Progressive Taxation versus Means-testing as solutions to the New Zealand Superannuation challenge:

Distributional impacts of alternate approaches to funding superannuation in New Zealand using social welfare functions to frame results in terms of philosophical approaches to equity.

Mia Andrews
Te Herenga Waka

February 9, 2026

VICTORIA UNIVERSITY OF WELLINGTON
TE HERENGA WAKA

Abstract

What does it mean for a system to be fair? Who should contribute to our collective resources? How much should they contribute, and who should benefit? These questions form the fabric of an ongoing debate surrounding New Zealand's response to population aging. This thesis explores means-testing and progressive taxation as two ways to meet the increasing need for old-age income support. Using simple models and three different social welfare functions, I explore who gains and who loses under different tax and income-provision scenarios. My analysis goes beyond income to consider impacts to wellbeing and fairness. I find that means-testing overwhelmingly benefits the rich, harms middle New Zealand and provides only modest gains for New Zealand's poorest. Progressive taxation, by contrast, generates gains for all but the richest, lifting collective welfare under every measurement approach. Taxation emerges as a force capable of protecting superannuation as a right for all New Zealanders far into the future.

Acknowledgements

To Robert - I feel like I have just topped my first V6, in large part due to your beta and patient spotting. Thank you.

To Jesse, for teaching me to criticise economists. To Paul, for teaching me to criticise philosophers. Or perhaps that actually happened the other way around.

To Chris and Andrew from The Treasury for helping me think differently about my research question and find my angle.

Samantha for helping me format my citations, and Thomas for *extensive* proof-reading.

To my friends and family, for everything, and everyone who showed an interest in what this thesis would eventually say.

Ehara taku toa i te toa takitahi, engari he toa takitini.

Chapter 1: Introduction

1.1 Motivation and context

The New Zealand population is following global trends that have seen the median age rise as people live longer and have less children. Currently there are nearly 4 working-age individuals for every one individual of retirement age in New Zealand. By 2060 this ratio will be closer to 2.4 working-age individuals for every one individual of retirement age. These statistics represent what is known as the dependency ratio, which captures how a shrinking number of workers are being asked to support a growing elderly population.

The New Zealand Treasury projects that the cost of providing New Zealand's universal basic pension (New Zealand Superannuation, or NZS) will rise to 7.7% of GDP by 2061 under current policy settings, up from 5% of GDP in 2021.[1] There will also be a significant rise in per capita costs for healthcare and hospice provision. This challenge has contributed to calls from the New Zealand Treasury to reduce the debt-to-GDP ratio today in order to preserve borrowing capacity for future fiscal shocks. This discourse, while legitimate, has been used by politicians to justify controversial cuts to social services and other government spending.[2] Funding NZS sustainably was also a key feature of the New Zealand tax department's (IRD's) most recent long term insights briefing.[3] They used it as a defining example of the need to reform New Zealand's tax system.

New Zealand Superannuation makes up more than half of total transfer spending by New Zealand's Ministry of Social Development. In the context of means-testing expansion in other parts of the transfer system, social commentators have begun to question whether NZS should be allowed to continue as a universal payment. This commentary is underpinned by questions about what New Zealanders value and who we believe is deserving of or should be entitled to support.

The scale of the NZS challenge makes this conversation relevant to anyone interested in how resources are distributed in democratic societies. The declining dependency ratio is recognised globally as a challenge to economic sustainability and social cohesion.[4] It therefore, as with all challenges, represents an opportunity to rethink the status quo. This

---

[1] The Treasury, *He Tirohanga Mokopuna 2021* (The Treasury, 2021), 18, https://www.treasury.govt.nz/sites/default/files/2021-09/ltfs-2021_2.pdf.

[2] Tayla Forward and Madeleine Foreman, "The Debt Ceiling and Its Discontents," *Policy Quarterly* 21, no. 4 (2025): 3—13, doi:10.26686/pq.v21i4.10325.

[3] Inland Revenue Department, *Stable bases and flexible rates: New Zealand's tax system* (Inland Revenue Department, 2025), https://www.taxpolicy.ird.govt.nz/-/media/project/ir/tp/publications/2025/ir-ltib/ltib-consultation.pdf?modified=20250626002152

[4] OECD, *OECD Employment Outlook 2025: Can We Get Through the Demographic Crunch?* (OECD Publishing Paris, 2025), 5, https://doi.org/10.1787/194a947b-en.

thesis aims to be another resource in the debate by addressing both economic and political concerns such as what the costs of different policy options are, and what values are reflected in the design of our tax and transfer systems.

1.2 Research question

What are the distributional impacts of alternate tax and means-testing approaches to funding New Zealand Superannuation? How do conclusions differ under three different social welfare functions, each representing alternative philosophies of equity?

1.3 Contribution

This thesis employs simple and transparent quantitative analysis. This method generates concrete indicators of how different NZS provision approaches might impact wellbeing for rich, poor, and middle income New Zealanders. I compare a flatter taxation condition with a more progressive alternative, and universal provision with means-tested provision. Together these dimensions make up the following four alternative policy scenarios:

- Baseline tax, universal provision
- Baseline tax, means-tested provision
- Progressive tax, universal provision
- Progressive tax, means-tested provision

To capture impacts from a shifting dependency ratio, I repeat the comparisons between policy scenarios across three future time periods. I also include wealth models as conceptual extensions.

While projections of the cost of NZS provision under different policy settings exist, my approach is unique in its focus on distributionary impacts by wage and salary income decile, and in my use of social welfare functions to evaluate model outputs, which has not been done in the New Zealand pension context.

1.4 Thesis roadmap

Chapter 2 provides institutional and demographic background to anchor the thesis models in the New Zealand context. Chapter 3 draws together key literature in the areas of tax and pension provision. Chapter 4 explains the philosophical underpinnings of the different social welfare functions and how readers can interpret results. Chapter 5 outlines the methods used to construct my quantitative models. Chapter 6 presents important results from the models and I explore the implications of key modeling decisions in Chapter 7.

Chapter 8 discusses model results with reference to relevant theories. Chapter 9 concludes this work.

Chapter 2: Institutional and Demographic Background

2.1 Retirement Income in New Zealand

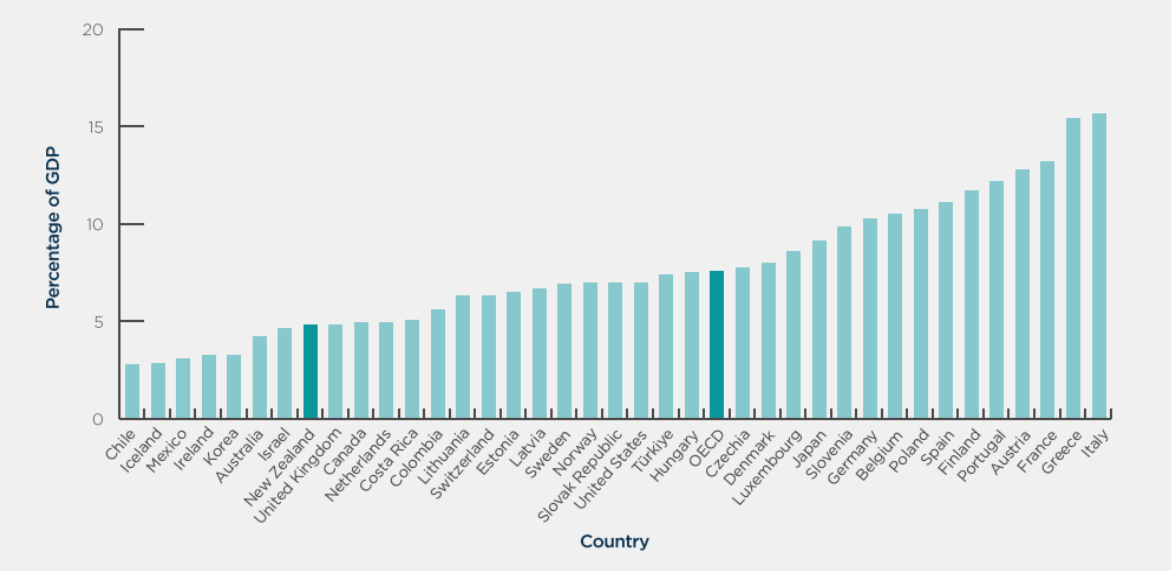
New Zealand currently provides a universal pension for all residents aged 65 and above, as long as they meet basic eligibility criteria. New Zealand funds this pension using a pay-as-you-go model, where today's tax payers pay for today's New Zealand Superannuation (NZS) recipients. As the dependency ratio falls, a smaller number of tax payers face a higher cost of NZS provision in the absence of policy changes, leading to sustainability concerns.

New Zealand also offers an opt-out retirement savings scheme called KiwiSaver. Those who remain opted-in to KiwiSaver contribute 3–4% of their income and receive employer contributions at 3%, along with small government incentive payments.

New Zealand Superannuation spending is moderate relative to old-age income provision systems internationally. New Zealand's 2023 spending on NZS as a proportion of GDP was less than the OECD average (Figure 1). The relative affordability of NZS is most likely due to New Zealand's young median age and system that aims only to provide a basic income rather than replace a proportion of working-age earnings.[5]

Fig.1 Public expenditure on old-age and survival benefits by OECD country as a percentage of GDP.[6]

[5] The Treasury, *He Tirohanga Mokopuna 2021*, 55.
[6] Retirement Commission, *NZ Super: Issues and Options* (2024), 14, https://assets.retirement.govt.nz/public/Uploads/Policy/TAAO-RRIP-NZ-Super-issues-paper.pdf.



The relative affordability of New Zealand Superannuation has led prominent economic policy commentators to claim that NZS reform is not needed or non-urgent.[7] Some commentators point out that the 7.7% of GDP figure projected for 2061 is less than many OECD countries already pay to provide state pensions, making the question less one of affordability and more one of prioritisation.[8] That is, instead of asking what changes can be made to make NZS sustainable, we should first ask what we would be willing to pay in taxes to keep NZS as it is. Implicit here is the secondary question of *who specifically* should pay those taxes.

2.2 The New Zealand tax system

New Zealand has a broad-base low-rate tax system. Around one quarter of tax revenue is derived from a 15% tax applied to almost all goods and services (GST), with the incidence falling on the end consumer. GST is a regressive tax because lower income households spend a higher proportion of each dollar they receive on goods and services, in comparison to higher income households. Around 16% of tax revenue is derived from a 28% tax on companies. Nearly all of the remaining revenue is from taxes on personal income.[9]

---

[7] For example: Bill Rosenburg, *Economist Bill Rosenberg runs the ruler over NZ Super cost predictions, and argues it's not as scary as we've been told* (Interest, 2017),https://www.interest.co.nz/opinion/86837/economist-bill-rosenberg-runs-ruler-over-nz-super-cost-predictions-and-argues-its-not.

[8] Max Rashbrooke, *What the Sensible Adults don't tell you about the cost of super* (The Post, 2025) https://www.thepost.co.nz/nz-news/360738318/what-sensible-adults-dont-tell-you-about-cost-super.

[9] Inland Revenue Department, *Inland Revenue Annual Report Te Tari Taake Pūrongo ā-Tau* (Inland Revenue Department, 2024), 13, https://www.ird.govt.nz/about-us/publications/annual-corporate-reports/annual-report..

Although New Zealand has progressive marginal taxation on wages and salaries, it lacks a comprehensive capital gains tax, leading to horizontal inequity between income sources.[10] New Zealand's reliance on GST combined with low rates of taxation on capital income mean that average tax rates are only slightly progressive across income deciles. In this context low, middle, and high income households all make similar contributions to the universal provision of NZS as a proportion of their income.

2.3 The Cullen Fund

The New Zealand Superannuation Fund, known colloquially as the Cullen Fund after the Minister of Finance who established it, aims to smooth the cost of NZS provision over time.[11] The fund is independently managed by a crown entity with annual government contributions mandated under the New Zealand Superannuation and Retirement Income Act 2001.[12] However, the Act permits sitting governments to suspend fund contributions, making projected contributions vulnerable to political decisions. The 5th National Government suspended contributions to the fund from FY 2010/11 to FY 2016/17, while subsequent governments have contributed less than the amount stipulated by the legislated formula. The fund is also dependent on GDP growth and investment returns, both of which have deviated from projections over time. Recent projections for the fund anticipate a $5.9 billion withdrawal in FY 2059/60, less than the projected increase in the cost of NZS provision.[13] This history makes clear that the New Zealand Super Fund, while mitigating the dependency ratio challenge, does not remove the need for either tax changes or changes to NZS eligibility criteria.

The Cullen Fund exists to smooth costs of provision between generations and is funded from the general tax pool. I have excluded it from my models both due to the difficulty in simplifying the legislated formula and due to my focus on distributional impacts by income decile rather than by age or generation.

---

[10] Inland Revenue Department, *Tax and the Economic Income of the Wealthy* (Inland Revenue Department, 2023), https://www.ird.govt.nz/-/media/project/ir/home/documents/about-us/high-wealth-research-project/hwi-research-project/factsheets-supporting-hwi-report/tax-and-the-economic-income-of-the-wealthy.pdf?modified=20230420234159. See Section 3.4 for an explanation of horizontal equity in taxation.

[11] Mathew Bell, *Golden Years* (The Treasury, 2021), 1, https://www.treasury.govt.nz/sites/default/files/2021-06/twp21-01.pdf.

[12] Contributions and withdrawals to the Cullen fund are mandated by a formula such that, if the contribution rate established by the formula that year was held constant for 40 years, the New Zealand Superannuation fund would be able to cover the cost of NZS for that 40 year period.

[13] The Treasury, *New Zealand Superannuation Fund Contribution Rate Model* (The Treasury, 2020), 2020 Half year economic & fiscal update track with planned capital contributions and reductions for early stage capital market investment over the forecast years, https://www.treasury.govt.nz/publications/new-zealand-superannuation-fund-contribution-rate-model-hyefu-2020.

2.4 Te Tiriti o Waitangi

Te Tiriti o Waitangi is the founding document of New Zealand.[14] It guarantees tangata Māori, New Zealand's indigenous population, protection and equality. This document is relevant when considering policy changes to NZS due to demographic differences between Māori and the wider population. The Māori population is heterogenous, however, on average they live shorter lives and face more work-limiting health conditions at younger ages.[15] Many Māori also face early-life disadvantages that see them more likely to enter into heavy labour intensive fields or be unemployed, further impacting their ability to work and save for retirement.[16] The Māori population is younger, with higher fertility rates than the general population. Universal NZS funded by general taxation therefore redistributes away from young Māori towards older Pakeha.[17]

Chapter 3: Literature Review

The challenge of sustainable old-age income provision with shrinking dependency ratios has been the subject of extensive research globally and in New Zealand.[18] This chapter explores the purpose of pension systems, possible solutions to the dependency ratio challenge, and the values underpinning different approaches to provision and taxation. It also touches on efficiency concerns with regards to these approaches.

3.1 The purpose of pension systems

Pensions systems exist to meet several aims, with the specific goals of a given pension system shaping how the system is designed. The two most common primary intentions of pension provision are the smoothing of consumption across a lifetime and protection from poverty during old age.[19] In New Zealand, government pension provision is largely focused on the latter concern with individual savings being relied on for consumption smoothing.

The New Zealand Retirement Commission suggests that New Zealand's retirement framework should aim to support New Zealanders to enjoy adequate standards of social participation and material living. It additionally recommends active support for New

[14] There are two treaty documents: the English-language "Treaty of Waitangi" and the Te Reo Maori "Te Tiriti o Waitangi", with important differences between the texts. The Māori language version is the one referred to here, as this is the one most treaty signatories signed and understood and is considered to take precedence under international agreement.
[15] Retirement Commission, *NZ Super*, 7.
[16] Retirement Commission, *NZ Super*, 5.
[17] This picture is clouded for the working age transfer system for but remains true of NZS incidence.
[18] See eg: The Retirement Income Policy Special Issue of *Policy Quarterly* 21, no. 3 (2025), https://ojs.victoria.ac.nz/pq/issue/view/1047/114.
[19] Nicholas Barr and Peter Diamond, "The economics of pensions," *Oxford Review of Economic Policy* 22, no.1 (2006): 1-2, https://eprints.lse.ac.uk/2630/1/economics_of_pensions_final.pdf.

Zealanders to build independent savings.[20] Achieving these outcomes sustainably is a guiding principle for pension and taxation reforms seeking to address the dependency ratio challenge.

3.2 Possible solutions to the dependency ratio challenge

The dependency ratio challenge refers to the decreasing base of workers available to support a growing number of retirement-age individuals. Several solutions have been proposed, each with various strengths and weaknesses.

3.2.1 Raising the retirement age:

Raising the age of pension eligibility has dominated the public conversation, with Labour, Act, and National politicians all advocating raising the age to 67.[21] This is unlikely to be a one-off shift, with the age of eligibility needing to be continually raised in step with life expectancy for this solution to be effective.[22] The Retirement Commission considers that this approach may be unfair to people who work more physically demanding jobs and are forced to retire due to health, as well as Māori and low income groups due to lower life expectancies in these populations.[23] However there are also equity justifications for raising the age when looked at through an intergenerational lens. Under current settings, some generations will enjoy more years of retirement-income in proportion to their working-lives, at the expense of future generations.[24] The Retirement Commission explores variations of this approach in their 2024 report and the New Zealand Treasury has modeled the impact of raising the retirement age in *He Tirohanga Mokopuna*.[25] Models in this thesis are based on 65 remaining the age of eligibility.

---

[20] New Zealand Institute of Economic Research, *Aotearoa New Zealand in 2050* (New Zealand Institute of Economic Research 2024), 1, https://assets.retirement.govt.nz/public/Uploads/Aotearoa-New-Zealand-in-2050-FINAL-v3.pdf.

[21] Lloyd Burr, "Treasury says pension age should rise to 72. Do any politicians dare to agree?" *Stuff*, 2025, https://www.stuff.co.nz/politics/360836979/treasury-says-pension-age-should-rise-72-do-any-politicians-dare-agree.

[22] Bell, *Golden Years*, 14.

[23] Hilary Waldron, "Mortality Differentials by Lifetime Earnings Decile," *Social Security Bulletin* 73, no. 1 (2013): 1–37; Retirement Commission, *NZ Super*, 5.

[24] Jorge M. Bravo, Mercedes Ayuso, Robert Holzmann and Edward Palmer, "Intergenerational actuarial fairness when longevity increases: Amending the retirement age," *Insurance: Mathematics and Economics* 113, (2023): 161–184, https://doi.org/10.1016/j.insmatheco.2023.08.007.

[25] Retirement Commission, *NZ Super*, 24; The Treasury, *He Tirohanga Mokopuna 2025*, (The Treasury, 2025), 51–55, https://www.treasury.govt.nz/sites/default/files/2025-09/ltfs-2025.pdf; The Treasury, *He Tirohanga Mokopuna 2021*, 58-60.

3.2.2 Increasing taxation:

The political left, including the New Zealand Green Party,[26] has argued that New Zealand can afford to provide for everyone in the future by taxing wealthier New Zealanders more. Their policies include a comprehensive capital gains tax, inheritance and gift taxes, and other changes. However, even if such taxes are implemented, the majority of tax revenue will likely need to come from income tax.[27] Taxes must also be carefully designed to encourage desired labour supply and investment behaviours.[28] This thesis explores the impacts from more or less progressive taxes applied to capital and labour income but does not consider specific taxation policies.

3.2.3 Means-testing:

Instead of raising the eligibility age, the New Zealand Retirement Commission advocates for means-testing superannuation. Many consider means-testing inevitable[29] or frame the universal provision of NZS as hypocritical in the context of means-testing expansion for working-age transfers.[30] Means-testing could take the form of both income and asset testing, as in Australia where thresholds are high enough for most residents to remain eligible. The government could also means-test by paying NZS as a loan to be repaid by the recipient's estate.[31] Concerns around means-testing are explored throughout this chapter, so it is sufficient here to note that means-testing could be consistent with the Retirement Commission's purpose statement for NZS. Means-testing would ensure an adequate standard of living for retired New Zealanders by targeting only those without the means to support themselves independently. This thesis models simplified means-testing scenarios.

---

[26] New Zealand Green Party, *Green Budget 2025*, (2025), 31-34,https://www.greens.org.nz/green_budget_2025.

[27] Inland Revenue Department, *Stable bases and flexible rates: New Zealand's tax system*.

[28] See section 3.5.1

[29] Cameron Bagrie, *Means testing super is inevitable* (Business Desk, 2025), https://businessdesk.co.nz/article/opinion/means-testing-super-is-inevitable; Sharon Brettkelly, *NZ's means-testing creep* (Newsroom, 2025), https://newsroom.co.nz/2025/06/09/nzs-means-testing-creep/.

[30] Last year New Zealand extended means-testing on benefits for 18 and 19 year olds to consider parental income: see Ministry of Social Development, *Jobseeker Support – tightening eligibility for 18 and 19 year olds (*Ministry of Social Development, 2025), https://www.msd.govt.nz/about-msd-and-our-work/newsroom/budget/2025/factsheets/jobseeker-support-tightening-eligibility-for-18-and-19-year-olds.html; Means-testing has also been implemented for government contributions to Kiwisaver, see: Susan Edmunds, *Budget 2025: High earners can't get KiwiSaver credit - but they can get the pension* (RNZ, 2025), https://www.rnz.co.nz/news/budget-2025/561918/budget-2025-high-earners-can-t-get-kiwisaver-credit-but-they-can-get-the-pension

[31] Retirement Commission, *NZSuper*, 32.

3.2.4 Replacement rate and indexing:

New Zealand currently pays NZS at 66% of the median income. Reducing this rate manually or by indexing increases against inflation would reduce the future cost of provision. There are implicit value judgments inherent to indexing approaches. Indexing to inflation would be appropriate if the purpose of NZS is to allow older New Zealanders to meet their material needs.[32] However, it would push recipients into poverty relative to other New Zealanders, as wages grow faster than inflation in the long run.[33] Indexing to median wage growth would keep NZS recipients in step with other New Zealanders and can be justified using participation-focused relational egalitarianism. This thesis assumes NZS rates will continue to be indexed against the higher of average wage growth or inflation.

3.3 Values in approaches to the provision of Social Welfare

Different approaches to social welfare provision implicitly reflect values around who should provide and receive financial support. Three provision approaches described by Boston and Dalzeil are outlined below, alongside political/philosophical considerations.[34]

3.3.1 Insurance/ contribution based:

Internationally there has been a trend towards defined-contribution (save-as-you-go) pension schemes as a way of preserving fiscal sustainability.[35] These schemes perform well at consumption smoothing, typically linking contributions while working to the rate received once retired. However, contributions made during a lifetime do not always cover the full cost of pension received. Personal insurance schemes such as KiwiSaver fall into this category of provision.[36]

Contribution-based systems perpetuate working-age inequalities. This disadvantages primary caregivers, people with health-conditions, and any populations that face early life opportunity inequalities (many low skilled workers, etc.). However this can be offset, for

---

[32] Indexing against inflation has recently been applied to working-age benefits on the basis that it would create greater incentives to work: Ministry of Social Development, *Indexing main-benefits to inflation* (Ministry of Social Development 2024), https://www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/regulatory-impact-statements/sar-indexing-main-benefits-to-inflation.docx.

[33] The Treasury, *New Zealand Superannuation Information Release* (The Treasury, 2017), 9, https://www.treasury.govt.nz/sites/default/files/2017-03/sup-3753731.pdf.

[34] Jonathon Boston and Paul Dalzeil, *The Decent Society?: Essays in response to National's economic and social policies* (Oxford University Press, 1992), 1–7.

[35] Susan St John, *Save as you go or pay as you go? The age old policy debate* (University of Auckland Retirement Policy and Research Center, 2013).

[36] KiwiSaver is a voluntary scheme with a small default contribution, so there is a less direct connection between life-time wages and retirement income—higher earners probably save more than their KiwiSavers reflect.

example the UK includes insurance credits alongside working-age benefits.[37] Combining contribution-based provision with means-tested government payments can mitigate concerns with this approach, and this combination approach is prevalent in systems aiming at universal coverage.[38]

3.3.2. Means testing:

Boston and Dalzeil argue that means-testing assumes individuals have the first duty to provide for themselves, followed by family groups, with the state stepping in as a last resort.[39]

Means-testing creates barriers to service access. This leads to people missing out on their entitlements due to administrative hurdles, which include both mental loads, interactions with health conditions, and cost barriers such as the cost of public transport to an appointment.

The psychological costs of such hurdles can also be substantial.[40] Applicants face additional scrutiny when payments become means-tested such as being forced to continually demonstrate their need for support. This is especially the case where payments are based not just on an individual's means but also the means of any partners.[41] Institutional stigma may also be combined with social stigma as the recipient pool shrinks and begins to take on the negative stereotypes associated with poverty. Means-testing has been characterised by some researchers as punitive and dehumanising for these reasons.[42]

The magnitude of these effects will depend on the specific means-testing approach taken. Modest tapering schemes such as Australia's may mitigate many of the concerns with means-testing.

---

[37] "National Insurance Credits", GovUK, accessed 6 February, 2025, https://www.gov.uk/national-insurance-credits/eligibility.

[38] Rafael Rofman, Ignacio Apella, and Evelyn Vezza, *Beyond Contributory Pensions* (The World Bank, 2015), 1–9, ed. Rafael Rofman, Ignacio Apella, and Evelyn Vezza, http://dx.doi.org/10.1596/978-1-4648-0390-1.

[39] Boston and Dalzeil, *The Decent Society?*, 3.

[40] Pamela Herd et. al, "Administrative Burden as a Mechanism of Inequality in Policy Implementation," *The Russell Sage Foundation Journal of the Social Sciences* 9, no. 5 (2023): 1-30, https://doi.org/10.7758/RSF.2023.9.5.01.

[41] Michael Fletcher, *Individualising entitlements in New Zealand's benefit and social assistance systems* (New Zealand Work Research Institute, 2018), 2–4, https://nzpri.aut.ac.nz/__data/assets/pdf_file/0006/181437/Individualising-entitlements-in-New-Zealands-benefit-and-social-assistance-systems.pdf; Olivia Healey and Jennifer Curtin, *'Relationship status' and the Welfare System in Aotearoa New Zealand* (Public Policy Institute, 2019), 4, https://static1.squarespace.com/static/60189fe639b6d67b861cf5c4/t/622a7f22a6428d7d6b6df258/1646952232546/relationship+status+and+the+welfare+system.pdf.

[42] Robert Stephens, *The Universal Basic Income: Should it replace the existing social security system?* (Policy Quarterly, 2019), 33, https://doi.org/10.26686/pq.v15i1.5293.

3.3.3 Rights-based:

Boston and Dalzeil advocate for a rights-based approach to social welfare where it is taken as the duty of the state to provide a minimum standard of living for all its citizens. The current NZS, with no means-testing, falls under this approach.

Boston and Dalzeil argue that even in a society where everyone's means are below a high means-testing threshold, and so all are able to receive a means-tested pension, the mere existence of the means-testing threshold would remain a violation of the rights of citizens.

A rights-based approach to NZS provision may reflect values such as a duty of care to kaumatua, or the belief that everyone contributes to the community throughout their lives and retirement-age support is their fair recognition. New Zealand overwhelmingly voted against compulsory retirement savings in a 1997 referendum, with rights-based philosophies driving the popular vote.[43]

Rights-based provision can be the most expensive for the state. However, most of the savings from means-testing in Australia are spent on tax-incentives for private-savings schemes designed to lift more Australians above the means-testing threshold. These incentives disproportionately benefit the wealthy, highlighting the significance of specific policies for determining the distributional impacts of any provision approach.[44]

Means-testing might be justified under rights-based philosophies on the basis that finite resources should go towards those who would benefit the most. Under this reasoning, means-testing would be disallowable in ideal circumstances but allowable in reality. Whether or not resources are sufficient for the ideal depends on taxation.

3.4 Political values underpinning taxation

New Zealand legislation sets out several principles for designing tax policy, including horizontal and vertical equity. Horizontal equity is the extent to which two people who receive the same level of income pay the same level of tax regardless of the form that income takes—for example, wages versus dividends. Vertical equity describes the extent to which those with greater income pay a higher proportion of tax.[45]

---

[43] David A Preston, *The Compulsory Retirement Savings Scheme Referendum of 1997* (Ministry of Social Development, 1997), 2, https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/journals-and-magazines/social-policy-journal/spj09/compulsory-retirement-savings-scheme-referendum.html; The Treasury, *New Zealand Superannuation Information Release*, 2.

[44] New Zealand Institute of Economic Research, *Lessons from across the Tasman* (New Zealand Institute of Economic Research, 2024), 15, https://www.nzier.org.nz/publications/lessons-from-across-the-tasman-comparing-the-australian-and-new-zealand-retirement-income-systems-nzier-working-paper-2024-01.

[45] Taxation Principles Reporting Act, 2023, sch.1, https://www.legislation.govt.nz/act/public/2023/0055/latest/LMS842854.html.

Vertical equity is related to the principle of ability to pay, where those who can most afford to make a contribution should make that contribution. Diminishing marginal utility of income means that vertical equity is often also aligned with the principle of equal sacrifice, where everyone should sacrifice the same level of utility[46] to contribute to tax revenue.[47] However, the two principals sometimes conflict. Under prioritarianism[48] someone with higher utility might be thought of as having the ability to pay more of their utility, in violation of equal sacrifice. In opposition to both equal-sacrifice and ability-to-pay is the liberal notion of natural rights, where individuals have the right to their income and property. Natural rights are related to narratives such as individuals deserving to keep what they have earned through hard work and pass these gains down to their children.[49] This thesis examines the extent to which greater vertical equity leads to higher collective welfare. It also brushes up against horizontal equity via wealth models, which consider the tax rates that would need to be applied to capital income in order to fund NZS.

3.5 Incentives and Disincentives

3.5.1 Incentives effects from progressive taxation

Optimal tax theory describes an equity-efficiency trade-off when designing tax policy. Higher marginal tax rates on high income earners may disincentivise labour supply, leading to less tax revenue despite higher tax rates. Similarly, taxing capital income is thought to negatively impact productive investment, slowing economic growth. Hence higher tax rates may not maximise revenue beyond a certain point.

In reality, tax systems do not aim to maximise revenue but instead balance keeping tax rates low while still funding investments and services. The empirical support for revenue maximising approaches are mixed, with labour supply being much more resilient to increases in the marginal tax rate than early models predicted, and the distinction being made between productive labour supply or investment versus rent-seeking behaviours in high income brackets.[50] Instead of an efficiency-equity trade off, wealth taxation may improve efficiency if monopolies are weakened to create opportunities for smaller firms to

[46] Utility in economics is used to mean something similar to wellbeing or happiness.
[47] Section 4.3 explains the marginal utility of income.
[48] Section 4.4.2 explains the prioritarian social welfare function.
[49] Matt Nolan, *Horizontal and Vertical Equity in the New Zealand Tax-Transfer System: 1988–2013* (Te Herenga Waka, 2018), 5–6, https://www.wgtn.ac.nz/__data/assets/pdf_file/0011/1863191/WP-1-2018.pdf.
[50] Andrew B. Abel, Ben S. Bernanke and Dean Croushore, *Macroeconomics Eleventh Edition* (Pearson Education Limited, 2024), 156–157.

disrupt markets.[51] Reduced inequality may also pay dividends in social stability and cohesion not accounted for in the traditional Laffer curve model.[52]

3.5.2 Incentive effects from means-testing

Means-testing NZS has disincentive effects which are related to the pension replacement rate, that is, how closely income from the pension resembles an individual's income from working. Retirement-age individuals are more responsive to disincentive effects than the general population as they prepare for full retirement.[53] Low income working-age individuals may be disinclined to save for retirement if NZS asset-testing is strict. However, high income individuals are likely to continue saving in order to be able to maintain their standard of living across their lifetime.[54] For labour supply disincentives, income testing functions as a high marginal tax rate on incomes within the abatement threshold.[55] Low income individuals of retirement age are likely to stop work or reduce hours in order to qualify for income-tested payments. This would be consistent with income bunching at abatement thresholds observed for working-age benefits in New Zealand.[56] High-income individuals are likely to continue working for longer.

Significant disincentive effects from means-testing may undermine one stated purpose of New Zealand's retirement framework, which is the active support of individual savings. However, all pension provision schemes have distortionary impacts, with many individuals stopping work once they become eligible.[57] Encouraging older workers to stay in the labour market is not a case of mere incentives and requires an educated population and job flexibility, among other changes.[58]

---

[51] Fatih Guvenen et al., *Use it or Lose it: Efficiency Gains from Wealth Taxation* (National Bureau of Economic Research, 2019), 1, http://www.nber.org/papers/w26284.

[52] The Laffer curve describes a theoretical relationship between tax rates and tax revenue such that tax-revenue is zero when tax-rates are at both 0% and 100% and follows a parabolic curve between these two points for all other tax rates; For the benefits of equality see: "Inequality and New Zealand," Business and Economic Research Ltd, December 15 2020, https://berl.co.nz/our-mahi/inequality-and-new-zealand.

[53] Andrew Biggs, *Means testing and its limits* (American Enterprise Institute, 2011), https://www.aei.org/articles/means-testing-and-its-limits/.

[54] John Gibson, Trinh Le, and Grant Scobie, *Women's Retirement Incomes in New Zealand: A Household Bargaining Approach* (The Treasury 2004), 2, https://www.treasury.govt.nz/sites/default/files/2018-12/twp04-22.pdf.

[55] Social welfare payments generally decrease gradually as a person's income increases. This is abatement and aims to smooth the gap between entitlement and non-entitlement to mitigate strong disincentive effects that would otherwise be present with a single earnings threshold.

[56] Dean R. Hyslop and David C. Maré, *Earnings bunching at benefit abatement thresholds: evidence from recent policy changes* (Motu, 2024), 19–22, https://motu-www.motu.org.nz/wpapers/23_05.pdf.

[57] Rodger Hurnard, *The effect of New Zealand Superannuation eligibility age on the labour force participation of older people*, (The Treasury, 2005), https://www.econstor.eu/bitstream/10419/205574/1/twp2005-09.pdf; It may also be possible to over-incentivise savings for retirement leading to share price increases unrelated to real growth: see Bill Dunn and Sam Webb, "Australian superannuation: An unsustainable pyramid scheme?," *Journal of Australian political economy* 83, no. 1 (2019): 5–31.

[58] OECD, *OECD Employment Outlook 2025*, 6; See also section 3.2.1

3.5.3 Treatment in thesis

People make labour supply and savings decisions based on the net return on their next dollar earned or saved. Therefore, marginal tax rate design is what counts. This thesis uses average tax rates throughout, leaving room for the proposed rates to be reached through a combination of different income and consumption taxation approaches. Behavioural responses to taxation and means-testing are therefore out of scope for this thesis, which assumes no behavioral changes under the different policy settings.

Chapter 4: Social Welfare Framework

This chapter explores the uses and limitations of social welfare functions , and explains the utility scores from which social welfare scores are derived. I outline the philosophical underpinnings of each of the three social welfare functions used in this work, along with guidelines for interpreting their outputs.

4.1 Why social welfare functions?

Social welfare functions produce single number figures for aggregate social welfare that enable economists to integrate some philosophies of equity into cost-benefit analyses. Cost-benefit analyses rely on consequentialism - they compare the relative merits of different policies based solely on measurable outcomes, such as self-reported happiness, or willingness to pay. This thesis uses them to compare distributional outcomes from different tax and transfer policies. By using a quantitative methodology this thesis aims to create transparency around the benefits accruing from different policy approaches.

There is debate over whether social welfare functions can be used to address deontological concerns such as the right of citizens to government support in old age.[59] This thesis does not employ social welfare functions to address these complexities. It also does not directly engage with issues such as whether it is fair or politically feasible to impose high tax rates. Instead what this thesis offers is a consequentialist analysis of means-testing versus universal benefits, and more versus less progressive taxation. I use social welfare functions to explicitly compare the distributional outcomes from each policy setting, declaring a ‘winner’ based on different notions of fairness.

This analysis can inform a debate around the price we are willing to pay to realise different notions of the rights of New Zealand residents. Social welfare results are not irrefutable

[59] Rosemary Lowry and Martin Peterson, “Cost-benefit analysis and non-utilitarian ethics,” *Sage Journals* 11, no. 3 (2011): 258–279, https://doi.org/10.1177/1470594X11416767.

support for the 'best' policy outcome. They are the starting point of a conversation around the collective welfare costs of different approaches to transfers and taxation.

4.2 Utility from Income and Consequentialist Social Welfare

Social welfare functions are different ways of aggregating utility scores. Due to data availability, utility scores within this work are a function of income. This allows comparison between groups in a way that would not be possible if utility was not quantified in some way that related it to income redistribution. However, it is important to note that there is more than one way to think about utility—for example, by incorporating experiences of stigma or other qualitative factors, as well as non-consequentialist perspectives.[60] Even in economics, framing utility as a function of consumption and leisure is frequently used as a more holistic alternative to consumption-only utility derivations. It is reasonable to ask if it is possible to accurately generalise wellbeing across the population. It is also reasonable to question if the way money is earned and able to be spent might not be more important than the quantity of money. Income-based utility does not capture all the factors that contribute to social welfare, but is a valuable starting point.

4.3 Marginal utility of income

Assume that the utility of income is given by an isoelastic utility function, that is:

$$u = \begin{cases} \frac{y^{1-\rho}-1}{1-\rho} & \rho \neq 1 \\ \log y & \rho = 1 \end{cases}$$

where u = utility, y = income, and p = parameter.

This function defines utility as proportional to income level, with the proportion of utility to income shrinking as income grows. p represents the elasticity of utility with regards to income, such that when p is greater than 1 the additional utility from each dollar gained decreases faster than if utility decreased in proportion to income gained.

The figure used for p in this thesis is 1.26.[61] Figure 2 illustrates how with p=1.26, utility rises quickly at lower incomes before flattening out such that additional dollars give less

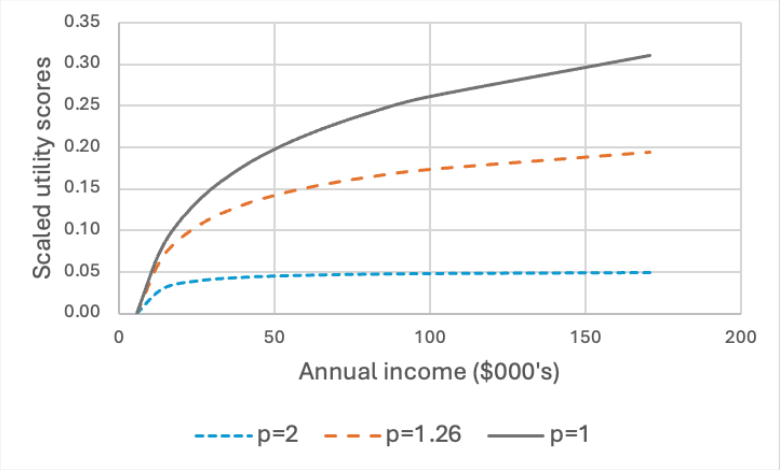
[60] R.B. Brandt, "Objections to Desire-Satisfaction Views of Happiness," in *Utilitarianism and its Critics*, ed. Jonathon Glover (Macmillan Publishing Company, 1990), 52-57, https://www.utilitarianism.com/utilitarianism-critics.pdf.

[61] R. Layard, G. Mayraz, S. Nickell, "The marginal utility of income," *Journal of Public Economics* 92, no. 8 (2008): 1846-1857, https://doi.org/10.1016/j.jpubeco.2008.01.007. This figure is in the ballpark of those found by other researchers in this area. Here, p determines the elasticity of the marginal utility of income and so is different to estimates of p representing the elasticity of risk aversion that readers may be familiar with from risk-related models which also use isoelastic functions.

additional utility at higher incomes. With *p*=1.26 redistribution from high income to low income deciles brings increases in total utility as dollars are shifted away from the horizontal and into the vertical portion of the utility curve. However, redistribution between deciles at the top end of the curve makes little difference to total utility.

I sensitivity check model results by modeling outcomes when *p*=1 and when *p*=2. Figure 2 demonstrates that when *p*=1 the utility function is less concave—utility still flattens out at higher incomes, but not to the same extent, so redistribution from high to middle income households contributes more to total utility than when *p*=1.26. Under *p*=2, utility rises sharply with income for incomes below $40,000. Past this threshold utility is flat, resulting in few benefits from redistribution among middle and high income deciles

Fig.2 Utility scores derived from income using isoelastic utility functions with different *p* values.[62]



4.4 Social welfare functions

To evaluate a given pension system, I first evaluate the income impacts on different groups of people. I then evaluate the utility impacts on these same groups as explained in Section 4.3. Combining these gives the impact on total social welfare. Three different ways of combining group utilities are considered which are the three social welfare functions outlined below. The highest social welfare score is attributed to the scenario with greatest aggregate utility. This would be considered the 'best' policy scenario.

4.4.1 Utilitarian welfare

[62] Utility scores were first normalised so that under each function utility at $50600.00 was 1. Utilities were then normalised again so that for each function Decile 1 utility was 0. p=1.26 utility was scaled by 3, p=2 scaled by 300, and p=1 left at 1:1 scale. The graph illustrates the shape of utility functions under each *p* value only, not the comparative value of utility under each function.

The utilitarian social welfare function reflects a simplified and adjusted version of utilitarian philosophy called the Kaldor-Hicks criterion.[63] Implicit in the function's construction is the philosophy that every person's increased wellbeing is of equal value, and therefore an extra unit of wellbeing generates just as much collective welfare when received by a high wellbeing person as it does when received by someone with low wellbeing.

4.4.2 Prioritarian welfare

Prioritarianism reflects a philosophy of fairness that states that increases in the wellbeing of the worst-off matter more. Paired with marginal utility of income, this approach implies that inequality matters beyond just the difference in the utility a rich or poor person derives from an additional dollar. Prioritarianism can therefore be thought of as consistent with a relational-egalitarian approach, where material inequality matters not only due to material concerns but because those with less are unable to participate or access the same opportunities within their social context.[64]

4.4.3 Maximin welfare

The maximin social welfare score is equal to the utility value of the worst-off group. This reflects Rawlsian justice, which proposes that we should design society under a 'veil of ignorance' as to our own position within that society. John Rawls argued that if society was designed under the veil of ignorance using a social contract approach then the representatives of each group would naturally agree to maximise the position of the worst-off.[65]

4.4.4 Pigou-Dalton

The Pigou-Dalton axiom is useful for understanding how the three social welfare philosophies treat equity. Pigou-Dalton states that when a gap-diminishing transfer is achieved with no impact on total wellbeing this must lead to higher social welfare.[66] Social welfare functions that satisfy this axiom are therefore more inequality-averse. Prioritarianism satisfies the Pigou-Dalton axiom when used with both income and utility. Maximin satisfies Pigou-Dalton only if the gap diminishing transfer directly involves the group with the lowest utility. It is blind to all other transfers. Utilitarianism does not satisfy Pigou-Dalton when applied to utility. However, it does when applied to income due to the

---

[63] Lowry and Peterson, "Cost-benefit analysis and non-utilitarian ethics", section 2.
[64] Mathew D. Adler, *Measuring Social Welfare* (Oxford University Press, 2019), ch.3, https://doi.org/10.1093/oso/9780190643027.001.0001; it is possible that relational egalitarianism could be captured with a threshold approach such as sufficientarianism, but prioritarianism reflects the concept more closely.
[65] Leif Wenar "John Rawls", *The Stanford Encyclopedia of Philosophy* (Fall 2025 Edition), eds. Edward N. Zalta and Uri Nodelman, section 4.6, https://plato.stanford.edu/archives/fall2025/entries/rawls/.
[66] Adler, *Measuring Social Welfare*, section 3.1.

marginal utility of income, which leads to less welfare when income is concentrated within high-income groups. Overall, prioritarianism is more averse to inequality than utilitarianism and maximin represents a special case where inequality matters only to the extent that it harms the material circumstances of the worst-off group. This framing is useful for interpreting results under each social welfare function.[67]

4.5 Interpretation

Care is required when interpreting social welfare functions results. Utility scores are measured in util units which do not have cardinality - two utils do not represent double the utility of one util in any meaningful sense. They are therefore compared ordinally, with the magnitude of the difference between scores having no significance. Social welfare scores are derived from aggregating utils according to different parameters. Like utility scores they can be used to rank policy scenarios but they can not provide information about the magnitude of the difference between scenarios. It is also not possible to compare scores between social welfare functions, for instance prioritarian scores can not be ranked against utilitarian scores. Finally, social welfare outcomes should be interpreted with reference to the limitations I outlined at the beginning of this chapter.

Chapter 5: Models and Methodology

5.1 Chapter overview

This thesis uses four primary models: a base model and three adaptations. I perform an analysis using projected figures for 2026 with all four models, and for two of the models I also use projected figures for 2040 and 2078. In this chapter I outline the logic of the base model and explain how I adapted this model to form the remaining models.

5.2. Base model overview

The base model calculates income, taxation, and utility outcomes for the year 2026 for 10 decile groups, with each decile group representing one tenth of wage and salary earners. For example, Decile 1 represents the bottom 10% of wage and salary earners. The model assumes universal provision of New Zealand Superannuation (NZS) and contains two alternative tax scenarios. The primary model outputs are:

- Per decile total and average net incomes under each tax scenario (net income includes NZS payments received by each decile);

[67] For further insight into the social welfare functions used in this paper, see Chris Thompson, *Equality, equity, and distributive justice* (The Treasury, 2022),https://www.treasury.govt.nz/sites/default/files/2022-12/ap22-03.pdf.

- Per decile utility scores under each tax scenario;
- Social welfare aggregates under each tax scenario; and
- Per decile implied effective tax rates required to fund NZS under each tax scenario.

5.2.1 Initial Income, by Decile

The first step in the model was calculating incomes for each decile. I first took the total income of each decile based on IRD data for FY 2024/25.[68] I used inflation[69] and nominal wage growth projections,[70] based on historical averages, to project real wage growth from FY 2024/25 to the period for each scenario (2026, 2040, and 2078).

5.2.2 Taxation scenarios

The models use a baseline taxation scenario and a more progressive taxation scenario. Both scenarios use effective tax rates. I designed the baseline scenario to be similar to actual effective tax rates experienced by income deciles in New Zealand. The progressive scenario has tax rates for middle income deciles that are similar to the baseline scenario, with lower tax rates on lower deciles and higher tax rates on higher deciles. The models assume that NZS is funded entirely by income taxation and only calculate tax incidence from NZS provision rather than total tax incidence.[71]

Given the projected incomes of each decile, the next step was to determine the taxes that each decile pays. I first calculated the tax paid by each decile based on prescribed rates for each tax scenario.[72] Dividing this tax paid per decile by the income of each decile would give the effective tax rate for each decile, but scaling these up and down interacts with the progressivity of the tax system so I avoided this approach. Instead I add up all the tax paid, and then for each decile calculate the revenue share of that decile as tax paid by that decile divided by total tax paid; e.g., if the top income decile pays $10 of tax, and total tax revenue is $40, the revenue share of the top income decile is 0.25. These tax revenue shares for each decile are used to determine taxes paid by deciles in the different scenarios, which

---

[68] "Wage and salary distributions for Individuals September 2025" Inland Revenue Department, Wage and Salary Statistics datasets, https://www.ird.govt.nz/about-us/tax-statistics/revenue-refunds/wage-salary-distributions/wage-and-salary-statistics-datasets.

[69] Inflation was set at 2.60% per year, the average inflation rate in New Zealand from 2005 to 2025 based on StatsNZ data. See: "Annual inflation at 2.7 percent in June 2025" Statistics New Zealand, https://www.stats.govt.nz/news/annual-inflation-at-2-7-percent-in-june-2025/.

[70] The average annual increase in the nominal wage was calculated as 3.69% based on nominal wage growth in the years spanning 1999 to 2023. See: "Income growth for wage and salary earners remains strong" Statistics New Zealand, https://www.stats.govt.nz/news/income-growth-for-wage-and-salary-earners-remains-strong/.

[71] For capital income models income taxes would include taxes on interest, capital gains, and dividends.

[72] More details regarding the tax rates used can be found in the appendix.

better preserves the existing progressivity of the tax system than would scaling the effective tax rates.[73]

5.2.3 NZS Receipt, and total cost of NZS

NZS payment rates are calculated by adjusting the FY 2024/25 payments for growth in the average real wage which was calculated as part of 5.2.1, since NZS is indexed to this growth.[74] NZS payments are based on relationship status and I calculate the total cost of provision by assuming that 58% of retirement-age individuals are in a relationship, in line with 2023 New Zealand Census data.[75] I assigned the employed over 65 year old population[76] to each of the income deciles in a weighted way such that lower-income deciles are made up of a higher proportion of over 65 year olds. I then simply gave the payment to each income decile in proportion to the fraction of the 65 year old population in each income decile. This method gives NZS received by income decile.

5.2.4 After tax and NZS incomes, by decile

I assumed that taxes must raise sufficient revenue to pay for the total cost of NZS. The total tax raised was then split across the deciles by multiplying it by the tax revenue shares for the deciles which were calculated in 5.2.2. I then calculated the total after-tax-and-NZS incomes for each decile by taking the initial income (from 5.2.1) adding the NZS (from 5.2.3) and then subtracting the taxes. These after-tax-and-NZS incomes for each decile are the main output of my model. I calculate utility for each decile from the average decile income, and then use social welfare functions to combine utility across deciles, as explained in Chapter 4.[77]

---

[73] Revenue shares work to a fixed funding amount. This means that in scenarios where lower deciles or quintiles make low or no contributions to total revenue, for example in the wealth models where the lowest quintile has negative wealth, higher deciles contribute more even than the original tax rates would imply. Additionally, under an income weighted revenue-shares approach, the identity *tax owed < income* is not guaranteed, and it is possible for the model to return negative net income figures.

[74] NZS payments are indexed to the higher of inflation or after tax nominal wage growth. Real-wage indexing is used in this thesis as wages tend to grow faster than inflation in the long run. The use of gross income ignores interaction effects between taxes and NZS rates for the purpose of simplification.

[75] "At 1 April 2024", Ministry of Social Development, https://www.workandincome.govt.nz/map/deskfile/nz-superannuation-and-veterans-pension-tables/at-1-april-2024.html; I assume that all single clients receive the living alone rate of payment, which is the highest rate. Net figures are used for all NZS calculations.

[76] Calculated as 25% of the total over 65 population in each year modeled. Each decile represents 10% of the employed population, found by summing 78% of the working-age population with the employed over 65 population. Weighting retirement age individuals implicitly shifts working-age individuals into higher deciles.

[77] Average income is used to capture the dependency ratio, as using average income shows the per-person cost to wage and salary earners from NZS provision.

5.3 Wealth models

I substituted wage and salary income for capital income to create wealth models.[78] The wealth models are quintile-based with each quintile representing 20% of the total population. The use of quintiles is standard practice for wealth-based modeling in New Zealand, where wealth data is far less complete and accurate than income data. Wealth models also use household figures rather than individual-based data.[79] Retirement-age individuals were assigned to quintiles in a weighted way so that higher deciles had a higher proportion of retirement age individuals. I prescribed capital income as 5% of net wealth in FY 2023/24 and used real wage projection to project capital income into 2026.[80] Owner-occupied dwellings were subtracted from the wealth total for each quintile before calculating capital income.[81] I based utility scores in the wealth models on total income by quintile rather than average income.[82]

5.3.1 Wealth taxation

To determine revenue shares for the wealth-based models, I converted the decile based tax rates for baseline and progressive taxation scenarios into quintile figures by taking the mean of two deciles for each quintile. I then followed the same process of creating revenue shares from the tax rates as outlined in section 5.2.2. This implies that the progressivity of the wealth tax would be similar to current income taxes.

5.4 Means-tested models

Means-testing was based on providing NZS to only the bottom three deciles or quintiles. I found the post-means-testing cost of NZS provision by subtracting the payments attributed to non-receiving groups from the total under universal provision. The post means-tested figure formed the cost side of the analysis and was used to calculate implied taxes. The NZS payments assigned to groups 1–3 made up the benefit side of the analysis and were used to determine post-tax post-NZS income for these deciles. For non-receiving groups net income was simply gross wage and salary income minus NZS tax contribution. Two

[78] Flow-based taxation was used to determine implied tax rates as it may be more politically feasible than stock taxation.
[79] Wealth data is from the Household Economic Survey year ending June 2024. Table 2.03 https://www.stats.govt.nz/information-releases/household-net-worth-statistics-year-ended-june-2024/.
[80] 5% is a moderate return and likely underestimates both returns from wealth in higher deciles where returns tend to be higher, and income-from-wealth inequality between quintiles, a frequent effect when working with New Zealand data where the top end of the wealth distribution is thought to be poorly captured.
[81] Low and middle wealth New Zealanders hold most of their wealth in a family home. Income from family home ownership, in the form of capital gains, is illiquid and would rarely be taxed under flow-based taxation, with taxes only taking effect when homes are sold even if a comprehensive capital gains tax were implemented that included the family home, which is unlikely.
[82] Total income is able to be used because dependency ratio is not relevant in the wealth models. Capital income is assumed to accrue across the lifetime in a consistent way across time periods.

sensitivity checks recreated means-tested income models with the bottom four or bottom five deciles receiving NZS payments.

Chapter 6: Results

6.1. Overview of model scenarios

Results are framed in terms of the following four policy scenarios:

- Baseline taxation with universal provision
- Baseline taxation with means-tested provision
- Progressive taxation with universal provision
- Progressive taxation with means-tested provision

All policy scenarios are revenue-neutral with respect to NZS expenditure and are evaluated across income deciles using three social welfare functions: utilitarian, prioritarian, and maximin. In addition, a simple wealth tax model is included as a conceptual extension to investigate the social welfare outcomes of capital taxation.

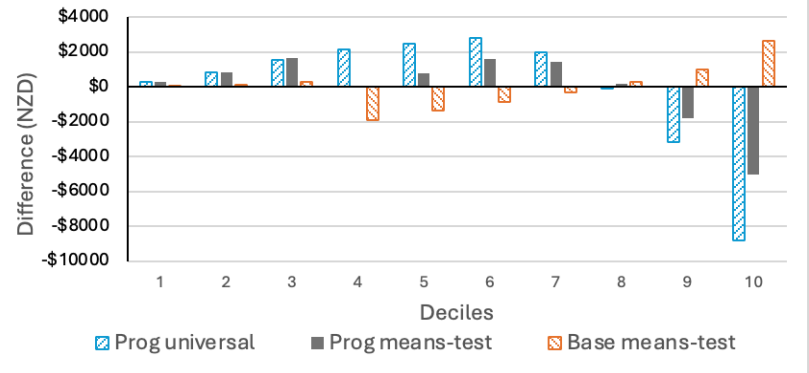
All results presented below are for 2026 figures unless otherwise specified.

6.2 Income models

6.2.1 Net income differences

Figure 3 displays the difference in per decile net income between policy scenarios for the income models. Net income means income after tax and NZS are accounted for. Difference was calculated against baseline taxation with universal provision.

Fig.3 Net income difference between policy scenarios.

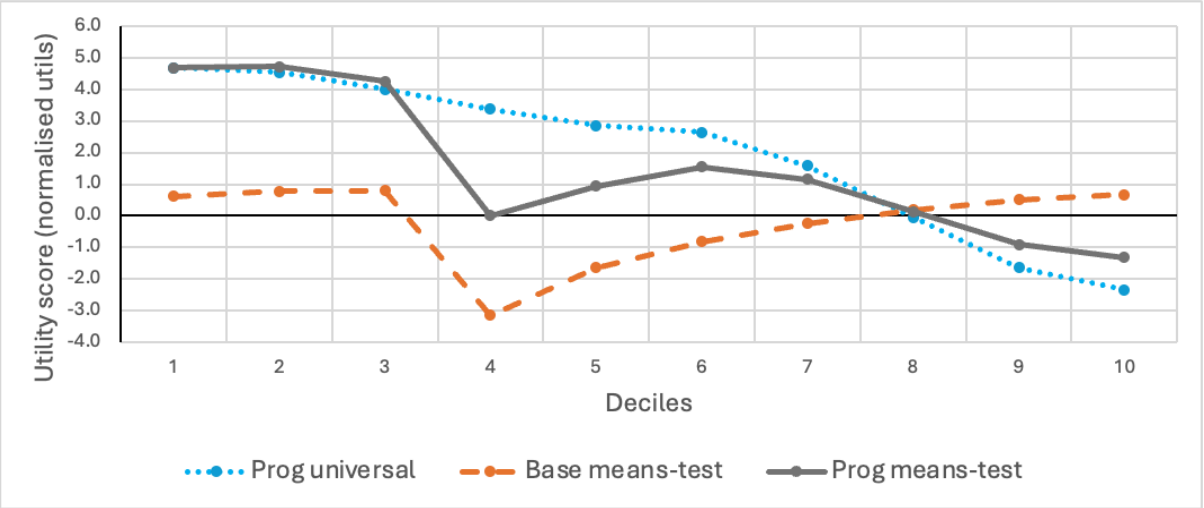


Compared to the baseline tax scenario, progressive tax structures result in higher net incomes for deciles 1–7 and lower net incomes for the remaining deciles. Means-testing reduces income for deciles 4–7 and increases income under each taxation scenario for deciles 1–3 and 8–10. Means-testing offsets gains from progressive taxation for Decile 4.

6.2.2 Utility scores

Figure 4 depicts the distance from the baseline utility score for each policy scenario. Baseline utility scores are given by baseline taxation with universal provision.[83]

Fig.4 Scaled utility scores by decile and policy scenario. Scores are normalised against baseline utility shown as 0.0 for all deciles. The dotted blue line shows utility with progressive taxation and universal provision. The dashed orange line shows utility for baseline taxation with means-tested provision. The solid grey line shows utility with progressive taxation and means-tested provision.



All three alternate scenarios offer higher utility scores for the bottom three deciles. Progressive taxation with universal provision also has higher utility scores through to Decile 7, with a negligible difference from the baseline scenario for Decile 8. Baseline taxation with means-tested provision has the lowest utility scores overall, with the greatest negative impact on those just above the means-testing threshold. Utility improved under means-testing for the lowest and highest income deciles.

6.2.3 Income model social welfare scores

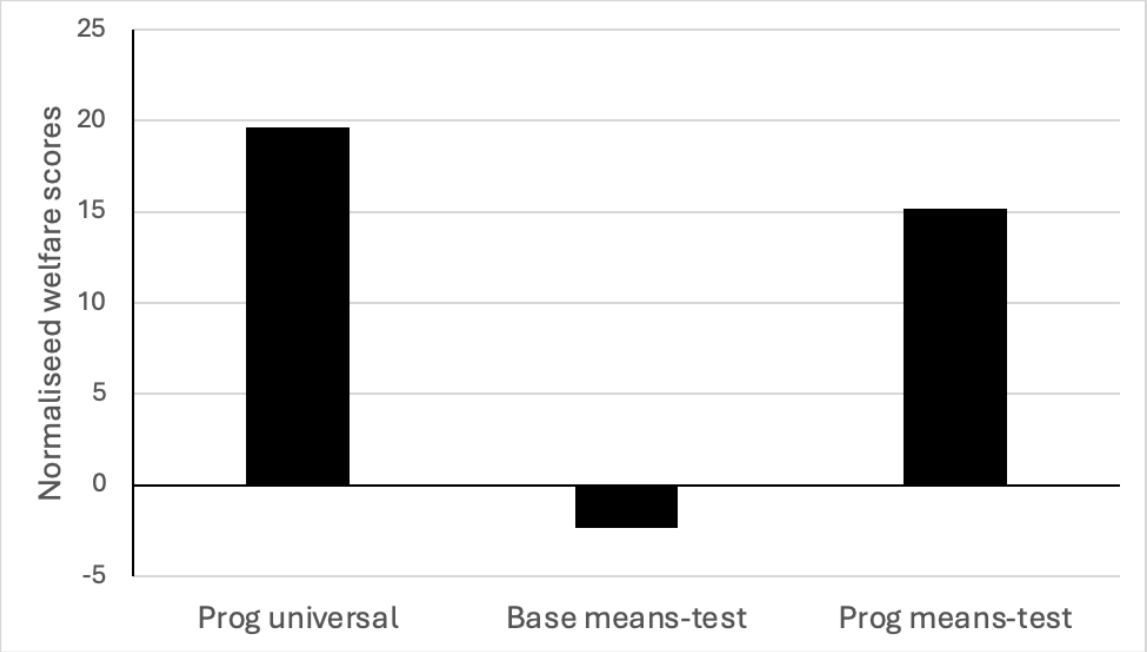
The below graphs compare the social welfare of each policy scenario under utilitarian, prioritarian and maximin approaches to aggregation.

Figure 5 depicts the distance from the baseline utilitarian social welfare score for each of the alternate policy scenarios. The baseline score is the welfare score with universal provision and baseline taxation. Utilitarianism is a simple sum of the utility scores for all deciles.

[83] Utility scores are derived from average individual income post-tax and post-NZS payments, using isoelastic utility with p=1.26. Scores are scaled up by 1000.

Universal provision with progressive taxation resulted in the highest utilitarian social welfare score, with means-tested progressive taxation having a slightly lower score and means-tested provision with baseline taxation resulting in worse welfare outcomes than the baseline scenario.

Fig.5 Utilitarian welfare scores normalised against baseline welfare. Scores are scaled by 1000.

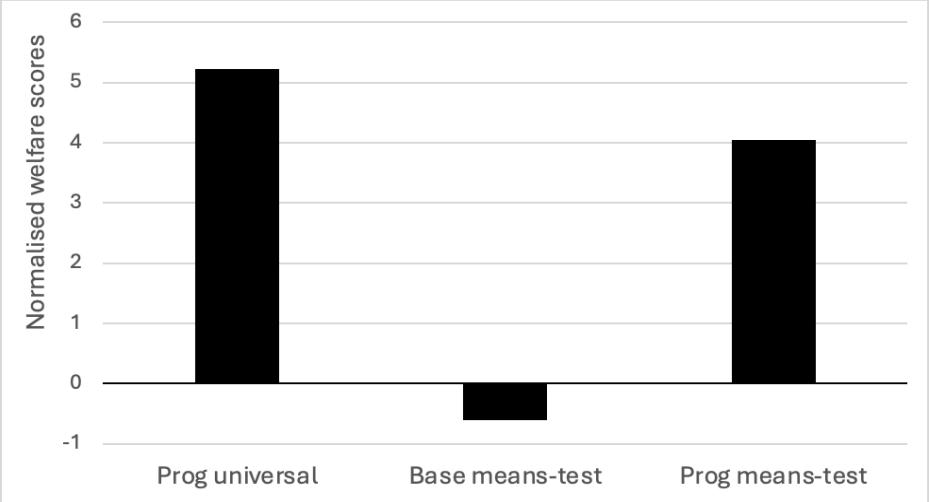


The same ordinal results were seen under the p=1 sensitivity check. However, with p=2 all three policy scenarios ranked above the baseline scenario, with means-tested provision ranked above universal provision under baseline taxation. The top two ranked scenarios remained universal provision with progressive taxation, then means-tested provision with progressive taxation.

When means-testing was sensitivity checked by providing NZS to the bottom four income deciles ordinal results remained the same. Once NZS payments were expanded to the bottom five deciles, means-testing with baseline taxation was ranked above the baseline scenario, however progressive taxation with universal provision remained the highest ranked scenario, followed by progressive taxation with means-tested provision.

Figure 6 depicts the distance from the baseline prioritarian social welfare score for each of the alternate policy scenarios. Prioritarianism sums the transformed utility scores for all deciles.

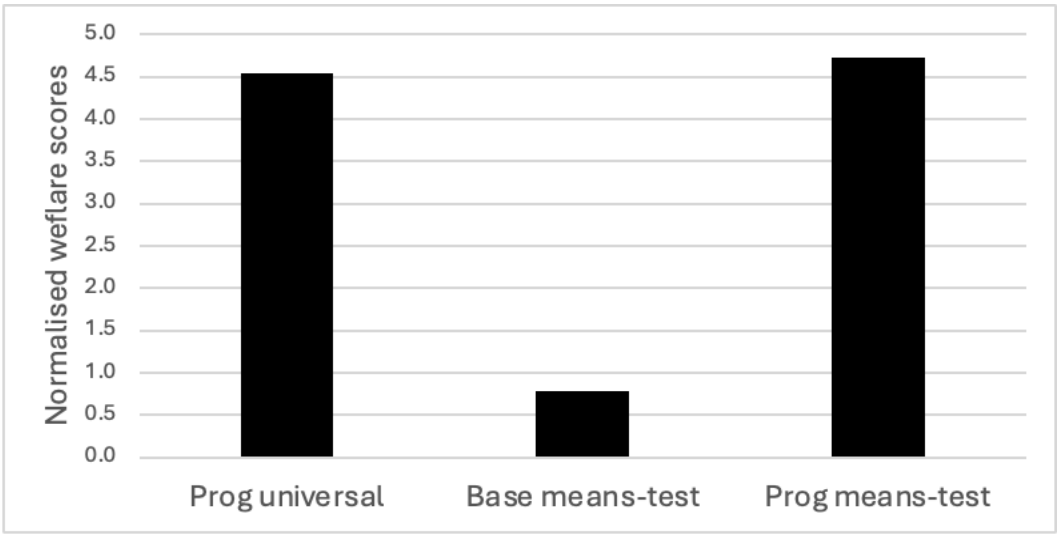
Fig.6 Prioritarian welfare scores normalised against baseline welfare. Scores are scaled by 1000.



Prioritarian welfare scores followed the same ordinal pattern as the utilitarian scores, with the highest welfare seen with universal provision and progressive taxation. The lowest score came from means testing with baseline taxation. Prioritarian had identical outcomes to utilitarianism under the sensitivity checks.

Figure 7 depicts the distance from the baseline maximin social welfare score for each of the alternate policy scenarios. Maximin social welfare scores are equivalent to the utility of the worst-off group.

Fig.7 Maximin welfare scores normalised against baseline welfare. Scores are scaled by 1000.



The worst-off group was Decile 2 in every policy scenario after accounting for identical scores under progressive taxation for Decile 1. Maximin social welfare scores improved

under all three alternative policy scenarios. Progressive taxation resulted in the two highest ranked outcomes.

6.2.4 Implied effective tax rates by policy scenario.

Figures 8 and 9 display the effective tax rates necessary to raise required NZS revenue by decile for each policy scenario.

Fig.8 Implied effective tax rates under baseline taxation. Black bars show tax rates under universal provision policy settings. Cross hatched bars show tax rates under means-tested provision.

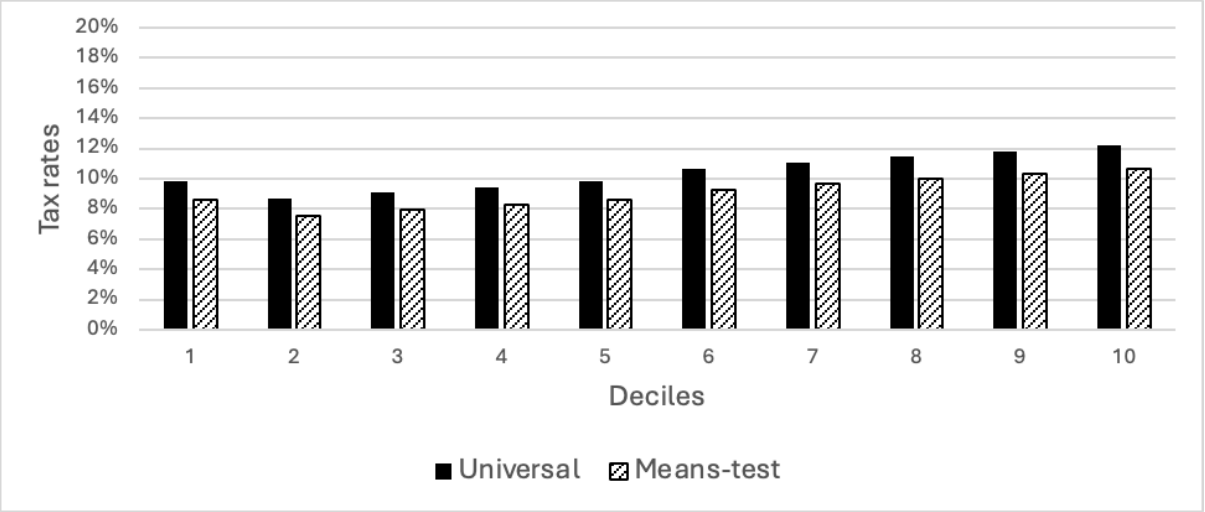
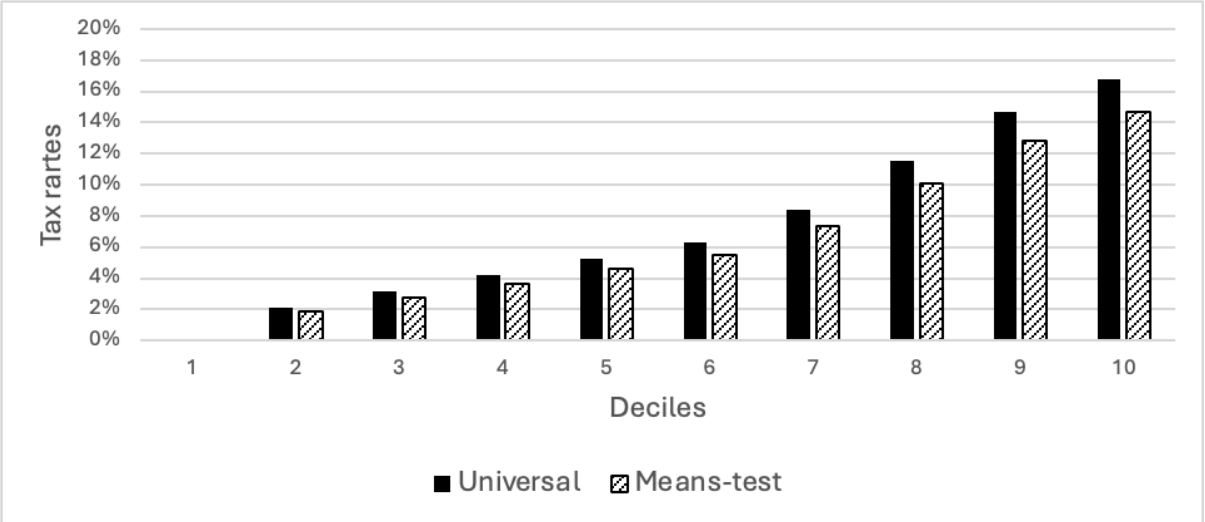


Fig.9 Implied effective tax rates under progressive taxation. Black bars show tax rates under universal provision policy settings. Cross hatched bars show tax rates under means-tested provision.



Baseline tax rates are fairly flat across deciles, around 10%. Progressive taxation reduces tax rates for low-income deciles substantially, with tax rates only increasing under progressive taxation for deciles 9 and 10. This translates to net-income increases under

progressive taxation for the bottom eight deciles in Figure 3. Means-testing has only a small effect on tax rates across deciles, with the largest difference being experienced by the highest deciles.

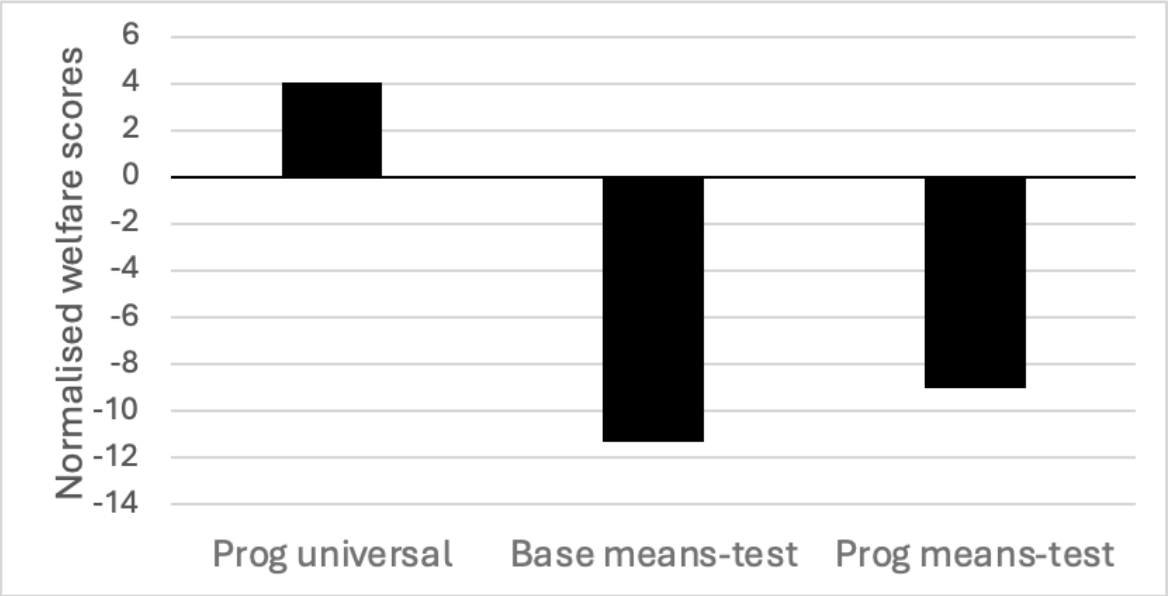
6.3 Wealth Models

6.3.1 Wealth model social welfare scores

The below graphs compare the aggregate utility of each policy scenario under utilitarian, prioritarian and maximin approaches to aggregation.

Figure 10 compares the utilitarian welfare scores under each policy scenario measured by difference from the baseline score, shown here as 0.0. The baseline score is the social welfare score for universal provision with baseline capital-income taxation.

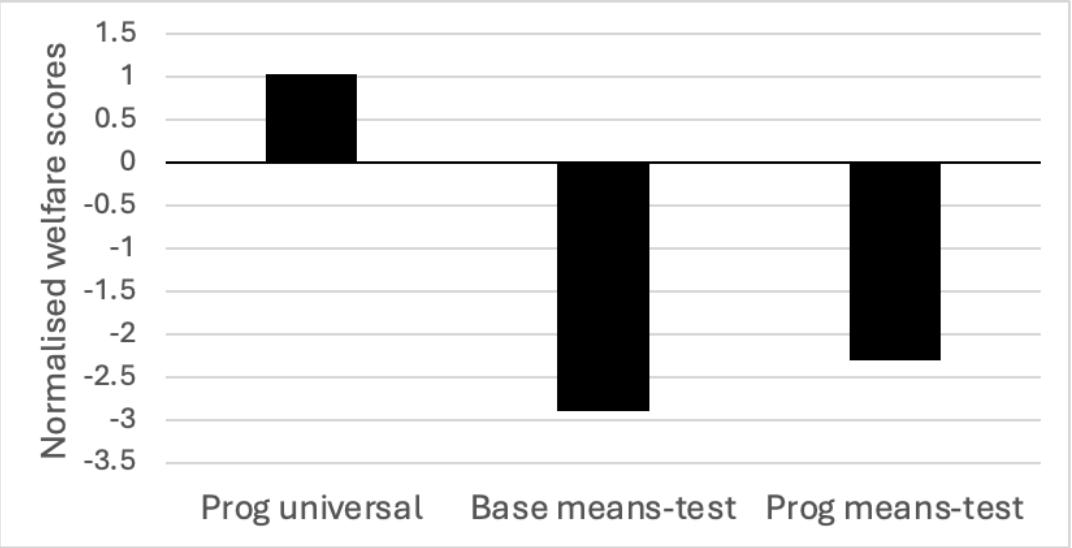
Fig.10 Utilitarian welfare scores normalised against baseline welfare. Scores are scaled by 10,000.



The highest utilitarian welfare score was achieved with universal provision and progressive taxation. The next highest was the baseline scenario. Means testing reduced welfare under both taxation scenarios, however this impact was mitigated under progressive taxation.

Figure 11 compares the welfare scores for each scenario under the prioritarian social welfare function. Scores are graphed as the difference from the baseline scenario.

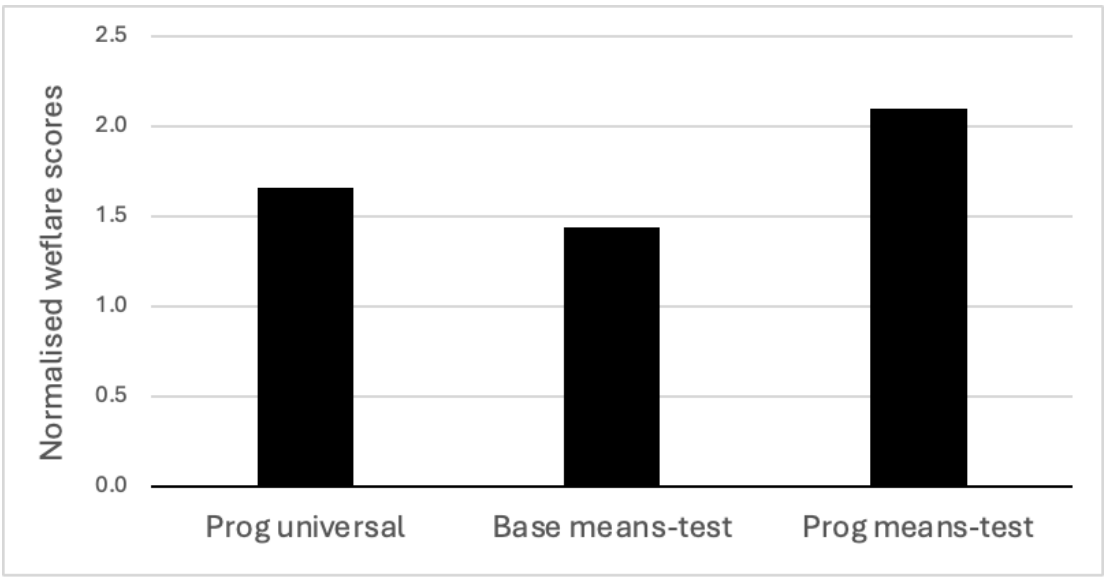
Fig.11 Prioritarian welfare scores normalised against baseline welfare. Scores are scaled by 10,000.



As with the utilitarian social welfare function, universal provision resulted in higher social welfare than means-tested provision under prioritarianism. Progressive taxation resulted in higher social welfare under both provision scenarios.

Figure 12 compares the maximin score of each capital income scenario against the baseline scenario.

Fig.12 Maximin welfare scores normalised against baseline welfare. Scores are scaled by 10,000.

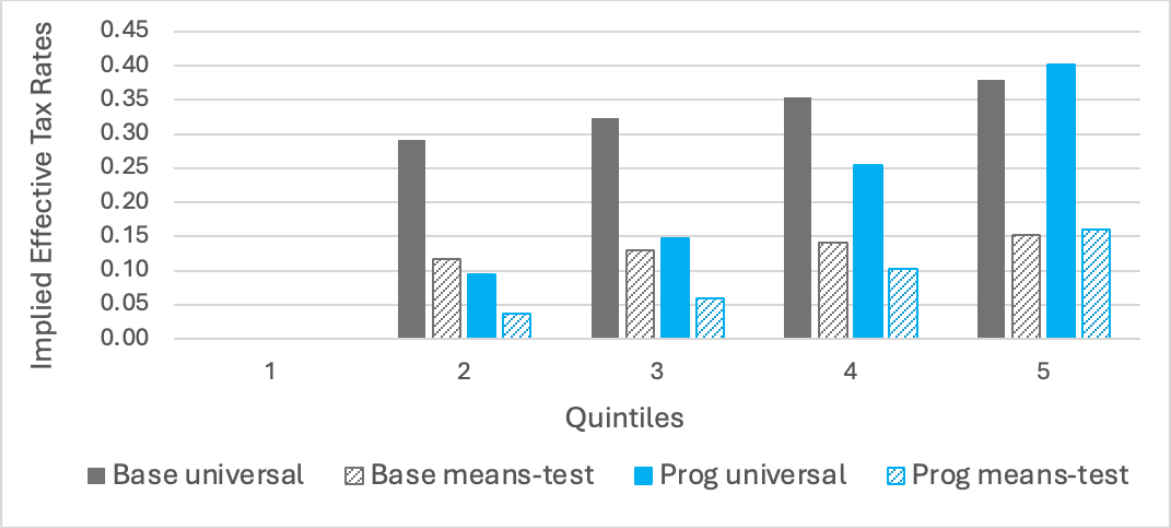


Maximin matches prioritarianism and utilitarianism in assigning the highest social welfare scores to progressive taxation. However, this social welfare function is unique in ranking means-testing provision over universal provision under each tax scenario.

6.3.2 Implied effective tax rates

Figure 13 shows the effective tax rates required to fund New Zealand Superannuation using capital income by quintile under each policy scenario.

Fig.13 Implied effective tax rates by quintile.



Quintile 1 has an effective tax rate of 0% due to total net wealth being negative for this decile. Tax rates under means-tested provision are less than half the tax rates for universal provision across tax scenarios and quintiles. Progressive taxation results in lower tax rates for quintiles 2–4 and slightly higher tax rates for Quintile 5 across provision scenarios. Provision and taxation settings are similar in the magnitude of their impact on implied effective tax rates.

These scores can be multiplied by 5% to give the implied effective tax rates for wealth taxation, in contrast to taxing capital income. The highest wealth tax rate arising from this calculation is around 2% for Quintile 5 under universal provision with progressive taxation.

6.4 Future Projections

The dependency ratio is calculated as the number of working-age individuals divided by the number of individuals 65 years and over for each time period. StatsNZ projects a steep decline in dependency ratio, from 3.75 to 3.04 in the medium short term (2026 –2040), with this decline slowing gradually. By 2078, StatsNZ projects 2.04 working-age individuals for every one individual of retirement age. Figure 14 shows the declining dependency ratio across time using StatsNZ data.

Fig.14 dependency ratio by year.

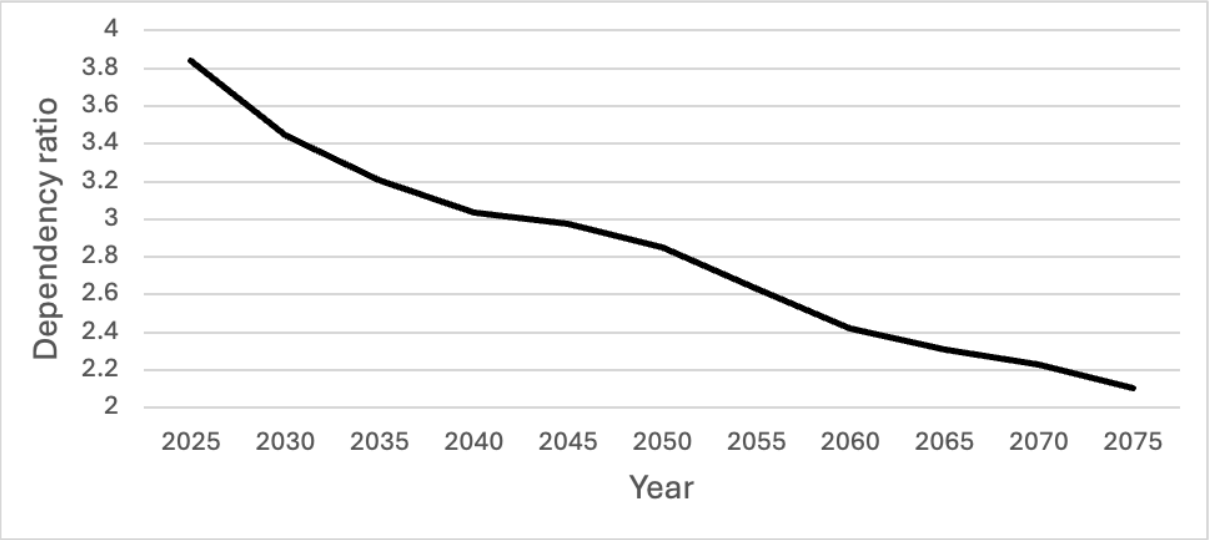
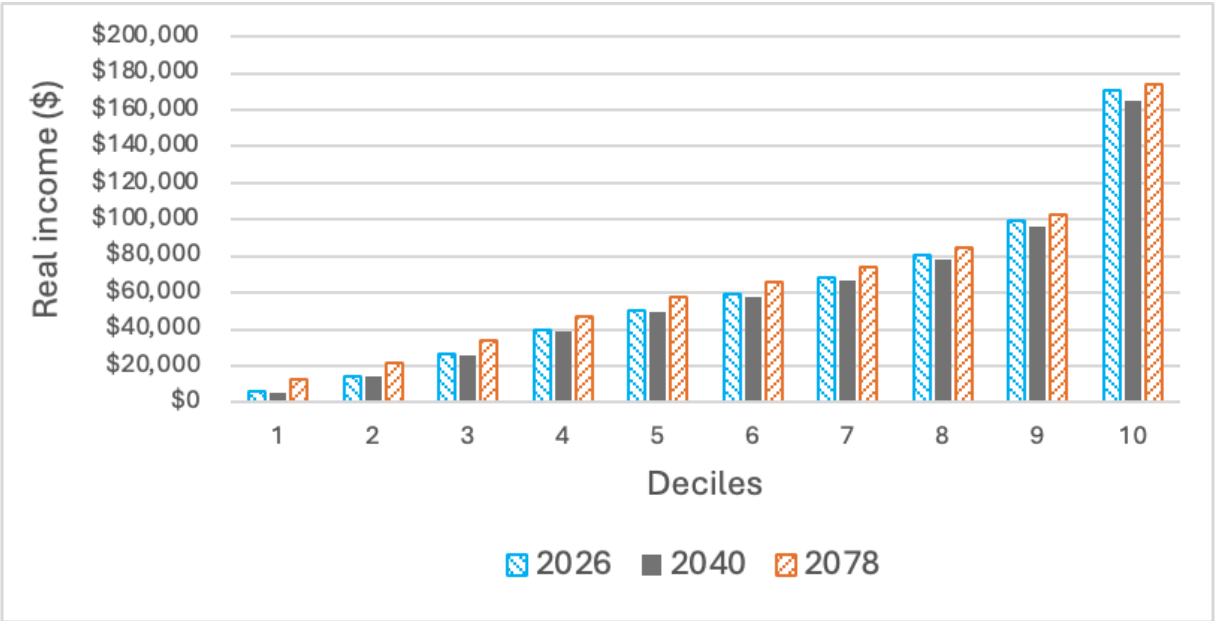


Figure 15 shows average per person income by income decile after-tax-and-NZS. It depicts these values for each of the three future time periods modeled, 2026, 2040 and 2078. All figures are based on universal NZS provision and baseline taxation. Income figures are real, with FY 2024/25 as the base year.

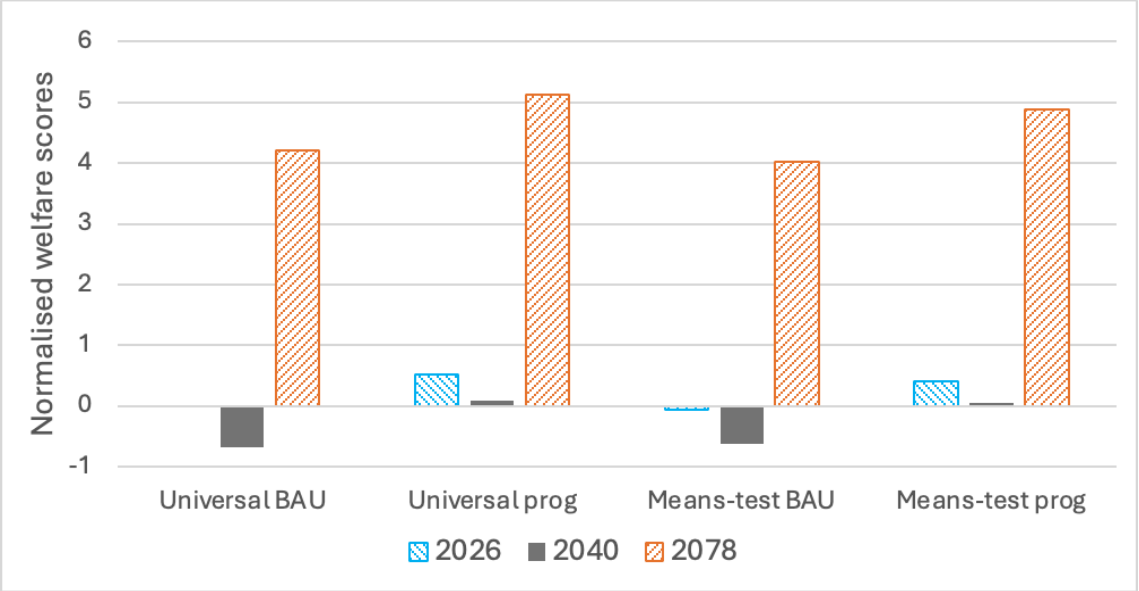
Fig.15 Net income by wage and salary income decile.



For all deciles net real income declines slightly from 2026 to 2040 and rises from 2026 to 2078.

Figure 16 shows the prioritarian scores for each policy scenario and year measured against a baseline. The baseline is the welfare score for universal provision and baseline taxation in the year 2026.[84]

Fig.16. Normalised prioritarian welfare scores by policy scenario and year.



The prioritarian social welfare score declines from 2026 to 2040 under both baseline taxation scenarios. However, progressive taxation under either provision scenario increases welfare in 2040 from the 2026 baseline. Welfare increases from 2026 to 2078 under all scenarios, with progressive taxation and universal provision resulting in higher welfare scores, replicating the 2026 results.

6.5 Summary of results

Progressive taxation resulted in higher welfare under all models, provision scenarios, and social welfare functions. In the income models, progressive taxation reduced tax rates for deciles 1–7. In the wealth models, progressive taxation reduced tax rates for quintiles 1–4. This reduction translated into increased utility scores for these groups and was robust to sensitivity checks.

Means-testing results were mixed, with higher utility for high income deciles and those in receipt of NZS, but lower utility for middle income deciles. Maximin ranked means-testing above universal provision under both the income and wealth models. Prioritarianism and utilitarianism ranked universal provision above means-testing and this result was robust to NZS receipt being expanded to Decile 4 under the income models but reversed once provision was expanded to Decile 5.

[84] Welfare scores are scaled up by 100.

The models show after-tax-and-NZS real income declining between 2026 and 2040 but rising by 2078. This result holds across income deciles and both tax scenarios. This is because the slowing rate of decline in the dependency ratio allows wage growth to become the dominant factor determining average incomes.

Chapter 7: Modeling choices

This chapter discusses the implications of key modelling choices, including accuracy considerations and constraints on result generalisability.

The total projected cost of NZS provision in 2026 is $22,287 million in my models. The budgeted cost of NZS provision is $24,691 million for FY 2025/26, so the models in this work slightly underestimate the total cost of provision.[85] This is likely due to high inflation in FY 2024/25 leading to higher than normal NZS rate increases in FY 2025/26. However, this difference is small enough to have no meaningful impact on the main results.

Deciles used in the income models were based on wage and salary earners due to data availability. The exclusion of non-workers likely underestimates the welfare benefits from progressive taxation as their inclusion would increase the range between the high and low ends of the income distribution. The use of deciles and quintiles also implicitly assumes income distribution won't change in the future, which may not be the case.[86]

Tax rates used in the models reflect realistic tax policy settings to varying extents. Effective tax rates for top income earners in this thesis were around 16% under progressive taxation. This would require marginal tax rates far below revenue-maximising rates found in most studies, suggesting that disincentive effects would be negligible.[87] However, these tax rates are only what would be required to fund New Zealand Superannuation, which is a relatively small fraction of overall government revenue. The tax-rates used to calculate progressive revenue shares were high, implying an 80% top effective tax rate, and even the baseline tax rates used in my wealth models exceed the level of tax currently paid on many forms of capital income in NZ.

Means-testing threshold choices have important implications for interpreting model outcomes. In the means-tested income model the total cost of NZS provision was calculated as the cost of providing NZS to the bottom three income deciles only. For 2026

---

[85] Ministry of Social Development, *Vote Social Development* (Ministry of Social Development, 2025), 194, https://www.budget.govt.nz/budget/pdfs/estimates/v9/est25-v9-socdev.pdf.
[86] Meghan Stephens, *Trends in the household income distribution: 2007-2021* (The Treasury, 2023), https://www.treasury.govt.nz/sites/default/files/2023-04/an23-01.pdf.
[87] For revenue-maximing top tax rates see: Mathias Trabandt and Harald Uhlig, "The Laffer curve revisited," *Journal of Monetary Economics* 58, no.4 (2011): 305-327, https://doi.org/10.1016/j.jmoneco.2011.07.003.

the annual singles rate for NZS provision was projected as $27,997.84 and the average net income per person for Decile 4 (the cut-off decile) was projected as $37,695.52 before NZS provision. Working-age benefits in New Zealand cut-off at a gross income of $35,204.[88] Therefore, everyone in the means-tested scenarios received income at least as adequate as the base level of New Zealand Superannuation and 40–50% of the relevant population continued to be eligible for NZS in both the income and wealth models.[89]

Means-testing is an administratively complex approach to NZS provision and some claim that the additional cost from means-testing could substantially mitigate savings from reduced transfers. However, it is difficult to determine an exact figure for the additional cost burden of means-testing as there is no disaggregated administrative cost data available.[90] For this reason administration costs are not included in the models for this thesis.

Chapter 8: Discussion

8.1 Interpretation

8.1.1 Income models

Means-testing lowered effective tax rates, but it also damaged welfare under both progressive and baseline taxation. As seen in Figure 3, tax savings from means-testing accrue primarily to the highest income deciles when revenue shares are held constant. For these deciles, small tax rate changes translate into large increases in net income. By comparison, middle income deciles experienced a net *loss* from means-testing, even when 62% of retirement age earners were eligible for payments.[91] This impact was worst immediately above the recipient threshold. Diminishing marginal utility of income meant that even when the recipient threshold for means-testing was raised, welfare gains from means-testing remained smaller than those from progressive taxation.

Progressive taxation shifted the cost of NZS provision away from lower income deciles and towards high income deciles. The marginal utility of income meant that these high income

---

[88] "Jobseeker Support cut-out points (current)" Ministry of Social Development, https://www.workandincome.govt.nz/map/deskfile/main-benefits-cut-out-points/jobseeker-support-cut-out-points-current.html.
[89] Australian pension abatement begins at $11,336.00 but pensions are not cut-off until $66,960.00. See: "Income test", Services Australia, https://www.servicesaustralia.gov.au/income-test-for-age-pension.
[90] The Treasury, *He Tirohanga Mokopuna 2021*, 54; IRD recently determined that the cost of means-testing government KiwiSaver contributions would be in the range of 2–5 million dollars. This is for the working-age population which is larger than the pool of potential superannuates, but it is also similar to administering payroll tax, which is administratively less intensive than means-testing transfer payments. See: Inland Revenue Department, "Considering a KiwiSaver switch as part of Budget 2025" in *Information Release* (Inland Revenue Department, 2024), 3, https://www.taxpolicy.ird.govt.nz/publications/2024/ir-budget-2025.
[91] Percentage based on provision to bottom four deciles under weightings used to assign retirement age workers to income groups, see appendix A.3.

deciles were able to carry the cost with very little lost utility, while low-income deciles saw significant utility gains from tax savings. Progressive taxation has the greatest welfare benefits as it more accurately targets benefits towards low income groups.

Ordinal welfare outcomes held when sensitivity-tested using p=1 to derive utility. p here represents the extent to which the additional utility gained from additional income declines as income increases. Ordinal outcomes changed under p=2. Means-testing was preferred over universal provision in baseline taxation scenarios because utility losses to middle income deciles from means-testing fell onto the flat section of the p=2 utility curve. This meant that they were small enough to be offset by gains to low income deciles from means-testing under baseline taxation revenue shares.

Maximin was the only model that preferred means-tested provision over universal provision. Maximin only considers the wellbeing of the lowest income group and is blind to impacts on other deciles. The lowest income groups continue to receive NZS under means-testing, so the only difference between policy setting under maximin is reduced taxation from means-testing. Within provision scenarios maximin accorded with utilitarianism and prioritarianism in endorsing progressive taxation.

8.1.2 Wealth models

In the wealth models, universal provision was preferred over means-testing for both taxation scenarios under prioritarianism and utilitarianism. This was contributed to by the concentration of retirement age individuals in higher wealth households. Capital income generally makes up a smaller fraction of personal income than wage and salary, so the loss of NZS eligibility for top quintiles had a significant impact on utility derived from capital income for these groups. However, wealth model scores cannot be directly compared with income model scores as they are household-based and include the total population, not just wage and salary earners.

All three social welfare functions supported progressive taxation in both provision scenarios. Maximin was unique in ranking means-testing over universal provision. As with the income models this is because maximin only considers the worst-off, in this case the bottom two quintiles. It is therefore indifferent to NZS lost by the top two wealth quintiles in the means-tested models.

Means-testing resulted in significant tax-rate reductions in the wealth models, possibly due to savings being split across fewer groups. Implied tax rates were based on capital income. Scaling tax rates to explore the implied rates if wealth were taxed as a stock value demonstrates how less than 2% wealth taxation would be sufficient to fund universal NZS

provision.[92] This figure is likely an overestimate, as the top end of wealth distribution in New Zealand is thought to be higher than known figures.[93]

8.1.3 Future projections

I included future projections to explore how distributional impacts shift with the declining dependency ratio. Per person net income declined across all deciles from 2026 to 2040, reflecting a shrinking number of workers facing a greater cost of NZS provision. This translated to social welfare scores declining under baseline taxation scenarios from 2026 to 2040. Progressive taxation *increased* social welfare in 2040 compared to a 2026 baseline taxation scenario, suggesting that the *aggregate welfare gains from progressive taxation are large enough to offset the decline in the dependency ratio*.

Although the dependency ratio decline continues from 2040 to 2078, net income increases, as does social welfare. This suggests that economic growth over the next 60 years will offset the decline in the dependency ratio as this decline begins to slow.[94] The ordinal results between policy settings were the same across time-periods, showing *robust benefits from progressive taxation and universal provision even as the dependency ratio falls*.

8.2 Philosophies of equity

8.2.1 Utilitarianism

Under utilitarianism, an additional unit of utility generates the same level of social welfare regardless of who receives the additional utility. This approach can be considered 'impartial' as it reflects the equal standing of all human beings. It is the default method of assessing costs and benefits in economic research. It is also consistent with the value of equal-sacrifice, with no one group being asked to sacrifice more utility than another.

Utilitarianism consistently ranked progressive taxation with universal provision above alternatives across the income and wealth models in this thesis. This remained true under the p=1 sensitivity check, where the marginal utility of income declined more slowly than is

---

[92] 2% is a high wealth tax by international standards but slightly below the rate proposed by the New Zealand Green Party on net assets over $2 million; Wealth tax implementation is complex and compliance costs can be significant, see: David Burgherr, "The costs of administering a wealth tax" *Fiscal Studies* 42, no. 3–4 (2021): 677–697, https://doi.org/10.1111/1475-5890.12276.

[93] Benjamin Ching, Tayla Forward and Oscar Parkyn, *Estimating the Distribution of Wealth in New Zealand* (The Treasury, 2023), https://www.treasury.govt.nz/sites/default/files/2023-04/twp23-01.pdf.

[94] This finding runs counter to Treasury modelling, possibly due to slight future real-wage growth assumptions having a large impact due to compounding. Assuming constant growth to 2078 may be optimistic. For more information on the role of growth assumptions in modelling, see: Diana Cook, *The productivity slowdown: implications for the Treasury's forecasts and projections* (The Treasury, 2024), https://www.treasury.govt.nz/publications/tp/productivity-slowdown-implications-treasurys-forecasts-and-projections

generally found to be the case in economic research. This indicates that even low rates of diminishment for marginal utility lead to welfare gains from redistribution.

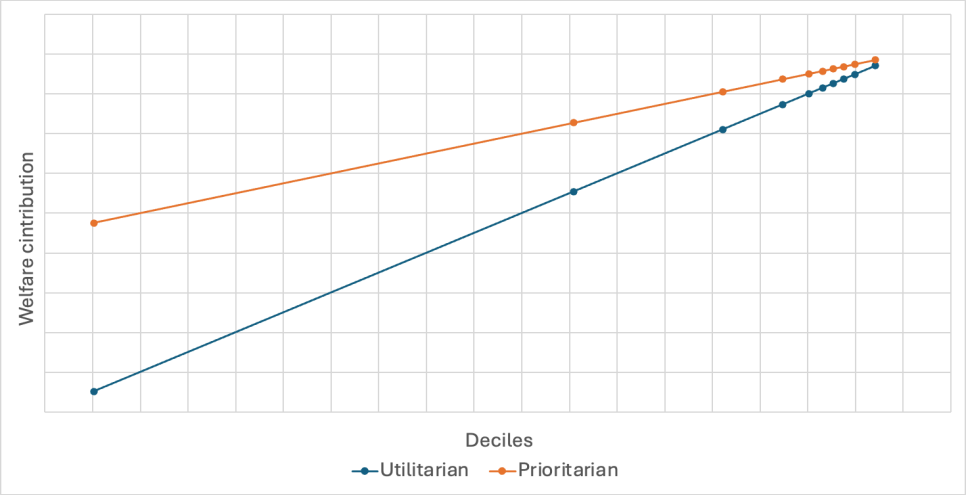
When diminishing marginal utility was high with p=2, utilitarianism endorsed means-testing over universal provision but only under baseline taxation. At this level of diminishing marginal utility, individuals with income above $40,000 received negligible wellbeing benefits from additional income. This erased wellbeing losses for middle income deciles from means-testing while low income groups still held substantial shares of taxation liability. The use of utilitarianism as an equity-neutral welfare function highlights the significance of p values in analyses of this kind.

8.2.2 Prioritarianism

New Zealand Retirement Commission emphasises that a New Zealand retirement framework must exist not only to protect residents from poverty but also to uphold mana in retirement years.[95] Mana is closely associated with social standing and is aligned with the prioritarian focus on relational equity, which holds that inequality matters for reasons beyond material circumstances.

Prioritarianism minimises the impact of high income and middle income deciles on the aggregate wellbeing score. Figure 17 illustrates this difference, showing how lower decile utility scores contribute more to total welfare under prioritarianism, with contribution growing closer to utilitarianism levels in higher deciles. Prioritarianism rankings were identical to utilitarian rankings across primary scenarios and sensitivity checks, showing that the p value used to calculate utility scores mattered more for scenario rankings than the social welfare function used for aggregation.

Fig.17. Welfare contribution by decile utility score and social welfare function under p=2.



[95] New Zealand Institute of Economic Research, *Lessons from across the Tasman*, 15.

8.2.3 Maximin

Maximin gives ultimate priority to raising the wellbeing of the worst-off. Maximin was unique in both the income and wealth models for endorsing means-testing over universal provision. This raises an interesting tension between Rawlsian justice and proponents of rights-based approaches to social welfare provision. Under a consequentialist framework the poorest New Zealanders are best off under means-testing. That is, rights-based approaches to NZS provision based, for example, in notions of what we owe to our kaumatua, directly harm the wellbeing of the worst-off groups in the New Zealand economy.[96] The disagreement between maximin and prioritarianism also raises questions about the extent to which it is acceptable to raise the wellbeing of middle-income New Zealand at the expense of New Zealand's poorest.

8.3 Taxation vs means-testing in the model

Progressive taxation and means-testing both reduce income inequality net of tax and transfers. As such, they are sometimes considered to differ only in the point at which they take effect, with increasing the progressivity of taxation being considered more administratively efficient than means-testing if taxation is already taking place. However, in this thesis means-testing disproportionately benefited the highest income deciles, while progressive taxation more effectively targeted benefits to low-income groups. Ultimately specific policies matter, and the wellbeing impacts of any means-testing or tax approaches will depend on levels and implementation. The New Zealand Treasury explored the wellbeing impacts from different taxation approaches in *He Tirohanga Mokopuna 2021*.[97]

8.4 Extensions and future research

Future research could repeat these models while including impacts from incentives. This includes the impact of progressive taxation on labour supply and saving and investment behaviours under specific capital income taxes, such as a comprehensive capital gains tax. If disincentive impacts are significant, it is possible that progressive taxation would no longer result in increased social welfare.

The means-testing mechanism employed is very different between wealth and income models in this work. Wealth models implicitly employ a form of asset-testing which has negligible disincentive implications for labour supply but may disincentivise saving. The income models by contrast test income but not assets. High-wealth individuals are more responsive to disincentive effects from income-testing, and it would be valuable to investigate these interaction effects. The models here assume no general equilibrium

[96] There is a small chance this result might not hold under more holistic measures of consequentialist utility.
[97] The Treasury, *He Tirohanga Mokopuna 2021*, 67–74.

effects, for example, redistribution is not factored into inflation estimates. A general equilibrium analysis would further deepen behavioural analytics approaches to this research area.

Utility was based only on NZS and capital or wage and salary income. Including utility from consumption, and from holding wealth more generally, would increase model applicability. While evidence suggests that many people do not spend their retirement savings to any significant degree, this may change under means-testing, and wealth offers security and financial freedom unavailable to those with income but no assets. A model of utility that combined all income sources with wealth would paint a more holistic picture of distributional impacts from income and asset testing.[98] Incorporating further policy setting changes, such as changing the retirement age, would provide further context to the util rankings found in this thesis. A more comprehensive assessment of welfare that incorporates leisure time and other considerations would deepen the discussion.

Chapter 9: Conclusion

New Zealand faces a demographic crunch that is already causing debt to grow as a proportion of GDP. At high levels of debt, New Zealand will be unable to respond to fiscal shocks such as extreme weather events. Such events are only growing more frequent with the climate crisis. However, debate persists over what specific solutions are necessary, desirable, and politically feasible.

This thesis aimed to establish the distributional impacts of prominent solutions to funding New Zealand Superannuation. It explored how conclusions differ under three different philosophical approaches to equity. I used this methodological approach both to centre fairness and human wellbeing as key metrics in economic analysis, and to employ consequentialism as a tool for moving philosophical debate forward.

Within my models means-testing reduces rather than increases welfare, at least when considering the impact for middle New Zealand. By contrast, progressive taxation improves welfare. This is true across time, for every provision scenario, and under every philosophy of equity. The benefits from progressive taxation may be large enough to offset the decline in the dependency ratio.

The results of my analysis depend on specific growth assumptions, mean-testing thresholds, and behavioural responses. However, they demonstrate that there are many potential solutions to the dependency ratio decline, and to wider social welfare provision.

---

[98] Jo Gamble, *Older People's Voices 2024: Part 2 Income, expenditure and decumulation* (Retirement Commission, 2025), 22, https://assets.retirement.govt.nz/public/Uploads/Older-Peoples-Voices-2024-Income-expenditure-and-decumulation_AW-2.pdf.

No policy change is inevitable, and framing means-testing as unavoidable circumvents our responsibility to be explicit about what values underpin the trade-offs we choose.

The dependency ratio challenge is, like all challenges, also an opportunity. This work provides insight into the nature of that opportunity. The pressure of population aging has the potential to change what 'politically-feasible' looks like for taxation and provision. It can therefore be leveraged to ensure these systems reflect what New Zealanders value most.

Appendix

All models used in this thesis can be found at: https://doi.org/10.5281/zenodo.18529058.

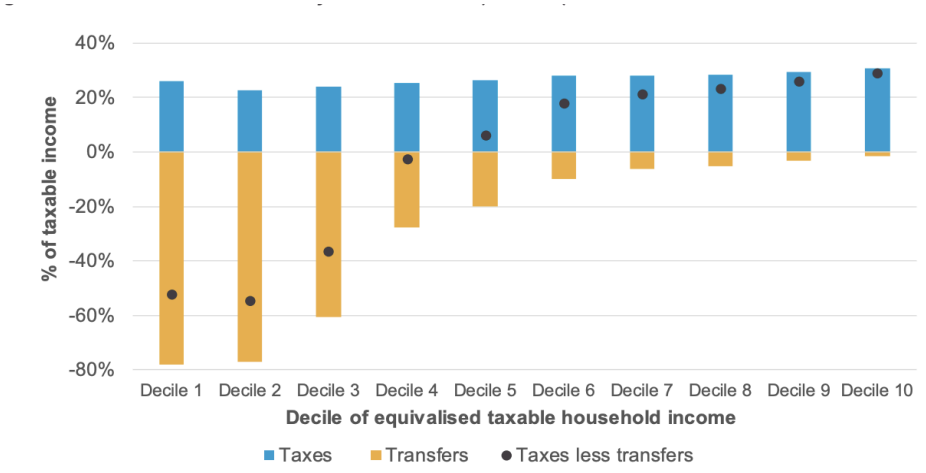
A.1. Baseline Tax Rates

Table 1 shows the tax rates that were used to calculate revenue shares for the baseline tax scenario. These are based on average tax rates found in Appendix Figure 1 from the Tax Working Group report into New Zealand's tax system. The report includes GST and ACC levies to provide a more comprehensive measure of effect tax rates. This leads to a flatter tax structure than would be suggested by New Zealand's progressive marginal tax rates on wage and salary income, and to Decile 1 having a higher tax rate than deciles 2–4.

Appendix Table 1. Baseline tax rates by decile.

Decile	Effective tax rate	Decile	Effective tax rate
1	0.25	6	0.27
2	0.22	7	0.28
3	0.23	8	0.29
4	0.24	9	0.30
5	0.25	10	0.31

Appendix Fig.1 Taxes and Transfers by Income Decile in FY 2012/13.[99]



[99] Tax Working Group, *Future of Tax: Final Report Volume 1* (Tax Working Group, 2019), 31, https://taxworkinggroup.govt.nz/resources/future-tax-final-report.html.

The average tax rates from the Tax Working Group report are based on equivalised taxable household income data. Equivalisation is a method of accounting for the size and composition difference between different households, for example by assigning each household member a weighting dependent on whether they are an adult or child, and dividing the total household income by the sum of these weightings. [100]

I have applied these equivalised household tax figures to individual income deciles in my thesis. This is reasonable as households can be just one individual. However, this approach is likely to underestimate the level of tax paid by individual wage earners as income and taxes are spread over more individuals in larger households. This is particularly true for middle income households which are more likely to be dual earning households with children, so may have the effect of underestimating the progressivity of individual rates in the baseline tax system.[101]

Transfers, except NZS, are ignored for the purposes of this thesis, rather than being treated as negative taxation. This is because this thesis is focused on the distributional impacts of funding and providing New Zealand Superannuation, rather than the redistributional impacts of the entire tax and transfer system.

A.1.1 Similarity between baseline tax rates and current taxation in New Zealand

Table 2 presents a side by side comparison of today's tax rates with income tax rates in FY 2012/13 which was the year used for average tax rate figures in the Tax Working Group report. The primary differences are the introduction of the new tax brackets at $14,001–$15600 and $48,001—$53,500 with rates reduced from FY 2012/13 levels, and the addition of a 39% marginal rate for those earning more than $180,000 per year. These changes suggest that, after bracket-creep, taxes today may be slightly more progressive than taxes at the time of the report, particularly, but still less progressive than the progressive scenario used in this thesis.[102]

---

[100] "Why high income households get benefits", The Treasury, 2016, https://www.treasury.govt.nz/publications/research-and-commentary/rangitaki-blog/why-high-income-households-get-benefits

[101] A brief modelling exercise reveals that when revenue from companies tax is attributed to the top two income deciles, realistic in the New Zealand context where these deciles dominate share ownership, the tax rate required to achieve the same revenue as the companies tax is similar to the average tax rate based only on GST, income tax and ACC levies for these deciles.

[102] For a more recent indepth analysis of effective tax rates see: Benjamin Ching, Chelsey Reid and Luke Symes, *Tax and Transfer Progressivity in New Zealand* (The Treasury, 2023), https://www.treasury.govt.nz/sites/default/files/2023-04/an23-03.pdf

Appendix Table 2. Side by side comparison of marginal tax rates on personal income by year.

FY 2012/13 tax brackets		FY 2024/25 tax brackets[103]	
Income bracket($)	**Marginal tax rate**	**Income bracket($)**	**Marginal tax rate**
0-14000	10.5	0-14,000	10.5
14001-48000	17.5	14,001-15600	12.82
48001-70000	30	15601-48000	17.5
70001+	33%	48,001-53,500	21.64%
		53,501-70,000	30%
		70,001-78,100	30.99%
		78,101-180,000	33%
		$180,001 and over	39%

A.2. Progressive Tax Rates

Average tax rates used to calculate revenue shares for the progressive tax scenarios are shown in Table 3. Decile 5 is the same as in the baseline tax scenario, with tax rates being lower for low deciles and higher for high income deciles than in the baseline scenario.

Appendix Table 3. Effective tax rates by decile.

Decile	Effective tax rate	Decile	Effective tax rate
1	0.00	6	0.30
2	0.10	7	0.40
3	0.15	8	0.55
4	0.20	9	0.70
5	0.25	10	0.80

[103] "Tax rates for individuals" Inland Revenue Department, 2025. https://www.ird.govt.nz/income-tax/income-tax-for-individuals/tax-codes-and-tax-rates-for-individuals/tax-rates-for-individuals.

A.3 Decile weighting

Tables 3 shows the proportion of the employed 65+ population that was assigned to each income decile in the income models. A higher proportion of the 65+ population are assigned to low income deciles to reflect the shift towards part-time work and lower income roles in retirement years.[104] Proportions were calculated by first assigning each decile a value from 1 to 10, with Decile 1 having value 10, Decile 2 having value 9, e.t.c. These values were then summed to 55, with the value assigned to each decile being divided by this total to give the proportion for that decile.

Appendix Table 3. Proportions used to assign 65+ population to income deciles.

Decile	Proportion of 65+ population	Decile	Proportion of 65+ population
1	0.18	6	0.09
2	0.16	7	0.07
3	0.15	8	0.05
4	0.13	9	0.04
5	0.11	10	0.02

Table 4 shows the proportions used to assign the 65+ population to wealth quintiles, with higher quintiles being assigned a greater proportion of the 65+ population to reflect wealth accumulation across the lifetime. Proportions were calculated by assigning each quintile a value from 1 to 5, with Quintile 1 having value 1, Decile 2 having value 2, e.t.c. These values were summed to 15 and then each value divided by 15 to give the proportion for that decile. Retirement age individuals currently hold around 37% of private wealth in New Zealand.[105]

[104] The Treasury, He Tirohanga Mokopuna 2021, 12.

[105] The retirement age population holds 37% of all wealth in New Zealand, see: "Household net worth statistics: Year ended June 2024" StatsNZ, 2025. https://www.stats.govt.nz/information-releases/household-net-worth-statistics-year-ended-june-2024/

Appendix Table 4. Proportions used to assign 65+ population to wealth quintiles.

Quintile	Proportion of 65+ population
1	0.07
2	0.13
3	0.20
4	0.27
5	0.33

A.4 Employment rates

A.4.1Working-age employment rates

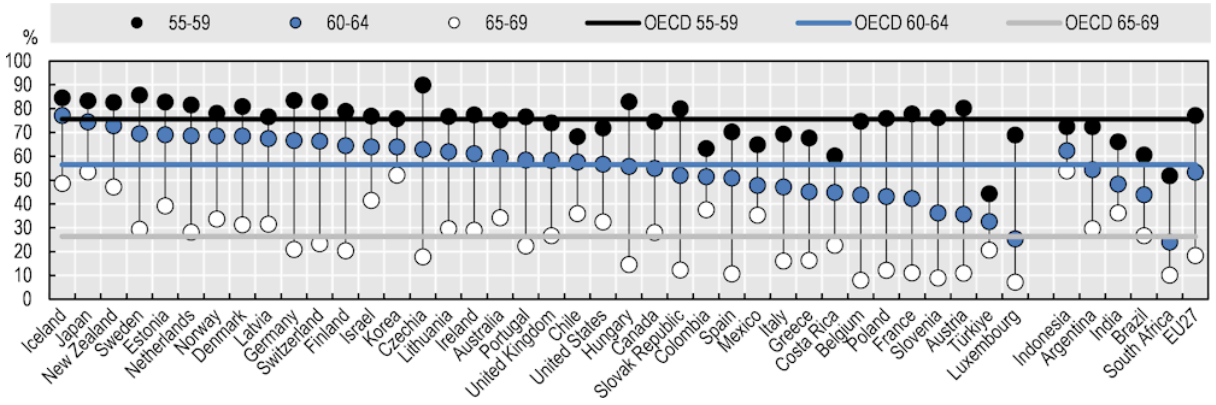
A 78% employment rate was used for the working age population in the models as this was the employment rate in the base year FY 2024/25 and is similar to employment rates for this age group in previous years.

A.4.2 Retirement-age employment rates

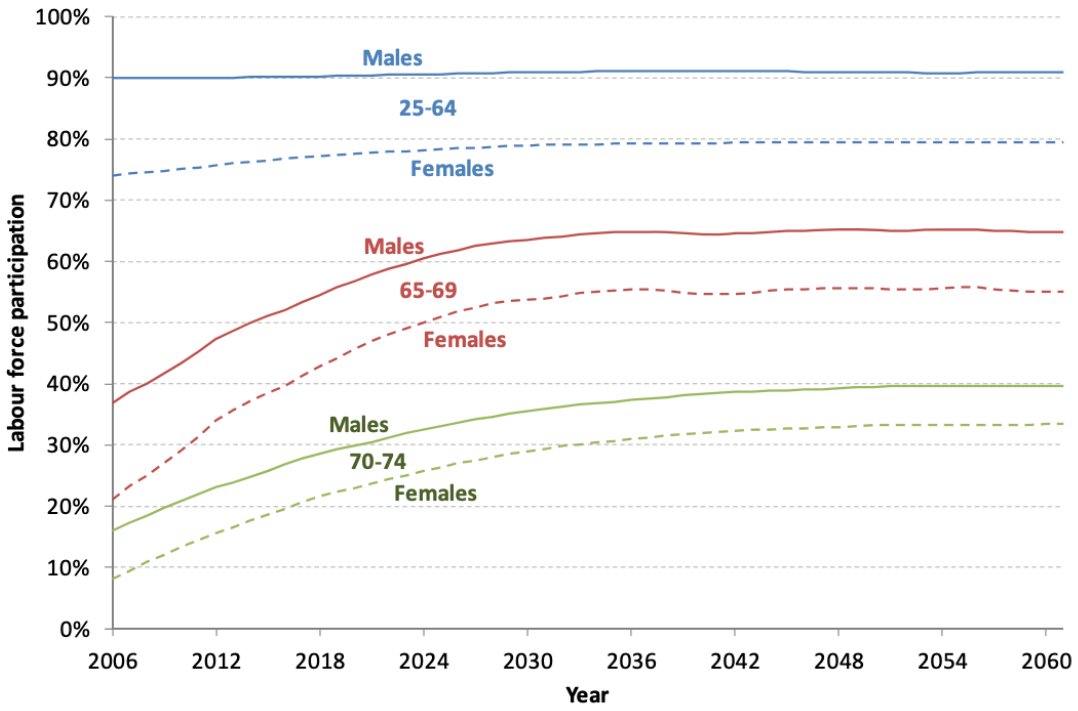
New Zealand has relatively high employment rate amongst the retirement age population, at around 25%[106]. Figure 2 shows how New Zealand's retirement-age employment rate compares to other countries within the OECD. High employment by the retirement age population is what enables a meaningful cost benefit analysis of the provision of NZS for wage and salary earners in New Zealand. The rate of employment has risen steadily over previous decades, but further growth is expected to be small, as shown in Figure 3. The models in this thesis assume a constant 25% employment rate for the 65+ population over time, which likely underestimates the true rates.

[106] Table: Labour Force Status by Sex by Age Group (Annual-Mar) | Total Both Sexes | Aged 65 years and over | Employment rate | 2025 https://infoshare.stats.govt.nz/SelectVariables.aspx?pxID=a3faf5f4-e39a-4dbb-be8e-f81723992bcb

Appendix Fig.2. Employment rates of workers aged 55-59, 60-64 and 65-69 in 2024 by OECD country.[107]



Appendix Fig.3 Projected changes in labour force participation by age: 2006 to 2060. Labour force participation is a useful proxy for employment rates.[108]



[107] Pensions at a Glance 2025, OECD, 2025, https://doi.org/10.1787/e40274c1-en.

[108] Omar A. Aziz, Christopher Ball, John Creedy and Jesse Eedrah, *The Distributional Impact of Population Ageing* (The Treasury, 2013), 4, https://www.treasury.govt.nz/sites/default/files/2013-07/twp13-13.pdf.

A.6 Method presented as formal logic

A.6.1. Income models

Assume that for every policy scenario total income for each decile is given by:

$y^i_{26} = y^i_{24/25} \times (1 + (g - \pi))^2$

where

y^i_{26} = total decile income in 2026

$y^i_{24/25}$ = total decile income in FY 2024/25

g = annual nominal wage growth

π = inflation.

Assume that for every policy scenario revenue shares for each decile are calculated with the following steps:

$r^i = y^i_{24/25} \times t$

$R = \sum r^i$

$s^i = r^i / R$

where

r^i = tax revenue raised from decile

t = stipulated tax rate

R = total revenue raised

s^i = decile revenue share.

Assume that for every policy scenario total NZS payments are given by:

$single_{26} = single_{24/25} \times (1 + (n - \pi))^2$

$married_{26} = married_{24/25} \times (1 + (n - \pi))^2$

$NZS_{single} = (N \geq 65) \times 0.42 \times single_{26}$

$NZS_{married} = (N \geq 65) \times 0.58 \times married_{26}$

$NZS_{total} = married_{26} + single_{26}$

Where

$single_{26}$ = the rate of annual payments made to single clients in 2026

$single_{24/25}$ = the rate of annual payments made to single clients in FY 24/25

$married_{26}$ = the rate of annual payments made to clients in a relationship in 2026

$married_{24/25}$ = the rate of annual payments made to clients in a relationship in FY 2024/25

NZS_{single} = the total payments made to all single clients in that year

$NZS_{married}$ = the total payments made to all clients in a relationship that year

N = total population

NZS_{total} = total NZS payments for the year

Assume that for every policy scenario NZS payments to each decile are given by:

$n^{65+} = (N \geq 65) \times e^{>64}$

$(n \geq 65)^i = n^{65+} \times prop^i$

$NZS^i = NZS_{total} \times (n \geq 65)^i$

where

n^{65+} = total retirement age population employed

e^{65+} = employment rate for the retirement age population

$(n \geq 65)^i$ = number of NZS recipients in each decile

$prop^i$ = prescribed proportion of retirement age workers in each decile

NZS^i = NZS payments made to each decile

Assume that for every policy scenario average after-tax-and-NZS per decile incomes are given by:

$y^i_{net} = y^i_{26} - (NZS_{total} \times s^i) + NZS^i$

$n^{15-64} = N^{15-64} \times e^{15-64}$

$n^{total} = n^{15\text{-}64} + n^{65+}$

$n^{i} = n^{total} / 10$

$y^{i}_{pp} = y^{i}_{net} / n^{i}$

where

y^{i}_{net} = total post-tax-post-NZS income per decile

$n^{15\text{-}64}$ = employed working-age population

$N^{15\text{-}64}$ = total working-age population

$e^{15\text{-}64}$ = working-age employment rate

n^{total} = total employed population

n^{i} = number of people in each decile

y^{i}_{pp} = average after-tax-and-NZS per person income for each decile.

Assume that for every policy scenario utility scores for each decile are given by:

$u^{i} = (y^{i}_{pp}{}^{-0.26} - 1) / -0.26$

where u^{i} = per decile utility.

For every policy scenario utilitarian welfare scores are given by:

$\sum u^{i}$

For every policy scenario prioritarian welfare scores for each decile are given by:

$\sum(\sqrt{u^{i}})$

For every policy scenario maximin welfare scores for each decile are given by:

$\min(u^{i})$

A.6.2. Wealth models

Assume that 2026 per quintile incomes in the wealth models are given by:

$y^{i}_{23/24} = w^{i}_{23/24} \times 0.05$

$y^{i}_{26} = y^{i}_{23/24} \times (1 + (g - \pi))^{3}$

where

$y^{i}_{23/24}$ = per quintile income in FY 2023/24

$w^{i}_{23/24}$ = per quintile wealth in FY 2023/24

y^{i}_{26} = per quintile in 2026

Remaining calculations as in income models except that utility calculated from total income, not average income.

A.6.2. Means-tested models

Assume that the total cost of NZS provision in means-tested models is given by:

$NZS_{means\text{-}test} = NZS_{total} - \sum NZS^{i}_{ineligible}$

where

$NZS_{means\text{-}test}$ = total cost of provision under means-testing

$NZS^{i}_{ineligible}$ = NZS payments that would be due to deciles above the threshold under universal provision

Assume that total net income for ineligible deciles under means-testing is given by:

$y^{i}_{net} = y^{i}_{26} - (NZS_{total} \times s^{i})$

Bibliography

Abel, Andrew B., Ben S. Bernanke, and Dean Croushore. *Macroeconomics*. 11th ed. Pearson Education Limited, 2024.

Adler, Mathew D. *Measuring Social Welfare*. Oxford University Press, 2019. https://doi.org/10.1093/oso/9780190643027.001.0001.

Aziz, Omar A., Christopher Ball, John Creedy, and Jesse Eedrah. *The Distributional Impact of Population Ageing*. The Treasury, 2013. https://www.treasury.govt.nz/sites/default/files/2013-07/twp13-13.pdf

Bagrie, Cameron. “Means testing super is inevitable.” Business Desk. (2025). https://businessdesk.co.nz/article/opinion/means-testing-super-is-inevitable

Barr, Nicholas and Peter Diamond. "The Economics of Pensions." *Oxford Review of Economic Policy* 22, no. 1 (2006): 15–39. https://doi.org/10.1093/oxrep/grj002.

———. *Pension Reform: A Short Guide*. Oxford University Press, 2009. https://doi.org/10.1093/acprof:oso/9780195387728.001.0001.

———. "Reforming Pensions: Principles, Analytical Errors and Policy Directions ". *International Social Security Review* 62, no. 2 (7 April 2009): 5–29. https://doi.org/10.1111/j.1468-246X.2009.01327.x.

Bell, Matthew. *Golden Years: Understanding the New Zealand Superannuation Fund*. The Treasury, 2021. https://www.treasury.govt.nz/sites/default/files/2021-06/twp21-01.pdf.

Biggs, Andrew. "Means Testing and Its Limits." American Enterprise Institute, 2011, https://www.aei.org/articles/means-testing-and-its-limits/.

Boston, Jonathon and Paul Dalzeil. *The Decent Society?: Essays in Response to National's Economic and Social Policies*. Oxford University Press, 1992.

Brandt, R. B. "Objections to Desire-Satisfaction Views of Happiness." In *Utilitarianism and Its Critics*, edited by Jonathon Glover. New York: Macmillan Publishing Company, 1990. https://www.utilitarianism.com/utilitarianism-critics.pdf.

Bravo, Jorge M., Mercedes Ayuso, Robert Holzmann and Edward Palmer. “Intergenerational actuarial fairness when longevity increases: Amending the retirement age.”

Insurance: Mathematics and Economics 113, (2023): 161–184. https://doi.org/10.1016/j.insmatheco.2023.08.007.

Brettkelly, Sharon. “NZ’s means-testing creep.” Newsroom. (2025). https://newsroom.co.nz/2025/06/09/nzs-means-testing-creep/.

Burgherr, David. "The Costs of Administering a Wealth Tax." *Fiscal Studies* 43, no. 3-4 (2021): 677–97. https://doi.org/10.1111/1475-5890.12276.

Burr, Lloyd. "Treasury Says Pension Age Should Rise to 72. Do Any Politicians Dare to Agree?." *Stuff*, September 30, 2025. https://www.stuff.co.nz/politics/360836979/treasury-says-pension-age-should-rise-72-do-any-politicians-dare-agree.

Business and Economic Research Ltd. "Inequality and New Zealand." Updated 15 December, 2020. https://berl.co.nz/our-mahi/inequality-and-new-zealand.

Center for Economic Policy Research, *Rethinking Pension Reform*. Center for Economic Policy Research, 2024. https://cepr.org/system/files/publication-files/219445-rethinking_pension_reform.pdf.

Ching, Benjamin, Chelsey Reid and Luke Symes, *Tax and Transfer Progressivity in New Zealand* (The Treasury, 2023), https://www.treasury.govt.nz/sites/default/files/2023-04/an23-03.pdf

Ching, Benjamin, Tayla Forward, and Oscar Parkyn. *Estimating the Distribution of Wealth in New Zealand*. The Treasury, 2023. https://www.treasury.govt.nz/publications/wp/wp-23-01.

Cook, Diana. *The Productivity Slowdown: Implications for the Treasury’s Forecasts and Projections*. 2024. https://www.treasury.govt.nz/publications/tp/productivity-slowdown-implications-treasurys-forecasts-and-projections.

Creedy, John, Norman Gemmell, and Grant Scobie. *Pensions, Savings and Housing: A Life-Cycle Framework with Policy Simulations*. Victoria Business School, Te Herenga Waka (January 2015). https://ir.wgtn.ac.nz/server/api/core/bitstreams/89e7da4d-6e1d-409b-a690-ece4e642386d/content.

Dixon, Josie, Josephine Exley, Gerald Wistow, Raphael Wittenberg, Martin Knapp, and Nicholas Mays. "The Sociocultural Framing of Public Attitudes to Sharing the Costs of Social Care for Older People in England." *Health Soc Care Community* (2022). https://doi.org/10.1111/hsc.13946.

Draper, Rowan. "All About the Benefits Cliff: Challenges and Solutions." United Way. Last updated March 4, 2025. https://www.unitedwaycleveland.org/benefits-cliff-challenges-and-solutions/.

Dunn, Bill and Sam Webb. "Australian Superannuation: An Unsustainable Pyramid Scheme?." *Journal of Australian political economy* 83, no. 1 (2019).

Edmunds, Susan. “Budget 2025: High earners can't get KiwiSaver credit - but they can get the pension.” RNZ. (2025). https://www.rnz.co.nz/news/budget-2025/561918/budget-2025-high-earners-can-t-get-kiwisaver-credit-but-they-can-get-the-pension

Fletcher, Michael. *Individualising Entitlements in New Zealand’s Benefit and Social Assistance Systems*. New Zealand Work Research Institute, 2018. https://nzpri.aut.ac.nz/__data/assets/pdf_file/0006/181437/Individualising-entitlements-in-New-Zealands-benefit-and-social-assistance-systems.pdf.

Forward, Tayla, and Madeleine Foreman. “The Debt Ceiling and Its Discontents.” *Policy Quarterly* 21, no. 4 (2025): 3–13. doi:10.26686/pq.v21i4.10325.

Gamble, Jo. *Older People’s Voices 2024: Part 2 Income, Expenditure and Decumulation*. Retirement Commission (2025). https://assets.retirement.govt.nz/public/Uploads/Older-Peoples-Voices-2024-Income-expenditure-and-decumulation_AW-2.pdf.

Gibson, John, Trinh Le, and Grant Scobie. *Women’s Retirement Incomes in New Zealand: A Household Bargaining Approach*. 2004. https://www.treasury.govt.nz/sites/default/files/2018-12/twp04-22.pdf.

Guvenen, Fatih, Gueorgui Kambourov, Burhanettin Kuruscu, Sergio Ocampo-Diaz, and Daphne Chen. *Use It or Lose It: Efficiency Gains from Wealth Taxation*. National Bureau of Economic Research, 2019. http://www.nber.org/papers/w26284.

Healey, Olivia and Jennifer Curtin. *‘Relationship Status’ and the Welfare System in Aotearoa*. New Zealand Public Policy Institute, 2019. https://static1.squarespace.com/static/60189fe639b6d67b861cf5c4/t/622a7f22a6428d7d6b6df258/1646952232546/relationship+status+and+the+welfare+system.pdf.

Herd, Pamela, Hilary Hoynes, Jamila Michener, and Donald Moynihan. "Administrative Burden as a Mechanism of Inequality in Policy Implementation." *The Russell Sage*

Foundation Journal of the Social Sciences 9, no. 5 (2023): 1–30. https://doi.org/10.7758/RSF.2023.9.5.01.

Hurnard, Rodger . *The effect of New Zealand Superannuation eligibility age on the labour force participation of older people*. The Treasury. 2005. https://www.econstor.eu/bitstream/10419/205574/1/twp2005-09.pdf

Hyslop, Dean R., and David C. Maré, *Earnings bunching at benefit abatement thresholds: evidence from recent policy changes*. Motu, 2024. https://motu-www.motu.org.nz/wpapers/23_05.pdf.

Inland Revenue Department. "Wage and Salary Distributions for Individuals September 2025." Last updated October 6, 2025. https://www.ird.govt.nz/about-us/tax-statistics/revenue-refunds/wage-salary-distributions/wage-and-salary-statistics-datasets.

———. *Tax and the Economic Income of the Wealthy 2023*. https://www.ird.govt.nz/-/media/project/ir/home/documents/about-us/high-wealth-research-project/hwi-research-project/factsheets-supporting-hwi-report/tax-and-the-economic-income-of-the-wealthy.pdf?modified=20230420234159.

———. *Inland Revenue Annual Report Te Tari Taake Pūrongo ā-Tau*. 2024. https://www.ird.govt.nz/about-us/publications/annual-corporate-reports/annual-report.

———. *Information Release*. 2024. https://www.taxpolicy.ird.govt.nz/publications/2024/ir-budget-2025.

———. *Stable Bases and Flexible Rates*. 2025. https://www.taxpolicy.ird.govt.nz/-/media/project/ir/tp/publications/2025/ir-ltib/ltib-consultation.pdf?modified=20250626002152.

———. "Tax Rates for Individuals." Last updated June 3, 2025. https://www.ird.govt.nz/income-tax/income-tax-for-individuals/tax-codes-and-tax-rates-for-individuals/tax-rates-for-individuals.

Layard, R., G. Mayraz, and S. Nickell. "The Marginal Utility of Income." *Journal of Public Economics* 92, no. 8 (2008): 1846–57. https://doi.org/10.1016/j.jpubeco.2008.01.007.

Lowry, Rosemary and Martin Peterson. "Cost-Benefit Analysis and Non-Utilitarian Ethics." *Sage Journals* 11, no. 3 (2011): 258–79. https://doi.org/10.1177/1470594X11416767.

Ministry of Social Development, "At 1 April 2024." accessed February 7, 2026, https://www.workandincome.govt.nz/map/deskfile/nz-superannuation-and-veterans-pension-tables/at-1-april-2024.html.

———. *A Description of New Zealand's Current Retirement Income Framework*. Ministry of Social Development, 2003. https://www.treasury.govt.nz/sites/default/files/2007-11/prg-msd-dnzcrif.pdf.

———. *Indexing Main-Benefits to Inflation 2024*. https://www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/regulatory-impact-statements/sar-indexing-main-benefits-to-inflation.docx.

———. "Jobseeker Support – Tightening Eligibility for 18 and 19 Year Olds." Last updated May 2025. https://www.msd.govt.nz/about-msd-and-our-work/newsroom/budget/2025/factsheets/jobseeker-support-tightening-eligibility-for-18-and-19-year-olds.html.

———. *Vote Social Development*. 2025. https://www.budget.govt.nz/budget/pdfs/estimates/v9/est25-v9-socdev.pdf.

———. "Jobseeker Support Cut-out Points (Current)." Accessed February 7, 2025. https://www.workandincome.govt.nz/map/deskfile/main-benefits-cut-out-points/jobseeker-support-cut-out-points-current.html.

New Zealand Goverment. "Taxation Principles Reporting Act." 2023. https://www.legislation.govt.nz/act/public/2023/0055/latest/LMS842854.html.

The New Zealand Green Party. *Green Budget 2025*. 2025. https://www.greens.org.nz/green_budget_2025.

New Zealand Institute of Economic Research. *Aotearoa New Zealand in 2050*. New Zealand Institute of Economic Research. 2025. https://www.nzier.org.nz/publications/aotearoa-new-zealand-in-2050-preparing-our-retirement-income-policy-for-the-future.

———. *Lessons from across the Tasman*. (2024). https://www.nzier.org.nz/publications

/lessons-from-across-the-tasman-comparing-the-australian-and-new-zealand-retirement-income-systems-nzier-working-paper-2024-01.

Nolan, Matt. *Horizontal and Vertical Equity in the New Zealand Tax-Transfer System: 1988-2013* Te Herenga Waka (2018). https://www.wgtn.ac.nz/__data/assets/pdf_file/0011/1863191/WP-1-2018.pdf.

OECD. *OECD Employment Outlook 2025: Can We Get through the Demographic Crunch?* Paris OECD Publishing, 2025. https://doi.org/10.1787/194a947b-en.

———. "Pensions at a Glance." 2025.

Ortiz, Isabel, Fabio Durán-Valverde, Stefan Urban, Veronika Wodsak, and Zhiming Yu. *Reversing Pension Privatization: Rebuilding Public Pension Systems in Eastern European and Latin American Countries (2000-18)*. Switzerland: International Labour Organisation, 2018. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40ed_protect/%40soc_sec/documents/publication/wcms_648639.pdf.

Policy Quarterly 21, no. 3 (2025), https://ojs.victoria.ac.nz/pq/issue/view/1047/114.

Preston, David A. *The Compulsory Retirement Savings Scheme Referendum of 1997*. 1997. https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/journals-and-magazines/social-policy-journal/spj09/compulsory-retirement-savings-scheme-referendum.html.

Rashbrooke, Max. "What the Sensible Adults Don't Tell You About the Cost of Super." *The Post*. (2025). https://www.thepost.co.nz/nz-news/360738318/what-sensible-adults-dont-tell-you-about-cost-super.

Retirement Commission. *What Retirement Assets Do People Have Beyond NZSuper and KiwiSaver?* 2024. https://assets.retirement.govt.nz/public/Uploads/Policy/TAAO-RC-Policy-Paper-What-else-do-people-have-beyond-KS-and-NZS_AW.pdf.

———. *Review of Retirement Income Policies 2025*. (2025). https://assets.retirement.govt.nz/public/Uploads/Retirement-Income-Policy-Review/2025-RRIP/Review-of-Retirement-Income-Policies-2025_WEB.pdf.

———. *NZSuper: Issues and Options*. (2024). https://assets.retirement.govt.nz/public/Uploads/Policy/TAAO-RRIP-NZ-Super-issues-paper.pdf.

Rofman, Rafael, Ignacio Apella, and Evelyn Vezza. “Introduction and overview." In *Beyond Contributory Pensions Fourteen Experiences with Coverage Expansion in Latin America World Bank Group* edited by Rafael Rofman, Ignacio Apella, and Evelyn Vezza. The World Bank, 2014. http://dx.doi.org/10.1596/978-1-4648-0390-1.

Rosenburg, Bill. "Economist Bill Rosenberg Runs the Ruler over NZ Super Cost Predictions, and Argues It's Not as Scary as We've Been Told " Interest. (2017). https://www.interest.co.nz/opinion/86837/.

Services Australia, "Income Test." Updated September 20, 2025, https://www.servicesaustralia.gov.au/income-test-for-age-pension

St John, Susan, *Save as You Go or Pay as You Go? The Age Old Policy Debate*. University of Auckland Retirement Policy and Research Center, 2013.

StatsNZ. "Annual Inflation at 2.7 Percent in June 2025." 2025, https://www.stats.govt.nz/news/annual-inflation-at-2-7-percent-in-june-2025/.

———. "Income Growth for Wage and Salary Earners Remains Strong." 2025. https://www.stats.govt.nz/news/income-growth-for-wage-and-salary-earners-remains-strong/.

———. "Household Economic Survey Year Ending June 2024." 2025. https://www.stats.govt.nz/information-releases/household-net-worth-statistics-year-ended-june-2024/.

———. "Household Net Worth Statistics: Year Ended June 2024." 2025, https://www.stats.govt.nz/information-releases/household-net-worth-statistics-year-ended-june-2024/.

Stawinski, Brett. "Why High Income Households Get Benefits." The Treasury, 2016, https://www.treasury.govt.nz/publications/research-and-commentary/rangitaki-blog/why-high-income-households-get-benefits.

Stephens, Meghan. *Trends in the Household Income Distribution: 2007-2021*. 2023. https://www.treasury.govt.nz/sites/default/files/2023-04/an23-01.pdf.

Stephens, Robert. "The Universal Basic Income: Should It Replace the Existing Social Security System?". Policy Quarterly 33, no. 1 (2019). https://doi.org/10.26686/pq.v15i1.5293.

The Tax Working Group. *Future of Tax: Final Report*. 2019. https://taxworkinggroup.govt.nz/resources/future-tax-final-report.html.

Thompson, Chris. *Equality, Equity, and Distributive Justice*. 2022. https://www.treasury.govt.nz/sites/default/files/2022-12/ap22-03.pdf.

Trabandt, Mathias and Harald Uhlig,. "The Laffer Curve Revisited." *Journal of Monetary Economics* 58, no. 4 (2011): 305–27. https://doi.org/10.1016/j.jmoneco.2011.07.003.

The Treasury. "Why High Income Households Get Benefits." Updated November 23, 2016, 2016, https://www.treasury.govt.nz/publications/research-and-commentary/rangitaki-blog/why-high-income-households-get-benefits.

———. *New Zealand Superannuation Information Release*. 2017. https://www.treasury.govt.nz/sites/default/files/2017-03/sup-3753731.pdf.

———. *New Zealand Superannuation Fund Contribution Rate Model - Hyefu 2020*. 2020. https://www.treasury.govt.nz/publications/new-zealand-superannuation-fund-contribution-rate-model-hyefu-2020.

———. He Tirohanga Mokopuna 2021. https://www.treasury.govt.nz/sites/default/files/2021-09/ltfs-2021_2.pdf.

———. He Tirohanga Mokopuna 2025. https://www.treasury.govt.nz/sites/default/files/2025-09/ltfs-2025.pdf.

Waldron, Hilary. "Mortality Differentials by Lifetime Earnings Decile." *Social Security Bulletin* 73, no. 1 (2013): 1–37. https://heinonline.org/HOL/P?h=hein.journals/ssbul73&i=5.

Wenar, Leif. "John Rawls." The Stanford Encyclopedia of Philosophy. (2025). https://plato.stanford.edu/archives/fall2025/entries/rawls/.