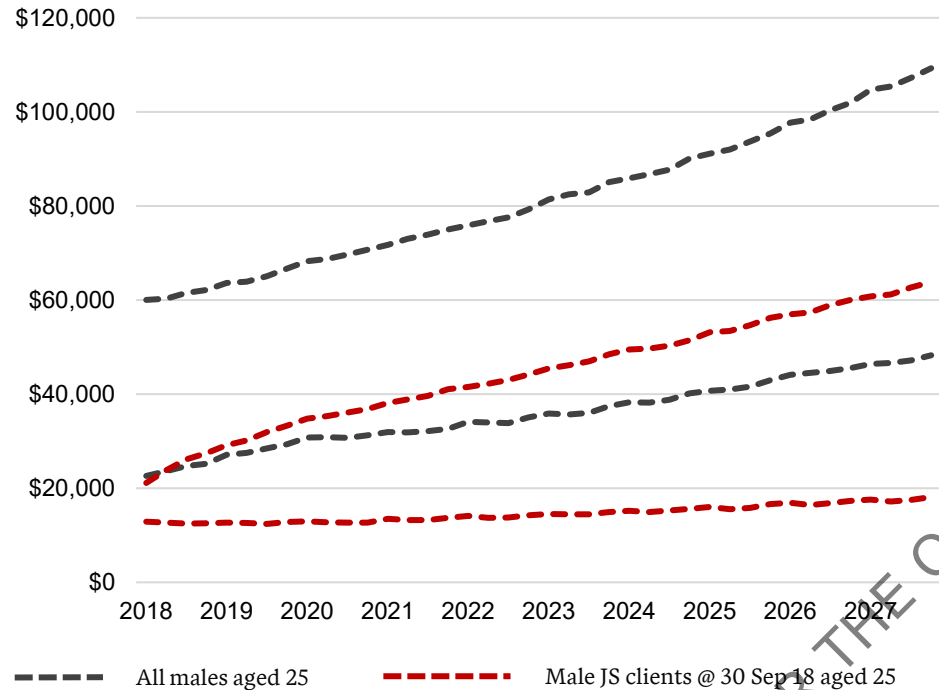
- This page looks at just earned income for the same cohort.
- As expected, there's a large gap at the start of the estimates.
- This gap is estimated to decrease over time as more of the starting cohort of SPS clients exit the benefit system.
- By 2028 the gap in upper quartile income between the estimates is about \$31k. Note that 37% of the SPS aged 25-30 are estimated to be receiving a main benefit at this point, compared to 9% of all females 25-29.
- At the 90th percentile, the difference in income is greater at about \$43k.

On an earned income basis, the comparison is more stark, highlighting the important role government assistance plays. The spread of income for the SPS group expands significantly over time, highlighting mixed fortunes and the value of segmenting groups like this further (see Section 6).

*Earned income includes wages and salaries, ACC weekly compensation, Student Allowance, paid parental leave, rental income, shareholder income and partnership and sole trader income. Expressed as quarterly income times four, on a nominal basis.

Total Income – Male JS-WR and JS-HCD clients aged 25

Estimated total income* – Interquartile range



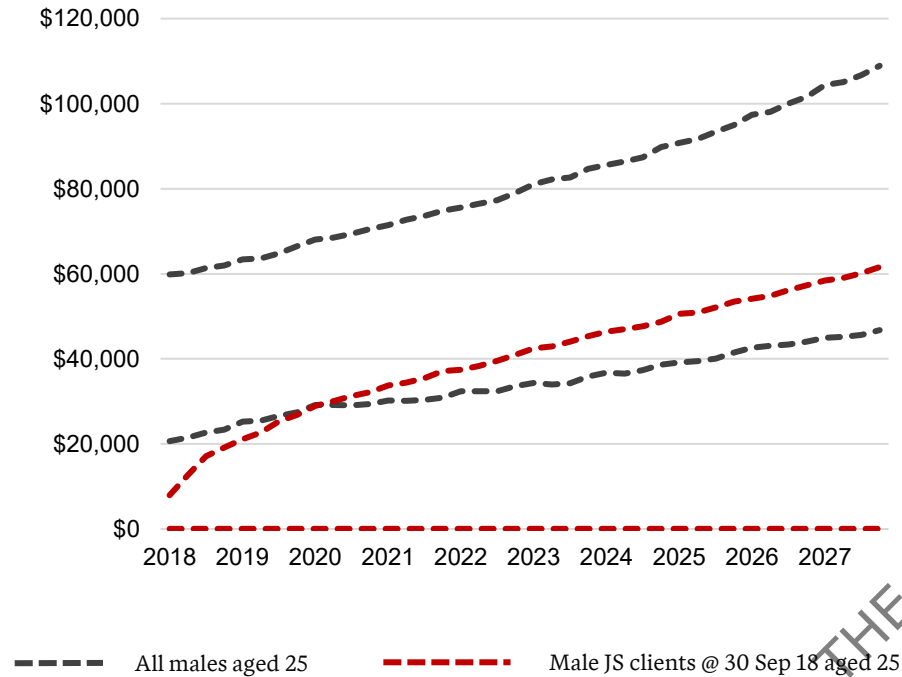
* Total income includes earned income, benefits, Working For Families tax credits and the effective boost to income from Income Related Rent Subsidy. Expressed as quarterly income times four, on a nominal basis.

- In general, the income levels for young males aged 25 are higher than that for the previous comparison of females aged 25-29.
- The difference in upper quartile total income does not vary significantly over time – about \$45k in 2028.
- The gap in lower quartile total income starts small and gradually expands to about \$30k by 2028.
- The income range of the JS cohort is much narrower, although this expands with time as more of this cohort are estimated to exit the benefit system (this was the same for the SPS comparison too).

Income disparity appears greater for this group compared to the previous SPS example. Furthermore, males are less likely to be financially supported by a partner/family than females, and so we can probably be a little more confident that this personal income disparity translates to disparity in material wellbeing (supported by material wellbeing index comparisons in the next section).

Earned Income – Male JS-WR and JS-HCD clients aged 25

Estimated earned income – Interquartile range



*Earned income includes wages and salaries, ACC weekly compensation, Student Allowance, paid parental leave, rental income, shareholder income and partnership and sole trader income. Expressed as quarterly income times four, on a nominal basis.

- The lower quarter income (25th percentile) is \$0 for the JS cohort
- This highlights large disparities in this group, given that:
 - Males tend to be less likely to be home makers and hence less likely to be supported by a partner
 - A lot of this cohort were work-ready at the estimation date
 - Many are earning significantly more than the lower quartile for all 25 year-olds by 2028.
- We can use the modelling to define the factors that explain the difference in estimates between these two broad scenarios of earning zero or earning at least a moderate income.

Similar to the SPS example, the spread of earned income for the JS group expands significantly over time, highlighting differing fortunes.

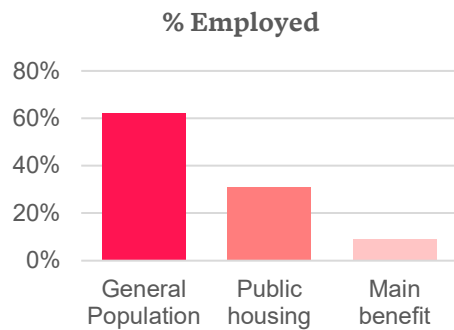
A useful next exercise would be to use the modelling to identify factors that explain the difference in estimated future income for this group. This could help with service streaming.

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5

Current wellbeing

Current wellbeing dashboards



In the following slides we show a range of dashboards highlighting wellbeing through a range of indicators. This chart is an example of an indicator showing the proportion of 16-64-year-olds employed in the general population, public housing population and main benefit population.

Main dashboard

The main dashboard compares the indicators for the general population, public housing population and main benefit population. There is one version for 16-64-year-olds and one version for over 65-year-olds. They include subjective wellbeing indicators drawn from the General Social Survey.

Population groups of interest dashboards

We also show dashboards for specifically defined population groups of interest e.g. Māori aged 16-24 on main benefit. For each group there are two dashboards:

1. Comparing the group to similarly defined general population subgroups e.g. non- Māori aged 16-24.
2. Exploring variation with the group by comparing subgroups with 0, 1, 2, 3, and 4 defined characteristics.

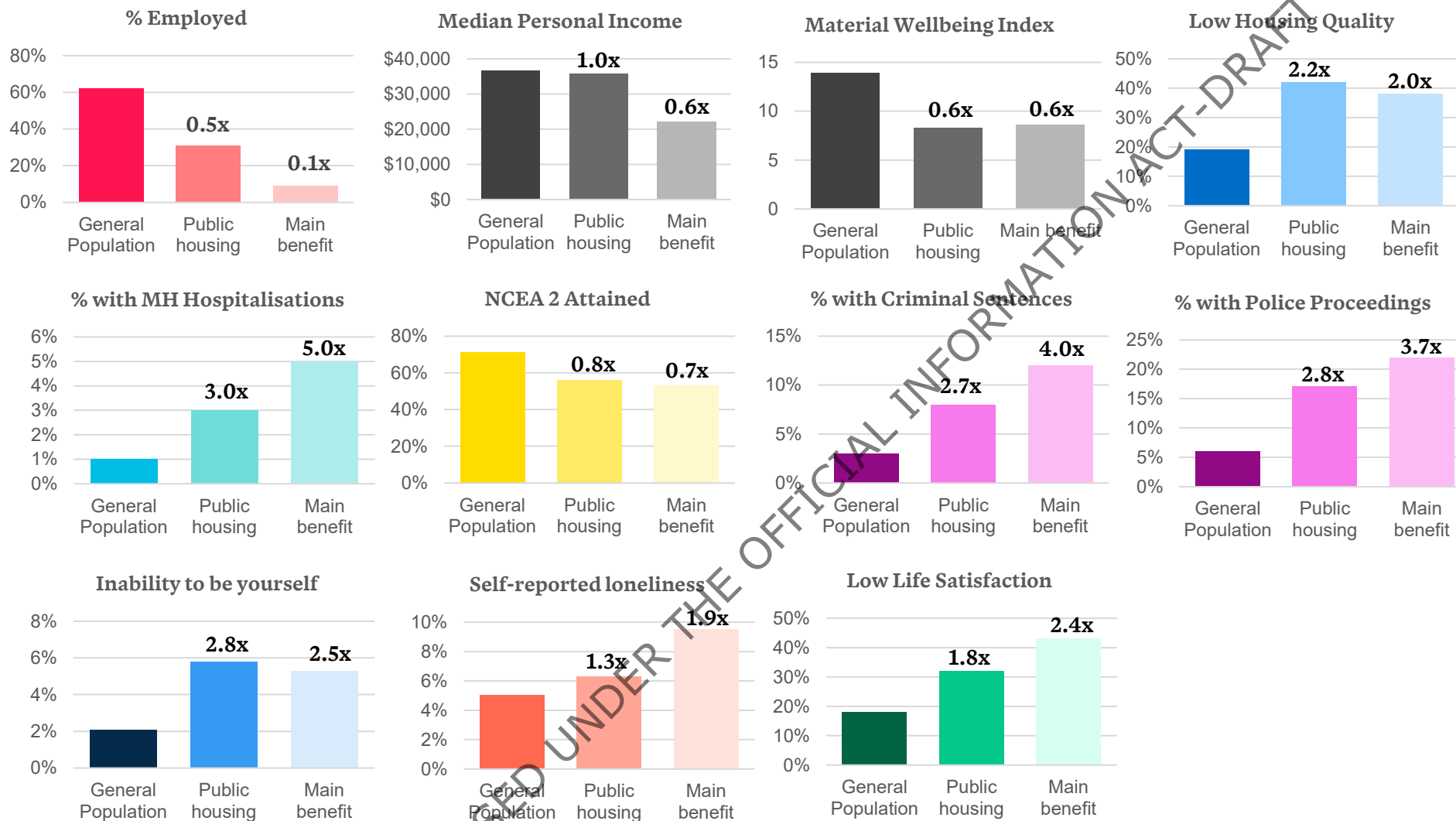
These do not include subjective wellbeing indicators as the survey sample sizes are too small.

Wellbeing dashboard – Measures

<i>Indicator</i>	<i>Measure</i>
Employment	% employed in quarter – defined as earning more than equivalent to 20 hours a week at minimum wage. Note that this is a different measure to the official employment rate reported by Stats NZ.
Income	Total personal income (earned income, benefits, Working For Families tax credits and the effective boost to income from Income Related Rent Subsidy) - Median over year
Material Wellbeing Index	Material Wellbeing Index (mean average, 0-20 scale) - General Social Survey
Housing quality	% with one or more of: house ‘always’ cold, house has a ‘major’ problem with mould, house needs ‘immediate’ or ‘immediate and extensive’ repairs - General Social Survey
Mental health-related hospital admissions	% who have had a mental health-related hospital discharge in the last 3 years
Educational attainment at school	% attained at least NCEA 2 (or equivalent)
Criminal sentences	% who have served a corrections spell in the last 3 years
Police proceedings	% who have had a police proceeding against them in the last 3 years
Ability to be yourself	% who find it ‘hard’ or ‘very hard’ to be themselves in NZ - General Social Survey
Self-reported loneliness	% who are lonely "most" or "all" of the time - General Social Survey
Life satisfaction	% who rate their overall level of satisfaction as 6 or below (1-10 scale) – General Social Survey

* The material wellbeing index is a score based on answers to questions about household’s non-monetary standard of living, access to necessities, access to non-essential things that could be expected in a typical household and capacity to cope with unexpected demands on finances.

Main wellbeing dashboard - 16-64-year-olds



- Multipliers are relative to the general population.
- Note: for some measures, higher is better, for others higher is worse. In all cases, the general population has the best measure.

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Wellbeing dashboard - 16-64-year-olds

Key results

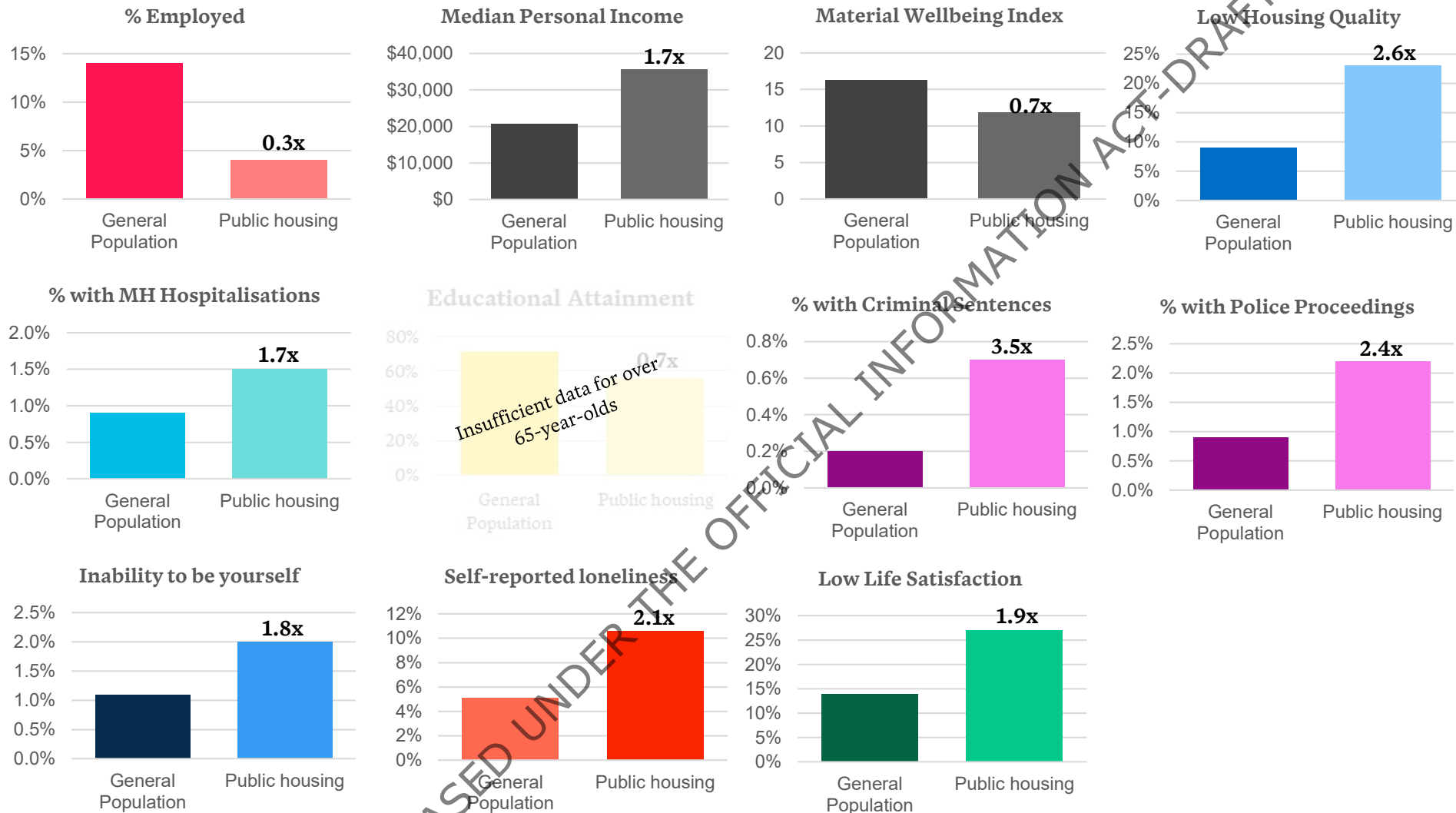
- Across all measures the benefit system and public housing populations look worse than the general public. For most measures the public housing population looks better than the benefit system population. The exceptions are the material wellbeing index, housing quality and ability to be yourself measures.
- Individual median income is relatively high for the public housing population, highlighting the financial benefit of subsidised housing.
- As a general overall measure of wellbeing, the proportion of benefit system clients rating their life satisfaction as 6 out of 10 or lower is high at 43%.

Implications

- Benefit system clients and public housing tenants measure relatively poorly on all wellbeing measures and not just those related to the ministry's core focus areas i.e. wellbeing needs extend beyond employment, income and housing. Reducing barriers to employment, increasing income and improving housing outcomes may require improvements in other wellbeing domains to be successful. Analysis on how different wellbeing domains influence each other may be worthwhile.
- The material wellbeing index measure is relatively low for public housing tenants despite their median individual income being relatively high. Material wellbeing is also more closely linked to household income.
- The difference between income for public housing tenants and for benefit system clients partly reflects the value of the Income Related Rent Subsidy (compared to other housing supports such as the Accommodation Supplement).

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Wellbeing dashboard – Over 65-year-olds



- Multipliers are relative to the general population.
- Note: for some measures, higher is better, for others higher is worse.

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Wellbeing dashboard – Over 65-year-olds

Key results

- Across most measures, over 65-year-olds look better than 16-64-year-olds. Their self-reported level of life satisfaction is higher, mental health-related hospitalisations are lower, and they rate their housing quality as higher.
- A notable exception is self-reported loneliness which over 65-year-olds in public housing rate as higher than 16-64-year-olds in public housing.
- The public housing population looks worse than the general population across all measures (income aside), though in general the differences are smaller than for the 16-64-year-old populations.

Implications

- The wellbeing needs of over 65-year-olds in public housing extend beyond housing.

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Population groups of interest

Defining groups of interest

For demonstration, we have looked at the following groups:

1. Female SPS clients aged 16-24
2. Māori aged 16-24 on main benefit
3. JS-WR clients aged 50-54

We can define any group within the study population that we like and produce similar output.

Comparison groups

For each group of interest we have defined a comparison group as the broader group within the study population with the same demographic description.

To highlight variation with the groups of interest, we have also segmented each one based on how many of four defined characteristics they have. The defined characteristics are different for the third group and are noted below:

- In public housing
- Prior criminal sentence
- Education level < NCEA 2 (groups 1 and 2 only)
- CYF/OT history (groups 1 and 2 only)
- Been on benefit for more than 50% of the last 5 years (group 3 only)
- Zero earned income in Sep 18 quarter (group 3 only)

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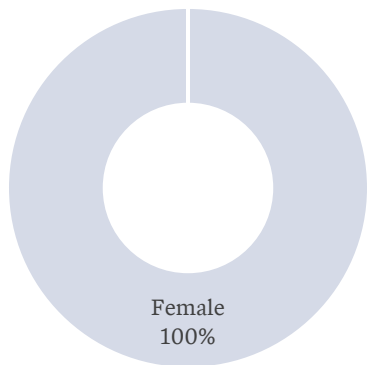
1. Female SPS clients aged 16-24 – About this population

Demographics

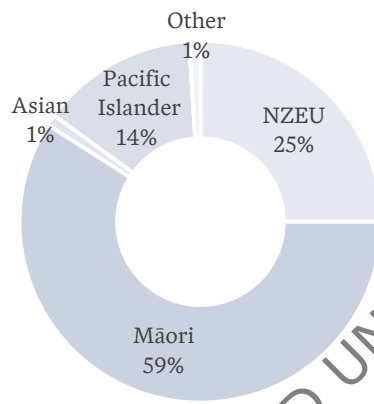
Number of people

11,250
0.3% of the adult population

Gender

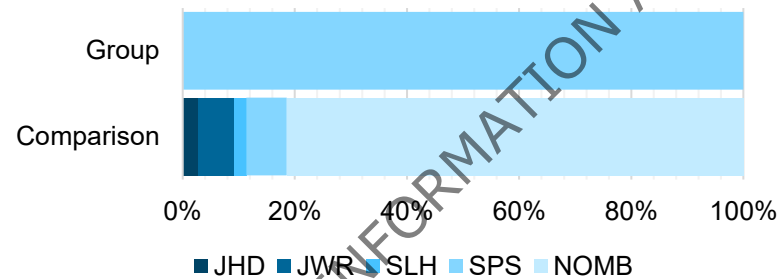


Ethnicity

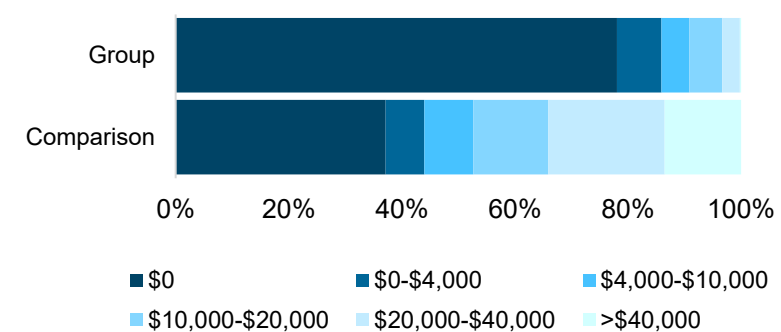


Status

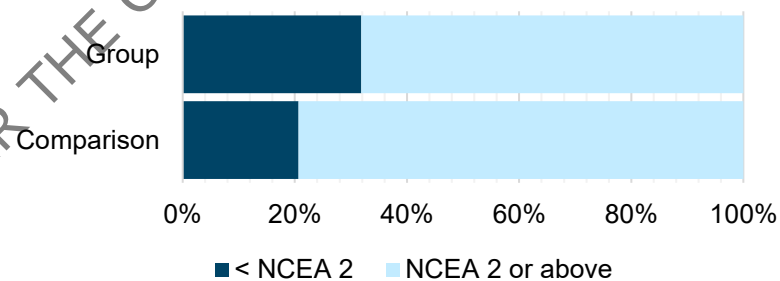
Benefit category



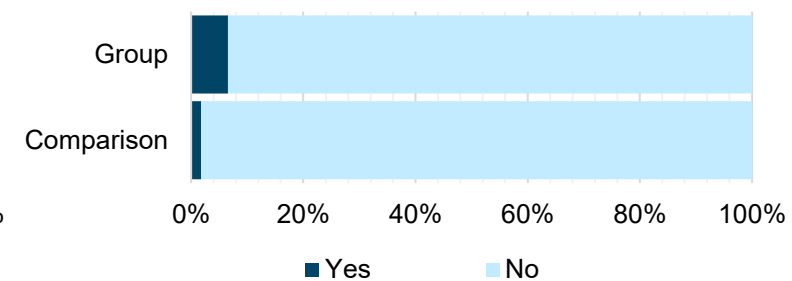
Earned income



Education status

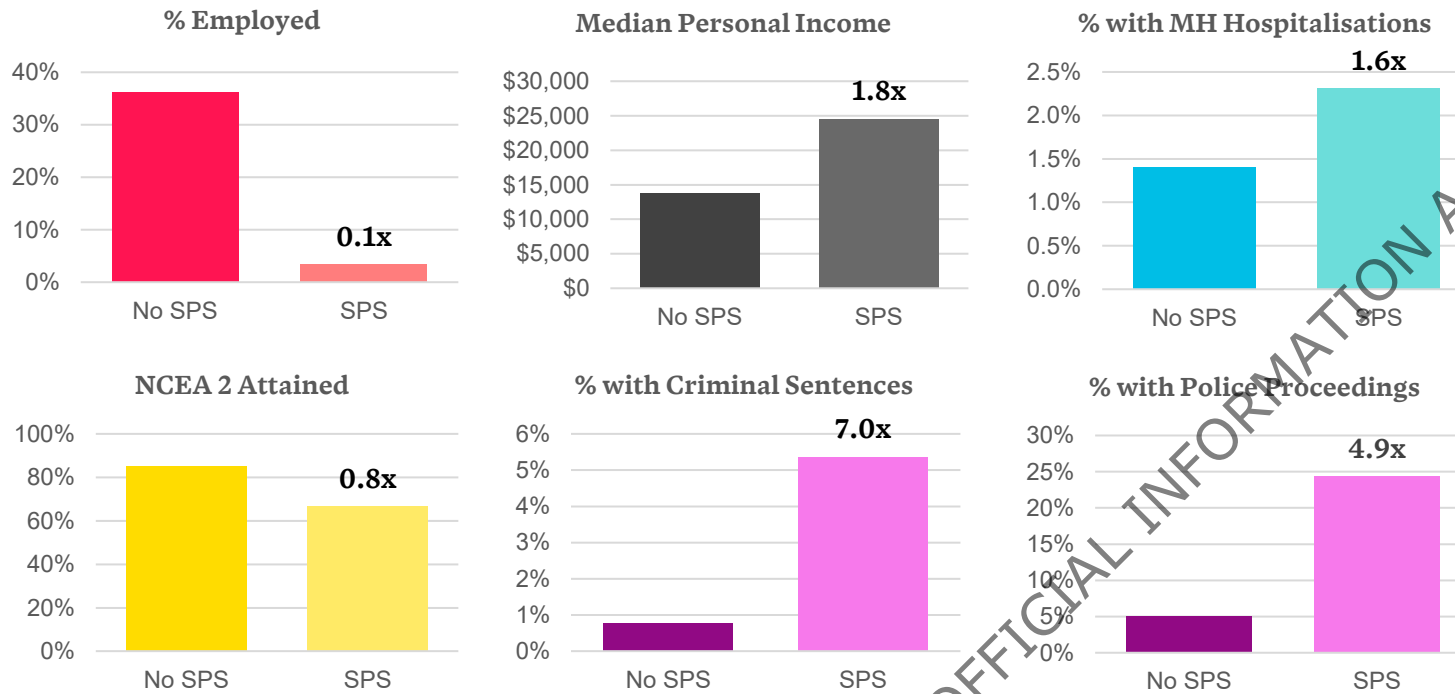


Criminal sentence in last 3 years



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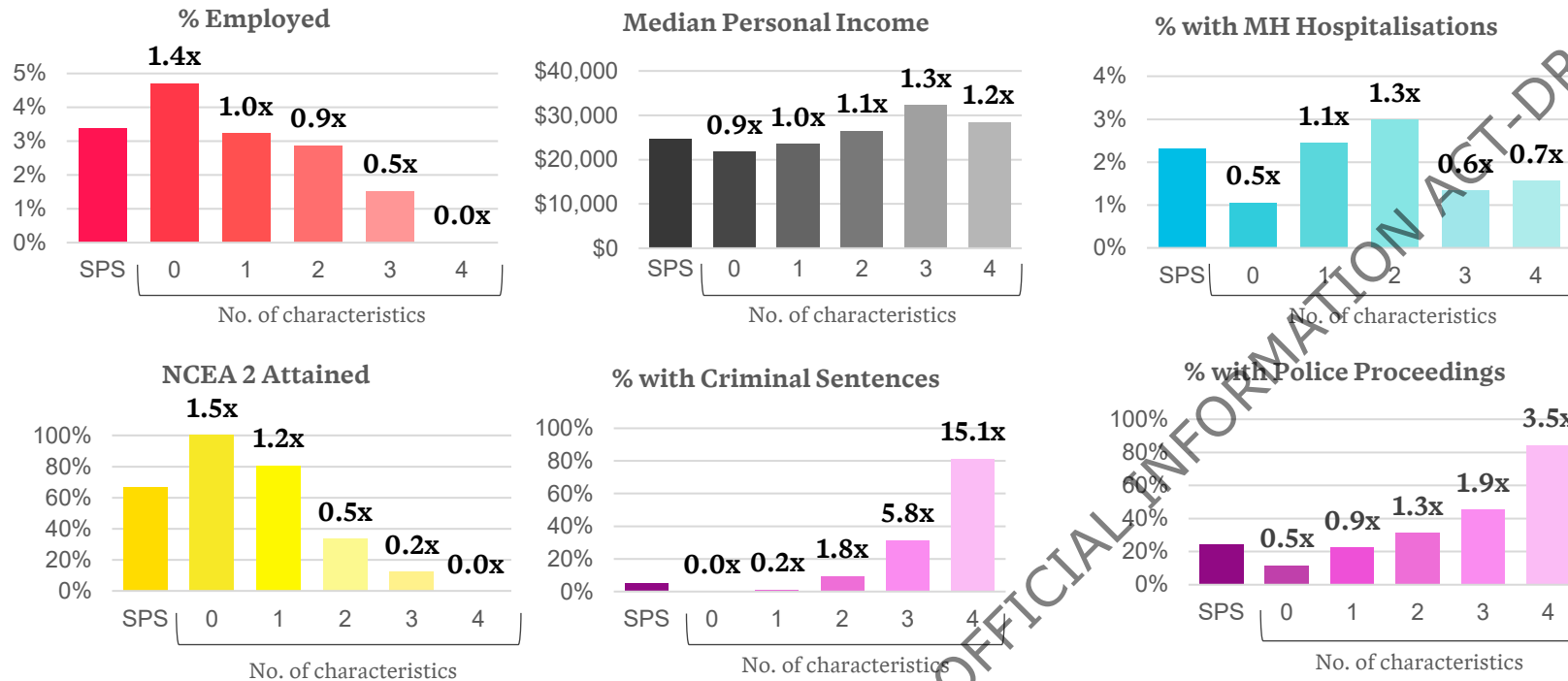
Wellbeing dashboard- Female SPS clients aged 16-24



Key results

- Employment levels are relatively low for young females, with many in education and/or financially supported by family/whānau.
- This is part of the reason why median income is higher for SPS clients. The effective boost to income from Income Related Rent Subsidy also contributes to this.

Wellbeing dashboard- Female SPS clients aged 16-24



Key results

- Variation of these wellbeing indicators within this SPS group is generally wide. Less so for median personal income given the on-benefit status of the whole group. And less so for the two health indicators, which do not show an obvious pattern with increased number of indicators.

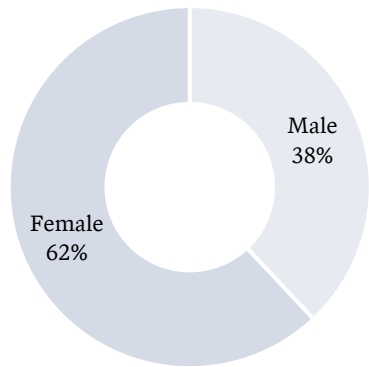
2. Māori aged 16-24 on main benefit – About this population

Demographics

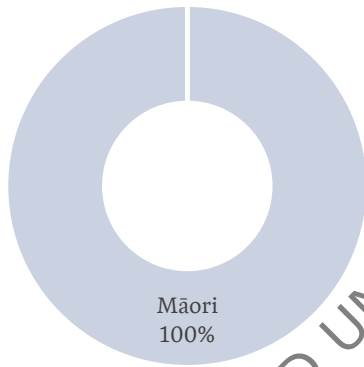
Number of people

23,718
0.6% of the adult population

Gender

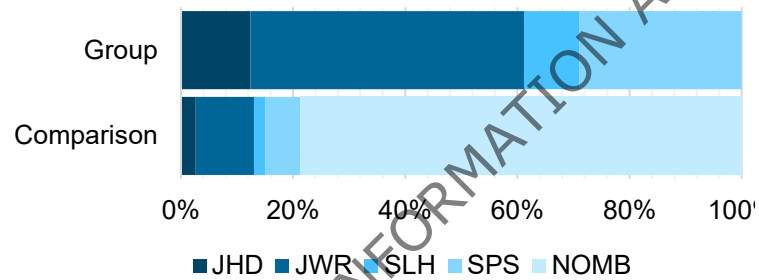


Ethnicity

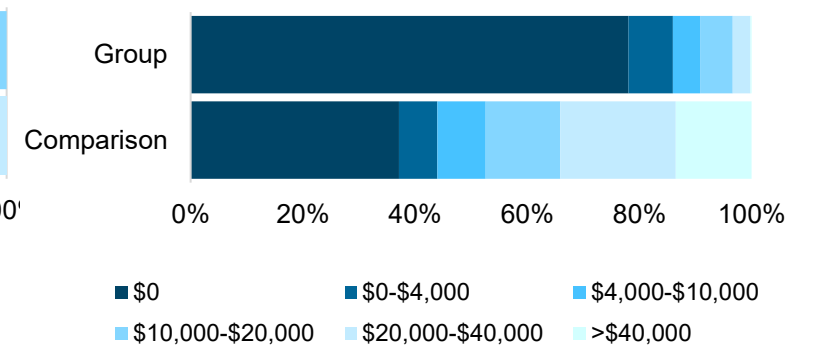


Outcomes

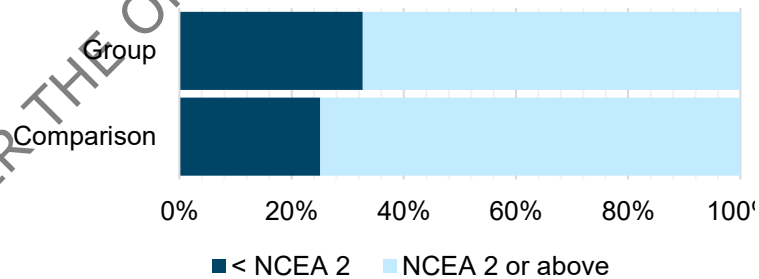
Benefit category



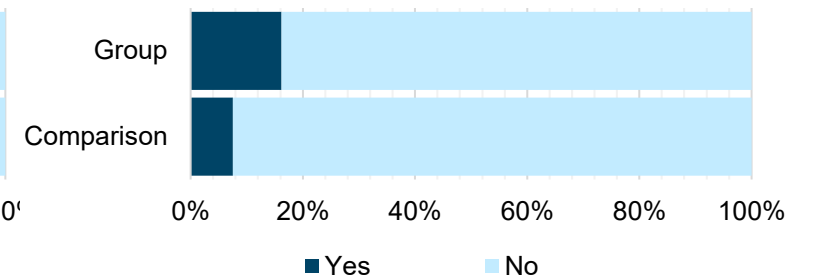
Earned income



Education status

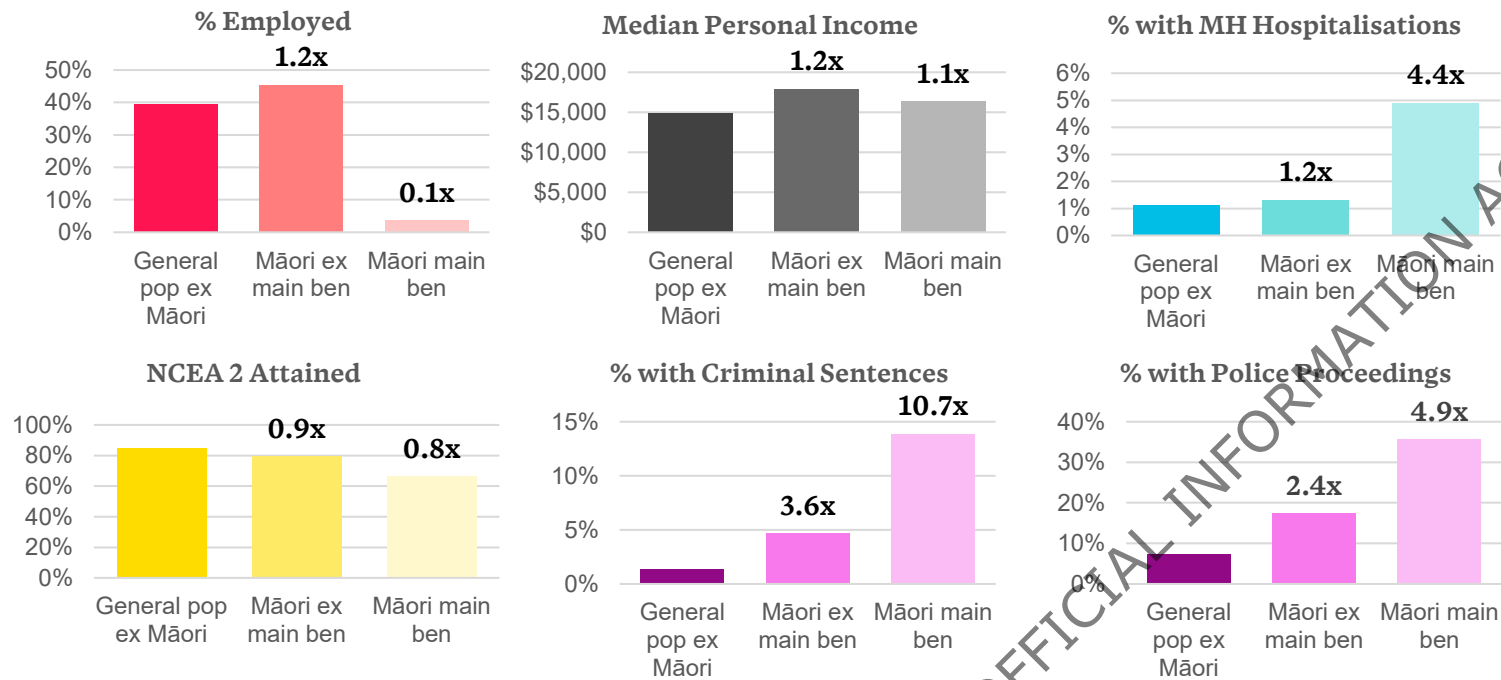


Criminal sentence in last 3 years



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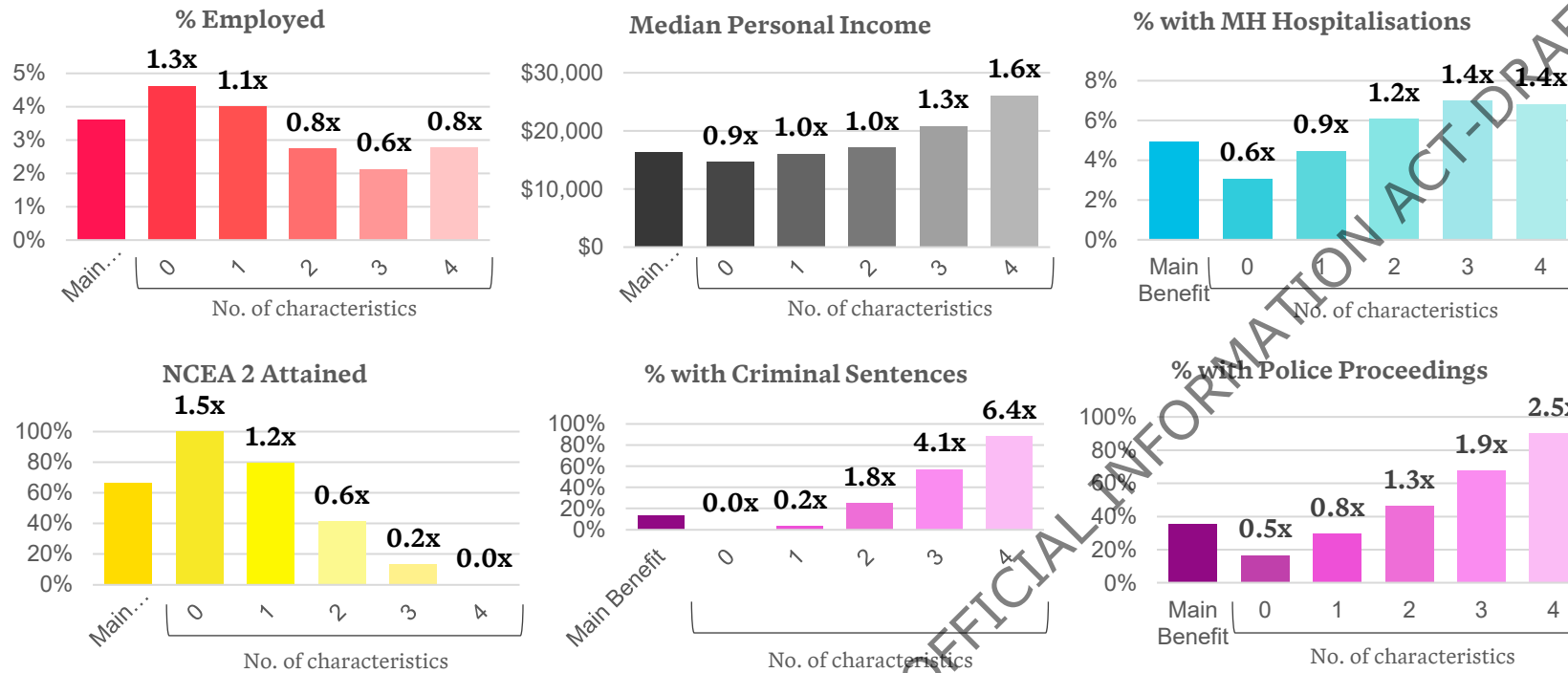
Wellbeing dashboard- Māori aged 16-24 on main benefit



Key results

- Young Māori not on a main benefit have a higher employment rate than the general population excluding Māori. We have not investigated the reasons behind this, though it is likely to at least partly reflect a higher level of engagement in education for non-Māori.
- Mental health-related hospitalisations are particularly high for Māori main benefit clients. 5% of this group is nearly 1,200, which is a concern given that this is an acute mental health-related measure.

Wellbeing dashboard- Māori aged 16-24 on main benefit



Key results

- 36% (or 8,500) of the group have had a police proceeding against them in the last three years. This is relatively high.

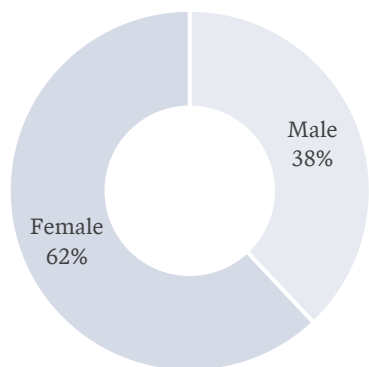
3. JS-WR clients aged 50-54 – About this population

Demographics

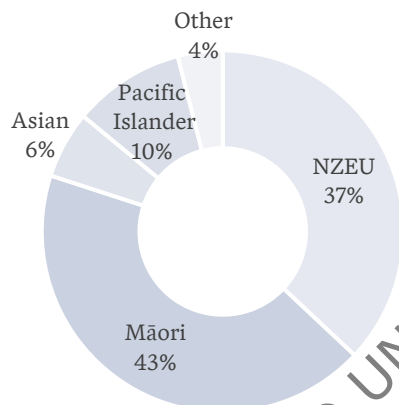
Number of people

6,669
0.2% of the adult population

Gender

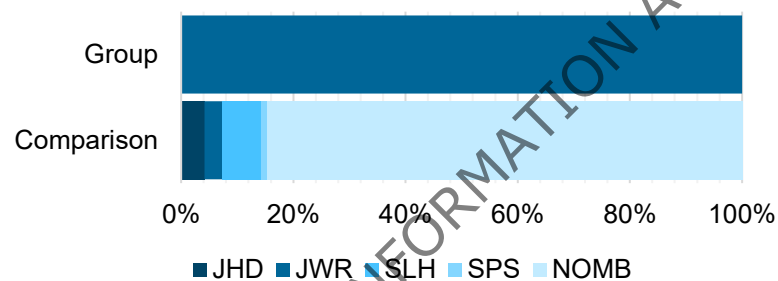


Ethnicity

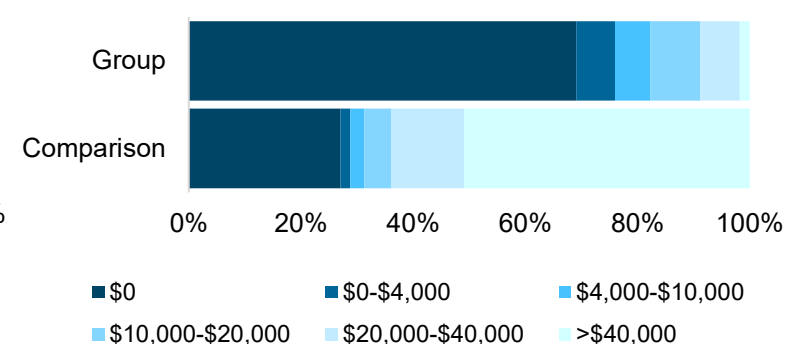


Outcomes

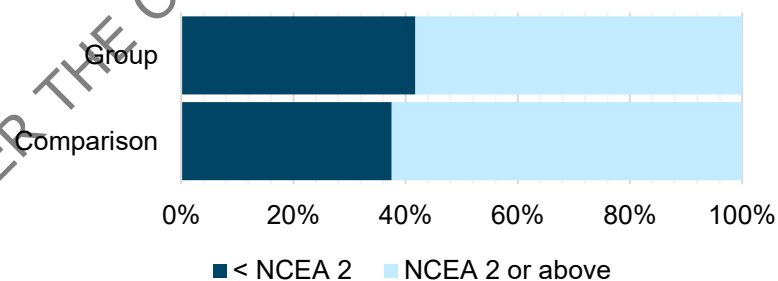
Benefit category



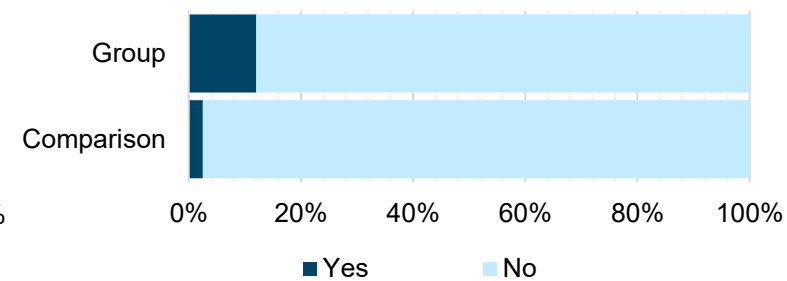
Earned income



Education status

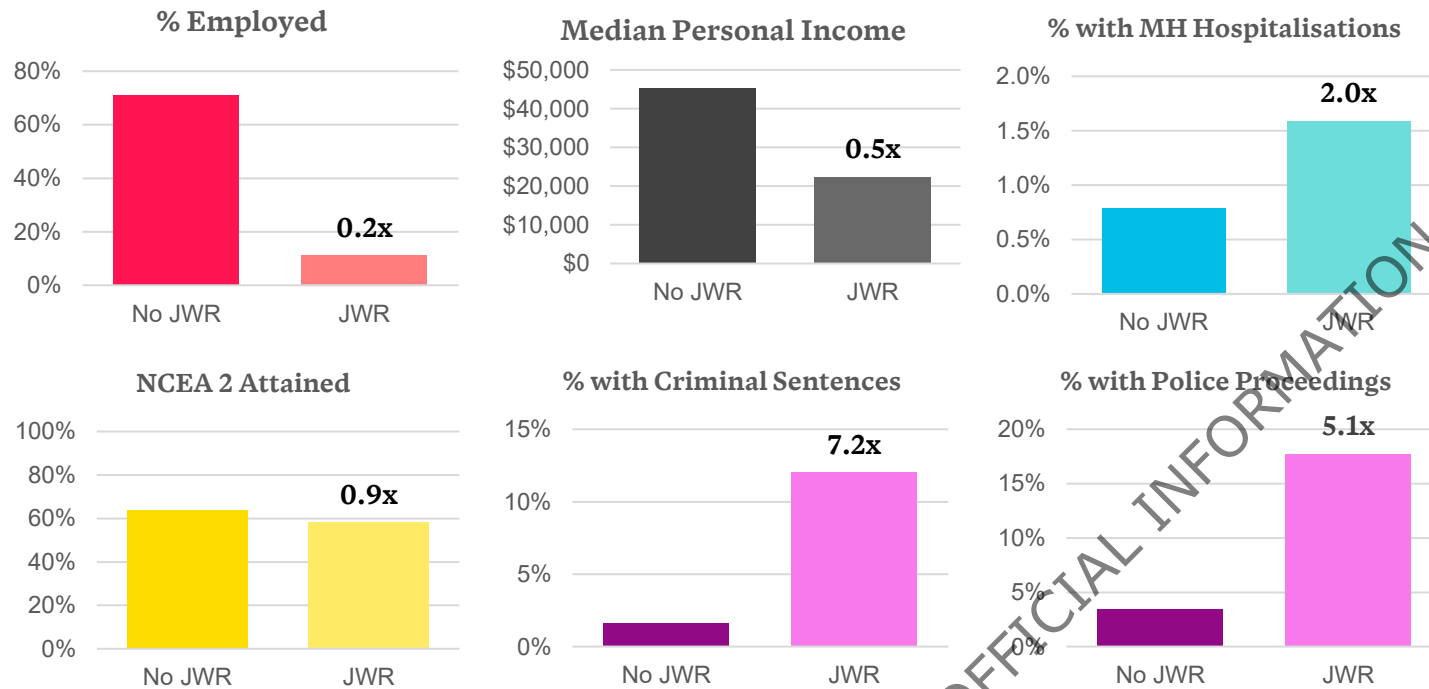


Criminal sentence in last 3 years



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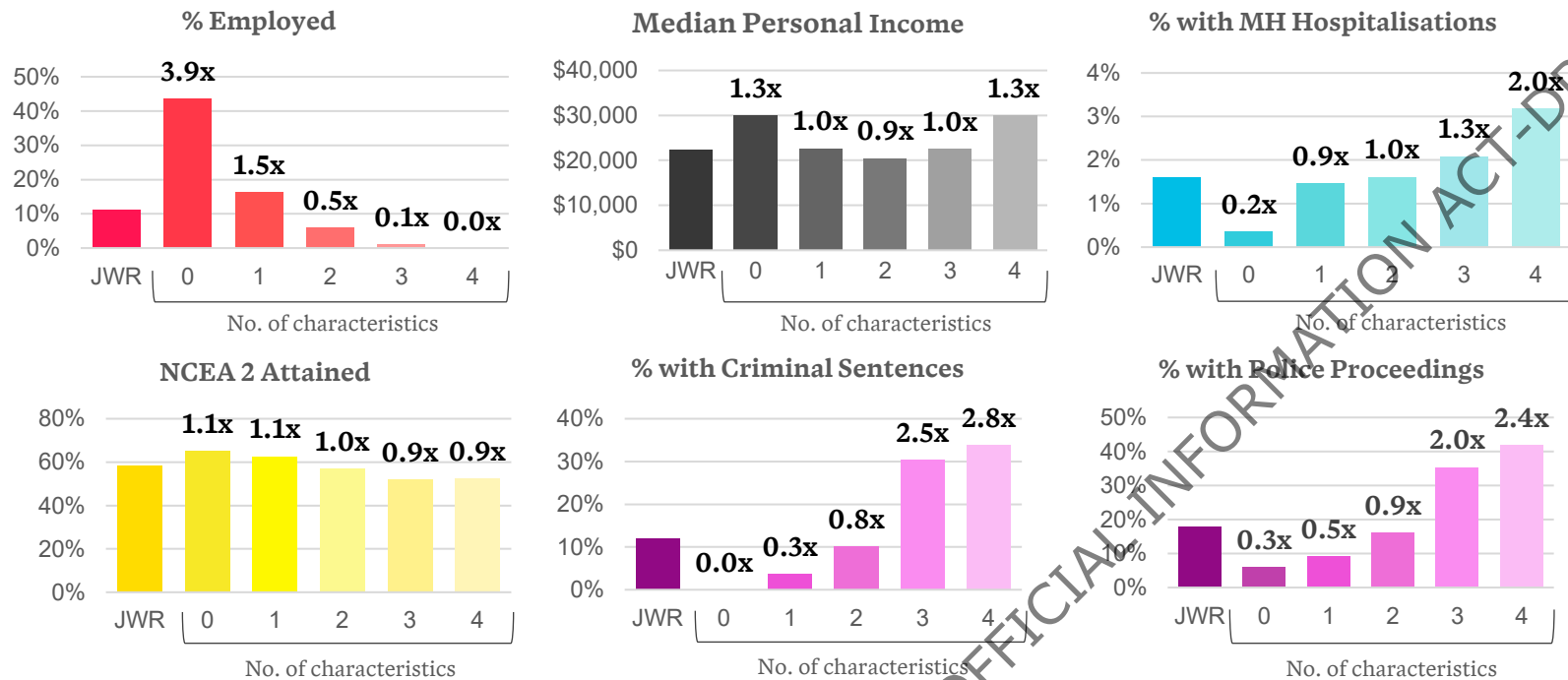
Wellbeing dashboard- JS-WR clients aged 50-54



Key results

- Median personal income is much lower for the group receiving JS-WR, highlighting the disparity in financial fortunes in this older age group. Many of these clients have extensive benefit history and their financial pathways have diverged significantly over time from their peers not on JS-WR (most of whom are not receiving a benefit).

Wellbeing dashboard- JS-WR clients aged 50-54 - Segmentation



Key results

- By definition everyone in the subgroup with 4 characteristics has a prior criminal conviction, but only a third of these people have had one in the last 3 years i.e. most of the convictions are at least 3 years ago and much older in many cases.
- It may be worthwhile considering whether historical convictions are acting as a barrier to employment for some older clients, and whether there are ways in which the barrier can be ameliorated.

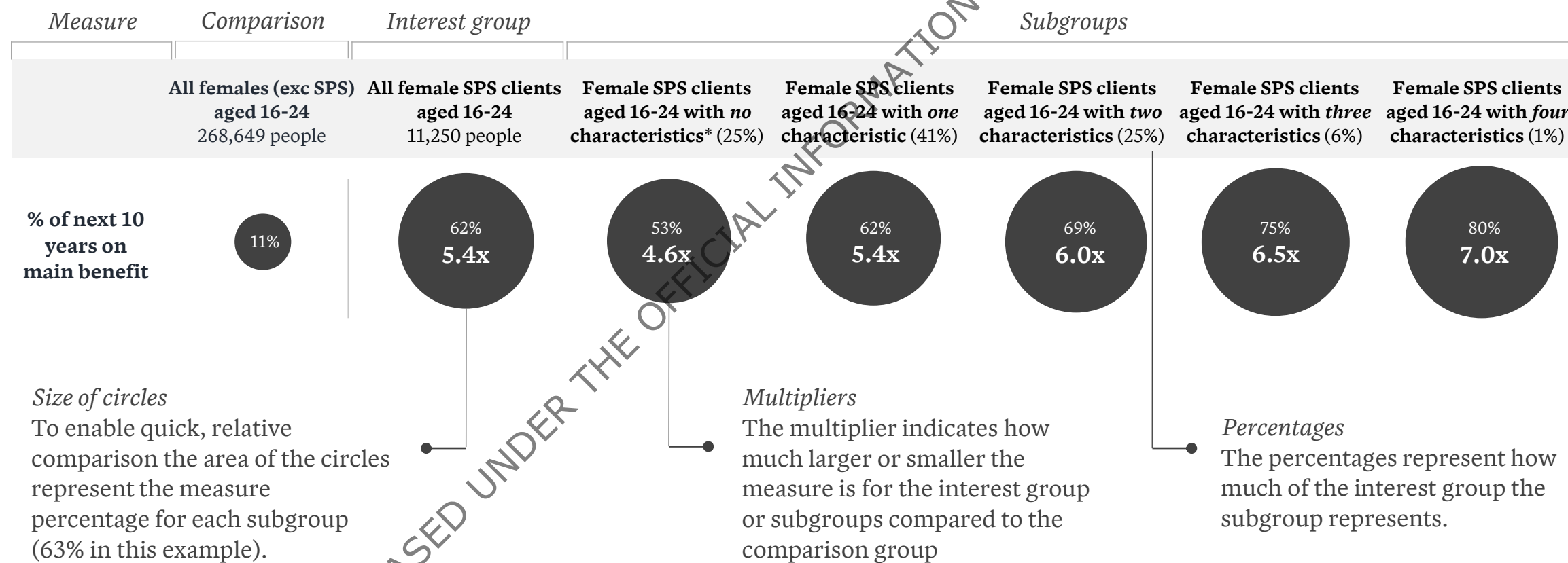
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6

Estimated wellbeing and
social outcomes

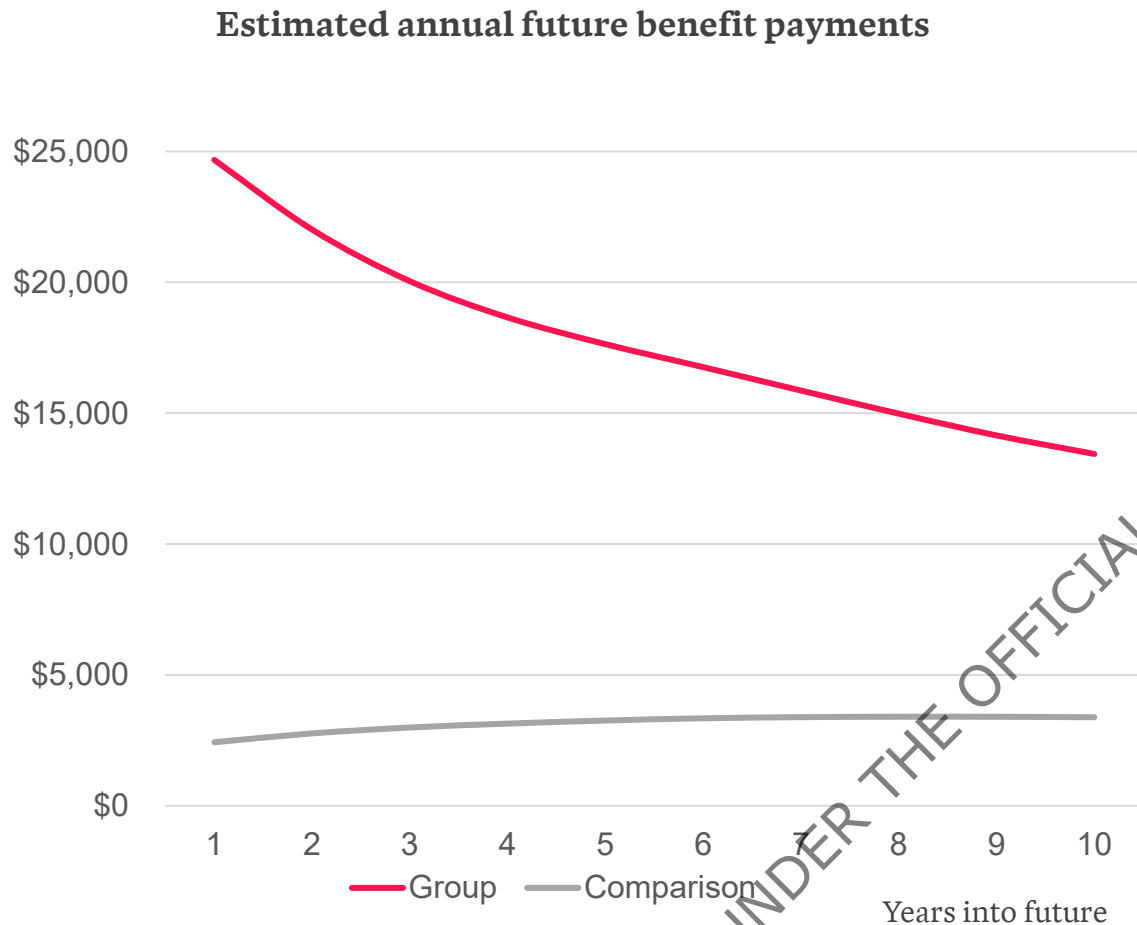
Estimated outcomes

In section 5 we showed how current wellbeing varies for a range of groups, using a range of wellbeing measures. In this section we show outcomes from the modelling to describe how these groups are estimated to fare over the next 10 years. The example below describes how the circle representations of the outcomes works. Note that for the 2019 modelling a larger range of outcomes will be modelled including health and education measure.

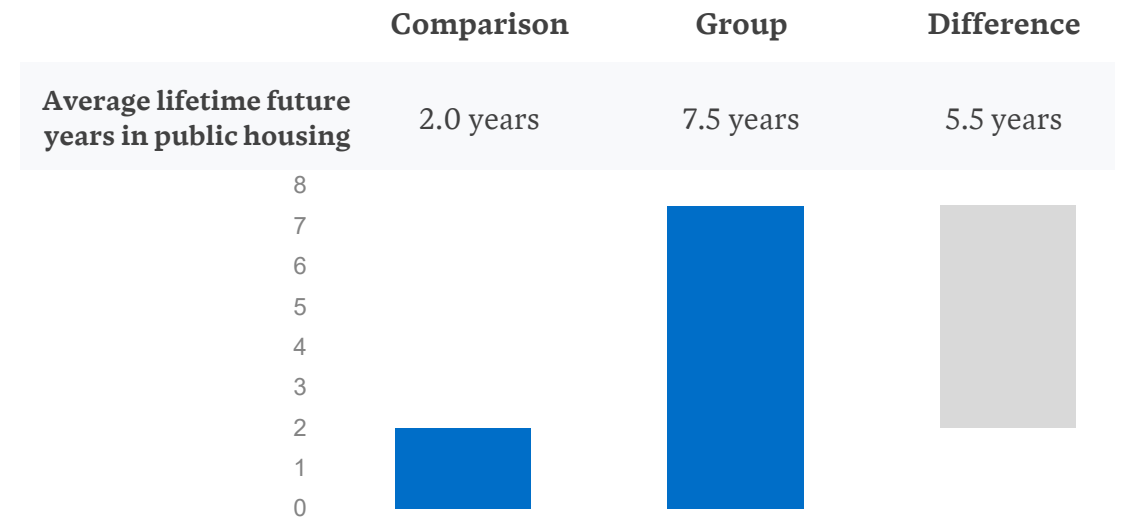
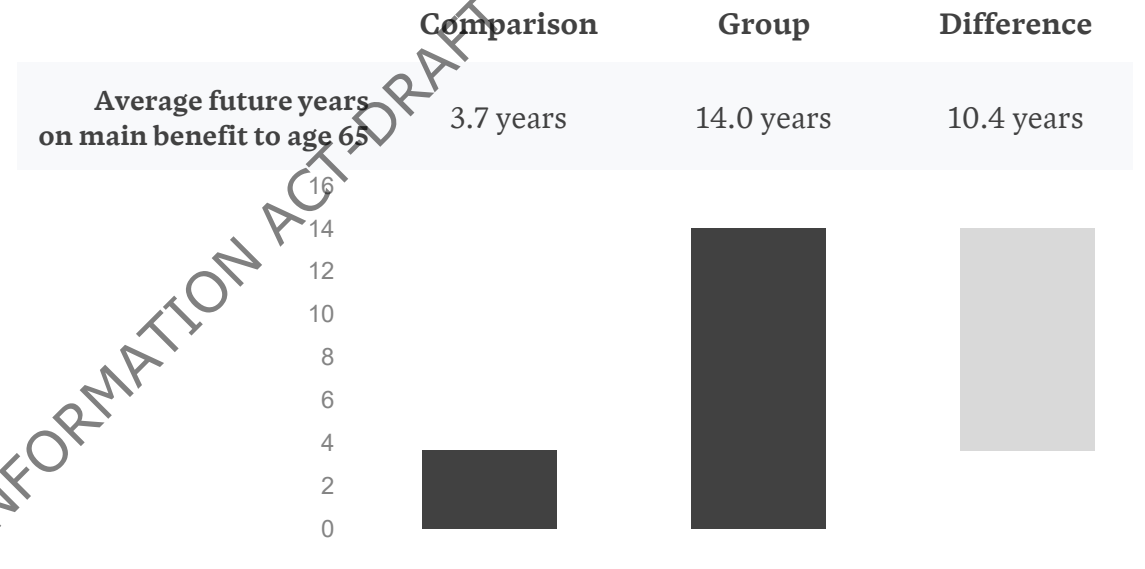


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1. Female SPS clients aged 16-24 – Estimated future service use

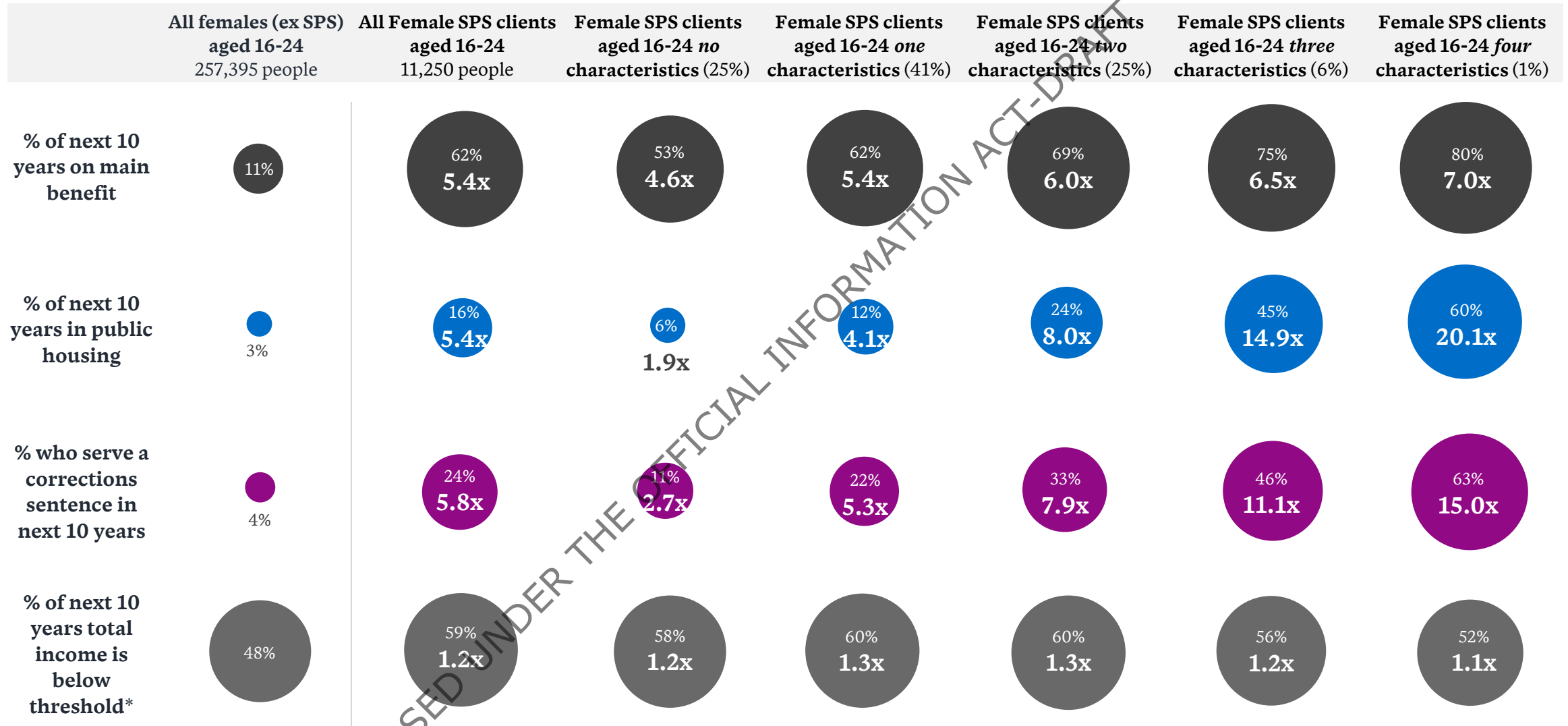


While the estimated annual payments decreases over the 10-year period it remains high - \$178k across all 10 years, compared to \$32k for the comparison group.



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1. Female SPS clients aged 16-24 – Estimated social outcomes



Characteristics are: in public housing, prior criminal conviction, educational level <NCEA 2 and CYF/OT history

* Measured as number of quarters in which a person is estimated to earn less than income threshold divided by 40. Income includes earned income, benefits, Working For Families tax credits and the effective boost to income from Income Related Rent Subsidy. Threshold based on 52 weeks at 40 hours per week at minimum wage (increased with CPI) - \$34,320 p.a. in 2018.

1. Female SPS clients aged 16-24

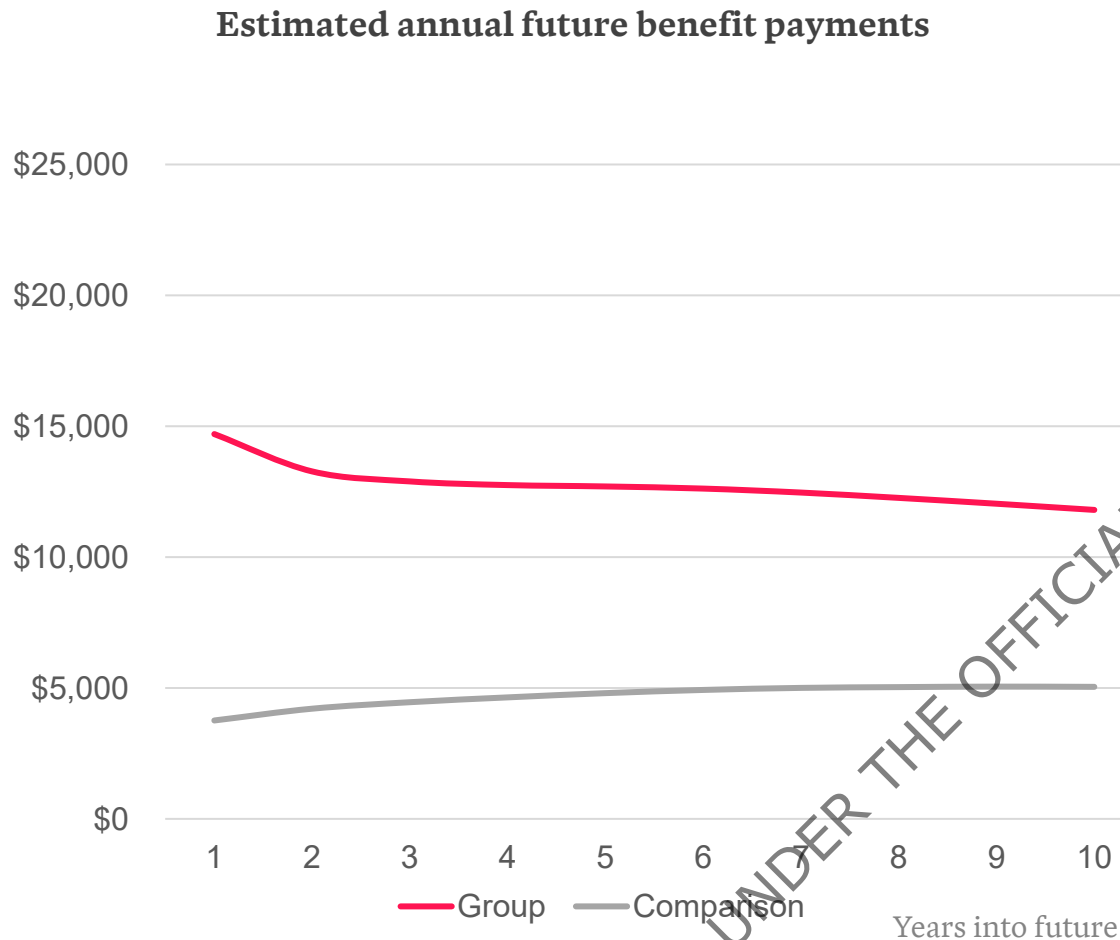
Key results

- While the segmented view presented earlier in this pack highlights variation of outcomes amongst the study population, it underplays the range. Here, we look at a relatively small cohort and break this down further according to how many defined characteristics a person has.
- The extent to which benefit receipt, public housing and serving of a corrections sentence over the next 10 years increases with the number of characteristics is significant. Compared to all females aged 16-24, the subgroups are estimated to spend between 1.9x and 20.1x more time in public housing.
- Similarly, about 50% of the population of interest with 3 or more of the characteristics are estimated to serve a corrections sentence in the next 10 years compared to 4% for the comparison population.

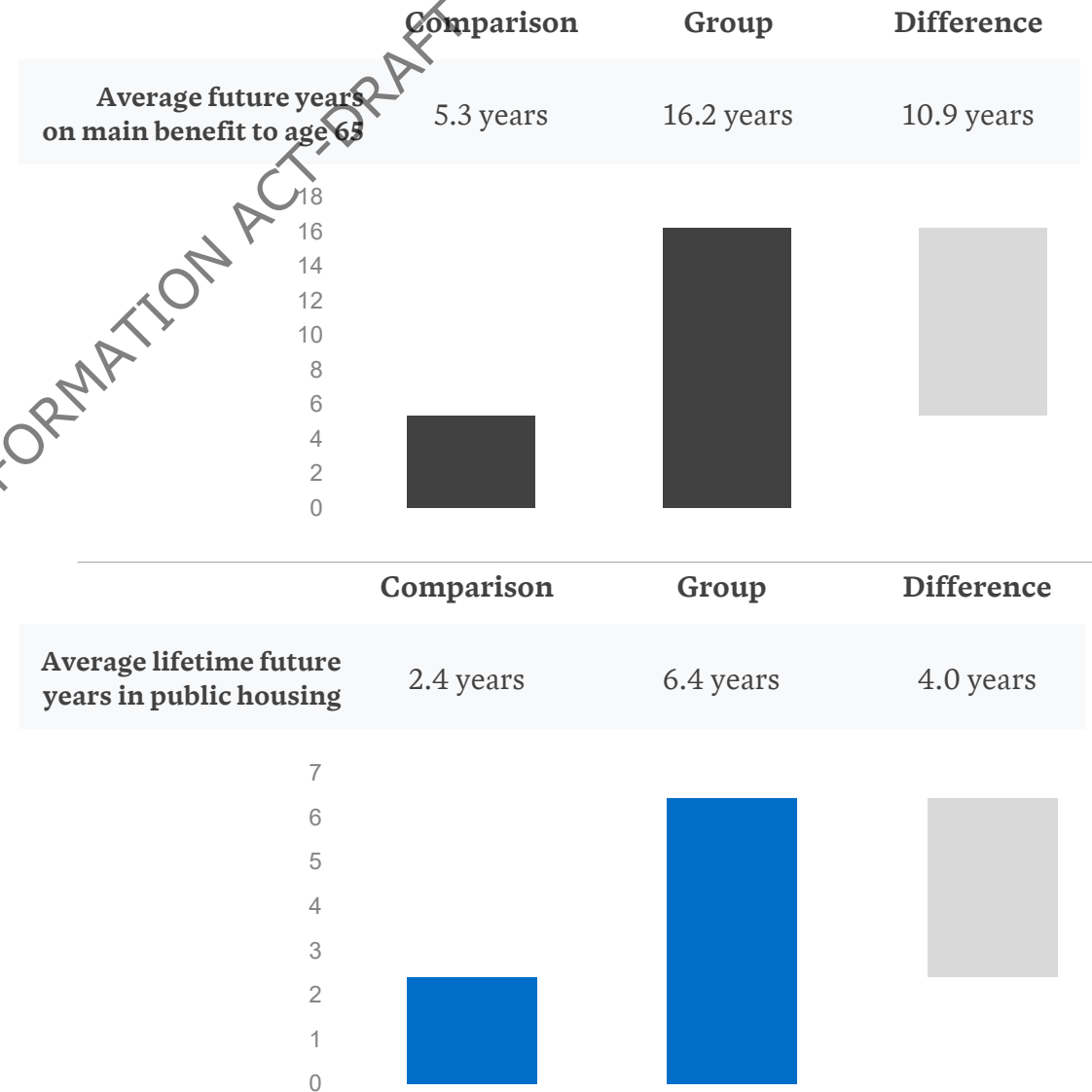
Implications

- Targeting of interventions is based on reasonably broad groups of clients. This representation of the modelling output shows that there can be as much variation within the population of interest as there is between the population of interest and the comparison group.
- It may be worthwhile considering defining groups for targeted intervention based on estimated outcomes (or the factors correlated with those estimated outcomes), rather than descriptions of their current state. For example, clients with a high likelihood of serving a corrections sentence in the future.

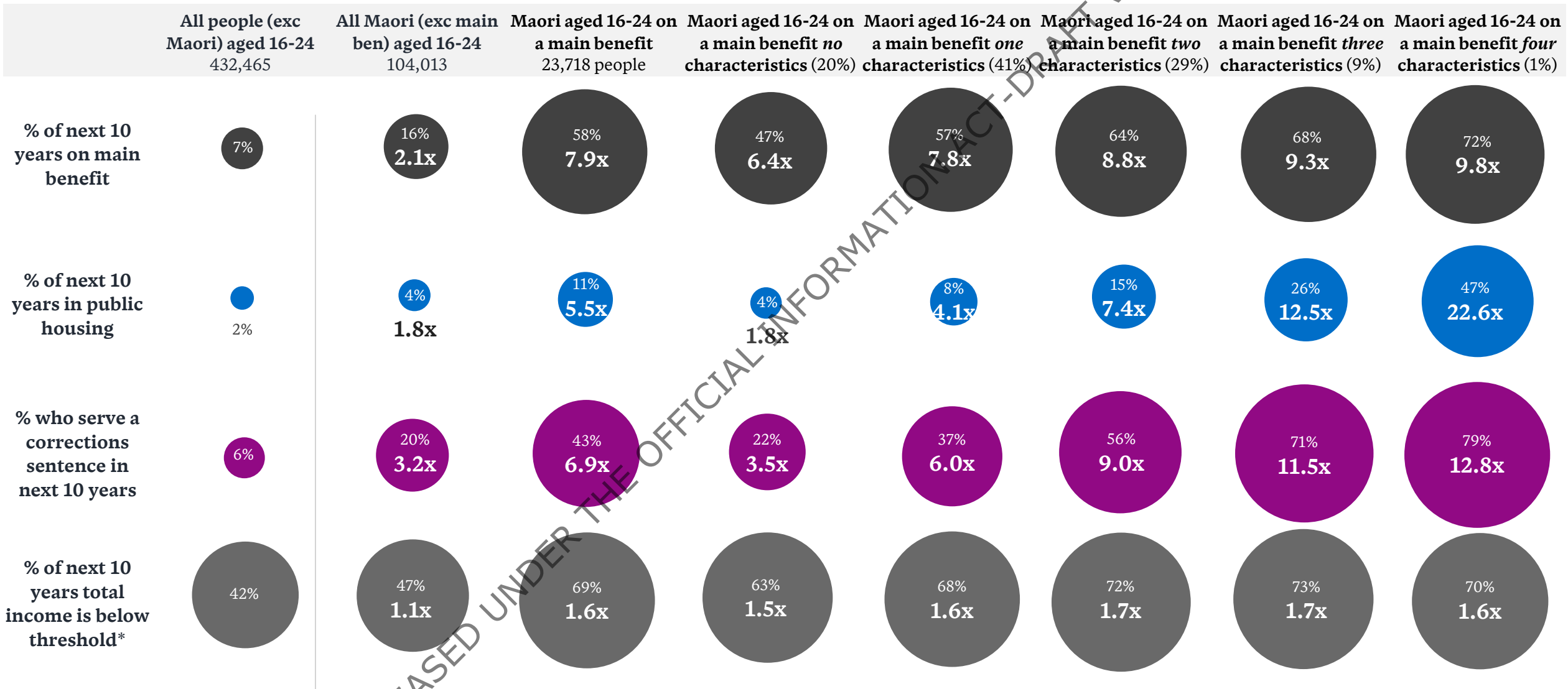
2. Māori aged 16-24 on main benefit – Estimated future service use



Estimated payments to the comparison group are relatively high, highlighting a broader spread of benefit receipt amongst young Māori



2. Māori aged 16-24 on main benefit– Estimated social outcomes



Characteristics are: in public housing, prior criminal sentence, educational level <NCEA 2, and CYF/OT history

* Measured as number of quarters in which a person is estimated to earn less than income threshold divided by 40. Income includes earned income, benefits, Working For Families tax credits and the effective boost to income from Income Related Rent Subsidy. Threshold based on 52 weeks at 40 hours per week at minimum wage (increased with CPI) - \$34,320 p.a. in 2018.

2. Māori aged 16-24 on main benefit

Key results

- 20% of the Māori aged 16-24 (exc. main benefit) group are estimated to serve a corrections sentence in the next 10 years. This is higher than the rate for the third population of interest (JS-WR clients aged 50-55 – 18%) and only marginally lower than the first population of interest (Female SPS clients aged 16-24 – 24%).
- This rate for the population of interest increases to over 70% for the sub-group with three or four of the characteristics.
- The average estimated proportion of time over the next 10 years on main benefit is also high for the Māori aged 16-24 (exc. main benefit) group at 16%.
- Note that for all three populations of interest, the income measure does not increase as much as the other measures as you move from left to right in the previous slide.

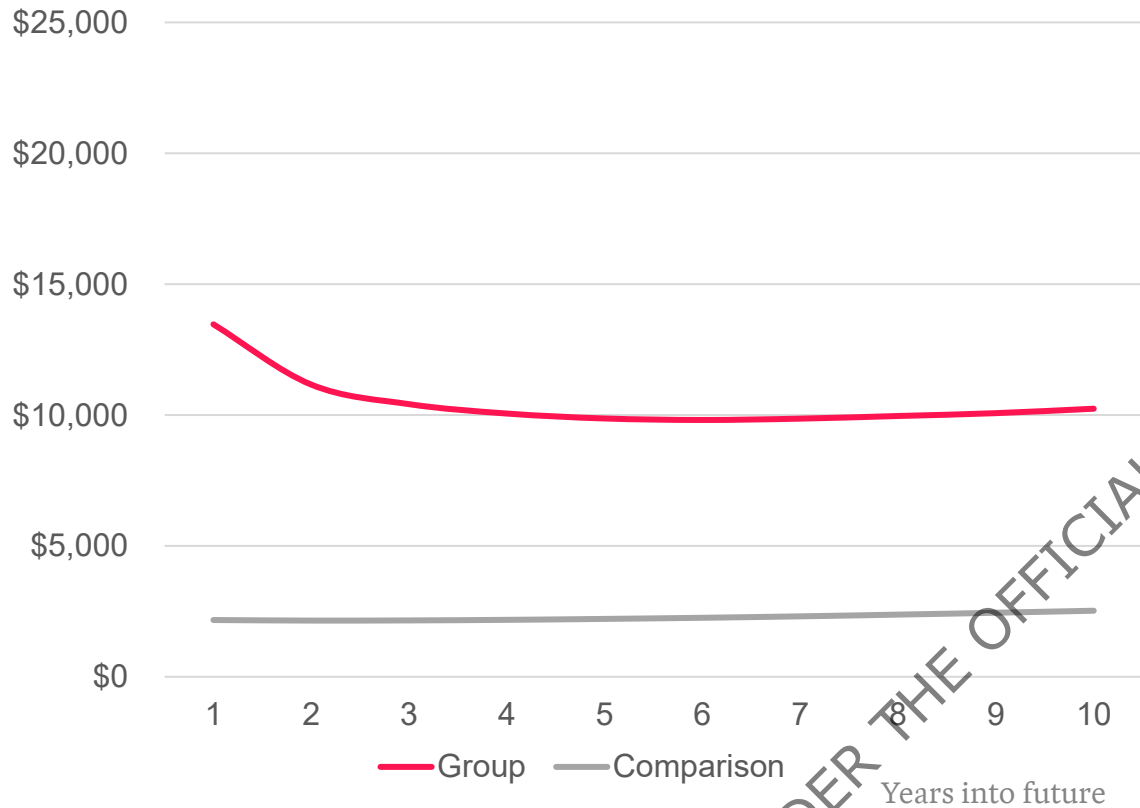
Implications

- Young Māori are estimated to receive main benefits and serve corrections sentences at a far greater rate than other ethnicities. Trying to improve outcomes for the specific population of young Māori on main benefit may have limited success without considering this broader point.

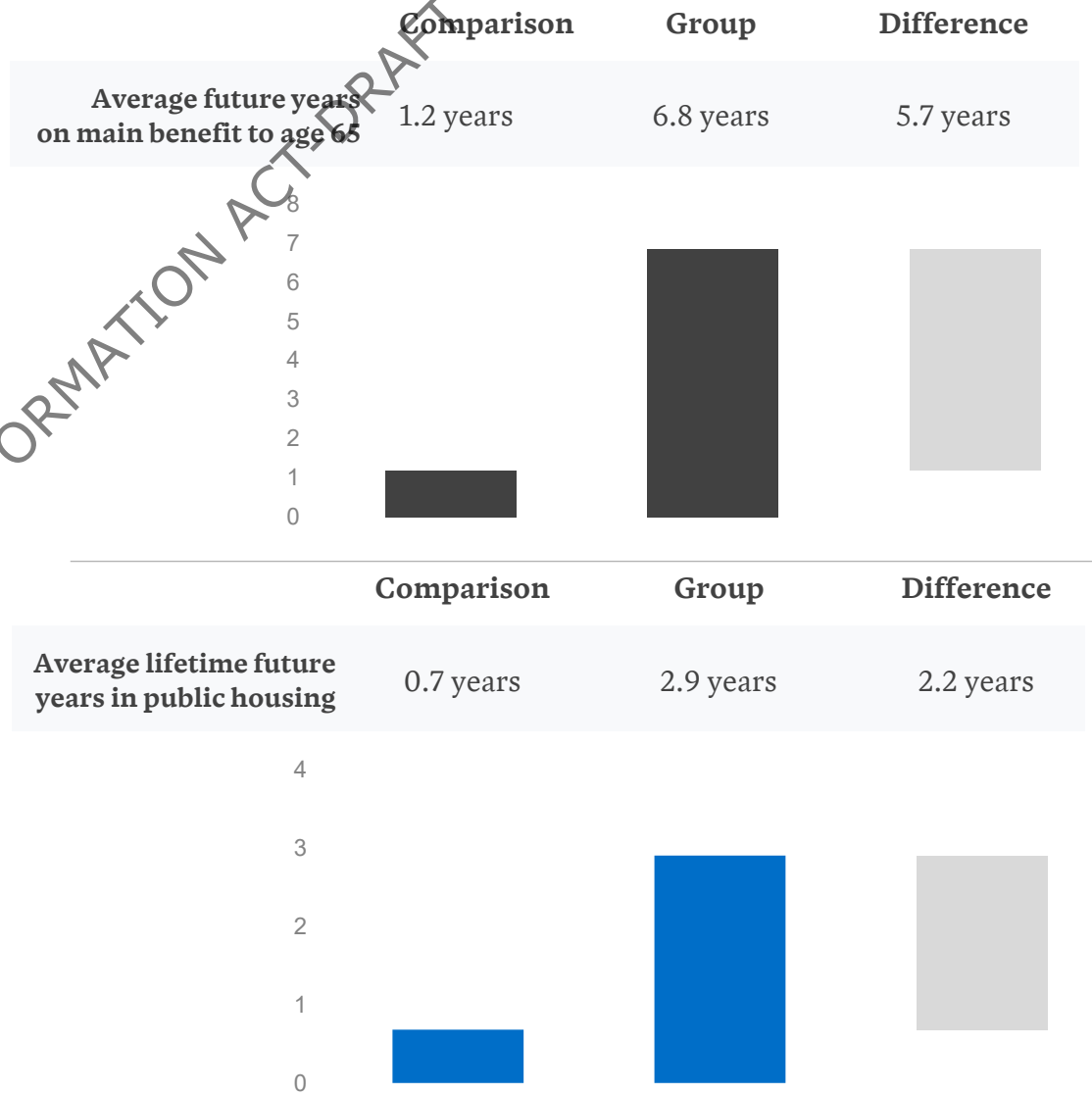
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3. JS-WR clients aged 50-54 – Estimated future service use

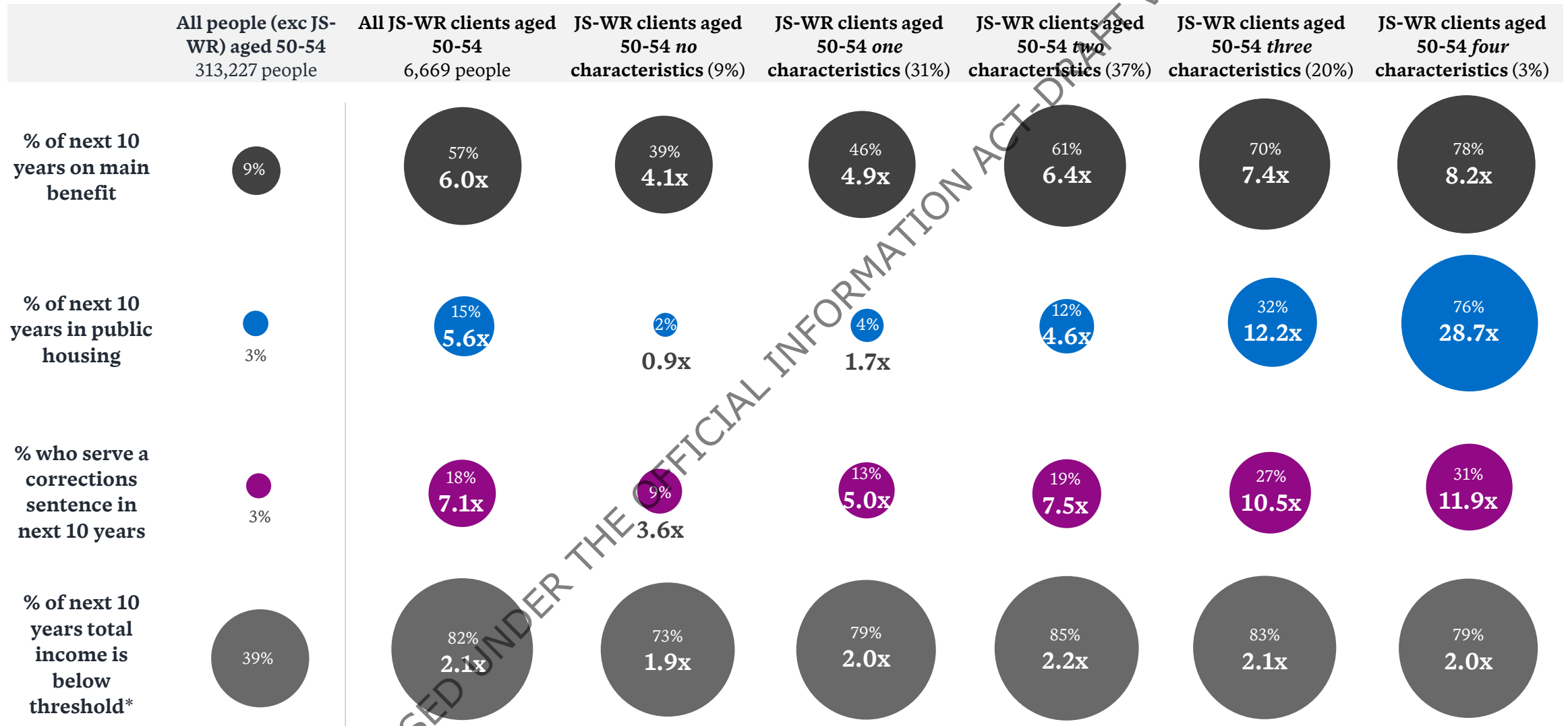
Estimated annual future benefit payments



Note the flattening of future benefit payment and slight increase towards the end of the 10-year estimation. For the other population groups of interest the trend was all downwards. This is likely to reflect increased difficulty to find suitable work as people near retirement.



3. JS-WR clients aged 50-54 – Estimated social outcomes



Characteristics are in public housing, prior criminal conviction, zero earned income in Sep18 quarter and more than 50% of last 5 years on main benefit.

* Measured as number of quarters in which a person is estimated to earn less than income threshold divided by 40. Income includes earned income, benefits, Working For Families tax credits and the effective boost to income from Income Related Rent Subsidy. Threshold based on 52 weeks at 40 hours per week at minimum wage (increased with CPI) - \$34,320 p.a. in 2018.

3. JS-WR clients aged 50-54

Key results

- Compared to the other two populations of interest, the comparison group (all people aged 50-54) have relatively low estimated rates of benefit receipt, public housing use and serving corrections sentences over the next 10 years e.g. 3% for public housing use.
- However, disparity in respect of these measures between the population of interest and the comparison group is high. Estimated benefit receipt and public use for the population of interest are at similar levels to the other two populations of interest.

Implications

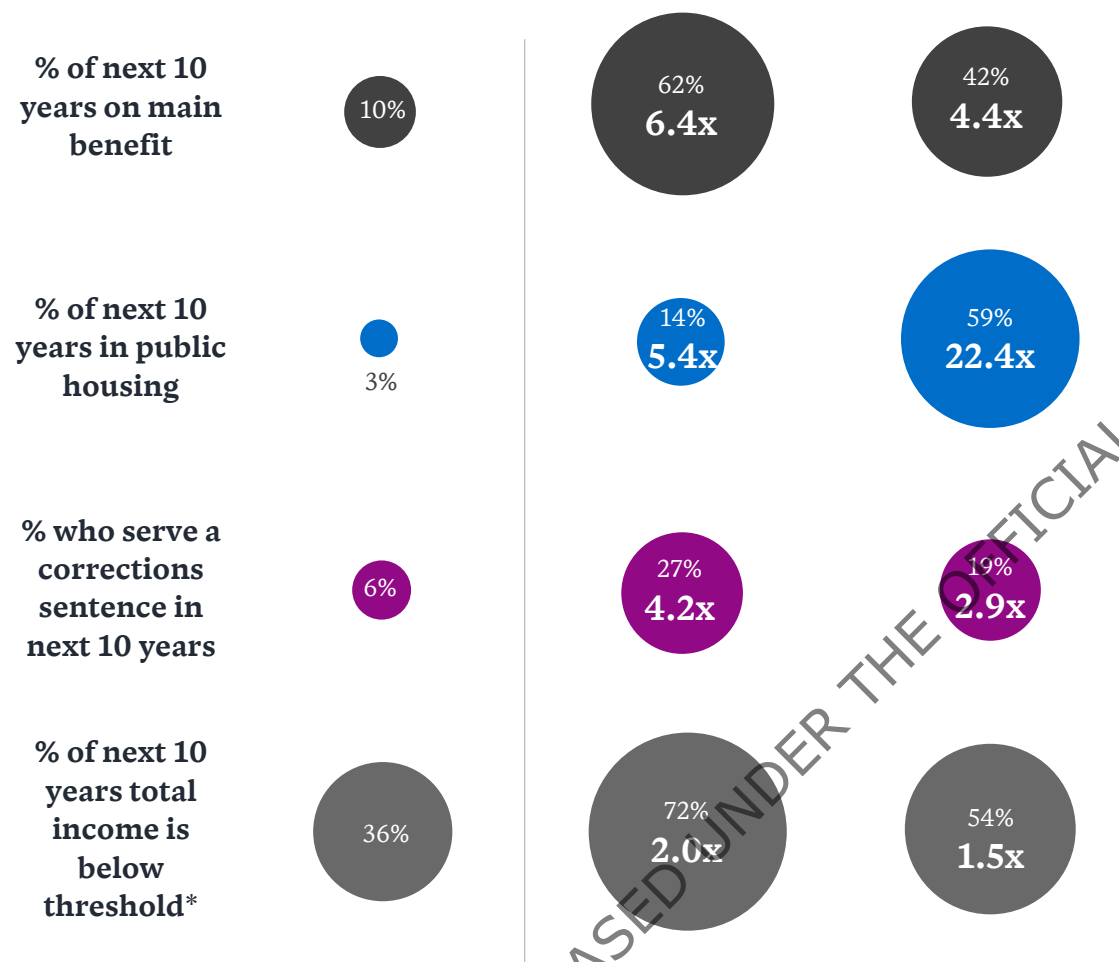
- Arguably older work-able clients are strong candidates for targeted intervention because:
 - They may need retraining support and face other age-related barriers to employment.

They have limited remaining time to accumulate wealth in support of their retirement. While over 65-year-olds can (and many do) live off NZ Super, it does not afford a high level of material wellbeing on its own.

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4. Main population comparisons – aged 16-54 – Estimated outcomes

	General population aged 16-54 2,512,944 people	Main benefit clients 16-54 241,020 people	Public housing aged 16-54 82,281 people
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Key results

- People in public housing are estimated to spend on average 59% of the next 10 years in public housing, over 20 times the average for the general population.

Implications

- Long tenure in public housing should not be thought of as a negative, so long as it is providing people/families/whānau with good quality housing that they wouldn't otherwise be able to access and a stable platform to support other aspects of wellbeing.
- However, it can create a disparity where the needs of those on the register are greater than some already in housing.
- Fiscally, public housing appears more generous than the Accommodation Supplement. It may be worthwhile considering options that reduce this difference for people capable of exiting public housing (e.g. a higher level of accommodation supplement). This might help enable people on the register to get into public housing quicker.

* Measured as number of quarters in which a person is estimated to earn less than income threshold divided by 40. Income includes earned income, benefits, Working For Families tax credits and the effective boost to income from Income Related Rent Subsidy. Threshold based on 52 weeks at 40 hours per week at minimum wage (increased with CPI) - \$34,320 p.a. in 2018.

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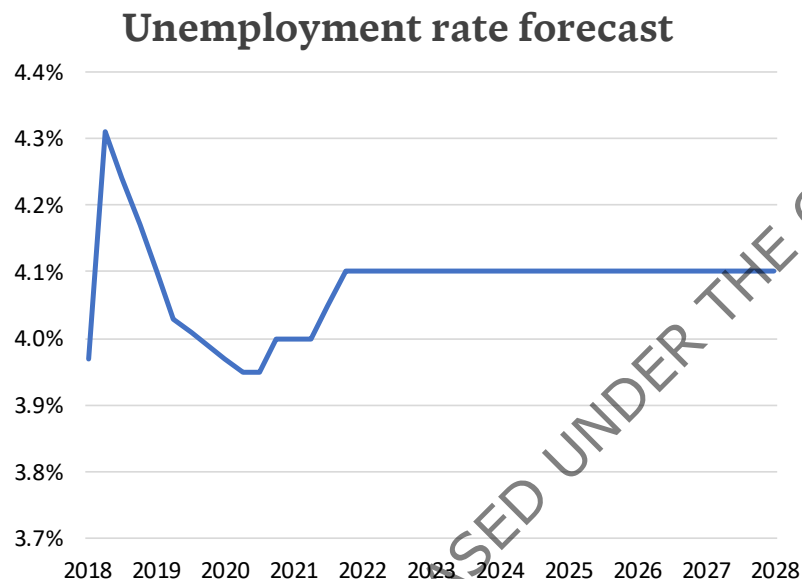


Expected system change

Expected population change

In the following slides we show how the distributions of the benefit system and public housing populations are estimated to change over the next 10 years. The distributions of these populations (particularly the benefit system) are dependent on labour market conditions. For example, in an economic downturn, the proportion of main benefit clients on work-obligated benefits tends to increase. For the same reasons the proportion of males tends to increase as the number of SPS clients is less sensitive to economic conditions than JS-WR.

Hence, the estimated benefit system population change shown here is partly a product of the unemployment rate forecast underpinning the estimation. To some extent, the estimated changes in both systems are also due to estimated changes in the general NZ population.



Key population change themes

Higher proportion of youth and older people in both systems

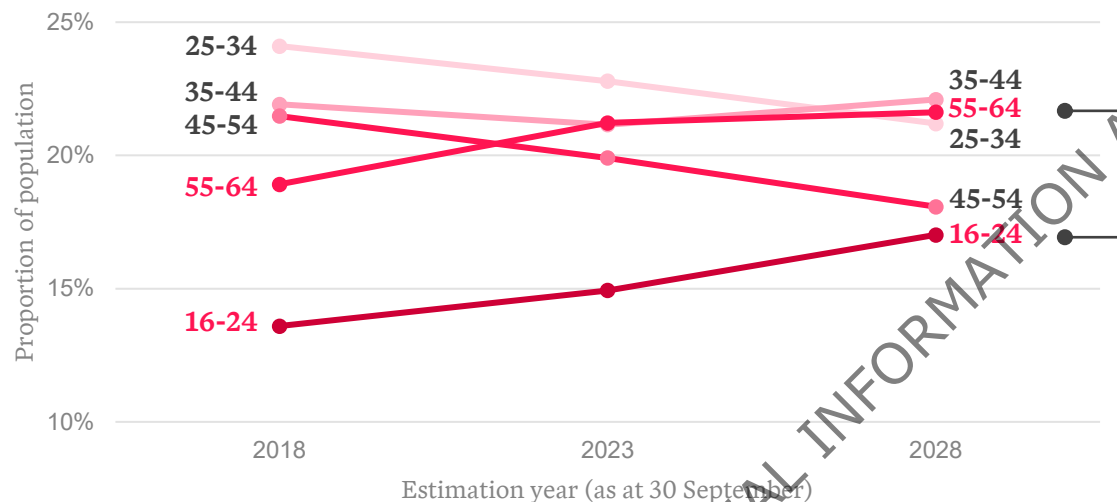
A higher proportion of Māori in both systems

A relatively stable mix of population by benefit category

A significant increase in average IRRS level for public housing tenants

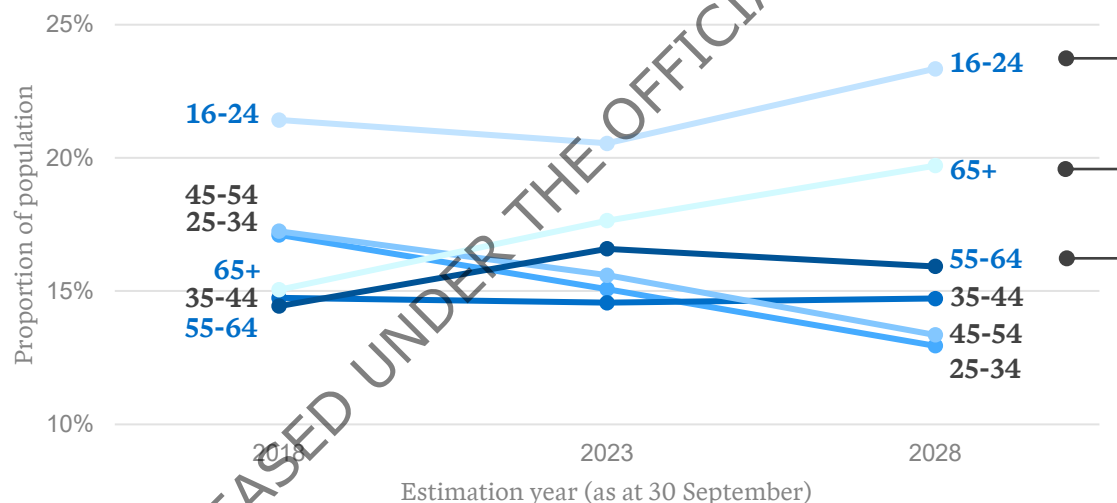
Expected population change – Age

Benefit system population



A higher proportion of 16-25 year-olds and 55+ year-olds in both systems.

Public housing population



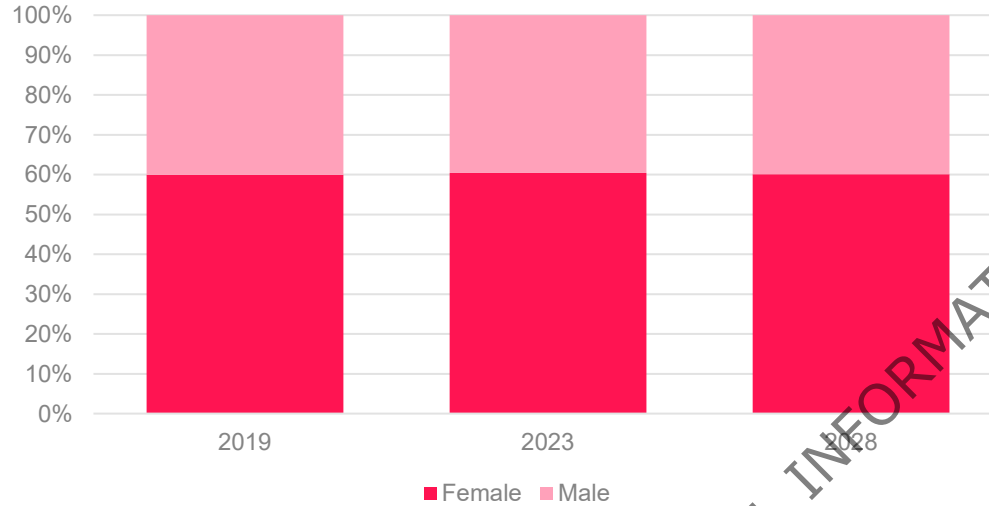
The increase in pensioners in public housing is noteworthy – estimated to reach nearly 20% by 2028. This is consistent with a gradual ‘slowing’ of the public housing system, which has been evident for several years. It also reflects an estimated increase in the proportion of the population that is over 65.

Note that current under-16-year-olds are included in the model in the quarter they turn 16.

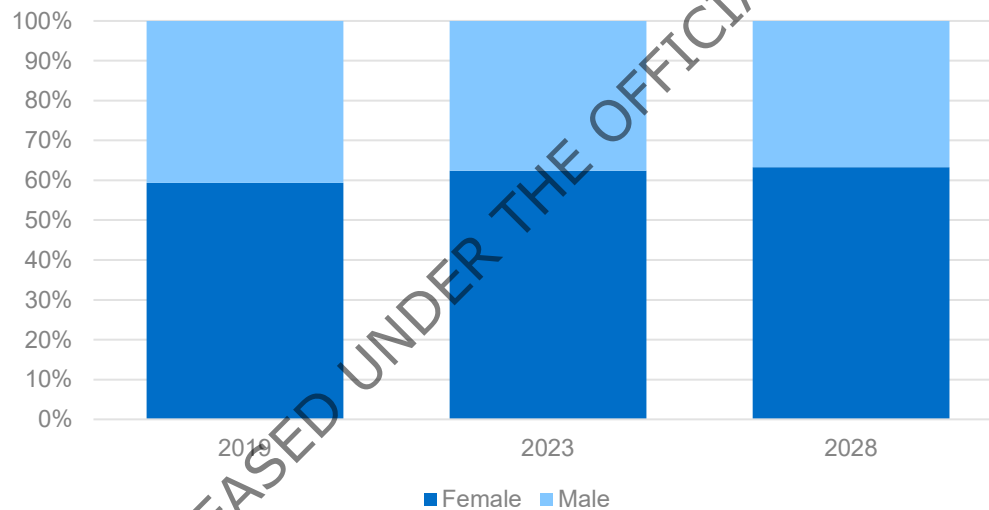
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Expected population change – Gender

Benefit system population



Public housing population

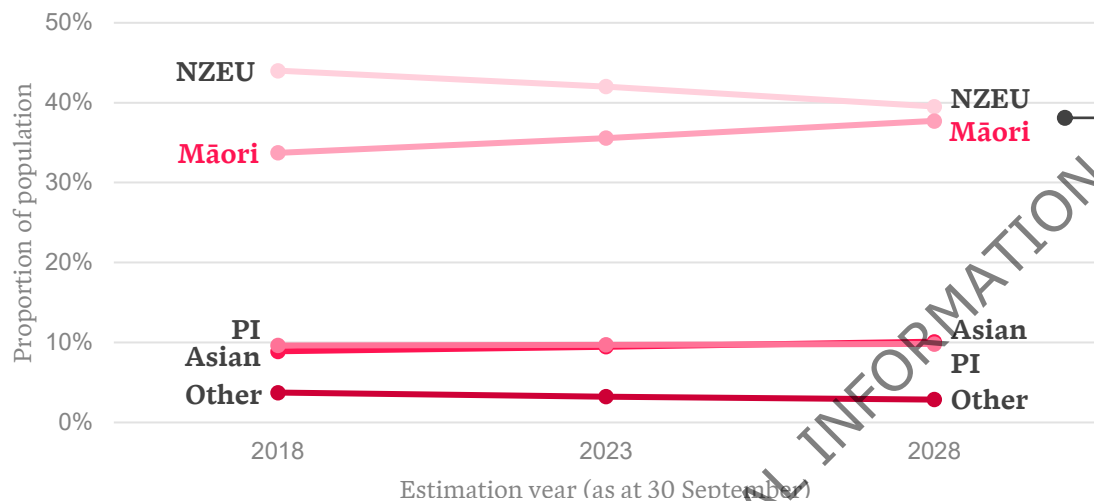


We estimate a moderate increase in the proportion of females in public housing. This partly reflects a higher proportion of females on the register as at 30 September 2018 compared to in housing (62.4% vs. 59.4%).

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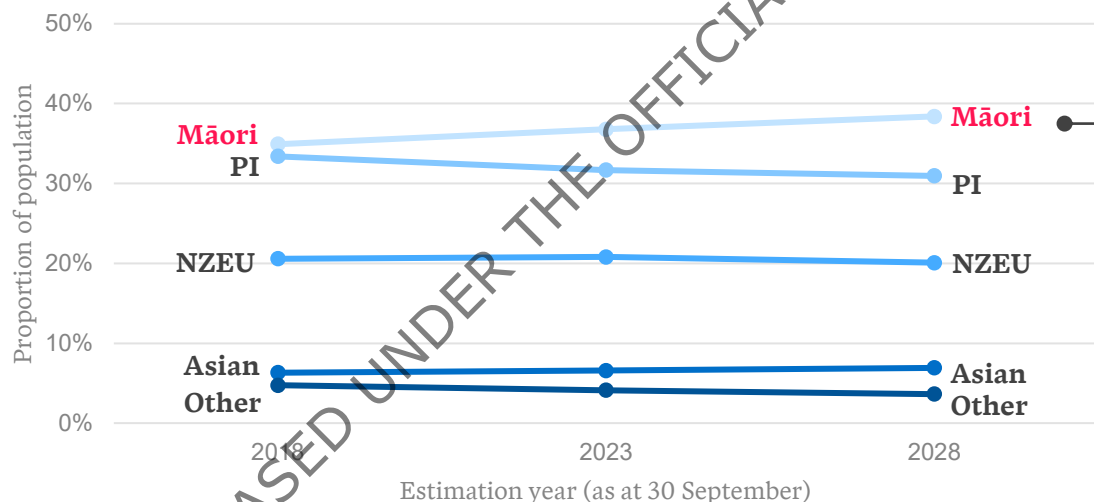
Expected population change – Prioritised ethnic group

Benefit system population



The proportion of people in both systems that are Māori is estimated to increase moderately. This largely reflects an estimated increase in the proportion of the general population that is Māori. The extent to which Māori is over-represented in the benefit system is estimated to remain stable at about 2.3x.

Public housing population



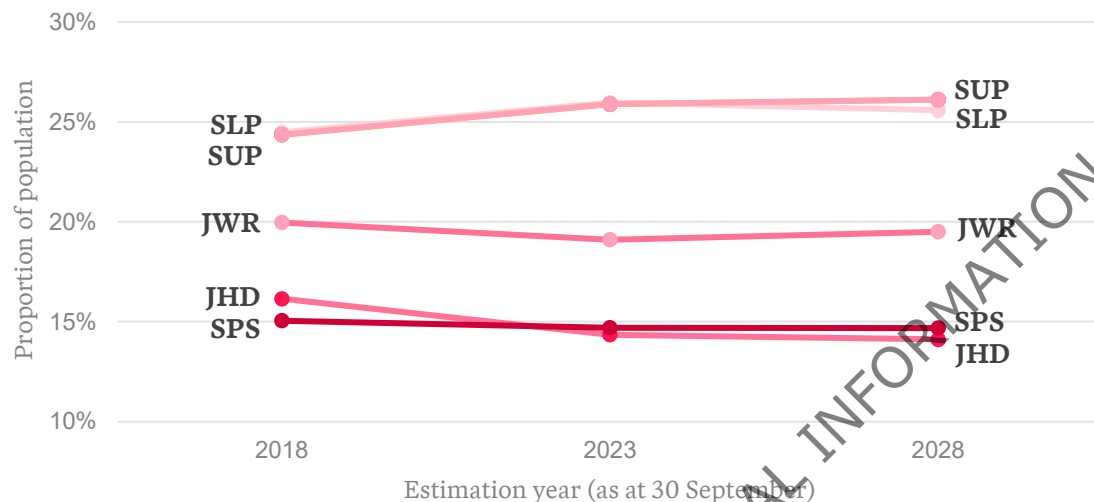
Note the high proportion of Pacific Islanders in public housing due to lower housing affordability in Auckland where most reside.

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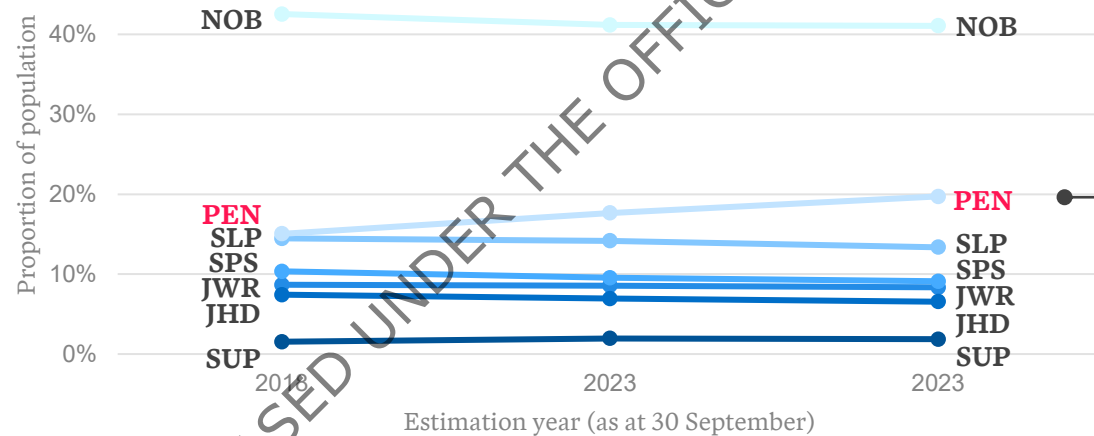
Expected population change – Benefit mix

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Benefit system population



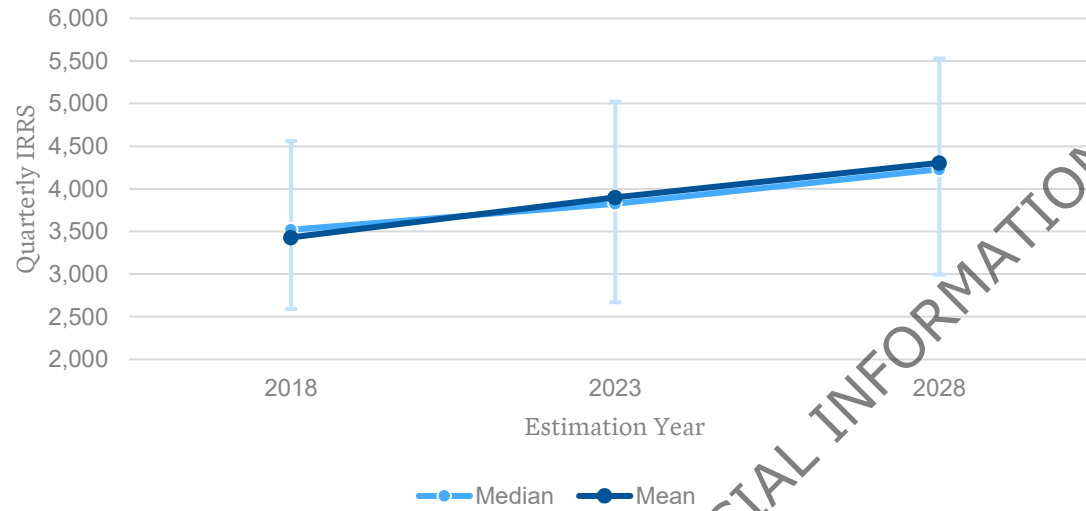
Public housing population



Aside from the already mentioned increase in pensioners in public housing, there are relatively small estimated changes in the benefit category mix

Expected population change – IRRS

Public housing population



IRRS levels have been growing for many years and are estimated to continue growing in the future. The numbers in the chart are in today's terms i.e. adjusted for CPI. The vertical lines represent the estimated interquartile range.

IRRS levels are sensitive to changes in rent relative to changes income. In the estimation, rents are estimated to increase by more than average weekly earnings until 2028 and more than CPI indefinitely.

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8

Future developments

Future Developments

The model will be developed in 2019, with a number of key developments planned as described in the table below.

New outcomes modelled			
Domain	Outcome	Model output	Value proposition
Health	Ambulatory sensitive hospitalisations	Number of events and number of hospital days	Key Health domain wellbeing indicators
Health	Mental health and substance abuse related hospitalisations	Number of events and number of hospital days	Key Health domain wellbeing indicators
Health	Broad mental health flag	Flag denoting mental illness based on SIA mental health flag definition	Broader coverage than the hospitalisation indicator. Mental illness common amongst people in all benefit categories and public housing.
Housing	Emergency housing	Incidence of grants and payment amounts to be modelled	Key part of the housing continuum (note there is not sufficient data to model transitional housing)
Safety & Security	Police proceedings (as a proxy for offending)	Number of offences and broad offence categorisation	Key Safety & Security domain wellbeing indicator
Knowledge & Skills	Tertiary education enrolment	Currently modelled to age 25. To be extended to all ages	Key Knowledge & Skills domain wellbeing indicator

Future Developments

New outcomes modelled			
Domain	Outcome	Model output	Value proposition
Knowledge & Skills	Tertiary education completion	Completion of tertiary course and NQF level	Key Knowledge & Skills domain wellbeing indicators
Health	Mortality	Currently only modelled for over 65's. Extend to all ages	Not a Health domain wellbeing indicator, but will allow us to highlight disparities in mortality
Modelling and reporting construct			
What	Description	Value proposition	
Exits from benefit system	Estimated exits from the benefit system to be categorised into employment-related exits, education-related exits, death and other exits	Better understanding of post benefit system pathways	
Income	Currently modelled as an overlay with estimated income not informing the prediction of other outputs. Development will integrate income progression so that estimated income informs estimation of other outputs	Snapshot modelling of outputs like employment exits has shown that income is highly predictive. Will strengthen the model considerably	

Future developments

Modelling and reporting construct

What	Description	Value proposition
% of quarter on benefit	The model will estimate the proportion of any future quarter on benefit (currently just estimates the incidence of benefit receipt in a quarter)	Will give a more accurate reflection of future years on benefit
Oranga Tamariki variables	Alignment of definitions of Oranga Tamariki (OT) related outcomes modelled to those used in the OT modelling	Consistency with OT modelling
Household view	A proxy for 'household' as at the modelling estimation date (30 June 2019) will be created using a hierarchy of data sources	Will allow us to report modelling results based on household dynamics as at the modelling estimation date

The model will continue to be developed beyond 2019.

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Appendix A – Wellbeing framework

Wellbeing framework

	Jobs & Earnings	Income & Consumption	Housing	Health	Education & Skills	Safety & Security
<i>Description</i>	Everybody has access to meaningful employment	Households have the economic resources to afford the necessities of life	All New Zealanders have access to affordable, warm and dry housing	People have the capacity to stay well and recover well	Everybody has the education and skills needed to participate in society	New Zealanders feel safe and live free from victimisation and abuse
<i>Population Indicators</i>	<ul style="list-style-type: none"> ▪ Participation and employment rates ▪ Job satisfaction 	<ul style="list-style-type: none"> ▪ Household income ▪ Income inequality ▪ Material wellbeing index 	<ul style="list-style-type: none"> ▪ Housing affordability ▪ Rooms per person ▪ Housing quality ▪ Stability of housing ▪ School enrolment & changes 	<ul style="list-style-type: none"> ▪ Perceived health ▪ Mental health-related hospital admissions ▪ Diabetes prevalence ▪ Preventable hospitalisations* ▪ Maternity registrations 	<ul style="list-style-type: none"> ▪ Educational attainment at school ▪ Post-school enrolment ▪ Post-school completion 	<ul style="list-style-type: none"> ▪ Crime rates (violent assault, property, domestic violence) ▪ Child protection reports and interventions ▪ Perceived safety ▪ Victimization ▪ Offending ▪ Criminal convictions
<i>Subpopulation indicators</i>	<ul style="list-style-type: none"> ▪ Sustained employment exits for job seekers ▪ Effectiveness of certain work programs ▪ Employment rates for unemployed tenants 	<ul style="list-style-type: none"> ▪ Income following exit from welfare and/or housing ▪ Household income adequacy for subgroups on benefits or in housing 	<ul style="list-style-type: none"> ▪ Overcrowding and underuse ▪ Unmet demand for public housing (known/unknown) ▪ Time to house on register 	<ul style="list-style-type: none"> ▪ Employment outcomes for those with partial capacity to work ▪ Employment outcomes for those with mental illness 	<ul style="list-style-type: none"> ▪ Education-related benefit exits ▪ Improvement in jobseeker skills ▪ Educational achievement for children of clients ▪ Outcomes post-study support 	<ul style="list-style-type: none"> ▪ Employment & housing outcomes for those with criminal history

In bold = Measures wholly or partially covering the indicator will be estimated in the 2019 model

* To be replaced with an alternative indicator

Wellbeing framework

	Cultural identity	Social connections	Subjective wellbeing	Time use	Civil, engagement and governance	Environment
<i>Description</i>	People feel accepted as they are and can freely identify with their culture or place	Everybody feels socially connected to others	People are satisfied with the quality of their life	Everybody has sufficient time to participate in leisure and recreation activities to their satisfaction	Everybody has civil and political rights and actively participates in democratic society	People experience high quality environment conditions
<i>Population indicators</i>	<ul style="list-style-type: none"> Ability to be yourself 	<ul style="list-style-type: none"> Social supports among family, friends and whānau Self-reported engagement and loneliness Volunteering 	<ul style="list-style-type: none"> Personal life satisfaction Family wellbeing 	<ul style="list-style-type: none"> Work hours Participation in arts and cultural activities Participation in active recreation 	<ul style="list-style-type: none"> Voter turnout (general elections) Institutionalised trust Discrimination Acceptance of diversity 	<ul style="list-style-type: none"> Air quality Water quality
<i>Subpopulation indicators</i>	<i>No subpopulation indicators</i>	<ul style="list-style-type: none"> Household change-related benefit system entries/exits Clients with mental illness living alone Community investment effectiveness 	<i>No subpopulation indicators</i>	<i>No subpopulation indicators</i>	<i>No subpopulation indicators</i>	<i>No subpopulation indicators</i>

In bold = Measures wholly or partially covering the indicator will be estimated in the 2019 model

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Appendix B – Model outputs

Population and time horizon

Population

All New Zealand residents aged 16 and over. For the first 10 years of the estimates, people are added to the modelled population in respect of:

- Children as they turn age 16 – output from the Oranga Tamariki model is used
- Net migration.

Time horizon

People's full future lifetime. The further into the future the more uncertain we are about outcomes. Beyond say 10 years, estimates are intended to give lifetime context under the broad implicit assumption that trends and prevalence of service use persist long into the future.

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Model outputs

Category	Outcomes modelled	Associated cashflows modelled
Benefit payment (tier 1)	<ul style="list-style-type: none"> ▪ Jobseeker Support ▪ Sole Parent Support ▪ Emergency Benefit ▪ Youth Payment ▪ Young Parent Payment ▪ Supported Living Payment ▪ Orphan's/Unsupported child's benefit 	Yes
Benefit payment (tier 2)	<ul style="list-style-type: none"> ▪ Accommodation Supplement ▪ Disability Allowance ▪ Child Disability Allowance 	Yes
Benefit payment (tier 3)	<ul style="list-style-type: none"> ▪ Hardship payments including Temporary Additional Support ▪ Recoverable Assistance 	Yes
Benefit payment (other)	<ul style="list-style-type: none"> ▪ Childcare subsidy 	Yes

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Model outputs

Category	Outcomes modelled	Associated cashflows modelled
Public housing	<ul style="list-style-type: none"> ▪ Tenancies in Housing New Zealand (HNZ) or Community Housing Provider (CHP) managed properties and associated Income Related Rent Subsidy (IRRS) payments ▪ Applications to the public housing register ▪ Transfer applications (both client and business initiated) ▪ Accommodation Supplement ▪ Temporary Additional Support 	Yes
Other taxable personal income	<p>This incorporates:</p> <ul style="list-style-type: none"> ▪ Wages and Salaries ▪ ACC weekly compensation ▪ Paid parental leave ▪ Student Allowance ▪ Rental income ▪ Company director/shareholder income ▪ Partnership and sole trader income 	Yes

* Note that Temporary Additional Support is not explicitly a housing benefit. It is intended to cover a range of essential costs that clients have no other way to pay for. In practice, it is mainly used by clients to help meet accommodation costs. Hence, we have categorised it with other housing-related outcomes.

Model outputs

Category	Outcomes modelled	Associated cashflows modelled
Working for Families tax credits	<p>This incorporates:</p> <ul style="list-style-type: none"> Family tax credit Minimum family tax credit In-work tax credit Parental tax credit 	Yes
NZ Super	<ul style="list-style-type: none"> NZ Superannuation payments 	Yes
Corrections activity	<ul style="list-style-type: none"> Percentage of time serving any sentence (community or custodial) over the last quarter, excluding driving-related offences Percentage of time serving a custodial sentence over the last quarter Percentage of time serving any sentence in the last quarter relating to a theft offence 	Not for 2018 model
Child protection and youth justice	<ul style="list-style-type: none"> Whether the person, as a child, has interacted with child protection or youth justice services The number of events to date Days in child protection <p>These outcomes are estimated up to age 18</p>	Not for 2018 model

Model outputs

Category	Outcomes modelled	Associated cashflows modelled
Educational	<ul style="list-style-type: none"> ▪ Whether the client has left school ▪ The NCEA attainment level at secondary school ▪ The total days of any suspensions or stand-downs while at school ▪ The highest New Zealand Qualification Framework (NZQF) level of any tertiary enrolments to date 	Not for 2018 model
Other	<ul style="list-style-type: none"> ▪ Partnered status ▪ Existence and age of children (SPS client only) ▪ Region/Territorial Local Authority (TLA)/Auckland Board ▪ Incapacity code for JS-HCD and SLP ▪ Occurrence of benefit sanctions 	N/A

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Appendix C – Public housing segmentation

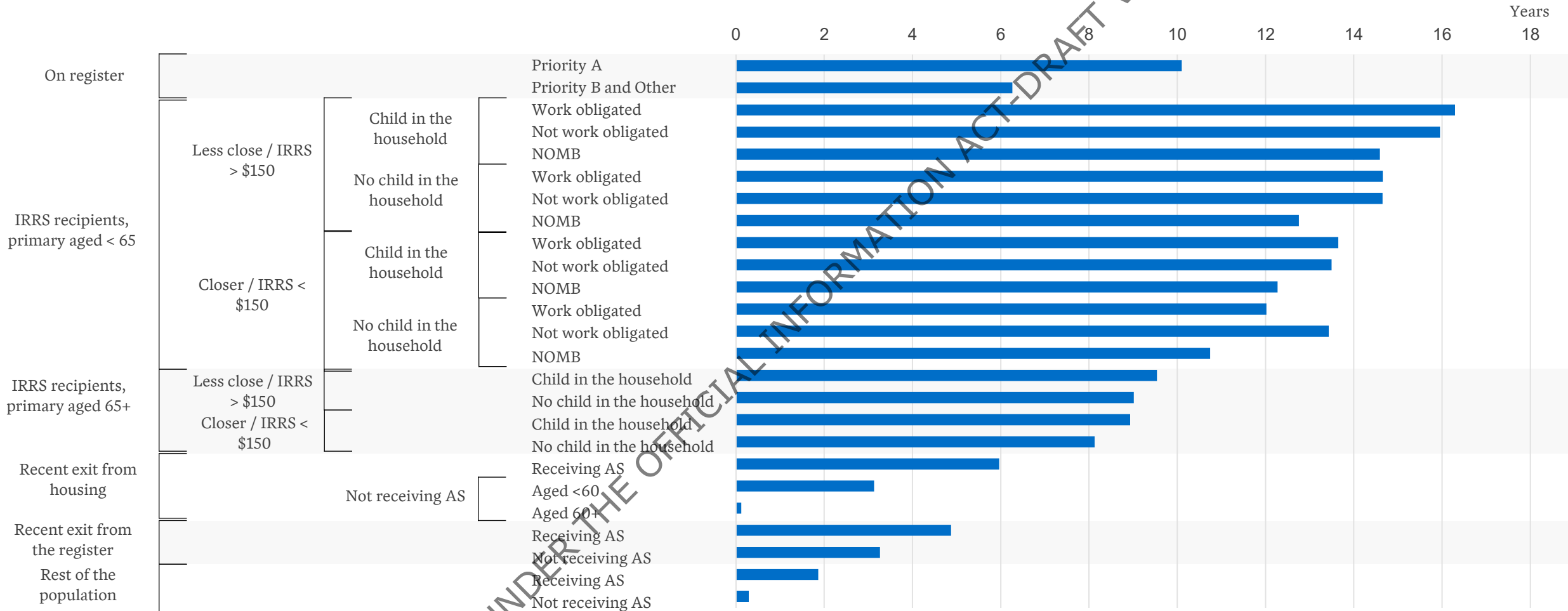
Segmentation – average future years to age 65 on main benefits



NOMB: Not on Main Benefit. AS: Accommodation Supplement. IRRS: Income Related Rent Subsidy

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Segmentation – average lifetime future years in public housing



NOMB: Not on Main Benefit. AS: Accommodation Supplement. IRRS: Income Related Rent Subsidy

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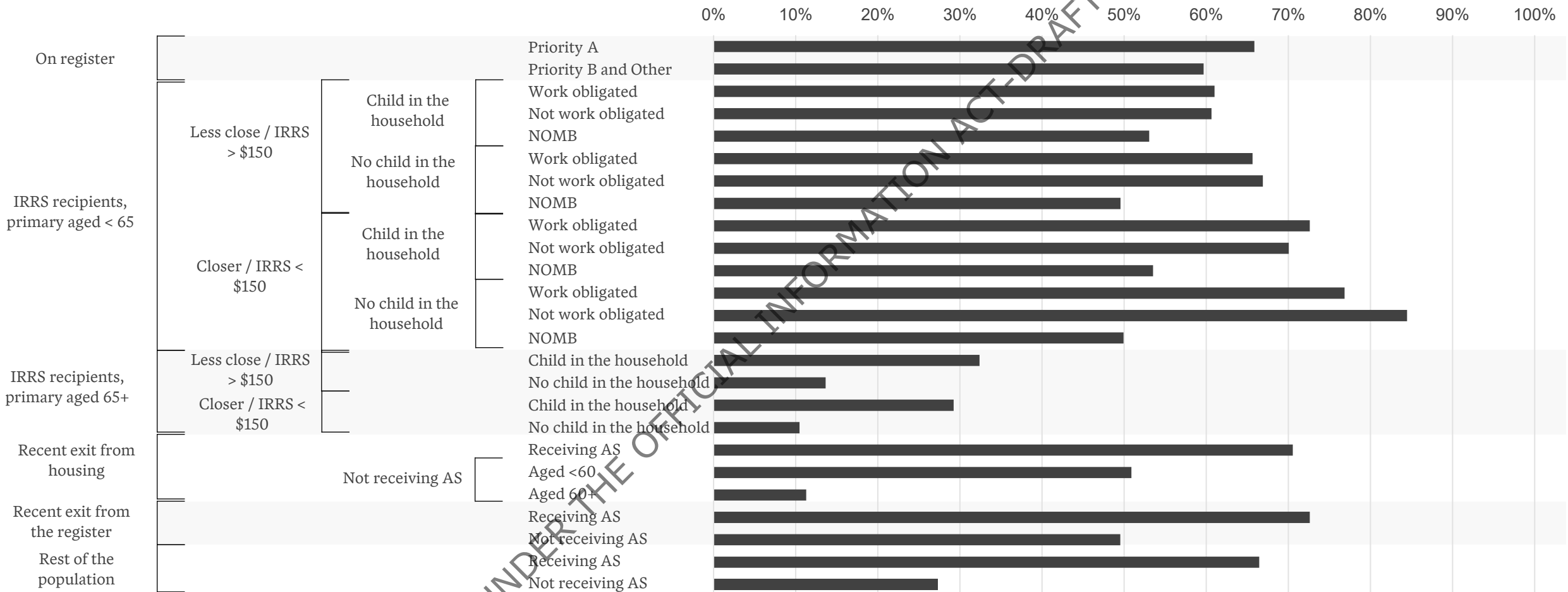
Segmentation – Average future cost – benefits and public housing



NOMB: Not on Main Benefit. AS: Accommodation Supplement. IRRS: Income Related Rent Subsidy

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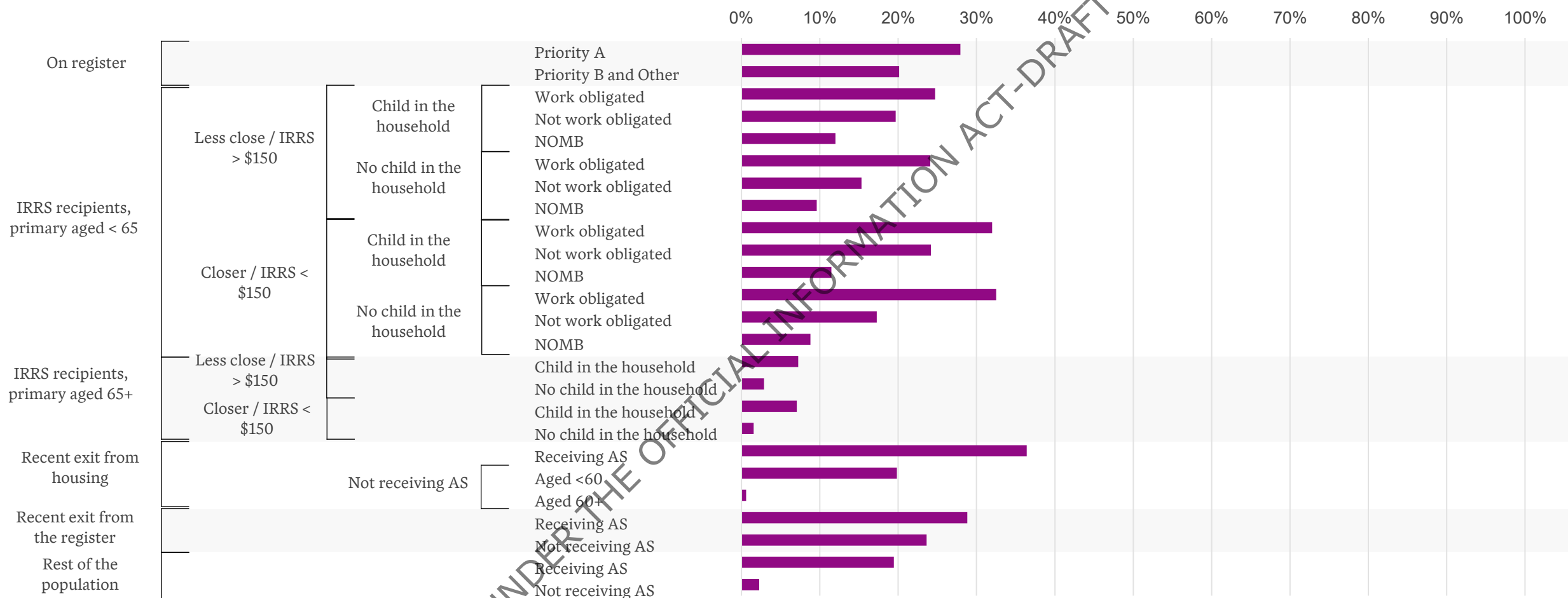
Segmentation – % of future lifetime to age 65 below income threshold*



* Measured as number of quarters in which a person is estimated to have income less than income threshold divided by quarters to 65. Income includes earned income, benefits, Working For Families tax credits and the effective boost to income from Income Related Rent Subsidy. Threshold based on 52 weeks at 40 hours per week at minimum wage (increased with CPI) - \$34,320 p.a. in 2018.

NOMB: Not on Main Benefit. AS: Accommodation Supplement. IRRS: Income Related Rent Subsidy

Segmentation – % serving a corrections sentence in next ten years



NOMB: Not on Main Benefit. AS: Accommodation Supplement. IRRS: Income Related Rent Subsidy

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