MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Impact of Temporary Migration on Employment and Earnings of New Zealanders

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MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
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Access to the anonymised data used in this study was provided by Statistics New Zealand in accordance with security and confidentiality provisions of the Statistics Act 1975. Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person, household, business or organisation, and the results in this report have been confidentialised to protect these groups from identification. Careful consideration has been given to the privacy, security and confidentiality issues associated with using administrative and survey data in the IDI. Further detail can be found in the privacy impact assessment for the IDI available from the Statistics New Zealand website (www.stats.govt.nz).

The results in this study are based, in part, on tax data supplied by Inland Revenue to Statistics New Zealand under the Tax Administration Act 1994. This tax data must be used for only statistical purposes, and no individual information may be published or disclosed in any other form or provided to Inland Revenue for administrative or regulatory purposes. Any person who had access to the unit record data used in this study has certified that they have been shown, have read and have understood section 81 of the Tax Administration Act 1994, which relates to secrecy. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes and is not related to the data's ability to support Inland Revenue's core operational requirements.

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Executive summary

Introduction – this report updates a 2013 study

This report updates K McLeod and D Maré's 2013 report *The Rise of Temporary Migration in New Zealand and its Impacts on the Labour Market*.[1]

McLeod and Maré sought to determine whether temporary migrants had an impact on employment outcomes for New Zealanders. As the authors noted, migrants are attracted to regions and industries that are experiencing employment growth, and this leads to a positive association between temporary migrant employment and the employment outcomes of New Zealanders.

McLeod and Maré used econometric modelling to estimate the causal impact of temporary migration on the employment outcomes of New Zealanders. The techniques took into account common factors that influence employment patterns for temporary migrants and New Zealanders and addressed the selection bias associated with migrants choosing to work in regions with positive employment prospects.

The authors were "unable to find any evidence [of] adverse consequences for the employment of New Zealanders overall".[2] However, since the 2013 report, temporary migrant employment has increased rapidly and reached higher levels than previously seen.

Description of the study population and outcomes of interest

The study population is all working-age people in New Zealand who ever received wage and salary employment earnings from January 2000 to December 2015. The study divides this timeframe into the three periods 2001–2005, 2006–2010 and 2011–2015.

The study examines three outcomes of interest: months worked,[3] earnings per month[4] and new hires.[5] The study looks at the impact on New Zealanders overall and on three subpopulations of New Zealanders: beneficiaries, New Zealanders aged 16 to 24 (referred to as 'youth') and New Zealanders aged 25 and older (referred to as 'New Zealanders 25 years+').

[1] K McLeod and D Maré. (2013). *The Rise of Temporary Migration in New Zealand and its Impact on the Labour Market.* Wellington: Ministry of Business, Employment and Innovation. www.mbie.govt.nz/publications-research/research/migrants---economic-impacts

[2] McLeod and Maré, 2013, p vii.

[3] 'Months worked' are the total number of calendar months per year for which a worker received wage and salary earnings.

[4] 'Earnings per month' are the real (inflation adjusted) wage and salary income per month worked by New Zealanders or one of the subpopulations.

[5] 'New hires' are workers in the population of interest (New Zealanders or a subpopulation) who received wages and salary income from an employer when they had not received wage and salary income in the prior three months.

Two models were used – direct effects and combined effects

Various models have been fitted to the data. The results, summarised below, include overall results (total effects models that give the overall results using all the data) and results for sub-groups of the data.

Two sorts of models were fitted to the data: direct effects models and combined effects models. Direct effect models consider the impact that migrant employment might have on the outcomes of New Zealanders in the same industry and region. Combined effects models consider direct and indirect effects. Indirect effects are the effects that changes in migrant employment in an industry in a region might have on the employment of New Zealanders in another industry in the same region.

The specifications of the models used in this study are different to those McLeod and Maré used (as discussed further in section 3.5.7). However, we used a broadly similar approach to isolate the causal impact of temporary migration.

- We included fixed effects to control for changes that are constant across industry and/or region in a year and industry–region differences that are constant over time.
- We controlled for changes in regional and/or industry demand for employment.
- We used instruments[6] for temporary migrant employment and lagged employment terms.

Results

The results are divided into two: the overall results (from the total effects models that give overall results using all the data) and more detailed results (for subgroups of the data).

Overall results – no effects on employment and new hires, and some positive effect on earnings

The total effects model shows temporary migration has some effect on earnings, but none on employment or new hires:[7]

- no significant indications of migrants crowding out New Zealanders for jobs, and, in particular, no overall effects on employment in the same industry (direct effects) or in other industries (combined effects)
- temporary migration had some positive effects on the earnings of New Zealanders 25 years+, but not of youth
- no effects, either direct or combined, on new hires.

[6] An econometric approach that is used to reduce bias in a model

[7] Effects that are not significant are not commented on and are considered to be 'no effect'.

Detailed results

The results for different periods and different subgroups show effects of temporary migration that are not evident in the overall results.

The results for non–main urban areas are consistent with some of the industry-specific results, such as the negative effect of temporary migration on new hires of beneficiaries in horticultural regions.

Different periods – varying effects on new hires

In the earliest period (2001–2005), we saw a negative effect on new hires of beneficiaries. However, we observed no effects on beneficiaries in later periods. This early period was associated with a decline in the number of beneficiaries overall and an increase in temporary migration. We controlled for these factors in our modelling.

In the later periods (2006–2010 and 2011–2015), we observed positive effects for new hires of youth. The later periods were also associated with higher levels of temporary migrant employment, and it may be that positive effects are seen only past a certain threshold level of migrant employment. However, this does not explain the earlier negative impact when temporary migrant employment was at a lower level.

Main urban areas – positive effects on youth and beneficiary new hires

In main urban areas (for all periods), we see positive effects on new hires of youth and beneficiaries.

Non–main urban areas – negative effect on beneficiary hires, positive effect on earnings of New Zealanders 25 years+ and all New Zealanders

In the non–main urban areas, we see a negative effect on new hires of beneficiaries and a positive effect on the earnings of New Zealanders 25 years+ and of New Zealanders as a whole.

Other detailed results

We also observed the following effects in various regions, industries, and visa-type groups.

- Horticultural regions – negative effects on new hires of beneficiaries.
- Food services industry – positive effects on new hires of all groups except beneficiaries, where we saw no effect.
- International students – positive effects on new hires of youth and beneficiaries.
- Study to Work visa – negative effects on new hires of youth.
- Essential Skills visa – negative effects on new hires of New Zealanders as a whole.
- Family visa – negative effects on new hires of New Zealanders and beneficiaries.
- Auckland – positive effects on earnings of New Zealanders 25 years+.

We have found it difficult to definitively explain the more detailed results. Our efforts to deepen our understanding by running additional regressions, for example, over different periods involving a policy change, were hampered by technical model fitting issues in some situations.

Focus for further work

Since 2015, there has been a further increase in migration, which raises the question whether the analysis should be updated again soon. We recommend the focus of further work be on monitoring the industries and regions with the highest migrant share of employment. We also suggest detailed analysis be undertaken in those areas to understand the dynamics between migrant employment and the employment of New Zealanders.

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1 Introduction

In 2013, the Ministry of Business, Innovation and Employment published a report by K McLeod and D Maré on the impacts of temporary migration and its impact on the New Zealand labour market.[8]

McLeod and Maré sought to determine whether temporary migration had an impact on employment outcomes for New Zealanders. The authors noted that "[t]emporary migrant employment grew over most of the decade to 2011", but that it adjusted to the economic changes from 2008 (that is, the time of the global financial crisis). The employment of migrants through some temporary migrant policy categories "changed rapidly in response to declining labour demand", while in other employment categories migrant employment "only flattened off".[9] Despite this environment, the authors were "unable to find any evidence [that there were] adverse consequences for the employment of New Zealanders overall".[10] The authors did, however, note that the research had largely been undertaken over a period of economic growth and negative impacts should not be discounted in the future.

We are now in a position to consider the period of migrant employment from 2000 to 2015. This encompasses a period of rising temporary migrant employment coupled with strong economic growth, a period that includes the global financial crisis and the subsequent downturn, and the period from 2011 where temporary migration and temporary migrant employment has increased rapidly again and reached higher levels than previously seen.

After this latter period, with high and increasing levels of temporary migrant employment, it is probably wise to revisit the question of whether temporary migration has an effect on the employment of New Zealanders.

This report updates McLeod and Maré's work to provide an updated assessment of any impact of temporary migration on the New Zealand labour market. It also provides additional detail on any effect that migration may have had in different industries and regions.

[8] K McLeod and D Maré. (2013). *The Rise of Temporary Migration in New Zealand and its Impact on the Labour Market.* Wellington: Ministry of Business, Employment and Innovation. www.mbie.govt.nz/publications-research/research/migrants---economic-impacts

[9] McLeod and Maré, 2013, p vii.

[10] McLeod and Maré, 2013, p vii.

2 Background

In this section, we summarise the background and context that McLeod and Maré presented in their 2013 report.[11, 12]

The decade from 2000 saw considerable growth in the use of temporary migrants to fill labour market gaps in New Zealand. Over much of this time, there was strong economic growth and skill shortages. In 2001, the temporary work policy was reviewed.[13] An outcome from that review was that Cabinet agreed to "an overarching work policy objective, which was that work policy should complement residence policy by contributing to developing New Zealand's capacity base".[14]

Temporary migration began to be seen as:

> an important pathway for prospective permanent migrants. From 2002, new work-to-residence policies were introduced, and the introduction of other policies such as the Skilled Migrant Category provided greater recognition of New Zealand work experience and qualifications (Merwood, 2006).[15]

The number of temporary permits rose steadily over the period to 2010. The global financial crisis resulted in a decrease in labour demand and the number of temporary migrants decreased as a result. This effect, however, was not consistent across all categories. Temporary migrant approvals decreased "under labour market tested policies such as Essential Skills",[16] but the number of working holidaymakers continued to increase.

In more recent years, since McLeod and Maré's study, temporary migration has risen steadily. For example, the number of international students approved to study in New Zealand rose from 64,000 in 2012/13 to 91,000 in 2015/16. Also, approvals under work visa policies rose from 145,000 in 2012/13 to 193,000 in 2015/16.[17]

[11] K McLeod and D Maré. (2013). *The Rise of Temporary Migration in New Zealand and its Impact on the Labour Market.* Wellington: Ministry of Business, Employment and Innovation. www.mbie.govt.nz/publications-research/research/migrants---economic-impacts

[12] We did not review the literature for this report, so it does not include literature subsequent to that discussed by McLeod and Maré in their 2013 report.

[13] Department of Labour. (2001). *Review of Immigration Work Policy.* Wellington: Department of Labour.

[14] McLeod and Maré, 2013, p 1, quoting P Merwood. (2006). *Migration Trends 2005/6.* Wellington: Department of Labour, p 4.

[15] McLeod and Maré, 2013, p 1.

[16] McLeod and Maré, 2013, p 1.

[17] MBIE. 2013. *Migration Trends and Outlook 2012/13.* Wellington: Ministry of Business, Innovation and Employment; MBIE. 2016. *Migration Trends 2015/16.* Wellington: Ministry of Business, Innovation and Employment. Both available from www.mbie.govt.nz/info-services/immigration/migration-research-and-evaluation/trends-and-outlook

2.1 Research question

As noted above, this paper revises the work undertaken by McLeod and Maré. Therefore, the research question outlined in the 2013 report has not changed:

> What impact does temporary migration have on the labour market outcomes of New Zealanders?
>
> A subsequent question is whether [any impacts differ] for subgroups of the New Zealand population who we identify as being at greater risk in the labour market. Beneficiaries (people who were in receipt of an income-tested benefit before gaining work …) and youth were identified as groups of specific interest[18]

Similarly to the authors of the previous report, we are also interested in whether there is any evidence of temporary migration impacts on New Zealand employment for different periods and for different temporary migration policies. This report also focuses on some specific industries and regions.

2.2 Correlation compared with causation

The focus in this study is on estimating the causal impact of temporary migration. To do this, we need to determine what would have happened to the labour market outcomes of New Zealanders if there was no temporary migration. The key problem from an estimation perspective is that migrants are attracted to regions and industries that are experiencing employment growth. This leads to a positive association (or correlation) between temporary migrant employment and labour market outcomes of New Zealanders. If we used simple statistical techniques, such as ordinary least squares (OLS) regression, then we might infer that temporary migration has a positive impact on labour market outcomes, when in fact we are only picking up a correlation between the two variables. This 'spurious' positive effect is known as selection bias.

We need to use econometric modelling techniques to estimate the causal impact. These techniques take into account factors that influence employment patterns for both temporary migrants and New Zealanders. They also seek to address the selection bias. The detail is discussed in section 3.5, but broadly speaking we try to isolate a causal impact in three ways.

- We control for changes in employment demand at the regional and/or industry level.
- We use fixed effects to control for any changes in employment outcomes of New Zealanders that are constant across an industry and/or a region in a year and industry–region differences that are constant over time.
- We use instrumental variables methods in the regression.

[18] McLeod and Maré, 2013, p 3.

3 Empirical strategy

3.1 Data

3.1.1 Integrated Data Infrastructure

This study uses Statistics New Zealand's Integrated Data Infrastructure (IDI), which combines linked anonymised administrative data from the tax system with anonymised administrative and survey data from other sectors, including immigration. Using this database, we can identify people on temporary migrant visas separately from other people resident in New Zealand and compare their employment and earnings over time.

As McLeod and Maré noted:[19]

> it is possible that some workers may not be matched correctly in the IDI … [but that] the data is likely to capture and classify correctly the vast majority of temporary migrant employment. Any error is likely to be lesser in magnitude and importance than comparable measures derived from survey sources.

3.1.2 Temporary migration

We identify temporary migrants using the Ministry of Business, Innovation and Employment's immigration and international movement data, which has been linked to the IDI.[20] An individual may hold different types of visas during their stay in New Zealand. We split these histories into different periods ('spells') defined by whether the migrant is living in New Zealand and the type of visa under which they were granted work rights. The start date of a spell is the arrival date into the country or, if the migrant is already in New Zealand, the date on which a new visa was approved (including changes in type of visa). Similarly, the end date of a migration spell is either the date a migrant leaves the country or the expiry or change date of a visa. Note that people with Australian, Cook Island, Tokelau and Niue nationalities do not need a visa to live and work in New Zealand, so are not classified as migrants in this study.

Temporary migrants are grouped according to the type of visa associated with their work rights:[21]

- International Student
- Study to Work
- Essential Skills

[19] K McLeod and D Maré. (2013). *The Rise of Temporary Migration in New Zealand and its Impact on the Labour Market.* Wellington: Ministry of Business, Employment and Innovation, p 3. www.mbie.govt.nz/publications-research/research/migrants---economic-impacts.

[20] An alternative definition might be to classify a person as a temporary migrant if they were born outside New Zealand, are living in New Zealand, and have only recently arrived. The IDI contains New Zealand birth records so people born outside New Zealand could be identified. Border movements could be used to classify people born outside New Zealand into recent or longer-term migrants and census information could provide country of birth information for some of these people. We chose a visa-based definition for this study because it is more policy relevant.

[21] We use the current names for these schemes; prior schemes with different names have been classified into current scheme groups according to their objectives, in the same manner as McLeod and Maré (2013).

- Working Holiday Scheme
- Recognised Seasonal Employer
- Family
- Other categories.

Migrants who have been approved under the New Zealand Residence Programme as permanent residents are classified as New Zealanders (even if they were once temporary migrants). We also classify temporary migrants by their country of origin (see Appendix A, Table 5).

3.1.3 Employment, earnings and benefit payments

Tax data provides longitudinal monthly information on individuals' employment-related earnings and taxable benefit-related income over 1999–2015. This information is derived from Inland Revenue's employer monthly schedule records. However, information about hours worked is not included. In a 2015 paper, Fabling and Maré used some plausible assumptions to derive approximate estimates of monthly labour input.[22] As part of that derivation, they also identified job spells (that is, unique combinations of person identification and employer identification) and corrected for short (one-month) gaps in earnings.

We use updated versions of the tables provided by Fabling and Maré as the basis for this analysis. Similar to the previous McLeod and Maré study, we identify the calendar months in which any waged or salaried employment was undertaken, the amounts that were earned and the months associated with job starts.[23] Note that our analysis excludes people who have ever received self-employment income from their current employer.

We use the main tax tables derived by Statistics New Zealand from Inland Revenue records to identify whether an individual received benefit income in any given month. We need this information to identify job starts associated with a beneficiary being hired into a new job. We also use this information to estimate the total number of people receiving a main benefit (and therefore included in the Inland Revenue tax tables) within a region and year. We assign a beneficiary to one region in a year based on the district office through which the benefit has been paid. The district office information is held in a separate Ministry of Social Development table. We randomly select one region in cases where records show that people have been paid through multiple offices.

3.1.4 Employee and employer characteristics

We use information on the age, gender and ethnicity of employees available from a central IDI table derived by Statistics New Zealand. We also classify the employer according to the industry and location of the employer using the same broad categories as used in the previous study: 12 regional council areas and 21 industry groupings (see Appendix A, Table 6 and Table 7, respectively). In addition, we classify the location of the employer by urban area

[22] R Fabling and D Maré. 2015. *Addressing the Absence of Hours Information in Linked Employer–Employee Data.* Working Paper 15-17. Wellington: Motu Economic and Public Policy Research..

[23] The annual totals of person-months worked and job starts and annual mean earnings derived from Fabling and Maré's tables are very similar in magnitude to the summaries derived from tables available in the main IDI data set.

category.[24] Specifically, we classify the location as a main urban area or as outside a main urban area.

Industry and location information is available at the plant level (that is, geographic unit[25]) of the employer, where an employing firm may have several plants undertaking different types of activities in different locations. Each worker is assigned to a region and industry for each month and job. We then select one industry/region for each worker-month. In the case of a worker having more than one job in a month, we prioritise employer characteristics associated with job starts, if one exists, or select the characteristics associated with the minimum plant number if not. A worker may move between plants within the same firm or change employers, potentially resulting in changes in industry and/or region over a year. In the case of multi-plant firms, Statistics New Zealand allocates workers to different plants within a firm and it is possible that workers may be misallocated.[26]

Similar to the previous study, we find only a very small proportion of workers with a missing industry and/or region.

3.2 Study population

The study population is all people in New Zealand who ever received wage and salary employment earnings between January 2000 and December 2015. The study population is split into two main groups: temporary migrants and New Zealanders (including permanent migrants).

Similar to the previous study, we disaggregated New Zealanders into different subpopulations to examine whether impacts on employment and hiring vary by the type of New Zealander:

- temporary migrants
- New Zealanders
    - beneficiaries (New Zealanders who received an income-tested benefit)
    - youth (New Zealanders aged 16–24)
    - New Zealanders 25 years+.

The first two subpopulations – beneficiaries and youth – might be particularly vulnerable to competition for jobs created by an influx of temporary migrants, especially if the jobs are low-skilled and/or temporary in nature. On the other hand, New Zealanders 25 years+ may have more work experience, have higher skills and be more established in the work force. Therefore, they might be less affected by changes in migrant employment. Our model specification allows us to determine whether this is the case.

[24] Urban areas are four statistically defined areas with no administrative or legal basis: main urban area, secondary urban area, minor urban area and rural area: Statistics New Zealand. (No date). *Urban Area: Classification and coding process*. www.stats.govt.nz/methods/classifications-and-standards/classification-related-stats-standards/urban-area/classification-and-coding-process.aspx

[25] A geographic unit is a separate operating unit engaged in one, or predominantly one, kind of economic activity from a single physical location or base in New Zealand.

[26] R Fabling and L Sanderson. (2016). *A Rough Guide to New Zealand's Longitudinal Business Database* (second edition). Working Paper 16-03. Wellington: Motu Economic and Public Policy Research.

Each person is classified as being in one of these mutually exclusive states in every calendar month with the priority order shown in the list above.

The beneficiary subpopulation is considered as a separate group only for hiring-related outcomes. When considering employment or earnings-related outcomes, people who receive only benefit-related income are excluded from the analysis, but wage and salary workers who receive benefit income in addition to their wages or salaries are included. For hiring-related outcomes, we also apply a temporal window in classifying beneficiaries and migrants to allow for delays in updating records and other quality issues. A person is classified as a temporary migrant if they are a temporary migrant in any of the three months before or after a job start. A beneficiary is defined as a non-migrant who receives benefit income in any of the three months before a job start.

3.3 Outcomes of interest

The three outcomes of interest are similar to those in the previous study.

- **Months worked:** Employment of New Zealanders or subpopulations (youth and New Zealanders 25 years+) measured as the total number of calendar months per year for which a worker received wage or salary earnings.
- **Earnings per month:** Real earnings per month worked of New Zealanders or subpopulations (youth and New Zealanders 25 years+) measured as total monthly wage and salary earnings per total months worked per year.
- **New hires:** New hires of New Zealanders or subpopulations (beneficiaries, youth and New Zealanders 25 years+) measured as the number of times a worker in the population of interest received wage and salary earnings from an employer, where they had not received wage and salary earnings in the prior three months.

3.4 Limitations

This study has four main limitations. First, the study is limited to dynamics visible through government data. The data used in this study is data that is collected through government agencies. Therefore, the dynamics that are observed and the results and conclusions that are drawn from that data are limited to those that can be observed from official sources. For example, the study does not include effects of employment where the worker is not paying tax on their earnings, that is, work in the hidden or shadow economy.

McLeod and Maré noted:[27]

> It is impossible to know the extent of [the hidden or shadow economy]. However, it would be reasonable to assume it is more likely to occur for those groups engaged in employment of a more short-term, transitional nature such as international students and working holidaymakers.
>
> A World Bank report concluded the size of the hidden economy in New Zealand to be small in world terms, estimated at around 12 per cent of gross domestic product in

[27] McLeod and Maré, 2013, p 3.

each of the five years to 2007 (Schneider, Buehn, and Montenegro, 2010).[28] The New Zealand Inland Revenue does not produce its own estimates of the size of the hidden economy, but it does identify sectors of the economy where it expects noncompliance to be of particular concern (Inland Revenue, 2010).[29] These sectors include the hospitality industry and the agriculture and horticulture sectors, both of which are areas of the economy with large numbers of temporary migrant workers. [Footnotes added]

The second limitation is that the examination of earnings does not include allowances for the number of hours worked, so does not provide information on any impact that temporary migration may have on wage rates.

The third limitation is that the study does not identify whether temporary migrants are having an adverse effect on labour conditions and standards.

The fourth limitation is that the report looks at only some labour market outcomes. Implications for macroeconomic management, housing markets and wider firm performance (including impacts on capital investment) are not examined.

3.5 Method

3.5.1 Overview

We estimate the causal impact of temporary migrant employment on labour market outcomes of New Zealanders to determine whether migrants are displacing or complementing New Zealanders in the job market. We focus on the impact at an industry and regional level, rather than an individual worker level.

Employment outcomes of New Zealanders are affected by many different factors, one of which may be the presence of temporary migrants. We need a way to separately identify the impact due to changes in migrant employment from other impacts. We use a standard econometric approach of dynamic panel regression with fixed effects, using instrumental variables to estimate the causal impact of temporary migration. Including fixed effects in the regressions controls for any changes in employment outcomes of New Zealanders that are constant across an industry and/or region in a year and industry–region differences that are constant over time. The fixed effects could include impacts from the global financial crisis, industry-specific fluctuations in prices, or region-specific natural disasters such as earthquakes. Once these potentially large impacts are excluded, we determine whether changes in migrant employment can account for the residual variation in employment outcomes of New Zealanders.

Another issue is that temporary migrants are not randomly assigned to jobs across all industries and regions in New Zealand. They may choose to find work in regions or industries that are actively growing. In that case, migrant employment increases in response to higher employment levels of New Zealanders (that is, migrants seek out growing areas) and, at the

[28] F Schneider, A Buehn, and C Montenegro. (2010). *Shadow Economies from All over the World: New estimates for 162 countries from 1999 to 2007.* Policy Research Working Paper 5356, Washington DC: World Bank.

[29] Inland Revenue Department. (2010). *Helping You Get it Right: Inland Revenue's compliance focus 2010/11.* Wellington: Inland Revenue Department.

same time, employment levels of New Zealanders could change due to the increasing migrant employment (that is, the migrants have an impact). In this situation, a standard ordinary least squares (OLS) regression would give a biased estimate of the impact of temporary migration on the employment levels of New Zealanders.[30] We use instrumental variables methods in the regression to reduce (and, we hope, eliminate) the bias.

3.5.2 Employment models

We start with the assumption that aggregated employment in a local industry follows a dynamic process whereby current employment levels are influenced by prior levels after controlling for mean employment in the local industry δ_{ir}, industry-wide changes δ_{it} and region-wide changes δ_{rt}; that is:[31]

$$lnE^X_{irt} = \gamma ln\, E^X_{irt-1} + \delta_{ir} + \delta_{it} + \delta_{rt} + \varepsilon_{irt} \quad (1)$$

where:

E^X_{irt} = total months worked by population *X*
(*X* = all New Zealanders or a subpopulation (youth or New Zealanders 25 years+))
i = industry
r = region
t = year
ε_{irt} = error term.

Equation (1) specifies the baseline dynamics for employment of New Zealanders (or a subpopulation) in a local industry. Next, we consider how the baseline dynamics are altered by adding or reducing the proportional levels of migrants employed in the local industry:

$$lnE^X_{irt} = \gamma ln\, E^X_{irt-1} + \beta \left(\frac{\Delta M_{irt}}{E^T_{irt-1}}\right) + \delta_{ir} + \delta_{it} + \delta_{rt} + \varepsilon_{irt} \quad (2)$$

where:

E^T = total employment (months worked) of all workers
ΔM = $M_t - M_{t-1}$ = change in months worked by temporary migrants

The main term of interest is the change in migrant employment in the current period divided by total employment at the start of the period $\left(\frac{\Delta M_{irt}}{E^T_{irt-1}}\right)$. If migrants are displacing New Zealanders, then β will be negative; if additional employment is created because migrants are complementing New Zealanders, then β will be positive. The size of β quantifies the degree of change in employment for a given increase in migrant employment. Specifically, If the migrant term changes by Δm, then the expected value of employment is multiplied by $e^{\left[\frac{\beta \Delta m}{E_{t-1}}\right]}$. For example, assume we run the regression with employment of all New Zealanders as the outcome and we estimate that β = 1. This means that if there is, on average, an increase in

[30] It can be shown that the OLS bias is positive if migrants select into growing regions or industries (for reasonable values of the impact of migration).

[31] Logs have been used in this and other models in this study. Taking logs translates to considering the proportional change in E^X_{irt} (or similar). Also, logs tend to be used as standard practice when analysing measures of employment and full-time equivalent counts to adjust for the skewness of the distributions.

temporary migrant employment that adds 10% to total employment, that is $\frac{\Delta M_{irt}}{E^T_{irt-1}}$ changes by 0.1, then the corresponding on-average percentage change in the employment of New Zealanders is ($e^{\beta*0.1} - 1$) * 100% ≈ 11%, all other variables held constant.

3.5.3 Earnings models

We use the same model specification for earnings outcomes of New Zealanders, because we think similar baseline dynamics will apply to earnings per month worked. In other words, we expect that the average earnings per month worked (logged) of New Zealanders in a local industry will be influenced by prior levels. We then include a term to account for changes in migrant employment and fixed effects to determine the causal impact of migrant employment on monthly earnings of New Zealanders:

$$lnY^X_{irt} = \gamma ln\, Y^X_{irt-1} + \beta \left(\frac{\Delta M_{irt}}{E^T_{irt-1}}\right) + \delta_{ir} + \delta_{it} + \delta_{rt} + \varepsilon_{irt} \quad (3)$$

where:

Y^X = average real monthly earnings of population X
(X= all New Zealanders or a subpopulation (youth or New Zealanders aged 25+))

Note that the fixed effects and error terms use the same notation as in the employment and earnings models for simplicity even though the terms will differ in magnitude across the two specifications. We also use the same notation in all the following equations.

3.5.4 Hiring models

For the hiring models, we maintain consistency with the assumptions made in specifying employment dynamics. The hiring rate, which is equal to the number of hires divided by the lagged total employment (E^T_{irt-1}) is directly related to employment growth. Therefore, we can write the number of hires (logged) as:[32]

$$lnH^X_{irt} = \gamma ln\, E^T_{irt-1} + \delta_{ir} + \delta_{it} + \delta_{rt} + \varepsilon_{irt} \quad (4)$$

where:

H^X_{irt} = the number of hires of subpopulation X
(X = all New Zealanders or a subpopulation (beneficiaries, youth, New Zealanders aged 25+)

Similar to the previous specifications, we now include a change in migrant employment term to determine the impact of migrant employment on hiring rates:

$$lnH^X_{irt} = \gamma ln\, E^T_{irt-1} + \beta \left(\frac{\Delta M_{irt}}{E^T_{irt-1}}\right) + \delta_{ir} + \delta_{it} + \delta_{rt} + \varepsilon_{irt} \quad (5)$$

[32] To see the connection with equation (1), consider the situation when employment follows a random walk after controlling for fixed effects; that is, $\gamma = 1$. In that case, the growth in employment $ln(\frac{E^T_{irt}}{E^T_{irt-1}}) \approx \frac{\Delta E_{irt}}{E^T_{irt-1}}$ is random (=ε_{irt}), which implies that the hiring rate $ln\left(\frac{H_{irt}}{E^T_{irt-1}}\right)$ is also random after controlling for fixed effects since ΔE_{irt} is directly related to H_{irt}.

3.5.5 Estimation – technical notes

We use the fixed-effects estimator to estimate the parameters in equations (2), (3) and (5). There are two issues with this specification as it stands. As mentioned previously, we think temporary migrants might move into areas and industries that are rapidly growing. This will result in a positively biased estimate of β from an OLS regression when the ΔM_{irt} term is positively correlated with the error term ε_{irt}.

The lagged dependent variable $ln\ E^X_{irt-1}$ in equations (2) and (3) is also problematic because the fixed-effects transformation will cause the transformed lagged term to be correlated with the transformed error term, violating OLS assumptions. This is known as dynamic panel bias.[33] We deal with these issues by using instruments for the endogenous variables ΔM_{irt}, $ln\ E^X_{irt-1}$ and $ln\ Y^X_{irt-1}$ and applying the two-stage least squares (2SLS) approach.

We use the predicted change in migrant employment as an instrument for the migrant term. This instrument term is the same as used in the previous study,[34] except for a scale factor, and is similar in approach to that used in Smith (2012).[35] The rationale behind the selection of this instrument is that we expect migrants will probably seek employment in areas where migrants have been employed previously. We could just use a lagged migrant employment term, M_{irt-1}, but this does not take into account any changes that occur between the last year and the current year.

Predicted employment is based on the lagged country of origin level of temporary migrant employment, M_{cirt-1}, which occurs in the past, so cannot be influenced by the current employment levels of New Zealanders (and hence is not correlated to the current error term). The prior employment levels of migrants from each source country are adjusted by the proportional change in the national levels of migrant employment from that country, that is:

$$\frac{\widehat{\Delta M_{irt}}}{E^T_{irt-1}} = \frac{1}{E^T_{irt-1}} \sum_c M_{cirt-1} \left(\frac{M_{ct} - M_{ct-1}}{M_{ct-1}} \right) \quad (6)$$

where:

M_c = total employment of temporary migrants from country of origin *c*

We divide by the lagged total employment to be consistent with how the migrant variable appears in equation (3). We tested alternative instruments based on the visa category share instead of source country share[36] for some models (where we are trying to estimate the impact of different types of visa categories). Models that include an instrument for the migrant term are labelled IV1 in the presentation of the regression results.

[33] S Nickell. (1981). Biases in dynamic models with fixed effects. *Econometrica* 1417–1426.

[34] K McLeod and D Maré. (2013). *The Rise of Temporary Migration in New Zealand and its Impact on the Labour Market.* Wellington: Ministry of Business, Employment and Innovation. www.mbie.govt.nz/publications-research/research/migrants---economic-impacts

[35] C Smith. (2012). The impact of low-skilled immigration on the youth labor market. *Journal of Labor Economics* 30: 55–89.

[36] The visa category share instrument is analogous to the instrument defined in equation (6) except M_c is replaced by M_p = the total employment of temporary migrants in visa category *p*.

As an aside, we found that the instrumenting appears to work better in some situations than in others. For example, this instrument did not work well when modelling working holidaymakers. It may be that the very nature of being on holiday may lead to behaviour that is unpredictable; in particular, the assumption that these people might seek employment where migrants have worked before may not hold. Unfortunately, we do not have good alternatives.

The lagged dependent variable $ln\ E^X_{irt-1}$is instrumented using $\Delta lnE^X_{irt-1} = ln\ E^X_{irt-1} - ln\ E^X_{irt-2}$. It is not possible to use a double lag $ln\ E^X_{irt-2}$ as an instrument because the fixed effects transformation creates a correlation between $ln\ E^X_{irt-2}$ and the transformed error term. Similarly, $ln\ Y^X_{irt-1}$ in equation (3) is instrumented using ΔlnY^X_{irt-1}. Models that include an instrument for only the migrant term and an instrument for the lagged dependent variables are labelled IV2 in the presentation of the regression results.

We use the Stata routine *xtivreg2* to estimate the parameters in our models.[37] All regressions are weighted by the mean total employment across the full period. All estimates of standard errors are robust to heteroskedasticity.

We also test whether the instruments are correlated with the variable they are instrumenting and whether the instruments are weak using the Kleibergen-Paap rk LM and the Kleibergen-Paap rk Wald F test statistics, respectively. Weak instruments can produce biased estimates that are worse than the OLS bias due to endogeneity. They also result in imprecise parameter estimates making inference difficult. We compare the two test statistics to Stock and Yogo's critical values for maximum 2SLS biases of 10% and 15% with respect to OLS (although these assume homoscedastic errors in the first and second stage regressions). We are unable to test the assumption that the instruments are uncorrelated with the error term (and hence doing a better job than the original variables) because we have the same number of instruments as instrumented variables. In other words, our models are just identified. One positive aspect of using just-identified models is that the 2SLS bias due to weak instruments is approximately zero.[38] However, we still have imprecise estimates to deal with.

3.5.6 Combined indirect and direct impact of migrant employment

The previous specifications have all considered the direct impact of migrant employment on outcomes of New Zealanders in the same industry and region. Indirect impacts are also possible, whereby changes in migrant employment in industry *i* impact on employment outcomes of New Zealanders in another industry in the same region. For example, consider an influx of migrant workers into a region, perhaps to work in the horticultural sector. This might have a positive impact on support industries providing accommodation, hospitality or food services. However, if migrants are not employed in these sectors, our previous specifications would not pick up this indirect positive impact.

[37] ME Schaffer. (2010). *xtivreg2: Stata module to perform extended IV/2SLS, GMM and AC/HAC, LIML and k-class regression for panel data models.* http://ideas.repec.org/c/boc/bocode/s456501.html and CF Baum, ME Schaffer, and S Stillman. 2003. Instrumental variables and GMM: Estimation and testing. *Stata Journal* 3(1): 1–31

[38] J Angrist and J Pischke. (2009). *Mostly Harmless Econometrics: An empiricist's companion.* Princetown: Princetown University Press.

The indirect effect might also be negative. For example, if employers started buying in skilled management expertise using migrant labour and this resulted in high performance within the industry, which in turn created additional demand for workers, then those workers might be poached from other industries in the region.

To estimate the combined direct and indirect impact of migrant employment within a region, we consider the regional variation versions of the original models.

$$lnE_{rt}^{X} = \gamma ln\, E_{rt-1}^{X} + \beta_{ID}^{E}\left(\frac{\Delta M_{rt}}{E_{rt-1}^{T}}\right) + \delta_r + \delta_t + \varepsilon_{rt} \quad (9)$$

$$lnY_{rt}^{X} = \gamma ln\, Y_{rt-1}^{X} + \beta_{ID}^{Y}\left(\frac{\Delta M_{rt}}{E_{rt-1}^{T}}\right) + \delta_r + \delta_t + \varepsilon_{rt} \quad (10)$$

$lnH_{rt}^{X} = \gamma lnE_{rt-1}^{T} + \beta_{ID}^{H}\left(\frac{\Delta M_{rt}}{E_{rt-1}^{T}}\right) + \delta_r + \delta_t + \varepsilon_{rt}$ for X = all New Zealanders, youth, New Zealanders 25 years+ (11)

$lnH_{rt}^{X} = \gamma lnE_{rt-1}^{T} + \gamma_B N_{rt-1}^{T} + \beta_{ID}^{H}\left(\frac{\Delta M_{rt}}{E_{rt-1}^{T}}\right) + \delta_r + \delta_t + \varepsilon_{rt}$ for X = beneficiaries (12)

We use a different specification, equation (12), to estimate the combined impact of migrant employment on beneficiary hires compared with the hiring of other subpopulations. This equation includes a new term N_{rt-1}^{T} which equals the total number of beneficiaries in the region at the start of the period. This additional term was not required in the model estimating the direct impact of migrants on hiring of beneficiaries (equation (5)) because in that case any trend in the total number of beneficiaries in a region is picked up by the fixed effect δ_{rt} term. We cannot control for the regional–time effect in equation (12) using a δ_{rt} fixed effect because the observations are at the regional–time level. There is no need for an equivalent term for other subpopulations in equation (11) because the growth in total employment of a subpopulation is related to growth in lagged total employment so the lnE_{rt-1}^{T} term picks up trends in the number of people in a subpopulation available for work.

The parameter estimates $\beta_{ID}^{E}, \beta_{ID}^{Y}, \beta_{ID}^{H}$ measure the effects of migrant employment on employment, earnings and new hires across all industries in a region. This includes the direct and indirect impacts of migrant employment. The industry composition may vary across regions and/or may have different trends across regions, but this variation will be captured by the fixed effects. Migrants may choose to go into industries that are growing, and those growing industries may be clustered in particular regions. However, because we are instrumenting for migrant employment changes using prior levels of migrant employment, we remove (or reduce) the associated correlation with the error term that causes bias in our impact estimate.

3.5.7 Comparison with the previous study

This section briefly explains why we changed some of the specifications used in the previous study.

The previous study used the following specification to estimate the direct impact of migrant employment in a local industry:

$$lnZ_{irt}^{X} = \beta ln\, M_{irt-1} + \gamma \Delta ln\, E_{irt}^{T} + \theta\, U_{rt} + \delta_{ir} + \delta_{it} + \delta_{rt} + \varepsilon_{irt}$$

where:

Z_{irt}^{X} = employment outcome of all New Zealanders or subpopulations (where outcomes were the same as in those used in the current analysis – total months worked, total hires and mean earnings per month worked)

U_{rt} = unemployment in region *r* and year *t*

(We have changed some of McLeod and Maré's notation to avoid confusion with our notation.)

The same specification was used for employment, earnings per month worked and hires. In our revised specification, we have chosen the hiring model specification to be consistent with the assumptions used to derive the employment model. We think the main improvement in the revised specification is the inclusion of the dynamic term in the models. This seems more intuitive to us since, for example, it is easy to believe that current employment levels are influenced by prior levels.

In hindsight, we think that including the $ln\, E_{irt}^{T}$ term as an independent variable in the prior specification is problematic, because, in the case of employment outcomes, this term is directly related to the lnZ_{irt}^{X} term. This leads to endogeneity issues that were not dealt with by instrumenting the problematic variable.

Finally, the new specifications allow us to deduce the combined direct and indirect impact quite simply using the regional variation model.

3.5.8 Subpopulation estimates and extensions to the main specification

The main specifications estimate the average effect of temporary migration on New Zealanders' employment outcomes, averaged across all industries and all regions. However, it is possible considerable variation exists in the strength and significance of the impact in different regions and industries, so estimating an average effect may obscure real impacts concentrated in just a few industries or regions. We test whether this is the case by considering some subpopulations of industries or regions where migrant employment is more concentrated, so might have a stronger effect on employment outcomes of New Zealanders. We consider sub-populations that fit into the following categories:

- horticultural regions – Bay of Plenty, Gisborne–Hawke's Bay, Otago, and Tasman, Nelson, Marlborough and West Coast regions
- high migrant presence in dairy regions – Canterbury, Otago, Southland
- Auckland
- Otago
- Canterbury
- food services industry
- accommodation services
- employment services.

The 16-year period (2000–2015) examined in our analysis incorporates a period when the economy was growing strongly, a declining period associated with the global financial crisis and the more recent recovery period. It is possible that migrant displacement effects may differ at different stages in the economic cycle. Perhaps disadvantaged groups, such as youth and beneficiaries, will be more vulnerable to displacement by migrants when the economy is declining. We test whether this is the case by estimating the effects for three separate periods:[39]

- 2001 to 2005
- 2006 to 2010
- 2011 to 2015.

The different periods are also helpful for trying to understand the effects of various events that happened or policies that changed at particular times.

Similarly, migrant effects may not be uniform across the country. It could be that effects differ in more concentrated labour market areas, such as in cities, than in rural areas. To better understand this, we provide estimates by urban area. Specifically, we estimate effects in:

- main urban areas[40]
- areas outside main urban areas.

[39] For consistent five-year age bands, we excluded the year 2000 from the analysis.

[40] See Statistics New Zealand. (No date). *Urban Area: Definition.* www.stats.govt.nz/methods/classifications-and-standards/classification-related-stats-standards/urban-area/definition.aspx

4 Descriptive statistics

This section provides descriptive statistics about the New Zealand labour market and the place of temporary migrants within that market.

4.1 Employment trends

Figure 1 shows the total number of months worked by wage and salary workers. A separate series is shown for each of temporary migrants, youth and all other workers.[41]

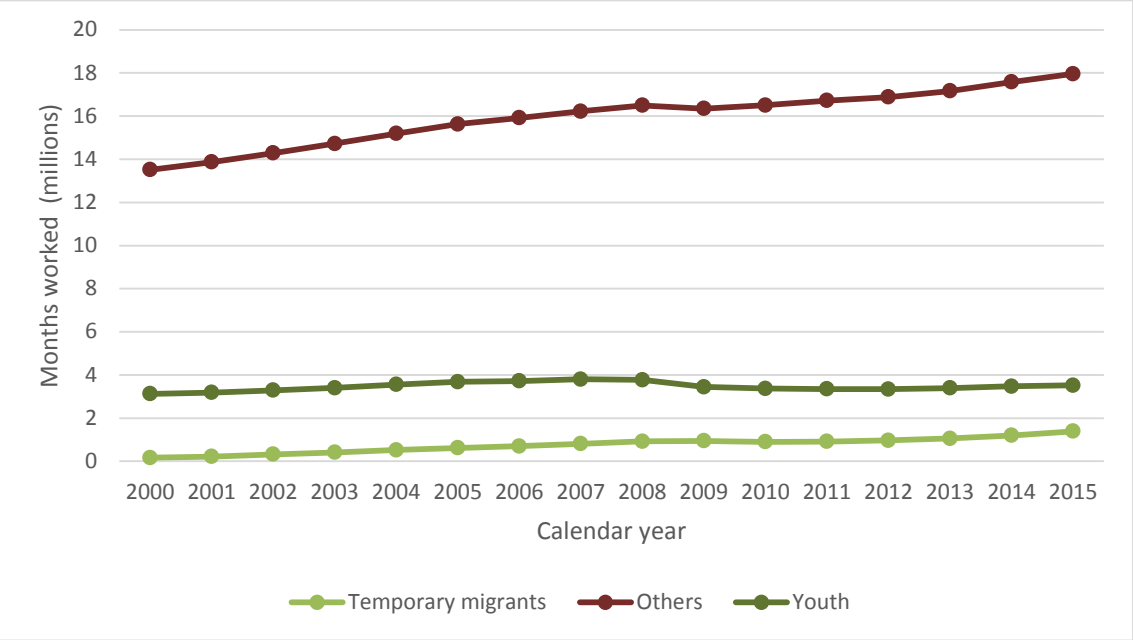
From 2000, employment increased until the global financial crisis in 2008, reflecting the buoyant economic conditions over most of the decade. Temporary migrants had a small but steadily increasing share in the labour market over that period. While migrant employment was much smaller in comparison to the other two groups, the level of migrant employment grew to 5½ times its previous level. Youth employment also grew over this period, but not as dramatically, increasing by approximately a fifth.

For all three series, employment decreased after the global financial crisis. For the Other group (that is, people who were neither migrants nor youth), employment decreased in 2009, but then began to track upwards again. Youth, a group that is often susceptible to difficult economic conditions, also saw employment decrease in 2009 and then remained low. As at 2015, youth employment still had not returned to its highest level in 2007. The employment series for temporary migrants decreased in 2010 but after that it began tracking upwards again.

The ongoing increases in migrant employment coupled with the stagnated levels of youth employment raise the question whether the employment of migrants has been at the expense of youth employment and perhaps other groups of New Zealanders.

[41] A hierarchy has been used to classify individuals into these three groups. A temporary migrant who is also a youth is classified as a temporary migrant.

Figure 1 Total wage and salary employment by broad category, 2000–2015



4.1.1 Migrant category

Employment under the Essential Skills Category (formerly the General Work policy) has dominated over the other categories from 2000 until the present day. McLeod and Maré noted a decline over the 2009/10 and 2010/11 tax years (tax years run from 1 July to 30 June) after a "considerable year-on-year growth throughout the decade".[42] The authors noted that "[v]isas issued under this policy are tied to a particular job, and the visa is subject to a labour market test that establishes whether New Zealanders are available for the job before the visa is approved".[43] Because of this, employment under the Essential Skills Category "might be expected to react most strongly to changes in the economic conditions".[44]

Figure 2 shows migrant employment (months worked) by the migrant policy that applied to the migrant. The graph shows how employment under the Essential Skills Category rose strongly until the global financial crisis then dropped sharply. From 2012, employment began to increase strongly again.

Employment for those on a student visa rose up to 2005 before remaining relatively steady until it increased strongly after 2013. This increase later in the series is likely to be linked to changes in the Student policy. In 2013, students became able to study full time in all study breaks (not just the break over summer), the types of student who were allowed to work while studying became more varied, and master's and doctorate students were allowed to work full time. At the same time, the composition of the student population in terms of their country of origin changed (see section 4.1.2).

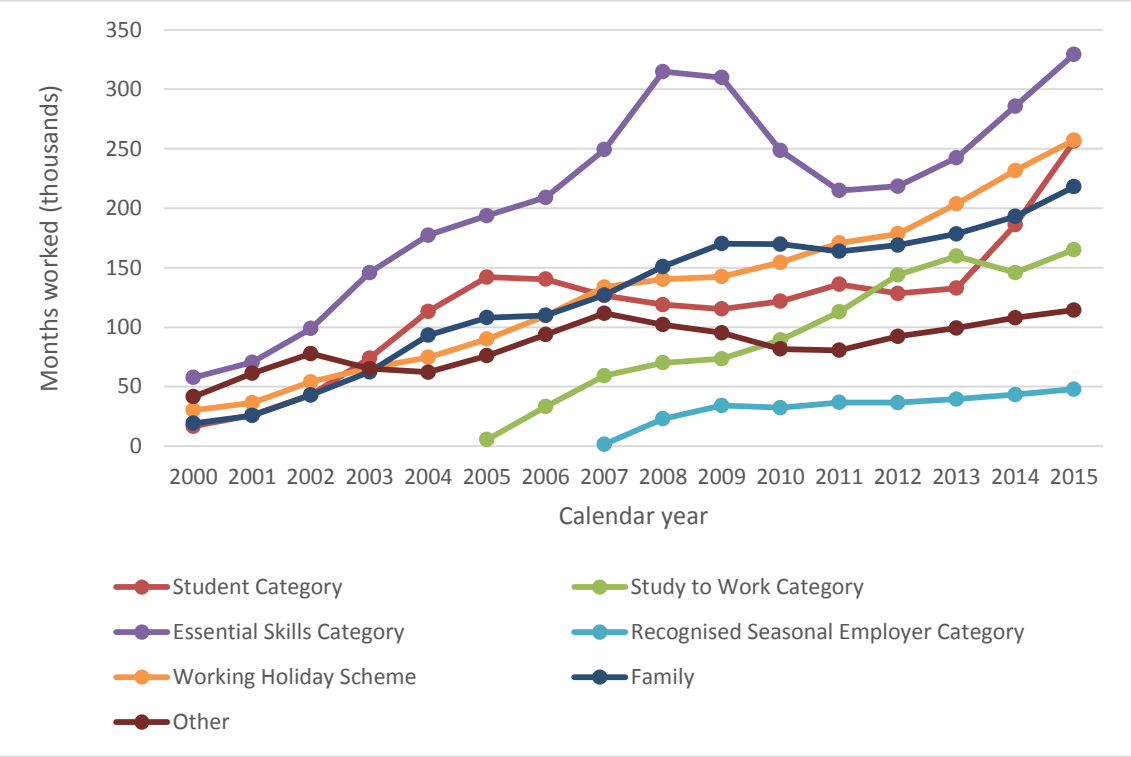
[42] K McLeod and D Maré. (2013). *The Rise of Temporary Migration in New Zealand and its Impact on the Labour Market.* Wellington: Ministry of Business, Employment and Innovation, p 14. www.mbie.govt.nz/publications-research/research/migrants---economic-impacts

[43] McLeod and Maré, 2013, p 14.

[44] McLeod and Maré, 2013, p 14.

Two other notable points in Figure 2 are the series for the Study to Work and Recognised Seasonal Employer visas. These policies began in 2005 and 2007, respectively. Employment under the Study to Work policy increased strongly to 2015. Employment for those on a Recognised Seasonal Employer visa has risen relatively slowly since its implementation.

Figure 2 Employment months worked by temporary migrants, by policy category, 2000–2015



4.1.2 Country of origin

Employment trends have quite different patterns depending on the country of origin of the migrant. In 2000, temporary migrants who contributed the most to employment came from Great Britain–Ireland, Japan, South Africa, Fiji and China (in that order). Over the next seven years, the only other countries (or country groups) to feature in the top five were Tonga–Western Samoa in 2001 and 2002, Brazil–Argentina–Chile in 2007 and India from 2002.

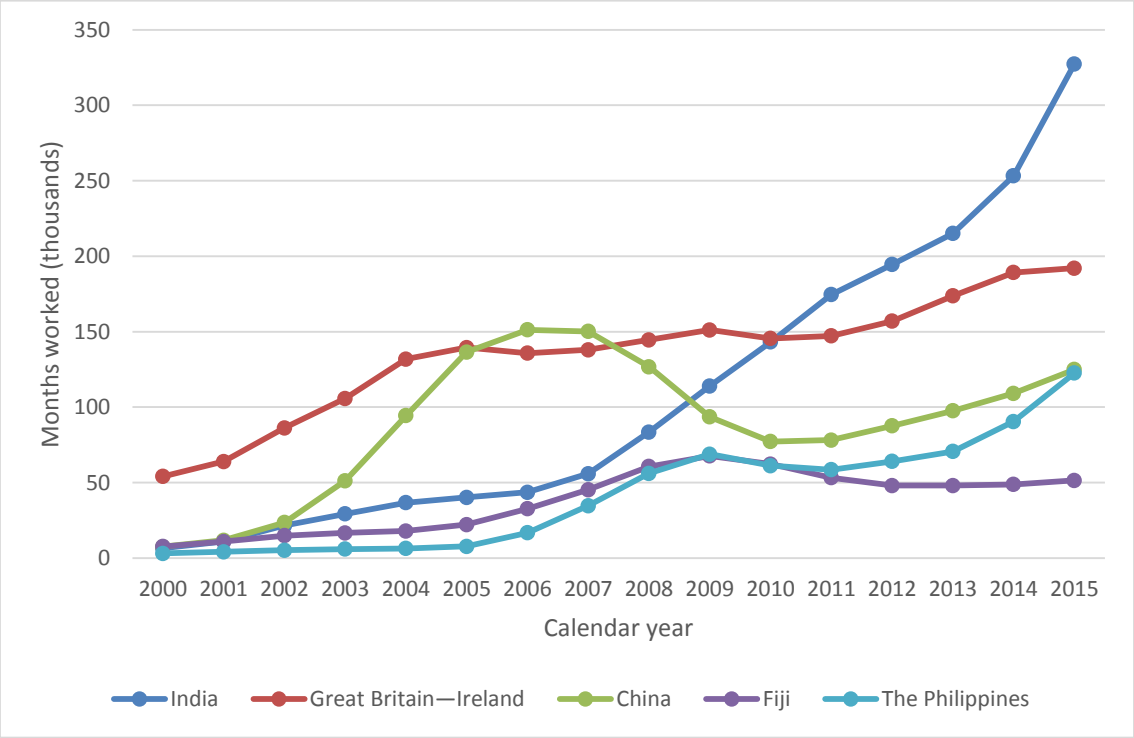
By 2008, the top countries were Great Britain–Ireland, China, India, Fiji and the Philippines. These countries have remained in the top five through to 2015. Figure 3 shows the pattern of temporary migrant employment from these countries from 2000 to 2015.

Great Britain–Ireland has been a key contributor, and often 'the' key contributor, to temporary migrant employment over this whole period. The employment of temporary migrants from Great Britain–Ireland increased strongly up to 2004–2005, levelled off until 2011 and then increased again from 2012. Temporary migrants from China had a dramatic increase in migrant employment from the early 2000s until 2006–2007. Employment then dropped off around the period of the global financial crisis and for the next few years afterwards. It picked up again only from 2011.

India has a very dramatic pattern in the trends of temporary migrant employment. Over the period to 2007, the rise in the employment of migrants from India was modest compared with the rises we saw from Great Britain–Ireland and China. However, from 2008, the employment of temporary migrants from India increased year on year right up until 2015, with many of these students choosing to study and work rather than study alone as previous cohorts of students from other countries were more inclined to do.

By 2015, India accounted for 24% of all temporary migrant employment. This compares with 14% for Great Britain–Ireland and 9% for each of China and the Philippines.

Figure 3 *Employment months by temporary migrants by country of origin, 2000–2015*



4.2 Where temporary migrants are employed

This section examines where temporary migrants work and, in particular, the region and industries within which the work takes place.

4.2.1 Region

Figure 4 shows the migrant employment (in person-months) within each region as a percentage of total employment in that region. In 2015, the share that migrants had of the regional employment was highest in Otago; Auckland; Canterbury; Tasman, Nelson Marlborough and West Coast; and Bay of Plenty. For many of these regions, the relatively high share in the local labour market is likely to be related to the predominant industries that operate there. For example, Tasman, Nelson, Marlborough and West Coast and Bay of Plenty have a large amount of agricultural work that is likely to attract temporary migrants. Similarly, Otago includes areas that are very high in tourism, which is likely to attract temporary migrant workers.

Looking back over 2010 and 2005, Otago, Auckland, and Tasman, Nelson, Marlborough and West Coast have consistently been in the top five regions in terms of the share that temporary migrants have of the region's employment. Bay of Plenty also ranks highly.

It is worth noting that Canterbury ranked highly in 2015 and this may be as a result of the Christchurch rebuild.

Also, over all regions the percentage share that temporary migrants had of employment progressively increased from 3% in 2005 to 4% in 2010 and, finally. 6% in 2015.

Figure 4 Temporary migrant share of employment (months) by region, 2005, 2010, and 2015

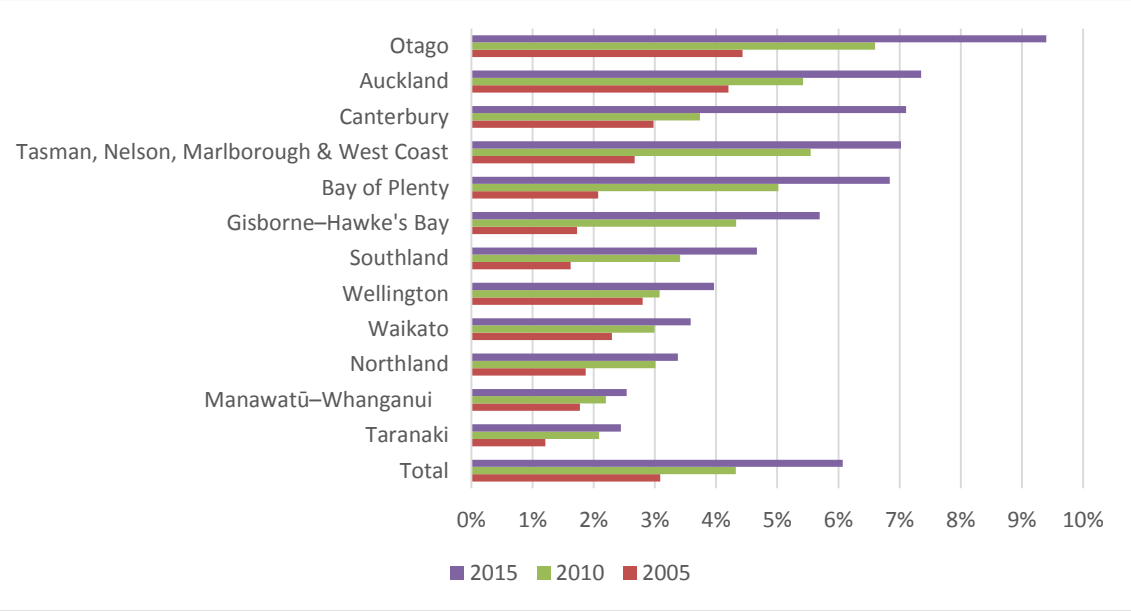


Table 1 shows the percentage point change in the migrant share of employment (months) by region in five-year periods. The changes ranged up to 3 percentage points, and the largest changes tended to be in the regions where migrants had a higher share of employment.

Table 1 Change in migrant share of employment (months) by region, 2000–2015

Region	Percentage point change 2000–2005	Percentage point change 2005–2010	Percentage point change 2010–2015	Migrant months employed 2015
Otago	3	2	3	105,378
Auckland	3	1	2	587,814
Canterbury	2	1	3	223,131
Tasman, Nelson, Marlborough & West Coast	2	3	1	62,103
Bay of Plenty	1	3	2	90,885
Gisborne–Hawke's Bay	1	3	1	55,737
Southland	1	2	1	23,667
Wellington	2	0	1	108,495
Waikato	2	1	1	69,828
Northland	1	1	0	20,754
Manawatū–Whanganui	1	0	0	27,150
Taranaki	1	1	0	13,455
All regions	**2**	**1**	**2**	**1,388,397**

4.2.2 Industry

Figure 5 shows the share of employment that temporary migrants had in different industries over 2005, 2010 and 2015. In 2015, the migrant share of employment was high in agriculture and fishing support services, packaging and labelling, and fruit and tree nut growing. These were also the predominant three industries in 2010. In 2005, the top three were food services, accommodation and employment services, which were also relatively high in 2010 and 2015.

The share of migrant employment in construction was not high in any year. Any possible effect that might have occurred as a result of the Christchurch rebuild is not evident in these national-level figures.

Figure 5 *Temporary migrant share of employment (months) by industry, 2005, 2010, and 2015*

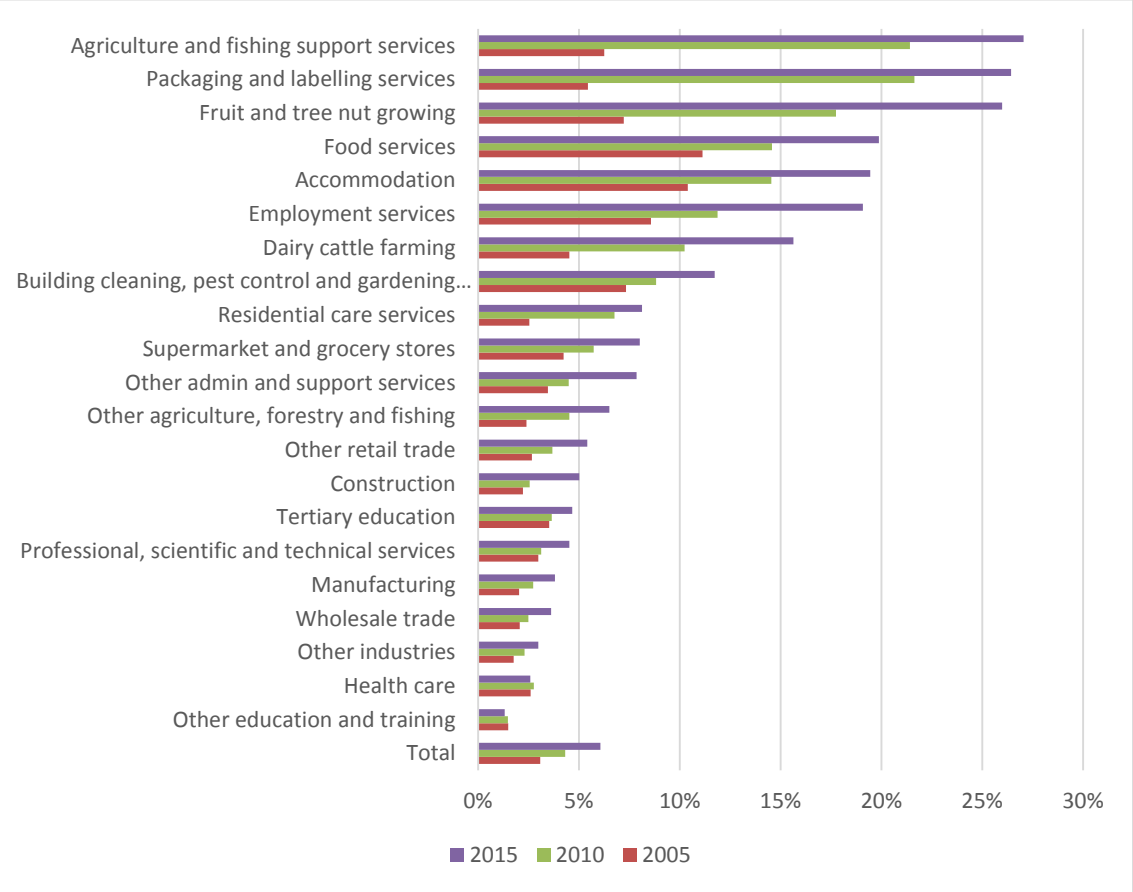


Table 2 shows the percentage point changes in the migrant share of employment (months) by industry in the five-year periods. Some of the changes were comparatively high; that is, in 2005–2010, the changes ranged from 11 to 16 percentage points for fruit and tree nut growing, packaging and labelling services, and agriculture and fishing support services. As with regional changes, the higher percentage point changes tended to be in industries that had a higher migrant share of employment.

Table 2 Change in migrant share of employment (months) by region, 2001–2015

Industry	Percentage point change			Migrant months employed
	2000–2005	2005–2010	2010–2015	2015
Agriculture and fishing support services	5	15	6	65,103
Packaging and labelling services	4	16	5	25,623
Fruit and tree nut growing	5	11	8	42,843
Food services	8	3	5	240,939
Accommodation	8	4	5	63,099
Employment services	5	3	7	90,150
Dairy cattle farming	3	6	5	44,115
Building cleaning, pest control and gardening services	6	1	3	29,628
Residential care services	2	4	1	43,956
Supermarket and grocery stores	4	1	2	48,696
Other admin and support services	2	1	3	25,185
Other agriculture, forestry and fishing	2	2	2	29,241
Other retail trade	2	1	2	88,452
Construction	2	0	2	79,686
Tertiary education	2	0	1	25,458
Professional, scientific and technical services	2	0	1	85,062
Manufacturing	1	1	1	94,689
Wholesale trade	1	0	1	43,554
Other industries	1	1	1	161,598
Health care	1	0	0	40,290
Other education and training	1	0	0	21,024
Total	**2**	**1**	**2**	**1,388,391**

In addition to the information above, we examined the migrant share of employment across industries by region (see Appendix D for more details). The main points from that analysis are as follows.

- **Otago** had relatively high migrant shares of employment in agricultural industries (dairy and fruit and tree nut growing), employment services and accomodation.
- **Canterbury** had high migrant shares in dairy, employment services and food services, but was not high in construction. It is feasible that both the high migrant shares in employment services and food services are showing temporary migrants working in areas that support the rebuilding effort in Christchurch, even though the migrant share in construction work itself is not notable.
- **Bay of Plenty, Gisborne–Hawke's Bay, and Tasman, Nelson, Marlborough and West Coast**, as expected, had high migrant shares in agriculture and related services (for example, employment services and other administration and support services).
- **Auckland** had high migrant shares in six industries, the highest being food services and accommodation.

5 Results

This section provides details of the modelling used to analyse temporary migration in New Zealand. A summary of the overall results is in Table 3, which shows the results of 20 models that were fitted to all the data.

Appendix B contains summary results for some of the other models that were fitted. The summary tables show only the coefficients for the migrant term of interest. The full models include controls for the local industry, industry trends, regional trends, and either the lagged dependent variable (employment and earnings models) or a lagged total employment term (hiring models).

Appendix C (Tables 9–22) provides the full results for each model, including the results for tests of weak instruments and under-identification. In each case, three potential models were investigated. The IV1 model is the model with a single instrument applied to the migration term, and the IV2 model is the model with both instruments. Details of the ordinary least squares (OLS) model are also provided for comparative purposes. The model with both instruments (IV2) is the preferred model.

5.1 Overall results

The overall results are the results from the models that analyse all the data. We refer to the results from these models as 'total effects'.

We first investigated the total direct effect models for 'months worked' by New Zealanders. This measure of months worked is a measure of the total employment of New Zealanders. Table 3 shows the results for models using all New Zealanders and subpopulations of youth and New Zealanders 25 years+.[45]

We see that with all these three models the migrant term is not statistically significant. This means that, on average, temporary migration has no direct effect on the months worked by New Zealanders in the same industry, holding all other variables in the models constant. Therefore, we conclude that, when examining total effects, there is no evidence that temporary migration has had a direct effect on months worked of New Zealanders or of the subpopulations of youth or New Zealanders 25 years+. In other words, for total effects, temporary migrants do not displace New Zealanders working in the same industry and region. This is true even when we focus on the potentially disadvantaged group of youth.

One note of caution about this conclusion is that the instrument tests for the direct effects indicate that the instruments may be a bit weak, leading to inflated standard errors. It is possible that inflated standard errors are masking some small negative direct effects that would be significant if the standard errors were smaller. We have no better instruments, so are unable to test whether this is the case.

[45] The asterisks in the tables show the level of significance of the various effects. This relates to the confidence that we can have in the result (see the notes to Table 3 and Table 54).

It is possible that there might be an indirect effect due to temporary migration; that is, where migrant employment levels in one industry impact on the outcomes of New Zealanders working in other industries within the same region. We considered this using the combined effect models, which estimate the combined direct and indirect effect due to temporary migration. None of the combined effect models for 'months worked' shows significant effects. Therefore, we infer no evidence exists of an indirect effect due to temporary migration. In summary, we conclude that, for total effects, there is no evidence that temporary migrants displace New Zealanders working in the same region either directly or indirectly; that is, in the same or another industry.

Secondly, we considered the total direct effect models of earnings. In the first two models (New Zealanders and youth), the migrant term is not significant. However, in the model for New Zealanders 25 years+, there is a significant and positive migrant term. This means that, on average, temporary migration had a positive effect on the earnings of New Zealanders 25 years+, all else being equal. This effect was not evident for youth or for New Zealanders as a whole.

Table 3 contains information about the size of that effect for New Zealanders 25 years+. The table shows that a 0.4% change in ΔX[46] (that is, the migrant term $\frac{\Delta M}{E_{t-1}^{T}}$) is associated with an average increase in earnings of 0.2% for New Zealanders 25 years+ or an additional $11 per month, if all other variables are held constant. In other words, an increase in the level of temporary migrants in particular industries has encouraged higher earnings for New Zealanders 25 years+ in those industries.

When considering combined effects for monthly earnings there is no significant effect for youth, and the models for New Zealanders as a whole and New Zealanders 25 years+ could not be estimated due to weak instruments.

Thirdly, we considered the hiring models. The 'new hires' outcome is a measure of labour market turnover, including changes in employment due to business growth as well as changes associated with labour market churn (where people are hired to replace those who have left). For new hires, four groups were considered: New Zealanders and the three subpopulations of youth, New Zealanders 25 years+ and beneficiaries. With all four groups, the temporary migrant terms in the total effects models (direct and combined) are not significant. This leads us to conclude that, for total effects, no evidence exists that temporary migration has an effect on the hiring of New Zealanders – either in the same industry or in different industries within the same region.

In this section, we focused on our best estimates of the causal impact of temporary migration on labour market outcomes of New Zealanders. It is also worth pointing out that our assumption that migrants seek out regions or industries that are growing is confirmed by the OLS results presented in Appendix C. Results presented in Table 9 in Appendix C, show highly significant positive coefficients for the migrant term for months worked and new hires and no effect for earnings. This is the relationship that we expected to see. Once we include instruments, the coefficients are no longer significant and, in many cases, they change sign.

[46] See Appendix B for the relevant ΔX *value* (in this case $\Delta X = 0.4\%$).

This illustrates the importance of including techniques to deal with selection issues when trying to estimate the causal impact.

Table 3 Overall results

Overall results			New Zealanders	Subpopulations: Youth	Subpopulations: New Zealanders 25 years+	Subpopulations: Beneficiaries
Months worked	Direct effect	Coefficient of migration term	-1.371	-1.026	-1.444	
		Mean outcome value	184,000	29,000	149,000	
		Proportional change in outcome due to ΔX	-0.6%	-0.4%	-0.6%	
		Estimated change in outcome due to ΔX	-1309	-120	-885	
	Combined effect	Coefficient of migration term	0.106	-4.224	0.700	
		Mean outcome value	2,322,000	415,000	1,906,000	
		Proportional change in outcome due to ΔX	0.0%	-1.7%	0.3%	
		Estimated change in outcome due to ΔX	1017	-7162	5517	
Monthly earnings	Direct effect	Coefficient of migration term	0.449	0.190	**0.598***	
		Mean outcome value	$4,000	$2,000	**$5,000**	
		Proportional change in outcome due to ΔX	0.2%	0.1%	**0.2%**	
		Estimated change in outcome due to ΔX	$8	$2	**$11**	
	Combined effect	Coefficient of migration term		1.100		
		Mean outcome value		2,000		
		Proportional change in outcome due to ΔX		0.5%		
		Estimated change in outcome due to ΔX		$10		
New hires	Direct effect	Coefficient of migration term	-0.192	-1.186	0.670	1.020
		Mean outcome value	10,000	3,000	5,000	2,000
		Proportional change in outcome due to ΔX	-0.1%	-0.5%	0.3%	0.4%
		Estimated change in outcome due to ΔX	-8	-13	15	7
	Combined effect	Coefficient of migration term	-2.529	4.205	2.100	-2.040
		Mean outcome value	143,000	41,000	75,000	26,000
		Proportional change in outcome due to ΔX	-1.0%	1.8%	0.9%	-0.8%
		Estimated change in outcome due to ΔX	-1479	714	650	-221

Notes: The proportional change in outcome figures are based on observed average value of ΔX between 2001 and 2015 = 0.004 where $\Delta X = \frac{\Delta M}{E^T_{t-1}}$.

Instruments are good: IV estimator bias compared with ordinary least squares (OLS) < 10%.

Instruments are weak but still usable: IV estimator biased by 10–15% compared with OLS.

** p<0.05 ** p<0.01 *** p<0.001*

5.2 More detailed results

We now go on to explore other models such as models for different periods of time and different subgroups. These more specific models show some effects that are not evident in the overall results (that is, the total effects models).

Table 4 shows the significant results for specified models where the model passed the specification tests. The coefficients in Table 4 show the relative size of the effects. More details for interpreting the coefficients are in Appendix B.

There are several effects for new hires models and none for months worked. This is not inconsistent because the outcomes 'months worked' and 'new hires' measure different things. For example, if a new job comes up in a particular industry and region, it might be that a temporary migrant gets the job but they might leave several months later. This could have an impact on a New Zealander who is also looking for work and who misses out on the job. However, in this scenario, the temporary migrant has done relatively little work, so may have had only minimal impact on employment.

Table 4 Detailed models – for periods or subgroups with significant effects

	Direct or combined effects	New Zealanders	Youth	New Zealanders 25 years+	Beneficiaries
New hires					
2001–2005	D				
	C	-	-	-	-17.242* / -8.9%
2006–2010	D	-	1.57* / 0.4%	-	-
	C	-	8.16* / 2.3%	-	
2011–2015	D				
	C	-	8.2 ** / 3.6%	-	-
Main urban	D	-	-	-	3.7** / 1.5%
	C	-	7.1** / 2.8%	-	-
Outside main urban	D	-	-	-	-
	C	-	-	-	-4.7* / -2.3%
Horticulture	D	-	-	-	-3.2* / -1.6%
	C	-	-	-	-8.9* / -4.5%
Food services	D	7.3** / 11.1%	10.8** / 16.4%	10.5** / 16.0%	-
	C	NA	NA	NA	NA
International students	D	-	4.2** / 0.3%	-	3.4* / 0.3%
	C	-	20.0* / 1.6%	-	-
Study to Work Category	D	-	-6.7* / -0.4%	-	-
	C				
Essential Skills Category	D	-	-	-	-
	C	-14.1* / -1.3%	-	-	-
Family Category	D	-20.6* / -1.4	-	-	-43.5** / -3.0
	C				
Earnings					
Outside main urban	D	0.6** / 0.3%	-	0.7** / 0.3%	NA
	C				NA
Auckland	D		-	1.2* / 0.5%	NA
	C	NA	NA	NA	NA
Months worked					
	No significant effects				

** p<0.05 ** p<0.01 *** p<0.001*

Key: coefficient / marginal-effect. NA = not applicable (for example, single industry or region, earning models not relevant for beneficiaries). A dash (-) means the effect term was not significant. A blank means we were unable to estimate the model. For further details, see Appendix B, Table 8.

5.2.1 Results for different periods

To understand the nature of the effect of migration through different periods, we refitted the models separately for the three five-year periods 2001–2005, 2006–2010 and 2011–2015.

Looking at 2011–2015, there is a statistically significant positive combined effect on the hiring of youth. (However, we are unable to estimate many of the effects over 2011–2015 because of weak instruments.)

The middle period (2006–2010) also shows positive effects on youth hires. In particular, positive direct effects and positive combined effects. Again, for this period, we cannot estimate some effects.

The earliest period (2001–2005) is associated with a negative (combined) effect on the hiring of beneficiaries. The new hire direct effect models and the other models for this period could not be estimated.

It is worth considering the context within which these effects took place. As discussed in section 4 (descriptive statistics), migrant employment rose strongly over the first eight years after 2000, but this rise started from a low level. The 2006–2010 period saw the tail end of that rise to relatively high levels and then a levelling over the period of the global financial crisis and immediately afterwards. The final period (2011–2015) showed both strong growth in temporary migrant employment and higher numbers of temporary migrants than had previously been seen.

It may be that the more positive hires effect in the middle and later periods are related to the level of temporary migrant employment. That is, it may be that some of the positive effects of migration are observed only when the levels of migrant employment reach a critical level – such as those seen in more recent years. It is perhaps harder to imagine an explanation for why smaller amounts of migration would have a negative effect, as we see in the earliest period.

We have no explanation for the negative impact of temporary migration on beneficiary hires in the earlier period. Information provided by the Ministry of Social Development shows that this period was associated with an overall decrease in the number of beneficiaries.[47] Over the same period, the number of temporary migrants was increasing. Hence, you would expect to see a negative association between temporary migrant employment and beneficiary new hires. Therefore, we included a control for the numbers of beneficiaries in a region as well as other fixed effects. It is possible that we do not have a very good estimate for the number of beneficiaries living in a region, in which case we are picking up some of this negative association in our estimate. It is also possible that the effect is real.

[47] Ministry of Social Development. (2016). *2016 Benefit Fact Sheets Archive.* www.msd.govt.nz/about-msd-and-our-work/publications-resources/statistics/benefit/archive-2016.html

5.2.2 Where effects can be seen

Some differences in the temporary migration effects can be seen between the areas 'main urban' and 'outside main urban'. Results from the models of main urban areas show positive direct effects on the hiring of beneficiaries. There was also a positive combined effect on youth hires – similar to that in the middle and later periods (that is, 2006–2015).

While a positive direct effect on beneficiary hires exists in the main urban areas, a negative combined effect on beneficiaries exists in non-main urban areas.

In the non-main urban areas, we also see positive (relatively small) effects on earnings for New Zealanders and New Zealanders 25 years+ (but no effect for youth).

Auckland showed some positive (smallish) effects on earnings for New Zealanders 25 years+.

5.2.3 Industry

In the food services industry, we observed positive direct effects on 'new hires' for New Zealanders, youth and New Zealanders 25 years+ (but no effect for beneficiaries).

In horticultural regions, we observed negative direct and combined effects on beneficiaries.[48]

5.2.4 Visa type

We show results for only four types of visas: International Student, Study to Work, Essential Skills and Family.[49] We were unable to estimate models for other types of visa because of poor instruments.[50] The Student category was associated with positive effects of migration compared with other visa categories, which showed negative effects.

For the International Student category, there are significant positive effects for youth hires (direct and combined) and beneficiary hires. The effect on youth hires could be related to an increase in student migrants in 2012 and 2014–2015, who are likely to have consumed services in industries where young people tend to work.[51]

The Study to Work category showed negative (direct) effects for youth hires, suggesting that migrants under this visa and youth may be competing for the same jobs.

The Essential Skills category showed negative (combined) effects in the hiring of New Zealanders as a whole. Employers must guarantee a certain number of hours of employment for Essential Skills migrants. It is possible that during challenging economic conditions, businesses might find it easier (or be contractually obligated) to retain an Essential Skills migrant over a New Zealander. We tried to explore this by estimating the impact of

[48] We were unable to estimate the impact of temporary migration for employment and accommodation services because of poor instruments.

[49] For this report, Family visas include Parent visas and Partnership visas.

[50] For the analysis of different visa types, we first tried to use the instruments based on policy share rather than country share. However, we obtained better results with the country-share instruments, so we used them.

[51] We tried to test whether the impact of international students changed following the increase in 2012 by estimating impacts in a period before and after the change. However, we were unable to obtain estimates because of poor instruments.

Essential Skills migrants across different periods (that is, before and after the policy was introduced), but we were unable to obtain estimates because of poor instruments.

In the Family category, there were direct negative effects in the hiring of New Zealanders as a whole and beneficiaries.

5.3 Results summary

The results are divided into two: the overall results (from the total effects models that give overall results using all the data) and more detailed results (for subgroups of the data).

5.3.1 Overall results – no negative effects on employment and new hires and some positive effect on earnings

When considering the total effects models, we found:

- no significant indications of migrants crowding out New Zealanders for jobs, and, in particular, no overall effects on employment in the same industry (direct effects) or when also considering other industries (combined effects)
- temporary migration has had some positive effects on the earnings of New Zealanders 25 years+ (but no effect on youth)
- no effects – either direct or combined – on new hires.

5.3.2 More detailed results – varying effects depending on group

The results for different periods and different subgroups show effects of temporary migration that are not evident in the overall results.

Different periods – varying effects on new hires

In the earliest period (2001–2005), there were negative effects on beneficiary hires. In later periods, there were positive effects for youth hires.

Main urban areas – positive effects on youth and beneficiary new hires

In main urban areas (for all years), we see positive effects for youth and beneficiary hires.

Non–main urban areas – negative effect on beneficiary hires, positive effect on earnings of New Zealanders 25 years+ and all New Zealanders

In non–main urban areas, we see a negative effect for beneficiary hires and a positive effect on the earnings of New Zealanders 25 years+ and New Zealanders as a whole.

Other effects

We also observed the following effects (see Table 4 for the size and significance of these effects).

- Horticultural regions – negative effects on new hires of beneficiaries.
- Food services industry – positive effects on new hires of all groups except beneficiaries, where we saw no effect.
- International students – positive effects on new hires of youth and beneficiaries.

- Study to Work visa – negative effects on new hires of youth.
- Essential Skills visa – negative effects on new hires of New Zealanders as a whole
- Family visa – negative effects on new hires of New Zealanders and beneficiaries.
- Auckland – positive effects on earnings of New Zealanders 25 years+.

6 Ideas for future work

Future work on the effects of temporary migration could include the following areas.

- Monitoring migrant share of employment by industry and region (as per Appendix D), as this shows where migrant employment is highest in proportional terms.
- Doing detailed analysis (possibly qualitative) of the dynamics between migrant employment and the employment of New Zealanders in the industries and regions where the migrant share of employment is high (as is determined in the first area we recommend for additional work). This will give us a more detailed understanding of the issues at play in these areas, so should help with developing appropriate policy responses.
- Adding more data into the models as it becomes available (for example, data for 2016 and 2017). With the recent surge in migrant levels, keeping this analysis up to date will be important. However, we suggest it may be more important to better understand the detailed dynamics in the industry-regions that have the highest share of migrant employment.
- Considering the length of time in a job, particularly how this affects new hires.
- Allowing for an individual's occupation, skill or wage level. This may be most relevant for the Essential Skills category of temporary migrants and raises similar issues to extending the analysis to cover permanent migrants.
- Adjusting for the amount of work (as measured in full-time equivalents) that individuals do. This may be most relevant for the models of months worked and earnings rates.
- Providing separate results by gender and ethnic group of the New Zealand population.
- Considering 'recent migrants' as a separate subcategory of New Zealander alongside youth and New Zealanders 25 years+.

7 Conclusion

Recent years have seen a rapid increase in temporary migration and temporary migrant employment with higher levels of temporary migrant employment than previously seen.

The authors of the 2013 report on the impacts of temporary migration and its impact on the New Zealand labour market concluded there was no evidence that the employment of temporary migrants had any "adverse consequences for the employment of New Zealanders overall".[52]

In this study, we updated the analysis of temporary migrants and the effects that they may have had on the employment of New Zealanders (using data from 2000 to 2015). We found similar results to the previous study. In particular, the overall results (that is, the results from the total effects models that used all the data) are:

- no evidence of migrants 'crowding out' New Zealanders for jobs
- no effects on new hires
- some positive effects on the earnings of New Zealanders aged 25 years+ (but not for youth).

Since 2015, there has been a further surge in migration, which perhaps raises the question whether this analysis should be updated again soon. However, it is our recommendation that the focus of further work be on:

- monitoring which industry–regions have the highest share of temporary migrant employment in order to have an up to date view of where any impacts might be
- a detailed (possibly qualitative) analysis of the dynamics between migrant employment and the employment of New Zealanders in those areas.

[52] K McLeod and D Maré. (2013). *The Rise of Temporary Migration in New Zealand and its Impact on the Labour Market.* Wellington: Ministry of Business, Employment and Innovation, p vii. www.mbie.govt.nz/publications-research/research/migrants---economic-impacts

Appendix A: Country of origin, region and industry groupings

Table 5 Country of origin groupings

Code	Country grouping
1	Great Britain–Ireland
2	China
3	India
4	Fiji
5	Japan
6	South Africa
7	Germany
8	US
9	Malaysia
10	Philippines
11	Tonga–Western Samoa
12	Korea
13	Brazil–Argentina–Chile
14	Other nationalities

Table 6 Region groupings

Code	Region grouping
1	Northland
2	Auckland
3	Waikato
4	Bay of Plenty
5	Gisborne–Hawke's Bay
6	Taranaki
7	Manawatū–Wanganui
8	Wellington
9	Tasman, Nelson, Marlborough and West Coast
10	Canterbury
11	Otago
12	Southland

Table 7 Industry groupings presented in the analysis

Industry	Industry description	Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006 codes included
A013	Fruit and tree nut growing	Group A013
A016	Dairy cattle farming	Group A016
A052	Agriculture and fishing support services	Group A052
A999	Other agriculture, forestry and fishing	Groups A011, A012, A014, A015, A017, A018, A019, A020, A030, A041, A042, A051
C999	Manufacturing	Division C
E999	Construction	Division E
F999	Wholesale trade	Division F
G411	Supermarkets and grocery stores	Group G411
G999	Other retail trade	Groups G391, G392, G400, G412, G421–G427, G431, G432
H440	Accommodation	Subdivision H44
H450	Food and beverage services	Subdivision H45
M999	Professional, scientific and technical services	Division M
N721	Employment services	Group N721
N731	Building cleaning, pest control and gardening services	Group N731
N732	Packaging services	Group N732
N999	Other administrative and support services	Groups N722, N729
P810	Tertiary education	Subdivision P81
P999	Other education and training	Subdivisions P80, P82
Q860	Residential care services	Subdivision Q86
Q999	Other health care and social assistance	Subdivisions Q84, Q85, Q87
Z999	Other industries	Divisions B, D, I, J, K, L, O, R, S

Appendix B: Summary results for other models

Table 8 Summary results for other models fitted, showing only the coefficients for the migrant term of interest

Term of interest	Results	Months worked			Monthly earnings $			New hires				$\Delta X = \frac{\Delta M}{E^T}$
			Subpopulation			Subpopulation			Subpopulation			
		NZers	Youth	25+ yrs	NZers	Youth	25+ yrs	NZers	Youth	25+ yrs	Beneficiary	
Overall results												0.004
Direct effect	Mean outcome variable	184,000	29,000	149,000	4,000	2,000	**5,000**	10,000	3,000	5,000	2,000	
	Coefficient of migration term	-1.371	-1.026	-1.444	0.449	0.190	**0.598***	-0.192	-1.186	0.670	1.020	
	Marginal effect =beta ΔX	-0.6%	-0.4%	-0.6%	0.2%	0.1%	**0.2%**	-0.1%	-0.5%	0.3%	0.4%	
	Proportional change in outcome due to ΔX	-0.6%	-0.4%	-0.6%	0.2%	0.1%	**0.2%**	-0.1%	-0.5%	0.3%	0.4%	
	Estimated change in outcome due to ΔX	-1039	-120	-885	8	2	**11**	-8	-13	15	7	
Combined effect	Mean outcome variable	2,322,000	415,000	1,906,000		2,000		143,000	41,000	75,000	26,000	
	Coefficient of migration term	0.106	-4.224	0.700		1.100		-2.529	4.205	2.100	-2.040	
	Marginal effect =beta ΔX	0.0%	-1.7%	0.3%		0.5%		-1.0%	1.7%	0.9%	-0.8%	
	Proportional change in outcome due to ΔX	0.0%	-1.7%	0.3%		0.5%		-1.0%	1.8%	0.9%	-0.8%	
	Estimated change in outcome due to ΔX	1017	-7162	5517		10		-1479	714	650	-221	
First 5 years (2001–2005)												0.005
Combined effect	Mean outcome variable							155,000	42,000	79,000	**33,000**	
	Coefficient of migration term							-10.203	-10.835	-7.378	**-17.242***	
	Marginal effect =beta ΔX							-5.3%	-5.6%	-3.8%	**-8.9%**	
	Proportional change in outcome due to ΔX							-5.1%	-5.4%	-3.7%	**-8.5%**	
	Estimated change in outcome due to ΔX							-7937	-2270	-2937	**-2815**	

Term of interest	Results	Months worked			Monthly earnings $			New hires				$\Delta X = \frac{\Delta M}{E^T}$
			Subpopulation			Subpopulation			Subpopulation			
		NZers	Youth	25+ yrs	NZers	Youth	25+ yrs	NZers	Youth	25+ yrs	Beneficiary	
Middle 5 years (2006–2010)												0.003
Direct effect	Mean outcome variable	190,000	30,000	153,000	4,000	2,000	5,000	10,000	**3,000**	6,000	2,000	
	Coefficient of migration term	-0.121	-0.550	-0.184	0.034	0.111	0.096	0.973	**1.571***	0.743	0.440	
	Marginal effect =beta ΔX	0.0%	-0.2%	-0.1%	0.0%	0.0%	0.0%	0.3%	**0.4%**	0.2%	0.1%	
	Proportional change in outcome due to ΔX	0.0%	-0.2%	-0.1%	0.0%	0.0%	0.0%	0.3%	**0.4%**	0.2%	0.1%	
	Estimated change in outcome due to ΔX	-64	-47	-78	0	1	1	29	**13**	12	2	
Combined effect	Mean outcome variable			1,956,000				143,000	**43,000**	77,000		
	Coefficient of migration term			0.056				0.244	**8.163***	-0.648		
	Marginal effect =beta ΔX			0.0%				0.1%	**2.3%**	-0.2%		
	Proportional change in outcome due to ΔX			0.0%				0.1%	**2.3%**	-0.2%		
	Estimated change in outcome due to ΔX			310				99	**1009**	-139		
Last 5 years (2011–2015)												0.004
Combined effect	Mean outcome variable				5,000			130,000	**38,000**	69,000	22,000	
	Coefficient of migration term				0.225			5.744	**8.191****	7.337	0.078	
	Marginal effect =beta ΔX				0.1%			2.5%	**3.6%**	3.2%	0.0%	
	Proportional change in outcome due to ΔX				0.1%			2.6%	**3.7%**	3.3%	0.0%	
	Estimated change in outcome due to ΔX				4			3331	**1406**	2258	8	
Main urban												0.004
Direct effect	Mean outcome variable	186,000	28,000	151,000	4,000	2,000	5,000	10,000	3,000	5,000	**2,000**	
	Coefficient of migration term	-0.851	-0.425	-0.875	0.352	0.196	0.483	1.119	0.673	1.367	**3.723****	
	Marginal effect =beta ΔX	-0.3%	-0.2%	-0.3%	0.1%	0.1%	0.2%	0.4%	0.3%	0.5%	**1.5%**	
	Proportional change in outcome due to ΔX	-0.3%	-0.2%	-0.3%	0.1%	0.1%	0.2%	0.4%	0.3%	0.5%	**1.5%**	
	Estimated change in outcome due to ΔX	-626	-47	-521	6	2	9	44	7	28	**24**	

Term of interest	Results	Months worked			Monthly earnings $			New hires				$\Delta X = \frac{\Delta M}{E^T}$
			Subpopulation			Subpopulation			Subpopulation			
		NZers	Youth	25+ yrs	NZers	Youth	25+ yrs	NZers	Youth	25+ yrs	Beneficiary	
Combined effect	*Mean outcome variable*							125,000	**36,000**	66,000	23,000	
	Coefficient of migration term							-0.063	**7.058****	4.059	1.786	
	Marginal effect =beta ΔX							0.0%	**2.8%**	1.6%	0.7%	
	Proportional change in outcome due to ΔX							0.0%	**2.8%**	1.6%	0.7%	
	Estimated change in outcome due to ΔX							-30	**1014**	1068	161	
Outside main urban												0.005
Direct effect	Mean outcome variable	29,000	5,000	23,000	**4,000**	2,000	**4,000**	2,000	500	1,000	*500*	
	Coefficient of migration term	0.416	0.486	0.498	**0.630****	0.307	**0.700****	-0.181	0.520	0.103	*-0.936*	
	Marginal effect =beta ΔX	0.2%	0.2%	0.2%	**0.3%**	0.2%	**0.3%**	-0.1%	0.3%	0.1%	*-0.5%*	
	Proportional change in outcome due to ΔX	0.2%	0.2%	0.2%	**0.3%**	0.2%	**0.3%**	-0.1%	0.3%	0.1%	*-0.5%*	
	Estimated change in outcome due to ΔX	60	11	57	**11**	4	**13**	-2	1	1	*-2*	
Combined effect	Mean outcome variable		71,000					30,000	8,000	15,000	***6,000***	
	Coefficient of migration term		-0.515					-0.511	1.807	0.633	***-4.652****	
	Marginal effect =beta ΔX		-0.3%					-0.3%	0.9%	0.3%	***-2.3%***	
	Proportional change in outcome due to ΔX		-0.3%					-0.3%	0.9%	0.3%	***-2.3%***	
	Estimated change in outcome due to ΔX		-179					-75	76	48	***-133***	
Horticultural												*0.005*
Direct effect	Mean outcome variable	65,000	10,000	53,000	4,000	2,000	4,000	4,000	1,000	2,000	***1,000***	
	Coefficient of migration term	-0.399	-0.123	-0.577	0.246	0.247	0.315	-2.375	-1.169	-2.739	***-3.200****	
	Marginal effect =beta ΔX	-0.2%	-0.1%	-0.3%	0.1%	0.1%	0.2%	-1.2%	-0.6%	-1.4%	***-1.6%***	
	Proportional change in outcome due to ΔX	-0.2%	-0.1%	-0.3%	0.1%	0.1%	0.2%	-1.2%	-0.6%	-1.4%	***-1.6%***	
	Estimated change in outcome due to ΔX	-129	-6	-153	5	3	6	-52	-6	-31	***-14***	

Term of interest	Results	Months worked			Monthly earnings $			New hires				$\Delta X = \frac{\Delta M}{E^T}$
			Subpopulation			Subpopulation			Subpopulation			
		NZers	Youth	25+ yrs	NZers	Youth	25+ yrs	NZers	Youth	25+ yrs	Beneficiary	
Combined effect	Mean outcome variable							70,000	19,000	35,000	***15,000***	
	Coefficient of migration term							-1.966	1.044	-0.774	***-8.908****	
	Marginal effect =beta ΔX							-1.0%	0.5%	-0.4%	***-4.5%***	
	Proportional change in outcome due to ΔX							-1.0%	0.5%	-0.4%	***-4.4%***	
	Estimated change in outcome due to ΔX							-698	102	-137	***-666***	
Canterbury												*0.004*
Direct effect	Mean outcome variable				4,000	2,000	5,000	10,000	3,000	5,000	*2,000*	
	Coefficient of migration term				0.627	0.167	0.404	-2.468	-5.397	-1.669	*1.839*	
	Marginal effect =beta ΔX				0.3%	0.1%	0.2%	-1.0%	-2.2%	-0.7%	*0.7%*	
	Proportional change in outcome due to ΔX				0.3%	0.1%	0.2%	-1.0%	-2.1%	-0.7%	*0.7%*	
	Estimated change in outcome due to ΔX				10	2	7	-102	-57	-36	*13*	
Auckland												*0.004*
Direct effect	Mean outcome variable					2,000	**5,000**	10,000	3,000	5,000	*2,000*	
	Coefficient of migration term					-0.741	**1.236***	0.350	-3.745	2.375	*1.601*	
	Marginal effect =beta ΔX					-0.3%	**0.5%**	0.1%	-1.5%	1.0%	*0.6%*	
	Proportional change in outcome due to ΔX					-0.3%	**0.5%**	0.1%	-1.5%	1.0%	*0.6%*	
	Estimated change in outcome due to ΔX					-7	**22**	15	-39	52	*11*	
Food services												*0.015*
Direct effect	Mean outcome variable		50,000					**11,000**	**5,000**	**3,000**	*2,000*	
	Coefficient of migration term		-2.523					**7.295****	**10.788***	**10.501***	*-1.122*	
	Marginal effect =beta ΔX		-3.8%					**11.1%**	**16.4%**	**16.0%**	*-1.7%*	
	Proportional change in outcome due to ΔX		-3.8%					**11.7%**	**17.8%**	**17.3%**	*-1.7%*	
	Estimated change in outcome due to ΔX		-1884					**1264**	**973**	**545**	*-35*	

Term of interest	Results	Months worked			Monthly earnings $			New hires				$\Delta X = \frac{\Delta M}{E^T}$
			Subpopulation			Subpopulation			Subpopulation			
		NZers	Youth	25+ yrs	NZers	Youth	25+ yrs	NZers	Youth	25+ yrs	Beneficiary	
Student visa												*0.0008*
Direct effect	Mean outcome variable							10,000	**3,000**	6,000	***2,000***	
	Coefficient of migration term							2.001	**4.245****	0.660	***3.356****	
	Marginal effect =beta ΔX							0.2%	**0.3%**	0.1%	***0.3%***	
	Proportional change in outcome due to ΔX							0.2%	**0.3%**	0.1%	***0.3%***	
	Estimated change in outcome due to ΔX							17	**9**	3	***5***	
Combined effect	Mean outcome variable	2,322,000		1,906,000				143,000	**41,000**	75,000	*26,000*	
	Coefficient of migration term	-1.585		-2.767				13.402	**20.047***	5.295	*8.798*	
	Marginal effect =beta ΔX	-0.1%		-0.2%				1.1%	**1.6%**	0.4%	*0.7%*	
	Proportional change in outcome due to ΔX	-0.1%		-0.2%				1.1%	**1.6%**	0.4%	*0.7%*	
	Estimated change in outcome due to ΔX	-2928		-4196				1538	**657**	316	*186*	
Study to Work visa												0.0005
Direct effect	Mean outcome variable							10,000	**3,000**	5,000	2,000	
	Coefficient of migration term							-4.271	**-6.721***	-4.608	-0.886	
	Marginal effect =beta ΔX							-0.2%	**-0.4%**	-0.2%	0.0%	
	Proportional change in outcome due to ΔX							-0.2%	**-0.4%**	-0.2%	0.0%	
	Estimated change in outcome due to ΔX							-24	**-9**	-13	-1	
Essential Skills visa												0.0009
Direct effect	Mean outcome variable							10,000	3,000	5,000	2,000	
	Coefficient of migration term							0.852	-0.647	0.224	0.803	
	Marginal effect =beta ΔX							0.1%	-0.1%	0.0%	0.1%	
	Proportional change in outcome due to ΔX							0.1%	-0.1%	0.0%	0.1%	
	Estimated change in outcome due to ΔX							8	-2	1	1	

Term of interest	Results	Months worked			Monthly earnings $			New hires				$\Delta X = \frac{\Delta M}{E^T}$
			Subpopulation			Subpopulation			Subpopulation			
		NZers	Youth	25+ yrs	NZers	Youth	25+ yrs	NZers	Youth	25+ yrs	Beneficiary	
Combined effect	Mean outcome variable							**143,000**	41,000	75,000	26,000	
	Coefficient of migration term							**-14.065***	-2.463	-5.008	-23.701	
	Marginal effect =beta ΔX							**-1.3%**	-0.2%	-0.5%	-2.2%	
	Proportional change in outcome due to ΔX							**-1.3%**	-0.2%	-0.5%	-2.2%	
	Estimated change in outcome due to ΔX							**-1832**	-92	-343	-570	
Family visa												0.0007
Direct effect	Mean outcome variable		29,000		4,000	2,000	5,000	**10,000**	3,000	5,000	**2,000**	
	Coefficient of migration term		1.883		2.195	4.714	2.143	**-20.647***	-8.476	-19.445	**-43.535****	
	Marginal effect =beta ΔX		0.1%		0.1%	0.3%	0.1%	**-1.4%**	-0.6%	-1.3%	**-3.0%**	
	Proportional change in outcome due to ΔX		0.1%		0.1%	0.3%	0.1%	**-1.4%**	-0.6%	-1.3%	**-2.9%**	
	Estimated change in outcome due to ΔX		37		6	8	7	**-145**	-15	-72	**-52**	

Note: * figures are based on observed average values of ΔX where $\Delta X = \frac{\Delta M}{E^T_{t-1}}$.

The only exceptions are for Canterbury and Auckland where we used the average from the pooled observations; that is, the same as the overall results.

Appendix C: Full results

Table 9 Overall regression results

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings – 25+ yrs**		
	OLS FE	**FE IV 1**	**FE IV 2**	**OLS FE**	**FE IV 1**	**FE IV 2**	**OLS FE**	**FE IV 1**	**FE IV 2**	**OLS FE**	**FE IV 1**	**FE IV 2**	**OLS FE**	**FE IV 1**	**FE IV 2**	**OLS FE**	**FE IV 1**	**FE IV 2**
Lagged dependent variable	0.832***	0.831***	1.229***	0.774***	0.779***	1.063***	0.844***	0.839***	1.217***	0.740***	0.743***	0.755***	0.691***	0.691***	0.820***	0.720***	0.721***	0.680***
	[0.016]	[0.019]	[0.091]	[0.016]	[0.019]	[0.069]	[0.015]	[0.018]	[0.084]	[0.026]	[0.027]	[0.070]	[0.018]	[0.018]	[0.053]	[0.026]	[0.026]	[0.077]
Change in migrant employment	1.329***	-0.543	-1.371	1.793***	-0.667	-1.026	1.204***	-0.651	-1.444	-0.019	**0.519***	0.449	-0.033	0.409	0.190	0.052	**0.584****	**0.598***
	[0.150]	[0.497]	[0.846]	[0.212]	[0.789]	[0.926]	[0.138]	[0.473]	[0.807]	[0.045]	[0.227]	[0.241]	[0.065]	[0.305]	[0.325]	[0.043]	[0.216]	[0.241]
Observations	3600	3600	3360	3600	3600	3360	3600	3600	3360	3600	3600	3360	3600	3600	3360	3600	3600	3360
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Adj R-squared – ex FE	0.93	0.91	0.84	0.87	0.85	0.80	0.94	0.92	0.86	0.94	0.94	0.93	0.85	0.84	0.82	0.93	0.93	0.92
KP under-ID (Ho: Not identified)		15.14	13.68		14.87	14.34		15.29	14.09		15.30	14.04		15.09	13.81		15.12	13.82
KP under-ID LM (p: ideally 0)		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
KP Weak ID (Ho: Weak Instrument)		16.39	6.80		16.10	7.45		16.58	7.01		16.73	7.43		16.40	7.39		16.47	7.30
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings – 25+ yrs**		
	OLS FE	**FE IV 1**	**FE IV 2**	**OLS FE**	**FE IV 1**	**FE IV 2**	**OLS FE**	**FE IV 1**	**FE IV 2**	**OLS FE**	**FE IV 1**	**FE IV 2**	**OLS FE**	**FE IV 1**	**FE IV 2**	**OLS FE**	**FE IV 1**	**FE IV 2**
Stock-Yogo critical value (15%)		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58
	Regional variation									**Regional variation**								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings –25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.941***	0.960***	1.460***	0.763***	0.852***	1.723***	0.962***	0.967***	1.405***	0.867***	0.843***	0.209	0.874***	0.879***	0.796***	0.865***	0.845***	0.413
	[0.036]	[0.040]	[0.198]	[0.049]	[0.063]	[0.247]	[0.035]	[0.038]	[0.225]	[0.039]	[0.042]	[0.556]	[0.021]	[0.025]	[0.110]	[0.040]	[0.043]	[0.364]
Change in migrant employment	1.089***	-0.551	0.106	3.137***	-0.547	-4.224	0.783**	-0.348	0.700	0.117	**0.828***	2.330	0.485	0.271	1.100	0.289	**0.947****	1.850
	[0.286]	[0.723]	[0.897]	[0.623]	[1.349]	[2.764]	[0.250]	[0.636]	[0.883]	[0.167]	[0.345]	[1.685]	[0.293]	[0.494]	[1.128]	[0.160]	[0.328]	[1.093]
Observations	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.98	0.98	0.98	1.00	1.00	1.00
Adj R-squared – ex FE	0.98	0.98	0.94	0.93	0.91	0.68	0.99	0.99	0.97	0.99	0.99	0.96	0.97	0.97	0.96	0.99	0.99	0.97
KP under-ID (Ho: Not identified)		30.24	12.97		27.08	13.02		29.54	8.70		26.04	2.17		15.65	10.12		26.16	3.10

	Regional variation									Regional variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings –25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
KP under-ID LM (p: ideally 0)		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.14		0.00	0.00		0.00	0.08
KP Weak ID (Ho: Weak Instrument)		70.76	11.25		62.27	7.02		72.69	5.47		61.35	0.98		37.67	5.41		63.37	1.41
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Local industry variation								Regional variation							
Dependent variable	**Hires – NZers**		**Hires – youth**		**Hires – 25+ yrs**		**Hires – beneficiaries**		**Hires – NZers**		**Hires – youth**		**Hires – 25+ yrs**		**Hires – beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total number of beneficiaries															0.793***	0.744***
															[0.037]	[0.049]
Lagged total employment	0.669***	0.657***	0.642***	0.624***	0.681***	0.674***	0.712***	0.707***	0.820***	0.893***	0.707***	0.759***	0.830***	0.866***	0.520***	0.565***
	[0.032]	[0.035]	[0.036]	[0.042]	[0.034]	[0.036]	[0.036]	[0.037]	[0.142]	[0.154]	[0.144]	[0.151]	[0.146]	[0.149]	[0.107]	[0.115]
Change in migrant employment	2.336***	-0.192	2.881***	-1.186	2.217***	0.670	2.197***	1.020	4.485***	-2.529	9.266***	4.205	5.526***	2.100	1.976	-2.040
	[0.264]	[0.934]	[0.330]	[1.361]	[0.265]	[0.955]	[0.300]	[1.042]	[1.230]	[2.551]	[1.410]	[2.671]	[1.292]	[2.654]	[1.272]	[2.355]
Observations	3600	3600	3600	3600	3600	3600	3597	3597	180	180	180	180	180	180	180	180
Adj R-squared	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj R-squared – ex FE	0.78	0.77	0.78	0.75	0.73	0.73	0.87	0.87	0.88	0.86	0.89	0.88	0.84	0.83	0.98	0.97
KP under-ID (Ho: Not identified)		15.95		15.95		15.95		15.95		29.99		29.99		29.99		19.29
KP under-ID LM (p: ideally 0)		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
KP Weak ID (Ho: Weak Instrument)		17.49		17.49		17.49		17.49		70.88		70.88		70.88		45.75
Stock-Yogo critical value (10%)		16.38		16.38		16.38		16.38		16.38		16.38		16.38		16.38

	Local industry variation								Regional variation							
Dependent variable	**Hires – NZers**		**Hires – youth**		**Hires – 25+ yrs**		**Hires – beneficiaries**		**Hires – NZers**		**Hires – youth**		**Hires – 25+ yrs**		**Hires – beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Stock-Yogo critical value (15%)		8.96		8.96		8.96		8.96		8.96		8.96		8.96		8.96

* p<0.05 ** p<0.01 *** p<0.001

OLS FE includes fixed effects, FE IV 1 includes fixed effects and instrument for migrant term, FE IV2 includes fixed effects and instrument for migrant term and lagged dependent variable.

KP Under-ID = Kleibergen-Paap rk LM statistics; KP Weak ID = Kleibergen-Paap rk Wald F statistics.

Diagnostic test results are highlighted for cases where instruments are particularly weak or insufficiently correlated with the variables they are instrumenting (that is, the system is underidentified). In these cases, coefficient estimates and their errors are unreliable.

Table 10 Regression results – last five years (2011–2015)

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings – 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.594***	0.590***	0.810***	0.465***	0.447***	0.619***	0.629***	0.615***	0.852***	0.531***	0.533***	0.693***	0.382***	0.370***	0.512***	0.443***	0.426***	0.614***
	[0.035]	[0.046]	[0.113]	[0.037]	[0.059]	[0.094]	[0.036]	[0.048]	[0.107]	[0.072]	[0.085]	[0.110]	[0.048]	[0.051]	[0.079]	[0.050]	[0.073]	[0.116]
Change in migrant employment	1.056***	0.944	0.274	1.307***	0.336	0.527	0.974***	0.611	-0.284	-0.067	0.806	0.465	-0.183*	-0.720	-1.023	0.018	1.342	1.020
	[0.134]	[0.893]	[1.566]	[0.230]	[2.311]	[2.148]	[0.129]	[0.884]	[1.701]	[0.053]	[0.967]	[0.706]	[0.080]	[0.745]	[0.845]	[0.051]	[1.252]	[1.031]
Observations	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Adj R-squared – ex FE	0.69	0.69	0.62	0.46	0.44	0.42	0.70	0.69	0.59	0.83	0.76	0.80	0.65	0.63	0.59	0.82	0.64	0.71
KP under-ID (Ho: Not identified)		1.60	1.10		1.24	1.29		1.72	1.21		1.30	1.31		1.40	1.46		1.23	1.14
KP under-ID LM (p: ideally 0)		0.21	0.29		0.27	0.26		0.19	0.27		0.25	0.25		0.24	0.23		0.27	0.29
KP Weak ID (Ho: Weak Instrument)		1.59	0.52		1.20	0.63		1.73	0.57		1.27	0.64		1.38	0.72		1.19	0.55
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Regional variation									Regional variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings – 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.676***	0.670***	0.924*	0.622***	0.646***	0.633	0.662***	0.656***	1.180	0.569***	0.518***	0.661***	0.499***	0.537***	0.719*	0.570***	0.512***	0.696**
	[0.053]	[0.055]	[0.437]	[0.052]	[0.069]	[0.382]	[0.064]	[0.067]	[0.757]	[0.081]	[0.094]	[0.198]	[0.061]	[0.103]	[0.347]	[0.079]	[0.096]	[0.220]
Change in migrant employment	1.745***	**2.049*** **	0.807	3.845***	**2.915** **	3.035	1.343***	**2.002*** **	-0.109	-0.147	0.360	0.225	0.252	-0.303	-0.781	0.046	0.574	0.351
	[0.213]	[0.574]	[2.205]	[0.405]	[0.997]	[3.891]	[0.219]	[0.582]	[2.984]	[0.170]	[0.411]	[0.361]	[0.233]	[0.848]	[1.551]	[0.179]	[0.421]	[0.400]
Observations	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00
Adj R-squared – ex FE	0.96	0.96	0.93	0.90	0.90	0.90	0.96	0.95	0.87	0.97	0.96	0.96	0.96	0.95	0.94	0.96	0.96	0.96
KP under-ID (Ho: Not identified)		9.31	0.96		7.37	0.37		8.78	0.69		5.41	6.74		4.17	1.12		5.06	5.01
KP under-ID LM (p: ideally 0)		0.00	0.33		0.01	0.55		0.00	0.41		0.02	0.01		0.04	0.29		0.02	0.03
KP Weak ID (Ho: Weak Instrument)		15.41	0.46		14.63	0.16		14.73	0.32		13.87	4.29		10.99	0.47		13.70	3.11
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	8.96		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Local industry variation								Regional variation							
Dependent variable	**Hires – NZers**		**Hires – youth**		**Hires – 25+ yrs**		**Hires – Beneficiaries**		**Hires – NZers**		**Hires – youth**		**Hires – 25+ yrs**		**Hires – Beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total number of beneficiaries															1.178***	1.182***
															[0.130]	[0.142]
Lagged total employment	0.207**	0.072	0.216**	0.092	0.248**	0.095	0.036	-0.011	0.724	0.698	0.998**	0.981**	1.020*	0.972*	1.064*	1.065*
	[0.072]	[0.155]	[0.075]	[0.176]	[0.085]	[0.168]	[0.068]	[0.123]	[0.430]	[0.409]	[0.323]	[0.307]	[0.461]	[0.435]	[0.481]	[0.485]
Change in migrant employment	1.337***	-1.904	1.611***	-1.384	1.117***	-2.581	1.320***	0.168	4.409*	5.744	7.316***	**8.191****	4.857*	7.337	-0.249	0.078
	[0.264]	[3.092]	[0.360]	[3.667]	[0.279]	[3.177]	[0.318]	[2.608]	[2.226]	[3.823]	[1.643]	[2.662]	[2.309]	[4.916]	[1.665]	[2.701]
Observations	1200	1200	1200	1200	1200	1200	1197	1197	60	60	60	60	60	60	60	60
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj R-squared – ex FE	0.32	0.23	0.34	0.25	0.33	0.25	0.56	0.56	0.19	0.18	0.69	0.69	0.28	0.26	0.87	0.87
KP under-ID (Ho: Not identified)		2.31		2.31		2.31		2.31		9.91		9.91		9.91		8.70
KP under-ID LM (p: ideally 0)		0.13		0.13		0.13		0.13		0.00		0.00		0.00		0.00
KP Weak ID (Ho: Weak Instrument)		2.38		2.38		2.38		2.38		17.48		17.48		17.48		16.91
Stock-Yogo critical value (10%)		16.38		16.38		16.38		16.38		16.38		16.38		16.38		16.38
Stock-Yogo critical value (15%)		8.96		8.96		8.96		8.96		8.96		8.96		8.96		8.96

Table 11 Regression results – middle five years (2006–2010)

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings – 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.571***	0.563***	0.900***	0.534***	0.535***	0.900***	0.575***	0.562***	0.864***	0.315***	0.315***	0.463***	0.478***	0.475***	0.689***	0.281***	0.281***	0.397**
	[0.039]	[0.041]	[0.137]	[0.037]	[0.038]	[0.102]	[0.040]	[0.042]	[0.125]	[0.059]	[0.059]	[0.125]	[0.067]	[0.068]	[0.096]	[0.054]	[0.054]	[0.121]
Change in migrant employment	0.666***	-0.057	-0.121	0.917***	-0.124	-0.550	0.567**	-0.219	-0.184	-0.079	0.017	0.034	-0.031	0.131	0.111	-0.043	0.087	0.096
	[0.194]	[0.343]	[0.349]	[0.267]	[0.527]	[0.600]	[0.177]	[0.359]	[0.348]	[0.082]	[0.163]	[0.169]	[0.093]	[0.262]	[0.284]	[0.081]	[0.155]	[0.158]
Observations	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Adj R-squared – ex FE	0.70	0.68	0.62	0.79	0.78	0.73	0.66	0.64	0.59	0.65	0.65	0.64	0.48	0.48	0.46	0.61	0.61	0.60
KP under-ID (Ho: Not identified)		7.66	15.00		7.79	12.98		7.56	14.57		7.63	7.62		7.74	8.48		7.65	7.61
KP under-ID LM (p: ideally 0)		0.01	0.00		0.01	0.00		0.01	0.00		0.01	0.01		0.01	0.00		0.01	0.01
KP Weak ID (Ho: Weak Instrument)		10.28	9.21		10.36	8.12		10.16	8.98		10.29	5.14		10.42	5.62		10.31	5.12
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Regional variation									Regional variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings –25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.512***	0.512***	0.697**	0.611***	0.607***	1.174***	0.501***	0.500***	0.519	0.386**	0.353*	-0.099	0.685***	0.756***	-1.546	0.453**	0.424*	0.011
	[0.112]	[0.110]	[0.270]	[0.114]	[0.120]	[0.280]	[0.132]	[0.130]	[0.282]	[0.137]	[0.163]	[0.376]	[0.064]	[0.111]	[19.551]	[0.144]	[0.176]	[0.326]
Change in migrant employment	0.862	0.709	0.381	3.282*	3.765	0.176	0.403	0.072	0.056	0.101	0.581	0.982	0.261	-0.549	14.103	0.344	1.072	1.431
	[0.575]	[0.888]	[1.016]	[1.601]	[1.981]	[2.526]	[0.431]	[0.921]	[0.965]	[0.329]	[0.690]	[0.781]	[0.431]	[1.259]	[126.446]	[0.400]	[0.755]	[0.898]
Observations	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.53	1.00	1.00	1.00
Adj R-squared – ex FE	0.76	0.76	0.74	0.94	0.94	0.89	0.84	0.84	0.84	0.92	0.92	0.89	0.88	0.87	-1.62	0.87	0.86	0.81
KP under-ID (Ho: Not identified)		11.22	5.85		10.23	3.14		11.37	7.87		11.22	6.71		4.26	0.01		11.01	7.54
KP under-ID LM (p: ideally 0)		0.00	0.02		0.00	0.08		0.00	0.01		0.00	0.01		0.04	0.91		0.00	0.01
KP Weak ID (Ho: Weak Instrument)		19.05	3.77		18.14	3.37		19.08	4.44		15.56	2.84		4.33	0.01		15.70	3.57
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	8.96		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Local industry variation								Regional variation							
Dependent variable	**Hires – NZers**		**Hires – youth**		**Hires – 25+ yrs**		**Hires – beneficiaries**		**Hires – NZers**		**Hires – youth**		**Hires –25+ yrs**		**Hires – beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total number of beneficiaries															0.675***	0.430*
															[0.098]	[0.171]
Lagged total employment	0.308***	0.311***	0.279***	0.279**	0.327***	0.327***	0.367***	0.358***	-0.181	-0.371	0.613	0.543	-0.334	-0.561	0.079	-0.722
	[0.066]	[0.072]	[0.079]	[0.088]	[0.077]	[0.084]	[0.085]	[0.095]	[0.504]	[0.465]	[0.510]	[0.495]	[0.574]	[0.541]	[0.555]	[0.690]
Change in migrant employment	0.910***	0.973	1.571***	**1.571***	0.755**	0.743	0.631	0.440	5.050*	0.244	9.919**	**8.163***	5.085*	-0.648	-0.905	-9.340
	[0.275]	[0.647]	[0.296]	[0.687]	[0.262]	[0.689]	[0.359]	[0.756]	[2.368]	[3.636]	[3.330]	[4.035]	[2.593]	[4.317]	[1.802]	[4.785]
Observations	1200	1200	1200	1200	1200	1200	1197	1197	60	60	60	60	60	60	60	60
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj R-squared – ex FE	0.82	0.82	0.86	0.86	0.79	0.79	0.71	0.71	0.95	0.95	0.96	0.96	0.94	0.93	0.95	0.92
KP under-ID (Ho: Not identified)		7.29		7.29		7.29		7.29		11.26		11.26		11.26		5.52
KP under-ID LM (p: ideally 0)		0.01		0.01		0.01		0.01		0.00		0.00		0.00		0.02
KP Weak ID (Ho: Weak Instrument)		9.42		9.42		9.42		9.42		23.50		23.50		23.50		6.21
Stock-Yogo critical value (10%)		16.38		16.38		16.38		16.38		16.38		16.38		16.38		16.38
Stock-Yogo critical value (15%)		8.96		8.96		8.96		8.96		8.96		8.96		8.96		8.96

Table 12 Regression results – first five years (2001–2005)

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings – NZers 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.503***	0.405***	0.358	0.467***	0.409***	0.464	0.506***	0.422***	0.351	0.376***	0.405***	0.388	0.343***	0.346***	0.465**	0.400***	0.430***	0.554
	[0.042]	[0.092]	[0.657]	[0.038]	[0.067]	[0.349]	[0.038]	[0.081]	[0.738]	[0.037]	[0.051]	[0.326]	[0.037]	[0.039]	[0.147]	[0.038]	[0.051]	[0.448]
Change in migrant employment	2.484***	-3.311	-15.521	3.473***	-3.522	-9.395	2.280***	-2.627	-20.169	0.176	2.989	9.776	-0.145	0.559	3.790	0.366**	2.793	9.724
	[0.457]	[3.269]	[26.662]	[0.677]	[4.082]	[16.850]	[0.407]	[3.178]	[36.406]	[0.124]	[1.545]	[16.409]	[0.241]	[1.604]	[7.686]	[0.129]	[1.476]	[13.013]
Observations	1200	1200	960	1200	1200	960	1200	1200	960	1200	1200	960	1200	1200	960	1200	1200	960
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	1.00	1.00	0.98
Adj R-squared – ex FE	0.84	0.74	-0.48	0.76	0.69	0.38	0.82	0.74	-1.61	0.77	0.61	-1.72	0.52	0.51	0.09	0.77	0.66	-1.45
KP under-ID (Ho: Not identified)		5.30	0.39		5.13	0.56		5.58	0.34		4.46	0.34		4.43	0.40		4.47	0.51
KP under-ID LM (p: ideally 0)		0.02	0.53		0.02	0.45		0.02	0.56		0.03	0.56		0.04	0.53		0.03	0.48
KP Weak ID (Ho: Weak Instrument)		4.99	0.18		4.82	0.26		5.34	0.15		4.18	0.15		4.16	0.18		4.18	0.23
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Regional variation									Regional variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings – NZers 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.666***	0.666***	4.515	0.540***	0.540***	4.967	0.721***	0.741***	-72.136	0.653***	0.670***	-5.592	0.795***	0.781***	2.523	0.609***	0.639***	-2.109
	[0.128]	[0.127]	[19.735]	[0.090]	[0.090]	[17.223]	[0.129]	[0.134]	[7794.863]	[0.106]	[0.110]	[67.538]	[0.074]	[0.085]	[3.877]	[0.107]	[0.112]	[27.217]
Change in migrant employment	-0.850	-0.822	27.855	-1.940	**-5.197***	-9.010	-0.423	0.655	-700.111	0.293	-0.317	22.851	-0.708	0.076	-24.550	0.283	-0.819	8.713
	[0.990]	[1.768]	[154.520]	[1.100]	[2.425]	[25.803]	[1.064]	[1.963]	[74778.084]	[0.573]	[0.850]	[259.001]	[0.932]	[1.816]	[48.864]	[0.610]	[0.830]	[98.393]
Observations	60	60	48	60	60	48	60	60	48	60	60	48	60	60	48	60	60	48
Adj R-squared	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	-0.06	1.00	1.00	0.90	0.99	0.99	0.79	1.00	1.00	0.99
Adj R-squared – ex FE	0.97	0.97	-1.09	0.96	0.95	-2.59	0.96	0.96	-793.57	0.96	0.96	-3.76	0.92	0.92	-1.50	0.96	0.96	0.29
KP under-ID (Ho: Not identified)		5.65	0.04		5.40	0.07		6.12	0.00		6.16	0.01		6.71	0.25		6.24	0.01
KP under-ID LM (p: ideally 0)		0.02	0.84		0.02	0.79		0.01	0.99		0.01	0.93		0.01	0.62		0.01	0.93
KP Weak ID (Ho: Weak Instrument)		27.64	0.02		28.09	0.03		28.16	0.00		29.37	0.00		34.21	0.11		29.07	0.00
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	8.96		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Local industry variation								Regional variation							
Dependent variable	**Hires – NZers**		**Hires – youth**		**Hires – NZers 25+ yrs**		**Hires – beneficiaries**		**Hires – NZers**		**Hires – youth**		**Hires – NZers 25+ yrs**		**Hires – Beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total number of beneficiaries															0.614***	0.562***
															[0.097]	[0.135]
Lagged total employment	0.293***	0.128	0.391***	0.260*	0.238***	0.108	0.416***	0.166	0.438	0.398	0.571	0.481	0.921*	0.919*	-0.251	-0.348
	[0.064]	[0.131]	[0.077]	[0.131]	[0.069]	[0.132]	[0.080]	[0.176]	[0.327]	[0.323]	[0.352]	[0.360]	[0.441]	[0.444]	[0.291]	[0.322]
Change in migrant employment	3.702***	-5.451	4.201***	-3.062	3.795***	-3.430	3.982***	-9.863	-7.050*	-10.203	-3.715	-10.835	-7.264	-7.378	-13.476***	**-17.242***
	[0.597]	[5.040]	[0.671]	[4.851]	[0.683]	[5.343]	[0.720]	[6.584]	[3.216]	[5.795]	[3.605]	[6.220]	[4.206]	[6.792]	[2.583]	[7.035]
Observations	1200	1200	1200	1200	1200	1200	1200	1200	60	60	60	60	60	60	60	60
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj R-squared – ex FE	0.44	0.31	0.73	0.69	0.49	0.44	0.73	0.64	0.46	0.45	0.90	0.90	0.63	0.63	0.96	0.96
KP under-ID (Ho: Not identified)		6.52		6.52		6.52		6.52		5.86		5.86		5.86		5.85
KP under-ID LM (p: ideally 0)		0.01		0.01		0.01		0.01		0.02		0.02		0.02		0.02
KP Weak ID (Ho: Weak Instrument)		6.28		6.28		6.28		6.28		28.86		28.86		28.86		22.67
Stock-Yogo critical value (10%)		16.38		16.38		16.38		16.38		16.38		16.38		16.38		16.38
Stock-Yogo critical value (15%)		8.96		8.96		8.96		8.96		8.96		8.96		8.96		8.96

Table 13 Regression results – main urban areas only

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings – 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.841***	0.836***	1.126***	0.775***	0.777***	1.014***	0.852***	0.845***	1.121***	0.748***	0.753***	0.783***	0.665***	0.663***	0.786***	0.733***	0.737***	0.717***
	[0.015]	[0.017]	[0.072]	[0.017]	[0.019]	[0.060]	[0.014]	[0.016]	[0.067]	[0.026]	[0.026]	[0.065]	[0.018]	[0.019]	[0.052]	[0.025]	[0.025]	[0.069]
Change in migrant employment	1.200***	-0.034	-0.851	1.839***	0.131	-0.425	1.093***	-0.144	-0.875	0.018	0.398	0.352	-0.075	0.359	0.196	0.081	**0.451***	0.483
	[0.183]	[0.429]	[0.753]	[0.221]	[0.673]	[0.884]	[0.172]	[0.424]	[0.694]	[0.060]	[0.235]	[0.247]	[0.069]	[0.328]	[0.348]	[0.054]	[0.223]	[0.247]
Observations	3579	3579	3336	3558	3558	3318	3576	3576	3333	3582	3582	3339	3564	3564	3321	3579	3579	3333
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Adj R-squared – ex FE	0.91	0.90	0.84	0.85	0.84	0.80	0.92	0.91	0.86	0.93	0.92	0.92	0.80	0.80	0.78	0.92	0.91	0.90
KP under-ID (Ho: Not identified)		15.14	11.59		14.74	12.39		15.20	12.23		15.02	13.47		14.93	13.99		14.91	13.16
KP under-ID LM (p: ideally 0)		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
KP Weak ID (Ho: Weak Instrument)		16.84	5.92		16.29	6.47		16.91	6.32		16.65	7.38		16.44	7.64		16.50	7.19
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Regional variation												Regional variation					
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings – 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.932***	0.936***	1.538***	0.756***	0.815***	1.950***	0.949***	0.945***	1.467***	0.890***	0.877***	0.345	0.878***	0.891***	0.537*	0.880***	0.869***	0.443
	[0.035]	[0.041]	[0.294]	[0.046]	[0.050]	[0.567]	[0.033]	[0.038]	[0.309]	[0.039]	[0.040]	[0.439]	[0.022]	[0.029]	[0.237]	[0.042]	[0.042]	[0.356]
Change in migrant employment	1.038**	-0.666	-1.072	2.732***	-0.373	-8.175	0.801*	-0.449	-0.124	0.243	**0.615***	1.862	0.623	0.070	3.266	0.387*	**0.704***	1.692
	[0.332]	[0.849]	[1.190]	[0.556]	[1.329]	[5.278]	[0.320]	[0.776]	[1.054]	[0.203]	[0.306]	[1.428]	[0.390]	[0.599]	[1.956]	[0.189]	[0.287]	[1.185]
Observations	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.96	1.00	1.00	1.00
Adj R-squared – ex FE	0.98	0.97	0.91	0.93	0.92	0.52	0.99	0.98	0.95	0.99	0.99	0.97	0.95	0.95	0.88	0.99	0.99	0.97
KP under-ID (Ho: Not identified)		25.84	7.71		25.46	4.71		25.12	6.13		20.10	2.54		13.70	6.58		19.42	2.76
KP under-ID LM (p: ideally 0)		0.00	0.01		0.00	0.03		0.00	0.01		0.00	0.11		0.00	0.01		0.00	0.10
KP Weak ID (Ho: Weak Instrument)		50.50	5.42		50.22	2.42		51.15	3.67		44.00	1.23		32.49	2.90		43.46	1.30
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	8.96		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Local industry variation								Regional variation							
Dependent variable	**Hires – NZers**		**Hires – youth**		**Hires – 25+ yrs**		**Hires – beneficiaries**		**Hires – NZers**		**Hires – youth**		**Hires – 25+ yrs**		**Hires – beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total number of beneficiaries															0.779***	0.799***
															[0.049]	[0.056]
Lagged total employment	0.706***	0.700***	0.707***	0.694***	0.696***	0.692***	0.738***	0.750***	0.790***	0.799***	0.785***	0.788***	0.783***	0.784***	0.405**	0.392**
	[0.033]	[0.035]	[0.034]	[0.037]	[0.037]	[0.038]	[0.036]	[0.036]	[0.126]	[0.136]	[0.124]	[0.127]	[0.152]	[0.152]	[0.133]	[0.135]
Change in migrant employment	2.103***	1.119	2.570***	0.673	2.016***	1.367	2.003***	**3.723****	3.958**	-0.063	8.620***	**7.058****	4.797**	4.059	0.228	1.786
	[0.370]	[0.929]	[0.445]	[1.081]	[0.349]	[1.074]	[0.362]	[1.380]	[1.323]	[2.740]	[1.231]	[2.214]	[1.485]	[3.115]	[1.610]	[2.694]
Observations	3573	3573	3552	3552	3552	3552	3525	3525	180	180	180	180	180	180	180	180
Adj R-squared	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj R-squared – ex FE	0.74	0.74	0.76	0.75	0.69	0.69	0.84	0.84	0.87	0.86	0.91	0.91	0.80	0.80	0.97	0.97
KP under-ID (Ho: Not identified)		16.07		16.04		16.01		16.22		25.91		25.91		25.91		16.22
KP under-ID LM (p: ideally 0)		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
KP Weak ID (Ho: Weak Instrument)		18.19		18.14		18.10		18.33		50.27		50.27		50.27		39.27
Stock-Yogo critical value (10%)		16.38		16.38		16.38		16.38		16.38		16.38		16.38		16.38
Stock-Yogo critical value (15%)		8.96		8.96		8.96		8.96		8.96		8.96		8.96		8.96

Table 14 Regression results – outside main urban areas

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings – 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.783***	0.783***	0.972***	0.707***	0.707***	0.910***	0.778***	0.781***	0.940***	0.624***	0.635***	0.678***	0.584***	0.587***	0.666***	0.587***	0.597***	0.624***
	[0.016]	[0.019]	[0.072]	[0.015]	[0.016]	[0.050]	[0.018]	[0.021]	[0.071]	[0.024]	[0.024]	[0.072]	[0.021]	[0.021]	[0.050]	[0.028]	[0.027]	[0.077]
Change in migrant employment	0.912***	**0.906***	0.416	1.129***	1.077	0.486	0.837***	**0.926***	0.498	-0.034	**0.699****	**0.630****	0.020	0.449	0.307	-0.015	**0.744****	**0.700****
	[0.159]	[0.391]	[0.424]	[0.192]	[0.610]	[0.565]	[0.175]	[0.380]	[0.417]	[0.092]	[0.229]	[0.224]	[0.052]	[0.285]	[0.286]	[0.106]	[0.237]	[0.218]
Observations	3600	3600	3357	3564	3564	3321	3600	3600	3360	3600	3600	3357	3570	3570	3324	3600	3600	3357
Adj R-squared	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	0.99	0.99	0.99	0.97	0.97	0.98	0.99	0.99	0.99
Adj R-squared – ex FE	0.85	0.85	0.80	0.75	0.75	0.68	0.86	0.86	0.82	0.88	0.85	0.85	0.70	0.70	0.66	0.85	0.83	0.83
KP under-ID (Ho: Not identified)		16.62	11.82		14.83	12.66		17.08	10.41		14.33	16.01		13.98	12.02		14.37	16.98
KP under-ID LM (p: ideally 0)		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
KP Weak ID (Ho: Weak Instrument)		20.32	6.41		17.47	6.97		20.99	5.85		16.50	8.86		16.07	6.92		16.55	9.39
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Regional variation									Regional variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings –25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.939***	0.944***	1.188***	0.931***	0.950***	1.179***	0.935***	0.938***	1.216***	0.789***	0.790***	0.572	0.787***	0.787***	0.989***	0.796***	0.797***	0.663**
	[0.026]	[0.028]	[0.197]	[0.036]	[0.046]	[0.144]	[0.023]	[0.024]	[0.278]	[0.056]	[0.056]	[0.292]	[0.041]	[0.041]	[0.251]	[0.057]	[0.057]	[0.221]
Change in migrant employment	1.218***	0.245	0.369	2.265***	-0.179	-0.515	1.003***	0.365	0.634	-0.176	0.141	-0.168	0.040	-0.014	-0.164	-0.091	0.155	-0.075
	[0.269]	[0.388]	[0.498]	[0.444]	[0.749]	[1.072]	[0.251]	[0.364]	[0.507]	[0.154]	[0.302]	[0.419]	[0.213]	[0.371]	[0.410]	[0.160]	[0.321]	[0.395]
Observations	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj R-squared – ex FE	0.96	0.96	0.92	0.91	0.88	0.81	0.97	0.97	0.93	0.97	0.97	0.97	0.96	0.96	0.94	0.97	0.97	0.96
KP under-ID (Ho: Not identified)		25.55	4.26		24.40	10.14		26.04	2.44		27.27	2.70		26.34	5.30		27.25	3.91
KP under-ID LM (p: ideally 0)		0.00	0.04		0.00	0.00		0.00	0.12		0.00	0.10		0.00	0.02		0.00	0.05
KP Weak ID (Ho: Weak Instrument)		40.27	2.10		37.70	5.33		40.92	1.15		40.89	0.95		43.45	2.50		40.92	1.34
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	8.96		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Local industry variation								Regional variation							
Dependent variable	**Hires – NZers**		**Hires – youth**		**Hires – 25+ yrs**		**Hires – beneficiaries**		**Hires – NZers**		**Hires – youth**		**Hires –25+ yrs**		**Hires – beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total number of beneficiaries															0.740***	0.691***
															[0.076]	[0.076]
Lagged total employment	0.622***	0.575***	0.625***	0.590***	0.615***	0.576***	0.707***	0.648***	0.548***	0.561***	0.319*	0.334*	0.680***	0.688***	0.419***	0.426***
	[0.023]	[0.029]	[0.029]	[0.038]	[0.024]	[0.030]	[0.034]	[0.041]	[0.063]	[0.067]	[0.140]	[0.140]	[0.052]	[0.054]	[0.085]	[0.088]
Change in migrant employment	1.378***	-0.181	1.662***	0.520	1.383***	0.103	0.988***	-0.936	3.082***	-0.511	5.707***	1.807	2.826***	0.633	2.239**	**-4.652***
	[0.161]	[0.582]	[0.216]	[0.731]	[0.154]	[0.586]	[0.247]	[0.882]	[0.649]	[1.293]	[1.281]	[2.407]	[0.649]	[1.223]	[0.860]	[2.162]
Observations	3591	3591	3552	3552	3585	3585	3552	3552	180	180	180	180	180	180	180	180
Adj R-squared	0.99	0.99	0.99	0.99	0.99	0.99	0.98	0.98	0.99	0.99	0.98	0.98	0.99	0.99	0.99	0.98
Adj R-squared – ex FE	0.68	0.67	0.57	0.56	0.64	0.64	0.76	0.75	0.86	0.85	0.65	0.63	0.86	0.85	0.95	0.94
KP under-ID (Ho: Not identified)		19.04		19.20		19.06		19.20		25.20		25.20		25.20		23.13
KP under-ID LM (p: ideally 0)		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
KP Weak ID (Ho: Weak Instrument)		24.53		24.68		24.55		24.69		39.89		39.89		39.89		36.82
Stock-Yogo critical value (10%)		16.38		16.38		16.38		16.38		16.38		16.38		16.38		16.38
Stock-Yogo critical value (15%)		8.96		8.96		8.96		8.96		8.96		8.96		8.96		8.96

Table 15 Regression results – horticultural areas (Gisborne–Hawke's Bay; Bay of Plenty; Tasman, Nelson, Marlborough, West Coast; and Otago)

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – Youth**			**Months worked –25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings –25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.803***	0.798***	1.088***	0.763***	0.769***	0.982***	0.810***	0.797***	1.124***	0.661***	0.659***	0.313*	0.622***	0.615***	0.664***	0.613***	0.610***	0.245*
	[0.025]	[0.029]	[0.097]	[0.028]	[0.029]	[0.094]	[0.024]	[0.029]	[0.106]	[0.036]	[0.036]	[0.128]	[0.026]	[0.027]	[0.097]	[0.044]	[0.044]	[0.118]
Change in migrant employment	0.762***	-0.860	-0.399	1.054***	-0.512	-0.123	0.690***	-1.130	-0.577	-0.004	0.135	0.246	0.007	0.305	0.247	0.040	0.240	0.315
	[0.137]	[0.684]	[0.546]	[0.211]	[0.895]	[0.751]	[0.128]	[0.701]	[0.551]	[0.058]	[0.198]	[0.235]	[0.074]	[0.298]	[0.330]	[0.059]	[0.197]	[0.219]
Observations	1200	1200	1119	1200	1200	1119	1200	1200	1119	1200	1200	1119	1200	1200	1119	1200	1200	1119
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99
Adj R-squared – ex FE	0.89	0.86	0.83	0.82	0.81	0.80	0.90	0.87	0.83	0.93	0.93	0.90	0.82	0.82	0.79	0.92	0.91	0.88
KP under-ID (Ho: Not identified)		8.59	9.32		8.89	9.93		8.44	9.30		8.82	10.91		8.77	11.53		8.79	9.84
KP under-ID LM (p: ideally 0)		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
KP Weak ID (Ho: Weak Instrument)		8.12	4.57		8.39	4.67		7.95	4.65		8.18	4.64		8.05	4.90		8.14	4.35
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Regional variation									Regional variation								
Dependent variable	**Months worked – NZers**			**Months worked – Youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – Youth**			**Monthly earnings –25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.941***	0.943***	1.198***	0.665***	0.649***	1.657***	0.977***	0.979***	0.962***	0.734***	0.809***	0.244	0.542***	0.560***	-0.668	0.730***	0.825***	0.397
	[0.038]	[0.044]	[0.257]	[0.092]	[0.094]	[0.440]	[0.034]	[0.036]	[0.153]	[0.085]	[0.085]	[0.325]	[0.066]	[0.069]	[3.050]	[0.086]	[0.090]	[0.356]
Change in migrant employment	0.862**	0.200	-0.374	1.896**	0.355	-2.791	0.574*	0.216	0.246	-0.516	1.284	-0.190	0.207	1.453	2.446	-0.503	1.329	0.095
	[0.305]	[0.692]	[0.855]	[0.698]	[1.324]	[2.682]	[0.271]	[0.651]	[0.692]	[0.264]	[0.989]	[1.001]	[0.251]	[0.788]	[3.523]	[0.268]	[1.052]	[1.109]
Observations	60	60	57	60	60	57	60	60	57	60	60	57	60	60	57	60	60	57
Adj R-squared	1.00	1.00	1.00	0.99	0.99	0.97	1.00	1.00	1.00	0.99	0.98	0.98	0.99	0.98	0.94	0.99	0.97	0.98
Adj R-squared – ex FE	0.99	0.99	0.96	0.95	0.94	0.77	0.99	0.99	0.99	0.99	0.98	0.97	0.98	0.97	0.85	0.98	0.97	0.97
KP under-ID (Ho: Not identified)		9.82	3.03		10.32	4.12		9.73	2.72		9.51	3.87		9.53	0.30		9.23	3.65
KP under-ID LM (p: ideally 0)		0.00	0.08		0.00	0.04		0.00	0.10		0.00	0.05		0.00	0.59		0.00	0.06
KP Weak ID (Ho: Weak Instrument)		10.22	1.12		12.69	2.57		10.10	1.04		10.74	1.52		11.74	0.10		10.16	1.45
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	8.96		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Local industry variation								Regional variation							
Dependent variable	**Hires – NZers**		**Hires – Youth**		**Hires – NZers 25+ yrs**		**Hires – Beneficiaries**		**Hires – NZers**		**Hires – Youth**		**Hires – NZers 25+ yrs**		**Hires – Beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total number of beneficiaries															0.895***	0.947***
															[0.164]	[0.198]
Lagged total employment	0.559***	0.503***	0.651***	0.603***	0.511***	0.452***	0.702***	0.639***	0.085	0.054	-0.725*	-0.747*	0.285	0.256	0.097	0.053
	[0.055]	[0.064]	[0.057]	[0.068]	[0.059]	[0.069]	[0.066]	[0.076]	[0.184]	[0.223]	[0.327]	[0.338]	[0.180]	[0.213]	[0.194]	[0.283]
Change in migrant employment	1.109***	-2.375	1.834***	-1.169	0.947***	-2.739	0.777**	**-3.200***	3.101**	-1.966	4.601*	1.044	3.981***	-0.774	0.092	**-8.908***
	[0.228]	[1.456]	[0.327]	[1.598]	[0.238]	[1.543]	[0.279]	[1.504]	[1.123]	[2.225]	[1.931]	[3.482]	[1.051]	[2.353]	[1.809]	[3.578]
Observations	1200	1200	1200	1200	1200	1200	1200	1200	60	60	60	60	60	60	60	60
Adj R-squared	0.99	0.98	0.99	0.98	0.98	0.98	0.98	0.98	0.98	0.97	0.92	0.92	0.96	0.95	0.99	0.99
Adj R-squared – ex FE	0.73	0.67	0.70	0.68	0.67	0.61	0.85	0.82	0.94	0.92	0.86	0.85	0.92	0.90	0.97	0.96
KP under-ID (Ho: Not identified)		8.93		8.93		8.93		8.93		10.04		10.04		10.04		10.21
KP under-ID LM (p: ideally 0)		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
KP Weak ID (Ho: Weak Instrument)		8.36		8.36		8.36		8.36		11.10		11.10		11.10		12.02
Stock-Yogo critical value (10%)		16.38		16.38		16.38		16.38		16.38		16.38		16.38		16.38
Stock-Yogo critical value (15%)		8.96		8.96		8.96		8.96		8.96		8.96		8.96		8.96

Table 16 Regression results – Auckland region only

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked –25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings –25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.926***	0.912***	1.647*	0.895***	0.885***	1.620**	0.933***	0.919***	1.517**	0.790***	0.791***	0.900***	0.842***	0.835***	1.051***	0.776***	0.785***	0.814***
	[0.018]	[0.023]	[0.675]	[0.024]	[0.032]	[0.504]	[0.017]	[0.022]	[0.562]	[0.043]	[0.047]	[0.244]	[0.039]	[0.042]	[0.112]	[0.049]	[0.050]	[0.224]
Change in migrant employment	2.404***	-1.143	-2.100	3.178***	-3.987	-4.544	2.063***	-1.308	-2.862	-0.006	**1.271***	1.096	-0.079	0.733	-0.741	0.159	**1.119***	**1.236***
	[0.614]	[1.133]	[2.490]	[0.867]	[2.045]	[3.681]	[0.517]	[1.251]	[2.619]	[0.148]	[0.534]	[0.739]	[0.184]	[0.701]	[1.059]	[0.152]	[0.512]	[0.523]
Observations	300	300	282	300	300	282	300	300	282	300	300	282	300	300	282	300	300	282
Adj R-squared	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Adj R-squared – ex FE	0.94	0.92	0.52	0.87	0.79	0.16	0.96	0.94	0.70	0.93	0.91	0.90	0.75	0.74	0.72	0.91	0.90	0.88
KP under-ID (Ho: Not identified)		12.03	2.57		11.93	4.20		12.11	2.79		11.69	7.84		12.92	10.30		12.15	10.74
KP under-ID LM (p: ideally 0)		0.00	0.11		0.00	0.04		0.00	0.09		0.00	0.01		0.00	0.00		0.00	0.00
KP Weak ID (Ho: Weak Instrument)		15.17	1.63		15.04	2.39		15.26	1.64		15.82	3.80		15.71	5.15		15.45	5.68
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Local industry variation							
Dependent variable	**Hires – NZers**		**Hires – youth**		**Hires –25+ yrs**		**Hires – beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total employment	0.934***	0.917***	0.979***	0.946***	0.956***	0.948***	0.824***	0.811***
	[0.052]	[0.057]	[0.059]	[0.064]	[0.055]	[0.058]	[0.084]	[0.088]
Change in migrant employment	4.840***	0.350	4.457***	-3.745	4.527***	2.375	4.774***	1.601
	[1.009]	[2.535]	[1.070]	[3.089]	[1.191]	[2.834]	[0.965]	[2.996]
Observations	300	300	300	300	300	300	300	300
Adj R-squared	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj R-squared – ex FE	0.76	0.74	0.76	0.71	0.71	0.71	0.82	0.82
KP under-ID (Ho: Not identified)		11.90		11.90		11.90		11.90
KP under-ID LM (p: ideally 0)		0.00		0.00		0.00		0.00
KP Weak ID (Ho: Weak Instrument)		14.71		14.71		14.71		14.71
Stock-Yogo critical value (10%)		16.38		16.38		16.38		16.38
Stock-Yogo critical value (15%)		8.96		8.96		8.96		8.96

Table 17 Regression results – Canterbury region only

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – youth**			**Months worked – 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – youth**			**Monthly earnings –25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.949***	0.979***	1.660***	0.877***	0.914***	1.387***	0.956***	0.987***	1.733**	0.843***	0.836***	0.683**	0.879***	0.877***	0.904***	0.827***	0.826***	0.754***
	[0.017]	[0.030]	[0.466]	[0.029]	[0.044]	[0.298]	[0.017]	[0.028]	[0.592]	[0.046]	[0.048]	[0.216]	[0.065]	[0.067]	[0.259]	[0.043]	[0.043]	[0.204]
Change in migrant employment	2.245***	-1.380	-4.970	2.853***	**-2.871***	-4.733	1.982***	-1.411	-6.151	0.139	0.354	0.627	0.097	0.182	0.167	0.232*	0.247	0.404
	[0.411]	[0.889]	[4.365]	[0.654]	[1.388]	[2.960]	[0.343]	[0.892]	[5.841]	[0.087]	[0.195]	[0.342]	[0.143]	[0.330]	[0.580]	[0.092]	[0.191]	[0.245]
Observations	300	300	282	300	300	282	300	300	282	300	300	282	300	300	282	300	300	282
Adj R-squared	1.00	1.00	0.99	1.00	0.99	0.99	1.00	1.00	0.99	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Adj R-squared – ex FE	0.94	0.90	0.35	0.84	0.75	0.38	0.95	0.91	0.29	0.96	0.96	0.95	0.91	0.91	0.89	0.96	0.96	0.95
KP under-ID (Ho: Not identified)		24.47	3.82		25.30	8.32		23.89	2.63		25.96	10.53		26.33	8.51		26.12	10.70
KP under-ID LM (p: ideally 0)		0.00	0.05		0.00	0.00		0.00	0.11		0.00	0.00		0.00	0.00		0.00	0.00
KP Weak ID (Ho: Weak Instrument)		16.96	1.58		17.12	3.83		16.92	1.11		17.14	4.69		17.12	4.06		17.34	5.15
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Local industry variation							
Dependent variable	**Hires – NZers**		**Hires – youth**		**Hires – 25+ yrs**		**Hires – beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total employment	0.912***	0.978***	0.863***	0.949***	0.957***	1.016***	0.703***	0.746***
	[0.056]	[0.080]	[0.063]	[0.098]	[0.061]	[0.081]	[0.070]	[0.081]
Change in migrant employment	5.094***	-2.468	4.375***	-5.397	5.026***	-1.669	6.717***	1.839
	[1.090]	[2.326]	[1.141]	[2.836]	[1.114]	[2.517]	[1.363]	[2.100]
Observations	300	300	300	300	300	300	300	300
Adj R-squared	0.98	0.97	0.98	0.98	0.98	0.97	0.98	0.98
Adj R-squared – ex FE	0.67	0.57	0.65	0.49	0.62	0.55	0.85	0.84
KP under-ID (Ho: Not identified)		23.82		23.82		23.82		23.82
KP under-ID LM (p: ideally 0)		0.00		0.00		0.00		0.00
KP Weak ID (Ho: Weak Instrument)		17.01		17.01		17.01		17.01
Stock-Yogo critical value (10%)		16.38		16.38		16.38		16.38
Stock-Yogo critical value (15%)		8.96		8.96		8.96		8.96

Table 18 Regression results – food services industry

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – Youth**			**Months worked – NZers 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – Youth**			**Monthly earnings – NZers 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.944***	0.947***	1.030***	0.845***	0.864***	1.435***	0.917***	0.906***	0.446	0.823***	0.815***	0.969*	0.801***	0.764***	1.233	0.816***	0.774***	1.244
	[0.043]	[0.069]	[0.202]	[0.058]	[0.067]	[0.188]	[0.039]	[0.067]	[0.925]	[0.033]	[0.039]	[0.448]	[0.035]	[0.047]	[0.832]	[0.030]	[0.042]	[0.674]
Change in migrant employment	0.706	-2.427	-2.349	0.971*	-1.135	-2.523	0.503	-3.577	-5.349	-0.202	-0.053	-0.977	-0.327*	0.927	-3.958	-0.006	0.895	-1.721
	[0.361]	[1.734]	[1.761]	[0.379]	[1.956]	[2.224]	[0.377]	[2.011]	[6.562]	[0.162]	[0.736]	[2.904]	[0.154]	[0.767]	[8.515]	[0.192]	[0.743]	[3.422]
Observations	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	0.93	0.90	0.63	0.98	0.98	0.96
Adj R-squared – ex FE	0.94	0.88	0.84	0.91	0.87	0.67	0.93	0.85	0.66	0.94	0.94	0.89	0.90	0.85	0.33	0.92	0.90	0.73
KP under-ID (Ho: Not identified)		8.19	3.23		8.53	8.62		7.97	0.68		3.79	0.39		5.35	0.26		4.21	0.41
KP under-ID LM (p: ideally 0)		0.00	0.07		0.00	0.00		0.00	0.41		0.05	0.53		0.02	0.61		0.04	0.52
KP Weak ID (Ho:Weak Instrument)		9.83	1.73		9.24	4.57		10.05	0.31		4.57	0.17		7.67	0.12		5.05	0.19
Stock-Yogo critical value (10%)		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03		16.38	7.03
Stock-Yogo critical value (15%)		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58		8.96	4.58

	Local industry variation							
Dependent variable	**Hires – NZers**		**Hires – Youth**		**Hires – NZers 25+ yrs**		**Hires – Beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total employment	0.663***	0.691***	0.562***	0.602***	0.635***	0.679***	0.824***	0.823***
	[0.075]	[0.097]	[0.086]	[0.137]	[0.088]	[0.154]	[0.101]	[0.105]
Change in migrant employment	1.312	**7.295****	2.288***	**10.788****	1.174	**10.501****	-0.913	-1.122
	[0.714]	[2.818]	[0.670]	[3.400]	[0.726]	[4.042]	[1.252]	[3.286]
Observations	180	180	180	180	180	180	180	180
Adj R-squared	1.00	0.99	1.00	0.99	0.99	0.99	0.99	0.99
Adj R-squared - ex FE	0.75	0.52	0.78	0.51	0.62	0.16	0.89	0.89
KP under-ID (Ho: Not identified)		7.65		7.65		7.65		7.65
KP under-ID LM (p: ideally 0)		0.01		0.01		0.01		0.01
KP Weak ID (Ho:Weak Instrument)		9.81		9.81		9.81		9.81
Stock-Yogo critical value (10%)		16.38		16.38		16.38		16.38
Stock-Yogo critical value (15%)		8.96		8.96		8.96		8.96

Table 19 Regression results – International Students

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – Youth**			**Months worked – NZers 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – Youth**			**Monthly earnings – NZers 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.832***	0.831***	1.250***	0.774***	0.782***	1.073***	0.844***	0.839***	1.235***	0.740***	0.747***	0.740***	0.693***	0.700***	0.791***	0.720***	0.722***	0.678***
	[0.016]	[0.020]	[0.105]	[0.016]	[0.021]	[0.075]	[0.015]	[0.018]	[0.099]	[0.026]	[0.028]	[0.072]	[0.018]	[0.020]	[0.056]	[0.026]	[0.026]	[0.077]
Change in migrant employment – students	1.009***	0.102	-0.564	1.840***	1.516	0.479	0.709***	-0.544	-0.802	-0.191*	-0.217	-0.240	-0.354**	**-0.875****	**-1.079****	-0.015	0.277	0.328
	[0.195]	[0.636]	[0.852]	[0.327]	[0.886]	[1.093]	[0.185]	[0.652]	[0.801]	[0.079]	[0.212]	[0.218]	[0.109]	[0.330]	[0.336]	[0.078]	[0.207]	[0.229]
Change in migrant employment – all others	1.410***	-1.049	-2.161	1.781***	-2.395	-2.365	1.330***	-0.734	-2.076	0.025	**1.088***	**1.072***	0.048	**1.393***	**1.358***	0.069	**0.824***	**0.833***
	[0.187]	[0.810]	[1.526]	[0.259]	[1.373]	[1.541]	[0.172]	[0.725]	[1.496]	[0.056]	[0.443]	[0.501]	[0.076]	[0.588]	[0.668]	[0.052]	[0.366]	[0.411]
Observations	3600	3600	3360	3600	3600	3360	3600	3600	3360	3600	3600	3360	3600	3600	3360	3600	3600	3360
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Adj R-squared – ex FE	0.93	0.91	0.82	0.87	0.83	0.78	0.94	0.92	0.84	0.94	0.93	0.92	0.85	0.83	0.80	0.93	0.92	0.91
KP under-ID (Ho: Not identified)		8.23	6.01		8.09	6.98		8.38	5.78		8.50	6.95		8.34	6.85		8.29	6.87
KP under-ID LM (p: ideally 0)		0.00	0.01		0.00	0.01		0.00	0.02		0.00	0.01		0.00	0.01		0.00	0.01
KP Weak ID (Ho: Weak Instrument)		3.94	1.87		3.88	2.25		4.02	1.78		4.10	2.20		4.00	2.19		3.99	2.19
Stock-Yogo critical value (15%)		4.58			4.58			4.58			4.58			4.58			4.58	

	Regional variation									Regional variation								
Dependent variable	**Months worked – NZers**			**Months worked – Youth**			**Months worked – NZers 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – Youth**			**Monthly earnings – NZers 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.936***	0.924***	1.415***	0.765***	0.948***	2.030***	0.959***	0.939***	1.314***	0.852***	0.811***	-0.109	0.874***	0.886***	0.803***	0.845***	0.830***	0.237
	[0.036]	[0.041]	[0.163]	[0.049]	[0.085]	[0.489]	[0.035]	[0.037]	[0.158]	[0.038]	[0.054]	[0.928]	[0.022]	[0.034]	[0.090]	[0.041]	[0.061]	[0.587]
Change in migrant employment – students	1.577	3.105	-1.585	3.438*	**9.595****	9.259	1.048	1.710	-2.767	-0.607	-0.395	-0.886	0.554	0.619	0.651	-0.520	0.464	-0.163
	[0.812]	[2.234]	[2.284]	[1.379]	[3.667]	[9.042]	[0.741]	[2.035]	[2.008]	[0.367]	[0.969]	[3.418]	[0.544]	[1.046]	[0.998]	[0.378]	[1.032]	[2.692]
Change in migrant employment – all others	0.943**	-1.991	0.764	3.036***	**-5.234***	-11.802	0.702*	-1.208	1.916	0.356	**1.427***	4.796	0.461	0.023	1.169	0.557*	1.187	3.260
	[0.305]	[1.066]	[1.214]	[0.711]	[2.063]	[7.142]	[0.282]	[0.934]	[1.254]	[0.219]	[0.663]	[4.298]	[0.377]	[0.994]	[1.330]	[0.220]	[0.702]	[2.923]
Observations	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.98	0.98	0.98	1.00	1.00	0.99
Adj R-squared – ex FE	0.98	0.97	0.95	0.93	0.86	0.46	0.99	0.99	0.97	0.99	0.99	0.92	0.97	0.97	0.96	0.99	0.99	0.95
KP under-ID (Ho: Not identified)		12.90	15.02		12.77	4.69		13.05	11.29		17.65	1.34		11.62	10.59		17.10	1.68
KP under-ID LM (p: ideally 0)		0.00	0.00		0.00	0.03		0.00	0.00		0.00	0.25		0.00	0.00		0.00	0.19
KP Weak ID (Ho: Weak Instrument)		13.91	9.12		11.14	1.78		13.16	5.37		13.49	0.40		7.18	3.88		12.97	0.51
Stock-Yogo critical value (15%)		4.58			4.58			4.58			4.58			4.58			4.58	

	Local industry variation								Regional variation							
Dependent variable	**Hires – NZers**		**Hires – Youth**		**Hires – NZers 25+ yrs**		**Hires – Beneficiaries**		**Hires – NZers**		**Hires – Youth**		**Hires – NZers 25+ yrs**		**Hires – Beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total number of beneficiaries															0.788***	0.614***
															[0.040]	[0.109]
Lagged total employment	0.669***	0.652***	0.642***	0.609***	0.682***	0.674***	0.712***	0.701***	0.818***	0.737***	0.728***	0.605***	0.837***	0.835***	0.513***	0.469***
	[0.032]	[0.038]	[0.036]	[0.050]	[0.034]	[0.036]	[0.036]	[0.039]	[0.137]	[0.148]	[0.146]	[0.175]	[0.146]	[0.149]	[0.108]	[0.141]
Change in migrant employment – students	2.290***	2.001	2.865***	**4.245****	1.737**	0.660	2.347***	**3.356***	4.648	13.402	7.086	20.047*	4.790	5.295	2.774	8.798
	[0.434]	[1.112]	[0.542]	[1.360]	[0.531]	[1.218]	[0.491]	[1.553]	[3.815]	[8.835]	[4.331]	[9.597]	[3.904]	[7.829]	[2.553]	[8.431]
Change in migrant employment – all others	2.348***	-1.841	2.885***	-5.272	2.340***	0.677	2.158***	-0.737	4.436**	-8.619*	9.922***	-1.851	5.747***	0.879	1.685	-10.854
	[0.326]	[1.590]	[0.404]	[2.808]	[0.321]	[1.388]	[0.357]	[1.456]	[1.350]	[3.955]	[1.597]	[4.711]	[1.559]	[3.506]	[1.488]	[7.178]
Observations	3600	3600	3600	3600	3600	3600	3597	3597	180	180	180	180	180	180	180	180
Adj R-squared	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj R-squared – ex FE	0.78	0.75	0.78	0.70	0.73	0.73	0.87	0.87	0.88	0.82	0.89	0.85	0.84	0.83	0.98	0.97
KP under-ID (Ho Not identified)		8.73		8.73		8.73		8.72		12.11		12.11		12.11		7.70
KP under-ID LM (p: ideally 0)		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.01
KP Weak ID (Ho: Weak Instrument)		4.26		4.26		4.26		4.25		13.44		13.44		13.44		4.49
Stock-Yogo critical value (15%)		4.58		4.58		4.58		4.58		4.58		4.58		4.58		4.58

Table 20 Regression results – Study to Work Policy

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – Youth**			**Months worked – NZers 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – Youth**			**Monthly earnings – NZers 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.824***	0.817***	1.140***	0.753***	0.754***	1.005***	0.832***	0.822***	1.133***	0.632***	0.636***	0.770***	0.645***	0.642***	0.784***	0.600***	0.595***	0.687***
	[0.018]	[0.020]	[0.082]	[0.018]	[0.020]	[0.065]	[0.017]	[0.019]	[0.076]	[0.042]	[0.043]	[0.083]	[0.024]	[0.024]	[0.059]	[0.043]	[0.044]	[0.089]
Change in migrant employment – Study to Work	1.701***	-0.960	-0.004	2.551***	-2.006	-0.589	1.558***	-0.433	0.810	-0.434*	0.893	0.770	-0.316	-1.383	-0.238	-0.298	**1.422***	1.154
	[0.418]	[0.962]	[1.313]	[0.611]	[1.522]	[1.645]	[0.431]	[0.972]	[1.437]	[0.207]	[0.579]	[0.547]	[0.267]	[0.815]	[0.846]	[0.196]	[0.638]	[0.647]
Change in migrant employment - all others	1.134***	0.150	-0.361	1.490***	0.122	-0.221	1.022***	-0.035	-0.552	-0.031	0.433	0.346	-0.048	0.103	0.041	0.032	**0.573***	**0.525***
	[0.143]	[0.438]	[0.653]	[0.197]	[0.731]	[0.825]	[0.134]	[0.422]	[0.635]	[0.046]	[0.243]	[0.238]	[0.062]	[0.306]	[0.320]	[0.044]	[0.253]	[0.249]
Observations	2640	2640	2640	2640	2640	2640	2640	2640	2640	2640	2640	2640	2640	2640	2640	2640	2640	2640
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Adj R-squared – ex FE	0.85	0.84	0.78	0.82	0.80	0.77	0.87	0.85	0.80	0.88	0.87	0.87	0.76	0.76	0.75	0.85	0.83	0.84
KP under-ID (Ho: Not identified)		9.75	9.59		9.57	9.83		9.85	9.77		9.78	9.96		9.61	9.62		9.68	9.94
KP under-ID LM (p: ideally 0)		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
KP Weak ID (Ho: Weak Instrument)		5.46	3.41		5.38	3.62		5.53	3.46		5.52	3.67		5.40	3.61		5.43	3.65
Stock-Yogo critical value (15%)		4.58			4.58			4.58			4.58			4.58			4.58	

	Regional variation									Regional variation								
Dependent variable	**Months worked – NZers**			**Months worked – Youth**			**Months worked – NZers 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – Youth**			**Monthly earnings – NZers 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.944***	0.888***	1.182***	0.749***	0.754***	1.544***	0.980***	0.951***	1.117***	0.834***	0.818***	0.829***	0.836***	0.841***	1.009***	0.849***	0.828***	0.819***
	[0.040]	[0.094]	[0.100]	[0.048]	[0.114]	[0.327]	[0.037]	[0.060]	[0.088]	[0.060]	[0.094]	[0.141]	[0.033]	[0.052]	[0.223]	[0.058]	[0.080]	[0.127]
Change in migrant employment – Study to Work	3.436*	-15.834	8.558	6.420**	-35.661	-21.807	3.111*	-6.487	9.209	1.254	10.989	10.537	0.854	3.782	-15.513	1.786*	9.689	10.061
	[1.517]	[20.134]	[7.899]	[2.300]	[37.850]	[32.307]	[1.431]	[12.527]	[6.875]	[0.855]	[7.695]	[6.618]	[1.116]	[5.471]	[19.243]	[0.852]	[7.248]	[6.655]
Change in migrant employment – all others	1.379***	3.008	-0.887	3.847***	7.835	0.419	0.957***	1.477	-0.818	-0.009	-0.639	-0.597	0.554	-0.069	1.323	0.166	-0.189	-0.223
	[0.239]	[2.988]	[1.448]	[0.574]	[5.335]	[4.954]	[0.209]	[1.961]	[1.241]	[0.179]	[1.054]	[0.934]	[0.304]	[0.747]	[1.400]	[0.175]	[0.939]	[0.894]
Observations	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.92	1.00	1.00	1.00
Adj R-squared – ex FE	0.95	0.83	0.90	0.94	0.72	0.72	0.97	0.95	0.95	0.97	0.94	0.95	0.93	0.92	0.81	0.96	0.94	0.93
KP under-ID (Ho: Not identified)		1.21	3.97		1.36	1.95		1.20	4.01		1.99	2.55		2.20	1.12		1.90	2.18
KP under-ID LM (p: ideally 0)		0.27	0.05		0.24	0.16		0.27	0.05		0.16	0.11		0.14	0.29		0.17	0.14
KP Weak ID (Ho: Weak Instrument)		0.54	1.27		0.65	0.59		0.53	1.28		1.00	0.98		1.09	0.36		0.92	0.84
Stock-Yogo critical value (15%)		4.58			4.58			4.58			4.58			4.58			4.58	

	Local industry variation								Regional variation							
Dependent variable	**Hires – NZers**		**Hires – Youth**		**Hires – NZers 25+ yrs**		**Hires – Beneficiaries**		**Hires – NZers**		**Hires – Youth**		**Hires – NZers 25+ yrs**		**Hires – Beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total number of beneficiaries															0.882***	0.758***
															[0.045]	[0.114]
Lagged total employment	0.672***	0.644***	0.632***	0.587***	0.686***	0.660***	0.670***	0.663***	0.894***	0.919**	1.078***	1.096***	0.949***	1.028***	0.702***	0.679*
	[0.046]	[0.051]	[0.049]	[0.060]	[0.051]	[0.056]	[0.052]	[0.056]	[0.179]	[0.301]	[0.147]	[0.248]	[0.195]	[0.183]	[0.148]	[0.272]
Change in migrant employment – Study to Work	0.736	-4.271	2.718*	**-6.721***	0.258	-4.608	-0.452	-0.886	10.479	-63.033	15.721*	-40.108	12.185	-12.940	4.302	-48.135
	[1.309]	[3.143]	[1.329]	[3.206]	[1.780]	[4.135]	[1.375]	[3.773]	[5.997]	[60.406]	[6.846]	[48.438]	[7.027]	[40.042]	[5.400]	[57.027]
Change in migrant employment – all others	2.220***	0.716	2.746***	0.413	2.056***	0.627	1.964***	1.476	5.613***	9.413	9.789***	12.798	5.778***	3.333	2.397	4.118
	[0.271]	[0.868]	[0.325]	[1.207]	[0.284]	[0.917]	[0.293]	[1.093]	[1.248]	[9.145]	[1.280]	[7.262]	[1.432]	[7.125]	[1.247]	[6.881]
Observations	2640	2640	2640	2640	2640	2640	2637	2637	132	132	132	132	132	132	132	132
Adj R-squared	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Adj R-squared – ex FE	0.76	0.75	0.79	0.77	0.72	0.72	0.70	0.70	0.91	0.75	0.94	0.89	0.88	0.86	0.92	0.85
KP under-ID (Ho: Not identified)		10.55		10.55		10.55		10.54		2.17		2.17		2.17		1.63
KP under-ID LM (p: ideally 0)		0.00		0.00		0.00		0.00		0.14		0.14		0.14		0.2
KP Weak ID (Ho: Weak Instrument)		5.96		5.96		5.96		5.96		1.01		1.01		1.01		0.7
Stock-Yogo critical value (15%)		4.58		4.58		4.58		4.58		4.58		4.58		4.58		4.58

Table 21 Regression results – Essential Skills Policy

	Local industry variation												Local industry variation					
Dependent variable	**Months worked – NZers**			**Months worked – Youth**			**Months worked – NZers 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – Youth**			**Monthly earnings – NZers 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.828***	0.839***	1.271***	0.771***	0.787***	1.070***	0.841***	0.845***	1.267***	0.740***	0.743***	0.756***	0.692***	0.690***	0.820***	0.720***	0.722***	0.680***
	[0.016]	[0.022]	[0.107]	[0.016]	[0.021]	[0.070]	[0.015]	[0.020]	[0.103]	[0.026]	[0.027]	[0.070]	[0.018]	[0.019]	[0.053]	[0.026]	[0.026]	[0.078]
Change in migrant employment – Essential Skills	2.080***	-2.048	**-6.602***	2.657***	-2.735	**-5.706***	2.010***	-1.956	**-6.432***	0.321***	0.166	0.177	0.468**	-0.231	0.198	0.353***	0.217	0.288
	[0.361]	[1.091]	[3.169]	[0.504]	[1.460]	[2.448]	[0.338]	[1.117]	[3.119]	[0.091]	[0.412]	[0.414]	[0.152]	[0.585]	[0.582]	[0.091]	[0.426]	[0.451]
Change in migrant employment – all others	1.209***	-0.075	0.363	1.656***	-0.004	0.632	1.075***	-0.242	0.182	-0.074	**0.638***	0.546	-0.114	0.625	0.188	0.004	**0.707***	0.709*
	[0.152]	[0.591]	[0.728]	[0.223]	[0.967]	[0.904]	[0.139]	[0.558]	[0.728]	[0.050]	[0.317]	[0.324]	[0.070]	[0.443]	[0.430]	[0.047]	[0.288]	[0.314]
Observations	3600	3600	3360	3600	3600	3360	3600	3600	3360	3600	3600	3360	3600	3600	3360	3600	3600	3360
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Adj R-squared – ex FE	0.93	0.91	0.83	0.87	0.85	0.80	0.94	0.92	0.84	0.94	0.93	0.93	0.85	0.84	0.82	0.93	0.92	0.91
KP under-ID (Ho: Not identified)		15.79	15.22		15.06	11.86		15.63	13.85		14.61	10.48		14.28	10.75		14.34	10.62
KP under-ID LM (p: ideally 0)		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
KP Weak ID (Ho: Weak Instrument)		8.68	4.06		8.41	4.46		8.62	3.59		8.28	3.92		8.08	4.01		8.13	3.97
Stock-Yogo critical value (15%)		4.58			4.58			4.58			4.58			4.58			4.58	

	Regional variation									Regional variation								
Dependent variable	**Months worked – NZers**			**Months worked – Youth**			**Months worked – NZers 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – Youth**			**Monthly earnings – NZers 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.937***	0.946***	1.461***	0.770***	0.939***	2.179***	0.955***	0.951***	1.347***	0.840***	0.756***	-0.435	0.874***	0.861***	0.785***	0.828***	0.743***	-0.684
	[0.035]	[0.038]	[0.203]	[0.053]	[0.073]	[0.500]	[0.035]	[0.038]	[0.194]	[0.040]	[0.057]	[1.664]	[0.024]	[0.038]	[0.129]	[0.044]	[0.067]	[2.421]
Change in migrant employment – Essential Skills	-0.003	-2.975	0.056	2.596*	**-7.427***	-25.877	-0.076	-1.918	2.129	1.038*	**3.866****	15.550	0.465	1.468	3.272	1.357**	**3.922****	18.768
	[0.631]	[1.936]	[2.044]	[1.282]	[3.651]	[13.845]	[0.599]	[1.723]	[1.634]	[0.507]	[1.179]	[17.609]	[0.878]	[1.959]	[3.780]	[0.514]	[1.306]	[26.751]
Change in migrant employment – all others	1.472***	0.720	0.134	3.295***	2.344	4.229	1.084**	0.442	-0.220	-0.175	-0.409	-2.330	0.491	-0.022	0.096	-0.048	-0.235	-3.371
	[0.386]	[1.103]	[1.443]	[0.784]	[1.976]	[4.474]	[0.331]	[0.978]	[1.171]	[0.178]	[0.472]	[3.026]	[0.293]	[0.697]	[0.630]	[0.180]	[0.474]	[5.671]
Observations	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	0.98	1.00	1.00	0.98
Adj R-squared – ex FE	0.98	0.98	0.94	0.93	0.90	0.53	0.99	0.99	0.97	0.99	0.99	0.88	0.97	0.97	0.96	0.99	0.99	0.80
KP under-ID (Ho: Not identified)		6.32	10.20		6.15	7.27		6.34	9.54		6.53	0.67		7.06	8.57		6.51	0.41
KP under-ID LM (p: ideally 0)		0.01	0.00		0.01	0.01		0.01	0.00		0.01	0.41		0.01	0.00		0.01	0.52
KP Weak ID (Ho: Weak Instrument)		8.52	4.27		8.19	2.25		8.70	3.93		8.26	0.21		8.03	2.67		7.48	0.12
Stock-Yogo critical value (15%)		4.58			4.58			4.58			4.58			4.58			4.58	

	Local industry variation								Regional variation							
Dependent variable	**Hires – NZers**		**Hires – Youth**		**Hires – NZers 25+ yrs**		**Hires – Beneficiaries**		**Hires – NZers**		**Hires – Youth**		**Hires – NZers 25+ yrs**		**Hires – Beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total number of beneficiaries															0.726***	0.560***
															[0.048]	[0.121]
Lagged total employment	0.659***	0.653***	0.633***	0.622***	0.670***	0.677***	0.707***	0.708***	0.808***	0.840***	0.709***	0.729***	0.817***	0.833***	0.509***	0.548***
	[0.029]	[0.036]	[0.033]	[0.046]	[0.031]	[0.037]	[0.035]	[0.039]	[0.134]	[0.135]	[0.143]	[0.149]	[0.143]	[0.148]	[0.104]	[0.116]
Change in migrant employment – Essential Skills	5.027***	0.852	5.320***	-0.647	5.300***	0.224	3.638***	0.803	-0.008	**-14.065***	10.144***	-2.463	0.838	-5.008	-6.102	-23.701
	[0.872]	[2.618]	[0.976]	[2.964]	[0.886]	[2.919]	[0.849]	[2.755]	[2.538]	[6.142]	[2.567]	[7.496]	[2.826]	[4.690]	[3.373]	[12.483]
Change in migrant employment – all others	1.902***	-0.499	2.487***	-1.345	1.720***	0.801	1.964***	1.084	6.054***	3.598	8.960***	7.747	7.164***	5.875	4.053***	2.140
	[0.249]	[1.219]	[0.339]	[1.917]	[0.244]	[1.126]	[0.308]	[1.349]	[1.553]	[4.254]	[1.930]	[4.901]	[1.542]	[3.972]	[1.188]	[3.319]
Observations	3600	3600	3600	3600	3600	3600	3597	3597	180	180	180	180	180	180	180	180
Adj R-squared	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj R-squared – ex FE	0.78	0.77	0.78	0.75	0.74	0.73	0.87	0.87	0.88	0.86	0.89	0.88	0.84	0.83	0.98	0.97
KP under-ID (Ho: Not identified)		17.96		17.96		17.96		17.97		6.30		6.30		6.30		11.39
KP under-ID LM (p: ideally 0)		0.00		0.00		0.00		0.00		0.01		0.01		0.01		0.00
KP Weak ID (Ho: Weak Instrument)		9.72		9.72		9.72		9.72		8.44		8.44		8.44		6.12
Stock-Yogo critical value (15%)		4.58		4.58		4.58		4.58		4.58		4.58		4.58		4.58

Table 22 Regression results – Family Policy

	Local industry variation									Local industry variation								
Dependent variable	**Months worked – NZers**			**Months worked – Youth**			**Months worked – NZers 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – Youth**			**Monthly earnings – NZers 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.838***	0.832***	1.235***	0.778***	0.782***	1.058***	0.850***	0.841***	1.221***	0.740***	0.743***	0.761***	0.691***	0.695***	0.825***	0.720***	0.719***	0.686***
	[0.016]	[0.021]	[0.099]	[0.016]	[0.019]	[0.070]	[0.015]	[0.020]	[0.090]	[0.026]	[0.027]	[0.070]	[0.018]	[0.019]	[0.054]	[0.026]	[0.026]	[0.077]
Change in migrant employment – Family	5.603***	0.795	-4.289	6.424***	4.389	1.883	5.318***	0.453	-4.607	0.045	3.201	2.195	-0.472	4.680	4.714	0.270	3.389	2.143
	[0.659]	[3.964]	[6.569]	[1.005]	[5.737]	[6.850]	[0.624]	[3.976]	[6.346]	[0.265]	[1.840]	[1.700]	[0.385]	[2.623]	[2.591]	[0.260]	[1.872]	[1.741]
Change in migrant employment – all others	1.068***	-0.515	-1.477	1.508***	-0.548	-0.924	0.954***	-0.629	-1.553	-0.023	**0.587***	0.497	-0.007	0.511	0.325	0.039	**0.657****	**0.642***
	[0.142]	[0.495]	[0.976]	[0.205]	[0.762]	[0.947]	[0.131]	[0.468]	[0.919]	[0.048]	[0.255]	[0.261]	[0.067]	[0.334]	[0.356]	[0.046]	[0.246]	[0.263]
Observations	3600	3600	3360	3600	3600	3360	3600	3600	3360	3600	3600	3360	3600	3600	3360	3600	3600	3360
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Adj R-squared – ex FE	0.93	0.92	0.82	0.87	0.86	0.81	0.94	0.92	0.84	0.94	0.93	0.93	0.85	0.83	0.81	0.93	0.92	0.91
KP under-ID (Ho: Not identified)		25.68	12.75		23.92	17.01		26.29	13.62		23.76	21.79		23.53	21.43		23.32	21.79
KP under-ID LM (p: ideally 0)		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
KP Weak ID (Ho: Weak Instrument)		10.64	3.70		9.97	4.89		10.90	3.91		9.86	6.17		9.78	6.08		9.68	6.17
Stock-Yogo critical value (15%)		4.58			4.58			4.58			4.58			4.58			4.58	

	Regional variation									Regional variation								
Dependent variable	**Months worked – NZers**			**Months worked – Youth**			**Months worked – NZers 25+ yrs**			**Monthly earnings – NZers**			**Monthly earnings – Youth**			**Monthly earnings – NZers 25+ yrs**		
	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2	OLS FE	FE IV 1	FE IV 2
Lagged dependent variable	0.936***	1.001***	1.880*	0.765***	0.774***	1.942**	0.957***	0.985***	2.008	0.853***	0.900***	-1.754	0.876***	0.869***	0.785***	0.844***	0.872***	0.334
	[0.037]	[0.076]	[0.949]	[0.049]	[0.133]	[0.697]	[0.037]	[0.064]	[1.621]	[0.039]	[0.069]	[11.160]	[0.022]	[0.034]	[0.092]	[0.041]	[0.073]	[0.636]
Change in migrant employment – Family	-1.271	12.982	-46.332	2.061	72.928	-46.483	-0.848	4.597	-55.006	1.681	-6.527	-45.147	0.104	2.583	2.258	2.382	-2.156	-2.062
	[2.255]	[16.073]	[86.755]	[3.702]	[57.360]	[103.988]	[2.161]	[11.803]	[122.486]	[1.291]	[8.499]	[236.941]	[2.027]	[6.464]	[7.575]	[1.305]	[8.500]	[18.470]
Change in migrant employment – all others	1.311***	-2.699	8.005	3.228***	-11.788	1.517	0.935**	-1.108	10.980	-0.016	1.822	16.042	0.513	0.048	1.049	0.111	1.364	2.712
	[0.379]	[2.608]	[15.526]	[0.716]	[9.224]	[14.020]	[0.336]	[1.902]	[23.901]	[0.206]	[1.356]	[73.191]	[0.351]	[0.922]	[1.380]	[0.205]	[1.358]	[4.664]
Observations	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168	180	180	168
Adj R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.98	0.98	0.98	1.00	1.00	0.99
Adj R-squared – ex FE	0.98	0.97	0.75	0.93	0.62	0.62	0.99	0.98	0.72	0.99	0.98	0.03	0.97	0.97	0.96	0.99	0.98	0.95
KP under-ID (Ho: Not identified)		3.57	0.39		2.52	0.61		3.80	0.26		4.43	0.05		7.42	8.57		4.19	0.50
KP under-ID LM (p: ideally 0)		0.06	0.53		0.11	0.44		0.05	0.61		0.04	0.83		0.01	0.00		0.04	0.48
KP Weak ID (Ho: Weak Instrument)		1.91	0.12		1.27	0.19		2.06	0.08		2.35	0.01		4.38	3.22		2.19	0.16
Stock-Yogo critical value (15%)		4.58			4.58			4.58			4.58			4.58			4.58	

	Local industry variation								Regional variation							
Dependent variable	**Hires – NZers**		**Hires – Youth**		**Hires – NZers 25+ yrs**		**Hires – Beneficiaries**		**Hires – NZers**		**Hires – Youth**		**Hires – NZers 25+ yrs**		**Hires – Beneficiaries**	
	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1	OLS FE	FE IV 1
Lagged total number of beneficiaries															0.853***	0.931***
															[0.037]	[0.136]
Lagged total employment	0.675***	0.625***	0.648***	0.613***	0.687***	0.643***	0.721***	0.637***	0.819***	1.212**	0.724***	1.207*	0.839***	1.043***	0.542***	0.651***
	[0.032]	[0.042]	[0.036]	[0.047]	[0.034]	[0.042]	[0.036]	[0.050]	[0.140]	[0.408]	[0.145]	[0.485]	[0.144]	[0.253]	[0.106]	[0.148]
Change in migrant employment – Family	6.719***	**-20.647***	7.217***	-8.476	6.216***	-19.445	8.418***	**-43.535****	3.928	146.644	21.549**	213.768	12.127	85.144	24.237**	72.006
	[1.193]	[9.879]	[1.483]	[10.359]	[1.350]	[10.234]	[1.460]	[14.273]	[8.272]	[110.496]	[7.804]	[133.923]	[10.512]	[69.870]	[7.986]	[51.388]
Change in migrant employment – all others	2.070***	-0.507	2.618***	-1.299	1.975***	0.360	1.820***	0.333	4.537**	-26.562	8.121***	-29.557	4.911***	-11.279	0.434	-8.335
	[0.266]	[1.077]	[0.327]	[1.413]	[0.268]	[1.041]	[0.298]	[1.371]	[1.422]	[18.019]	[1.681]	[22.237]	[1.479]	[11.258]	[1.552]	[5.201]
Observations	3600	3600	3600	3600	3600	3600	3597	3597	180	180	180	180	180	180	180	180
Adj R-squared	1.00	0.99	1.00	1.00	0.99	0.99	0.99	0.99	1.00	0.99	1.00	0.99	1.00	1.00	1	1
Adj R-squared – ex FE	0.78	0.73	0.78	0.74	0.73	0.70	0.87	0.82	0.88	0.48	0.89	0.46	0.84	0.72	0.98	0.97
KP under-ID (Ho: Not identified)		29.10		29.10		29.10		29.19		3.09		3.09		3.09	0	4.3
KP under-ID LM (p: ideally 0)		0.00		0.00		0.00		0.00		0.08		0.08		0.08	0	0.04
KP Weak ID (Ho: Weak Instrument)		12.15		12.15		12.15		12.18		1.61		1.61		1.61	0	2.27
Stock-Yogo critical value (15%)		4.58		4.58		4.58		4.58		4.58		4.58		4.58		4.58

Appendix D: Temporary migrant share of employment, by industry and region

Table 23 Temporary migrant share of employment (months) for each industry and region, 2000 –2015

Industry	Auckland	Bay of Plenty	Canterbury	Gisborne–Hawke's Bay	Manawatū–Wanganui	Northland	Otago	Southland	Taranaki	Tasman, Nelson, Marlborough, West Coast	Waikato	Wellington	Total
Accommodation	17%	7%	10%	4%	7%	8%	21%	8%	4%	10%	7%	12%	10%
Agriculture and fishing support services	12%	28%	7%	22%	1%	12%	6%	5%	2%	41%	5%	1%	12%
Building cleaning, pest control and gardening services	12%	4%	7%	2%	5%	8%	8%	2%	2%	3%	5%	5%	5%
Construction	4%	1%	4%	1%	1%	1%	3%	1%	1%	1%	1%	2%	2%
Dairy cattle farming	3%	4%	20%	10%	3%	3%	13%	16%	2%	5%	6%	2%	7%
Employment services	11%	6%	13%	12%	4%	6%	27%	5%	3%	17%	6%	9%	10%
Food services	19%	9%	11%	5%	6%	7%	18%	6%	6%	8%	8%	11%	10%
Fruit and tree nut growing	12%	9%	8%	15%	3%	13%	24%	7%	2%	16%	9%	8%	10%
Health care	3%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%	3%	2%
Manufacturing	3%	2%	2%	1%	1%	2%	2%	1%	1%	4%	1%	2%	2%
Other admin and support services	6%	16%	4%	11%	2%	8%	8%	2%	1%	9%	2%	2%	6%
Other agriculture, forestry and fishing	7%	2%	5%	2%	2%	3%	2%	2%	1%	4%	4%	2%	3%
Other education and training	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Other industries	3%	1%	2%	1%	1%	1%	4%	1%	1%	1%	1%	1%	2%
Other retail trade	6%	2%	2%	1%	1%	1%	4%	1%	1%	1%	2%	2%	2%

Industry	Auckland	Bay of Plenty	Canterbury	Gisborne–Hawke's Bay	Manawatū–Wanganui	Northland	Otago	Southland	Taranaki	Tasman, Nelson, Marlborough, West Coast	Waikato	Wellington	Total
Professional, scientific and technical services	4%	2%	3%	2%	1%	2%	3%	2%	2%	2%	2%	3%	2%
Residential care services	7%	4%	6%	3%	4%	4%	3%	3%	3%	5%	4%	4%	4%
Supermarket and grocery stores	9%	2%	4%	2%	2%	2%	6%	2%	2%	2%	3%	6%	3%
Tertiary education	4%	1%	3%	1%	3%	1%	4%	2%	2%	1%	3%	3%	2%
Wholesale trade	3%	2%	2%	1%	1%	2%	2%	1%	1%	2%	2%	2%	2%
Total	**7%**	**5%**	**6%**	**5%**	**3%**	**4%**	**8%**	**3%**	**2%**	**7%**	**4%**	**4%**	**5%**

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