Motu Working Paper 23-05

Earnings bunching at benefit abatement thresholds: evidence from recent policy changes

Motu economic & public policy research

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August 2024

Document information

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Acknowledgements

This research was supported with funding from the Ministry of Social Development (MSD) as part of the Families Package Impact Studies project. We have benefited greatly from many policy and data related discussions and comments from Lars Arnesen, David Rea, Lynn Riggs, Moira Wilson, and seminar participants at MSD.

Disclaimer

Access to the data used in this study was provided by Stats NZ under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 2022. The results presented in this study are the work of the author, not Stats NZ or individual data suppliers.
These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI) which is carefully managed by Stats NZ. For more information about the IDI please visit https://www.stats.govt.nz/integrated-data/.
The results are based in part on tax data supplied by Inland Revenue to Stats NZ under the Tax Administration Act 1994 for statistical purposes. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes and is not related to the data's ability to support Inland Revenue's core operational requirements.
All results presented have been confidentialised in accordance with Statistics New Zealand's requirements. In particular, all sample sizes and counts have been randomly rounded to base 3 (RR3). Any opinions, findings, recommendations, and conclusions expressed are those of the authors, not Stats NZ or MSD.

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 ISSN 1176-2667 (Print), ISSN 1177-9047 (Online).

Abstract

This paper analyses the response to incentives associated with the main benefit abatement regimes. Policy changes substantially raised the abatement-free income thresholds for benefit

recipients in April 2020 and 2021: e.g. for non-Sole-parent Jobseeker Support (JSS) recipients, the threshold (beyond which benefits are abated at 70%) increased from $80 per week before April 2020 to $160 in April 2021; over the same period, the part-time threshold beyond which Sole-parents' benefits were abated at 30% increased from $100 to $160, and the full-time threshold beyond which their benefits were abated at 70% increased from $200 to $250 per week. Using Inland Revenue (IR) data from April 2019 to July 2022, we first analyse the weekly earnings distributions of benefit recipients. We find distinct bunching in the weekly earnings of Single-JSS recipients around the abatement thresholds, and some bunching at the part-time thresholds for Sole-parent recipients. We estimate statistically significant but small bunching elasticities with respect to the change in the effective marginal tax rate (EMTR) around the thresholds for Single-JSS and Sole-parent recipients. For Single-JSS recipients, the estimated elasticities are on the order of 0.07 and 0.02 in 2019/20 and 2021/22 respectively; while for Sole-parents, the estimated elasticities around the part-time thresholds are about 0.11 and 0.07 these years. We assess the contributions of the abatement policy changes to changes in net incomes of benefit recipients over the period, and to fiscal costs. For Single-JSS recipients, we estimate that average net weekly incomes increased $60 (27%) between 2019/20 and 2021/22: however, the threshold increases contributed only 3% ($2) and responses to the abatement changes up to 8% ($5) of this average increase; the dominant contribution was from increasing weekly benefit rates, accounting for 87% ($52) of the increase. We estimate similar patterns for Sole-parent recipients: their average weekly net incomes increased $71 (19%), of which 87% ($62) is due to benefit rate increases, and the abatement threshold changes and responses to these changes contribute only 6% ($4) and 3% ($2) respectively. Finally, we estimate the fiscal transfer cost of the policy changes for Single-JSS recipients are $22-24m annually.

JEL codes
C14, H24, I38

Keywords
Benefit abatement, employment, earnings, labour supply

Summary haiku
Abatement thresholds
lead to bunching in earnings
but small responses

DOI: doi.org/10.29310/WP.2023.05

Table of Contents

Tables and figures

1 Introduction

Effective and efficient welfare support policies face challenges and trade-offs between delivering adequate income support to recipients, encouraging (or not discouraging) self-sufficiency primarily through employment and earnings, and the fiscal costs of programmes (Nolan, 2003). Recent policy changes to the abatement thresholds for main benefit recipients attempt to positively address the first two objectives, at the possible expense of the third. In this study we analyse the effects of these changes on recipients' employment and earnings behaviour, and their net incomes.[1]

Our primary focus is on whether welfare beneficiaries in New Zealand respond to the financial incentives associated with the large increase in the effective marginal tax rate (EMTR) that they face when their earnings exceed the abatement-free threshold. Non-Sole-parent Jobseeker Support (JSS) recipients' benefits are reduced at the rate of 70 cents for each $1 of weekly earnings beyond the abatement threshold, in addition to the 17.5% marginal tax rate (MTR) they face on those earnings. This provides a strong disincentive to earn beyond the abatement threshold. Standard (neoclassical) economic theory predicts that recipients who would otherwise earn above and near to the threshold will respond to this (dis)incentive by reducing their weekly earnings and bunch at the threshold level.

We exploit two features of available data and policy design that help facilitate this analysis. First, using Inland Revenue's (IR) 'payday filing' (Employment Information – Employee, EIE) data matched to the Ministry of Social Development's (MSD) main benefit recipients within Statistics New Zealand's Integrated Data Infrastructure (IDI), we are able to derive an accurate measure of weekly earnings for benefit recipients with employment. This enables us to directly assess the degree of bunching at the abatement threshold of JSS recipients. Second, policy changes raised the abatement thresholds in two stages from $80 per week prior to April 2020, to $160 per week from April 2021.[2] To the extent that we observe bunching at the prevailing threshold, and a shift in the bunching point that matches the substantial change in the

[1] This research is partly motivated by an earlier study (Riggs et al., 2022) that analysed the evidence of responses to financial incentives associated with the kink points in the Family Tax Credit (FTC) income schedule, and changes as part of the 2018 Families Package. In that study, we found no evidence of behavioural responses, however the empirical identification was difficult because of the available data and implementation of the policy.

[2] The abatement thresholds also increased for other benefit recipients, in particular Sole-parents receiving either JSS or Sole Parent Support (SPS) and people receiving Supported Living Payment (SLP) benefits: these changes are summarised in Table 1. Although Sole-parents and SLP recipients face similar disincentives around the relevant thresholds, they may choose to have the abatement assessment based on their annual rather than weekly earnings. This substantially complicates the analysis for these groups, particularly as we are unable to observe whether or not a person elects chooses annual assessment. For this reason, we focus on JSS recipients, but also provide some analysis for Sole-parents.

threshold, we can be confident that the bunching is directly related to the policy incentives and not driven by some other factor.

First, we document trends in benefit recipients' employment and earnings over the period. A relatively large increase in the employment rate of JSS recipients occurs during the period, but the timing of the increase coincides with the aftermath of increasing numbers of recipients during the 2020 COVID-19 lockdowns, rather than due to the abatement threshold changes. We next analyse the distribution of Single-JSS recipients' weekly earnings. We find distinct spikes in the distributions at the applicable abatement threshold levels: i.e. at the $80 per week threshold in 2019/20, at the $90 threshold in 2020/21, and at the $160 threshold from April 2021 onwards. We also observe bunching of earnings for Sole-parents around the part-time thresholds above which Sole-parents' benefits are abated at 30%, but not around the full-time thresholds above which their benefits are abated at 70%. These spikes, and the fact they move as the threshold increases, strongly support the hypothesis that bunching reflects behavioural changes.

Second, given the visual evidence that bunching occurs, we econometrically analyse the extent of the behavioural response of recipients to the abatement policy incentives. To assess whether the responsiveness has changed over the period, we estimate the elasticity of bunching with respect to the change in the EMTR around a threshold separately for the year prior to the first increase (2019/20) and the year following the second increase (2021/22). Consistent with the visual evidence, we estimate statistically significant, although small, elasticities around the full-time threshold for Single-JSS recipients, and around the part-time threshold for Sole-parents. For Single-JSS recipients the estimated elasticities are about 0.07 in 2019/20 and 0.02 in 2021/22; and for Sole-parents about 0.11 and 0.07 respectively. These estimates are substantially smaller than bunching elasticities estimated around MTR kinks points in New Zealand's income tax schedule (Alinaghi et al., 2021), and also around the Earned Income Tax Credit (EITC) kink points for the US (Bertanha et al., 2021; Saez, 2010), suggesting the behavioural responses are comparatively modest.

Third, as the abatement policy changes were intended to both improve the income support of benefit recipients and encourage greater employment, we assess the contributions of the abatement threshold changes to changes in JSS and SPS recipients' incomes. For example, the $80 increase in the threshold for Single-JSS recipients implies recipients could be up-to $80 per week (less 17.5% tax) better off.[3] To do this we estimate the changes in recipients' net

[3] This assumes the recipient was already earning at their optimal level, and the $80 increase would apply as a lump-sum windfall to someone who was already earning at least $160 per week or who had bunched earnings at $80 and responded to the change to bunch at $160 per week. The increase would be even larger for someone who was encouraged to enter employment by the threshold increase. For Sole-parents the maximum increase would be $60, for recipients with earnings

incomes between the 2019/20 and 2021/22, and decompose the change in average and various quantiles into components associated with secular increases in earnings rates, other policy increases in benefit levels, the windfall effect of an increase in abatement thresholds, and the residual which includes the effects of behavioural changes associated with the threshold increases. We estimate that the average weekly net income of non-Sole-parent JSS recipients increased by $85 (27%) between these years, and $71 (19%) for Sole-parent recipients. However, in line with the small bunching elasticity estimates, we conclude that the abatement policy changes contributed only modestly to these increases. For non-Sole-parents, we estimate the windfall contribution was about 3% ($2) and the behavioural contribution (including the employment increase) was 8% ($5); and for Sole-parents, the corresponding contributions were about 6% ($4) and 3% ($2). In contrast, we estimate that the vast majority (about 87%) of the increase in average incomes was due to benefit rate increases over the period.

We also provide descriptive analyses for benefit recipients stratified by benefit type. In addition, we also present separate descriptive and net income impact analyses and results for various population subgroups of interest, including Māori, Pacific peoples, and other ethnic groups; and by gender, age, family structure, and urban versus rural location. Although there is some variation in patterns across the subgroups, the main results are broadly consistent for all population groups.

Finally, we provide some estimates of the fiscal cost of the abatement policy changes for Single-JSS recipients, which represent increased transfer payments to benefit recipients. We consider both the increase in benefit costs associated with lower abatement of benefits for recipients earning more than $80 per week, together with the offsetting increase in tax revenue from recipients who increase their earnings in response to the policy changes. From this exercise we estimate the net fiscal cost of the policy changes was on the order of $22-24m for the 2021/22 cohort of Single-JSS recipients that we analyse.

Based on this set of results, we conclude that some bunching at the abatement thresholds does occur, but the behavioural responses appear to be limited, and the overall effect of the policy changes on increased income support were modest. The rest of the paper is organised as follows. In the next section, we discuss related international and New Zealand literature. In section 3 we discuss the data to be used, describe trends in recipients' employment and earnings, and comparative patterns across population subgroups. Our main analysis and results are presented in section 4, and we conclude the paper with a summary discussion in section 5.

at the $160 part-time threshold or encouraged to move from the $100 to $160 threshold, and larger for recipients encouraged to enter employment because of the threshold increases.

2 Background and literature

In this section we provide some background to the benefit abatement policy changes, and discuss relevant international and New Zealand literature on the responses to financial incentives in welfare abatement policies.

2.1 Background

We begin by providing some background context to the abatement policy effects that we analyse. Table 1 summarises the abatement thresholds and abatement rates that apply beyond these thresholds, emphasising changes that have occurred since 2020. As shown in the table, there are two separate regimes. First, the full-time regime which applies to non-Sole-parents receiving Jobseeker Support (JSS) benefits and has a single earnings threshold: for earnings above that threshold, benefits are abated at 70% per dollar of earnings.[4] Second, the part-time regime applies to Sole-parents receiving either JSS or Sole Parent Support (SPS) benefits, and people receiving Supported Living Payments (SLP) benefits, and has two earnings thresholds: for earnings above the first (and below the second) threshold, benefits are abated at 30%; and for earnings above the second threshold, benefits are abated at 70%.[5]

Policy changes to the abatement thresholds increased the threshold levels in two tranches: first, there was a relatively small increase in the thresholds on 1 April 2020; and second, a more substantial increase on 1 April 2021. For non-Sole-parent JSS recipients, the abatement-free threshold doubled from $80 per week before April 2020 to $160 from April 2021. For Sole-parents and SLP recipients, the threshold increases were relatively smaller but still substantial: the 30% threshold increased from $100 to $160 per week, and the 70% threshold from $200 to $250 per week.

In what follows our analysis focuses primarily on Single-JSS recipients for two reasons. First, in contrast to Sole-parents who have the option to choose to have non-benefit income assessed on an annual basis for abatement purposes, they face abatement assessment of their weekly income. This means measures of weekly earnings are directly relevant for the determination of their benefits and abatement. Second, assessment of JSS recipients with

[4] JSS recipients who are 'work ready' (WR) are expected to look for full time work (30 hours per week of more). However, those who have a health condition or disability (HCD) that prevents them from working full time, may either have a part time work obligation (15 hours per week), or have a temporary exemption from looking for work if they are unable to work 15 hours per week. The full-time abatement regime applies to all (non-Sole-parent) JSS recipients with earnings.

[5] SLP recipients are restricted to working less than 15 hours per week. Given minimum wage rates, this should have little effect on earnings around the abatement thresholds, although there are exceptions for some disabled employees which may be relevant here. For example, the minimum wage during the year to March 2020 was $17.70 (per hour) or $265.50 for 15 hours per week, compared with the $100 and $200 thresholds. Similarly, the minimum wage in the year after April 2021 was $20 or $300 for 15 hours per week, compared to the $160 and $250 thresholds.

partners is complicated by the partner's situation. Thus, Single-JSS recipients provide the cleanest benefit group to identify the financial incentives they face; in addition, single people make up the vast majority (83% in our sample) of SPS recipients. However, we also provide some estimates for the combined group of Sole-parent benefit recipients.

2.2 Labour supply incentives

We next consider the expected financial incentives associated with the abatement policies that recipients face. Figure 1 describes the predicted effects of the increase in abatement threshold for a single adult Jobseeker Support (JSS) recipient, for the standard static labour supply model case in panel (a) and allowing for fixed costs associated with working in panel (b).[6] These figures show gross earning on the horizontal axis, and net (after tax) income including JSS benefit payments on the vertical axis. Before the abatement threshold policy change the earnings threshold was $80 per week (depicted as point A in each panel), which the policy change increased to $160 (point A').

The standard labour supply model implies the expected effects of the increase in abatement threshold will be in the range above the initial threshold. That is, someone earning less than the initial $80 per week threshold is not expected to change their behaviour. In panel (a), we show the case of someone at the initial threshold earnings of $80 per week who moves to the new threshold of $160 per week after the policy change. Others at the initial threshold are expected to increase their earnings by less than the increase in the threshold (i.e. lie between A and A'). In addition, some recipients earning above the initial threshold may reduce their labour supply and achieve the same or more net income. For example, some earning above the higher $160 threshold may optimally reduce their labour supply to this point: this potentially includes people who would otherwise not be on benefit, but find it optimal to reduce their earnings to either remain or become benefit-eligible under the higher abatement threshold regime.

Predictions can change if there are fixed costs associated with working, depicted in panel (b). In this case as well as the expected changes in the range above the initial threshold, there may also be an increase in employment. For example, we show that the increase in the abatement threshold may lead someone whose optimising behaviour has them not working initially to enter employment and earn at the new abatement threshold ($160 per week). In this case, those who choose to move into work are expected to earn between the two thresholds – i.e. above the initial threshold ($80) and no more than the current threshold ($160).

[6] Similar predictions apply to other benefit recipients, such as Sole-parents who face a two-tier abatement regime, with a lower initial (30%) abatement rate on benefits for income above the part-time threshold, followed by a higher (70%) abatement rate for income above the full-time threshold.

As well as fixed costs associated with working, the standard labour supply model has several limitations and caveats for predicting labour supply behaviour. In particular, the model assumes optimising behaviour based on full information, and the earnings and EMTR fully encapsulates the trade-offs involved in the decision of how much to work. The model neglects possible optimisation "frictions" such as adjustment costs of changing labour supply, limited ability to achieve a desired level of earnings, imperfect information with respect to the abatement regime and inattentive agents, that may result in apparently sub-optimal outcomes.[7]

In an analysis of bunching at kink points associated with disability insurance (DI) in Norway, Kostøl and Myhre (2021) find that informational deficiencies of recipients substantially affect their responses to financial incentives. These effects are particularly strong when the DI incentives change following a policy change: Kostøl and Myhre estimate that the bunching elasticities around kink points are attenuated by over 70% in this case.

In addition, as with concerns about tax avoidance in the presence of high marginal tax rates, rather than adjusting their hours of work, benefit recipients may respond to high-EMTRs by increasing their non-compliance. For wage and salary workers the legal non-compliance options are limited, although they may either seek work outside the formal (taxed) sector or simply underreport their actual earnings. Those with self-employment income may have greater flexibility and control over the scheduling of their work hours and/or the timing of their reported earnings.

2.3 Literature

Many jurisdictions (countries or US states) with unemployment insurance (or benefit) schemes allow either an abatement threshold ('earnings disregard') or abatement rate (benefit reduction rate - BRR) less than 100%. In reviewing UI schemes with abatement rates less than 100%, Kyyrä et al. (2017) conclude that the effects on encouraging employment and lowering unemployment durations are generally positive. For example, in most US states, UI recipients can earn a modest earnings-disregard before UI benefits are reduced dollar for dollar (BRR=100%) with subsequent earnings. McCall (1996) estimated that a 10% increase in the disregard increases the rate of part-time unemployment by 4–6% over the first three months of unemployment, and reduces unemployment duration by 0.3–0.9%, among recipients. Le Barbanchon (2016) also shows that UI recipients bunch at the abatement threshold but, despite such bunching, labour supply does

[7] For example, Chetty (2012) analyses the effects of such frictions on labour supply behaviour, and shows that allowing for relatively small optimisation errors can substantially attenuate estimated labour supply elasticities. Specifically with respect to bunching behaviour at kink points, Chetty (2012) also shows that the optimisation errors can substantially lower the observed bunching and there are only very small utility gains from bunching at kinks.

increase. In contrast to the US, UI benefits in Finland were subject to a 50% BRR (but no earnings disregard until 2014). Analysing the effect of the BRR in Finland, Kyyrä (2010) finds significant positive effects on employment rates and reduced unemployment durations of UI recipients.

There is extensive US research on welfare policy effects on labour supply behaviour, although this may be of limited direct relevance to the current analysis because of some marked differences in policy structures. Historical differences include that US cash welfare support policies generally have no abatement-free earnings range, and high abatement rates associated with any earned income.[8] The main historical welfare support programme, the Aid to Families with Dependent Children (AFDC) had no 'earnings disregard', and 100% 'benefit reduction rate'.[9] When AFDC was replaced by Temporary Assistance to Needy Families (TANF) in the late 1990s, policy parameters became US state specific, and many states introduced earnings disregards or lower benefit reduction rates.[10] Huffman and Jensen (2002) estimate that higher abatement thresholds and lower abatement rates result in higher TANF participation rates which, in turn, lower labour force participation slightly. In contrast to the AFDC, the near-cash Food Stamp Program (FSP) introduced in the US during the 1960s and 1970s had a relatively low abatement rate of 30%, and no abatement threshold. Exploiting the roll-out of the FSP across counties, Hoynes and Schanzenbach (2012) estimated that the FSP resulted in only modest reductions in work.

In response to growing concern about the rising caseloads and work disincentives associated with the then existing welfare programmes, several 'demonstration' projects were conducted in the US and Canada during the 1990s to test whether variations could lead to positive effects on self-sufficiency.[11] For example, the California Work Pays Demonstration Project (CWPDP) included a modest earnings disregard ($30/month) together with a lower benefit reduction rate (67% instead of 100%) for AFDC recipients. Analysing the effects of these changes on labour supply behaviour, Sprague (1995) finds little evidence of increased employment or hours of work; and, although recipients' earnings increased, concludes that this was largely a mechanical effect from lower benefit reduction associated with earnings. In contrast, analysing the Canadian Self Sufficiency Project (SSP), which provided a generous temporary earnings subsidy for long term welfare recipients who took-up full time employment,

[8] Similar differences exist in Canada: e.g. historically, income assistance for low income families is also subject to 100% abatement beyond modest earnings disregard levels.
[9] The abatement rate was lower (67%) from 1967 until 1981.
[10] Huffman and Jensen (2002) report the average benefit reduction rate was 62% across states, and the average earnings disregard was $140/month.
[11] These followed the earlier series of income maintenance social experiments conducted in the late 1960s and early 1970s (Groeneveld et al., 1983).

Card and Hyslop (2005, 2009) find large short term effects on labour supply behaviour, although these effects die out over time.

In summarising US research on labour supply effects of changes in the BRR (abatement rate) of the AFDC programme, Moffitt (2002) concludes that the effects are relatively small, partly because the changes induce sole parents to adjust their work effort and become (in)eligible for the programme. Parrott and Greenstein (2014) also argue that any effects of (high) effective marginal tax rates (EMTR) are overstated. In particular, while the EMTR may influence a worker's decision to increase their hours of work, the average tax rate faced by individuals and families is more relevant for their decision to work or not. Furthermore, most families face modest EMTRs: in the US this is partly because the Earned Income Tax Credit (EITC) phases in over the range where other benefits (e.g. Temporary Assistance for Needy Families, TANF) phase out, and acts to limit the overall impact of EMTRs over the range where they are high. In addition, Parrott and Greenstein note that the income effects associated with EMTRs act to offset substitution effects, and thus moderate any behavioural effects of high EMTRs.

In trying to understand why the responses to higher EMTRs may be relatively muted, as discussed above Chetty (2012) argues this can be attributed to a variety of optimisation frictions, such as adjustment costs, imperfect information and errors. In addition, Romich et al. (2007) conclude that it is often difficult for recipients to understand the EMTRs associated with many benefits, and workers may use simplified rules resulting in sub-optimal decisions; and also, most low income workers have limited discretion in choosing their work hours, and largely can control only whether or not they work. The latter suggests that responses to changes in abatement thresholds or rates may be stronger at the extensive (participation) margin than the intensive (earnings or hours worked) margin. This is at odds with the standard static labour supply model predictions that assumes recipients optimise their earnings choices across a continuum of time. However, as discussed above, the standard model ignores (e.g.) possible fixed costs associated with working that may be important in explaining persistence in individuals' participation decisions together with why relatively few people work a very small number of hours (Hyslop, 1999).

Our analysis below uses the bunching approach developed by Chetty et al. (2013) and Saez (2010), and used by Riggs et al. (2022) to analyse the changes in earnings around the Working for Families (WFF) tax credit abatement thresholds. Riggs et al. (2022) found no evidence of earnings bunching around the threshold where the Family Tax Credit (FTC) starts to abate. This is in contrast to Chetty et al.'s (2013) and Saez's (2010) analysis of the US Earned Income Tax Credit (EITC) that found clear bunching around the thresholds, especially for those with self-

employment income. Possible reasons for the lack of WFF effects that Riggs et al. (2022) discussed are that WFF tax credits may be administered on a partial, within-year basis, in contrast to the US's annual-administration; and also that New Zealand has a set of overlapping support policies so that behavioural responses may be diffused across a range of the earnings distribution making it difficult to identify specific bunching. However, some preliminary analysis from that project is suggestive of bunching at the benefit abatement thresholds (e.g. see Figure A1). Together with potentially better measured weekly earnings aligned to the abatement policy for Single-JSS recipients this is encouraging for the current analysis.

The bunching approach has also been used recently in New Zealand to examine incomes around the marginal tax rate (MTR) thresholds (Alinaghi et al., 2021). One important finding in both Saez's (2010) and Alinaghi et al.'s (2021) research is that bunching is much stronger among those who have self-employment or other forms of income that are more easily modified in response to tax and welfare policy financial incentives. For example, while Alinaghi et al. (2021) estimated elasticities with respect to the MTR of 0.2–0.3 for all taxpayers, they estimate elasticities close to 1 for self-employed taxpayers. One interpretation is that the measured behavioural responses reflect tax minimisation behaviour rather than labour supply responses *per se*. Given the focus of our analysis is on PAYE-withheld wage and salary earners who have limited tax manipulation options, this suggests that we may observe relatively minor bunching behaviour; and conversely, any bunching we do observe may more directly reflect labour supply than tax minimisation responses.

The general conclusion from the international literature is that the labour market impacts of abatement thresholds and abatement rates are highly context dependent. Depending on who is affected and on interactions with other relevant policies, responses could be on the extensive margin (work versus no work) or the intensive margin (hours or weeks of work), and the ability to detect impacts will depend also on how many people have earnings around the abatement threshold.

3 Data

In this section, we discuss the data to be used in the analysis, which uses a variety of MSD and IR sourced data in Statistics New Zealand's Integrated Data Infrastructure (IDI). We focus on main (Tier-1) benefit recipients, observed and identified in MSD tables, matched to employment earnings from IR's pay period (Employment Information – Employee, or EIE) tables. The analytical sample period is restricted to April 2019 – July 2022, by the availability of earnings

data in the EIE tables since April 2019, and benefit receipt information up until July 2022 in the most recent IDI release used for data extraction.

Most of the relevant information for the analysis is contained in spell structure in the various tables in the IDI. To simplify the nature of the data used we construct a monthly panel in which we sample spells that are ongoing at the 15th of each month from April 2019 until July 2022. As our focus is on recipients of main benefits, we first construct the monthly panel main benefit spells from the MSD's first tier expenditure table in the IDI (excluding NZS and VP benefit spells). We then use confidentialised versions of MSD's unique SWN (Social Welfare Number) person identifiers, to match these data to other MSD spell data (spanning the 15th of a month) on second tier expenditure, partners, children, and residential location.[12] Following this, the resulting MSD monthly data are matched, using the "snz_uid" identifier, to IR's earnings spells in the EIE tables, and finally to personal demographic information in the central IDI Personal Details table.

As part of the data cleaning process, we exclude any observations for which a single snz_swn_nbr value is concurrently matched to multiple snz_uid records, as this implies some form of mismatch. In the case of multiple partner or residential locations records spanning the 15th of any month, we keep the record with the most recent spell start-date. The primary concern with the tier-two benefits for this project is the potential effects of Temporary Additional Support (TAS) payments: benefit recipients receiving TAS payments are subject to 100% abatement associated with any earnings they receive. As a result, they face no abatement-free earnings range, and are not expected to respond to the changes in the Tier-1 benefit abatement thresholds. For this reason, we exclude TAS recipients from our main analysis, but document the incidence of TAS receipt and earnings stratified by TAS receipt.[13] We aggregate any multiple child records to measure the number of children a recipient may have, and the age of the youngest child listed.

We do not explicitly examine changes to Family Tax credit abatement thresholds that may also affect earnings distributions. These will have little effect on the present analysis, as those thresholds and changes related to substantially higher earnings levels. Furthermore, Riggs et al. (2022) found no evidence of earnings bunching around the threshold where the Family Tax Credit (FTC) starts to abate.

[12] The residential location information is also matched, at the meshblock level, to higher geographic classifications in order to identify the urban or rural type of the location.

[13] Main benefit recipients may receive multiple (tier-2) supplementary benefits – e. both Accommodation Supplement (AS) and TAS support. In cleaning the data matching we keep at most one tier-2 record per month, based on a hierarchical ranking of TAS, followed by Special Benefit (SB), and other supplementary benefit.

Our measure of main benefit receipt is whether a person is observed in the MSD first-tier expenditure table, as this enables the type of benefit to be identified. MSD's first- and second-tier expenditure tables contain information on the gross and net daily benefit amounts, and the start and end dates of the spell that covers. Most spells are for 7-days, with a small fraction being 1-day spells which suggest lumpsum payments. Because of this, we calculate the weekly rate of main benefit and TAS payments for 7 day spells, and use the daily rate for other spells.

The EIE tables contain data on PAYE-withheld payments, including employment earnings and main benefit payments (supplementary benefits are not taxed, so do not appear in the EIE data). The EIE data includes information on both the pay period frequency (e.g. 'weekly', 'fortnightly', etc), as well as start and end dates of the spell, from which the implied earnings spell duration can be calculated. Although not perfect, the concordance between the pay period frequency and the spell-duration is very strong – i.e. the vast majority of weekly and fortnightly pay periods have 7-day and 14-day durations respectively, etc.[14] Given this, for each job (defined as a worker-employer combination), we adjust gross payments by the spell-duration to calculate a weekly gross earnings rate;[15] and we calculate a worker's (gross) weekly earnings as the sum of the weekly earnings across all job-spells that span the 15th of a month.

3.1 Sample characteristics

We summarise the sample characteristics of all main benefit recipients, and JSS recipients, over our sample period in Table 2. (In Table A1 we summarise the corresponding sample characteristics of other benefit recipients.) The first column summarises the characteristics of all main benefit recipients over the period; the next two columns pertain to all JSS-recipients, in the two years before the second (and major) abatement threshold change in April 2021 (column 2), and the sixteen months after this change (column 3); and the final two columns pertain to Single-JSS recipients with no children over the corresponding periods.

Over the 40-month period (April 2019 – July 2022) our sample contains almost 15 million monthly records (almost 375,000 per month on average) for about 703,000 distinct people. Most recipients (94%) are non-partnered, 56% are female, and the average age of recipients is nearly 42 years. In terms of total ethnicity, 41% report only European, 34% either only Māori or Māori and European, 8% report only Pacific peoples, 7% report only Asian, and the remaining 10.5% report miscellaneous responses. About 28% of benefit recipients have children; and among

[14] Based on research on the COVID-19 Wage Subsidy (Hyslop et al., forthcoming), deriving weekly earnings rates from the EIE appears to be reliable for most observations (e.g. the pay frequency aligns with the implied pay period duration in the vast majority of cases).

[15] Specifically, for spell-durations of at least 7-days, we calculate weekly earnings = 7*gross earnings/spell-duration; and for spells less than 7-days, we calculate weekly earnings = gross earnings.

those, the average number of children 1.9 and the average age of their youngest child is 7.5 years. Over two-thirds (68%) of clients live in Major or large urban areas, 19% in medium or small urban areas, and 12% in rural areas.

The demographic characteristics of JSS recipients in columns 2 and 3 are broadly similar to those for all main benefit clients. However, JSS recipients are a little more likely to be partnered (about 8%), are less likely to be female (46%), are slightly younger (about 40 years on average), are less likely to have children (14%), and have fewer children (1.8 on average) and older youngest children (about 10 years on average). The ethnic makeup is similar, although slightly more report only Māori (21%) and fewer report only European (38%). Most JSS recipients are single (92%), and single JSS recipients are slightly less likely to be female (44.5%) and are also slightly younger.

The average (gross) benefit payments increased about $60 per week for all JSS recipients from $280 before April 2021 to about $340 after April 2021, largely reflecting policy increases in benefit rates (particularly in Jul 2021 and April 2022); and the average weekly benefit payments for Single JSS recipients increased about $50, from $267 to $329, over the same periods. About 20% of main benefit recipients, and slightly more (23%) of JSS recipients receive supplement TAS payments over the sample period. For JSS recipients, these payments average about $50 per week in the "Pre" period (before April 2021), and $60 per week since April 2021.

Although the sampling and matching process for MSD and EIE spells is conceptually consistent, there are some apparent inconsistencies in the data. For example, across the full sample, we observe main benefit payments in the IR data for only 94.4% of the observations with an MSD spell; and similar fractions are observed in the JSS samples. We are not sure the reasons for this, but suspect data revisions may at least partly explain it: e.g. if the observed MSD benefit spells are based on a 'point in time view', which are subsequently revised, some observed benefit spells may be cancelled and thus not have an EIE payment record.

As a comparison of the concordance between MSD and EIE recorded information, the average weekly gross main benefit income estimated in the EIE tables is about 10% lower than the average estimated from the MSD expenditure tables: i.e. $322 versus $354 for all main benefits; and similar relative differences for the JSS samples. Again, we don't have a clear understanding of these differences, but they may possibly be due to data collection differences,[16] our estimation of weekly amounts, or sample selectivity (our EIE estimates are based on matched observations with benefit payments).

[16] For example, the MSD amounts reflect point-in-time daily rates and spell periods, which may be subsequently revised, whereas the EIE amounts capture actual payments made. Although MSD revisions can be both up or down, if they are predominantly downwards, the EIE estimates will tend to be lower than the MSD estimates.

We now turn our attention to the employment and earnings of benefit recipients. The lower part of Table 2 summarises these outcomes over the period. we estimate that about 13% of beneficiaries have overlapping EIE earnings at the 15th of a month. For JSS recipients, the fraction employed (i.e. with earnings) increases about 1.5 percentage points (ppt) from 12.8% (12.5% for Singles) before April 2021 to 14.3% (13.9%) after April 2021. This increase is suggestive of an employment response to the increased abatement thresholds in 2020 and 2021. Among those employed, the average gross weekly earnings of JSS recipients increased 6% from about $465 over the two years prior to 2021, to $490 over the 16 months from April 2021. This increase likely includes secular earnings growth as well as any behavioural earnings increases related to the abatement policy changes.

The final four rows in Table 2 provide summary statistics on the fractions of estimated weekly earnings that are below and at both the initial ("0": pre-April 2020) and current ("1": from April 2021) abatement thresholds.[17] For JSS recipients, the fractions both below and at the initial threshold fell over time. Similarly, the fraction below the current threshold also fell, while the fraction at the current threshold increased somewhat (about 10% from 3.4% to 3.8%). This simple pattern is suggestive of some behavioural shifts from bunching at the initial threshold to bunching at the current threshold. However, other factors including secular growth in earnings may also contribute to or drive these patterns.

As our analysis is primarily focused on the earnings of benefit recipients while on benefit, a somewhat related issue is that an observed earnings spell may pertain either to a (non-benefit) employment spell prior to the start of a benefit spell, or conversely an employment spell following a benefit-exit. Given this, we define a "continuing benefit" spell indicator for whether a person receiving a benefit in one month also receive benefit payments in both the preceding and following months. By this measure, about 87% of all observations are continuing, and for JSS-recipients the rate is a bit lower (81-83%). We restrict our analysis below to such continuing benefit spells in an attempt to mitigate the effects of these 'transitioning' spells.

3.2 Trends in benefit numbers, employment and earnings

Before we consider trends in employment and earnings of benefit recipients, we first document changes in the numbers of recipients over the sample period, particularly given the COVID-19 related disruptions. To do this, in Figure 2 we document the monthly trends in the numbers of

[17] To allow for some rounding in actual and estimated weekly earnings, we allow for a +/-$10 window around each threshold value. For example, for Single JSS recipients, we measure the fraction below the initial ($80) threshold as the fraction with earnings less than $70; and the fraction at the threshold as the fraction with earnings between $70 and $90 per week. To determine the relevant full-time and part-time regime thresholds, we distinguish between family status and benefit type according to the characterisations in Table 1.

tier-1 benefit recipients over the period April 2019 – July 2022: for all benefits and JSS benefits in panel (a), and by benefit type in panel (b). Panel (a) shows there was a steady (6%) increase in main benefit recipients over the first year from 317,000 recipients in April 2019 to 338,000 in March 2020, followed by a sharp increase associated with the onset of COVID-19 and restrictions from April 2020 until a peak of almost 430,000 recipients in January 2021, and then a slow decline to about 380,000 by the end of the period. This trend appears to have been driven mostly by JSS recipients. Panel (a) shows roughly parallel trends between the numbers of JSS and all benefits; while panel (b) confirms that the trends for the other main benefits (SPS, SLP and miscellaneous benefits) are comparatively flat.[18]

We document the trend in official counts of JSS recipients over the five years from January 2018 until January 2023 in appendix Figure A2. Compared to Figure 2, the official counts are somewhat lower, but the trends are similar.[19] The official counts also provide separate trends for the Work Ready (JSS-WR) and Heath Conditions or Disability (JSS-HCD) subgroups, which we don't distinguish.[20] These trends show that most of the increase in JSS numbers around the start of the COVID period were JSS-WR recipients, but over time there was a growth in JSS-HCD numbers. Because of these different trends, the JSS-WR fraction of JSS recipients increased from about 55-58% in 2019/20 to 65% over April-September 2020, before trending down to about 58% by July 2022.

We also document, in appendix Figure A3, the relative trends in the fractions of JSS-WR and JSS-HCD recipients who declare positive earnings to MSD (panel (a)), and estimates of the average declared earnings (panel (b)).[21] The reported earnings rates in panel (a) are very similar for the two groups, but somewhat lower than the employment rate we observe in the EIE data for our analysis sample, and with different trends over the first year of our analysis period.[22] The estimated average declared earnings in panel (b) are about $20-30 higher for JSS-WR than JSS-HCD recipients, but the two series trend closely together. There are also noticeable increases in the averages coinciding with the abatement threshold changes in April 2020 and around April 2021.

[18] There are slight increases in SPS and SLP numbers over the period, with a noticeable increase of about 5,000 SPS recipients in November 2021, which is associated with a policy change that resulted in a transfer of about 5,700 people from JSS to SPS.

[19] The average difference is about 15,000. We are not sure the reason for the differences, but think it is that the benefit data available in the IDI is a 'point-in-time' view, while the official counts are based on a 'current view' that retrospectively removes ineligible recipients.

[20] The difference between these groups is that JSS-WR recipients are expected to look for full-time work (30 or more hours per week); while for JSS-HCD recipients who are unable to work full-time, their obligations are either to look for part-time work (15 hours a week or more) or deferred if they are unable to work because of their health, injury or disability.

[21] As the earnings data provided are categorical, we estimate the average earnings using the mid-points of categorical ranges, and $400 for those in the open-ended top category for earnings above $300 per week.

[22] We suspect these differences are due both to underreporting of earnings to MSD, and the result of data revisions that remove ineligible recipients from the official counts.

The patterns of both the total number of recipients, and the mix of JSS-WR and JSS-HCD clients, suggests there were potentially important changes in the composition of the JSS benefit population over the period. However, given that the two groups appear to have about the same rates of reported earnings, they are arguably equally at risk of bunching at the abatement thresholds.

We next document trends in the employment rates (i.e. fraction with EIE earnings) of benefit recipients in Figure 3. In panel (a) we show the employment rate trends for all JSS recipients as well as for non-TAS Single JSS recipients. The employment rate for non-TAS Single JSS recipients is generally 0.5-1 ppt higher than for all JSS recipients. Although the trends for both series are fairly noisy, a clear increase in the employment rate occurs around October 2020: before this the employment rate varies between 10-14%, and after that point the rate is typically 14-16%. The marked increase in employment around October 2020 is after the increase in JSS recipient numbers and the first three lockdowns. Given this occurred in the middle of the year between the first and second (major) change in abatement thresholds, we think the increase is more likely related to these COVID factors affecting the composition of JSS recipients, and less likely to the threshold policy changes. Specifically, we expect CIRP flows were likely one prominent driver of these changes.[23]

There was a substantial increase in JSS-benefit recipients through the middle of 2020 (see appendix Figure A2), which potentially affected the composition of recipients over the period. The COVID-19 Income Relief Payment (CIRP) was available for workers earning less than $2,000 per week who lost their job because of the impacts of COVID-19.[24] As CIRP payments were limited to 12 weeks, some recipients likely transferred to the JSS benefit at the expiry of CIRP payments. More generally, it is unclear what the effects of COVID-19 and CIRP are or how they would affect our analysis.[25] In our analysis we will treat the trends over this period with caution.

[23] For example, MSD reports that about half of CIRP recipients started in the first month (June-July 2020), so their CIRP-eligibility would have expired in August or September. Also, about 4,000 CIRP recipients transferred to JSS-WR in September (about one-half of the total CIRP transfers to JSS-WR). Although these people were not able to work while receiving CIRP, we suspect they were relatively more likely to work once receiving JSS.

[24] Eligibility for CIRP was assessed on an individual basis, paid $450 per week to those who had been working full-time (30 or more hours), $250 per week to those who had been working part-time (15-30 hours), and was available for up to 12 weeks between June 2020 and February 2021. Full-time CIRP generally provided substantially higher support than main benefits, but recipients could not earn any income. For example, the single JSS gross rate was $281 per week for those aged 25 and over in 2020. However, the full-time CIRP rate was about the same as the married JSS gross rate of $448. See MSD (2022) for more information on CIRP. The total number of CIRP participants was about 40,000 (much lower than the predicted 230,000), and by our calculations, less than one-half of the number of fresh JSS spells over the same period based on end of month JSS stocks and cancellations as reported in MSD's 2021 Annual Report.

[25] First, general effects include shocks to benefit recipient employment rates, which may either fall (e.g. due to COVID-19 lockdown effects) or rise (e.g. because of labour supply shortages or labour demand increases). There may well be (intensive margin) earnings effects associated with such shocks, which may be difficult to identify; however, if recipients lose some control over their labour supply decisions, we expect this may reduce any threshold bunching observed. Second, although it appears CIRP provided a relatively generous temporary alternative to JSS for some recipients, it restricted

The employment rate trends for other benefit types (non-TAS recipients) are presented in panel (b). These employment rates are relatively more stable than for JSS recipients: the employment rate for SPS is generally 18-23%, and shows little systematic trend over the period; while the rates for SLP and Miscellaneous benefit recipients are lower at about 8%.

In Figure 4 we document some of the earnings trends over the period for non-TAS Single JSS recipients. In panel (a) we show the trends in fractions of earnings that are, respectively, less-than and equal-to each of the initial ($80) and current ($160) applicable abatement thresholds. The fractions less-than and equal-to the initial threshold both show steady trend declines over time, with possibly a dip around April 2020. There is also a fairly steady decline in the fraction less than the current threshold (particular over the first 12-18 months). Finally, there is a suggestive dip in the fraction with earnings equal-to the current threshold from 4-5% during the first year, to about 3% in the second year, and then up to 4-5% again after April 2021. However, this pattern is not clear.

Panel (b) of Figure 4 presents trends in the mean, 10th percentile, 25th percentile and median (50th percentile) of JSS recipients' weekly earnings. There is an apparent increase in the mean earnings over the first 18 months or so (from mid-2019 to mid-2020), but little obvious patterns in the percentile trends.

3.3 Descriptive patterns for population subgroups

We next summarise basic employment and earnings patterns for various subgroups of JSS and SPS recipients. To do this we focus on the first year before the policy abatement changes occurred (2019/20), and in the first year after the second set of changes (2021/22). We also restrict the respective samples to continuing benefit recipients who are not receiving TAS payments: as discussed above, the first restriction mitigates the effects of an observed earnings spell being transitional either entering or exiting a benefit spell, while the second restriction focuses attention on recipients who are not subject to abatement on low earnings.

Table 3 summarises the main employment and earnings outcomes for all, and various subgroups of, continuing non-TAS JSS recipients. The top panel documents the sample size, employment rate and for those employed, the average weekly earnings, and the fractions at the initial and current abatement thresholds in each year, as well as the simple and relative (percentage) change between the two years. The subgroup panels document the subgroup

recipients from taking part-time work opportunities. As a result, we suspect eligible recipients may have self-selected into CIRP or JSS according to their preference or intention to take part-time work. If so, then we may expect to see a higher rate of part-time work among JSS recipients during the CIRP period, possibly boosting the degree of bunching if such recipients tend to earn near the abatement thresholds.

fraction of the full sample, and the corresponding statistics. The subgroups are organised by ethnicity, family structure (partnered and/or with children), gender, age group ('young': under 25; 'prime aged': 25-45; and 'older': over 45), and residential location (major or large urban, medium or small urban, or rural).

Consistent with the broader sample statistics reported in Table 2, the employment rate of JSS recipients increased strongly (23%) from 12.7% in 2019/20 to 15.7% in 2021/22. Similarly, there was a strong ($82 or 21%) increase in average weekly earnings from $392 to $476 among employed recipients. There was also a relatively strong drop in the fraction with earnings at the initial threshold level from 4.6% to 2.7%, while the fraction with earnings at the current threshold was stable at 3.9% in both years. The higher employment rates and earnings are consistent with positive labour supply responses to the less restrictive abatement regime, but there is less evidence of bunching patterns from the fractions at the thresholds.

The patterns of results across subgroups are broadly similar to these full sample patterns. For example, for Māori (including any Māori ethnicity report), the employment rates are 1-1.5 ppt lower than for the full sample, but show about the same increase (24%) over time. Also, the average weekly earnings, conditional on having employment is $25-$35 higher than the full sample, and increased $90 (21%) over the period. In addition, the fraction of Māori with earnings at the abatement thresholds was lower than across the full sample.

Similarly, for Pacific peoples JSS recipients, the employment rate was initially lower (12.5%) but increased more strongly to be slightly higher (15.9%) than overall in 2021/22. Average earnings were also substantially higher ($473 versus $394 in 2019/20) and increased relatively similarly to the full sample (to $569 versus $476 in 2021/22). Pacific peoples are also less likely to have earnings at the threshold levels.

Comparing the patterns for different family structures – Single JSS recipients, Sole-parent recipients, and Partnered recipients (with or without children) – two related differences stand out. First, Sole-parent recipients have noticeably higher employment rates than either single or partnered recipients: 17.6% in 2019/20 and 19.3% in 2021/22; and second, they also have higher average earnings ($414 in 2019/20 and $491 in 2021/22) than single recipients, but lower than partnered recipients. One possible factor in these differences is that Sole-parent JSS recipients are subject to the less punitive part-time abatement regime, in which earnings above a lower ('part-time') threshold ($100 initially, and $160 currently) are abated at 30%, and the 70% abatement does not occur until earnings exceed a higher ('full-time') threshold ($200 initially and $250 currently). For this reason, we report the fractions with earnings at the part-time (PT) as well as the full-time (FT) thresholds: the measured fractions are consistent both with a

tendency to bunch at either the PT or FT threshold, and also with more dispersed earnings. In addition, Sole-parents have the option to choose to have abatement based on their annual income, rather than week-to-week earnings. These factors imply Sole-parents have relatively stronger incentives to have non-trivial levels of earnings, and can also earn substantial amounts over short periods without facing higher abatement rates.

There are two apparent differences for males and females. On one hand, female JSS recipients have substantially higher employment rates than males, at least partly related to females more likely being Sole-parents. However, conditional on working, male JSS recipients have higher earnings than females ($459 compared to $347 in 2019/20, and $545 compared to $425 in 2021/22). The fractions at abatement thresholds are similar across the sexes.

The employment rates across age groups are similar in the first year (12.6-13.0%), but increased substantially more for younger recipients in 2021/22 (18.3% compared to 15.7% for prime aged, and 14.2% for older JSS recipients). Average earnings show a U-shaped age pattern, with similar relative increases (20-23%) across the ages. The U-shaped age pattern of earnings is also reflected in higher fractions with earnings at the thresholds for younger and older recipients. Finally, the employment and earnings summary patterns for JSS recipients by residential location are broadly similar, with no noteworthy differences.

Although our focus is primarily on JSS recipients, we provide similar summaries of the employment and earnings outcomes for continuing non-TAS SPS recipients in Table 4. The patterns are roughly similar to those observed for JSS recipients in Table 3. SPS recipients have higher employment rates (21.1% in 2019/20 and 22.4% in 2021/22), but smaller relative increases (6% compared to 23%) than JSS recipients; and slightly ($11) lower average weekly earnings ($383 in 2019/20 and $465 in 2021/22). The fractions with earnings at both the initial and current full-time thresholds, and the initial part-time threshold fell 8-30%, while the fraction at the current part-time threshold remained stable at 3.3%. Again, it's unclear whether and how much of these patterns reflect behavioural responses to the policy changes rather than other secular changes.

Across the different ethnic populations, Māori and Pacific peoples SPS recipients have lower employment rates, but similar (Māori) or higher (Pacific) average earnings. Asian recipients have noticeably higher employment rates (28.5% in 2019/20 and 29.8% in 2021/22) than other ethnicities, and almost the same average earnings as in the full sample. As with JSS recipients, females have about 10 ppt higher employment rates than males, but substantially (25-30%) lower earnings. Younger SPS recipients have lower employment rates (about 13%) than prime age and older recipients (22-25%), and also lower average earnings.

4 Analysis and results

We now turn to the main analytical results. We focus on three components of the analysis. First, we present graphical analysis of the distribution of Single JSS recipients' weekly earnings in order to examine whether there is any evidence of bunching at the abatement thresholds and, if so, whether the bunching shifted as the thresholds changed over the period. Second, we present econometric estimates of the elasticity of bunching at the thresholds with respect to the change in the EMTR around the threshold. Finally, we analyse the contribution of various components on the estimate change in benefit recipient net incomes and fiscal costs over the period involving the period.

4.1 Conditional earnings distributions

We first analyse the distribution of weekly earnings of Single JSS recipients, focusing on whether there is evidence of bunching at the abatement threshold. To do this we present kernel density estimates of weekly earnings for samples aggregated for each tax-year: 2019/20 corresponds to the year before the policy changes started, where the abatement threshold was $80 per week; in 2020/21 the abatement threshold was increased to $90; 2021/22 was the first year under the new regime with threshold $160; and April-July 2022 covers the final four months of the sample period. To focus on the sample who are most likely to respond to the abatement incentives, we also restrict the sample for this analysis to recipients who were not receiving TAS payments and were continuing on benefit (i.e. receiving benefits in both the previous and following months).

Figure 5 describes the distributions of weekly earnings of single-JSS recipients: to do this we have censored low (at $25) and high (at $1,000) weekly earnings. Panel (a) shows the distributions during the year prior to the first change (April 2019 – March 2020), and during the year following the April 2021 threshold increase to $160 (April 2021 – March 2022). In panel (b) we show the distributions during the April 2020 – March 2021 year when the threshold was $90, and during the final four months of our sample period (April – July 2022). In each panel we include vertical lines at the relevant thresholds (e.g. $80 and $160 in panel (a)). As simple neoclassical economic theory implies people should optimally locate away from earnings at the point where benefits are expected to be abated to zero, we also insert vertical lines at these earnings levels.[26]

First, in panel (a) there is clear bunching in weekly earnings around the $80 threshold in 2019/21 (dashed line), and also around the $160 threshold in 2021/22 (solid line). That the

[26] The latter are calculated based on the benefit rates for Single JSS recipients aged 25 and over; this changes with the $20 benefit increases in July 2021, for the 2021/22 year we place the vertical line midway between the two values.

bunching shifts with the threshold over time strongly suggests there is some behavioural response to the incentives around the abatement thresholds. There was also a noticeable shift in mass from below the $160 threshold between the two years, and there also appears to be less density above $160 (and below about $280) in 2021/22: most of this mass has shifted to higher earnings, between $350 and $700.

Second, we see no evidence of any density-deficit around the benefit expiry levels in either year. However, the other noticeable feature of both distributions is the relatively large fractions of earnings that lie above these levels (28% of earnings exceed the benefit-expiry level in 2019/20, and 22% in 2021/22). We expect this is mainly due to timing issues with respect to MSD's benefit spells and IR's earnings spells.

Panel (b) presents the earnings distributions for the 2020/21 year, and April-July 2022 periods. We again see clear spikes around the $90 threshold in 2020/21, and around the $160 threshold in April-July 2022, consistent with behavioural responses to the EMTR incentives around the abatement thresholds. There is also a loss of density mass below about $150 between these years, which appears to be displaced to between $400 and $580 in April-July 2022.

To give a sense of the relative and absolute numbers of recipients who are bunching at the threshold, we use the kernel density estimates in Figure 5 to derive simple estimates of the excess bunching around the abatement thresholds. To do this we first estimate the excess bunching density as the difference in the average density over the +/-$10 neighbourhood around the threshold and the average density over +/-$10 range outside this neighbourhood. Then, multiplying the average excess bunching by the $20 neighbourhood around the threshold, we estimate that the fraction of recipients with earnings who bunch is about 1% in each year (1.04% in 2019/20, and 0.93% in 2021/22), or about 0.1% of all non-TAS Single JSS recipients. In addition, multiplying these estimated fractions by the average number of (Non-TAS) JSS recipients with earnings in each year, we estimate about 80 single-JSS recipients bunched in 2019/20 and 125 in 2021/22.[27]

As to the question of whether some recipients responded to the threshold increases by reducing their labour supply and earnings, the shifts in the earnings distribution show no sign of this occurring. However, these effects may be difficult to detect with repeated cross-sectional samples if recipients are heterogeneous with respect to their preferences: i.e. any effect may be

[27] A similar exercise for the other years gives lower estimates the fraction of all recipients who bunch of about 0.06%. For 2020/21, this translates to about 75 recipients, and for the four months April-July 2022 about 47 recipients.

dominated by recipients who increase their labour supply and earnings in response to the policy changes.

4.1.1 Sensitivity of findings

In this section, we extend our main analysis to consider the sensitivity of our findings to sample definition and the effects of other policies. Specifically, we examine earnings distribution changes for Temporary Additional Support recipients, for non-continuing benefit recipients, and Sole-parent beneficiaries. We also consider the effect of the Winter Energy Payment, and examine earnings distributions for a range of demographic subpopulations.

To examine the effects of excluding TAS-recipients and non-continuing benefit recipients from the earnings samples in Figure 5, in the appendix Figure A4 we document the 2019/20 versus 2021/22 earnings distributions for these two subgroups of Single JSS recipients. The earnings distributions for JSS recipients who also receive TAS payments in panel (a) are very similar to those for non-TAS recipient in Figure 5. In particular, there is also clear bunching around the respective abatement thresholds in each year. This may appear unexpected as this group are subject to 100% benefit abatement on any earnings they receive; but, in this respect it is also surprising they have any earnings. Again, we suspect this is partly due to timing issues with respect to TAS receipt and earnings.

The earnings distributions for non-continuing recipients in panel (b) of appendix Figure A4 are much more broadly dispersed than those for the samples of continuing recipients, consistent with the notion that the observed earnings are associated with overlapping transitional spells into or off benefit for some people. Nonetheless, there still appears to be some evidence of earnings bunching around the respective abatement thresholds.

Thus, we see bunching at the relevant abatement thresholds across each of these samples. The bunching is clear both for the samples that exclude TAS-recipients and include (only) TAS recipients, and smaller for the samples of non-continuing benefit recipients. Although we are not able to distinguish “work-ready” from “health conditions or disability” JSS recipients in our analysis, as this is expected to mainly affect the work obligations of the respective groups, it is not clear what effect that has on these patterns which are conditional on working.

We next consider whether there is earnings bunching by Sole-parent beneficiaries around the abatement thresholds. For Sole-parents there are two complicating issues. First, they face two abatement thresholds: 30% abatement rate beyond the part-time threshold, and 70% abatement beyond the full-time threshold. Second, Sole-parents may choose annual rather than weekly assessment of their income, and we do not observe this choice in the data. Because of

these issues, we expect the evidence on bunching at abatement thresholds will be less detectable in Sole-parents' weekly earnings.

For this exercise we combine both JSS and SPS recipients, as they face the same abatement regimes. We suspect the main difference between Sole-parent receiving JSS and SPS is the age of their youngest child: e.g. the average age of youngest child for SPS recipients is 6.1 years, compared to 10 years among JSS recipients (the latter includes couples with children as well as Sole-parents). To the extent this is correct, perhaps the main expected difference in labour supply outcomes between the two groups is the decision to work or not; so that those who do work will face the same incentives around the abatement thresholds.

We plot the corresponding earnings distributions for Sole-parent beneficiaries in Figure 6. We plot the 2019/20 and 2021/22 distributions in panel (a), and the 2020/21 and April-July 2022 distributions in panel (b). In each graph there appears to be some earnings bunching around the part-time thresholds (at $100 in 2019/20, $115 in 2020/21, and $160 from April 2021), but no evidence of bunching around the full-time thresholds (at $200, $215 and $250). Nonetheless, there is a substantial shift in density, from below $160 and between $160 and $390, to above $450 between 2019/20 and 2021/22.

Incentive effects of the Winter Energy Payment (WEP) may also lead to changes in earnings distributions. The WEP was introduced in July 2018, and available for main beneficiaries (and NZS and Veteran's Pension) during the winter months (from May until September). The WEP provides an additional financial incentive to be on-benefit during the WEP months (Hyslop et al., 2022), potentially inducing people to reduce their earnings in order to be benefit-eligible. Although the WEP-eligibility incentive is not specific to bunching at the abatement threshold, if recipients are also more likely to respond to the benefit abatement incentives and bunch at the thresholds, this may increase bunching during the WEP-eligibility months.

Although Hyslop et al. (2022) found only weak statistical evidence to support this effect, we examine the possible effects of the Winter Energy Payment (WEP) policy on benefit recipients' responses to the various financial incentives they face. In Figure 7 we plot the weekly earnings distributions for Single-JSS recipients separately during the WEP-winter months (May – September) and non-winter months (April and October – March) for the 2019/20 and 2021/22 years. There is relatively more mass for earnings less than about $350 per week during the WEP-months in each year (and particularly noticeable in 2019/20), and corresponding more mass in the non-WEP months for earnings above this level. Given the benefit phase-out levels of $393 (2019/20) and over $500 (2021/22), this is consistent with recipients responding to the WEP

incentive to reduce earnings in order to maintain benefit eligibility during the WEP-months.[28] Associated with the higher densities for lower earnings, there are also higher spikes at the abatement thresholds in each year. However, that the ratio of the densities at the spikes is in line with that across this range (e.g. the WEP/non-WEP density ratio is 1.1-1.2 in 2019/20, and around 1.1 in 2021/22), suggests there is little evidence that the WEP policy has any particular effect on recipients behaviour of bunching at the abatement thresholds. There are somewhat smaller differences in the weekly earnings distributions for Sole-parents in the WEP and non-WEP months (not shown), which perhaps reflects their greater persistence on benefits.

Finally, in Figure 8 we present the estimated 2019/20 and 2021/22 earnings distributions for Māori single JSS (panel (a)) and Sole-parent (panel (b)) benefit recipients. The patterns are very similar to those of the full samples in Figure 5 and Figure 6. In particular, we see clear bunching at the relevant full-time thresholds for Single JSS recipients in each year in panel (a); and weaker bunching at the relevant part-time thresholds for Sole-parent recipients in panel (b), but no evidence on bunching at the full-time thresholds for these recipients.

4.2 Estimating the elasticity of bunching

Given the graphical evidence of bunching in the earnings of Single JSS recipients at the abatement thresholds, in this section we provide estimates of the elasticity of bunching with respect to the change in effective marginal tax rate (EMTR) across the threshold.

To do this, we follow the methodology of Bertanha et al. (2021), and apply the algorithms described in Bertanha et al. (2022). This assumes any bunching occurs from recipients who would otherwise have had earnings away from the threshold choosing to earn at the threshold in response to the change in EMTR because of the policy. Estimating the bunching elasticity requires knowledge of the EMTRs on either side of the threshold: for this, we assume benefit recipients face an EMTR of 17.5% on earnings close to but below the threshold, corresponding to the marginal tax rate (MTR) for weekly income between $269 and $923 ($14,000 and $48,000 annually); and 87.5% (17.5% MTR plus 70% abatement) on earnings above the threshold. We also allow for 'friction errors' associated with possible rounding in earnings near to the threshold: in particular, we allow for rounding within +/-$10 of each threshold.

Table 5 summarises the estimated behavioural responses to the abatement threshold incentives for single JSS-recipients. This analysis again excludes those who receive TAS payments, and non-continuing benefit recipients. The first column contains estimates for the 2019/20 year, prior to the policy changes; and the second column for the 2021/22 year, after the second

[28] A possible alternative explanation may be that there are more abundant work opportunities during the non-WEP months.

threshold increase. Our primary estimates are based on the mid-censored Tobit model approach of Bertanha et al. (2021). As the bunching estimators rely on data local to the kink points, the estimation algorithm derives a series of estimates based on different levels of symmetric data truncation around the kink threshold. Smaller (more local) samples enable more robust estimation, albeit potentially at the risk of loss of precision.

In the first rows we present Tobit estimates based on the full sample (100% of the data), 50% and 10% of the sample, for each year. Using 100% of the data, we estimate statistically significant elasticities of bunching at the threshold, of 0.048 in 2019/20 and 0.020 in 2021/22. Restricting the estimation samples to be more local to the kink points results in somewhat higher estimated elasticities: 0.066 (50%) and 0.069 (10%) for 2019/20, and 0.023 (50%) and 0.022 (10%) for 2021/22. From these and other truncation estimates not shown, we conclude that 50% truncation appears to provide a reasonable tradeoff between achieving a local data sample and not losing too much precision. For comparison with the Tobit approach, we also present point estimates based on the so-called Trapezoidal approach used by Saez (2010), which are somewhat higher again: 0.078 for 2019/20 and 0.024 for 2021/22.

Given the pattern of these estimates, in the next set of rows we present estimates for the full samples and various population subsamples from Tobit models with controls for various demographic and location characteristics and with 50% truncation.[29] The results for the full sample indicates controlling for covariates has almost no effect on the estimated bunching elasticities.[30] To interpret these results in terms of the effect on recipients with earnings at the threshold, when the EMTR increases from 0.175 to 0.875 around the abatement threshold, an elasticity of 0.07 implies that there were about 11% (0.113=log(0.875/0.175)*0.07) more recipients with earnings at the $80 threshold in 2019/20 than would be expected based on how many have earnings near that level; similarly an elasticity of 0.023 in 2021/22 implies about 4% more recipients with earnings at the $160 threshold than would otherwise be the case.

Based on these estimates two points appear relevant. First, it appears the overall behavioural response to bunching was somewhat lower after the policy changes than before (about 0.02–0.025 compared to 0.05–0.08). It is unclear why, but may be due to the higher threshold perhaps providing greater incentive to work more and exit the benefit, or to lags in response to the policy changes, in which case the elasticity may be expected to rise over time.

[29] The control variables include a quadratic in age, and indicators for gender, ethnicity (European/other, Māori, Pacific peoples, Asian), and location (Major/large urban areas, Medium/small urban areas, Rural areas)

[30] Varying the amount of data used around the threshold has some effect on the estimated elasticity, but this doesn't appear to vary systematically. For example, for 2019/20, reducing the amount of data used almost monotonically increases the estimated elasticity, so that based on 10% of the data, the estimate is 0.069; in contrast, for 2021/22, the estimates are much less affected by the amount of data used, varying in the range of 0.020 – 0.023. The corresponding estimates based on a trapezoidal approximation are 0.078 for 2019/20, and 0.024 for 2021/22.

Second, these estimates are substantially lower than the estimated bunching elasticities around marginal tax rate thresholds in New Zealand, and also US estimates around kink points in the income schedule associated with the Earned Income Tax Credit (EITC). For example, Alinaghi et al. (2021) estimate elasticities around the marginal tax rate thresholds in New Zealand of 02–0.3 for all tax payers, and 0.8–1.0 for self-employed. Similarly, Saez (2010) and Bertanha et al. (2021) estimate elasticities around the EITC kink points of 0.2 or more (and higher for self-employed). The lower bunching responses may reflect the benefit recipients' behaviour is less responsive than elsewhere. However, an alternative possibility is that bunching is more difficult to achieve at higher frequency assessment periods – i.e. weekly versus annual.

In the subsequent rows of Table 5, we present estimated elasticities for different population subgroups. Although there is some variation in the estimated elasticities, they are broadly comparable across the subgroups. For example, we estimate a relatively higher bunching elasticity for Māori (0.094) in 2019/20 but lower elasticity (0.018) in 2021/22; we estimate higher elasticities for males (0.104 in 2019/20 and 0.029 in 2021/22) than females (0.031 and 0.022); relatively higher elasticities for younger recipients in 2019/20, but lower in 2021/22; and higher elasticities for those living in major or large urban areas (or rural areas) than in medium or small urban areas.

We repeat this estimation for Sole-parent recipients, focusing on the bunching elasticity at the part-time (30%) abatement threshold. For this analysis, we again assume the EMTR below the abatement threshold is the 17.5% marginal tax rate, while the EMTR above the threshold is now 47.5% (17.5% MTR + 30% abatement rate).[31] Table 6 summarises the results for the 2019/20 and 2021/22 full samples and population subsamples, based on the Tobit approach with covariate controls and 50% symmetrically truncated samples. There are some noticeable differences with the Single-JSS estimates in Table 5. First, we estimate relatively larger bunching elasticities for Sole-parents around the PT-threshold in both years: about 0.11 in 2019/20 and 0.06 in 2021/22.[32] Although this may seem surprising given the smaller bunching visible in the distributions, that Sole-parents face a smaller (30%) increase in EMTR at this threshold than Single JSS recipients means any given amount of bunching will generate a relatively higher response elasticity.

[31] We have also attempted to separately estimate bunching elasticities at the FT-threshold for Sole-parents, assuming EMTRs of 47.5% below the threshold and 87.5% above the threshold. The Tobit approach was unable to estimate elasticities for any level of truncation. However, consistent with the absence of any apparent bunching at the FT-thresholds in Figure 6, the full sample point estimates based on the trapezoidal approach are extremely low: 0.009 for 2019/20 and 0.006 for 2021/22.

[32] These estimates imply about 11% (0.110=log(0.475/0.175)*0.11) more Sole-parent recipients with earnings at the $100 thresholds in 2019/20 than would otherwise be expected, and about 6% more recipients with earnings at the $160 threshold in 2021/22.

Second, although the estimated bunching elasticity is again smaller in 2021/22 than 2019/20, the drop in responsiveness is relatively smaller for Sole-parents than Single-JSS recipients. That is, the 2021/22 estimate is about 40% smaller for Sole-parents, compared to about 60% smaller for Single-JSS recipients. This may reflect greater awareness of the changes by Sole-parent benefit recipients, combined with their greater responsiveness to the threshold incentives. Third, the pattern of relative bunching elasticities across population subsamples also differs from that for Single-JSS recipients. This may reflect relatively different characteristics within the population subsamples of Single-JSS and Sole-parent recipients.

Finally, we briefly discuss full sample bunching elasticity estimates for Single-JSS and Sole parent recipients in the 2020/21 year and the April-July 2022 part-year. These are reported in Table 7. For Single-JSS recipients, the estimates are comparable to the 2019/20 and 2021/22 estimates respectively. In contrast, the two estimates for Sole parents are noticeably lower than their respective previous year estimates. These patterns do not support the idea of policy lags as the reason for the drop in bunching around the thresholds, although the four-month period may be too short to be definitive.

Bearing in mind that Sole parents may also choose to have their income assessed annually for abatement purposes, these bunching elasticity results suggest they are relatively more responsive to the financial incentives associated with the abatement policy than Single JSS recipients.

4.3 Estimating the effects on net income

In this section, we assess the effects that the abatement policy changes had on the net incomes of benefit recipients over the sample period. To do this requires paying attention to the contributions of changes in other factors that occurred over the period. In particular, we control for secular increases in earnings, and other policy changes that increased the main benefit rates for recipients. In addition, to assess the effects of the abatement policy changes, we distinguish windfall effects associated with increasing the abatement thresholds assuming no change in earnings, and the behavioural response to the increase in the thresholds. To do this, we take the observed EIE earnings as correct, and assume the relevant benefit rate is that associated with the client's family structure adjusted for any implied abatement.[33]

[33]For JSS singles and couples, we assign the benefit rate based on a person's partner-status, giving those partnered half the couple rate, and age for single recipients (<25 versus 25 and over). A consequence of abating the benefit given the observed earnings is that a benefit recipient may have their benefit rate fully abated to zero. This occurs for 30% of non-Sole-parents and 12% of Sole-parents with earnings in 2019/20; and 23% and 11% with earnings in 2021/22. For these cases, we keep them in the analysis, but treat their assessed net benefits to be zero.

For this exercise, let Y_{it} be some outcome of interest for recipient-*i* in year-*t*, and let Y_t be some summary measure of interest: we will focus on benefit recipients' net incomes and Y_t will be either the average or select percentiles of net income. Our objective is to decompose the change in Y_t ($\Delta \mathrm{Y} = Y_1 - Y_0$), between 2019/20 (year-"0") and 2021/22 (year-"1"), into components attributable to changes in earnings rates, changes in net benefit rates, threshold changes and responses to the threshold changes. To do this, we treat 2019/20 as the base year and define 'counterfactual' income measures for each stage as follows.

First, for secular changes in earnings rates, we apply MSD's cumulative average net wage ("W") growth increases that were used to adjust net benefit rates in April 2020 and April 2021 to recipients observed earnings in 2019/20. This combines a 3.10% increase in April 2020 and a 3.09% increase in April 2021 for a cumulative 6.29% increase. Applying this to the earnings of those working in 2019/20 provides counterfactual estimates of what their earnings and net income would have been in the absence of any other changes: we denote the resulting summary measure of net income $\hat{Y}_0^W$, and estimate the contribution of this component to the change in $\Delta \mathrm{Y}$, as $\Delta \mathrm{Y}^{\mathrm{W}} = \hat{Y}_0^W - Y_0$.

Second, to account for the effects of the changes in benefit rates ("B") over the period, our counterfactual estimate is obtained by applying the applicable 2021/22 net benefit rates to 2019/20 recipients.[34] We then derive the implied net income for each of the 2019/20 recipients, conditioning also on the assumed net earnings growth. We denote the summary measure that includes both the earnings and benefit changes as $\hat{Y}_0^{WB}$, and estimate the contribution of the changes in benefit rates to the overall change, as $\Delta \mathrm{Y}^{\mathrm{WB}} = \hat{Y}_0^{WB} - \hat{Y}_0^W$.

Third, to estimate the expected windfall effects of the abatement threshold changes ("A"), we next apply the 2021/22 thresholds to the counterfactual earnings of 2019/20 recipients and, taking account also of the change in benefit rates, estimate their implied net incomes. We denote the summary measure that includes these three changes as $\hat{Y}_0^{WBA}$, and estimate the contribution of the changes in benefit rates to the overall change, as $\Delta \mathrm{Y}^{\mathrm{WBA}} = \hat{Y}_0^{WBA} - \hat{Y}_0^{WB}$.

Finally, we attribute any remaining difference between the actual net income summary measure in 2021/22 (Y_1) and $\hat{Y}_0^{WBA}$ ($Y_1 - \hat{Y}_0^{WBA}$) to behavioural responses to the abatement threshold changes. Note that this is a residual component, so this attribution to behavioural responses will include any effects not adequately controlled for above: e.g. any earnings rate increases that differ from the cumulative increases in net earnings applied above. To summarise,

[34] Note that the $20 increase in benefit rates on 1 July 2021 implies two separate statutory sets of rates applied over the 2021/22 year: between April and June 2021, and between July and March 2022. We handle this by applying the different rates on the same seasonal basis to recipients in 2019/20 (i.e. before and after July 1 2019).

based on this sequence of counterfactuals, we decompose the change in Y_t between 2019/20 and 2021/22 as:

$$\Delta \mathrm{Y} = Y_1 - Y_0 = \Delta \mathrm{Y}^{\mathrm{W}} + \Delta \mathrm{Y}^{\mathrm{WB}} + \Delta \mathrm{Y}^{\mathrm{WBA}} + (Y_1 - \hat{Y}_0^{WBA}).$$

This description is silent on the possible contribution associated with an extensive (i.e. employment) margin behavioural response to the abatement threshold changes (or potentially other changes considered). To handle this issue, we first consider the effects conditional on employment and also for benefit recipients not employed, which implicitly assume any change in the employment rate over the period is neutral; we then aggregate these two dimensions and attribute the change in employment to behavioural responses. We expect this will provide an upper bound on the behavioural response effects to the change in unconditional net income.

We apply this analysis to JSS and SPS recipients as these are the groups who are most likely to have earnings, and respond to the abatement threshold changes. Table 8 summarises the effects on net income for non-Sole-parent JSS recipients, both all and Single JSS-recipients; and for Sole-parent benefit recipients, JSS and SPS combined and each group separately. The table summarises the contributions to changes in average net income, and changes at the 10th and 25th percentiles for benefit recipients who have earnings.

We first focus on the contributions to the change in benefit recipients average net income between 2019/20 and 2021/22. The top section of Table 8 documents the employment rates for each sample in the two years: for non-Sole-parent JSS recipients the fraction employed increased from just under 10% in 2019/20 to about 12% in 2021/22; the employment rate increased about 1 ppt for Sole-parents from 19.6% to 20.7% combined, and was surprisingly 3-4 ppt higher for SPS than JSS recipients.

In the next section of the table, we focus on changes for the employed subsamples, and document the average 2019/20 net income, actual change in average net income to 2021/22, and the estimated relative contributions to the total change from each of the components discussed above. For all non-Sole-parent JSS recipients in column 1, the average initial net income was $375 per week, and this increased by $85 per week (23%) in 2021/22. The relative contributions indicate that the main contribution to the increase in income was from increased benefit rates, which we estimate accounted for 57% ($49) of the increase. In addition to this contribution, the estimated increase in wage rates accounted for 14% ($12) of the increase, the windfall effect associated with increasing the abatement thresholds (holding earnings constant) accounted for 22% ($19), and the estimated behavioural response to the threshold increases (i.e. resulting in higher earnings) accounted for only 7% ($6) of the observed increase. The patterns for the subsample of Single JSS recipients are very similar, with the estimated behavioural

response contribution being even lower (less than 5% or about $4 contribution to the $85 increase).

Next, we briefly document the changes for non-earning benefit recipients. For the non-Sole-parent JSS recipients, the average net income was about $210 per week in 2019/20 and increased $53 (25%), which was all due to benefit increases.

Combining the employed and non-employed samples in the next section, we estimate the average initial income for non-Sole-parent recipients was $226 per week and increased by $60 (27%) in 2021/22. This unconditional increase is dominated by the increase in benefit rates, which accounts for 87% ($52) of the increase; the increased wages and abatement thresholds account for relatively little (2% and 3% respectively); and, attributing the higher employment rate to the behavioural response to the threshold changes, this component contributes 8% ($5) of the average increase. Again, the changes for Single JSS-recipients are very similar.

The estimated patterns of net income changes and contributions for Sole-parent recipients (in columns 3-5) are generally similar to those for the non-Sole-parents. Conditional on having earnings, the estimated average initial net income was about $505 per week ($513 for the JSS recipients), and increased $97 (19%, or $92 for JSS recipients). Around 60% of the increase is estimated to be associated with increasing benefit rates, around 20% each to higher wages and the abatement threshold increases, and we estimate small negative contributions attributed to behavioural responses to the threshold changes. For Sole-parents without earnings, the average net income, entirely due to benefit rates, increased $62 (18%) from $340 per week in 2019/20. The average unconditional net income increased about $70 (19%) from around $370 per week in 2019/20: again, we estimate the dominant factor in this increase was the benefit rate increases (contributing about 87%, $62), while higher wages and abatement thresholds contributed 4-6% ($3-4), and the behavioural response to the threshold increases a small 2-3% ($2).

As we expect any behavioural responses to the abatement threshold changes to be among recipients with relatively low earnings, in the final two sections of Table 8 we summarise the estimated contributions to changes at the 10^{th} (P10) and 25^{th} (P25) percentiles of net incomes for each sample, conditional on earnings. Compared to the conditional average increases, the net income increases are relatively stronger here. For non-Sole-parents, the increase was 30% (about $78) at the P10 and 33% ($95) at the P25. Although these increases were still dominated by benefit increases (about 60% at the P10 and 50% at the P25), the abatement threshold contributions were relatively larger (40%) at the P25, and the estimated behavioural responses larger at the P10.

In Table 9 we summarise the contributions to changes in average unconditional net incomes for various population subgroups. The pattern of results is generally very similar across these subpopulations. For example, the increases in average net incomes is estimated to range from $58-64 per week for non-Sole-parent JSS recipients, and $65-75 for Sole-parents; and the combined (windfall and behavioural response) contribution of the abatement threshold changes ranges from 7.8-16.3% for non-Sole-parents, and 4.3-12.8% for Sole-parents. Perhaps the most noticeable difference is for young (under 25) non-Sole-parent JSS recipients. Reflecting the lower Single JSS benefit rates for under-25s, they have lower net incomes on average. We also estimate a stronger behavioural response contribution to the change in net incomes of around 13%, which is largely due to a larger increase in employment rate (from 10.1% in 2019/20 to 14.2% in 2021/22) that is treated as a behavioural response in this exercise.

These results suggest the threshold policy changes induced some behavioural responses that had positive effects on the net incomes of recipients. However, these were of second order importance to the overall increases in net income for benefit recipients over the period.

4.4 Estimating fiscal effects

Finally, we consider the possible fiscal cost of the change in the abatement threshold policy for Single JSS recipients. For this exercise, we estimate both the higher benefit costs associated with less abatement of benefit, and the increase in tax revenue associated with recipients increasing their earnings, following the policy change. Both the higher benefit costs and the net fiscal costs (including offsetting tax revenue) represent transfers to benefit recipients.

First, we estimate the increase in benefit costs (BC) as the decrease in implied abatement under the higher (2021/22) versus original (2019/20) abatement threshold policy given recipients' weekly earnings distribution. Specifically, we estimate the following equation:

$$BC = JSS_{pop} * Emprate * 52 * \int_{80}^{ymax} \Delta A(y).f(y).dy$$

where $\Delta A(y)$ is the change in implied abatement at weekly earnings-y, and $f(y)$ is the probability density of earnings. We evaluate the change in abatement from the original ($80) level up to the implied maximum earnings to be eligible to receive any JSS payments ($ymax$) for recipients with earnings, and then scale up the per person weekly abatement cost to the annual cost for the JSS population. There is a choice of which year's earnings distribution to use, and we use the 2021/22 distribution as the baseline (in Figure 5). Based on the average number of non-TAS Single-JSS recipients in 2021/22 and the employment rate, we estimate the annual benefit cost of the policy change to be $24.6m.

Second, we estimate the increase in tax revenue (TR) from recipients' higher earnings based on the change in the weekly earnings distribution between 2019/20 and 2021/22:

$$TR = JSS_{pop} * Emprate * 52 * \int_0^{ymax} T(y).\Delta f(y).dy$$

where $T(y)$ is the tax revenue at weekly earnings-y (which we assume is taxed at the 17.5% MTR), and $\Delta f(y)$ is the change in the probability density of earnings between the two years. We evaluate the change in tax revenue from zero earnings up to the implied maximum earnings to be eligible to receive any JSS payments ($ymax$), and again scale up the per person weekly tax revenue to the annual amount for the JSS population, assuming the 2021/22 employment rate. This estimation conflates the behavioural increase in earnings due to the policy changes with other secular earnings increases, resulting in an upwards bias in the estimated tax increase. However, based on this exercise, we estimate the annual tax revenue increased $2.3m.

Combining the two components, we estimate the annual net fiscal cost of the abatement policy changes (=BC-TR) was $22.2m. There are several comments and caveats associated with this exercise. The estimated increase in benefit costs based on the 2021/22 earnings distribution includes the effects of any earnings increases (both behavioural and secular, including any increased employment rate) in response to the policy changes. An alternative estimate, based on the 2019/20 earnings distribution but scaled up to the 2021/22 population, gives BC=$24.1m, TR=$1.6m, and the net fiscal cost of $22.5m. In this case, using the 2019/20 earnings ignores any behavioural response to the policy changes, but includes the higher 2021/22 employment rate, and the calculations suggest the estimated fiscal cost is relatively robust to this change. On the other hand, the estimated tax increase results in an upwards bias in the estimated tax increase and downward bias in estimated net fiscal cost. Although we don't attempt to correct for this bias, we suspect the contribution from secular earnings increases likely dominated the estimated tax increases, in which case the increase in tax revenue is expected to be relatively small.

Based on this analysis, we summarise the estimated net fiscal cost of the abatement policy changes as being in the range of $22-24m, and likely towards the top of this range, for the 2021/22 cohort analysed. This fiscal cost represents a net transfer to recipients. As a comparison, we also calculate the implied aggregate annual net income effects for Single-JSS recipients from the previous section: these amount to $7.8m for the abatement threshold effects, $18.3m for the behavioural response effects, and $26.1m combined. Bearing in mind differences assumptions across the two exercises,[35] we interpret the estimates as being broadly consistent.

[35] For example, the behavioural response effects on net income are likely overstated as they directly include the increase in employment rate over the period.

5 Concluding discussion

Our analysis of the distribution of benefit recipients' weekly earnings implies that some Single-JSS recipients respond to the financial incentives around the benefit abatement thresholds and earn the threshold levels to avoid having their benefit abated. However, the estimated behavioural responsiveness is comparatively small: the estimated bunching elasticity at the initial $80 abatement threshold in 2019/20 is 0.07 (and only 0.02 at the $160 threshold in 2021/22). In addition, we observe some bunching at the part-time (30%) thresholds for Sole-parent (JSS and SPS) recipients, and estimate somewhat larger, although still small, bunching elasticities at the part-time thresholds of 0.11 in 2019/20 and 0.06 in 2021/22. Given Sole-parents can choose annual abatement assessment, we expect that their true bunching behaviour is somewhat stronger. We hypothesise that their relatively stronger bunching elasticities in weekly earnings than Single-JSS recipients is related to relatively longer benefit spells which both leads to better understanding of the abatement rules and greater gains over time from bunching.

These bunching estimates are much smaller than for income bunching at marginal tax rate kinks in the income schedule of at least 0.2 for all tax payers and close to 1 for the self-employed (Alinaghi et al., 2021), and also smaller than US estimates at EITC kink points of at least 0.2 (Bertanha et al., 2021; Saez, 2010). There are likely several contributing factors for the lower estimates, including the higher frequency (weekly) assessment which provides recipients' less scope to optimise bunching behaviour, many JSS recipients have relatively short spells which likely affects both their knowledge of the abatement rules and relative gains from bunching, and for Sole-parents choosing annual abatement assessment bunching in weekly earnings will be a poor measure.

The small behavioural responses are also apparent in the estimated contributions to benefit recipients' net income changes over the period. The threshold increases could increase Single-JSS recipients' net incomes by as much as $80 per week conditional on being employed, either for recipients who were already earning at least $160 per week or for those who increased their earnings from $80 to $160; while the effect is expected to be greater than $80 if a recipient is encourage to take-up employment and will be zero for those who remain non-employed. However, we estimate the average (unconditional) increase was less than $7 in total (about $2 from the windfall effect associated with existing earnings, and less than $5 from increased earnings), and accounted for at most 11% of the increase in average net incomes. We also estimate that the fiscal costs of the policy changes for Single-JSS recipients are on the order of $22-24m annually for the 2021/22 cohort.

The estimated effects of the threshold changes on the net incomes for Sole-parents even smaller. We estimate the increase in average net income from the policy changes was about $6 per week, and account for less than 10% of the observed increase in average net incomes. But, because Sole-parents may choose abatement assessment annually, we expect the analysis of weekly earnings will miss much of the response for this group.

Thus, the abatement policy changes had modest effects on the total income support for benefit recipients with earnings. But as most recipients do not work the proportion of recipients who benefited from these changes was low, and there is no sign that more recipients chose to work because of the more lenient abatement rules. Furthermore, these net income gains were relatively modest compared to the contributions of recent benefit rate increases.

In summary, we conclude there is some clear evidence of bunching in weekly around the full-time abatement threshold for Single-JSS recipients, and around the part-time threshold for Sole-parent recipients. Although the analytical estimates suggest the behavioural responses are relatively small, these should be interpreted in the context of measuring actual weekly labour supply responses of wage and salary work, rather than perhaps tax avoidance behaviour. As a result, we expect they likely understate the true responses to the financial incentives around the abatement thresholds, particularly for Sole-parents.

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Table 1: Main benefit abatement thresholds and abatement rates

Date effective	Full-time regime threshold (70%)	Part-time regime	
		threshold (30%)	threshold (70%)
Pre-1 April 2020	$80	$100	$200
1 April 2020	$90	$115	$215
1 April 2021	$160	$160	$250

Notes: Before 2020, the abatement thresholds (and rates) had not changed since 2010. The full-time regime applies to non-Sole-parents on Jobseeker Support (JSS); the part-time regime applies to Sole-parents on JSS or Sole Parent Support (SPS), and people on Supported Living Payments (SLP).

Table 2: Sample characteristics of Main (tier-1) and JSS benefit recipients

	All Main	All JSS recipients		JSS-Singles	
	Benefits	Pre-2021	Post-2021	Pre-2021	Post-2021
No. distinct recipients	703,473	403,233	351,573	349,176	301,473
No. Monthly Recipients	14,991,669	4,547,568	3,225,816	3,758,466	2,691,261
Partnered	0.063	0.080	0.077	0	0
Female	0.559	0.463	0.465	0.443	0.448
Age	41.8	39.9	40.6	39.2	39.9
Any children	0.283	0.142	0.135	0	0
No. of children[(1)]	1.90	1.79	1.77	0	0
Age of youngest child[(1)]	7.5	9.6	10.4	0	0
European	0.406	0.381	0.380	0.401	0.398
Māori	0.201	0.213	0.208	0.208	0.204
Euro & Māori	0.139	0.140	0.140	0.142	0.142
Pacific	0.081	0.081	0.085	0.074	0.077
Asian	0.068	0.072	0.074	0.063	0.066
Misc single ethnicity	0.023	0.027	0.027	0.024	0.024
Misc two ethnicities	0.058	0.059	0.061	0.061	0.062
Misc multi-ethnicities	0.024	0.025	0.026	0.027	0.027
Major/large urban	0.684	0.690	0.691	0.688	0.689
Medium/small urban	0.193	0.182	0.175	0.182	0.175
Rural	0.123	0.128	0.134	0.130	0.135
Receiving TAS	0.207	0.235	0.224	0.238	0.227
Continuing benefit	0.871	0.833	0.816	0.826	0.808
Tier-1 benefits[(2)]	$354	$280	$342	$267	$329
	($150)	($108)	($130)	($87)	($109)
Tier-2 TAS benefits[(2)]	$63	$51	$63	$49	$61
	($33)	($28)	($33)	($26)	($31)
IR Tier-1 benefit payments	0.944	0.941	0.946	0.939	0.944
IR (Tier-1) benefits[(2)]	$322	$254	$306	$244	$296
	($138)	($104)	($112)	($82)	($97)
IR employed	0.127	0.128	0.143	0.125	0.139
IR earnings	$448	$467	$494	$463	$488
	($331)	($483)	($250)	($515)	($244)
<FT0 threshold	0.161	0.065	0.051	0.068	0.054
@FT0 threshold	0.033	0.036	0.024	0.038	0.025
<FT1 threshold	0.264	0.195	0.154	0.204	0.160
@FT1 threshold	0.034	0.034	0.038	0.035	0.039

Notes: All numbers are sample means, except for the numbers of recipients (and standard deviations in parentheses). The "Pre-2021" period covers the 24 month period before the second abatement threshold increase (April 2019 – March 2021); and the "Post-2021" period covers the 16 month period after this increase (April 2021 – July 2022). Continuing benefit is an indicator for whether a benefit recipient received a benefit in both the previous and the following months.

[(1)] The average number of children and age of youngest child are conditional on children being observed.

[(2)] Tier-1 and Tier-2 benefit amounts are estimated as gross weekly amounts if a benefit spell is at least 7-days (7*daily rate), and as the total gross amount otherwise; IR (Tier-1) benefits are estimated as the gross amount received (these are mostly from 7-day spells, but with some 1-day spells). The benefit and earnings averages are conditional on non-zero receipt.

Table 3: Characteristics of non-TAS JSS benefit recipients

	Pre (2019/20)	Post (2021/22)	Change	Relative change
No. observations	1,462,404	1,909,803	447,399	31%
Employed	0.127	0.157	0.029	23%
Average Earns	$394	$476	$82	21%
@FT0	0.046	0.027	-0.019	-42%
@FT1	0.039	0.039	0.000	0%
Māori:	0.425	0.396	-0.028	-7%
Employed	0.116	0.143	0.028	24%
Average Earns	$419	$509	$90	21%
@FT0	0.038	0.023	-0.015	-40%
@FT1	0.035	0.033	-0.001	-4%
Pacific:	0.134	0.146	0.012	9%
Employed	0.125	0.159	0.033	27%
Average Earns	$473	$569	$96	20%
@FT0	0.029	0.018	-0.011	-38%
@FT1	0.031	0.028	-0.003	-9%
European:	0.558	0.565	0.007	1%
Employed	0.135	0.163	0.028	21%
Average Earns	$370	$442	$72	19%
@FT0	0.051	0.030	-0.020	-40%
@FT1	0.043	0.043	0.001	1%
Asian:	0.081	0.091	0.010	12%
Employed	0.118	0.154	0.036	31%
Average Earns	$366	$453	$87	24%
@FT0	0.047	0.025	-0.022	-47%
@FT1	0.040	0.044	0.004	10%
Single:	0.816	0.829	0.014	2%
Employed	0.121	0.153	0.032	26%
Average Earns	$385	$467	$83	22%
@FT0	0.049	0.026	-0.023	-47%
@FT1	0.041	0.041	0.000	0%
Sole-parent:	0.102	0.090	-0.012	-11%
Employed	0.176	0.193	0.018	10%
Average Earns	$414	$491	$77	19%
@FT0	0.030	0.032	0.002	6%
@FT1	0.033	0.029	-0.004	-13%
@PT0	0.028	0.022	-0.006	-21%
@PT1	0.031	0.031	0.000	0%
Partnered:	0.082	0.080	-0.002	-3%
Employed	0.126	0.151	0.025	20%
Average Earns	$445	$544	$99	22%
@FT0	0.040	0.023	-0.017	-43%
@FT1	0.035	0.035	0.000	1%

(Table continues)

Table 3 continued

	Pre (2019/20)	Post (2021/22)	Change	Relative change
Male:	0.545	0.545	0.000	0%
Employed	0.095	0.121	0.026	27%
Average Earns	$459	$545	$86	19%
@FT0	0.045	0.024	-0.021	-47%
@FT1	0.037	0.038	0.001	3%
Female:	0.454	0.454	0.000	0%
Employed	0.166	0.199	0.033	20%
Average Earns	$347	$425	$77	22%
@FT0	0.046	0.029	-0.018	-38%
@FT1	0.041	0.040	-0.001	-3%
Age<25:	0.187	0.194	0.007	4%
Employed	0.130	0.183	0.053	41%
Average Earns	$344	$421	$77	22%
@FT0	0.048	0.030	-0.019	-38%
@FT1	0.047	0.042	-0.004	-9%
Age 25-45:	0.429	0.424	-0.004	-1%
Employed	0.126	0.157	0.031	25%
Average Earns	$437	$523	$86	20%
@FT0	0.038	0.023	-0.015	-40%
@FT1	0.035	0.035	0.000	0%
Age>45:	0.384	0.381	-0.003	-1%
Employed	0.127	0.142	0.015	12%
Average Earns	$371	$455	$84	23%
@FT0	0.053	0.029	-0.023	-45%
@FT1	0.041	0.043	0.002	4%
Major/large urban:	0.615	0.644	0.029	5%
Employed	0.121	0.153	0.032	27%
Average Earns	$396	$481	$85	21%
@FT0	0.045	0.026	-0.019	-43%
@FT1	0.039	0.040	0.000	1%
Medium/small urban:	0.174	0.166	-0.008	-4%
Employed	0.141	0.169	0.028	20%
Average Earns	$371	$447	$75	20%
@FT0	0.046	0.029	-0.017	-37%
@FT1	0.041	0.038	-0.003	-7%
Rural:	0.116	0.125	0.009	8%
Employed	0.124	0.146	0.022	18%
Average Earns	$382	$462	$80	21%
@FT0	0.052	0.029	-0.023	-44%
@FT1	0.038	0.041	0.003	7%

Notes: see notes to Table 2. But note that the "Pre" and "Post" periods in this table refer to the first (2019/20) and third (2021/22) years respectively. Ethnic subgroups are based on ethnicity total responses.

Table 4: Characteristics of non-TAS SPS benefit recipients

	Pre (2019/20)	Post (2021/22)	Change	Relative change
No. observations	578,001	643,224	65,223	11%
Employed	0.211	0.224	0.012	6%
Average Earns	$383	$465	$82	21%
@FT0	0.036	0.030	-0.005	-15%
@FT1	0.034	0.031	-0.003	-8%
@PT0	0.036	0.025	-0.011	-29%
@PT1	0.033	0.033	0.000	0%
Māori:	0.521	0.515	-0.006	-1%
Employed	0.175	0.185	0.010	6%
Average Earns	$389	$475	$86	22%
@FT0	0.033	0.029	-0.004	-12%
@FT1	0.031	0.031	0.000	1%
@PT0	0.036	0.024	-0.012	-34%
@PT1	0.035	0.031	-0.004	-11%
Pacific:	0.179	0.188	0.009	5%
Employed	0.182	0.194	0.012	7%
Average Earns	$456	$550	$94	21%
@FT0	0.026	0.025	0.000	-2%
@FT1	0.030	0.022	-0.008	-26%
@PT0	0.023	0.018	-0.005	-21%
@PT1	0.025	0.024	0.000	-2%
European:	0.532	0.533	0.001	0%
Employed	0.238	0.249	0.011	5%
Average Earns	$356	$434	$78	22%
@FT0	0.040	0.033	-0.007	-18%
@FT1	0.036	0.033	-0.003	-8%
@PT0	0.040	0.028	-0.012	-29%
@PT1	0.036	0.037	0.001	4%
Asian:	0.045	0.048	0.004	8%
Employed	0.285	0.298	0.014	5%
Average Earns	$385	$469	$84	22%
@FT0	0.036	0.032	-0.004	-10%
@FT1	0.035	0.030	-0.005	-13%
@PT0	0.032	0.018	-0.014	-43%
@PT1	0.029	0.032	0.003	9%

(Table continues)

Table 4 continued

	Pre (2019/20)	Post (2021/22)	Change	Relative change
Female:	0.912	0.912	0.000	0%
Employed	0.220	0.232	0.012	5%
Average Earns	$375	$456	$80	21%
@FT0	0.036	0.031	-0.005	-15%
@FT1	0.034	0.031	-0.003	-8%
@PT0	0.036	0.026	-0.010	-29%
@PT1	0.034	0.033	0.000	-1%
Male:	0.088	0.088	0.000	0%
Employed	0.122	0.139	0.017	14%
Average Earns	$523	$622	$99	19%
@FT0	0.024	0.021	-0.003	-11%
@FT1	0.026	0.022	-0.003	-14%
@PT0	0.033	0.020	-0.013	-40%
@PT1	0.031	0.036	0.004	14%
Age<25:	0.118	0.107	-0.011	-9%
Employed	0.127	0.130	0.004	3%
Average Earns	$354	$419	$65	18%
@FT0	0.036	0.035	-0.001	-3%
@FT1	0.036	0.036	0.000	1%
@PT0	0.039	0.028	-0.011	-28%
@PT1	0.039	0.041	0.003	7%
Age 25-45:	0.758	0.772	0.014	2%
Employed	0.218	0.232	0.014	7%
Average Earns	$385	$470	$85	22%
@FT0	0.036	0.030	-0.006	-17%
@FT1	0.033	0.030	-0.003	-8%
@PT0	0.036	0.025	-0.011	-31%
@PT1	0.034	0.032	-0.001	-4%
Age>45:	0.124	0.121	-0.003	-2%
Employed	0.249	0.250	0.000	0%
Average Earns	$385	$453	$68	18%
@FT0	0.036	0.033	-0.003	-9%
@FT1	0.035	0.032	-0.003	-9%
@PT0	0.036	0.029	-0.007	-20%
@PT1	0.031	0.035	0.005	15%

(Table continues)

Table 4 continued

	Pre (2019/20)	Post (2021/22)	Change	Relative change
Major/Large urban:	0.629	0.642	0.013	2%
Employed	0.203	0.213	0.010	5%
Average Earns	$393	$481	$88	22%
@FT0	0.034	0.029	-0.005	-14%
@FT1	0.033	0.030	-0.003	-10%
@PT0	0.033	0.024	-0.009	-27%
@PT1	0.032	0.031	-0.001	-3%
Medium/small urban:	0.209	0.208	-0.002	-1%
Employed	0.233	0.259	0.026	11%
Average Earns	$350	$428	$79	22%
@FT0	0.042	0.034	-0.008	-18%
@FT1	0.036	0.032	-0.004	-10%
@PT0	0.041	0.029	-0.012	-29%
@PT1	0.036	0.037	0.001	2%
Rural:	0.110	0.118	0.007	6%
Employed	0.213	0.233	0.020	9%
Average Earns	$360	$441	$81	23%
@FT0	0.039	0.034	-0.005	-13%
@FT1	0.033	0.033	0.000	1%
@PT0	0.047	0.029	-0.019	-39%
@PT1	0.037	0.038	0.001	2%

Notes: see notes to Table 2. But note that the “Pre” and “Post” periods in this table refer to the first (2019/20) and third (2021/22) years respectively. Ethnic subgroups are based on ethnicity total responses.

Table 5: Estimated elasticities of bunching at abatement thresholds for JSS-Single recipients

	2019/20	2021/22
Full sample:		
No. benefit observations	90,534	160,425
Tobit estimate: 100% data	0.049 (0.001)	0.020 (0.0005)
50% data	0.066 (0.002)	0.023 (0.0006)
10% data	0.069 (0.002)	0.022 (0.006)
Trapezoidal estimate	0.078	0.024
Tobit with covariates and 50% data:		
Full sample	0.066 (0.002)	0.023 (0.001)
European	0.055 (0.002) [39,501]	0.027 (0.001) [70,266]
Māori	0.094 (0.005) [18,759]	0.018 (0.001) [28,386]
Pacific	0.038 (0.006) [5,997]	0.031 (0.003) [11,913]
Asian	0.086 (0.009) [4,671]	0.035 (0.003) [11,130]
Male	0.104 (0.004) [37,410]	0.029 (0.001) [65,343]
Female	0.031 (0.001) [53,049]	0.022 (0.001) [94,974]
Age<25	0.063 (0.004) [17,898]	0.023 (0.001)[(1)] [38,346]
Age 25-45	0.064 (0.003) [35,463]	0.026 (0.001) [62,469]
Age>45	0.042 (0.002) [37,173]	N/A [59,610]
Major/large urban	0.072 (0.002) [53,286]	0.028 (0.001) [101,439]
Medium/small urban	0.024 (0.002) [18,252]	0.019 (0.001) [29,724]
Rural	0.053 (0.004) [10,425]	0.026 (0.002) [19,446]

Notes: Entries are the estimated elasticity of bunching at the Full-time abatement threshold with respect to the EMTR, with estimated standard errors in parentheses, and sub-population sample sizes in square brackets below. We assume the EMTR is 0.175 (the MTR on earnings above $14,000 annually) below the abatement threshold, and 0.875 (0.175 MTR + 0.7 abatement rate) above the threshold, and allow for up to +/-$10 rounding at the thresholds. For the full sample, we present Trapezoidal approximation based elasticity estimates, and Tobit censored elasticity estimates with no covariate controls for 100%, 50% and 10% of the data (truncated symmetrically around the threshold). In addition, we present '50% Tobit' estimates (unless noted) with controls for the full sample and population subsamples. Covariate controls include a quadratic in age, and indicators for gender (Female), ethnicity (Māori, Pacific, Asian), and location (Medium/small urban, Rural).

"N/A" means the elasticities could not be estimated.

(1) Based on 60% of the data.

Table 6: Estimated elasticities of bunching at abatement thresholds for Sole-parent recipients

	2019/20	2021/22
Full sample	0.108 (0.004) [123,141]	0.064 (0.002) [161,001]
European	0.171 (0.007)[(1)] [45,807]	0.048 (0.002) [59,778]
Māori	0.060 (0.006) [27,420]	N/A [34,863]
Pacific	0.098 (0.016) [11,658]	0.104 (0.010) [16,263]
Asian	N/A [6,171]	0.120 (0.012) [8,709]
Male	0.114 (0.016) [7,341]	0.126 (0.012) [10,572]
Female	0.122 (0.004) [115,803]	0.061 (0.002) [150,489
Age<25	0.054 (0.011) [7,347]	0.078 (0.013) [8,598]
Age 25-45	0.109 (0.004) [90,258]	0.065 (0.002) [119,706]
Age>45	0.116 (0.007) [25,536]	0.063 (0.004) [32,700]
Major/large urban	0.086 (0.004) [74,616]	0.069 (0.003) [99,144]
Medium/small urban	0.232 (0.011) [28,275]	0.050 (0.003) [38,322]
Rural	0.130 (0.011) [14,076]	0.065 (0.006) [19,590]

Notes: Entries are the estimated elasticity of bunching at the Part-time (PT) abatement threshold with respect to the EMTR, with estimated standard errors in parentheses, and sub-population sample sizes in square brackets below. We assume the EMTR is 0.175 (the MTR on earnings above $14,000 annually) to the left of, and 0.475 (0.175 MTR + 0.3 abatement rate) to the right of, the PT abatement threshold, and allow for up to +/-$10 rounding at the thresholds. All estimates based on Tobit models with covariate controls, and use symmetrically truncated 50% samples (unless stated) around the abatement threshold. Covariate controls include a quadratic in age, and indicators for gender (Female), ethnicity (Māori, Pacific, Asian), and location (Medium/small urban, Rural).
"N/A" means the elasticities could not be estimated.
(1) Based on 60% of the data.

Table 7: Estimated elasticities of bunching at abatement thresholds – 2020/21 and April-July 2022

	2020/21	April-July 2022
Single JSS-recipients	0.064 (0.001) [176,979]	0.020 (0.001) [42,744]
Sole-parents	0.061 (0.003) [144,624]	0.025 (0.003) [41,295]

Notes: see notes to Table 5 and Table 6. Entries are the estimated elasticity of bunching at the FT abatement threshold (Single JSS) or PT-threshold (Sole-parents) with respect to the EMTR, with estimated standard errors in parentheses, and sample sizes in square brackets below. All estimates based on Tobit models with covariate controls, and use symmetrically truncated 50% samples around the abatement threshold.

Table 8: Contributions to net income changes – full sample averages, P10 and P50

Year "0": 2019/20	Non-Sole-parents		Sole-parents		
Year "1": 2021/22	All JSS	JSS-Singles	JSS & SPS	JSS	SPS
No. Benefit0	1,012,470	918,831	627,669	126,585	501,084
No. Benefit1	1,466,757	1,335,921	776,010	161,397	614,616
Emp rate0	0.099	0.099	0.196	0.164	0.204
Emp rate1	0.121	0.120	0.207	0.179	0.215
Employed (conditional):					
Net income0	$375	$373	$505	$513	$504
Change in net income	$85	$85	$97	$92	$98
Increased wages	13.5%	13.0%	18.3%	20.3%	17.9%
Increased benefits	57.1%	58.9%	61.5%	64.7%	61.0%
Abatement thresholds	22.3%	23.2%	21.7%	21.7%	21.7%
Behavioural response	7.1%	4.8%	-1.5%	-6.7%	-0.6%
Not employed:					
Net income0	$210	$212	$340	$340	$340
Change in net income	$53	$54	$62	$62	$62
Total (unconditional):					
Net income0	$226	$228	$372	$368	$373
Change in net income	$60	$61	$71	$70	$72
Increased wages	1.9%	1.8%	4.9%	4.4%	5.0%
Increased benefits	86.9%	87.5%	86.6%	87.8%	86.2%
Abatement thresholds	3.1%	3.2%	5.8%	4.7%	6.1%
Behavioural response	8.0%	7.5%	2.8%	3.1%	2.7%
P10: Net income0	$261	$261	$421	$423	$420
Change in income	$78	$79	$81	$83	$80
Increased wages	1.7%	1.9%	4.5%	4.0%	4.9%
Increased benefits	61.7%	64.5%	76.9%	76.3%	77.4%
Abatement thresholds	22.1%	19.9%	2.5%	2.8%	2.4%
Behavioural response	14.5%	13.7%	16.1%	16.9%	15.4%
P25: Net income0	$287	$288	$468	$473	$467
Change in income	$95	$97	$99	$96	$99
Increased wages	1.2%	1.0%	6.2%	12.1%	6.1%
Increased benefits	50.0%	53.2%	62.9%	57.7%	63.0%
Abatement thresholds	40.9%	36.2%	19.0%	21.0%	19.0%
Behavioural response	7.9%	9.5%	11.9%	9.2%	11.9%

Notes: The estimates in this table are based on the following assumptions: (1) statutory benefit rates based on age (for JSS-singles), and partner status (half-couple rate if partnered); (2) increased wages apply MSD's cumulative average net earnings rate increase used to adjust benefit rates each April; (3) increased benefits applies the 2021/22 rates to the 2019/20 data (on the same seasonal basis because of the July 2021 benefit increases); (4) abatement thresholds apply the 2021 thresholds to 2019/20 data. The "behavioural response" is measured as the residual between the 2021/22 actual net income and the combined counterfactual net income: so it includes other factors not controlled for (i.e. employment changes, and any secular earnings changes that differ from the statutory increases).

Table 9: Contributions to net income changes -- subgroups

"0": 2019/20	Non-Sole-parents		Sole-parents		
"1": 2021/22	All JSS	JSS-Singles	JSS & SPS	JSS	SPS
European:					
Net income0	$226	$227	$375	$372	$376
Change in net income	$61	$62	$72	$70	$73
Increased wages	1.8%	1.7%	5.2%	4.9%	5.3%
Increased benefits	86.8%	87.1%	85.6%	87.8%	85.2%
Abatement thresholds	3.7%	3.8%	7.0%	6.0%	7.2%
Behavioural response	7.7%	7.4%	2.1%	1.3%	2.4%
Māori:					
Net income0	$225	$226	$366	$363	$367
Change in net income	$59	$60	$70	$67	$70
Increased wages	2.0%	1.9%	4.1%	3.7%	4.2%
Increased benefits	88.6%	89.2%	88.6%	90.7%	88.1%
Abatement thresholds	2.2%	2.3%	4.5%	3.4%	4.8%
Behavioural response	7.1%	6.6%	2.7%	2.2%	2.9%
Pacific:					
Net income0	$228	$229	$371	$366	$372
Change in net income	$59	$60	$70	$69	$70
Increased wages	2.6%	2.4%	5.0%	4.3%	5.2%
Increased benefits	87.0%	88.2%	88.2%	88.7%	88.0%
Abatement thresholds	1.3%	1.5%	4.4%	3.3%	4.6%
Behavioural response	9.1%	8.0%	2.4%	3.7%	2.2%
Asian:					
Net income0	$223	$228	$385	$375	$388
Change in net income	$61	$63	$74	$71	$75
Increased wages	1.6%	1.4%	6.4%	5.2%	6.7%
Increased benefits	83.9%	84.7%	83.8%	86.6%	82.6%
Abatement thresholds	3.6%	3.7%	8.6%	6.9%	9.0%
Behavioural response	10.9%	10.2%	1.3%	1.3%	1.6%
Females:					
Net income0	$228	$229	$373	$371	$374
Change in net income	$63	$64	$72	$71	$72
Increased wages	1.9%	1.8%	5.1%	4.8%	5.1%
Increased benefits	82.6%	82.8%	86.1%	86.1%	86.0%
Abatement thresholds	5.3%	5.3%	6.3%	5.6%	6.5%
Behavioural response	10.2%	10.1%	2.5%	3.5%	2.3%
Males:					
Net income0	$225	$227	$362	$359	$364
Change in net income	$58	$59	$68	$66	$70
Increased wages	1.9%	1.7%	3.3%	2.9%	3.6%
Increased benefits	90.3%	91.5%	90.2%	93.2%	87.9%
Abatement thresholds	1.5%	1.4%	1.3%	1.1%	1.5%
Behavioural response	6.3%	5.3%	5.2%	2.8%	7.0%

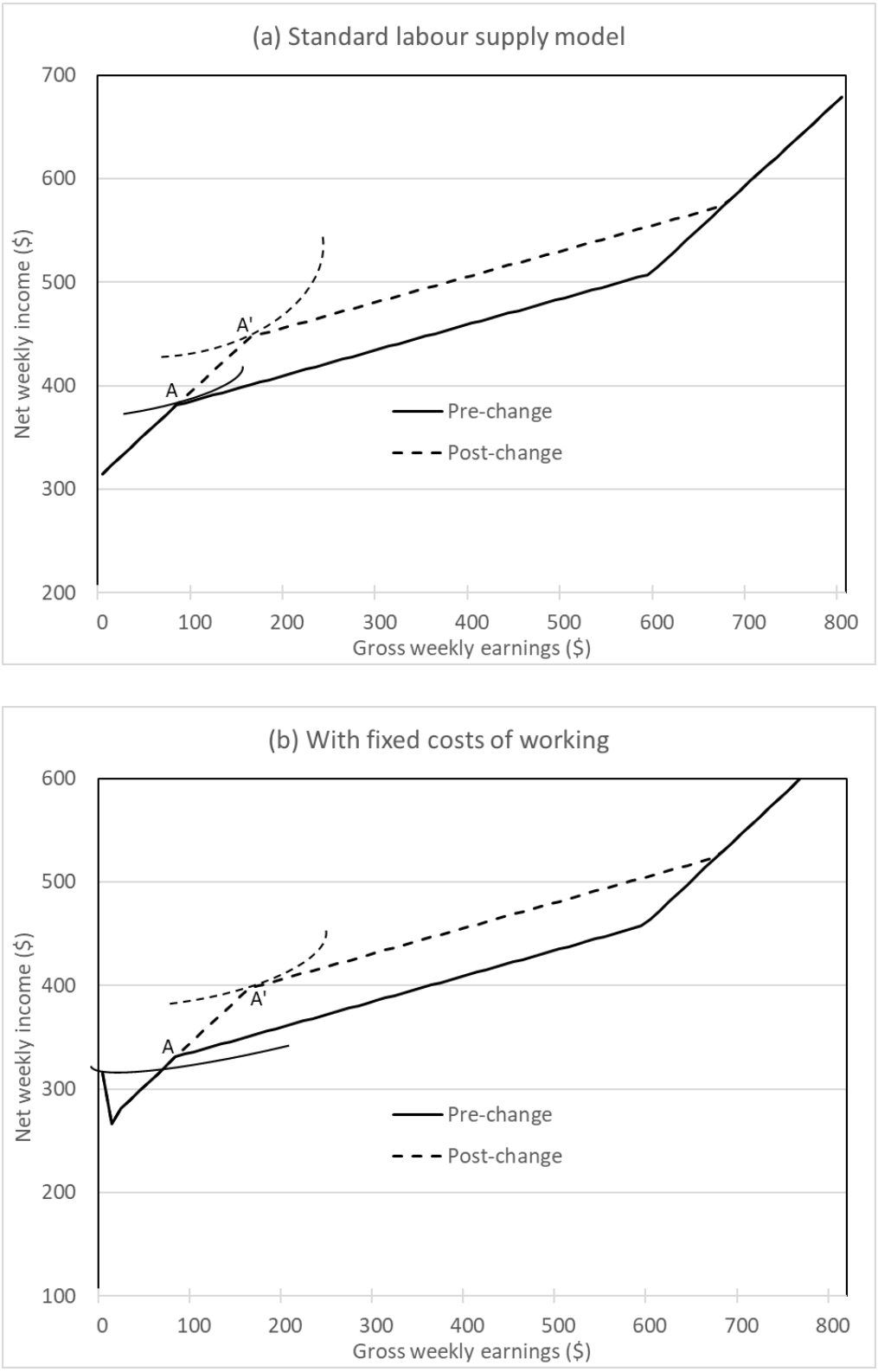
(Table continues)

Table 9 continued

"0": 2019/20	Non-Sole-parents		Sole-parents		
"1": 2021/22	All JSS	JSS-Singles	JSS & SPS	JSS	SPS
Age<25:					
Net income0	$198	$198	$357	$347	$358
Change in net income	$62	$63	$67	$65	$67
Increased wages	1.7%	1.7%	2.8%	1.1%	2.9%
Increased benefits	82.0%	82.2%	92.9%	93.0%	92.6%
Abatement thresholds	2.8%	2.9%	3.6%	1.6%	3.8%
Behavioural response	13.5%	13.3%	0.7%	4.3%	0.7%
Age 25-45:					
Net income0	$234	$236	$373	$366	$374
Change in net income	$61	$61	$72	$69	$72
Increased wages	2.2%	2.1%	5.0%	4.1%	5.2%
Increased benefits	86.9%	88.0%	85.9%	88.5%	85.4%
Abatement thresholds	2.3%	2.3%	5.8%	3.8%	6.2%
Behavioural response	8.6%	7.6%	3.3%	3.6%	3.3%
Age>45:					
Net income0	$231	$234	$377	$373	$380
Change in net income	$59	$61	$71	$71	$71
Increased wages	1.7%	1.6%	5.6%	5.1%	6.1%
Increased benefits	88.7%	89.2%	87.2%	86.7%	87.4%
Abatement thresholds	4.2%	4.2%	6.8%	6.2%	7.4%
Behavioural response	5.4%	5.0%	0.3%	2.1%	-0.9%
Major/large urban:					
Net income0	$226	$228	$371	$366	$372
Change in net income	$60	$61	$71	$70	$71
Increased wages	1.8%	1.7%	4.8%	4.1%	5.0%
Increased benefits	86.3%	87.0%	86.9%	87.1%	86.8%
Abatement thresholds	3.0%	3.1%	5.6%	4.4%	5.9%
Behavioural response	8.8%	8.2%	2.6%	4.4%	2.3%
Medium/small urban:					
Net income0	$228	$229	$374	$370	$374
Change in net income	$61	$61	$75	$73	$75
Increased wages	2.0%	1.9%	4.8%	4.5%	4.9%
Increased benefits	86.5%	87.5%	82.4%	83.8%	82.1%
Abatement thresholds	3.9%	4.1%	6.4%	5.4%	6.6%
Behavioural response	7.5%	6.6%	6.4%	6.4%	6.4%
Rural:					
Net income0	$227	$228	$373	$374	$372
Change in net income	$59	$61	$72	$66	$73
Increased wages	1.8%	1.7%	4.8%	5.4%	4.6%
Increased benefits	88.3%	88.6%	86.1%	93.6%	84.5%
Abatement thresholds	3.2%	3.2%	5.8%	5.7%	5.8%
Behavioural response	6.8%	6.6%	3.3%	-4.7%	5.1%

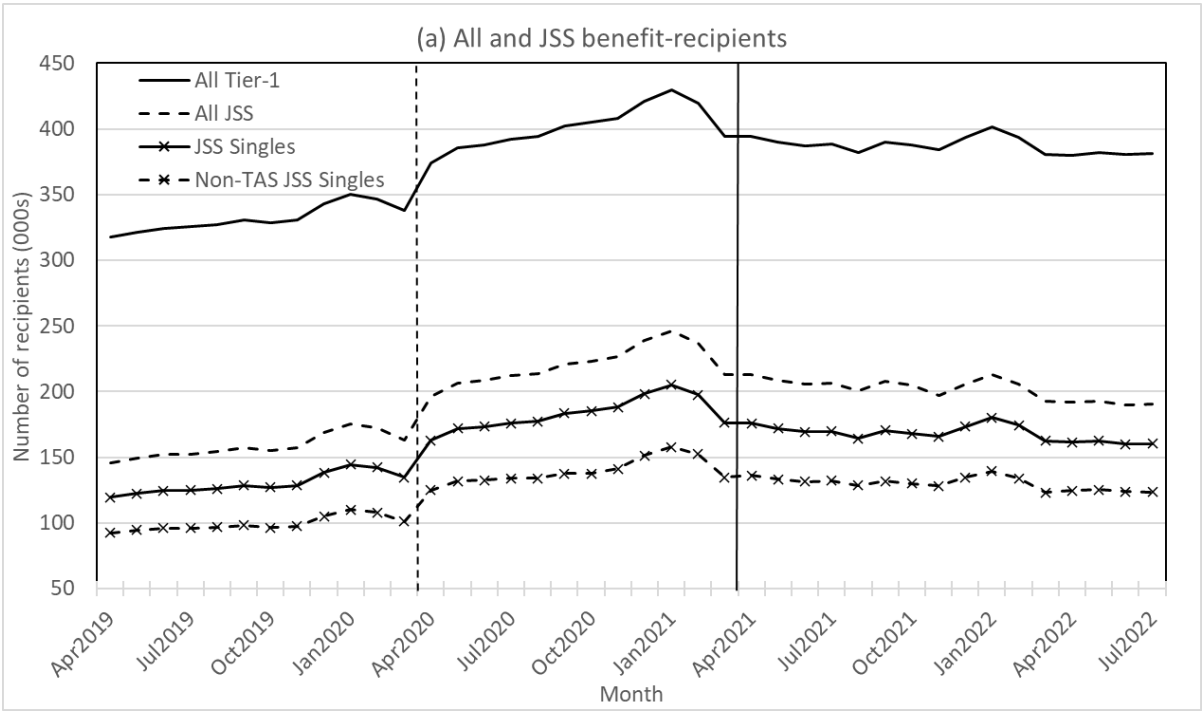
Notes: see notes to Table 8.

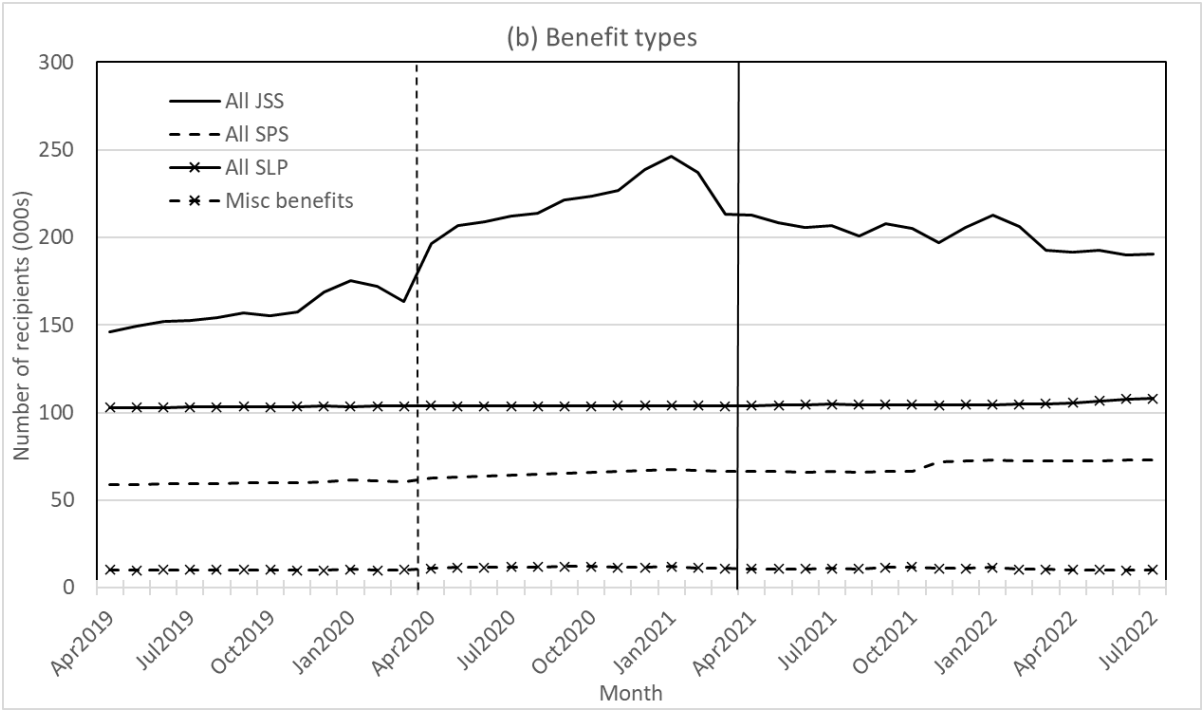
Figure 1: Theoretical effects of an increase in the abatement threshold



Notes: this figure is based (loosely) on the case for a single adult Jobseeker Support recipient, assuming 2022 benefit rates ($315 net of tax). The pre-change case (solid line) is drawn with an abatement-free earnings threshold is $80, the post-change case (dashed line) has a $160 abatement-free threshold; and the benefit abatement rate beyond these thresholds is 70% in both cases.

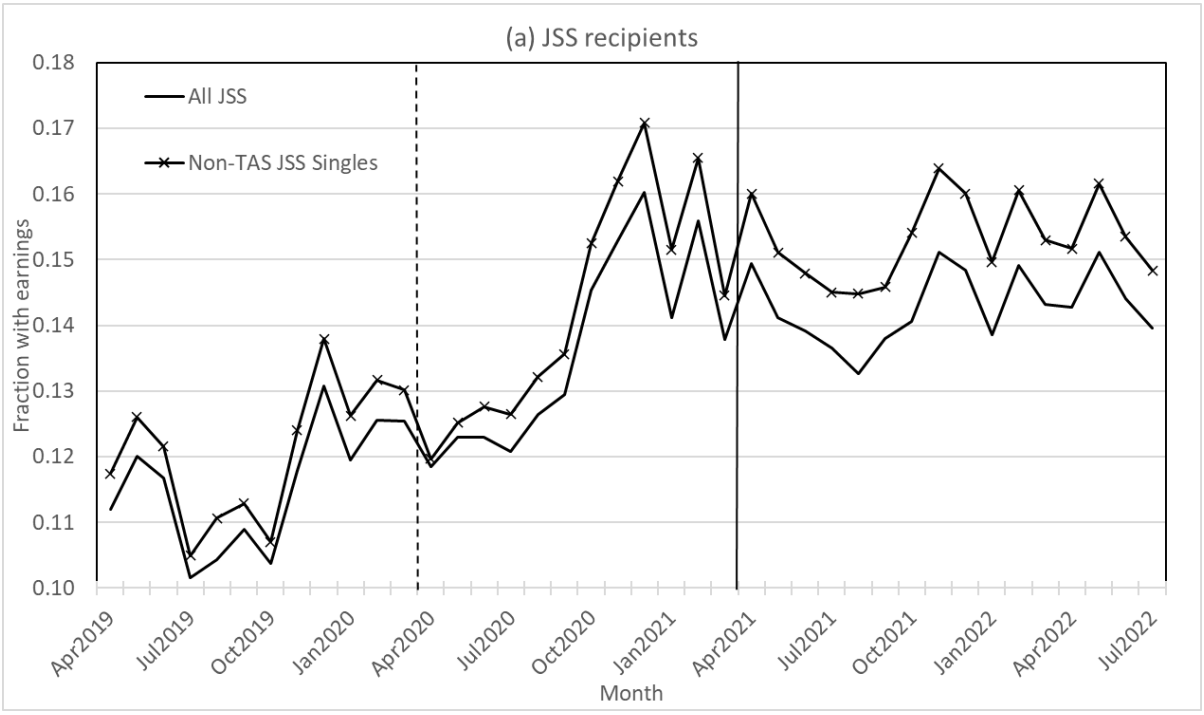
Figure 2: Trends in Tier-1 benefit recipients, 2019 – 2022

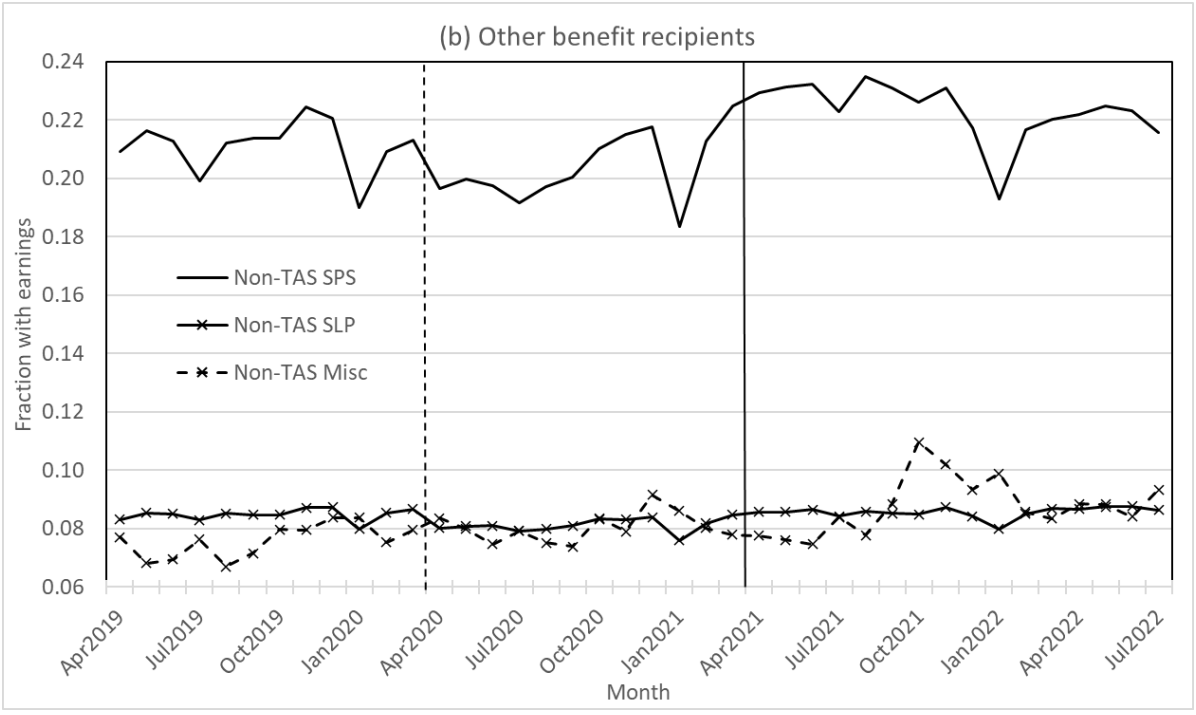




Notes: The vertical lines at April 2020 and April 2021 identify the dates of the abatement threshold increases.

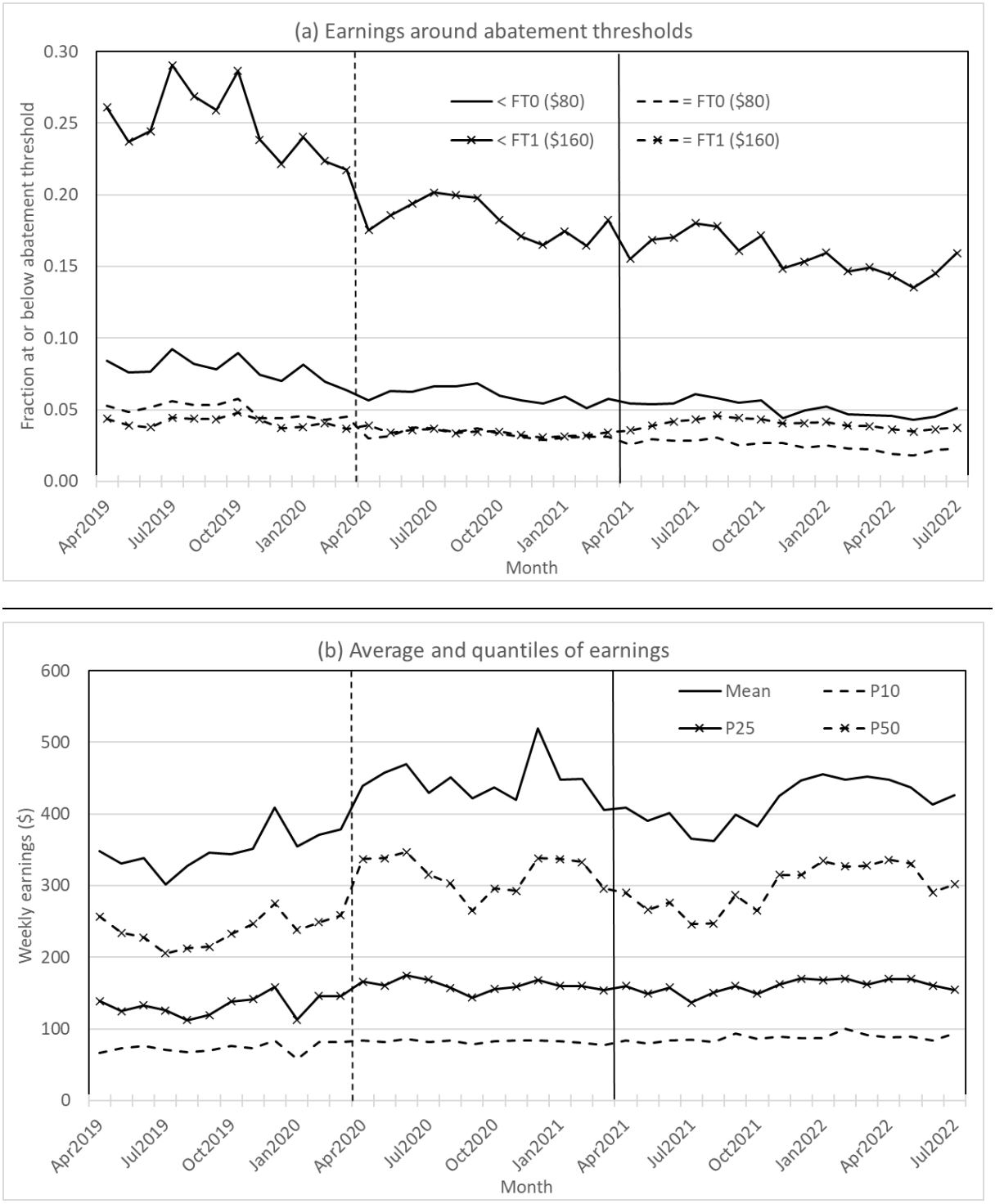
Figure 3: Trends in benefit recipients' employment rates





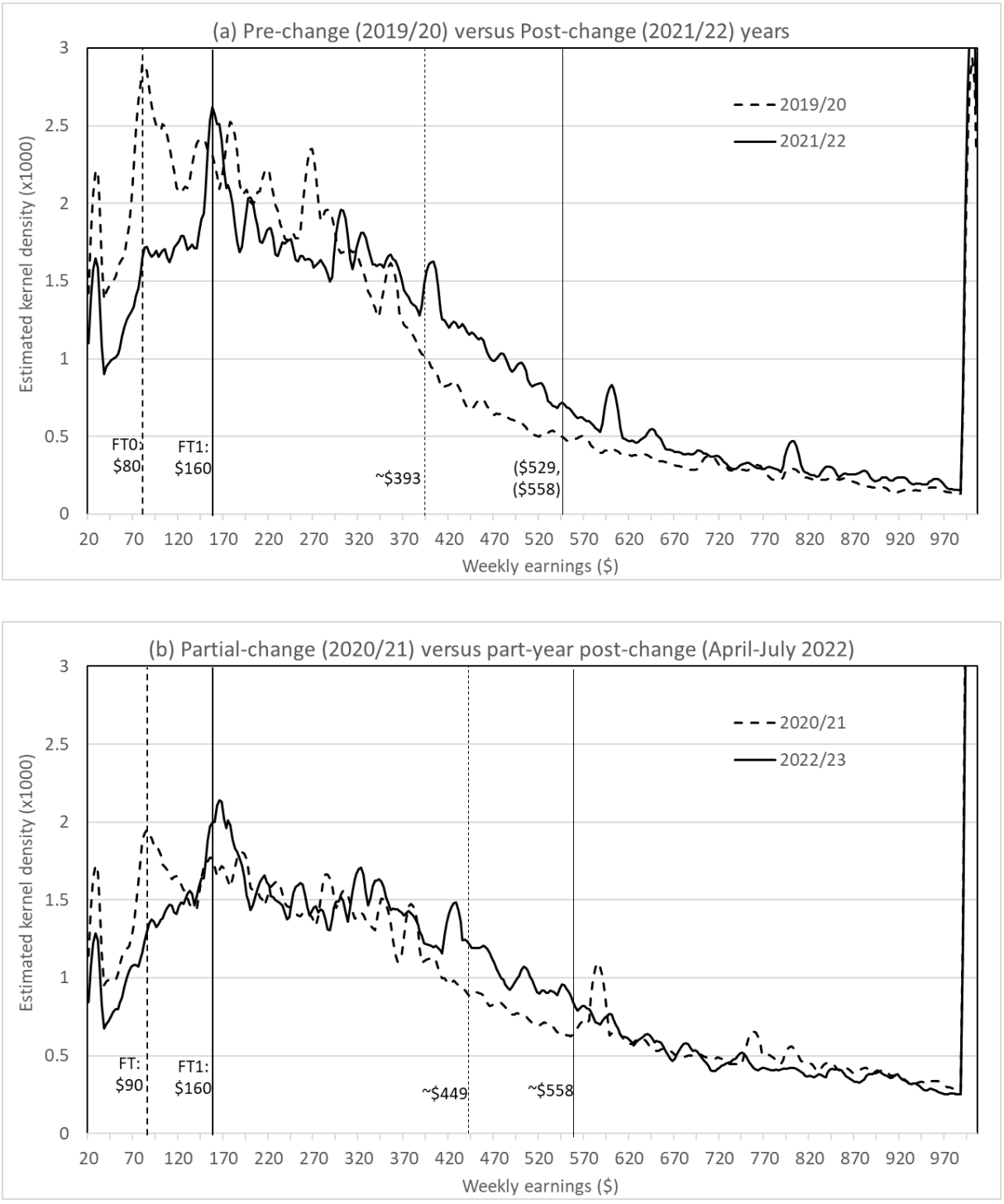
Notes: The vertical lines at April 2020 and April 2021 identify the dates of the abatement threshold increases.

Figure 4: Trends in Non-TAS Single-JSS recipients' weekly earnings



Notes: The vertical lines at April 2020 and April 2021 identify the dates of the abatement threshold increases to $90 and $160 respectively. In calculating the fractions less than (<) and at (=) the abatement thresholds, we allow a +/-$10 range about each threshold – e.g. "<FT0" measures the fraction of workers with weekly earnings <$70, and "=FT0" measures the fraction with weekly earnings between $70 and $90.

Figure 5: Distributions of Non-TAS Single-JSS recipients' weekly earnings

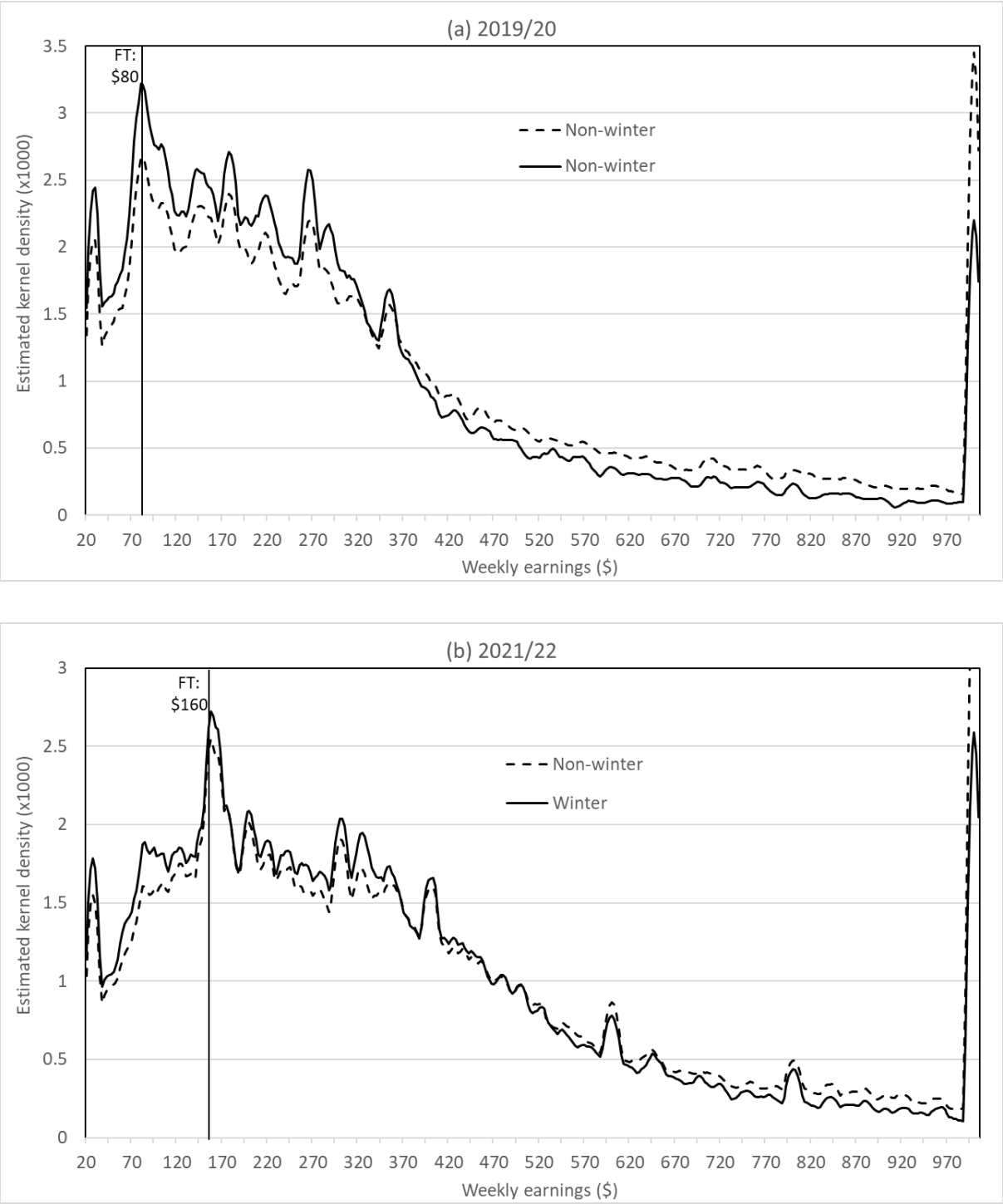


Notes: In panel (a), the left most vertical dashed line identifies the initial $80 abatement threshold that applied until March 2020, and the left most vertical solid line identifies the $160 abatement threshold that applied since April 2021; in panel (b) the dashed line is at the $90 threshold that applied from April 2020 until March 2021. The dashed and solid vertical lines to the right indicate (approximately) the level of earnings at which JSS benefits are fully abated.

Figure 6: Distribution of Non-TAS Sole-parent JSS and SPS recipients' weekly earnings

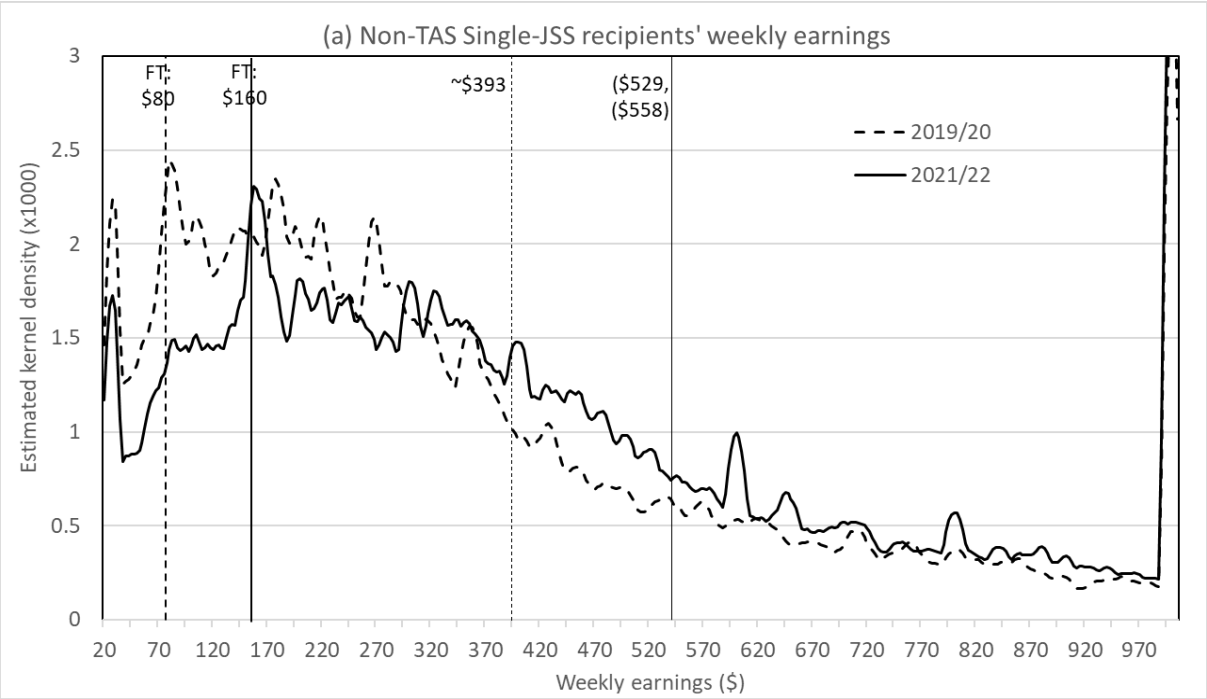
Notes: In panel (a), the left most vertical dashed line identifies the initial $80 abatement threshold that applied until March 2020, and the left most vertical solid line identifies the $160 abatement threshold that applied since April 2021; in panel (b) the dashed line is at the $90 threshold that applied from April 2020 until March 2021.

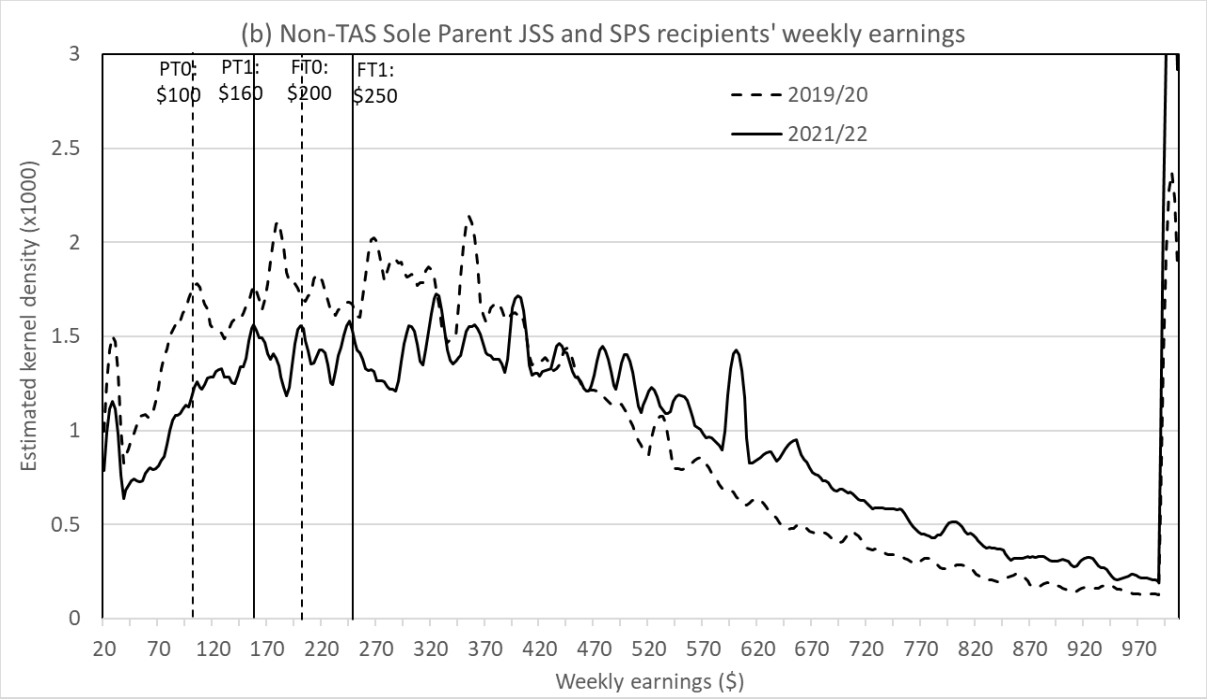
Figure 7: Distribution of Single-JSS recipients' weekly earnings in WEP and non-WEP months



Notes: The WEP (Winter Energy Payment) months are May – September (inclusive) in each year. Each distribution is based on continuing benefit recipients who do not receive TAS payments.

Figure 8: Distribution of Māori JSS-Single and Sole-parent recipients' weekly earnings





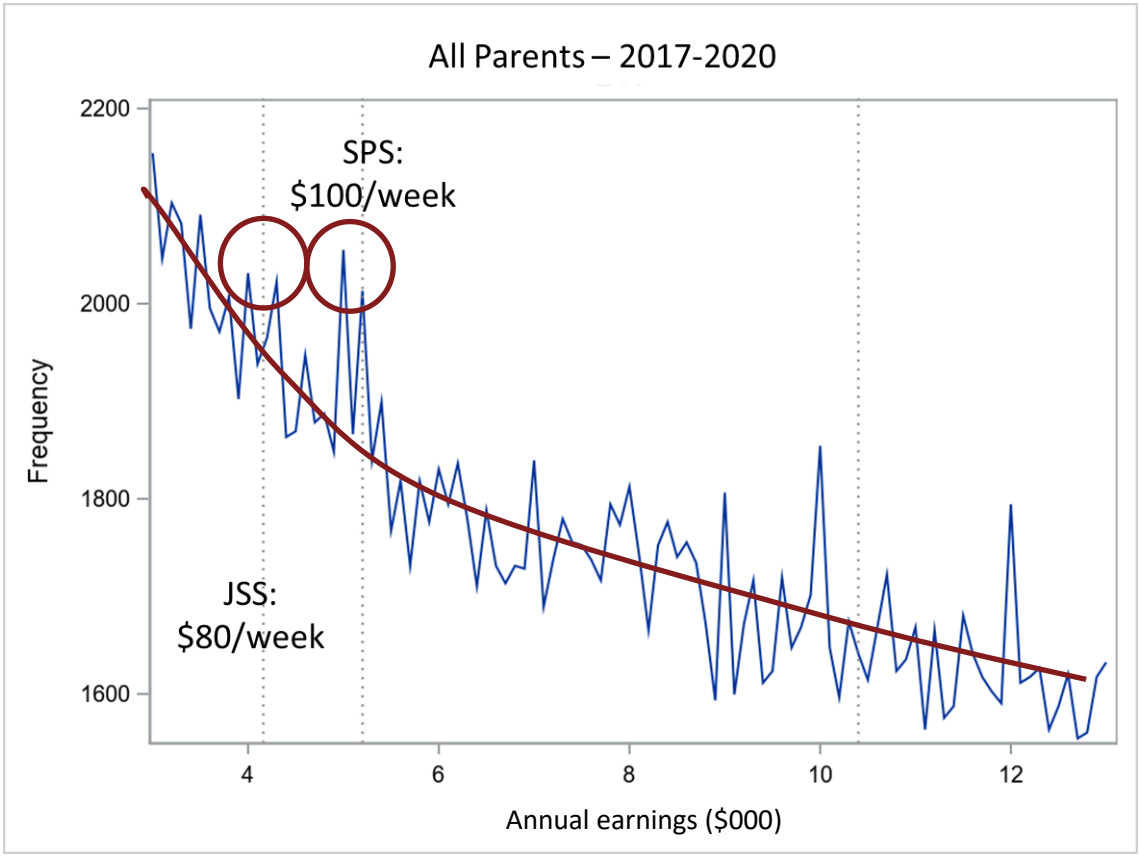
Notes: see notes to Figure 5 and Figure 6. Māori is based based on total ethnicity responses.

Table A1: Sample characteristics of other main benefit recipients

	All SPS		All SLP		Misc benefits	
	Pre-2021	Post-2021	Pre-2021	Post-2021	Pre-2021	Post-2021
No. recipients	94,977	94,293	127,155	124,926	27,081	22,638
No. Observations	1,502,910	1,115,607	2,484,375	1,681,569	261,189	172,632
Partnered	0.000	0.000	0.064	0.061	0.153	0.153
Female	0.911	0.912	0.504	0.508	0.650	0.652
Age	34.5	34.7	48.8	48.8	47.4	48.7
Any children	0.997	0.997	0.104	0.105	0.259	0.239
No. of children	2.00	2.01	1.74	1.74	1.40	1.40
Age of youngest child	6.1	6.1	11.1	11.3	4.2	4.3
European	0.318	0.311	0.536	0.533	0.165	0.161
Māori	0.254	0.252	0.156	0.154	0.144	0.131
Euro & Māori	0.187	0.190	0.111	0.115	0.090	0.090
Pacific	0.101	0.103	0.063	0.062	0.088	0.082
Asian	0.036	0.036	0.047	0.046	0.392	0.409
Misc single ethnic	0.015	0.015	0.018	0.019	0.045	0.046
Misc two ethnic	0.061	0.063	0.051	0.052	0.057	0.060
Misc multi-ethnic	0.028	0.030	0.018	0.019	0.020	0.021
Major/large urban	0.669	0.669	0.671	0.666	0.811	0.810
Med/small urban	0.215	0.211	0.212	0.212	0.121	0.119
Rural	0.116	0.120	0.118	0.122	0.068	0.072
Receiving TAS	0.209	0.222	0.166	0.167	0.128	0.114
Continuing benefit	0.918	0.898	0.942	0.920	0.850	0.831
Tier-1 benefits	$458	$544	$338	$400	$276	$333
	$153	$187	$110	$132	$127	$147
Tier-2 TAS benefits	$74	$93	$63	$74	$51	$59
	$37	$47	$29	$34	$24	$25
IR Tier-1 benefit	0.968	0.964	0.936	0.931	0.917	0.919
IR benefit payments	$395	$462	$323	$382	$259	$310
	$126	$130	$129	$167	$135	$169
IR employed	0.185	0.200	0.075	0.078	0.078	0.088
IR earnings	$414	$471	$339	$389	$420	$428
	$235	$371	$168	$178	$165	$172
<FT0 threshold	0.241	0.201	0.432	0.373	0.080	0.067
@FT0 threshold	0.034	0.029	0.039	0.041	0.053	0.039
<FT1 threshold	0.322	0.271	0.526	0.462	0.249	0.227
@FT1 threshold	0.031	0.030	0.031	0.034	0.043	0.052
<PT0 threshold	0.084	0.063	0.188	0.145	0	0
@PT0 threshold	0.034	0.026	0.064	0.051	0	0
<PT1 threshold	0.175	0.141	0.343	0.280	0	0
@PT1 threshold	0.032	0.033	0.044	0.054	0	0

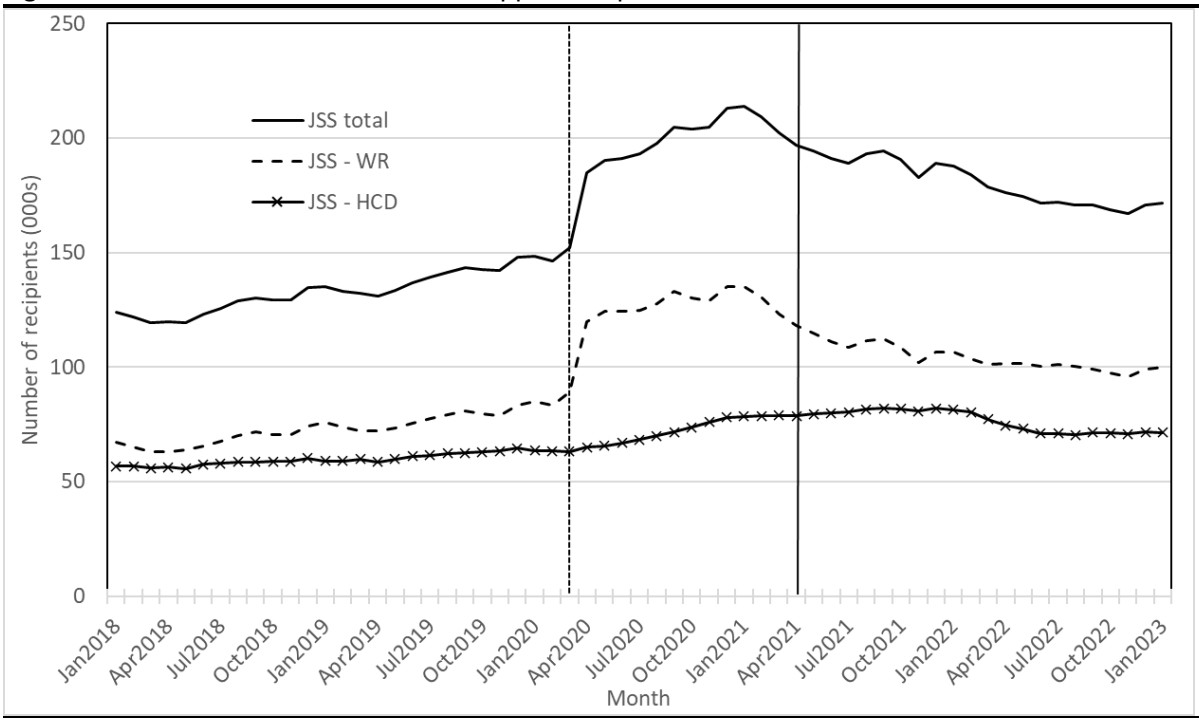
Notes: see notes to Table 2.

Figure A1: Bunching at benefit abatement threshold



Notes: The left most dotted line corresponds to the JSS $80 abatement threshold; the middle dotted line identifies the SPS/SLP $100 (30%) abatement threshold; and the right most dooted line the SPS/SLP $200 (70%) abatement threshold.

Figure A2: Official counts of Jobseeker Support recipients

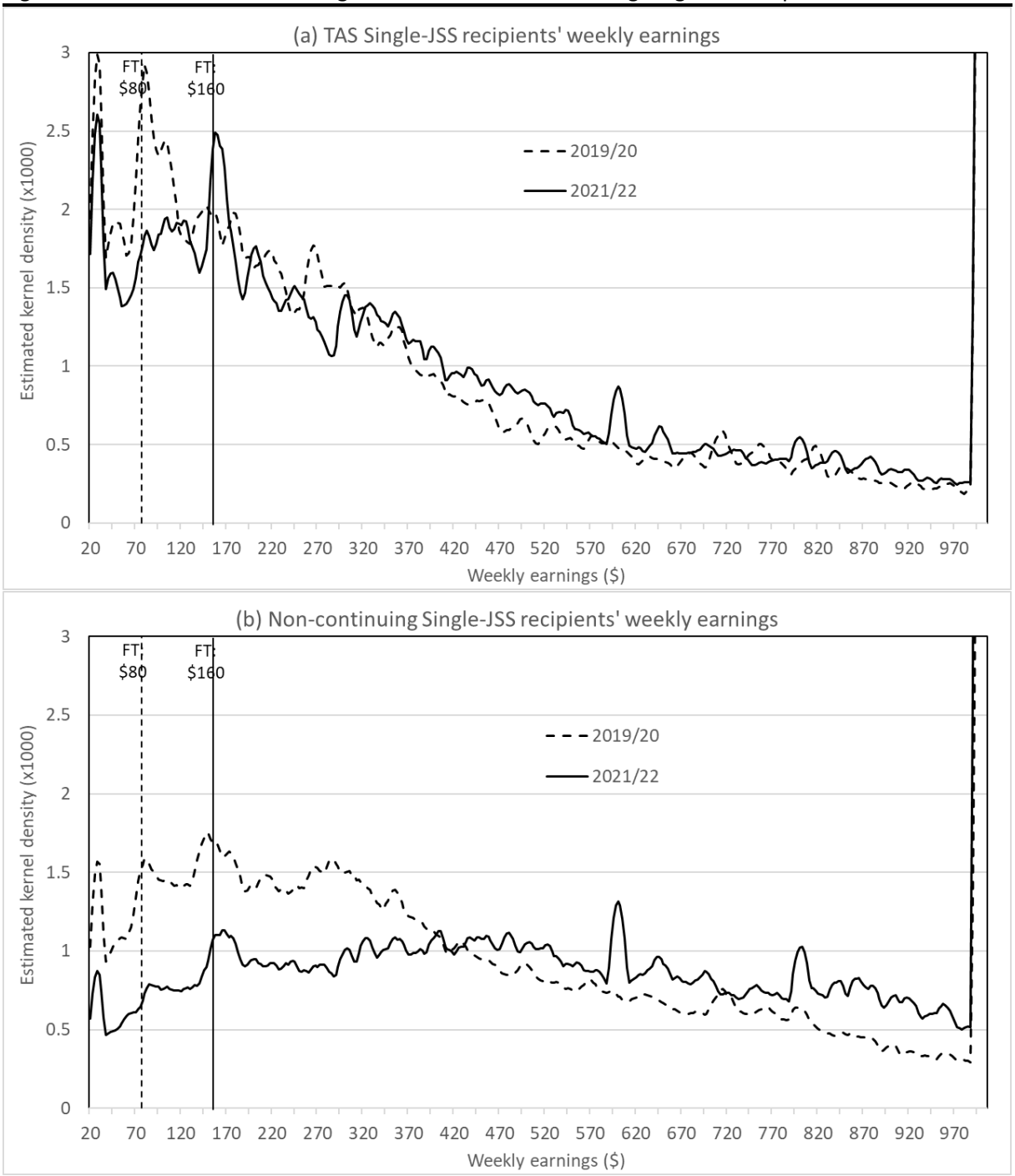


Notes: Based on monthly data summaries provided by MSD.

Figure A3: Declared earnings of Jobseeker Support recipients

Notes: Based on monthly data summaries provided by MSD. The summaries are for JSS recipients without children, based on snapshots of declared earnings of benefit recipients as-at each month's extract date. The average declared earnings are estimated from categorical data, by assigning the midpoint value to each category and $400 to the top (over $300) category.

Figure A4: Distributions of earnings for TAS and Non-continuing Single JSS recipients



Notes: see notes to Figure 5. In panel (a) the sample consists of all continuing Single-JSS recipients who receive TAS payments; in panel (b) the sample consists of all non-continuing Single-JSS recipients (i.e. irrespective of whether they receive TAS payments).