# Analytical note 2 – Distributional impact of low-income GST offset schemes

Authors: Hien Nguyen, Elly Ward, Felicity Barker

**IDI Disclaimer**

## Introduction

New Zealand's goods and services tax (GST) is often highlighted as a model of best practice in value added tax (VAT) design (de la Feria & Swistak, 2024). Its broad-base, single-rate structure minimises compliance and administrative costs as well as distortions in consumption decisions, and generates significant revenue. Similar to VAT systems in other OECD countries, GST has become an increasingly important component of New Zealand's tax mix.

Inland Revenue's draft Long-term Insights Briefing (LTIB) 2025 (Inland Revenue, 2025) underscores the potential of using consumption taxes to address long-term fiscal pressures. The LTIB finds that GST is likely to continue to be the best choice among consumption taxes. However, since New Zealand's GST is applied at a flat rate to expenditure, an increase in the GST rate could significantly affect families in poverty. Given this, the LTIB investigated approaches to making the GST more distributionally responsive.

It is common internationally for countries to provide lower rates or exemptions from VAT for certain items. These reduced rates and exemptions are often aimed at reducing the tax impost on lower-income households and therefore commonly apply to "necessities" such as food. However, more recently several countries, such as Thailand, Canada and Singapore, have implemented low-income GST offset schemes via transfer systems to make the GST system more progressive. Several studies, including in New Zealand, have shown that transfers are a more targeted and cost-effective way to reduce the GST impost on low-income households than exemptions.

Therefore, in this analysis, we examine the potential cost-effectiveness and impacts of GST low-income offset schemes in New Zealand should the GST rate increase. Our approach broadly follows the international examples, for which the general idea is to insulate a defined group of low-income families from the impacts of an increase in the GST rate. In undertaking this study, we simulate a GST rate increase and investigate various specifications of GST low-income offset schemes.

Before we discuss this modelling, we undertake a brief review of the literature, focusing on the New Zealand literature.

## Past literature

New Zealand GST literature has focused on the impacts of New Zealand moving away from its broad-base, single-rate GST system. This includes investigating who would benefit from the introduction of GST exemptions or a multi-rate structure such as reduced GST rates applied on certain expenditure groups. Several papers have also compared the impacts of government transfers and reduced GST rates on low-income households. These papers typically find that while exemptions and reduced GST rates have a progressive effect, they are not a cost-effective mechanism to support low-income households, and government transfers would be a superior approach to support low-income households.

The Tax Working Group (2009) used Household Economic Survey (HES) 2006/07 data to point out that removing food from the GST base would be costly and have little impact on the distribution of GST paid, which was measured as a proportion of either total expenditure or disposable income

across equivalised income deciles. They also emphasised that, if any increase in the GST rate was considered, the compensation provided through CPI adjustment of government financial assistance would not be well targeted.

Thomas (2015) used a static consumption tax microsimulation model to examine the distributional effect if New Zealand's broad-base, single-rate GST structure was replaced with the United Kingdom's narrow-base, multi-rate VAT system.[1] Using HES expenditure 2012/13 data, he found that adoption of the United Kingdom's VAT system would generally have a progressive effect. In particular, the GST burdens measured as a percentage of pre-tax expenditure would reduce proportionately more for low-income/expenditure households than for high-income/expenditure households.[2] This is because low-income/expenditure households often spend a higher proportion of their total expenditure on items that receive reduced or zero-rates than high-income/expenditure households. However, the higher-income households would gain more in absolute terms from the reform than the lower-income households, suggesting that exemptions were not a cost-effective way of targeting support to low-income households.

Ball et al. (2016) examined the welfare effects on New Zealand households of introducing zero-rating of GST on food and found evidence that is generally consistent with Thomas (2015). They considered two policy changes:

1. a zero GST rate on food (while still applying the standard rate of 12.5% applicable at the time on other goods), and
2. a package of a zero GST rate on food and a 2% higher GST rate on all other taxed goods (to compensate for the reduction in GST on food).

They used HES 2009/10 data and the Linear Expenditure System to account for behavioural responses in their model. In the first scenario, they found that every household would benefit from a reduction in the food price. However, the higher-expenditure households would receive greater welfare[3] gains in absolute terms and less in relative terms compared to the lower-expenditure households. In the second scenario, they found that the bottom six income deciles would experience a welfare gain while the higher-income groups would experience a welfare loss, but the relative gains to the lower-income deciles would be much smaller than they were in the first scenario.

In a more recent study, Thomas (2022) used a behavioural simulation model to examine the distributional impact of GST reforms. He used multiple HES expenditure datasets (2006/07, 2009/10, 2012/13, and 2015/16) and the Quadratic Almost Ideal Demand System model to simulate two policy reforms:

1. a reduced GST rate on the "food and beverages" and "recreational and culture" groups, and

[1] As of 1 January 2013, the standard VAT rate in the United Kingdom was 20%. There were also VAT exemptions, a zero VAT rate, and a 5% rate applied to certain items.
[2] Thomas (2015) argued that measuring the tax burden using current expenditure, rather than current income, as the base will better reflect the long-run magnitude of the tax burden on the household although income could be a better estimate of the household's lifetime income.
[3] The welfare change is measured as the equivalent variation, defined as the maximum amount that an individual would be prepared to pay (after the tax reform) to return to the old prices.

2. to replace a simplified version of the income-tested Family tax credit (which is the largest component of the Working for Families tax credit package) with reduced GST rates on those two expenditure groups.

In the first reform, his evidence is consistent with Ball et al. (2016) that the poorer households would benefit more than the richer ones when the tax and welfare changes are measured as a proportion of total expenditure, but richer households would gain considerably more in absolute terms. In the second reform, he found that poorer households would be worse off because the small gain they received from the reduced GST rates would be insufficient to compensate for the loss of the tax credit, and the richer households would gain. This suggested that the Family tax credit was better targeted at providing support to low-income households than reduced GST rates.

Among the international studies, the International Monetary Fund (2014) report that examined the effectiveness of different fiscal redistribution mechanisms further suggested that the use of exemptions or reduced VAT rates should be minimised, and that targeted transfers and progressive personal income tax systems would be more cost-effective instruments to help low-income and vulnerable groups. Since then, some countries have introduced reimbursement schemes targeted at helping low-income households faced with VAT increases.

In 2018, Thailand implemented a temporary system to reimburse consumption tax to recipients of the government's welfare scheme through the State Welfare Smartcard. The cardholders, who were unemployed and/or had low incomes, received 5 percentage points of the 7% VAT reimbursed into their e-wallet, capped at approximately US$16 equivalent per month. The credit was paid when they swiped their cards at shops with electronic data capture terminals (de la Feria & Swistak, 2024).

In Canada, the Goods and Services Tax/Harmonized Sales Tax credit is a tax-free quarterly payment designed to help individuals and families with low and modest incomes offset the GST or the Harmonized Sales Tax they pay. The credit amount is based on net income of the family and the number of children under 19 years old. Eligible individuals are automatically considered for the credit when they file their taxes (Canada Revenue Agency, 2025).

Singapore has a permanent GST voucher scheme aimed at supporting low- and middle-income households with their expenses, particularly what they pay in GST. This includes cash payments for their immediate needs, MediSave for seniors to support their healthcare needs, utility vouchers to offset their utilities bills, and rebates to offset their Service and Conservancy Charges fees (Government of Singapore, 2025).

With the early success in using direct transfers to enhance VAT compensation (targeted) programs in many countries (despite some limitations), de la Feria & Swistak (2024) proposed that countries could make use of new digital technologies to protect vulnerable households while still retaining the policy and administrative advantages of a broad-based VAT structure.

While the New Zealand literature has provided insights into the redistributive options that could be implemented if the GST rate were to increase, it has not examined in depth the effectiveness of different designs of low-income GST offset schemes designed to insulate low-income groups from a GST rate increase. We explore that aspect in this paper. In particular, we examine the

distributional impact of three hypothetical GST reforms in the 2022–23 tax year (April 2022 to March 2023). In these scenarios we simulate an increase in the standard GST rate from 15% to 18%. In the first two reforms, the GST rate increase is accompanied by a GST credit occurring in the same tax year to compensate low-income families for the increased GST burden. In the third reform, we examine the impact of the current CPI-indexation of government transfers assuming they are adjusted in the same tax year to account for the inflationary impact of the GST rate increase.

We note that this study does not attempt to design an appropriate compensation mechanism. Instead, it aims to emphasize the factors that may need to be considered when implementing a GST rate increase combined with some form of protection for the low-income families. It provides a deeper look at some of the issues that arise when considering the effectiveness of the government transfer system as the delivery system for that protection.

# Methodology

We present the methodology in three main steps as follows. First, we describe the construction of the underlying data including scaling household expenditure to align with the System of National Accounts (SNA), allocating household GST to families, and refining the sample. Second, we identify the low-income families that form our target population. Third, we describe the hypothetical GST reforms of which we examine the distributional impact.

## Data construction

In this analysis, we use the family as our statistical unit to align with the design of tax credits in New Zealand. We utilise the Treasury's Tax and Welfare Analysis (TAWA) microsimulation model and the HES expenditure 2022/23 (HES23) data to estimate disposable income and its components for each family for the 2022–23 tax year for each scenario.[4] For the sake of simplicity, we only examine the 2022–23 tax year; this means we do not carry over the inflationary impact to the subsequent years.

The HES is a sample survey conducted by Stats NZ that collects information on income, savings, expenditure, and demographic details of New Zealand residents and households over a year from 1 July to 30 June. Every three years, a subset of respondents from the full HES income survey participates in the HES expenditure survey, which collects detailed information on household consumption expenditure on goods and services. For the expenditure survey, households complete an expenditure diary for one week before the survey interview. Stats NZ then annualise this weekly expenditure data to produce annual figures. The TAWA model utilises the HES as its primary input, integrating HES data with administrative micro data from Inland Revenue and the Ministry of Social Development (MSD) to estimate incomes of each individual for tax years.[5] To transform the HES23 sample (of 3,384 households) into estimates that represent the New Zealand population, in this analysis, we use TAWA weights (instead of HES replicate survey weights), which

[4] The identification of distinct TAWA families within a household utilises a definition of dependent children that aligns with the Working for Families legislation. That is different from Stats NZ's definition. For more details on the TAWA model, see The Treasury (2024a).
[5] For more details on the incomes estimated in the TAWA model, see Wright and Nguyen (2024a, p. 6).

take into account various factors such as Stats NZ demographics and MSD beneficiary forecasts, to calculate the point estimates and their 95% confidence levels.

### *Scaling household expenditure*

The household expenditure and GST revenue estimated from HES data (micro data) do not match the total values from the SNA (macro data). In particular, the total GST revenue estimated from HES23 data is 73 ± 2% of the SNA aggregate value. This occurs due to differences in coverage and measurement between the micro and macro approaches.[6] In this analysis, we scale household expenditure on taxable items (and hence GST revenue) in HES23 data to match the SNA aggregate (described below), primarily to align the estimated GST revenue raised from the hypothetical GST rate increase with the SNA value and also to estimate the value of the GST credits as accurately as possible.

To determine the GST paid by each household we undertake the following steps.

First, we determine expenditure on taxable items in HES23 data for each household. When doing that, we exclude from expenditure the GST-exempt items, GST-zero-rated items, and illegal expenditures such as illicit drugs. GST-exempt items include rentals for housing, bond payments, mortgage principal, life insurance, credit services, brokerage fees, mortgage interest, other interest, savings and donations, and fines.[7] Zero-rated GST items include international air transport and overseas flights and accommodation.[8] We also exclude returns from games of chance (to avoid double counting) and expenditure defined in HES23 as out of scope from our analysis. The rest of expenditure is considered as taxable expenditure.

Second, we uniformly scale the taxable expenditure of each household in HES23 data so that the total household taxable expenditure from HES23 data aligns with total taxable domestic final consumption expenditure by New Zealand-resident households for tax year 2022–23 in the SNA.[9] The scaling factor – the aggregate value before scaling as a proportion of the total value – of taxable expenditure is 73 ± 2%. We note that applying this scaling ratio to all households is a simplification because the expenditure of two households on the same taxable item could differ.

The total household GST revenue estimated from the scaled data for tax year 2022–23 is $20,245 million (this is less than the total amount of GST raised because it is only GST paid by New Zealand-resident households).

---

[6] In the SNA, Stats NZ utilises multiple data sources, including HES data, to reconcile final consumption expenditure aggregates at a high level and then distributes the estimates into the household sector. For more details, see Stats NZ (2018a, 2024).

[7] https://www.ird.govt.nz/gst/charging-gst/exempt-supplies

[8] https://www.ird.govt.nz/gst/charging-gst/zero-rated-supplies

[9] Using Stats NZ's estimates of total taxable domestic final consumption expenditure by New Zealand-resident households for fiscal years 2021–22 and 2022–23, we estimate the total value for tax year 2022–23 by combining these with weights of ¼ and ¾, respectively. We scale to the aggregate for tax year 2022–23 to be consistent with TAWA's standard setup for modelling tax years.

The disposable income and its components estimated from the TAWA model are largely consistent with the fiscal aggregates; therefore, we do not scale them.[10]

### *Allocating household GST to families*

HES provides us with household level data, however, as discussed, our analysis is based on the family unit (a household may contain multiple families). To estimate GST at the family level from the HES in the status quo, we allocate the GST amount of each household to the families within that household according to each family's share of the household's total disposable income. We consider that disposable income is a good indicator of a family's spending power, that is, families within a household with higher disposable incomes are likely to spend more, and therefore contribute more towards GST.[11] Previous studies, such as Wright and Nguyen (2024b), applied the same intra-household sharing assumption on GST.

### *Refining sample*

We refine the sample in the two steps as follows.

First, we remove the households with negative or zero expenditure, or negative disposable income because they could distort the analysis. We also exclude the households having an expenditure-to-disposable income ratio larger than four to mitigate misleading results caused by households with temporarily low income who may fund their consumption within the surveyed year by borrowing or using their savings. This approach aligns with the methodologies of Thomas (2015, 2020) and Ching et al. (2023). When calculating the expenditure-to-disposable income ratio for each household in this step, we exclude purchases of motor cars and motorcycles from household expenditure. Since expenditure on these long-lived items is typically the costliest, including them in the numerator would overstate the expenditure of households that made such purchases during the survey period, and therefore too many households would be excluded. Ideally, we should apportion the cost of these durables over their useful life. However, that is an impractical option because it would require additional information, such as length of ownership, which we do not have.

In the second step, we identify the principal earner for each family as the first independent adult with the highest absolute market income,[12] and then include only the families with a principal earner aged 18 or above in our final sample. This is to align with our experiment design that we consider the adult principal earner as the representative for the family to receive the tax credit if the family is eligible.

---

[10] Several New Zealand studies, such as Aziz et al. (2012), Stats NZ (2018b) and Wright and Nguyen (2024a), reconciled the micro and macro data so that measures of household distributions based on micro data are consistent with national accounts concepts and totals.

[11] Though consumption and disposable income may have a long-term stable relationship, eg, as found in Jin (1995), these two variables could fluctuate independently in the short term. Therefore, we check the sensitivity of the results by alternatively allocating household GST among families based on a family's modified OECD weights. Sensitivity results are provided in the Appendix.

[12] If more than one independent adults within a family have the same level of absolute market income, we identify the principal earner as the individual with the smaller value of the TAWA person identifier.

There are 2,572,000 ± 29,000 families left in the final sample, accounting for about 95% of the total number of families. Table A1 in the Appendix describes the population composition of the final sample categorised by household type, family type, and the benefit type a family is receiving.

## Determining target families

Our approach requires us to determine a target population of low-income families that it may be desirable to insulate from a GST rate increase. While there are various factors and approaches that might need considering when defining targeted low-income families, in this experiment, we take a relatively straightforward approach where we determine this target population as families whose equivalised disposable income falls below a target income line. We set the target income line at 60% of the median family equivalised disposable income before housing cost (BHC).

Family disposable income refers to the income available for each family to spend after accounting for cash benefits, transfers, and direct taxes. To convert family disposable income into the equivalised terms, we use the modified OECD (mOECD) equivalence scale to adjust for different family sizes and compositions (so that we could compare across families).[13] Specifically, we assign the principal earner of each family a relative weight of 1, their spouse and each dependent child aged 14 or above a weight of 0.5, and each dependent child aged below 14 a weight of 0.3. The family mOECD equivalence scale is the total of the mOECD weights of all individuals in that family. Equivalised BHC disposable income of a family is the family's disposable income divided by their mOECD equivalence scale. We note that alternative equivalisation methods, such as those listed by Creedy and Sleeman (2021), could also be used.

Our target income threshold is estimated to be $27,300 ± 700.[14] In the 2022–23 tax year, we find 673,000 ± 47,000 families falling below the threshold, accounting for 26.2 ± 1.8% of the total number of families. Looking at the distribution of the target population by age group of family principal earner, we find that less than 30% of the target population are families within the 18–24 age groups, approximately 30% are within the 65 or over (65+) group, and the remaining (approximately 42%) are within the working-age group of 25–64.

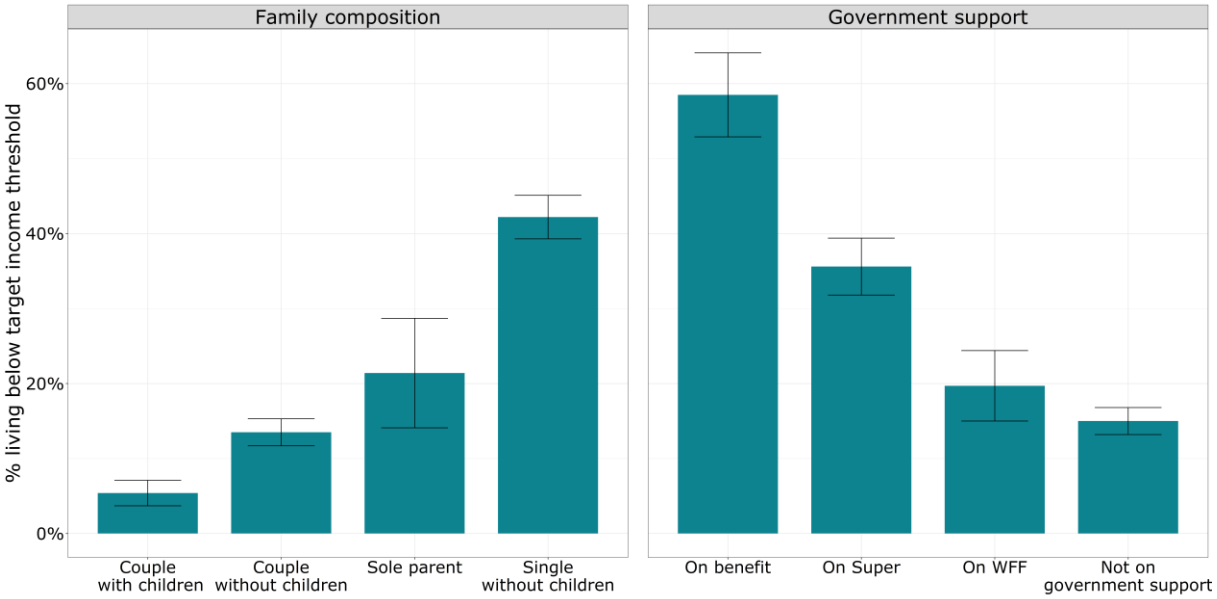
We also find that about 77% of the target population are single-person (without children) families. Government transfers, such as main benefits and New Zealand Superannuation, contribute a relatively larger contribution to the disposable income of those families than employment income does. On average, a family within the target population is $8,500 ± 600 below the target income threshold, in un-equivalised terms.

Figure 1 reports the percentage of families within a given family type and government support that live below the threshold. We find that 42.2 ± 2.9% of single-person (without children) families and 21.4 ± 7.3% of sole parent families are in the target population. About 58.5 ± 5.6% of families receiving main benefits, 35.6 ± 3.8% of families receiving New Zealand Superannuation, and 19.7 ± 4.7% of families receiving Working for Families are below the threshold. The column "Not on

[13] This scale is commonly used to equivalise household incomes to compare living standards between households of different sizes and compositions (Hagenaars et al., 1994, pp. 15–16). Here we apply it to family incomes to facilitate our experiment, though equivalising family incomes may result in a different outcome.
[14] Stats NZ's household BHC50 threshold for fiscal year 2022–23 is $25,185 (Stats NZ, 2023a, Table 1). Under their BHC50 measure, all families within the households below that threshold are considered as "low-income".

government support" refers to families not receiving main benefits, New Zealand Superannuation or Working for Families (but includes those on other transfers such as student allowance) – with about 15 ± 1.8% of this group in the target population.

*Figure 1: Percentage of families for a given family composition and government support in target population*




## Hypothetical GST reforms

We consider three hypothetical scenarios, with each involving a 3-percentage point GST rate increase. Details of each scenario are described below.

### *Full compensation*

In this scenario, we assume that the 3-percentage point increase in the GST rate is accompanied by a GST credit that is introduced within the same tax year designed to fully compensate all target families for the increased GST burden they bear. Our goal in this scenario is to ensure that the target families remain in the same economic position as prior to the GST rate increase. We estimate the GST increase for each family and set the GST credit amount, which is not subject to abatement, for each target family to be equivalent to the GST increase they incur. The GST credit amount varies based on family expenditure.

If the GST rate increases, prices for a range of consumption goods and services would increase to reflect this higher rate. Many transfer payments and benefits are legislatively indexed to inflation in New Zealand. Increases in transfers and benefits due to indexation would possibly occur with some lag because most financial assistances are adjusted in April every year.[15] In the full compensation scenario, we assume that other fiscal parameters, including benefits and other

[15] For instance, superannuation rates are increased annually according to (either CPI- or wage-) inflation over the previous year. The inflation-indexed increases to the Working for Families tax credits are triggered once the cumulative increases in the CPI reach 5% since rates were last adjusted.

government financial supports, are held constant with no adjustment for any potential inflationary effects of the GST rate increase.[16]

***Income-based credit***

The full compensation scenario would require modern technologies to track GST paid on customers' purchases and refund it to the target families (as has been done in Thailand). However, Inland Revenue does not collect information on the actual GST paid by families. Therefore, we consider the second scenario, in which we determine the GST credit amount to the target families based on family size and subject to an income threshold. The GST credit designed this way aligns with other tax credits in New Zealand (and has some similarities to Canada's Goods and Services Tax/Harmonized Sales Tax credit).

In this scenario, we retain the total GST credit amount to be the same as in the full compensation scenario so that we can illustrate how tax credit design is likely to alter the distribution of outcomes within the target population.

To retain the target population, we set the target (disposable) income line in the same manner as in the full compensation scenario. That is, we set the eligibility income threshold for a single-person (without children) family at $27,300 and adjust the eligibility income threshold for different family compositions according to their family's mOECD equivalence scale. Then we set a GST credit amount for a single-person (without children) target family and adjust the credit amount for different family compositions according to their family's mOECD equivalence scale in such a way that the total GST credit amount remains the same as in the full compensation scenario. By design, the GST credit each target family would receive in this scenario could differ from that in the full compensation scenario.

Table 1 provides examples of annual eligibility income threshold and GST credit amount for each family type.

**Table 1: Family income threshold and GST credit amount for each family type**

| Family composition | Family mOECD equivalence scale | Family disposable income threshold ($, annually, un-equivalised) | Family GST credit ($, annually, un-equivalised) |
|---|---|---|---|
| Single | 1 | 27,300 | 560 |
| Sole parent, 1 dependent child aged less than 14 | 1.3 | 35,490 | 728 |
| Sole parent, 1 dependent child aged 14 or above | 1.5 | 40,950 | 840 |
| Sole parent, 2 dependent children (one aged less than 14, one aged 14 or above) | 1.8 | 49,140 | 1,008 |
| Couple no dependent children | 1.5 | 40,950 | 840 |

[16] To examine the effects of this tax change in subsequent tax years, one needs to consider the potential inflationary impacts on transfer payments and benefits.

| | | | |
|---|---|---|---|
| Couple, 1 dependent child aged less than 14 | 1.8 | 49,140 | 1,008 |
| Couple, 1 dependent child aged 14 or above | 2 | 54,600 | 1,120 |
| Couple, 2 dependent children (one aged less than 14, one aged 14 or above) | 2.3 | 62,790 | 1,288 |

### *CPI-indexation*

If the GST rate increases by 3 percentage points, we estimate that there would be a one-off increase in CPI inflation of 2.3%.[17] Under current law, many transfer payments and benefits are indexed to CPI inflation. Therefore, we model the third scenario, in which recipients of "primary assistance" including main benefits, New Zealand Superannuation, and Working for Families receive a one-off 2.3% increase in those benefits in the same tax year, as a compensation for the CPI increase. In particular, we increase the net rates of Jobseeker Support, Supported Living Payment, Sole Parent Support, and New Zealand Superannuation by 2.3%. For Working for Families, we increase the rates of Family tax credit, In-work tax credit, and Best Start tax credit, and the minimum annual income of Minimum family tax credit by 2.3%. We then compare the fiscal cost as well as the distributional outcomes of this scenario relative to those of the full compensation scenario to reveal how effective the current indexation approach is at targeting low-income families.

### *Modelling assumptions*

In the first and second scenarios, we assume that there is no CPI-indexed adjustment to transfer payments and benefits resulting from the GST rate increase. Additionally, there are two key modelling assumptions for all three scenarios.

- GST transmission: While modelling the increase in the standard GST rate, we assume that businesses will fully pass the GST rate increase onto consumers (and businesses will not slip in additional price increases not necessarily related to GST rate increase), and inflation expectations are not exacerbated.[18] The structure of zero-rated GST items and GST exemptions is held constant as in the status quo.
- Behavioural responses: The model does not account for behavioural responses. The model assumes that households continue to purchase the same quantity and composition of goods and services, albeit at higher prices due to the GST rate increase. In practice, they may alter consumption choices, for example, by substituting toward untaxed or cheaper goods in response to increased prices or adjusting labour supply in response to the GST credit or the

[17] In our estimation of CPI increase, which is ((1.18/1.15)-1)*(1-0.1105), the 11.05% is the total weight of three subgroups that are not subject to GST: rentals for housing (9.8%), life insurance (1.11%), and credit services (0.14%) (Stats NZ, 2023b, Table 8).

[18] For example, Benedek et al. (2020) found evidence of 100% pass-through of standard VAT rate changes in European countries. See Thomas (2022) for more discussion on this assumption.

increases in transfer payments and benefits. These behavioural changes are not captured in the current simulations.[19]

# Results

## Full compensation versus Income-based credit

We estimate that increasing the standard GST rate by 3 percentage points would have raised aggregate GST revenue (from all sources) by $5,525.7 million in tax year 2022–23.[20] The total GST credit is estimated to cost $435.7 ± 41.3 million in each of the first two scenarios, accounting for 7.9 ± 0.7% of the total GST revenue raised. Below, we compare the distributions of the GST increase, GST credit, and the net impact between these two scenarios, by family income decile as well as age group and ethnic group of family principal earner. Note that the distribution of the GST increase (described below) reflects the GST incidence in the status quo, which may be driven by the GST sharing assumption applied.

### *Impact on target families*

This subsection particularly examines the impacts on the families living below the target income threshold.

*By family income decile*

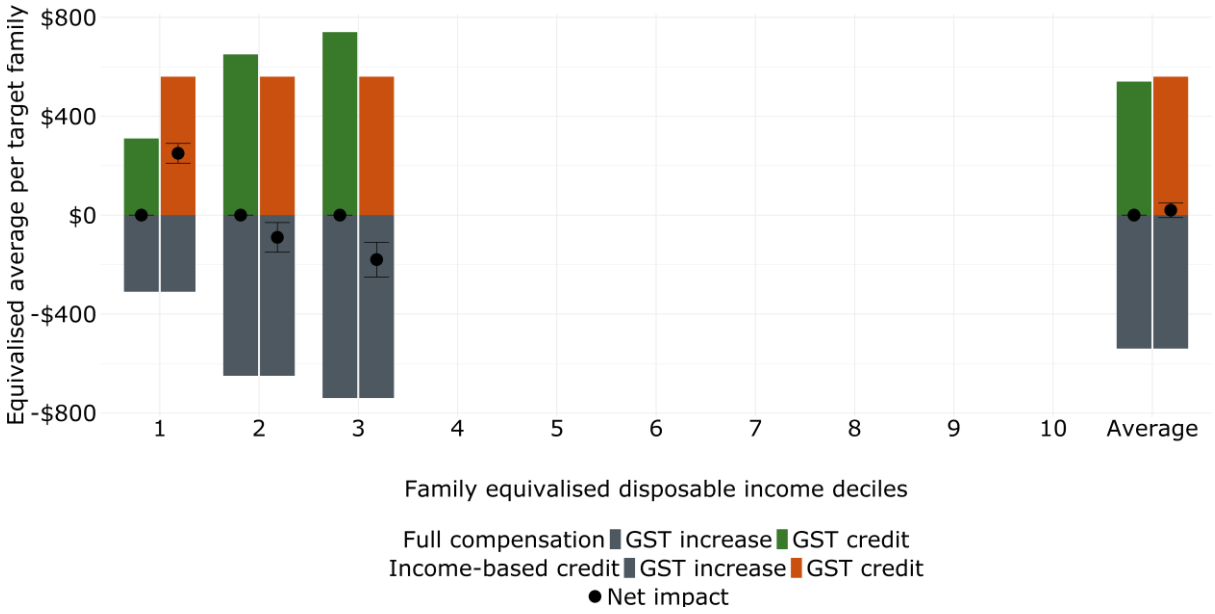
We define the family equivalised disposable income (FEDI) deciles in the status quo (that is, we place all families into ten groups ordered by income level) and find that the target families would be in the bottom three deciles, including all families in deciles 1 and 2 and 61.1 ± 17.7% of the families in decile 3. The decile boundaries are provided in Table A2 in the Appendix.

Figure 2 reports the average GST increase, GST credit, and net impact on the target families in each decile for each scenario, in equivalised terms (these are amounts per equivalent family).[21] The net impact (black points) results from the GST increase (negative bars) and the GST credit (positive bars). On average over the target population, a family would bear an additional amount of $540 ± 30 in GST due to the GST rate increase. The target families in higher deciles spend more on GST-taxable items and hence would receive a larger GST credit on average than those in lower deciles under the full compensation scenario. For example, the equivalised average GST increase for a target family in decile 3 would be $740 ± 70 while that for those in decile 1 would be $310 ± 40. In the full compensation scenario, the GST credit amount a target family would receive is exactly equivalent to the GST increase they would bear, which results in a zero net impact on these families. By design, in the income-based credit scenario, each target family would receive

[19] Creedy and Mok (2015) used the Treasury's behavioural microsimulation model and the HES 2009/10 data to examine the impact of the tax changes in 2010 to the GST rate, personal income tax, and transfers. They found that the full effect of policy changes had a small average increase in labour supply for all demographic groups.
[20] Our estimate is based on the consolidated GST revenue reported in Treasury's BEFU tables (The Treasury, 2023, 2024b, p. 125) for fiscal years 2021–22 and 2022–23.
[21] We use mOECD equivalence scale to calculate equivalised values. The equivalised average amount enables the comparison of the impact on the same family type across deciles and scenarios. We provide the un-equivalised average amounts in the Appendix, in which the y-axis scales are larger. Our findings (by decile, age group, and ethnic group as shown below) still remain valid.

the same GST credit amount in equivalised terms (so families of the same size and composition receive the same amount). This would leave a positive net impact ($250 ± 40) to those in the bottom decile and a negative impact to those in deciles 2 and 3, on average.[22]

*Figure 2: GST increase, GST credit, and net impact on target families by income decile*




*By age group*

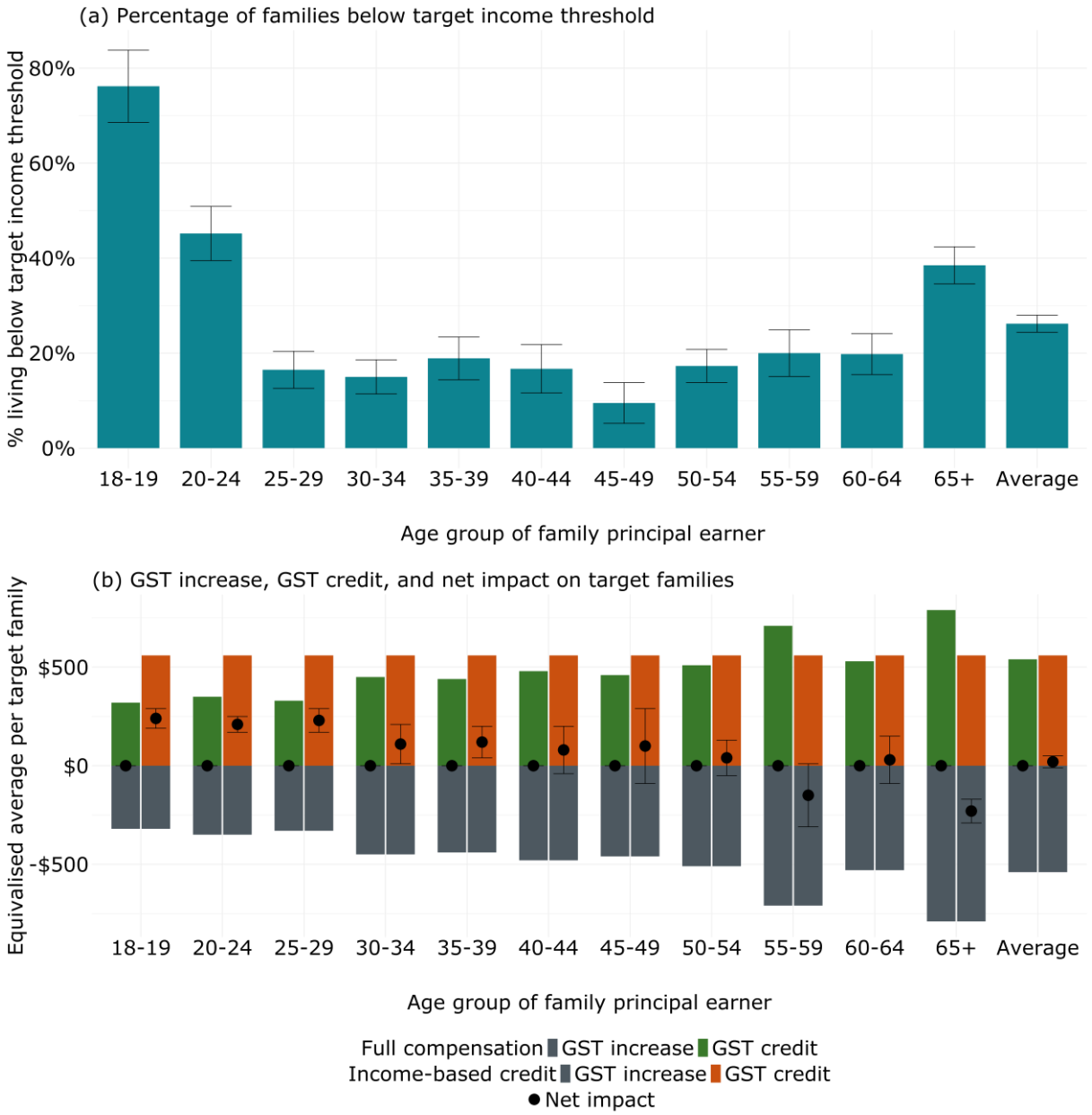
In Figure 3, the upper panel (a) illustrates the proportion of families that would be eligible for a GST credit for a given age group of family principal earner. A majority of the youngest age group (76.2 ± 7.6%) and a large proportion of the 20–24 age group (45.2 ± 5.7%) would be eligible. Also, about 38.5 ± 3.9% of the 65+ group would be included. The 45–49 age group has the lowest percentage of families falling into our target group, at 9.5 ± 4.3%.

In the lower panel (b), we present the equivalised average GST increase, GST credit, and net impact on the target families for each age group and each scenario. Within the target population, the older age groups seem to spend more on GST-taxable items and hence would bear a larger GST increase. For instance, a target family in the 65+ group would pay an additional $790 ± 60 in GST while those in the 18–19 group would pay an additional $320 ± 50 on average. This is likely due to the 65+ group having more savings than the younger group.

In the income-based credit scenario, the equivalised average GST credit a target family in the 18–39 age group receives would be significantly larger than their additional GST burden but that would be lower for the 65+ group. This results in positive net impacts on the 18–39 age groups and a negative net impact on the 65+ group. The net impacts on other middle working-age cohorts are not significantly different from zero.

[22] In the last two columns of panel (b), that the equivalised average GST credit amounts are slightly different between two scenarios is due to the rounding.

*Figure 3: Percentage of families within a given age group in target population; GST increase, GST credit, and net impact on target families by age group*

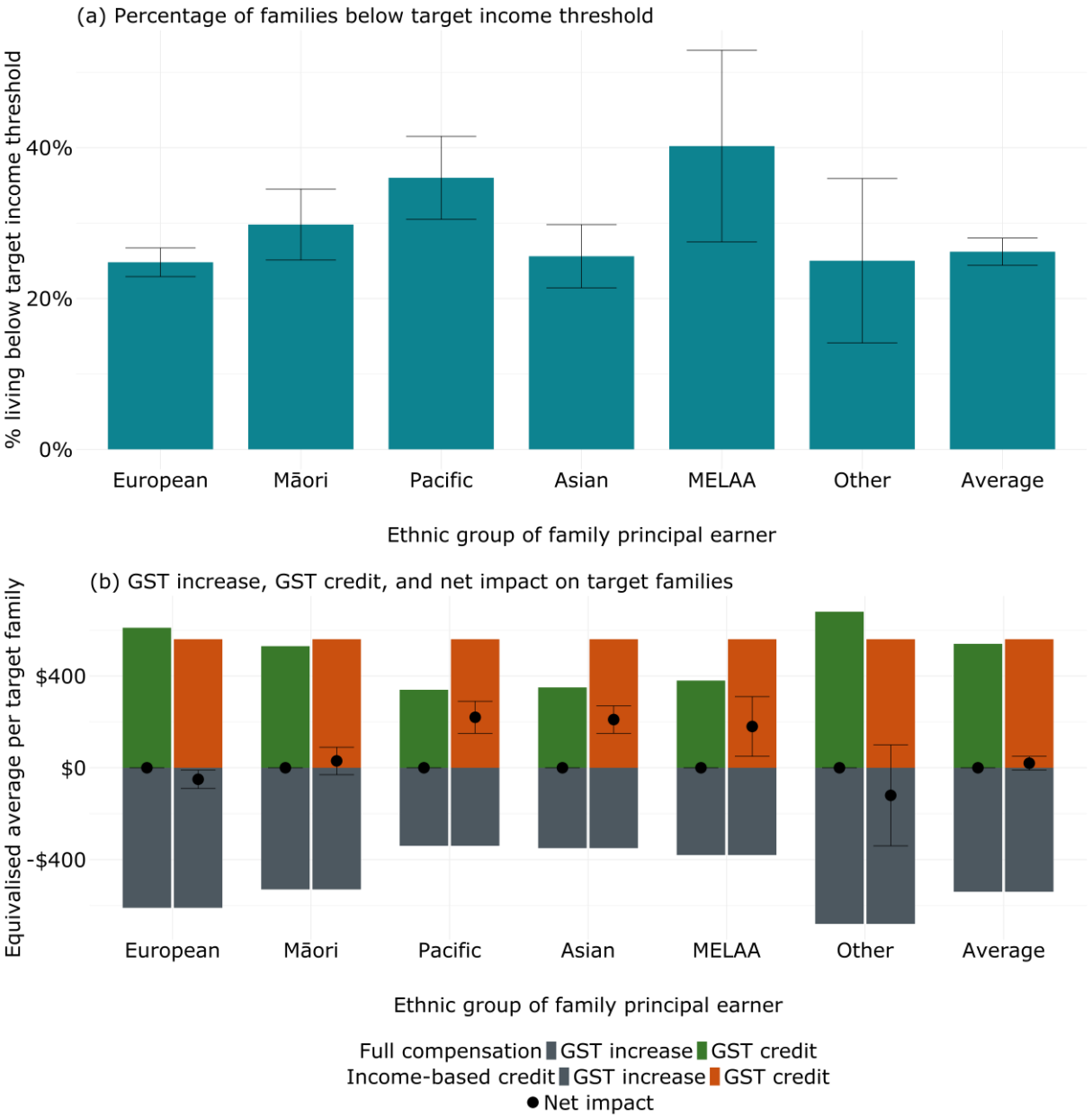



*By ethnic group*

In Figure 4, we present in the upper panel (a) the proportion of families within a given ethnicity group (of family principal earner) that are included in our target population.[23] The ethnic groups that have a largest share receiving a GST credit would be the Middle Eastern, Latin American and African (MELAA) (40.2 ± 12.7%), Pacific (36.0 ± 5.5%), and Māori (29.8 ± 4.7%).

[23] Note that people are able to identify with more than one ethnic group.

*Figure 4: Percentage of families within a given ethnic group in target population; GST increase, GST credit, and net impact on target families by ethnic group*




The lower panel (b) shows the equivalised average net impact from the GST increase and the GST credit on target families in each ethnic group and each scenario. The target families in European and Other groups seem to spend more on GST-taxable items and so would bear more GST increase compared to other groups. In the full compensation scenario, these groups would be provided with a larger GST credit than other groups would. In the income-based credit scenario, the target families in Pacific, Asian, and MELAA groups would receive a larger GST credit on average than their increased GST burden, and so incur positive net impacts. The European target families would bear a negative net impact and the net impacts on Māori and Other groups would not be statistically different from zero.

*From full compensation to income-based credit: Who would be better-off/worse-off?*

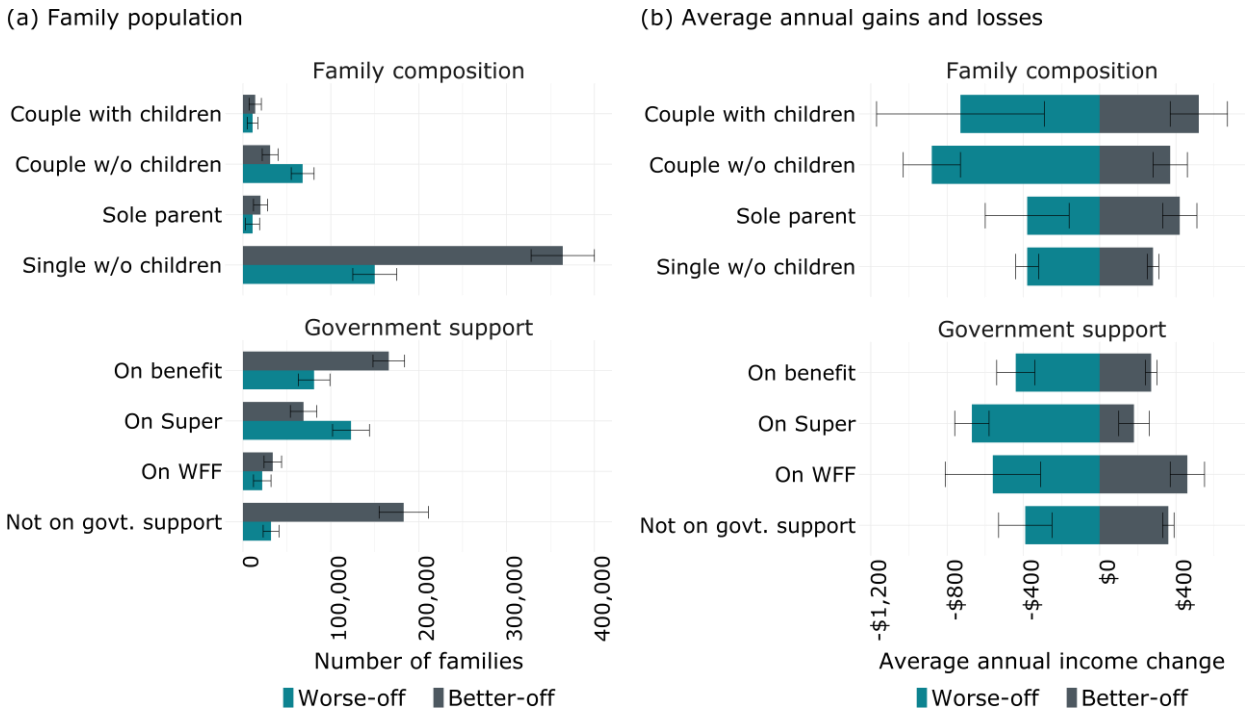
The GST credit amount a target family receives in the income-based credit scenario may be higher or lower than what they receive in the full compensation scenario. We define a target family as better-off if they benefit by $3 or more annually when we switch from the full compensation to the income-based credit, and as worse-off if they lose by $3 or more. Target families with a change in GST credit amount between -$3 to $3 are classified as "no change".

Below we show the headcount of families who would be better off and worse off and their average gains and losses, respectively, due to the change to the credit distribution mechanism. We note that these gains and losses are to illustrate how a credit that can be administered in the real world is likely to result in different outcomes to a credit that, in theory, fully compensates for a GST rate increase. And the full compensation scenario is currently conditional on the allocation of GST according to each family's share of the household's total disposable income.

The left panel (a) in Figure 5 shows the number of better-off and worse-off families, categorised by family composition and the government support they receive. Among our target population, there would be 429,000 ± 40,000 better-off families and 240,000 ± 37,000 worse-off families whereas the rest of target families would experience no change. Among those better-off families, 364,000 ± 36,000 are single-person families. Categorised by the type of government transfer, we found that 166,000 ± 18,000 families receiving main benefits and 183,000 ± 28,000 families not receiving the primary assistance would also be better-off, among others. Among those worse-off families, we found that 150,000 ± 25,000 are single-person families and 123,000 ± 21,000 are families receiving New Zealand Superannuation.

In the right panel (b), we present the un-equivalised average gains and losses. On average, a better-off family would gain $300 ± 30 per year, while a worse-off family would lose $540 ± 80 per year. The better-off families that would receive the largest average annual gain are couples with children ($520 ± 150) and families receiving Working for Families ($460 ± 90). Among the worse-off families, those losing the most are couples without children ($880 ± 150), couples with children ($730 ± 440), families receiving New Zealand Superannuation ($670 ± 90), and families receiving Working for Families ($560 ± 250).

*Figure 5: Better-off and worse-off families in the target population*




### *Impact on all families*

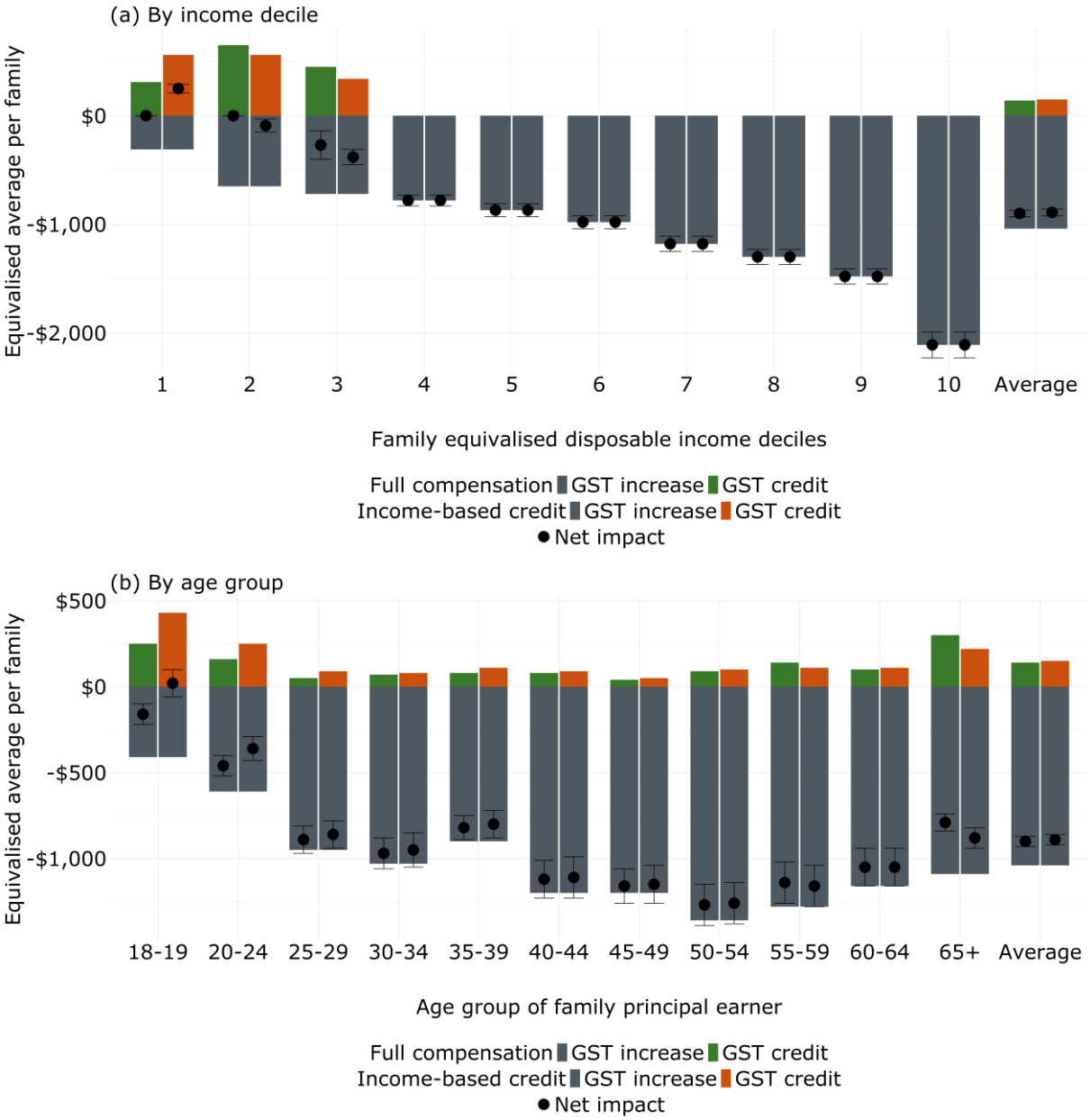
In Figure 6, we report the equivalised average net impact of the GST reforms on all families for each scenario. The average net impacts over the entire population and for many sub-population groups are largely comparable between the two scenarios because the number of non-target families are much larger than that of target families.

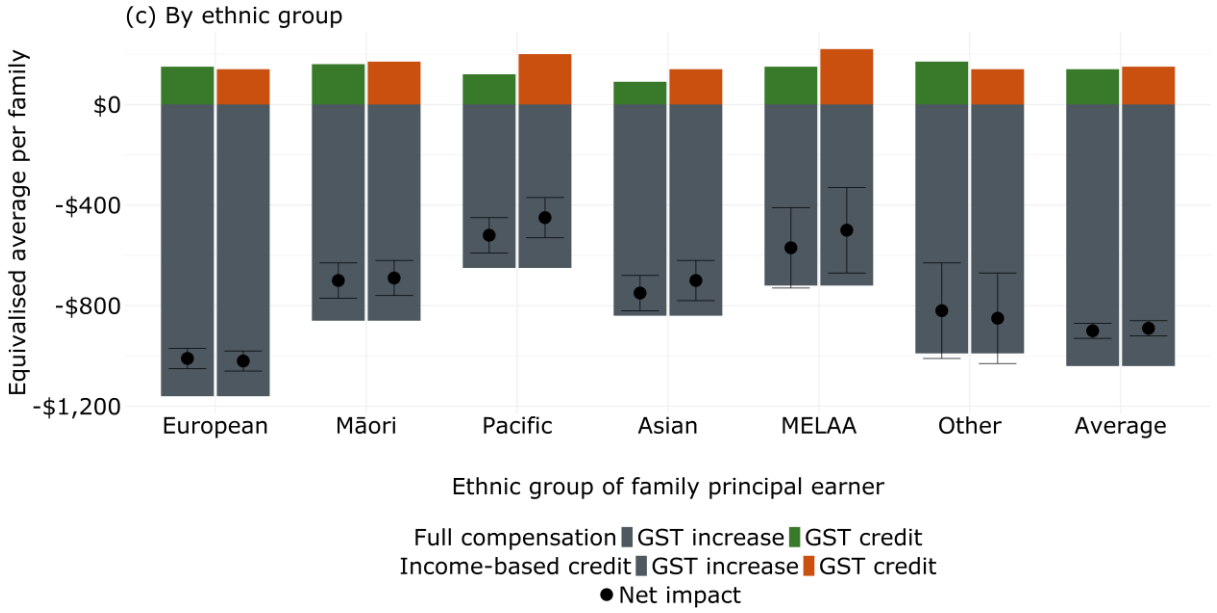
Panel (a) shows the result by FEDI decile. Over the entire population, a family would pay an additional $1,040 ± 30 in GST due to the GST rate increase and receive $140 ± 20 back as GST credit, resulting in a negative net impact of $900 ± 30, on average under both scenarios. Our finding that the families in decile 1 would incur a positive net impact in the income-based credit scenario remains valid. The net average impact on decile 3 would be negative under both scenarios, as not everyone in this decile receives the GST credit.

Panel (b) presents the result by age group of family principal earner. In both scenarios, the average net impact would also be negative for most age groups. In general, the negative net effect seems to increase with the age of a family's principal earner because older groups seem to spend more on GST-taxable items and are less likely to receive the GST credit. The largest negative average net impact would occur for those families with a principal earner aged 40–59. Compared to the middle working-age groups, the 65+ group would bear a comparable increase in GST burden but receive a higher average GST credit due to a higher share of the 65+ population eligible for the credit.

Panel (c) presents the average net impact by ethnic group of family principal earner, with European families tending to spend more on GST-taxable items so they would incur a larger negative net impact than the other groups would on average.

*Figure 6: GST increase, GST credit, and net impact on all families*






## Full compensation versus CPI-indexation

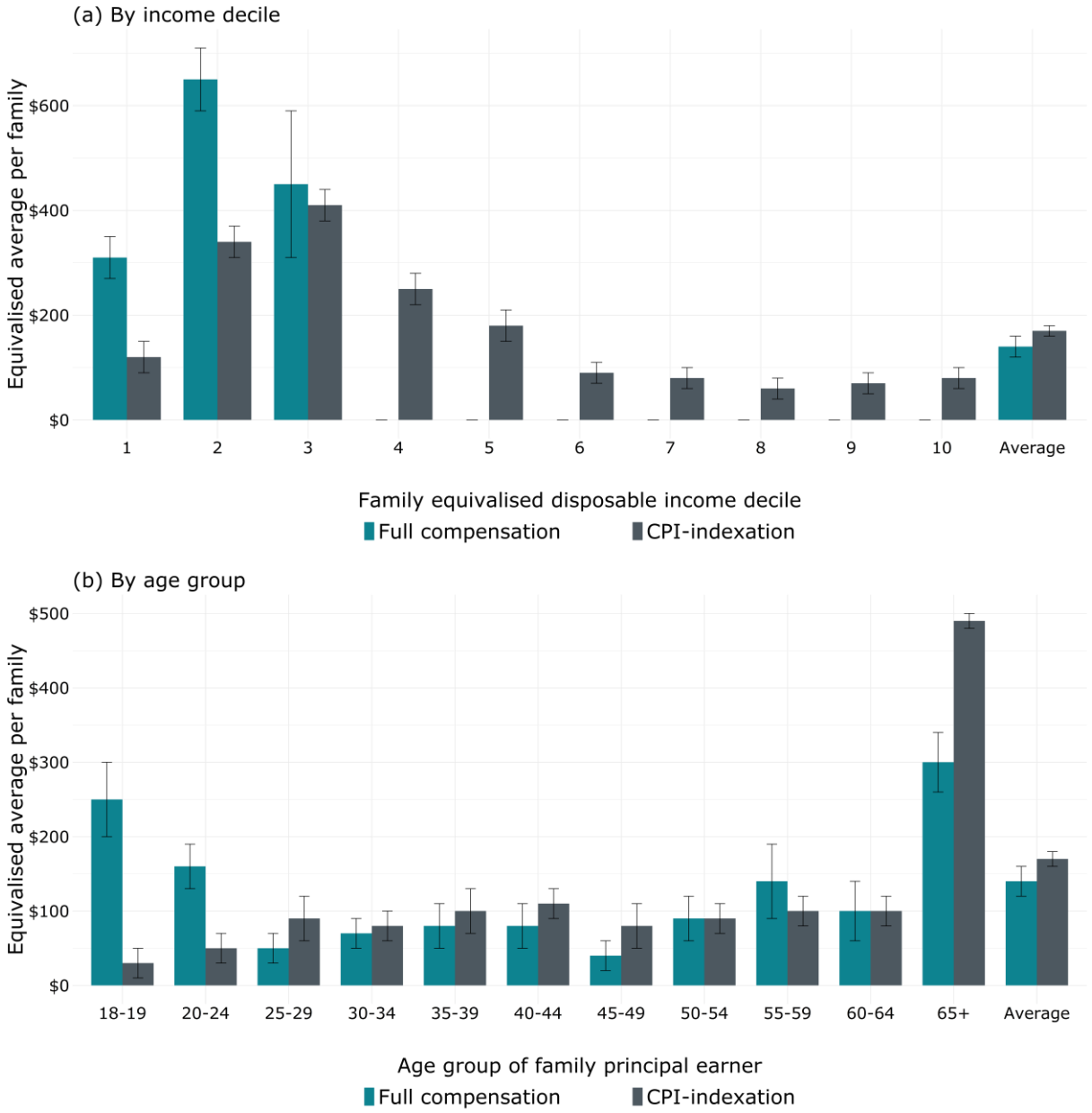
We estimate the total cost of adjusting government support to compensate for the inflationary impact of the GST rate increase to be $565.6 ± 14.2 million (compared to a cost of $435.7 ± 41.3 million in the full compensation scenario). This total cost reflects the combined effect of increased expenditure on main benefits ($180 ± 3 million), New Zealand Superannuation ($421.6 ± 9.4 million) and Working for Families ($94.1 ± 6.8 million), as well as increased income tax revenue ($121 ± 2.6 million) and a reduction in accommodation supplement payments ($7.6 ± 9.7 million).

In Figure 7, we compare the average GST credit in the full compensation scenario and the average gain in government support in the CPI-indexation scenario, in equivalised terms. We show the distribution by FEDI decile in the upper panel (a) and by age group of family principal earner in the lower panel (b).

In panel (a), the GST credit is limited to low-income families in the bottom three income deciles. In contrast, the CPI-indexation scenario also benefits families that are receiving at least a main benefit, New Zealand Superannuation, or Working for Families in higher income deciles. Our target families in deciles 1 and 2 would be worse-off with the current indexation approach because their CPI-indexed increases in those transfers would be significantly lower than the GST credit they would receive in the full compensation scenario, on average.

In panel (b), the 65+ group would be better-off under the CPI-indexation scenario because they would have a significantly larger gain in CPI-indexed transfers than the GST credit on average. This is because all New Zealand Superannuation recipients in the status quo would now be eligible for the CPI-indexed increases in New Zealand Superannuation and other benefits, while not all would be eligible for the GST credit in the full compensation scenario. However, on average the CPI-indexed increases for New Zealand Superannuation recipients in the target population would be smaller than the GST credit they would receive in the full compensation scenario, meaning Superannuation recipients in lower deciles are worse off under the CPI-indexation approach. By contrast, the two youngest age groups would be worse-off because they would receive smaller gains under the CPI-indexation scenario than in the full compensation scenario.

*Figure 7: Average gain in income support in full compensation and CPI-indexation scenarios*




## Conclusion

If the GST rate is increased to meet future fiscal pressures, it could have a relatively large effect on the wellbeing of low-income families as opposed to high-income families. With this analysis, we conclude that a low-income credit scheme would be a cost-effective approach to offset the impact of a GST rate increase on an intended group that may be considered as most in need. However, there are difficult trade-offs between targeting precision and implementation simplicity in designing a low-income offset scheme. A credit that can be administered in the real world is likely to make some target families better-off and some worse-off compared to a hypothetically full compensation credit. We also conclude that a low-income GST offset credit can more effectively target low-income families than the current CPI-indexation approach.

## Acknowledgement

We would like to thank Treasury's Analytics and Insights team for sharing the TAWA model, as well as their invaluable support while we were doing this analysis. We would like to especially thank Tod Wright for his insightful and detailed comments on the draft version of this note. We also want to thank Peer Skov and other Inland Revenue colleagues for their inputs.

## References

Aziz, O. A., Ball, C., Creedy, J., & Eedrah, J. (2013a). *The Distributional Impact of Population Ageing*. New Zealand Treasury Working Paper No. 13/2013. https://www.treasury.govt.nz/publications/wp/distributional-impact-population-ageing-wp-13-13

Aziz, O., Gemmell, N., & Laws, A. (2013b). *The Distribution of Income and Fiscal Incidence by Age and Gender: Some Evidence from New Zealand*. Working Paper in Public Finance No. 10/2013. Victoria University of Wellington. https://ir.wgtn.ac.nz/items/d0ac5958-13cf-489a-a375-e3ab36c9adff

Aziz, O., Gibbons, M., Ball, C., & Gorman, E. (2012). The effect on household income of government taxation and expenditure in 1988, 1998, 2007 and 2010. *Policy Quarterly*, *8*(1), 29–38. https://doi.org/10.26686/pq.v8i1.4411

Ball, C., Creedy, J., & Ryan, M. (2016). Food expenditure and GST in New Zealand. *New Zealand Economic Papers*, *50*(2), 115–128. https://doi.org/10.1080/00779954.2014.971480

Benedek, D., De Mooij, R. A., Keen, M., & Wingender, P. (2020). Varieties of VAT pass through. *International Tax and Public Finance*, *27*, 890–930.

Canada Revenue Agency. (2025). *GST/HST credit*. https://www.canada.ca/en/revenue-agency/services/child-family-benefits/goods-services-tax-harmonized-sales-tax-gst-hst-credit.html

Ching, B., Reid, C., & Symes, L. (2023). *Tax and transfer progressivity in New Zealand: Part 2 Results*. New Zealand Treasury Analytical Note No. 03/2023. https://www.treasury.govt.nz/publications/an/an-23-03

Creedy, J., & Mok, P. (2017). Labour supply in New Zealand and the 2010 tax and transfer changes. *New Zealand Economic Papers*, *51*(1), 60–78. https://doi.org/10.1080/00779954.2015.1136675

Creedy, J., & Sleeman, C. (2021). *Adult equivalence scales, inequality and poverty in New Zealand*. New Zealand Treasury Working Paper No. 04/2021. https://www.treasury.govt.nz/sites/default/files/2007-09/twp04-21.pdf

de la Feria, R., & Swistak, A. (2024). *Designing a progressive VAT*. International Monetary Fund Working Paper No. 78/2024. https://www.imf.org/en/Publications/WP/Issues/2024/04/05/Designing-a-Progressive-VAT-546923

Government of Singapore. (2025). *GST Voucher*. https://www.govbenefits.gov.sg/about-us/gst-voucher/overview/

Hagenaars, A. J. M., de Vos, K., & Asghar Zaidi, M. (1994). *Poverty Statistics in the Late 1980s: Research Based on Micro-data*. European Commission: Eurostat. https://op.europa.eu/en/publication-detail/-/publication/9c787f17-acb6-4f4b-badc-49a2310e65f7

Inland Revenue. (2025). *Stable bases and flexible rates: New Zealand's tax system*. https://www.taxpolicy.ird.govt.nz/consultation/2025/ir-ltib

International Monetary Fund. (2014). *Fiscal policy and income inequality*. International Monetary Fund Policy Paper. https://www.imf.org/external/np/pp/eng/2014/012314.pdf

Jin, F. (1995). Cointegration of consumption and disposable income: Evidence from twelve OECD countries. *Southern Economic Journal*, 77–88.

Statistics New Zealand. (2018a). *Quarterly gross domestic product: Sources and methods (fifth edition)*. https://www.stats.govt.nz/assets/Uploads/Methods/Quarterly-gross-domestic-product-Sources-and-methods-fifth-edition/quarterly-gross-domestic-product-sources-and-methods-fifth-edition.pdf

Statistics New Zealand. (2018b). *Measuring the distribution of household income and outlays within a national accounts framework*. https://www.stats.govt.nz/experimental/national-accounts-distribution-of-household-income-consumption-and-saving/

Statistics New Zealand. (2023a). *Household income and housing-cost statistics: Year ended June 2023*. https://www.stats.govt.nz/assets/Uploads/Household-income-and-housing-cost-statistics/Household-income-and-housing-cost-statistics-Year-ended-June-2023/Download-data/hihc-ye-june-2023-updated.xlsx

Statistics New Zealand. (2023b). *Consumers price index: September 2023 quarter*. https://www.stats.govt.nz/information-releases/consumers-price-index-september-2023-quarter/

Statistics New Zealand. (2024). *Overview of sources and methods for quarterly gross domestic product: Updates and COVID-19 adjustments – 19 December 2024 updates*. https://www.stats.govt.nz/assets/Uploads/Methods/Overview-of-sources-and-methods-for-quarterly-gross-domestic-product-Updates-and-COVID-19-adjustments/overview-of-sources-and-methods-for-quarterly-gross-domestic-product-updates-and-covid-19-adjustments-19-december-2024-updates.xlsx

Tax Working Group. (2009). Changing the rate of GST: fiscal, efficiency, and equity considerations. Background Paper of Tax Working Group Report. (2010). *A Tax System for New Zealand's Future*. Victoria University of Wellington. https://www.wgtn.ac.nz/cagtr/events/past-events/tax-working-group-2009/publications/gst-paper.pdf

The Treasury. (2023). *Budget Economic and Fiscal Update 2023*. https://www.treasury.govt.nz/sites/default/files/2023-05/befu23.pdf

The Treasury. (2024a). *Tax and Welfare Analysis (TAWA) Model*. https://www.treasury.govt.nz/information-and-services/financial-management-and-advice/revenue-expenditure/tax-and-welfare-analysis-tawa-model

The Treasury. (2024b). *Budget Economic and Fiscal Update 2024*. https://www.treasury.govt.nz/sites/default/files/2024-05/befu24.pdf

Thomas, A. (2015). *The distributional effects of consumption taxes in New Zealand.* Working Papers in Public Finance No. 08/2015. Victoria University of Wellington. https://ir.wgtn.ac.nz/server/api/core/bitstreams/2d5e891a-3fa0-4dd9-bdd6-bc3d41c3efad/content

Thomas, A. (2020). *Reassessing the regressivity of the VAT*. OECD Taxation Working Paper No. 49/2020. https://www.oecd.org/en/publications/reassessing-the-regressivity-of-the-vat_b76ced82-en.html

Thomas, A. (2022). Who would win from a multi-rate GST in New Zealand: Evidence from a QUAIDS model. *New Zealand Economic Papers*, *56*(2), 141–168. https://doi.org/10.1080/00779954.2021.2020324

Wright, T., & Nguyen, H. (2024a). *Fiscal incidence in New Zealand: The effects of taxes and benefits on household incomes in tax year 2018/19*. New Zealand Treasury Analytical Note No. 01/2024. https://www.treasury.govt.nz/publications/an/an-24-01

Wright, T., & Nguyen, H. (2024b). *Fiscal incidence and income inequality by age: Results for New Zealand in tax year 2018/19*. New Zealand Treasury Analytical Note No. 09/2024. https://www.treasury.govt.nz/publications/an/an-24-09

# Appendix

**Table A1: Population composition in the final sample**

**a. Family composition**

| Category | Group | Number of families | Number of target families |
|---|---|---|---|
| Family type | Couple with children | 470,000 ± 18,000 | 25,000 ± 8,000 |
| | Couple without children | 729,000 ± 25,000 | 98,000 ± 14,000 |
| | Sole parent | 148,000 ± 15,000 | 32,000 ± 12,000 |
| | Single | 1,225,000 ± 46,000 | 517,000 ± 40,000 |
| Government support[(a)] | On benefit | 423,000 ± 16,000 | 247,000 ± 23,000 |
| | On NZ Superannuation | 543,000 ± 15,000 | 193,000 ± 22,000 |
| | On Working for Families | 290,000 ± 18,000 | 57,000 ± 13,000 |
| | Not on government support | 1,447,000 ± 33,000 | 216,000 ± 28,000 |
| Household type | Couple with children | 351,000 ± 18,000 | 17,000 ± 7,000 |
| | Couple without children | 490,000 ± 18,000 | 69,000 ± 12,000 |
| | Sole parent | 83,000 ± 12,000 | 16,000 ± 7,000 |
| | Single | 431,000 ± 15,000 | 145,000 ± 20,000 |
| | Multi-family household[(b)] | 1,217,000 ± 38,000 | 425,000 ± 33,000 |
| **Total** | **All families** | **2,572,000 ± 29,000** | **673,000 ± 47,000** |

**b. Household composition**

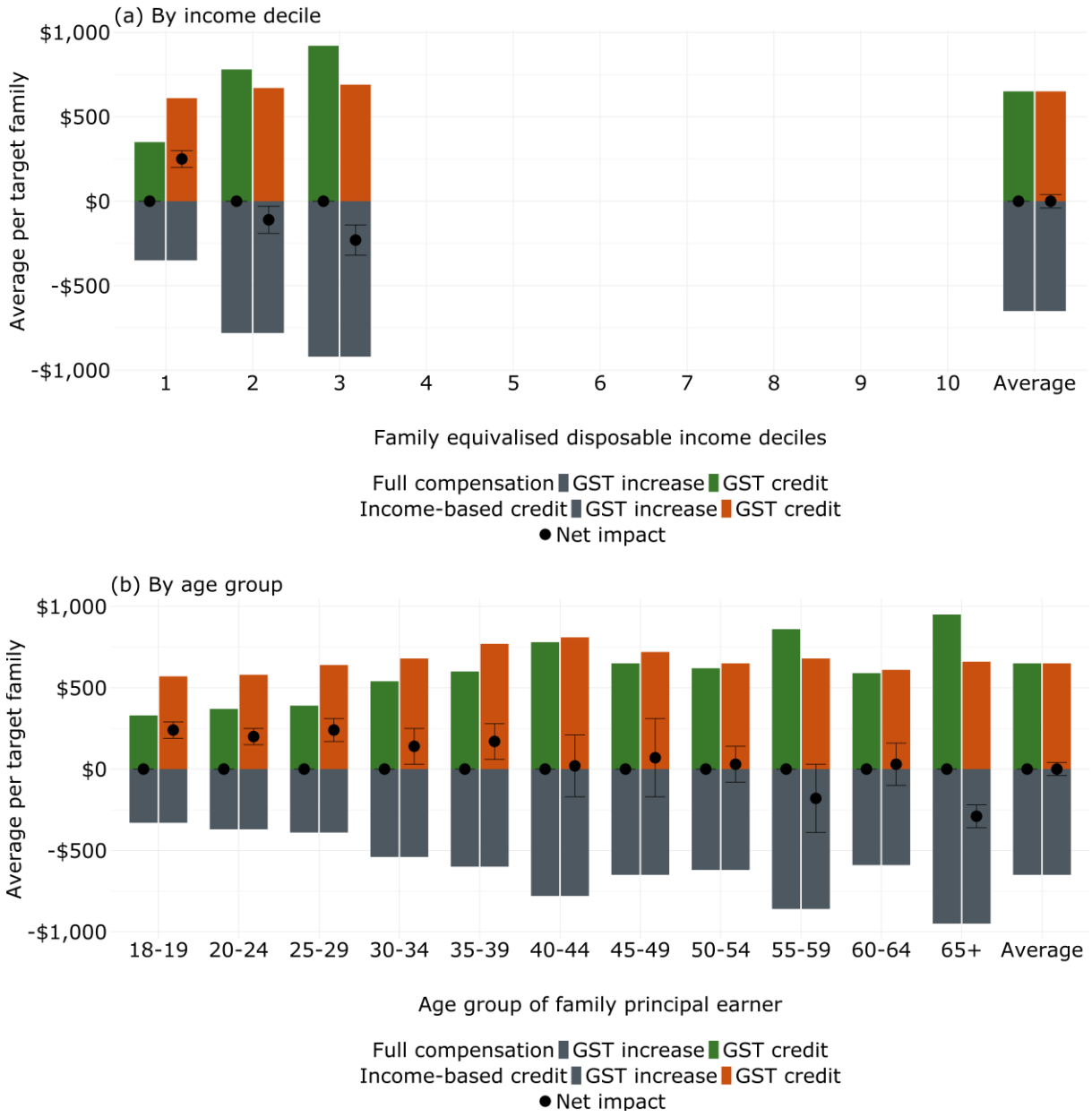
| Category | Group | Number of households |
|---|---|---|
| Household type | Couple with children | 351,000 ± 18,000 |
| | Couple without children | 490,000 ± 18,000 |
| | Sole parent | 83,000 ± 12,000 |
| | Single | 431,000 ± 15,000 |
| | Multi-family household | 521,000 ± 20,000 |
| **Total** | **All households** | **1,875,000 ± 12,000** |

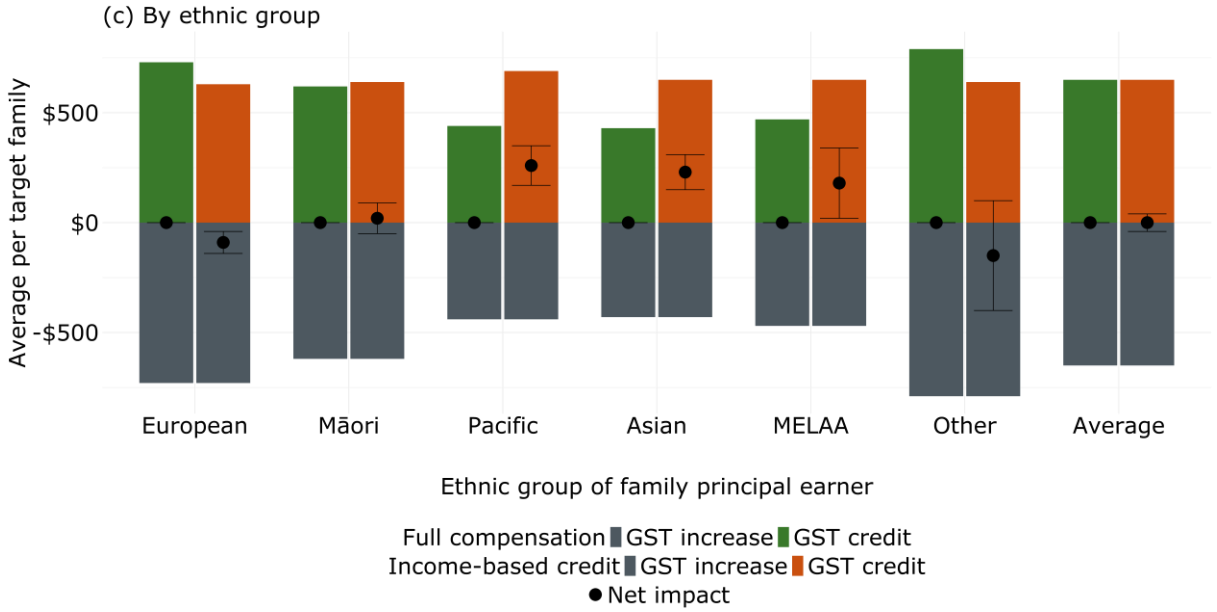
Note: ([a]) A person could be receiving more than one benefits listed above so figures will not sum to the total number of families. ([b]) Multi-family households include two-family or more than two-family households.

**Table A2: Family equivalised disposable income decile boundaries**

| Decile | FEDI decile boundaries |
|---|---|
| 1 | 19,900 ± 700 |
| 2 | 25,400 ± 400 |
| 3 | 29,500 ± 800 |
| 4 | 35,800 ± 700 |
| 5 | 42,500 ± 900 |
| 6 | 49,700 ± 1,300 |
| 7 | 59,600 ± 1,300 |
| 8 | 70,600 ± 1,600 |
| 9 | 90,900 ± 3,000 |

*Figure A1: Un-equivalised average GST increase, GST credit, and net impact on target families in full compensation and income-based credit scenarios*






## Sensitivity check

In the baseline result presented in the paper, we allocate household GST to families according to each family's proportion of the household's total disposable income. With a relatively large share of multi-family households in the population (about 28% as shown in Table A1 in the Appendix), altering the GST sharing assumption within a household may have some impact on the GST incidence in the status quo (and the distribution of GST credit in the full compensation scenario). In this section, we check the sensitivity of our output by instead allocating household GST to families based on family's mOECD weight within a household.[24]

By replacing the intra-household GST sharing assumption, the total GST increase on the target families would go up from $435.7 ± 41.3 million to $591.9 ± 45.6 million, given that the target population remains the same. In Figure A2, we compare the equivalised average GST increase over target families by age group of family principal earner between the two sharing assumptions. We find that, on average, the increased GST burden per target family would increase from $540 ± 30 to $770 ± 40. Under the alternative sharing assumption, the GST increase for the target families in the three youngest age groups would be significantly higher than that in the baseline. For instance, a target family in the 18–24 age group would bear more than twice the GST burden on average, compared to the baseline. This is because these young low-income families tend to reside with other families who are likely older, have higher income, and are not in the target population. Within these multi-family households, the sharing based on family's mOECD weight would allocate a higher GST burden to those young families, which we find less convincing than our baseline output. We, however, note that other sharing assumptions could be tested.[25]

[24] For example, the GST of a household consisting of two families including a single person and a couple without children will be shared to each family at the ratio 1:1.5 respectively.

[25] Aziz et al. (2013a, 2013b) combined two sharing assumptions by allocating household GST as a proportion to disposable income of each family within multi-family households unless one of the families earns below the subsistence level of $60 a week, when it is divided equally among the families. However, the rationale of the chosen income threshold ($60/week) is not clear to us.

*Figure A2: Sensitivity of GST increase incidence on target families in the status quo by age group to GST sharing assumptions*