Using longitudinal surveys to discuss labour force stability: A New Zealand case study

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Abstract

Labour market stability is an underexamined characteristic in traditional labour market statistics, despite its importance. Labour market instability can negatively impact people's wellbeing and incomes by locking short-term employees out of tenure dependent employment protections and limiting intermittently jobless people's access to social protection schemes. Conversely, while not all stable circumstances are necessarily positive ones, stability is generally a desirable characteristic, bringing with it social and economic benefits.

Here, we present a supplementary measure to traditional labour market statistics that treats stability as a characteristic of individuals. We used a subsample of consistent respondents from New Zealand's Household Labour Force Survey (HLFS) to demonstrate how best to create and apply an alternative measure of the stability of individuals across longitudinal survey datasets, including a description of our approach and remaining limitations, in a way that complements pre-existing stability measures like duration of unemployment, job tenure, and LEED employment turnover.

The descriptive statistics we produce reveal that completely stable employment and lack of labour force participation over the surveyed period were common and highly correlated with age. Instability – here defined as experiencing 3 or more labour market changes over two years – was most common amongst younger adults, though a lingering minority of people continue to experience highly unstable labour market outcomes in each age group. Stable unemployment or underutilisation proved rare, but respondents experiencing high instability were also unemployed and/or underutilised much more frequently across the two-year surveyed period than more stable respondents.

JEL Codes: J62, J60, J01

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Introduction

In labour market research, conventional statistical measures provide a nuanced picture of total labour market stocks for a given period, and aggregate changes across time. Some even provide a broad perspective on individual dynamics between two defined periods. However, none of these measures capture nuanced experiences as people navigate through various labour market statuses over longer time periods that may include any or all of employment, unemployment, and not in the labour force (NILF).

Here, we present an alternative approach that distinguishes itself from traditional stock measures and broad-flow statistics by defining labour market stability so it can be treated as a characteristic in subsequent analysis. We do so by taking a rotating panel survey – in this case, the New Zealand Household Labour Force Survey – and examining labour market outcomes for all the periods in which a respondent is surveyed. From there, we are able to produce some practical examples of basic descriptive statistics involving stability, reproduceable for any similar rotating panel sample from which longitudinal data can be extracted.

Stability is an important concept to measure as part of understanding labour market dynamics. Understanding whether flat levels quarter on quarter mean absolute stability or equal in- and out-flows is important for interpreting those numbers and understanding potential impacts. Beyond that, learning whether labour market churn is regularly and evenly spread or concentrated in particular groups can help researchers and decision-makers understand whether national labour markets are moving in a healthy way.

Job stability, in particular, matters when looking to move beyond measurements that indicate the presence of work to measurements that can be used to indicate the quality of that work. For people of prime working-age, for instance, we need to look for sustained employment over time as well as the number of people in work or gaining employment for a single quarter if we want to show successful job growth. Studies on job satisfaction frequently underline the importance of job security for respondents, such as the 2015 ISSP Survey on Work Orientations which showed that security was the most desired job characteristic, both on average across 37 countries and in New Zealand specifically (Clark, 2015; Volk and Hadler, 2018; MacCormick, 2019).

Short job tenures can also affect access to employment protections such as annual or sick leave, or access to social insurance schemes. In 2022, a New Zealand study discovered that 32.7 per cent of secondary caregivers were likely ineligible for a full two weeks' statutory leave from their waged job, as that requires a job tenure of 12 months or more. 17.5 per cent were ineligible for any statutory leave at all, as they had been employed in their role less than six months, a state which affected low-income fathers the most (Kulkarni and Mok, 2022).

Labour market transitions can have negative effects on individuals' incomes, which is also worth considering as part of stability analysis. This can be obvious if people move out of paid employment but can also be more subtle in cases when welfare receipt

depends on sustained periods of joblessness and people are intermittently employed. For some people, periods of employment may come with elevated income compared with benefit receipt, but then joblessness may come with zero income, leading to net negative effects over longer time periods.

Of course, labour market change can also be positive. Stability in unemployment is an entirely negative outcome. Labour market changes that indicate movement from a negative state to a positive one, like unemployment to employment, are obviously desirable. They can also be part of broader and desired life changes, like retiring or leaving the labour force to become a full-time parent. As such, one or two changes over an extended period are not necessarily a sign of instability or to be considered more negative than complete stability. In some cases, they can even act as examples of success, showing how individuals can transition successfully into a newly stable state.

This article aims to assist researchers and analysts in understanding how best to create and apply an alternative measure of the stability of individuals to diverse longitudinal survey datasets, including a description of our approach, data quality testing and subsequent recalibration impacts, and remaining limitations in the New Zealand context.

Standard uses of labour force surveys in measuring stability

Stocks measures

Labour force surveys are specifically designed for short-term snapshots of stock labour market outcomes as the best way to balance the need for timeliness and reliability through frequent collection of specific data from a representative sample. Any country that regularly produces labour market estimates through a household survey is likely producing stock measures of national labour market outcomes.

National labour market statistics produced from labour force surveys then rely on comparing aggregate measures, which tend to stay similar even as individuals experience change. This is because, in the absence of enormous economic shocks, people tend to shift between labour market outcomes in similar net quantities – roughly as many unemployed people finding work as formerly employed people entering unemployment, for instance.

Timely and reliable estimates of national labour statistics are crucial for informing policy, feeding into broader labour research, and acting as a basis for macro-economic monitoring.

Stocks measures can be used to discuss national labour market stability – whether headline rates of unemployment, employment and labour force participation

are steady – but provide no additional information about the underlying dynamism of labour market outcomes for individuals.

Direct questions about stability are asked each quarter, but they rely on the present state as a reference point and provide no way for people with highly unstable labour market outcomes to be identified. Duration of unemployment is one regularly used measure, which asks unemployed people how long they have remained unemployed. Another is job tenure, which quantifies how long employed people have remained in their current role. In both cases, this measures the length of time the respondent has been experiencing their present state up to the survey period.

Job tenure can also be produced using administrative sources, like taxation data, and tend to form the basis of analysis on job stability as defined as the continuing relationship between a single employee and single employer. This is an incredibly strong approach when measuring the length of that relationship, as a comprehensive source of all taxable wage and salary transactions over time. However, when using this approach to assess stability, this is limited to employment stability and excludes those who are unemployed or not in the labour force. It also resets with any job-to-job transitions, requiring additional work to examine individuals who have been stably employed for long periods but changed employers in that time.

While outside the scope of this work, similarly person-centric analysis could be done using LEED data to examine periods of employment and joblessness and incorporate some of the valuable information therein on job-to-job transitions and, potentially, forms of income other than employment.

Flows measures

Flow measures of labour market outcomes can be produced from longitudinal labour force surveys to analyse individuals' changing circumstances from one time period to another.

For example, a net increase in unemployment seen at the national level can be examined with flow data to determine whether that reflects more people entering unemployment or an increase in people staying unemployed over time. It can also determine where people who are exiting unemployment are going to, helping differentiate formerly unemployed people moving into employment from those moving out of the labour force.

Relatively few countries have official flows data publicly available, however. Flows are more complex than single period measures because, in addition to the requirement for surveying respondents for multiple quarters, the matched sample needs to be independently representative, so cannot rely on inflows and outflows in similar numbers from hard-to-reach groups creating a nationally representative picture for each individual quarter. Weights for responses should ideally also be produced across the periods examined when producing flows measures, allowing the matched sample to be weighted up to the full population across the total of the two periods being compared.

The United States is one of the few cases in which flows data is regularly published, as the Bureau of Labour Statistics produce a research series on labour force status flows from their Current Population Survey.

Research has also been done on the potential for extended flows series, such as Stats NZ's 2001 paper, *A longitudinal look at some data of the Household Labour Force Survey*. In that case, in addition to quarter-on-quarter flows, transitional probabilities were examined between the first interview quarter of a respondent and each of up to seven subsequent quarters. This still, however, focused on point-to-point measures as opposed to including all intermediary data collected.

Administrative measures, such as tax data, also regularly produce flows measures. In New Zealand, the Linked Employer-Employee Database (LEED) is the source of official statistics on worker accessions and separations data, from which a job turnover rate is produced. As with labour force surveys, this is limited to a single comparison between time x with time y. At the firm level, for example, a business expanding rapidly or laying off half their staff will have a high turnover rate if comparing a period before the change with one after the change occurs, but any subsequent measures comparing two periods after the change will not reflect the previous instability. In addition, administrative measures also tend to treat labour engagement as a binary – employed and not employed – due to the difficulty of reliably identifying availability and job seeking behaviour through administrative sources and thereby separating unemployment from those outside the labour force.

Flows data can provide some indication of labour market stability, specifically whether individual respondents were in the same labour market state in two surveyed periods. However, there are shortcomings in this use – looking at flows from two quarters a year apart will only compare those two snapshot points in time and not any of the interim periods.

This is particularly important to consider in countries where labour market outcomes are highly seasonal. As an example, the proportion of people in stable employment between one harvesting season and the next may look very different to the proportion in stable employment between fallow periods. In countries where agriculture is a major source of employment, a strong proportion of the country's workforce may habitually work two or three quarters, then remain outside the labour force the rest of the year.

Alternative approach

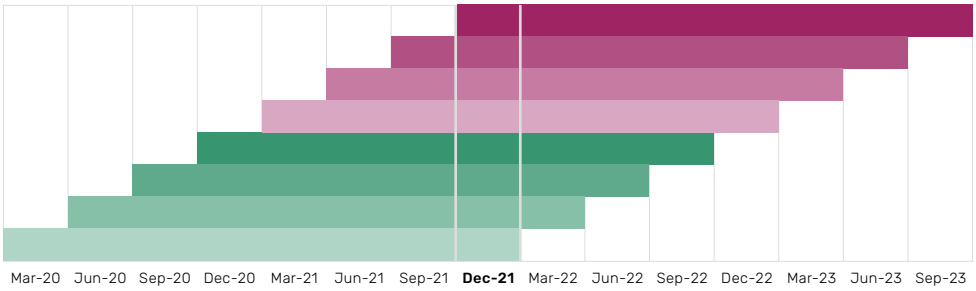
Stability as a measurable characteristic

Traditional approaches to labour market outcomes either ignore the regular labour market movements underpinning net stability or look at them as a trait of a given quarter – whether more or fewer people, in total, are moving between statuses than in previous quarters.

Another lens through which labour market movement can be understood, however, is as an individual characteristic. Which groups are more likely to experience labour market stability, or limited movement, and which groups experience extreme lack of stability?

In New Zealand, the Household Labour Force Survey (HLFS) is collected as a rotating panel survey of approximately 30,000 respondents each quarter. The staggered design means each quarter one eighth of the sample is rotated in and another eighth is rotated out, with each household is selected into the survey for two years. As a result, by selecting the HLFS sample from at least eight quarters back, each respondent can have eight quarters of historic or future labour market outcomes assigned to them for that period, as depicted in Figure 1.

Figure 1. Depiction of December 2021 representative sample by surveyed period for each wave of respondents



An example of how this could work would be someone who was interviewed from March 2020 to December 2021 quarters and was employed throughout. Their labour force characteristics over that time could be expressed as string 'EEEEEEEE', where the last 'E' represents the reference quarter of December 2021.

Alternatively, we could consider someone who was first selected in the December 2021 quarter. At the time of the December 2021 quarter, future labour market outcomes would be unknown. With the benefit of following quarters of data, however, we could represent their upcoming mixed unemployment/NILF outcomes from December 2021 to September 2023 quarters as string 'UNNUUNUN', where the first 'U' represents their unemployment in the December 2021 quarter.

This then allows us to derive a number of sub-variables, including how many movements any given respondent experienced; how long they experienced stability; how many quarters they were experiencing in any given labour market outcome, either continuously or across their full surveyed period; and what kinds of movements they experienced when shifting between outcomes.

Selecting a subsample

Using this characteristic approach, the HLFS sample can be looked at not just through the lens of their labour market outcomes in the December 2021 quarter, or their movement from September to December quarters, but what level of stability they had experienced or would go on to experience over their full two-year sample period.

To discuss stability, however, we need to limit our sample to those who have responded a minimum number of times in the period. This lets us avoid trying to draw conclusions about number of movements between labour market statuses experienced by respondents who may have only responded once or twice over the full two-year period.

This limited sample is likely to have quite different characteristics to those who responded more intermittently.

For our case study, we defined consistent respondents as those who responded at least six of a potential eight quarters. Choosing to include those who responded at least six quarters rather than the full eight was based on previous research into the use of longitudinal labour force survey data in New Zealand which indicated that samples of consistent respondents using this definition were larger and far more representative of the total population than a sample that was comprised only of those answering all eight quarters (Kuzmicich and Wigbout, 2001).

When selecting a subsample based on a specific characteristic, such as consistency of responding, it is important to measure the strength of association between selected characteristic and other variables. This allows us to estimate how biased our new subsample may be and determine whether it is appropriate to use to represent the entire population. Here, we chose to use a Rao-Scott chi square test to compare measured and expected results for our weighted survey sample.

In most cases, the p value alone can then be used to determine whether results produced using this subsample are significantly different from the group not selected or the entire population. If this value is 0.05 or less, this indicates at least 95 per cent confidence that differences are genuine or, alternatively, that there is a 5 per cent or less chance that differences are spurious. In some cases, the p value for determining significance will be lowered even further, to 0.01 for instance, to ensure 99 per cent confidence.

Using chi square p values can be challenging, however, when examining large samples, like those behind New Zealand's HLFS, where the sheer size of the groups being examined mean statistical significance does not always align with material effect size. An example of this could be proportion of urbanity in our valid/invalid samples in Table 1, which follow very similar trends but still have a p value of 0.1, indicating statistical significance at 90 per cent confidence.

In this case, we decided to also provide an interpretation of the magnitude of the difference between the proportion of our valid group and the national weighted sample to help represent effect size in addition to significance. For statistically significantly different groups, we decided that a mean absolute difference of up to 0.5 percentage points (pp) was negligible; up to 1.5pp small; up to 3.0pp medium, and over that large.

When examining our subsample through a demographic lens, Table 1 below shows that the limited weighted sample of consistent respondents was strongly older, more likely to be homeowners and more likely to be European than the original national sample. There were also moderately lower proportions who were of Māori ethnicity or of Māori descent, and minor changes to the proportion of the valid sample who were Pacific or Asian. Labour market outcomes, including labour force status, employment by full- and part-time, and underutilisation, also mildly differed in our limited sample compared with the national total.

Table 1. Data quality assessment of a limited sub-sample of consistent respondents to New Zealand's Household Labour Force Survey

December 2021 quarter (Total sample size = 30,293)	Consistent respondents (6+ quarters)	Excluded respondents (<6 quarters of data)	Rao-Scott chi square tests of independence between valid/invalid groups	Difference between proportions of total estimates and consistent respondents (percentage points [sample errors])	Effect size[1]
Characteristic					
Sex *n(%)*					
Male	1,399,200 (48.9)	621,900 (50.2)	*X² (1) = 6.8 p = 0.0104*	-0.4	-
Female	1,461,400 (51.1)	617,800 (49.8)		0.4	
Broad age *n(%)*					
15-29	490,000 (17.1)	512,700 (41.4)	*X² (2) = 1355 p = <.0001*	-7.3	Large
30-59	1,446,100 (50.6)	562,100 (45.3)		0.4	
60+	924,500 (32.3)	164,800 (13.3)		7.0	
Ethnicity *n(%)*[2]					
European	2,116,400 (74.0)	774,200 (62.5)	*X² (1) = 97 p = <.0001*	3.5	Large
Māori	365,600 (12.8)	243,500 (19.6)	*X² (1) = 92 p = <.0001*	-2.1	Medium
Pacific	150,400 (5.3)	100,100 (8.1)	*X² (1) = 35 p = <.0001*	-0.9	Small
Asian	400,000 (14.0)	223,200 (18.0)	*X² (1) = 19 p = <.0001*	-1.2	Small
MELAA	29,900 (1.0)	22,600 (1.8)	*X² (1) = 14 p = <.0003*	-0.2	-
Other	39,100 (1.4)	8,000 (0.6)	*X² (1) = 10 p = <.0021*	0.2	-
Māori descent *n(%)*[3]					
Maori descent	449,000 (15.7)	282,400 (22.8)	*X² (3) = 133 p = <.0001*	-2.1	Medium
No Maori descent	2,405,700 (84.1)	949,400 (76.6)		2.3	
Urbanity *n(%)*[4]					
Main urban areas	2,037,600 (71.2)	918,200 (74.1)	*X² (4) = 8 p = 0.1057*	-0.9	-
Secondary urban areas	163,000 (5.7)	54,900 (4.4)		0.4	
Minor urban areas	246,000 (8.6)	96,300 (7.8)		0.3	
Rural centres	50,700 (1.8)	22,300 (1.8)		0.0	
Rural areas	363,400 (12.7)	148,000 (11.9)		0.2	

Table 1. continued

December 2021 quarter (Total sample size = 30,293)	Consistent respondents (6+ quarters)	Excluded respondents (<6 quarters of data)	Rao-Scott chi square tests of independence between valid/invalid groups	Difference between proportions of total estimates and consistent respondents (percentage points [sample errors])	Effect size[1]
Household tenure *n(%)*[3]					
Dwelling owned or partly owned	1,652,000 (57.8)	467,100 (37.7)	*X² (3) = 661 p = <.0001*	6.1	Large
Dwelling rented (not owned and not held in a family trust)	685,600 (24.0)	623,400 (50.3)		-8.0	
Dwelling held in a family trust	505,500 (17.7)	134,500 (10.9)		2.1	
Labour force status *n(%)*					
Employed	1,959,300 (68.5)	875,000 (70.6)	*X² (2) = 85 p = <.0001*	-0.6	Small
Unemployed	48,600 (1.7)	43,800 (3.5)		-0.6	
Not in the labour force (NILF)	852,700 (29.8)	320,900 (25.9)		1.2	
Employment status *n(%)*					
Not employed	901,300 (31.5)	364,700 (29.4)	*X² (2) = 29 p = <.0001*	0.6	Small
Employed full-time	1,550,100 (54.2)	723,100 (58.3)		-1.3	
Employed part-time	409,200 (14.3)	151,900 (12.3)		0.6	
Underutilisation *n(%)*					
Not underutilised	2,694,000 (94.2)	1,118,000 (90.2)	*X² (4) = 150 p = <.0001*	1.2	-
Underemployed	69,100 (2.4)	37,600 (3.0)		-0.2	
Unemployed	48,600 (1.7)	43,800 (3.5)		-0.6	
NILF not actively seeking but available	37,900 (1.3)	23,000 (1.9)		-0.2	
NILF actively seeking, not currently available	11,000 (0.4)	17,300 (1.4)		-0.3	

1. Based on chi square and the mean absolute difference between the total population and consistent respondents in percentage points. A difference up to 0.5pp, or a p value over 0.05, is considered negligible; up to 1.5pp small; up to 3.0pp medium; and over 3.0pp large.
2. Each ethnicity tested against the counterfactual (e.g. European and non-European).
3. Residual values (e.g. unknown, refused to answer, blanks) included in chi square testing and totals, but excluded from further breakdowns and effect size calculations. As a result, proportions may not add to 100%.
4. Excludes outlying islands.

… Data not benchmarked
- Effect size negligible

Table 2. Data quality assessment of recalibrated sub-sample of consistent respondents to New Zealand's Household Labour Force Survey

December 2021 quarter (Reweighted sample size = 21,561)	Original total weighted population	Reweighted consistent respondents (6+ quarters)	Rao-Scott chi square tests of independence between original and reweighted groups	Difference between proportions of total estimates and reweighted consistent respondents (percentage points)	Effect size[1]
Characteristic					
Sex *n(%)*					
Male	2,021,100 (49.3)	2,021,100 (49.3)	*X^2 (1) = 0* *p = 1.00*	0.0	-
Female	2,079,300 (50.7)	2,079,300 (50.7)		0.0	
Broad age *n(%)*					
15-29	1,002,700 (24.5)	1,002,700 (24.5)	*X^2 (2) = 0* *p = 1.00*	0.0	-
30-59	2,008,300 (49.0)	2,008,300 (49.0)		0.0	
60+	1,089,400 (26.6)	1,089,400 (26.6)		0.0	
Ethnicity *n(%)*[2]					
European	2,890,600 (70.5)	2,952,700 (72.0)	*X^2 (1) = 15* *p = 0.0002*	1.5	Small
Māori	609,000 (14.9)	609,000 (14.9)	*X^2 (1) = 0* *p = 1.00*	0.0	-
Pacific	250,500 (6.1)	242,500 (5.9)	*X^2 (1) = 1* *p = 0.3163*	-0.2	-
Asian	623,200 (15.2)	602,300 (14.7)	*X^2 (1) = 2* *p = 0.1367*	-0.5	-
MELAA	52,400 (1.3)	46,000 (1.1)	*X^2 (1) = 14* *p = 0.1130*	-0.2	-
Other	47,100 (1.2)	47,800 (1.2)	*X^2 (1) = 0* *p = 0.7464*	0.0	-
Māori descent *n(%)*[3]					
Maori descent	731,500 (17.8)	728,400 (17.8)	*X^2 (3) = 14* *p = 0.0033*	-0.1	-
No Maori descent	3,355,100 (81.8)	3,355,100 (82.0)		0.2	
Urbanity *n(%)*[4]					
Main urban areas	2,955,800 (72.1)	2,961,400 (72.2)	*X^2 (4) = 7* *p = 0.1654*	0.1	-
Secondary urban areas	217,900 (5.3)	235,000 (5.7)		0.4	
Minor urban areas	342,300 (8.3)	338,200 (8.3)		-0.1	
Rural centres	73,000 (1.8)	70,400 (1.7)		-0.1	
Rural areas	511,300 (12.5)	495,300 (12.1)		-0.4	

Table 2. continued

December 2021 quarter (Reweighted sample size = 21,561)	Original total weighted population	Reweighted consistent respondents (6+ quarters)	Rao-Scott chi square tests of independence between original and reweighted groups	Difference between proportions of total estimates and reweighted consistent respondents (percentage points)	Effect size[1]
Household tenure *n(%)*[3]					
Dwelling owned or partly owned	2,119,100 (51.2)	2,293,600 (55.9)	*X² (3) = 180 p = <.0001*	4.3	Large
Dwelling rented (not owned and not held in a family trust)	1,309,000 (31.9)	1,102,400 (26.9)		-5.0	
Dwelling held in a family trust	640,000 (15.6)	676,20 (16.5)		0.9	
Labour force status *n(%)*					
Employed	2,834,300 (69.1)	2,882,900 (70.3)	*X² (2) = 20 p = <.0001*	1.2	Small
Unemployed	92,400 (2.3)	81,800 (2.0)		-0.3	
Not in the labour force (NILF)	1,173,600 (28.6)	1,135,600 (27.7)		-0.9	
Employment status *n(%)*					
Not employed	1,266,000 (30.9)	1,217,400 (29.7)	*X² (2) = 42 p = <.0001*	-1.2	Small
Employed full-time	2,273,190 (55.4)	2,283,400 (55.7)		0.3	
Employed part-time	561,105 (13.7)	599,400 (14.6)		0.9	
Underutilisation *n(%)*					
Not underutilised	3,812,100 (93.0)	3,826,200 (93.3)	*X² (4) = 21 p = 0.0004*	0.3	-
Underemployed	106,700 (2.6)	111,900 (2.7)		0.1	
Unemployed	92,400 (2.3)	81,800 (2.0)		-0.3	
NILF not actively seeking but available	60,800 (1.5)	60,300 (1.5)		0.0	
NILF actively seeking, not currently available	28,300 (0.6)	20,100 (0.5)		-0.2	

1. Based on chi square and the mean absolute difference between the total population and consistent respondents in percentage points. A difference up to 0.5pp, or a p value over 0.05, is considered negligible; up to 1.5pp small; up to 3.0pp medium; and over 3.0pp large.
2. Each ethnicity tested against the counterfactual (e.g. European and non-European).
3. Residual values (e.g. unknown, refused to answer, blanks) included in chi square testing and totals, but excluded from further breakdowns and effect size calculations. As a result, proportions may not add to 100%.
4. Excludes outlying islands.

… Data not benchmarked
- Effect size negligible

Recalibration to improve quality

Given the bias in our subsample, we therefore also needed to recalibrate our sample back to national benchmarks to mitigate the representation bias of our results.

In New Zealand, an integrated weighting approach based on the following benchmarks is used to ensure the Household Labour Force Survey is representative:

- Five-year age groups by sex
- The number of Māori (indigenous) adults by two age groups (15-29, 30+) and sex
- Region of household

These benchmarks refer to the target population of the non-institutionalised population 15 years and over who usually live in New Zealand. Recalibrating our limited sample to these benchmarks – based on the original total weighted population of the full survey – vastly improves the quality of our biased subsampled results, even for variables not directly calibrated like labour market outcomes and ethnicities other than Māori. Table 2 shows how the newly weighted subsample is significantly less biased than it was before recalibration, with the main lingering effect being a remaining increased likelihood of home ownership in the reweighted consistent respondent group.

Remaining limitations for analysis

Unmeasured residual bias

Creating this measure required us to assume that these consistent respondents could represent the stability patterns of our less consistent respondents.

We tested this assumption by examining stability by number of quarters responding, particularly those just below our cutoff of six. This testing showed that our eligible subsample had similar patterns of people experiencing no changes across their surveyed periods to those responding four or five quarters, and – as expected with more data points – a larger proportion of the eligible sample experiencing higher levels of instability and correspondingly smaller proportion experiencing one or two changes. This indicated to us that our subsample was appropriate to generally represent national stability.

However, it remains likely that there is a strong relationship between respondents who are unstable in their response patterns to the point of ineligibility and respondents who have highly unstable labour market outcomes. Visible in our data quality assessment of recalibrated data was strong lingering bias around homeownership, and minor biases

in favour of European and employed respondents, but there may also be latent biases around instability that are not visible in the examined variables. Our assumption is that this may lead to a minor underestimation of instability if people unable to respond regularly to the HLFS, such as those experience housing transience, are also more likely to be experiencing instability in their labour market outcomes.

From our testing, we believe that this approach is still appropriate to generally represent a national picture of stability, but this limitation should be noted for data users, particularly when using it to discuss those who are experiencing high levels of instability. It may also be possible to mitigate this latent bias further through use of non-response adjustment, using the more detailed information gathered from respondents who responded at least once, but less than six times.

Home ownership

As previously discussed, lingering bias remains around the proportion of our new limited sample who are homeowners compared with a national sample. This is to be expected – homeowners tend to live in the same location longer, and therefore systematically remain available for the same respondents to be interviewed over a full two-year period.

In New Zealand, unfortunately, there exists no regular official estimate of the national population by household tenure suitable as a quarterly benchmark. As such, the only way to reduce the lingering home ownership effect would be to assume the core HLFS levels were precisely correct and recalibrate to the estimates of the full sample. This is unlikely to be true, as it is not what the labour force survey was designed to measure.

Due to the lack of any official source, we simply choose to note this as a potential quality concern here but encourage countries with reliable and regular measures of homeownership to incorporate them in their recalibration should they wish to discuss labour market stability in this way.

Younger respondents

In New Zealand's HLFS, the target population are those aged 15 years and over. That means that if a household is selected while an existing resident is 13 or 14, they will not be interviewed until they turn 15.

When this is considered alongside Figure 1, the sample limitation is obvious – respondents aged 15 and 16 in the December 2021 quarter whose household had been selected previously would not have been eligible to respond for quarters in which they were <15. As a result, the sample of those who responded to the survey at least six of the previous eight quarters by single year age for these two groups is much smaller than all subsequent ages, leading to volatile and poor quality results.

In our analysis, we therefore choose to exclude people who were below the age of 17 in our reference quarter.

Older respondents

In New Zealand's HLFS, a special form of imputation is used for people aged 75 and over (75+).

If a household has only people aged 75+ when interviewed in its first quarter of participation, then we do not interview respondents quarterly. Instead, their current quarter responses are imputed by carrying over the data from their most recent interview. The only exception is in June quarters, when they are re-interviewed to confirm their current labour market outcomes and obtain income and disability data.

Since data for five or six quarters is carried forward from the other two or three quarters, households with only people aged 75+ are inappropriate for inclusion in this analysis and are therefore excluded.

Comparing time periods

One of the primary uses of labour market data is to put present economic conditions in the context of historical experiences. Our use of 15 quarters of data to create labour market stability as a characteristic for the full sample mean that this approach is not timely and requires an even longer time period to make comparisons.

As an example of this, consider trying to determine whether average labour market stability has increased or decreased between the September and December quarters of 2021.

Returning to Figure 1, you can see that seven of the waves included in the December 2021 quarter are also included in the September 2021 quarter, with only 1/8th of the sample moving out in the September quarter and a new 1/8th entering in the December quarter. Any changes observed will therefore only reflect the difference between those old and new waves, flattened significantly by the other seven waves' matching longitudinal labour market strings.

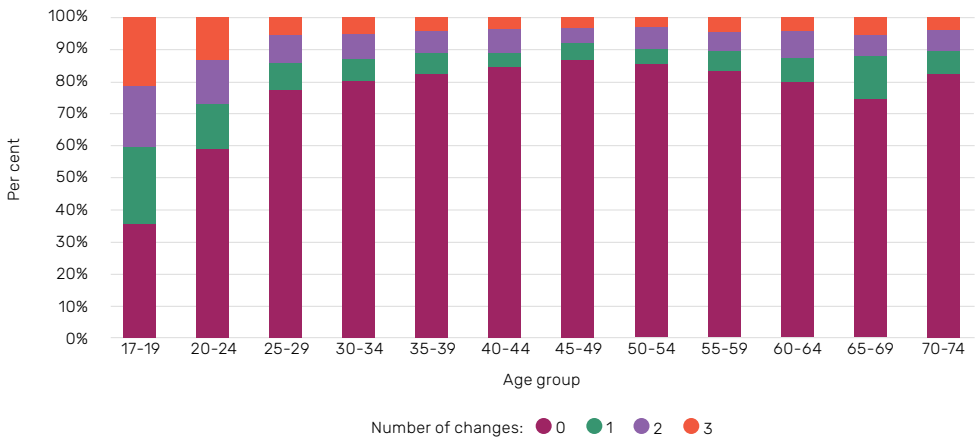
To consider change between groups, entirely independent samples would be optimal, and therefore a minimum of 15 quarters between them are required. The latest entirely independent grouping from our example December 2021 reference quarter would be the March 2018 quarter.

This method of analysing labour market stability can be used to understand which groups tend to be exposed to labour market instability or historical retrospectives to understand key economic periods of stability and instability. However, it will never be a timely measure of current experiences or short-term variability and should not be treated as such.

Examples of descriptive statistics produced with alternative stability measure

One of the simplest new measures that can be produced using this approach is the proportion of people experiencing change by age, which can be used to consider the relative labour market stability of each life stage, as shown in Figure 2.

Figure 2. Proportion of people experiencing changes in their labour market status, by age group, December 2021 representative sample



This simple graph can then be used as the foundation for subsequent analysis examining respondents in three broad groups – stable, moderately stable, and respondents experiencing instability.

Stable respondents

Stable respondents are those who experienced no changes to their labour market status at any surveyed point. Note that this does not necessarily mean no changes were experienced by the respondent, as brief shifts could occur between survey period, but it does mean that, each time they were interviewed, their labour force status was consistent. It also does not mean that the respondent felt secure in their labour market outcomes. For example, stable employment can exist for people on rolling fixed-term contracts or in businesses experiencing market challenges over long time periods.

Most people remained stable across their whole surveyed period, particularly when looking at age groups 25-64 and 70-74.

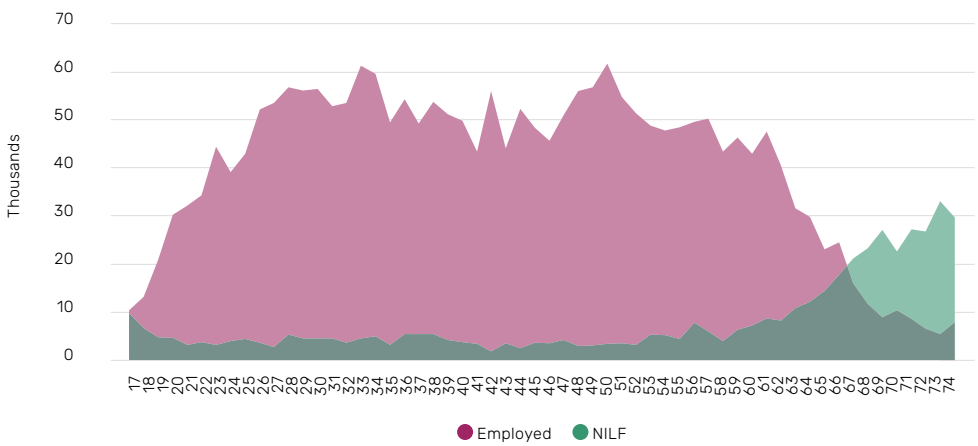
In theory, this stable group could include people who were consistently employed, unemployed, or NILF throughout their time in the HLFS. In practise, however, too small and variable a number of people in our sample were consistently unemployed to draw sensible conclusions from (1,100 ± 900, in our example December 2021 quarter).

Even when looking at the larger group of people who were stably underutilised, noting that this group overlaps with employment and NILF, only 8,800 ± 3,000 people were underutilised across their whole surveyed period. While a statistically significant group, it remains too small to dissect much further.

Stable unemployment and underutilisation will therefore not be discussed further, beyond noting that this fits with previously held assumptions that direct questions on the duration of unemployment are more likely to align with popular understanding of unemployment as joblessness or time since an appropriate job than with international statistical definitions of unemployment.

Overall, stable employment and NILF were both common and highly correlated with age, as the majority of people aged 21-64 were stably employed and the majority of people aged 69 to 74 were stably NILF. Ages 17-20 and 64-68 were the periods in which people were most likely to experience labour market changes, which will be discussed further in the 'moderately stable respondents' section.

Figure 3. Number of people consistently employed or NILF by age, December 2021 representative sample



Stable NILF

From 67 onward, more people were stably NILF than stably employed, and from 69 onward, they made up the majority of the population. Remaining consistently out of the labour force was also common amongst teenagers, and there was a steady group of people outside the labour force at even prime working ages.

When examined further, this group proves highly dependent on sex as well as age. Of the 475,400 stable NILF, approximately two-thirds (301,000) were women.

Table 3. Number and proportion of stable NILF engaged in broad main activity types by sex and age group, December 2021 representative sample

		Number and proportion of stable NILF engaged in broad main activity types by sex and age group				
		01.	02.	03.	04.	
Age band	Sex	Caregiving (children, other adults' and own)	Own-use or volunteer work (exc. caregiving)	Study or training	Free-time activities	Total stable NILF
17-25	Men	4,100 (21.6%)	§	8,400 (44.5%)	5,300 (28.1%)	18,800 (100%)
	Women	8,500 (36.2%)	2,500 (10.6%)	10,000 (42.8%)	2,400 (10.4%)	23,400 (100%)
26-59	Men	20,000 (52.3%)	6,800 (17.7%)	§	9,600 (25.1%)	38,100 (100%)
	Women	61,100 (58.5%)	28,300 (27.1%)	4,900 (4.7%)	9,000 (8.6%)	104,500 (100%)
60+	Men	15,400 (13.1%)	36,700 (31.3%)	§	62,200 (53.0%)	117,400 (100%)
	Women	28,200 (16.3%)	67,400 (38.9%)	§	73,300 (42.3%)	173,200 (100%)
All ages (17-74)	Men	39,400 (22.6%)	44,100 (25.3%)	9,500 (5.5%)	77,100 (44.2%)	174,400 (100%)
	Women	97,700 (32.5%)	98,100 (32.6%)	15,500 (5.2%)	84,700 (28.1%)	301,000 (100%)

§ indicates an estimate and rate suppressed because the estimate was < 1,000.
Stable NILF engaged in other and unknown activities excluded.

At younger ages (17-25), studying and training was the most common main activity for those who were consistently NILF, regardless of sex. Of the 42,100 young people who remained stably NILF, 18,300 were mainly engaged with study or training – 44.5 per cent of young men and 42.8 per cent of young women. For young women, caregiving responsibilities were the next most common, at 36.2 per cent, while young men were more likely to spend their time on free-time activities (28.1 per cent).

From 26 to 59, caregiving became the primary activity for both men and women who were consistently NILF. 58.5 per cent (61,100) of women and 52.3 per cent (20,000) of men who were consistently NILF at this age reported that their main activity was some form of caregiving. This included childcare, care for another adult, or own care due to sickness, illness, injury, or disability. Another 27.1 per cent (28,300) of women indicated that their main activity was some other form of work that was not paid employment or caregiving, such as volunteer work or own-use provision of services like household maintenance.

As previously noted, people remaining consistently NILF was most common amongst older age groups. Nearly 300,000 people aged 60 to 74 were consistently stably NILF – 173,200 women and 117,400 men. At this age, main activities were similar for men and women, primarily split between free-time activities and own-use or volunteer work. A small but significant subset were mainly engaged with caregiving responsibilities,

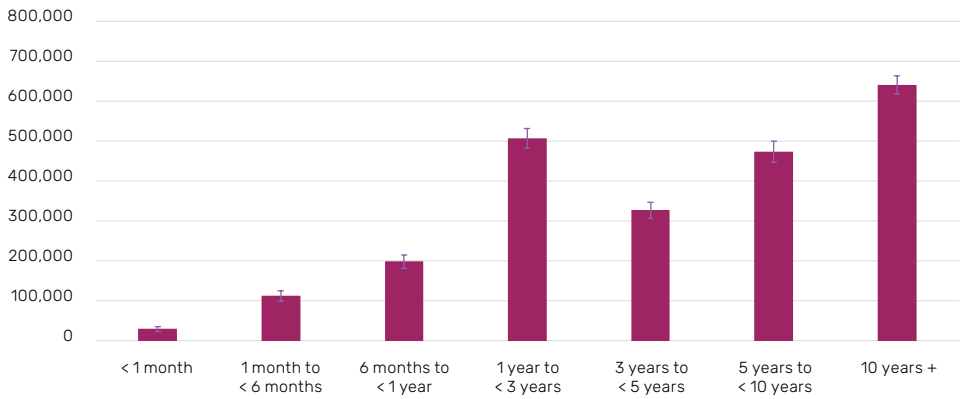
while the number of older stable NILF people who were primarily engaged with study and training was negligible.

Stable employment

Conversely, from 19 to 66 years old, more people were stably employed than stably NILF. From ages 21 to 64, the majority of people were consistently employed over their full surveyed periods.

This can be cross referenced against their reported job tenure, which showed 16.7 per cent of people who were consistently employed over their survey period had been at their current job for less than a year in the December 2021 quarter.

Figure 4. Number of people in stable employment over surveyed period, by job tenure, December 2021 representative sample



This job tenure variable is a December 2021 quarter snapshot, which may refer to the first or an early quarter in a respondent's surveyed period. Therefore, short job tenures for people who were stably employed can indicate one of two things:

1. Someone who was able to swiftly change jobs between survey periods without ever being recorded as NILF/unemployed in the HLFS, or
2. Someone who was first surveyed soon after starting a new job, that they have then gone on to have an extended tenure in as they remained stably employed for the following 21 months.

The first group is particularly interesting to consider when thinking about stable employment.

Research has shown that wage increases are "tightly and robustly associated with job-to-job transitions" in New Zealand (Ball et. al, 2019). As such, while remaining in a single long-tenure job may provide stability for workers, it comes with potential trade-offs in the form of subdued wages, with reduced income subsequently impacting long-term savings.

People who are able to move smoothly from job to job without any surveyed periods of joblessness manage to attain the potential benefits of job-to-job transitions while minimising the time spent in unstable circumstances. Additional research into this group of stable employed people could help provide further insights into the roles and industries in which employee-employer matching is efficient or which worker characteristics are in high demand.

Moderately stable respondents

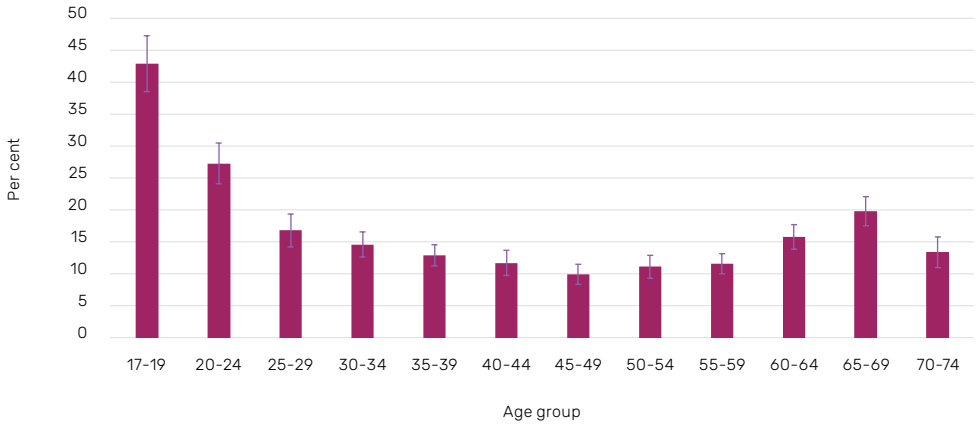
Moderately stable respondents are those who experienced one or two labour market changes across their surveyed period. It could include, for instance, someone moving from employment to NILF as they retire, or a student moving through NILF, unemployment, then employment as they graduate.

Life period changes like this are highly visible when analysing stability by age, with two 'bulges' in the proportion of people experiencing one or two changes over their surveyed period.

The first, and largest, is for people under 25, with 43.1 per cent of teenagers and 27.5 per cent of people in their early twenties experiencing one or two labour market changes over their two-year surveyed period. In terms of life stages, this makes sense, as the age in which people tend to transition from full-time education to employment. For many, it can also include periods of one-off employment during extended school or university holiday periods.

The second is between 65-69, when a growing proportion of the population make a single change in their labour market status. In New Zealand, this is the age at which eligible recipients for New Zealand Superannuation can begin receiving the government pension payments. Smaller swells can be seen in the age groups 60-64 and 69-74, but the majority of switching from employment to NILF comes in the 65-69 age group, once another source of income is available to most New Zealanders.

Figure 5. Proportion of the population who were moderately stable over surveyed period, December 2021 representative sample



The other shift into moderately stable labour market circumstances that can be inferred from labour force survey data requires a split by sex, which reveals that the majority of people aged 25-59 who were moderately stable were women, most of whom moved between employment and NILF.

In our sample, 296,600 people in this broad age band experienced one or two labour market changes, of whom:

- 40,700 were women moving from employment to NILF,
- 32,700 were women moving from NILF to employment, and
- 48,200 were women who began their time in the HLFS employed, moved to NILF, then returned to employment.

Many people in the 25-59 age group will be experiencing parenthood, and it is therefore our interpretation that this gendered difference shows the disproportionate instability introduced to women's careers from parenting. People on parental leave remain employed according to HLFS derivations, provided the respondent still remains connected to their job. For someone to be identified as NILF, they need to say that they do not have any form of employment, even one they were away from the previous week.

Moderate stability, while still stressful on the individuals experiencing one or two changes, can be considered generally choice based. The majority of labour market changes here are linked to broader lifestyle shifts that happen as people age and make different choices for themselves and their families. Not every period of moderate stability ends positively – employment to unemployment is only one labour market change, for instance, or someone may wind up unhappily retired and NILF – but the majority of shifts examined here fit with expected choice based lifestyle changes.

Respondents experiencing instability

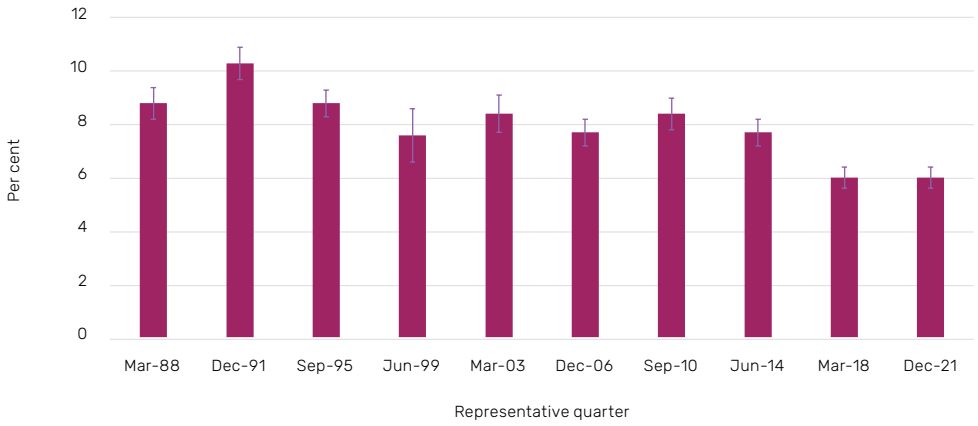
Instability here refers to experiencing 3 or more labour market changes over their surveyed period of up to two years. While most common amongst younger adults, a lingering minority of people experience highly unstable labour market outcomes in each age group.

In our December 2021 quarter sample, 220,500 people (6.0 per cent) experienced 3 or more labour market changes. Of this group:

- 115,400 experienced all three labour force statuses – NILF, employment and unemployment,
- 76,300 moved solely between NILF and employment,
- 18,900 moved solely between NILF and unemployment, and
- 9,900 moved solely between employment and unemployment.

Historically, 6.0 per cent experiencing instability is relatively low. Looking at the ten most recent representative quarters with independent surveyed periods, we can see that instability in the December 2021 quarter sample was unchanged from the March 2018 quarter sample, but lower than all other time periods examined. The highest rates of instability in this group were in the December 1991 quarter sample, which overlapped strongly with a national recession.

Figure 6. Proportion of people experiencing instability, independent representative quarters from March 1988 to December 2021



By age group, 21.4 per cent of teenagers, 13.3 per cent of people in their early twenties, and 3-5 per cent of each older five-year age band in the December 2021 quarter sample experienced 3 or more changes in labour market (see Fig. 2).

That there remains a group of respondents experiencing instability for each age band over 25 may be considered one of the most concerning from a policy perspective, given the noted negative impacts of instability and the relatively consistent size of the group experiencing instability.

As with many negative labour market outcomes, vulnerability to instability is also correlated with individual characteristics like gender and ethnicity. The rate of instability amongst women was 6.6 per cent, compared with 5.4 per cent of men. The Māori rate of instability was 8.2 per cent (compared with 5.6 per cent for non-Māori) and the Pacific rate was 8.9 per cent (compared with 5.9 per cent for non-Pacific), though this is likely correlated with age.

Instability can also be examined in conjunction with regular unemployment and underutilisation, which is used here to mean four or more quarters experiencing that state (whether irregular or steady). Stable unemployment or underutilisation is relatively rare, but respondents experiencing instability experienced regular unemployment and/or underutilisation at much higher rates than completely or moderately stable respondents did.

Of our 220,500 respondents experiencing instability, 7.2 per cent were unemployed for four or more of their surveyed quarters, compared with 0.3 per cent of more stable respondents. 25.8 per cent of respondents experiencing instability were underutilised for four or more quarters, compared with 2.6 per cent of more stable respondents.

Given the number of changes experienced by respondents experiencing instability, these four quarters are unlikely to qualify as long-term unemployment or underutilisation, as the traditional definition of long-term considers each period of unemployment independently. Instead, it highlights the limitations of that approach and the continuing stress of instability.

It should also be reiterated, at this point, that lingering biases in our sample may cause systematic underestimation of respondents experiencing instability, despite our quality improvements through recalibration. It seems fair to assume that non-homeowners, as they move houses more frequently, also find themselves in need of new employment more frequently, which can come with periods of unemployment and NILF as they shift. In addition, people who lose their jobs may also be losing the bulk of their income, even if eligible for social assistance, which can lead to loss of housing. Instability is rarely self-contained in a single aspect of a person's life, and it is likely that unstable labour market outcomes are closely connected with instability of responding to a labour force survey.

Conclusion

Labour market instability can negatively impact people's wellbeing and incomes. It locks short-term employees out of time bound employment protections like access to paid sick leave and can limit intermittently jobless people's access to social protection schemes.

To measure labour market stability, we are required to supplement traditional labour force survey stocks and flows measures. While valuable for other statistics, quarterly averages or movements between two isolated quarters are inappropriate when considering the prevalence of stability over an extended period.

This article presents a potential measure to appropriately create and assess labour market stability using longitudinal labour force surveys, like New Zealand's HLFS.

First, we treated stability as a measurable characteristic by looking at the number of changes experienced by respondents over their entire survey period. This required the individual respondents to have been surveyed for an extended period – in this case, at least 6 of a potential 8 quarters was considered to be the minimum required to reasonably assess stability.

This limitation does bring with it a number of potential biases. In New Zealand, respondents of this consistency are more likely to be of European ethnicity, less likely to be of Māori descent, and more likely to be fully utilised but not in the labour force. Above all, they're older homeowners – which makes sense, given the sample selection occurs at a household level, and single year tenancies are common for New Zealand renters.

As such, the second step required to measure stability was recalibration of our newly selected subsample. In our case, while this drastically lowered the measured biases, it could not fully eliminate the increased likelihood of our group to be homeowners nor means any unobserved biases were completely removed. This needs to be borne in mind for any subsequent analysis, particularly for respondents experiencing instability.

The final caveat is a more generic practical one. Stability takes time to measure well. It does not change quickly and is unlikely to change much quarter to quarter. This approach can form the foundation of deeper research pieces or be used for long-term historic comparisons but should not be considered a new regular measure for production and short-term comparison.

To demonstrate the potential value of this approach, a short set of descriptive statistics have been produced. While non-comprehensive, some interesting trends are immediately apparent.

Most people were completely stable, experiencing no changes to their labour market status during surveyed periods. For the bulk of the population, the prime working-age employment to retirement-age NILF shift works extremely well, and a single transition out of the labour force is seen at or near the age in which superannuation is available. Moderate stability can also be observed for many people under the age of 25, as they move from education to employment, and women shifting back and forth between employment and NILF through potential childbearing years.

A small minority of people experience high degrees of labour market instability at all ages. Over 90 per cent of them are employed for at least some of their surveyed period, but over a quarter are regularly underutilised. In addition to the strong youth affect, in New Zealand this group is disproportionately Māori, Pacific, and female.

While not all stable circumstances are necessarily positive ones, stability is generally a desirable characteristic for our working-age population, bringing with it a number of social and economic benefits. This paper provides researchers and analysts with a method to identify labour market stability at an individual level, as a potential first step toward prioritising programmes and policies aiming to improve labour market outcomes for those experiencing instability.

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