Inland Revenue
Te Tari Taake

Stats NZ
Tatauranga Aotearoa

Report to the Minister of Revenue and Minister of Statistics:

Update on approaches to improve the measurement of high wealth

Date	29 March 2023	**Ref number (Stats NZ)** MM2487
Decision by	12 April 2023	**Ref number (IR)** IR2023/107
Purpose	Inland Revenue's High Wealth Individuals Research Project (the Project) has been collaborating with Stats NZ to improve estimates of top wealth shares. This briefing updates you on issues with the application of the "Pareto" model developed by Stats NZ and applied by the Project to the combined Household Economic Survey and Project data. It outlines an alternative approach that Stats NZ have developed that will instead be used by the Project to improve estimates of the share of wealth held by the top 1, 5, 10, and 50 percent taking into account both Household Economic Survey and Project data. This briefing also provides information and key messages requested on differences between measures of high wealth across Stats NZ, Inland Revenue, and the Treasury. This briefing is a joint briefing between Stats NZ and Inland Revenue, and has been developed in consultation with the Treasury.	

Recommendations

It is recommended that you:

1. **Note** the issues with the "Pareto" model developed by Stats NZ, and the alternative approach developed to improve estimates of high wealth

NOTED

2. **Note** the attached key messages on different approaches to measuring high wealth across Stats NZ, Inland Revenue, and the Treasury, prepared to enable your offices to respond to any queries

NOTED

3. **Share** this report (including attached key messages) with the Minister of Finance

AGREE / DISAGREE

4. **Discuss** this report at a regular scheduled meeting with officials, if required

AGREE / DISAGREE

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Deputy Chief Executive and Deputy Government Statistician – Insights & Statistics
Date: 29 March 2023

Felicity Barker
Project Director
Date:

Hon Dr Deborah Russell
Minister of Statistics
Date:

Hon David Parker
Minister of Revenue
Date:

Issues with the "Pareto" statistical model attempting to improve the measurement of high wealth

1. As outlined in the supplementary briefing to the incoming Minister of Statistics – Measurement of high wealth in New Zealand (MM2456 refers), Inland Revenue (IR) has been investigating the application of a statistical modelling technique developed by Stats NZ (a "Pareto" model). This model was applied to combined Household Economic Survey (HES) and High Wealth Individuals Research Project data (high-wealth data).
2. Stats NZ has seconded an employee to IR's High Wealth Individuals Research Project (the Project) to trial the use of this model. The high-wealth data continues to be protected in accordance with IR's Privacy Impact Assessment and has not been shared with Stats NZ.
3. This "Pareto" model developed has been found to not work effectively with the wide range of wealth values when HES data and high-wealth data from the Project is combined. In particular, the model considerably underestimates the level of wealth at the top end of the wealth distribution. That is, the estimate is considerably less than when you add the wealthiest in HES to those in the IR dataset. This issue only became apparent recently after the data was suitable to be tested in the model.
4. Improving the model to address these issues is not feasible in time for publication of the High Wealth Individuals Research report on 18 April 2023. Further, the Project has undertaken to destroy identifiable unit record level data shortly after Project completion. It is not clear that the model could be re-scoped within the required timeframe (although IR is investigating retention of some form of aggregated data). Stats NZ will reach out to the OECD for further advice.
5. It would likely take several months to address the issues with the model. Without certainty as to whether aggregated data will be created by IR, Stats NZ and IR are proposing to follow an alternative approach for publication in the report.

Planned alternative approach

6. Stats NZ has been supporting IR in developing aggregated estimates of wealth for the population that are largely comparable with HES for inclusion in the report. Stats NZ and IR see considerable value in utilising this work to improve estimates of the top end of the wealth distribution.
7. Stats NZ has developed an approach that would allow the combination of HES and high-wealth data in a simpler way than "Pareto" modelling, and which the Project could undertake and include in the report to be published on 18 April 2023.
8. This approach effectively replaces some of the population that the wealthiest HES respondent represents with people (or households) in the Project dataset who have greater wealth than the wealthiest HES respondent.
9. This goes some way to addressing that these very wealthy individuals and households are not included in HES survey estimates. The approach may still underestimate the share of the wealth held by the top, as it only includes the wealth of those in the Project. Any wealth held by people who were not identified in the Project, or did not respond, is not included. This would, however, be greater cause for concern if there was a gap between the wealthiest HES respondent and the lowest wealth in the Project dataset, which is not the case.
10. The alternative approach will still account for "sampling error" i.e. the estimated error due to HES collecting information from a fraction of the population, rather than the entire population. The estimates of the wealth held by the top 1, 5, 10 and 50 percent in the report will therefore be a range, as is the case with the estimates on these shares that form part of the official net worth statistics

Comparison of measures of high wealth across agencies

11. Following a meeting between the Minister of Statistics and Stats NZ officials in February 2023, the Minister of Statistics requested Stats NZ prepare material on the differences between

measures of high wealth across Stats NZ, IR, and the Treasury. Summarised key messages are reflected in Appendix 1.

12. HES net worth survey data provides the most detailed data on the distribution of wealth of individuals and households, with a comprehensive and consistent framework that also provides detailed demographic information.
13. HES is, however, limited in respect of the very wealthy. For instance, all the wealth held by those wealthier than the richest HES participant is not included (MM2456 refers).
14. Combining high-wealth data and HES data – as is planned by the Project with methodological support from Stats NZ – improves on this, taking estimates closer to the actual level of wealth held by the top of the wealth distribution. While Stats NZ and IR have worked to align definitions as far as possible, there are still differences between the approach in the HES and the Project. For example, the Project includes some wealth estimates calculated from multipliers applied to earnings, whereas HES asks respondents market value of businesses.
15. Other methods, such as the capitalisation of taxable income used in the forthcoming Treasury Working Paper – *Estimating the distribution of wealth in New Zealand* – provide estimates of wealth based on all individuals for which taxation data is available. This avoids the issues with surveying the very wealthy, but relies on strong assumptions, particularly that the wealthy receive the same return on their assets as others. The research itself draws on HES data and aggregate level wealth data (the Stats NZ "household balance sheet"), alongside IR tax administrative data (separate to the high-wealth data).
16. Stats NZ has peer reviewed the Treasury's capitalisation work. It is a valuable advance and a robust methodology, but the different estimates should be considered alongside each other to fully understand the distribution of wealth. In particular, HES data provides insights across different demographics, and combining HES data with the high-wealth data provides a conservative (i.e. potentially low) estimate of the share of wealth held at the top of the distribution which can be compared alongside estimates from the capitalisation approach.

Next steps

17. Stats NZ officials will continue to improve statistical modelling by reaching out to the OECD (while maintaining confidentiality of data itself). It may be possible for modelling to be done before the conclusion of the Project – and the destruction of the unit record data – but this will depend on how work progresses.
18. Stats NZ will support IR to explore ways in which, consistent with the purpose of the Project and Privacy Impact Assessment, high level aggregate information on the distribution of wealth in the Project could be retained for research purposes.
19. The next release of the Household net worth statistics in early 2025 will refer to the estimates in the Project as a way of quantifying the possible wealth of those richer than the wealthiest HES participant.
20. Work to improve survey estimates and sampling approaches will continue at Stats NZ.
21. Officials are available to discuss this report with you at upcoming officials' meetings, if required.

Appendix 1: Key messages on different approaches to measure high wealth

These key messages summarise the different approaches and data used to estimate high wealth across Stats NZ, Inland Revenue, and the Treasury.

These can be used in response to any queries that may be received regarding these measures and upcoming reports. Officials can provide more detail on how the estimates themselves compare once these estimates are finalised.

- Household surveys are a valuable source of information on wealth distribution; however, such surveys typically underestimate the top end of the wealth distribution
- Given their small number, the wealthiest households have only a very small chance of being selected to take part in Stats NZ surveys from the approximately 1.9 million households in Aotearoa New Zealand
- Further issues can arise if: (i) very wealthy households are less likely to respond than other households; or (ii) if these households underreport their assets when they do respond.
- Whatever the reason for the non-observation of the wealthiest households, when they do not appear in the sample data, their absence contributes to an underestimation of the wealth distribution and the share of wealth at the top of the distribution
- High Wealth Individuals Research Project data is obtained through direct request of information from individuals identified as holding high wealth, so is more targeted than the sampling in HES, which does not know household wealth before surveying begins. It therefore includes households not covered by HES.
- Approaches that combine data on high wealth individuals, such as from Inland Revenue's High Wealth Individuals Research Project, with survey data can improve estimates of wealth by accounting for wealthy individuals not sufficiently captured in sample surveys. This is the approach taken in the High Wealth Individuals Research Project Report
- Estimates can be refined further as statistical modelling techniques are developed
- These can be considered alongside approaches that calculate wealth in a different way, such as recent work by the Treasury that uses capital income (e.g. dividends and interest) from tax administrative data across the population to estimate wealth (*Estimating the distribution of wealth in New Zealand*)
- Different approaches will always lead to slightly different estimates, but taken together, they can help provide a clearer picture on the concentration of wealth at the top