

Exploring new ways to measure wellbeing: benefit to work transitions

Working paper

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Authors

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Abstract

Each year a large number of people find paid employment after being on an income-tested main benefit. Encouraging this transition has been a key focus of welfare policy in recent years. However, there is limited New Zealand evidence about the extent to which these transitions are associated with improvements in overall wellbeing. The paper examines how a variety of wellbeing outcomes change when people transition from benefit into paid employment. The paper uses data from multiple waves of the New Zealand General Social Survey (NZGSS) that has been linked to government administrative records in the Statistics New Zealand Integrated Data Infrastructure (IDI). A small sample of NZGSS respondents were surveyed close to the time they made a transition from long-term benefit receipt to long-term employment. Our measurement strategy relies on the assumption that the date of when someone was surveyed is unrelated to when they made this transition. As a result, we have a small random sample of people who transitioned from benefit to employment. This random sample is then used to estimate outcomes for the wider population before and after the transition. We find that those surveyed after the transition had higher incomes and were also more likely to indicate they had a sufficient income to afford basic necessities. While there are hints of impacts across other indicators of wellbeing, the small sample size of the study limits our ability to estimate many meaningful differences.

Introduction

A large number of people make a transition from receiving a benefit to paid work. In 2017 almost 90,000 working age people cancelled their main benefit after finding full-time employment.

Transitions to employment have been a key focus of welfare policy in recent years, but there is only limited New Zealand evidence about how this transition affects people's lives.

This research investigates whether people moving from benefit to long-term paid employment end up being better off. We investigate whether people making the transition to paid employment for more than six months have higher incomes, better housing, improved mental and physical health, enough free-time and higher life satisfaction.

This paper uses data from the New Zealand General Social Survey (NZGSS) that has been linked to administrative records in the Statistics New Zealand Integrated Data Infrastructure (IDI). Building on the methodology set out in Smith et al (2018) we identify respondents to the NZGSS who, within six months before or after they responded to the survey, made a transition off benefit and into long-term paid employment. The resulting data is a small sample of the wider population who made the transition. Our measurement strategy is to compare differences in wellbeing indicators for the randomly selected sub-samples of individuals surveyed 'before' they transition, with those surveyed 'after' the transition.

The rest of this paper is set out as follows. Section 2 provides a brief review of the literature of welfare to work transitions. Section 3 and 4 describe the data and methodology in more detail. Section 5 describes our sample of people who transition from long-term benefit receipt to long-term employment. Section 6 presents and discusses our findings on how various indicators of wellbeing change with the transition from welfare to work. Section 7 discusses the limitations of the current study and also suggests some directions for future research. Section 8 concludes.

Existing research literature on the transition from welfare to work

There is a large and well-developed body of international literature looking at welfare transitions. However, the existing New Zealand research on how transitions from benefit to work impact on wellbeing is relatively modest.

A number of recent papers describe benefit-employment transitions in New Zealand (Hyslop et al., 2004; Stillman and Hyslop, 2006; Dixon and Crichton, 2007; Judd and Sung, 2018). A key observation from these studies is that many employment spells are only short-term and are followed by a return to benefit. It is unclear to what extent this instability reflects factors associated with individuals (eg episodic health conditions) or firms and jobs (eg temporary contracts).

A key feature of the transition from benefit to employment is higher incomes (Judd and Sung, 2018). Less is known about subsequent earning trajectories and the returns to experience and training for people leaving benefit. There is also uncertainty about the 'quality' of employment. (Pacheco and Plum, 2018).

Participation in paid employment reduces time available for other activities such as recreation and leisure, as well as parenting and caring responsibilities. The potential trade-offs mean that a focus on a narrow range of outcomes in assessing the impact of benefit to employment transitions does not provide the full picture. For example, in overseas research there are contradictory findings on how transitions to employment impact parenting and the care of children (Gennetian et al., 2002).

Participation in paid employment may also impact on physical and mental health. International literature on the impacts of employment on physical and mental health often shows positive impacts. On average employment appears to have a positive effect on mental health (OECD, 2015). But insecure, low paid and stressful workplaces may do the opposite (Butterworth et al., 2011). There is some evidence that employment might also be good for physical health (Waddell, 2006; Curnock et al., 2016) but this also depends on specific workplace factors (Wahrendorf et al., 2018).

There is growing literature looking at the impacts of employment status on people's subjective wellbeing. A number of studies have shown that transitions to employment are associated with gains in life satisfaction (Layard, 2004; Grün et al., 2010). There is also literature documenting the large negative impact of loss of employment on life satisfaction (eg Grün et al., 2010; Winkelmann & Winkelmann, 1998; Lucas et al., 2004; Krueger & Mueller, 2012; Boarini et al., 2013).

Linked New Zealand General Social Survey

This paper uses data from the NZGSS that has been linked to administrative records in the IDI.

NZGSS and IDI

The NZGSS is a Statistics New Zealand household survey that collects information on the wellbeing of the New Zealand population. The survey includes both a household questionnaire, which obtains socio-demographic information on the whole household, and a personal questionnaire, which collects detailed information on the wellbeing of the respondent across a wide range of different domains.

Each wave of the NZGSS surveys approximately 8,500 households. Only one person in each household responds to the personal questionnaire so there are approximately 8,500 responses to the personal questionnaire in each wave. The NZGSS commenced in 2008 and is conducted every second year. Interviewing starts from 1 April of the survey year and continues over the subsequent 12 months.

The survey aims to provide a representative sample of the population aged 15 years and over in private dwellings located in the North Island, South Island, or Waiheke Island. The target population for the survey explicitly excludes several groups including:

- people living in non-private dwellings such as hotels, motels, boarding houses, hostels; homes for the elderly, patients in hospitals, or residents of psychiatric and penal institutions; and people living on offshore islands (excluding Waiheke Island)
- New Zealand usual residents temporarily staying elsewhere in New Zealand (including other permanent and temporary private dwellings, institutions, and non-private dwellings; and people who have no fixed abode, but stay at private dwellings) who do not return within the survey period
- New Zealand usual residents who live in remote areas which are costly or difficult to access.
- in a companion paper we note that there is evidence that survey under-estimates the proportion of the population in receipt of income-tested main benefits (Rea et al., 2019). Some proportion of this under-estimate may reflect who is excluded from the target population for the survey.
- This paper uses survey data that has been augmented with other information within the IDI. The IDI is a linked longitudinal dataset that combines unit-record information from a range of agencies and organisations. The IDI combines both survey and administrative data and is maintained by Statistics New Zealand under strict privacy and confidentiality protocols.

Table 1 gives the response rate and achieved sample size for each wave of the NZGSS from 2008 to 2016. It also shows the smaller sample of personal respondents that are linked in the IDI.

Table 1. Descriptive statistics for the linked New Zealand General Social Survey (respondents to the personal questionnaire)

NZGSS wave	Response rate	Achieved sample	Link rate to IDI	IDI sample
2008	83%	8,721	82%	7,176
2010	81%	8,553	81%	6,942
2012	78%	8,460	81%	6,861
2014	80%	8,795	77%	6,780
2016	84%	8,493	87%	7,362

Source: Statistics New Zealand

The response rate in Table 1 gives the proportion of eligible respondents contacted by Statistics New Zealand who completed the NZGSS. When the NZGSS is added to the IDI it is necessary to link respondents in the NZGSS to a record in the IDI spine.¹ This is done on the basis of a range of different criteria including name, date of birth and sex, and is usually sufficient to identify the relevant person. The data linking takes place while preserving the confidentiality of the individuals in the dataset at all times. The initial matching is carried out by a data linkage team at Statistics New Zealand working with only the information required to identify the records. An anonymous identification number is used to link records across different collections. For some respondents it is not possible to find a link between the NZGSS record and the IDI spine. This might occur, for example, because the date of birth is transposed in one dataset, or a person informally changes their name. As a result of incomplete matching, the linked NZGSS has had a sample size of between 6,780 and 7,362 respondents per wave since 2008.

More information about the IDI and the NZGSS can be found on the Statistics New Zealand website².

IDI administrative data

The advantage of linking data is that it provides derived administrative records for each respondent. This study uses the administrative records for each respondent from a variety of collections including benefit, tax, corrections and education.

Administrative data provides a wider range of information about respondents at the time of the survey. It also provides information before and after the survey, which is crucial for this study, as we use longitudinal benefit-employment histories from the administrative data.

The two main administrative datasets used in this analysis are the Ministry of Social Development (MSD) Benefit Dynamics Dataset and the Inland Revenue Tax Dataset. The Benefit Dynamics

¹ The IDI spine is the dataset containing information for all people in New Zealand that is used to link administrative and survey data together for anonymised research and analysis.

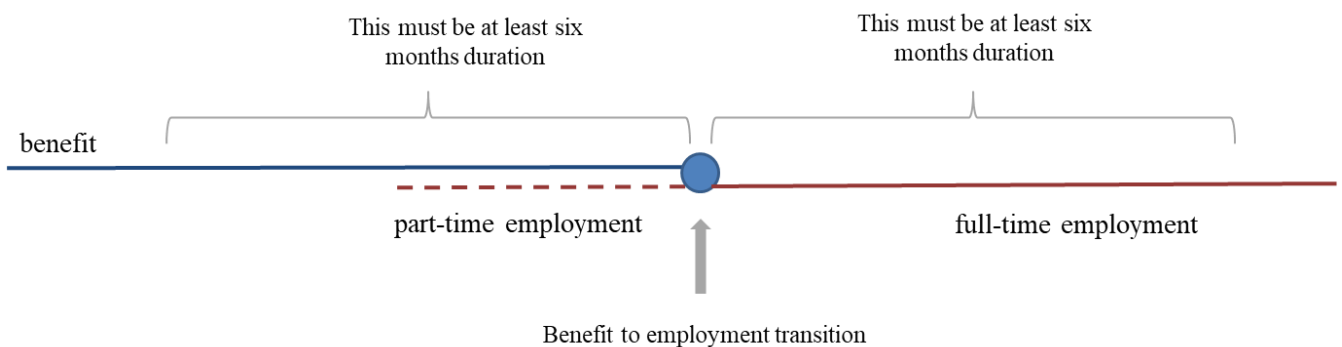
² Go to www.stats.govt.nz

Dataset can be used to identify the specific dates of grants and cancellations of main benefits. The Inland Revenue Tax Dataset draws information from the employee monthly schedule and contains monthly tax information on earnings.

Our analysis focuses on individuals where we have administrative records of a benefit to employment transition³. Figure 1 broadly shows how we combined monthly taxable earnings and benefit spell data. The transition date is identified by the end of the benefit spell, and we use a number of different rules to amalgamate spells where there are gaps less than a month. We define a benefit spell as when someone received an income-tested main benefit, noting that they might also have been working part-time while receiving a benefit. An employment spell is defined as when someone received taxable earnings and not a benefit.

Importantly, as we discuss in the next section, our focus is on the subset of individuals who prior to the transition were on a benefit for more than six months, and who after the transition were employed for at least six months.

Figure 1: Benefit to employment transitions from administrative data



³ We define employment using monthly PAYE data and thereby exclude individuals who become self-employed.

Methodology

This paper builds on the approach used to measure the impact of public housing on wellbeing (Social Investment Agency, 2018a). The methodology uses the opportunity created by linking longitudinal administrative records to cross sectional survey data.

For this study our base data is the longitudinal administrative records of everyone aged 18 to 63 years who made a transition off benefit and into paid employment.

Our specific focus is individuals who were on benefit at least six months prior to the transition, and who remained in employment for at least six months after the transition.

We identify all the individuals in this target population who were respondents to the NZGSS within a six-month window either side of their transition occurring. This means we have a representative sample of the target population surveyed when they were either 'on benefit' or 'employed'.

Our sample is representative of the target population because the NZGSS is designed to provide a representative sample of the wider New Zealand population.

Importantly, there is an equal chance of the target population being surveyed at any point before or after the transition. Because the date at which a person is surveyed is determined by administrative procedures, we assume that for any particular individual the survey date is statistically independent of the date of the transition to employment.

Our measurement strategy is to use the 'random' nature of the survey date to construct 'benefit' and 'employment' sub-samples of people who transitioned. We interpret the average outcomes for the 'benefit' and 'employment' groups as representative of the actual outcomes for the target population at these different points in time.

We report the aggregate differences in outcomes for the 'benefit' compared to the 'employment' sub-samples. We also report these differences after controlling for the other characteristics of the sample including age, gender, ethnicity and family type.

Our use of the combined waves of the NZGSS provides several outcomes that are measured consistently across five different surveys. These outcome measures are intended to cover the Social Investment Agency (SIA) wellbeing domains (Social Investment Agency, 2018b), and are consistent both with the OECD's approach to measuring wellbeing (OECD, 2011) and the New Zealand Treasury's Living Standards Framework (Smith, 2018).

For this study we look at the following indicators:

- employed for one hour or more in the last week
- net personal income in the 30 days prior to the survey date (measured using administrative data)
- enough income to meet every day needs for such things as accommodation, food, clothing and other necessities
- assessment of 'enough free time'
- sufficient bedrooms for all members of the household

- house free of dampness
- feel safe walking in neighbourhood after dark
- easy to be yourself in New Zealand (cultural identity)
- very good or excellent self-rated health
- SF12 physical health score
- SF12 mental health score
- in the last four weeks have not felt lonely
- overall life satisfaction.

Our analysis of indicators before and after the transition provides some potential insights into the causal impact of employment on wellbeing. However, these insights require careful interpretation. While employment will undoubtedly have important impacts (through, for example, changes in income), other co-occurring factors and reverse causality will also be important. An observed improvement in health among those employed may be the result of employment but could also have occurred because an improvement in health allowed an individual to increase their hours of work.

Our graphical analysis shows time trends in outcomes prior to transition. A causal impact of employment is suggested where outcomes for the 'employed' sub-sample are higher than the 'benefit' sub-sample – and where there is no pre-existing upward trend in outcomes for the 'benefit' sub-sample.

A caveat is that the findings of the study relate to individuals who transition from long-term benefit receipt to long-term employment. Importantly, outcomes might be different for individuals who leave benefit but are employed for less than six months.

Study sample

The focus of this study is people who made a transition from being on a benefit for at least six months to being off benefit and in paid employment for at least six months. Table 2 shows that over the period 1 April 2008 to 30 April 2017 around 200,000 people made this transition. Of this group, 0.11% or 228 people were respondents to the NZGSS within six months either side of making a transition off benefit and into employment. Men are relatively under-represented in the sample compared to women.

Table 2: Comparison of the target population and sample for the study

Category	IDI any employment transition population (A)	Target IDI employment transition population (B)	NZGSS sample (C)	NZGSS sample as a percentage of target IDI employment transitions population (C/B)
Women	257,949	115,911	157	0.14%
Men	236,979	82,761	71	0.09%
Total	494,928	198,672	228	0.11%

Source: IDI administrative data. Note: Individuals rather than spells. The target IDI employment transition population are all people who were employed for at least six months immediately after receiving an income-tested main benefit for at least six months.

Table 3 provides more detail on the characteristics of the 228 individuals in the NZGSS sample. As can be seen they were equally distributed across the five waves of the survey. There was an average age of 39 years, and the sample was over two-thirds women. Sole parents were approximately 41% of the sample, more than half only had school level qualifications, and the majority were renting. Importantly, before leaving benefit, 89% had undertaken some part-time employment in the previous six months.

Table 3: Demographic characteristics of the linked NZGSS sample

Category	Percentage	Standard error
2008 NZGSS	17.3	2.5
2010 NZGSS	22.6	2.8
2012 NZGSS	22.1	2.8
2014 NZGSS	22.6	2.8
2016 NZGSS	15.5	2.4
Men	31.6	3.0
Women	68.7	3.0
Couple with dependent children	25.7	2.9
Couple no dependent children	7.1	1.7
Single no dependent children	26.5	2.9
Sole parent with dependent children	40.7	3.3
European	66.4	3.1
Māori	27.4	3.0
Pacific	9.7	2.0
Asian	6.2	1.6
Middle Eastern, Latin American and African	0.9	0.6
Other ethnicity	1.3	0.8
No or lower secondary school qualification	35.8	3.2
Highest qualification upper secondary school	40.3	3.3
Highest qualification tertiary	19.9	2.7
Other qualification	4.0	1.3
Own home	34.1	3.2
Renting from public landlord	15.0	2.4
Renting from private landlord	50.9	3.3
Corrections' sentence in last year	5.3	1.5
Tertiary education in last year	17.7	2.5
Jobseeker work ready benefit (or equivalent) immediately prior to transition	33.6	3.1

Table 3: Continued

Category	Percentage	Standard error
Sole parent support payment (or equivalent) prior to transition	40.3	3.3
Jobseeker health condition or disability benefit (or equivalent) immediately prior to transition	19.5	2.6
Supported living payment (or equivalent) immediately prior to transition	8.0	1.8
Other benefit immediately prior to transition	4.9	1.4
Any employment in the six months prior to transition off-benefit	89.4	2.1
Surveyed 180 to 90 days prior to transition	27.4	3.0
Surveyed 90 to 0 days prior to transition	26.5	2.9
Surveyed 0 to 90 days after transition	24.3	2.9
Surveyed 90 to 180 days after transition	21.7	2.7
Characteristic	Average	Standard error
Age	38.9	0.8

Source. IDI administrative data. Note N=228. Total response for ethnicities sum to more than 100% because respondents could declare more than one ethnicity. See Annex 1 for detailed description of variables.

Our method assumes that it is essentially random if any individual is surveyed while they are ‘on benefit’ or ‘employed’. As a result, the two sub-samples should be very similar in relation to time invariant demographic characteristics. Table 4 shows the characteristics of each sub-sample, and we also report a test of whether any of the differences are statistically significant.

Overall the sample contains 123 people on benefit prior to the transition, and 105 employed after the transition. Despite the small numbers the two sub-samples are reasonably similar. On average people were surveyed 91 days prior to the transition, and 88 days after the transition. The average age was 39 years for both sub-samples, and women made up 68% of the benefit sub-sample and 74% of the employment sub-sample.

While the two sub-samples were very similar, there were statistically significant differences across some characteristics. There were more couples with children, and relatively fewer single people without children in the employment sub-sample. In addition, the employment sub-sample also had a higher proportion of individuals in public housing. Although it is difficult to be certain, it is possible that these observed differences could reflect actual changes that occurred with the transition into employment.

Table 4: Demographic characteristics of the 'benefit' and 'employment subsamples

Category	Benefit subsample (N=123)		Employment subsample (N=105)		T-test for difference
	Percentage	Standard error	Percentage	Standard error	p value
2008 NZGSS	15.6	3.3	19.2	3.9	0.47
2010 NZGSS	23.0	3.8	22.1	4.1	0.88
2012 NZGSS	25.4	4.0	18.3	3.8	0.19
2014 NZGSS	21.3	3.7	24.0	4.2	0.63
2016 NZGSS	14.8	3.2	16.3	3.6	0.74
Men	34.1	4.2	28.6	4.4	0.36
Women	68.3	4.2	74.3	4.4	0.36
Couple with dependent children	19.7	3.6	32.7	4.6	0.03
Couple no dependent children	7.4	2.4	6.7	2.5	0.85
Single no dependent children	32.0	4.2	20.2	4.0	0.04
Sole parent with dependent children	41.0	4.5	40.4	4.8	0.93
European	69.7	4.2	62.5	4.8	0.26
Māori	27.9	4.1	26.9	4.4	0.87
Pacific	9.0	2.6	10.6	3.0	0.70
Asian	6.6	2.3	5.8	2.3	0.81
Middle Eastern, Latin American and African	0.0	0.0	1.9	1.4	0.15
Other ethnicity	0.8	0.8	1.9	1.4	0.48
No or lower secondary school qualification	35.2	4.3	36.5	4.7	0.84
Highest qualification upper secondary school	41.8	4.5	38.5	4.8	0.61
Highest qualification tertiary	18.0	3.5	22.1	4.1	0.45
Other qualification	4.9	2.0	2.9	1.6	0.43

Table 4: Continued

Category	Benefit subsample (N=123)		Employment subsample (N=105)		T-test for difference
	Percentage	Standard error	Percentage	Standard error	p value
Renting from public landlord	10.7	2.8	20.2	4.0	0.05
Own home	34.4	4.3	33.7	4.7	0.90
Renting from private landlord	54.9	4.5	46.2	4.9	0.19
Corrections' sentence in last year	6.6	2.3	3.8	1.9	0.36
Tertiary education in last year	19.7	3.6	15.4	3.6	0.40
Jobseeker work ready benefit (or equivalent) immediately prior to transition	30.3	4.2	37.5	4.8	0.26
Sole parent support payment (or equivalent) prior to transition	40.2	4.5	40.4	4.8	0.97
Jobseeker health condition or disability benefit (or equivalent) immediately prior to transition	21.3	3.7	17.3	3.7	0.45
Supported living payment (or equivalent) immediately prior to transition	9.0	2.6	6.7	2.5	0.52
Other benefit immediately prior to transition	5.7	2.1	3.8	1.9	0.50
Any employment in the six months prior to transition off-benefit	89.3	2.8	89.4	3.0	0.98
	Average	Standard error	Average	Standard error	p value
Age	39.3	1.2	38.5	1.0	0.63
Days between survey date and transition	90.6	4.8	87.8	5.1	0.68

Source. IDI administrative data. Note N=228. Total response for ethnicities sums to more than 100% because respondents could declare more than one ethnicity. See Annex 1 for detailed description of variables.

Results

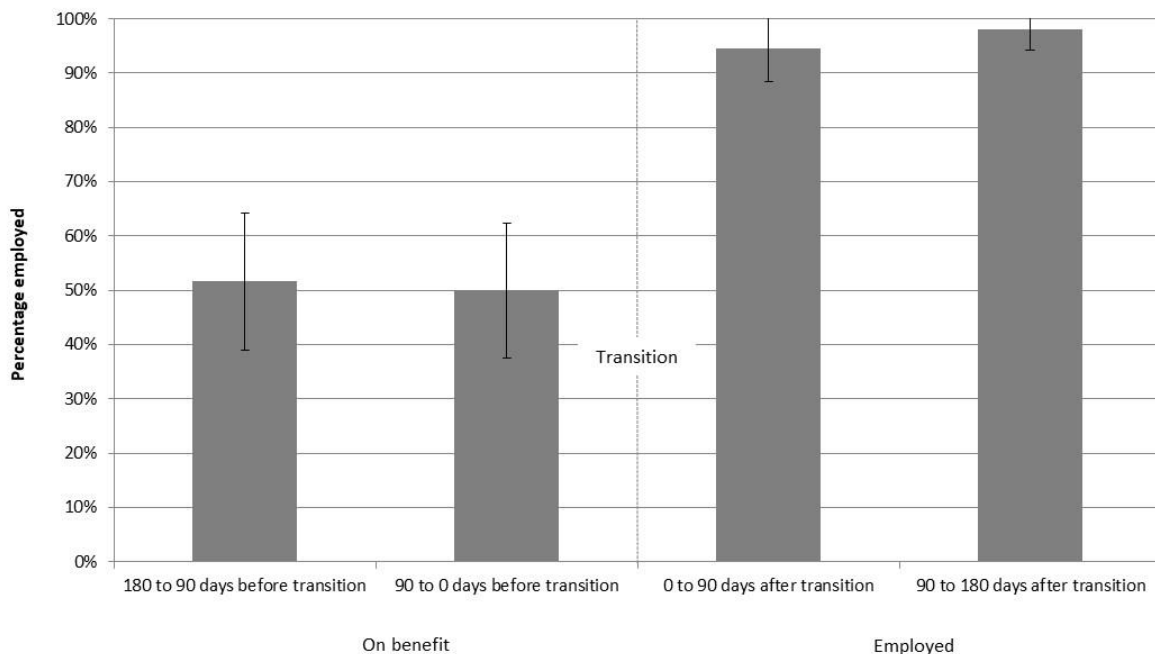
Our empirical strategy is to look at how indicators of wellbeing differ between the benefit and employment sub-samples. We show these graphically, reporting average outcomes for individuals surveyed within 3-month windows both before and after the transition to employment. We also report average outcomes for each indicator before and after the transition. As well as the raw difference between the two sub-samples, we also report this difference after regression-adjustment to account for any remaining compositional differences between the two sub-samples.

Employment rates

The NZGSS asked respondents to indicate if they were in paid employment for one hour or more within the last week. Among those surveyed before their transition off benefit, just over half indicated they were employed for at least one hour or more. Around 96% indicated they were employed when surveyed after the transition.

Figure 2 shows the average rates of employment for individuals categorised by when they were surveyed. This shows higher average rates of employment for individuals who were surveyed in the three months immediately following the date of benefit cancellation.

Figure 2: Employment rates of study sample



Note: Error bars show 95% confidence interval

Table 5 reports the difference in employment rates for the 'employed' compared to the 'benefit' sub-samples. The table reports both the simple difference as well as after adjusting for other factors that might have an impact on employment. These show that the transition from benefit to employment was associated with an increase of around 45 percentage points.

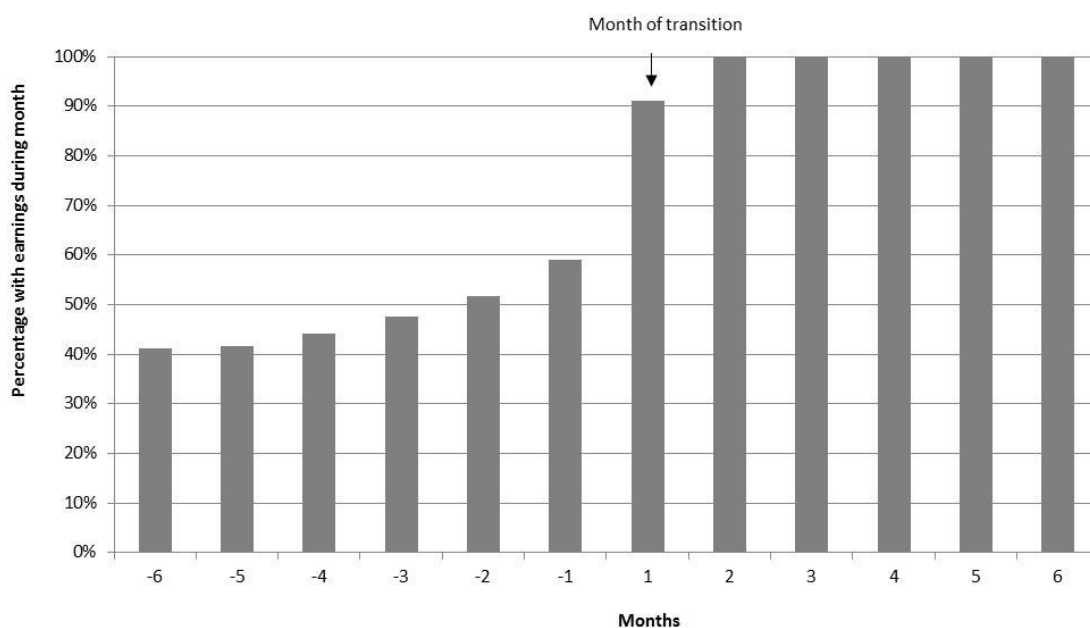
Table 5: Difference in the percentage employed (sub-samples of 'employed' versus 'on-benefit')

Category	Estimate	Standard error	p value
Simple difference	45	4.9	<0.001
Difference adjusted for survey year	45	4.8	<0.001
Adjusted for survey year, demographic and other covariates	46	4.8	<0.001

Note: N=225. Estimation using a linear probability model. Heteroscedasticity consistent standard errors. Demographic and other covariates are sex, age, ethnicity, family type, highest qualifications, previous tertiary study, housing tenure and last type of main benefit received.

Note that among respondents in the employed sub-sample, 82% indicated they were satisfied or very satisfied with their job. We also investigated how hours of work changed as people moved from part-time to full-time employment, but hours of work were not well recorded in the survey.

Figure 3: Monthly employment rates of target population



Note: Target population of individuals who transitioned from main benefit receipt to employment lasting at least six months over the period April 2008 to April 2017. The graph shows the proportion with PAYE earnings in the months before and after the benefit was cancelled (ie transition date).

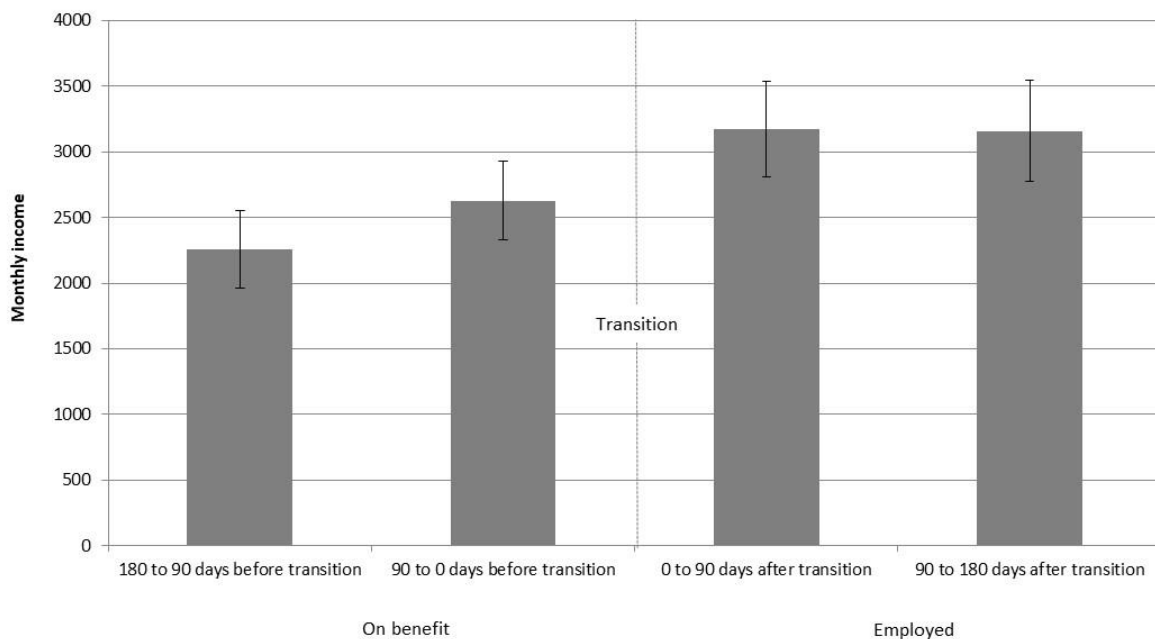
The changes in employment rates of the NZGSS sample can also be compared with similar changes among the wider target population of around 200,000 people who made a similar transition over the survey years. Figure 3 shows the percentage of the wider target population who have PAYE earnings during the calendar month. We show these 'employment rates' for the six months before and after the date the benefit was cancelled. The pattern is very similar to that observed in the sample, which provides some assurance that the changes measured in the small NZGSS sample are reflective of the wider population.

Monthly net personal income

Using administrative IDI data, we estimate real monthly net income from all sources for individuals in the sample. These estimates are adjusted for inflation and expressed in 2014 dollars. Among those surveyed while on benefit, monthly personal incomes were just over \$2,400 per month. After leaving benefit monthly incomes were approximately \$3,100 per month.

Figure 4 shows the average monthly net personal income for individuals categorised by when they were surveyed. This shows the increase in average incomes while in work, and the suggestion of an increase in real incomes in the three months immediately prior to the benefit being cancelled ($p=0.08$).

Figure 4: Monthly net personal income of study sample



Note: Error bars show 95% confidence interval

Table 6 reports the difference in net personal incomes rates for the 'benefit' compared to 'employed' sub samples. The increase of just over \$725 per month was statistically significant. When adjusting for the characteristics of respondents in the two sub-samples the increase in income was slightly lower but remained statistically significant.

Table 6: Difference in monthly net personal income ('employed' versus 'on-benefit' sub-samples)

Category	Estimate	Standard error	p value
Simple difference	725	175	<0.001
Difference adjusted for survey year	729	171	<0.001
Difference adjusted for survey year, demographic and other covariates	633	145	<0.001

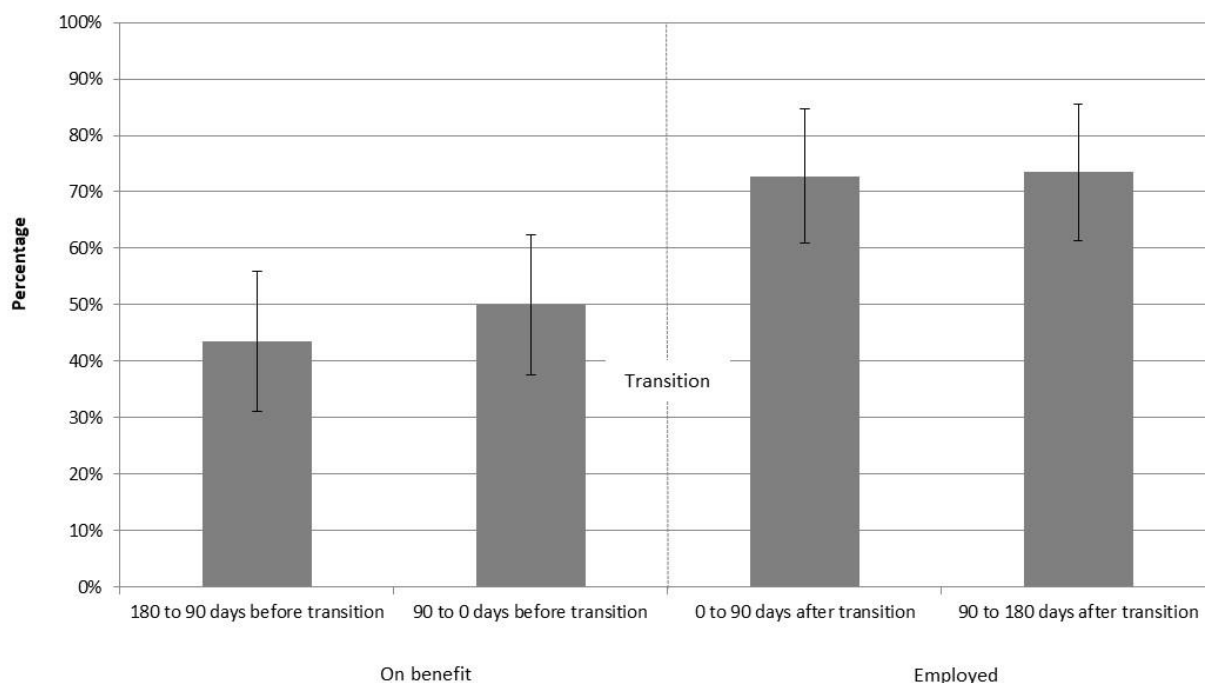
Note: N=225. Real NZ\$2014 dollars. Estimation using OLS. Heteroscedasticity consistent standard errors. Demographic and other covariates are sex, age, ethnicity, family type, highest qualifications, previous tertiary study, housing tenure and last type of main benefit received.

Sufficient income for daily necessities

Among those surveyed while on benefit only 47% indicated they had 'enough' or 'more than enough' combined income to meet every-day needs for accommodation, food, clothing and other necessities. This increased to 73% for those surveyed after moving off benefit.

Figure 5 show the percentage indicating they had sufficient income for individuals categorised by when they were surveyed. The increase in this measure closely tracked the increase in average incomes observed in the administrative data.

Figure 5: Percentage with sufficient income for daily necessities



Note: Error bars show 95% confidence interval

Table 7 reports the difference in sufficient income between the 'benefit' and the 'employed' sub-samples. The increase of 26 percentage points was statistically significant. When

controlling for the characteristics of respondents the increase was marginally larger and remained statistically significant.

Table 7: Difference in percentage with sufficient income ('employed' versus 'benefit' sub-samples)

Category	Estimate	Standard error	p value
Simple difference	26	6.3	<0.001
Difference adjusted for survey year	26	6.2	<0.001
Difference adjusted for survey year, demographic and other covariates	28	6.1	<0.001

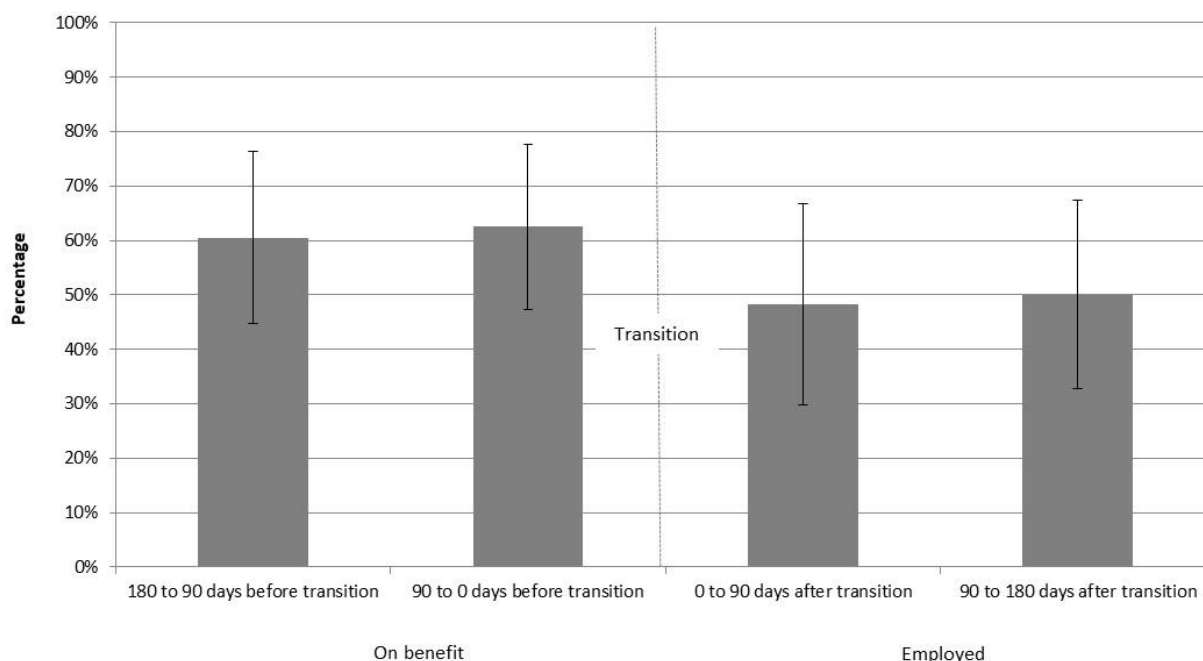
Note: N=225. Estimation using a linear probability model. Heteroscedasticity consistent standard errors. Demographic and other covariates are sex, age, ethnicity, family type, highest qualifications, previous tertiary study, housing tenure and last type of main benefit received.

Enough free time in the last four weeks

A question about free time related to leisure and recreation was asked in the 2008, 2010 and 2012 waves of the survey. Among those answering this question while on benefit, almost 62% indicated they had 'enough free-time in the last four weeks'. This decreased to 49% for those surveyed after moving off benefit and into employment.

Figure 6 shows the 'enough free-time' indicator for individuals categorised by when they were surveyed. The decrease in this outcome broadly tracked changes in employment as would be expected, but these differences, possibly because of the reduced sample size, were not statistically significant.

Figure 6: Percentage indicating enough free-time in last four weeks



Note: Error bars show 95% confidence interval

Table 8 reports the difference in the 'enough free-time' indicator for the 'benefit' and the 'employed' sub-samples. None of these changes were statistically significant at conventional levels.

Table 8: Difference in percentage indicating enough free-time in last four weeks ('employed' versus 'benefit' sub-samples)

Category	Estimate	Standard error	p value
Simple difference	-12	8.4	0.146
Difference adjusted for survey year	-12	8.3	0.139
Difference adjusted for survey year, demographic and other covariates	-11	7.7	0.138

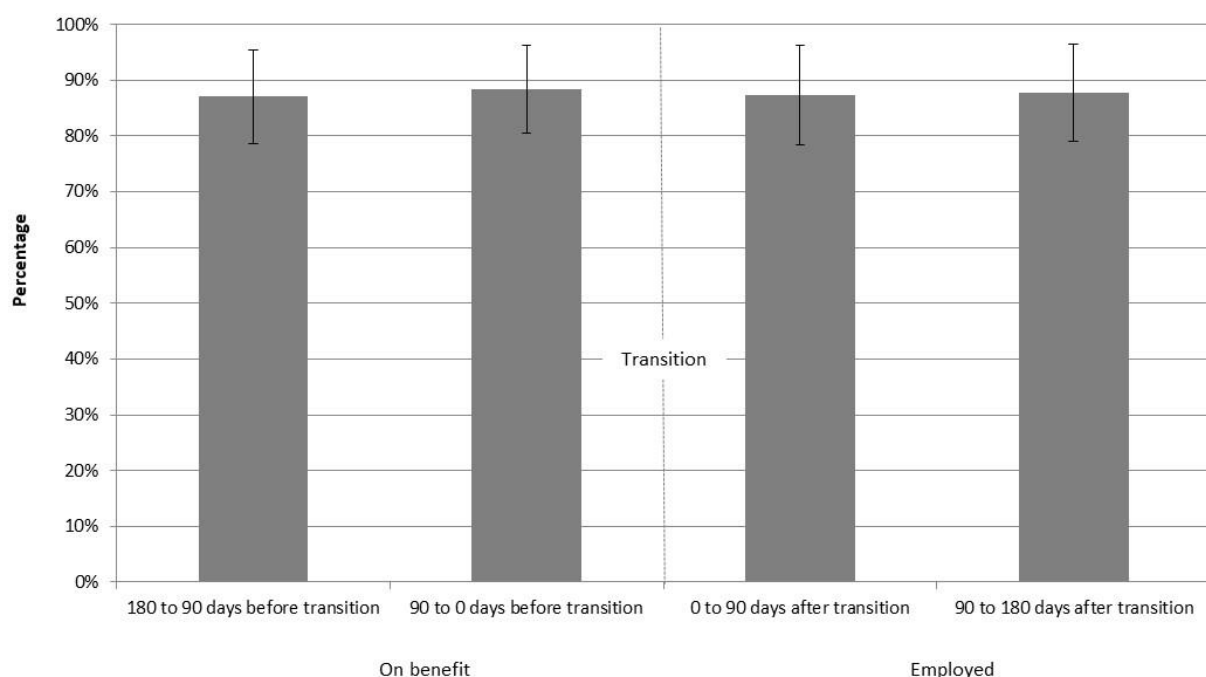
Note: N=138. Estimation using a linear probability model. Heteroscedasticity consistent standard errors. Demographic and other covariates are sex, age, ethnicity, family type, highest qualifications, previous tertiary study, housing tenure and last type of main benefit received.

Enough bedrooms for all members of the household

The NZGSS collects information that enables an estimate of household crowding using the Canadian National Occupancy Standard. We report the data as the percentage of respondents living in a house with enough bedrooms for all members of the household. Among the sample surveyed before leaving benefit, approximately 88% had enough bedrooms for all members of their household. This was unchanged for those after moving off-benefit.

Figure 7 shows the enough bedrooms indicator for individuals relative to when they were surveyed.

Figure 7: Percentage with enough bedrooms for all members of the household



Note: Error bars show 95% confidence interval

Table 9 reports the difference in the percentage indicating they had enough free time in the 'benefit' and the 'employed' sub-samples. None of these estimates were large or statistically significant.

Table 9: Difference in percentage indicating enough bedrooms for the household ('employed' versus 'benefit' sub-samples)

Category	Estimate	Standard error	p value
Simple difference	-0.2	4.4	0.963
Difference adjusted for survey year	-0.4	4.3	0.921
Difference adjusted for survey year, demographic and other covariates	1.5	4.0	0.709

Note: N=228. Canadian National Occupancy Standard. Estimation using a linear probability model. Heteroscedasticity consistent standard errors. Demographic and other covariates are sex, age, ethnicity, family type, highest qualifications, previous tertiary study, housing tenure and last type of main benefit received.

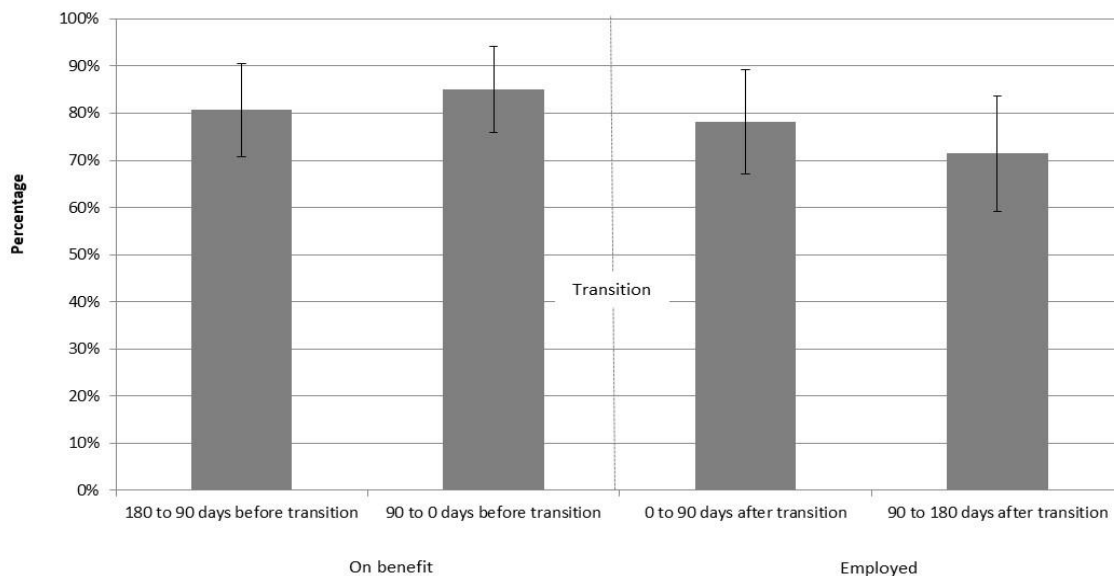
No problems with dampness in the house or flat

Successive waves of the NZGSS have asked respondents if they had problems with dampness in their house or flat.

Among the sample surveyed before leaving benefit, approximately 83% indicated no problems with this aspect of housing quality. Among the employed sub-sample, 75% indicated that they had no problems with dampness.

Figure 8 shows the dampness indicator for individuals in the sample relative to when they were surveyed. Those surveyed after leaving benefit report progressively more problems with this aspect of housing quality.

Figure 8: Percentage indicating no problems with dampness in house or flat



Note: Error bars show 95% confidence interval

As shown in Table 10, there was an eight-percentage point difference between the 'employed' and 'benefit' sub-samples. This was not statistically significant, even after controlling for differences in composition.

Table 10: Difference in percentage indicating no problems with dampness in house or flat ('employed' versus 'benefit' sub-samples')

Category	Estimate	Standard error	p value
Simple difference	-7.8	5.5	0.155
Difference adjusted for survey year	-7.5	5.4	0.162
Difference adjusted for survey year, demographic and other covariates	-8.7	5.4	0.108

Note: N=228. Estimation using a linear probability model. Heteroscedasticity consistent standard errors. Demographic and other covariates are sex, age, ethnicity, family type, highest qualifications, previous tertiary study, housing tenure and last type of main benefit received.

Although not significant, the data suggests housing conditions worsening after moving into work.⁴ As part of the research we also investigated creating an indicator of the house being cold. However, changes to questions across survey waves meant that this was not measured consistently across time. We have not looked at residential mobility, which might also provide some insights into this and other outcomes.

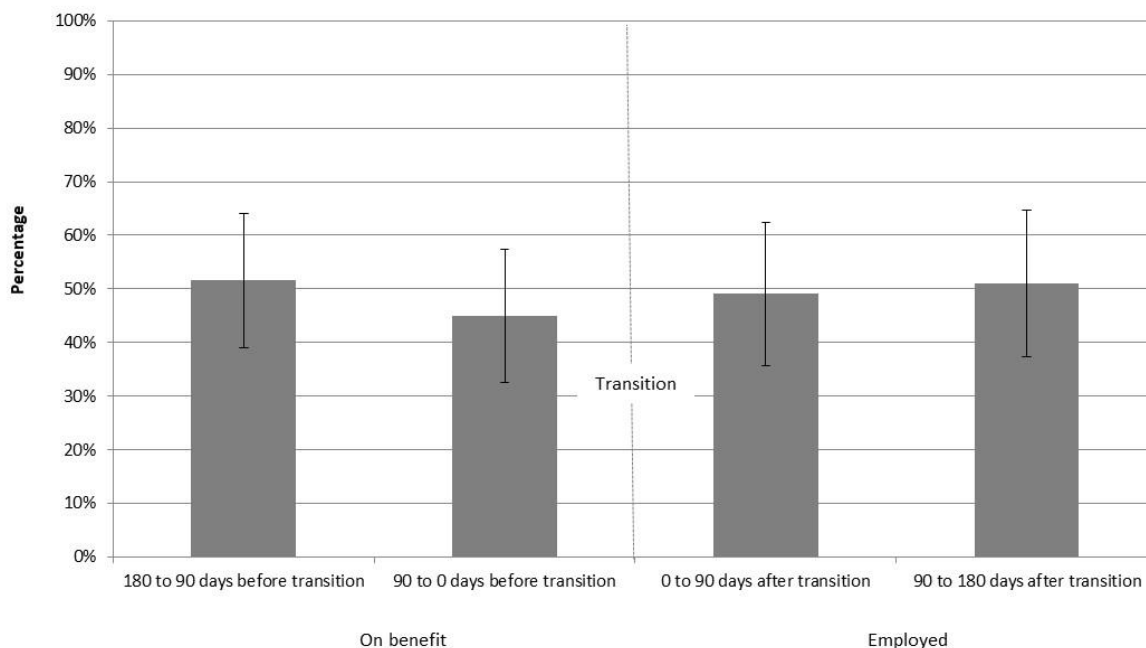
Safe neighbourhood

Successive waves of the NZGSS have asked respondents how safe they feel walking alone in their neighbourhood after dark. Approximately 49% of those surveyed before leaving benefit indicated they felt safe walking alone in their neighbourhood after dark. The rate was the same as for those surveyed after leaving benefit.

Figure 9 shows this indicator at different points in time relative to the transition. While this appears to show an improving assessment of neighbourhood safety in the quarters immediately after leaving benefit, none of these changes are statistically significant.

⁴ A possible explanation is that dampness might increase after moving into work if a house is locked up during the day.

Figure 9: Percentage feeling safe walking alone in neighborhood after dark



Note: Error bars show 95% confidence interval

Table 11 reports the percentage point difference in this indicator for the ‘employment’ and ‘benefit’ sub-samples. There was no statistically significant difference even when controlling for differences in composition.

Table 11: Difference in percentage feeling safe walking in neighbourhood after dark ('employed' versus 'benefit' sub-samples')

Category	Estimate	Standard error	p value
Simple difference	1.6	6.7	0.806
Difference adjusted for survey year	2.7	6.6	0.678
Difference adjusted for survey year, demographic and other covariates	3.4	6.3	0.591

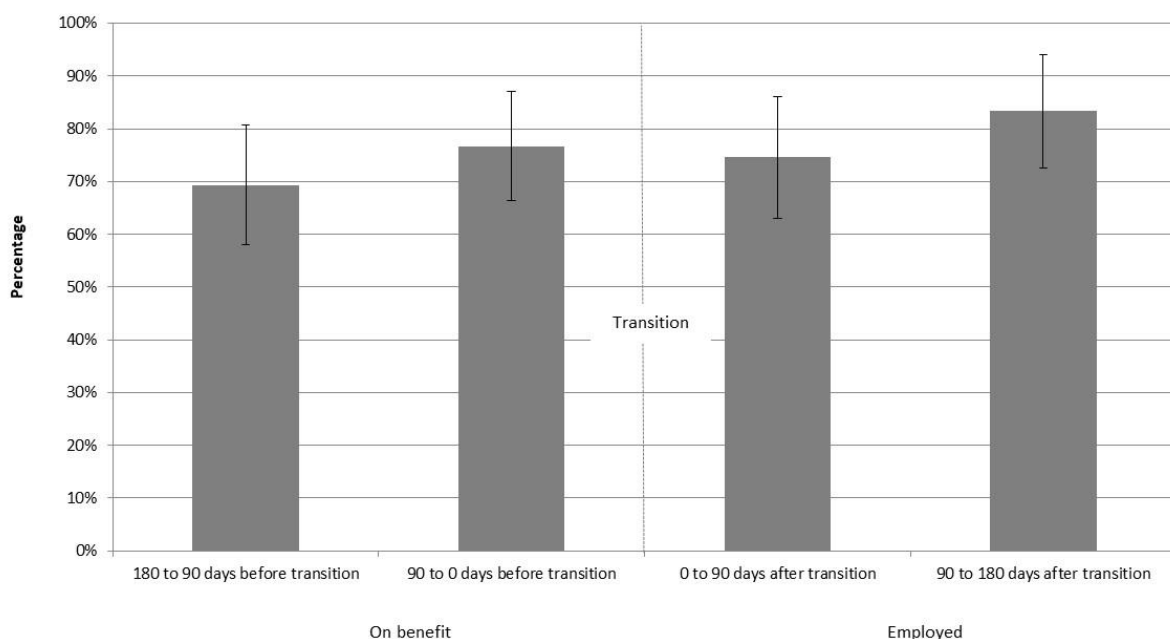
Note: N=225. Estimation using a linear probability model. Heteroscedasticity consistent standard errors. Demographic and other covariates are sex, age, ethnicity, family type, highest qualifications, previous tertiary study, housing tenure and last type of main benefit received.

Ūkaipōtanga /cultural identity

Successive waves of the NZGSS have asked respondents about cultural identity using the following question: 'People in New Zealand have different lifestyles, cultures, and beliefs that express their identity....how easy or hard is it for you to be yourself in New Zealand?'

Approximately 73% of those surveyed before leaving benefit indicated they felt it was 'easy' or 'very easy' to be yourself in New Zealand. The rate was slightly higher for those surveyed after leaving benefit at 79%, but the difference was not statistically significant. Figure 10 shows there was some suggestion of an improvement in this indicator in the last quarter, but this was also not statistically significant.

Figure 10: Percentage indicating it is 'easy' or 'very easy' to be yourself in New Zealand



Note: Error bars show 95% confidence interval

Table 12 reports the percentage point difference in this indicator for the 'employment' and 'benefit' sub-samples. As can be seen there was no statistically significant difference even when controlling for differences in the composition of the two sub-samples.

Table 12: Difference in percentage indicating it is 'easy' or 'very easy' to be yourself in New Zealand ('employed' versus 'benefit' sub-samples')

Category	Estimate	Standard error	p value
Simple difference	5.7	5.7	0.319
Difference adjusted for survey year	5.3	5.7	0.358
Difference adjusted for survey year, demographic and other covariates	5.9	5.9	0.312

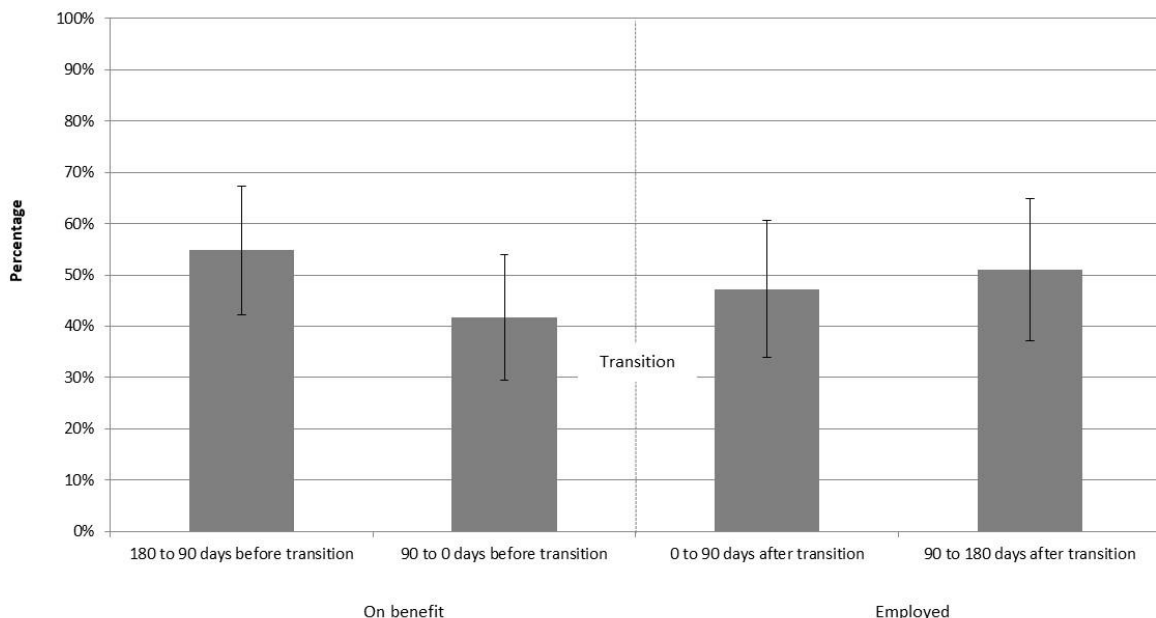
Note: N=225. Estimation using a linear probability model. Heteroscedasticity consistent standard errors. Demographic and other covariates are sex, age, ethnicity, family type, highest qualifications, previous tertiary study, housing tenure and last type of main benefit received.

Self-rated health

Successive waves of the NZGSS have asked respondents to assess their own health on a five-point scale from 'excellent' to 'poor'.

Just over 48% of those surveyed before leaving benefit indicated that their health was 'very good' or 'excellent'. For those surveyed after leaving benefit the rate was the same. As shown in Figure 11, there is some suggestion of a gradual improvement in this indicator starting from immediately prior to the transition. However, these changes were not statistically significant.

Figure 11: Percentage with 'very good' or 'excellent' self-rated health



Note: Error bars show 95% confidence interval

Table 13 reports the percentage point difference in this indicator for the 'employment' and 'benefit' sub-samples. As can be seen there was no statistically significant difference even when controlling for differences in the composition of the two sub-samples.

Table 13: Difference in percentage with 'very good' or 'excellent' self-rated health ('employed' versus 'benefit' sub-samples')

Category	Estimate	Standard error	p value
Simple difference	0.7	6.7	0.919
Difference adjusted for survey year	0.9	6.6	0.895
Difference adjusted for survey year, demographic and other covariates	-0.4	6.3	0.949

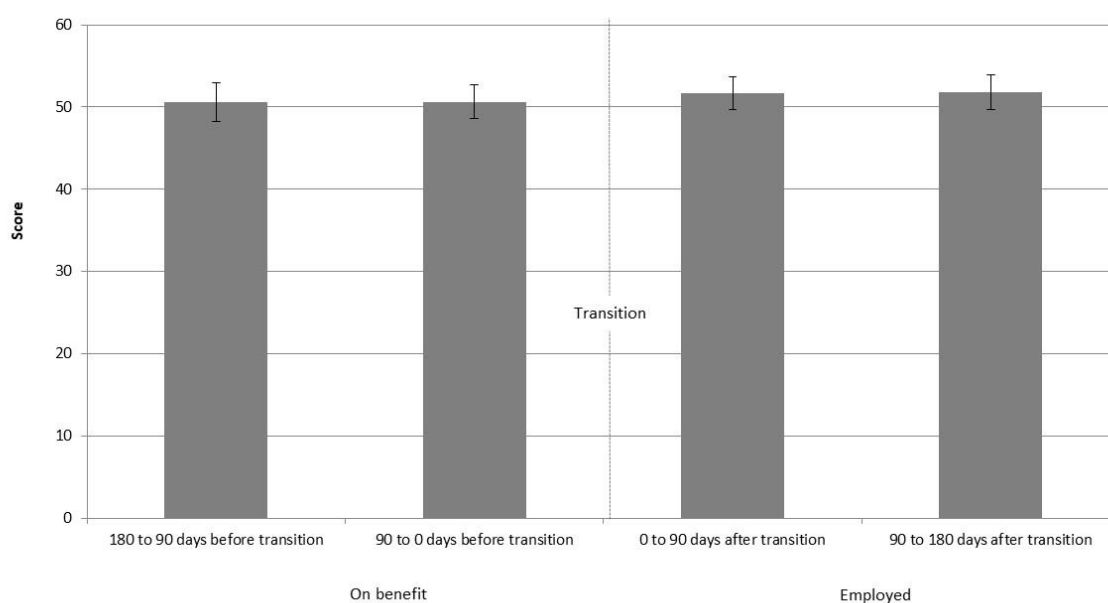
Note: N=225. Estimation using a linear probability model. Heteroscedasticity consistent standard errors. Demographic and other covariates are sex, age, ethnicity, family type, highest qualifications, previous tertiary study, housing tenure and last type of main benefit received.

Important context for this indicator is that typically almost two-thirds of working-age individuals indicate that their health is 'very good' or 'excellent'. As would be expected given the health-related eligibility for many income-tested main benefits, the self-rated health status of individuals in the sample was considerably worse than the rest of the population.

SF12 physical health score

Successive waves of the NZGSS have asked a series of health-related questions that enable the derivation of the SF12 physical health score. This instrument provides an index of the extent to which a person physical health restricts social, recreational and work-related activities (Ware et al., 1996). The scale varies from 0 to 100 with a mean of 50 and a standard deviation of 10. A higher score indicates better physical health. Figure 12 plots the average score before and after the transition. Although marginally higher among those who had left benefit, the difference in the SF12 physical health score was not statistically significant.

Figure 12: SF12 physical health score



Note: Error bars show 95% confidence interval

Table 14 shows the percentage point difference in this indicator for the ‘employment’ and ‘benefit’ sub-samples. There was no statistically significant difference even when controlling for differences in the composition of the two sub-samples.

Table 14: Difference in SF12 physical health score (‘employed’ versus ‘benefit’ sub-samples’)

Category	Estimate	Standard error	p value
Simple difference	1.0	1.0	0.315
Difference adjusted for survey year	1.1	1.1	0.299
Difference adjusted for survey year, demographic and other covariates	1.1	1.0	0.268

Note: N=225. Estimation using a linear probability model. Heteroscedasticity consistent standard errors. Demographic and other covariates are sex, age, ethnicity, family type, highest qualifications, previous tertiary study, housing tenure and last type of main benefit received.

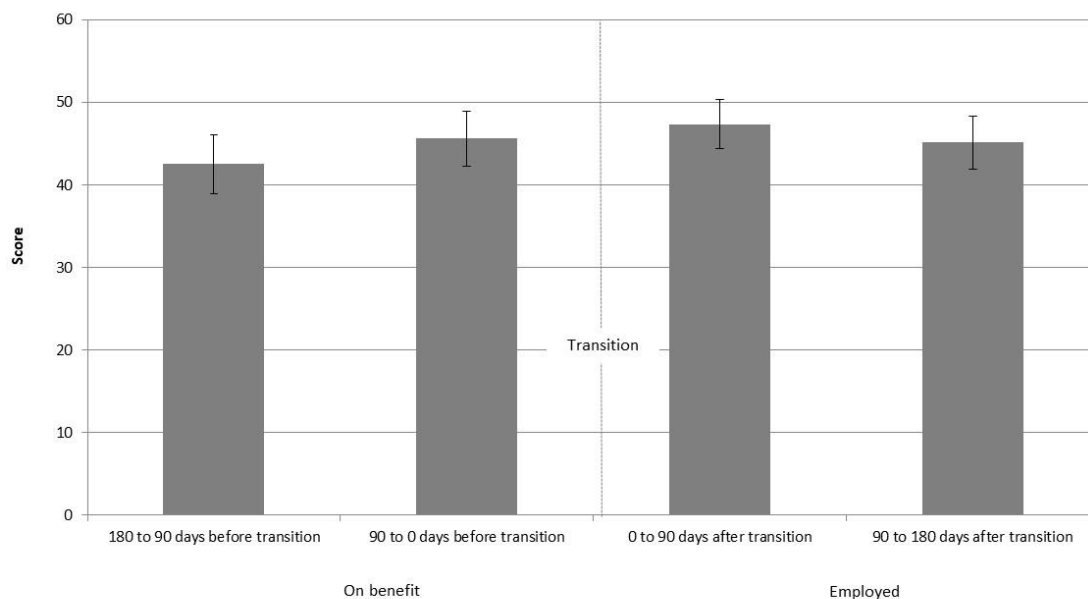
Important context for this indicator is that in contrast to what was recorded in terms of self-assessed health, the individuals in the sample appear to have SF12 physical health scores that are similar to the rest of the population. In addition, the average physical health score of the sample was considerably better than the average for the population receiving benefits.

SF12 mental health score

Successive waves of the NZGSS have also asked a series of health-related questions that enable the derivation of the SF12 mental health score. This instrument provides an index of the extent to which a person’s mental health restricts social, recreational and work-related activities (Ware et al., 1996). The scale varies from 0 to 100 with a mean of 50 and a standard deviation of 10. A higher score indicates better mental health.

Among those surveyed while on benefit, mental health scores were approximately 44 which represents a relatively poor level of mental health. Among those surveyed after the transition the average SF12 mental health score was 46. Figure 13 shows the SF12 mental health score for the individuals surveyed within four different time periods before and after the transition. While it suggests an improving trajectory for mental health, the changes are not statistically significant.

Figure 13: SF12 mental health score



Note: Error bars show 95% confidence interval

Table 15 reports the percentage point difference in this indicator for the ‘employment’ and ‘benefit’ sub-samples. While the estimate suggests an improvement, it was not statistically different from zero.

Table 15: Difference in SF12 physical health score (‘employed’ versus ‘benefit’ sub-samples’)

Category	Estimate	Standard error	p value
Simple difference	2.3	1.7	0.171
Difference adjusted for survey year	2.5	1.7	0.138
Difference adjusted for survey year, demographic and other covariates	1.8	1.6	0.265

Note: N=225. Estimation using a linear probability model. Heteroscedasticity consistent standard errors. Demographic and other covariates are sex, age, ethnicity, family type, highest qualifications, previous tertiary study, housing tenure and last type of main benefit received.

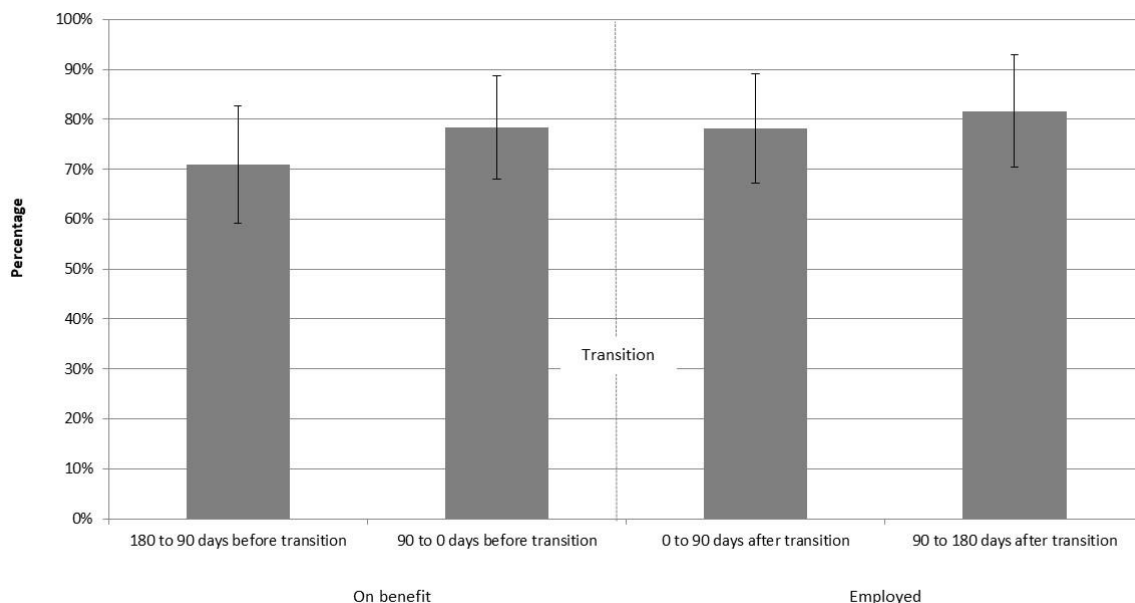
Important context for this indicator is the sample records relatively poor mental health compared to the wider population based on the SF12 mental health score. In addition, the average mental health score of the sample was also better than the average for individuals receiving benefits.

Not experiencing loneliness

Successive waves of the NZGSS have asked questions related to social isolation and loneliness during the previous four weeks. We have combined these to produce an indicator of the proportion of people who do not feel isolated or are not experiencing loneliness.

Among those surveyed while on benefit, approximately 75% indicated they were not lonely. This increased to 80% among those surveyed after the transition. Figure 14 shows the rate of not being lonely for individuals surveyed within four different time periods before and after the transition. While this is suggestive of an improving trajectory, the changes are not statistically significant.

Figure 14: Percentage who did not feel lonely in the last four weeks



Note: Error bars show 95% confidence interval

Table 16 reports the percentage point difference in this indicator for the ‘employment’ and ‘benefit’ sub-samples. While the estimates suggest an improvement, the small sample size means that the difference is not statistically significant.

Table 16: Difference in percentage not experiencing loneliness (‘employed’ versus ‘benefit’ sub-samples’)

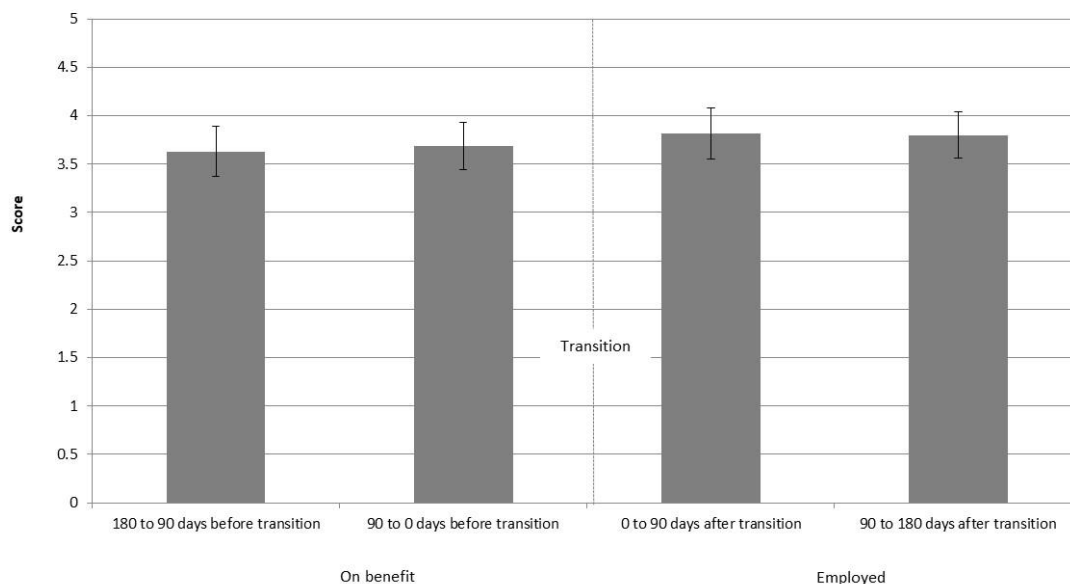
Category	Estimate	Standard error	p value
Simple difference	5.2	5.6	0.350
Difference adjusted for survey year	6.0	5.7	0.293
Difference adjusted for survey year, demographic and other covariates	5.9	5.8	0.308

Note: N=225. Estimation using a linear probability model. Heteroscedasticity consistent standard errors. Demographic and other covariates are sex, age, ethnicity, family type, highest qualifications, previous tertiary study, housing tenure and last type of main benefit received.

Life satisfaction

Successive waves of the NZGSS have asked respondents to indicate if they feel satisfied with their lives. We use this to create a life satisfaction score that ranges from 1 ('not satisfied') to 5 ('very satisfied'). Annex 1 provides more detail on how the indicator was derived across the multiple waves of the survey.

Figure 15: Life satisfaction score (1='low satisfaction' 5='high satisfaction')



Note: Error bars show 95% confidence interval

Among those surveyed while on benefit, the average life satisfaction score was 3.7. This increased to 3.8 among those surveyed after the transition. Figure 15 shows the average life satisfaction score within four different time periods before and after the transition. While this suggests steadily improving life satisfaction, the changes were not statistically significant.⁵

Table 17 reports the difference in the life satisfaction score for the 'employment' and 'benefit' sub-samples. While the estimates suggest an improvement (of around 4%), the small sample size means that the difference is not statistically significant.

⁵ It is useful to consider that for this indicator individuals might know they will be starting a job in the future, and hence have higher life satisfaction rating in the period immediately before leaving benefit.

Table 17: Difference in life satisfaction score ('employed' versus 'benefit' sub-samples')

Category	Estimate	Standard error	p value
Simple difference	0.15	0.12	0.241
Difference adjusted for survey year	0.15	0.13	0.241
Difference adjusted for year, demographic and other covariates	0.10	0.13	0.425

Note: N=225. Life satisfaction score ranges from 1 to 5. Estimation using OLS. Heteroscedasticity consistent standard errors. Demographic and other covariates are sex, age, ethnicity, family type, highest qualifications, previous tertiary study, housing tenure and last type of main benefit received.

Limitations and future directions for research

The data and methodology used for this analysis has a number of limitations and some caution is required when interpreting the results.

Although the data includes indicators relating to many of the main dimensions of wellbeing commonly identified as important in the empirical literature (eg Stiglitz, Sen & Fitoussi, 2009; OECD, 2011; Smith, 2018), the quality of the specific indicators used varies from area to area. We do not have any indicators related to parenting or the quality of family relationships. In addition, in many cases the indicator used is relatively narrow and we therefore cannot rule out impacts on wellbeing not reflected in the indicator.

The sample size used is also small and our method of comparing group averages does not have a lot of precision. This means that many of the results are only suggestive, and it is not possible to assess findings across different sub-groups or allow any analysis by the type of employment.

We are measuring short run impacts only, as the focus is a change in outcomes immediately after a transition off benefit. In addition, what we observe is average outcomes, and given the diversity of experiences this will not represent the experience of everyone.

It is important to be aware that this study is restricted to people who exit long-term benefit for a period of long-term employment. This restriction occurs because our method requires we create a sample where everyone in the 'before' sub-sample is receiving a benefit, and in the 'after' sub-sample everyone is employed. The experience of the group within this study may not generalise to those with shorter periods of benefit receipt or employment.

This research highlights the large range of potential questions that can be addressed using both administrative IDI and linked survey data. Useful areas for future investigation include looking at the pattern of residential address changes, housing and family structure.

As more NZGSS data becomes available it will be possible to repeat this analysis with a larger sample. However, a key issue will be maintaining some consistency in the questions asked in the survey questionnaire.

Conclusion

This paper has used linked NZGSS data to identify how indicators of wellbeing change as people move from welfare (benefit receipt) to employment.

We combine multiple waves of the NZGSS survey to create a small sample of people who left benefit for long-term employment. Unfortunately, the small size of our sample means we can only detect very large impacts.

The analysis of transitions from benefit into long-term employment show increased incomes and more people indicating they have sufficient money to meet their daily needs. However, as would be expected, individuals who transition also indicate they have less free time.

Our data shows no change in household crowding, but some indication of an increase in people indicating their houses have problems with dampness.

We observed very small improvements in other outcomes including mental health and life satisfaction, although none of these are statistically significant.

An important observation from the study is that the underlying prevalence of poor outcomes (eg inadequate incomes, poor health and household crowding) remain high for up to six months after the transition to employment.

References

- Boarini, R., Comola, M., de Keulenaer, F., Manchin, R., and Smith, C. (2013) Can governments boost people's sense of well-being? The impact of selected labour market and health policies on life satisfaction. *Social Indicators Research*, 14(1), 105-120.
- Brown, D., Woolf, J., and Smith, C. (2012) An empirical investigation into the determinants of life satisfaction in New Zealand, *New Zealand Economic Papers*, 46(3), 239-251.
- Butterworth, P., Leach, L., Rodgers, B., Broom, D., Olesen, S., and Strazdins, L. (2011) Psychosocial job adversity and health in Australia: analysis of data from the HILDA Survey, *Australian and New Zealand Journal of Public Health*, vol. 35, no. 6, pp. 564-571.
- Cook, K., (2012) Single parents' subjective wellbeing over the welfare to work transition, *Social Policy and Society*, vol 11(2), pp143-155
- Dixon, S. and Crichton, S. (2007) The Longer-term employment outcomes of people who move from a benefit to work, *Social Policy Journal of New Zealand* 31:pp 137-157
- Curnock, E., Leyland, A., and Popham, F. (2016) The impact on health of employment and welfare transitions for those receiving out-of-work disability benefits in the UK, *Social Science & Medicine*, 162: pp 1-10, doi:10.1016/j.socscimed.2016.05.042
- Gennetian L., Duncan G., Knox V., Vargas W., Clark-Kauffman E. and London A. (2002) *How welfare and work policies for parents affect adolescents: A synthesis of research*. New York, NY: Manpower Demonstration Research Corporation. <https://www.mdrc.org/publication/how-welfare-and-work-policies-parents-affect-adolescents>
- Grun, C., Hauser, W., and Rhein, T., (2010), Is any job better than no job? Life satisfaction and re-employment, *Journal of Labor Research* 31, pp285-306
- Hyslop, D., S. Stillman and S. Crichton (2004) The Impact of Employment Experiences and Benefit Spell Duration on Benefit-to-Work Transitions, Statistics New Zealand, Wellington.
- Judd, E. and Sung, J. (2018) *What happened to people who left the benefit system during the year ended 30 June 2014*, Ministry of Social Development, <https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research/benefit-system/what-happened-to-people-who-left-benefit-system-during-the-year-ended-30-june-2014.html>
- Krueger, A. B., & Mueller, A. I. (2012). Time use, emotional well-being, and unemployment: Evidence from longitudinal data. *American Economic Review*, 102(3), 594-99.
- Layard, R. (2004) *Good jobs and bad jobs*, Centre for Economic Performance Occasional Paper No. 19 (April), <http://cep.lse.ac.uk/pubs/download/occasional/op019.pdf>
- Lucas, R. E., Clark, A. E., Georgellis, Y., and Diener, E. (2004). Unemployment alters the set point for life satisfaction. *Psychological Science*, 15(1): pp 8-13.
- OECD (2011) *How's Life? Measuring Wellbeing*, OECD Publishing, Paris.

OECD (2015) *Fit Mind, Fit Job: From Evidence to Practice in Mental Health and Work*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264228283-en>.

Pacheco, G. and Plum A. (2018) When There Is No Way Up: Reconsidering Low-wage Jobs As Stepping Stones, New Zealand Association of Economists Conference paper.

Rea, D., Vinay B., Jhe Lee, W., Smith, C., Vandenbroucke, B. (2019) *Measuring the living standards of people on income-tested main benefits – Working paper*.

Smith, C., (2018), Treasury living standards dashboard: Monitoring intergenerational wellbeing, Kotata Insight, Wellington

Social Investment Agency (2018a). *Measuring the wellbeing impacts of public policy: social housing*. Wellington, New Zealand <https://sia.govt.nz/assets/Uploads/Measuring-the-wellbeing-impacts-of-public-policy-social-housing.pdf>

Social Investment Agency (2018b) *Are we making a difference in the lives of New Zealanders – how will we know?* <https://sia.govt.nz/assets/Uploads/Are-we-making-a-difference-in-the-lives-of-New-Zealanders-how-will-we-know.pdf>

Statistics New Zealand (2014) *Linking methodology used by Statistics New Zealand in the Integrated Data Infrastructure project*. Available from www.stats.govt.nz.

Stiglitz, J., Sen, A., and Fitoussi, J. (2009) Report by the Commission on the Measurement of Economic Performance and Social Progress. Available at http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf

Stillman, S., and Hyslop, D. (2006). Examining Benefit-to-Work Transitions Using Statistics New Zealand's Linked Employer-Employee Data. Statistics New Zealand.

Waddell G., Burton AK. (2006) *Is work good for your health and well-being?* London, UK: The Stationery Office.

Wahrendorf, M., Hoven, H., Goldberg, M., Zins, M., and Siegrist, J. (2018) Adverse employment histories and health functioning: the CONSTANCES study, *International Journal of Epidemiology*, 1-13.

Ware, John & Kosinski, MM & D. Keller, Susan. (1996). A 12-item short-form health survey: construction of scales and preliminary tests of reliability and validity. *Medical care*. 34: pp220-33.

Winkelmann, L., and Winkelmann, R. (1998). Why are the unemployed so unhappy? Evidence from panel data. *Economica*, 65(257), 1-15.

Annex 1: Definitions of variables used in the analysis of New Zealand General Social Survey data

Table A1.1: Variables in the linked NZGSS dataset	
Variable	Definition
Sex	NZGSS personal questionnaire.
Age	NZGSS personal questionnaire.
Ethnicity	NZGSS personal questionnaire. Six level total response categorisation of Māori, Pacific, European, MELAA, Asian, Other.
Highest qualification	NZGSS personal questionnaire. OECD classification into four levels of less than lower secondary, upper secondary, tertiary and other.
Caring for dependent children	NZGSS household questionnaire derived from family type variable.
Family type	NZGSS household questionnaire.
Income-tested main benefit	Income tested main benefits refers to the payments of Job Seeker Support, Sole Parent Support, Supported Living Payment and other categories. It excludes New Zealand Superannuation or Veterans Pension which are not income tested. The data in the IDI is derived from MSD administrative data. This study uses in receipt of an income-tested main benefit at the date of responding to the NZGSS. The type of main benefit is also identified.
Contact with Corrections in year before interview	Linked IDI administrative data using Corrections' records. Any custodial or community sentence in the year before NZGSS interview.
Tertiary study in year before interview	Linked IDI administrative data using Ministry of Education records. Any tertiary enrolment in the year before the NZGSS interview.
Labour force status	NZGSS personal questionnaire. Statistics New Zealand categorisation of employed, unemployed and not in labour force. Employment is defined as at least one hour of paid work.
Household tenure status	Derived variable from NZGSS household questionnaire. Three categories of private rent, public rent and owned.

Estimated after-tax monthly personal income	Linked IDI administrative data from a range of weekly, monthly and annual sources including benefit payments, student allowances, tax credits (Working for Families and Independent Earner Tax Credit), earnings and other taxable income. Income estimated for the month prior to being surveyed. Pro rating amounts across time periods creates some imprecision in these estimates. Values are adjusted to be real NZ\$2014.
Sufficient income for daily necessities	NZGSS personal questionnaire. How well does [your/you and your partner's combined] total income meet your every-day needs for such things as accommodation, food, clothing and other necessities. Binary variable coded to identify responses 'more than enough money' and 'enough money'.
Enough free-time in the last four weeks	Personal questionnaire in 2008, 2010 and 2012. Binary variable coded to identify responses 'too much free-time' and 'the right amount of free-time'.
Enough bedrooms for all members of the household	Derived from NZGSS household questionnaire using the Canadian National Occupancy Standard. Indicator of no household crowding.
House or flat has no problems with dampness	NZGSS personal questionnaire. From 2008 to 2014 respondents were asked to identify major problems in their house or flat relating to dampness. From 2014 the questions were restructured, so this indicator is not entirely consistent across years.
Feel safe walking alone in neighbourhood after dark	NZGSS personal questionnaire. Thinking about crime, how safe or unsafe do you feel walking alone in your neighbourhood after dark? Binary variable coded to include responses of 'very safe' and 'safe'.
Ūkaipōtanga /cultural identity	NZGSS personal questionnaire. Based on question: 'People in New Zealand have different lifestyles, cultures, and beliefs that express their identity. How easy or hard is it for you to be yourself in New Zealand? Variable coded to indicate 'very easy' or 'easy'.
Self-rated health	NZGSS personal questionnaire. In general, would you say your health is 'excellent', 'very good', 'good', 'fair' or 'poor'? Variable coded to indicate responses of 'excellent' and 'very good'. The self-rated health question is also used in the SF12 mental and physical health indices.
SF12 mental health index	Derived variable from NZGSS personal questionnaire using multiple questions. Variable ranges from 0 to 100 with higher score indicating better health.

SF12 physical health index	Derived variable from NZGSS personal questionnaire using multiple questions. Variable ranges from 0 to 100 with higher score indicating better health.
Not experiencing loneliness	NZGSS personal questionnaire. The wording of this question has changed across years. From 2008 to 2012 respondents were asked: 'In the last four weeks, how often have you felt isolated from others'. In 2014 and 2016 respondents were asked: 'In the last four weeks, how much of the time have you felt lonely? Variable coded to include responses of 'none of the time'.
Life satisfaction	NZGSS personal questionnaire. There have been some wording changes to this question across different waves. In 2008, 2010 and 2012 respondents were asked: 'I'm now going to ask you a very general question about your life. This includes all areas of your life, not just what we have talked about so far. How do you feel about your life as a whole right now?' Respondents were given a five-point scale ranging from 'very satisfied' to 'very dissatisfied'. In 2014 and 2016 the question was substantially the same except the 'right now' clause was removed. Respondents were given an 11-point scale ranging from 'completely dissatisfied' to 'completely satisfied'. The life satisfaction variable combines these into a as continuous variable from 1 to 5 with larger values indicating higher satisfaction.