Identifying the Resilience of the New Zealand Workforce in a Recession

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Department of Labour
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CONTENTS

LIST OF TABLES AND FIGURES **4**

EXECUTIVE SUMMARY **5**

1. THE IMPACT OF THE RECESSION **8**

1.1 More job seekers and fewer jobs 8

1.2 A rise in the long-term unemployed 9

2. RATIONALE AND METHODS **11**

2.1 Rationale for this work 11

2.2 Methodology used to determine results 11

2.3 Caveats concerning data and method used 12

3. CHARACTERISTICS THAT AFFECT JOB RESILIENCE **14**

3.1 Human or demographic characteristics 14

3.2 Firm characteristics 19

3.3 Other characteristics – does location matter? 22

3.4 Summary of factors that affect resilience 23

4. INDIVIDUAL RESILIENCE FACTORS BY INDUSTRY **24**

4.1 Education qualifications and skills by age 24

4.2 Long-tenure workers 28

4.3 Ethnicity 30

4.4 Self-employment 32

4.5 Geographic location 33

4.6 Which industry workforces have less resilience? 34

5. CONCLUSIONS **36**

6. TAKING THIS WORK FORWARD **36**

APPENDIX 1 ..... **38**

APPENDIX 2 ..... **39**

APPENDIX 3: DATA SOURCES USED **40**

BIBLIOGRAPHY **41**

LIST OF TABLES AND FIGURES

Figure 1: The impact of the recession on jobs and job seekers 9
Figure 2: Trends in the proportion of unemployed who are long-term unemployed 1987–2009 10
Figure 3: Trends in the proportion who are self-employed, 1989–2009 20
Table 2: Employment by skill (education) level in 2006 25
Table 3: Employment by occupational skill level in 2006 27
Table 4: Employment by proportion of long-duration (LD) and older workers in 2007 29
Table 5: Employment of Māori and Pacific ethnic groups in 2006 31
Table 6: Self-employed in 2000 and 2007 32
Table 7: Top 10 industries with employment outside main urban centres in 2006 34
Table A1: Department of Labour estimates of current and medium-term employment trends by industry (used to determine Table 1) 38
Table A2: Industry workforce resilience ranking (provisional) used to determine Table 1 39

EXECUTIVE SUMMARY

This report outlines a new approach to examining the risks to the New Zealand workforce arising from the current recession. It uses both qualitative and quantitative information to identify the resilience of the workforce in each main industry. The term resilience is used to define vulnerability, meaning those who may have more difficulty in finding new employment if made redundant from their existing jobs.

It is important to analyse workforce resilience given the weaker labour market conditions currently being experienced in New Zealand. This is resulting in more redundancies and decreased job opportunities across a range of sectors, and the number of people facing longer term unemployment (rather than short-term spells between jobs) is increasing. Apart from its social and fiscal costs, long-term unemployment may erode some of the skill benefits acquired from higher educational achievement and greater work participation.

The main outcome from this report is a framework to assess the workforce in each industry according to their potential risks of longer term unemployment. This approach can assist the early identification, by industry, of concentrations of people at greater risk of longer term unemployment. The report outlines the framework at a preliminary level and the approach taken to produce it. The framework is a summary only and a more detailed analysis of industry workforces will be made available in future, including regional analysis. This approach can assist in the early identification of at-risk groups, providing more informed responses for retraining and connecting people with more high skilled and stable employment.

Developing this framework involves firstly identifying the key factors that increase the likelihood of longer term unemployment. The major factors identifiable at an industry level include having low qualifications, belonging to younger or older age groups, being Māori or of Pacific ethnicity, having low or highly specific skills and long job tenure. The prevalence of these factors in the workforce of each industry is then determined.

Table 1 brings together an overall assessment of workforce resilience based on the analysis in this paper. For each main industry, the resilience factors are grouped together to identify the relative vulnerability of the workforce (column 1). Recent and projected (five year) employment trends at industry level are also shown to provide a view of labour "demand" trends, (in column 2 and 3). Each industry is listed alphabetically and given a rating ("weak, "medium" or "strong") in each column based on the strength of its results.

Table 1: Overall results of the workforce resilience study

Industry name	Workforce resilience (ability to reattach to new jobs)	Recent job growth trends	Forecast job growth over next five years
Accommodation	Medium	Strong	Weak
Administrative and support services	Medium	Medium	Medium
Agriculture, forestry and fishing	Medium	Medium	Weak
Arts and recreation services	Medium	Strong	Medium
Construction	Medium	Weak	Weak
Education and training	Medium	Medium	Medium
Electricity, gas, water and waste services	Medium	Weak	Medium
Financial and insurance services	Strong	Weak	Strong
Health care and social assistance	Medium	Medium	Strong
Information media and telecommunications	Strong	Weak	Strong
Manufacturing	Weak	Weak	Weak
Professional, scientific and technical services	Strong	Medium	Strong
Public administration and safety	Medium	Medium	Medium
Rental, hiring and real estate services	Strong	Strong	Medium
Retail trade and wholesale	Medium	Weak1	Medium
Transport, postal and warehousing	Weak	Medium	Medium

Under the 'Workforce resilience' column, results show that workers in manufacturing followed by transport and warehousing have the lowest resilience, while workers in the professional, scientific and technical services industry have the highest.

Under the 'Recent job growth trends' column, estimates show recent employment weakness in manufacturing, communication services, finance and insurance, and

[1] Recent job trends are shown as weak because, although Department of Labour employment estimates show retailing employment grew at an above-average 1.9% in the year to March 2009, recent redundancy figures suggest it has been hit hard in recent months.

utilities. These employment losses were partially offset by growth in areas like accommodation, and arts and recreational services.

In the 'Forecast job growth over next five years' column, results suggest that industries like health and information media and communications have the strongest job growth prospects.

Looking at each industry across all three dimensions, a standout feature is the weakness of manufacturing across all three columns. Workers in manufacturing tend to have longer job tenure, be older and lower skilled and have limited levels of self-employment. Māori and Pacific people also tend to be over represented in this industry. This means they have low overall workforce resilience, meaning that the effect of possible employment 'shocks' in this industry is likely to have more severe long-term consequences on the workforce than in other industries.

On the other hand, industries such as construction and financial services contain workforces that are liable to be more resilient to job losses even though recent labour demand has been weak and (for construction) forecast employment growth trends are also considered to be weak. The construction workforce is more used to cyclical changes while the financial services workforce is more highly skilled. In both cases, workers are likely to be better placed to shift into new employment opportunities.

The health industry has 'medium' resilience. While it is a sector with an older workforce, a high proportion of its workers are highly skilled. In addition, the table shows that forecast employment growth over the next five years is strong.

Overall, while there is considerable industry variation in workforce resilience, New Zealand's greatly improved education levels since 1990 are likely to boost overall resilience in a recession. While the chances of the higher skilled losing jobs in a sudden downturn are similar to those of the lower skilled, their long-term likelihood of re-entering employment is higher.

Stakeholders, in particular those working at an operational level with affected industries, are interested in industry-based information in order to:

- identify sectors where they can direct their resources to apply programmes such as work-based training through industry partnerships
- provide a range of other training and assistance programmes designed to help with job preparation and specific skills training activities with the aim of improving employability
- work more effectively to develop partnerships with vulnerable regions and communities reliant on a narrow range of sectors or with sectors subject to a decline in demand.

In order to increase the operational use of this industry-based resilience framework, users want it available in an accessible format at a finer level of detail. To achieve this, we intend to incorporate the framework into a new sector based information tool. When launched, this sector tool will enable users to more closely examine the relative vulnerability of workforces.

1. THE IMPACT OF THE RECESSION

Job losses are common in New Zealand at any time in the economic cycle. For example, Linked Employer Employee Dataset (LEED) data shows that, between 2002 and 2007, around 200,000 jobs were lost each year as firms shrank and closed.[2] These losses are usually offset by new jobs generated by firms that expand and by new firms opening, and as a result, most people are able to transfer their knowledge and skills quickly into new work areas without requiring much assistance in their job search activities. However, in a recession, more people will require additional assistance to find new jobs. Some may be highly skilled and qualified people who can move easily in the normal phase of the economic cycle, but when a widespread fall in hiring occurs (as is happening at present), even skilled and highly productive workers may find themselves unable to move out of depressed sectors and into new work. Others will be people with limited skills and a variety of other barriers, who will find it much harder to move into any new job.

1.1 More job seekers and fewer jobs

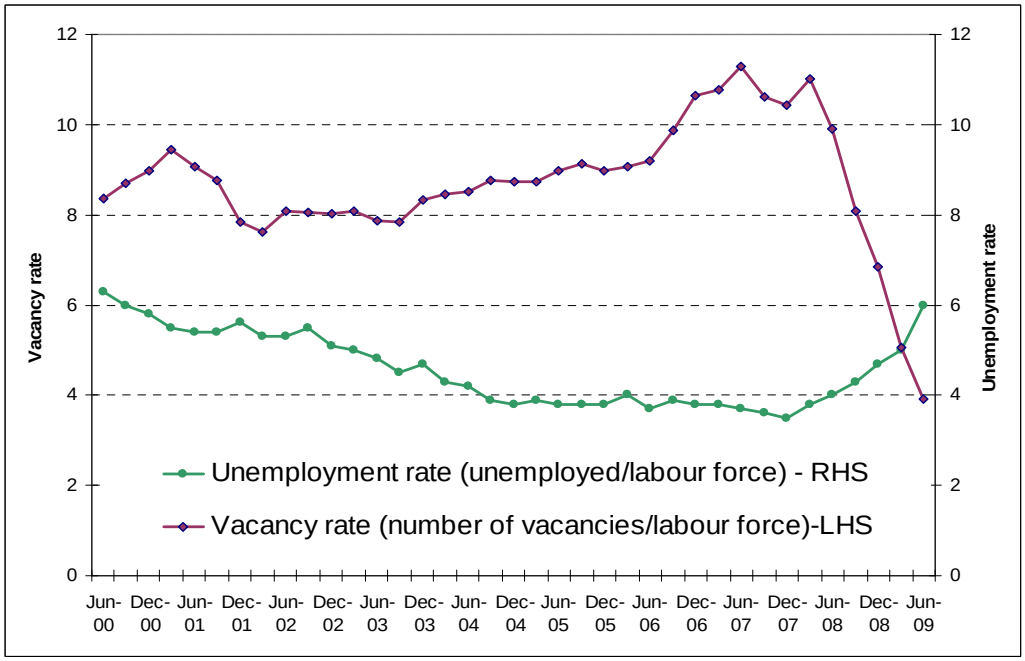
The current recession is causing the most severe economic contraction New Zealand has experienced since the early 1990s. There was a rise in unemployment to 6.0% in the June 2009 quarter. While a positive aspect of the current labour market is that the labour force participation has remained high, most analysts believe that labour market conditions will deteriorate further as the labour market tends to lag behind other economic indicators. Most forecasts are picking unemployment to rise from its current level to over 7% in 2010. A wide range of industries are being affected in this recession as sales decline due to reduced international demand and weaker domestic spending. [3]

Figure 1 highlights the sharp reversal of fortune that has occurred for the New Zealand labour market over recent quarters. This recession has triggered increased job losses (resulting in a higher unemployment rate), in tandem with a sharp reduction in new job openings (indicated by the declining job vacancy rate). New job opportunities for those becoming unemployed have therefore declined.

[2] Statistics New Zealand (2009).

[3] For more context, a recent report (DOL 2009a) examines this recession compared with past recessions.

Figure 1: The impact of the recession on jobs and job seekers



Source: HLFS and Department of Labour (ANZ Job Ad Monitor).

Looking ahead, the most recent June 2009 Quarterly Survey of Business Opinion (QSBO) showed that labour market indicators showed improvement but were still negative. A net 31% of businesses said they intended to shed staff over the June 2009 quarter. A net 19% of firms intend to cut staff numbers over the next three months, down from 36% previously.

There is no complete breakdown of where job losses are occurring in New Zealand. Reported redundancies data, while incomplete for various reasons, provides a partial indication of which areas are most affected. Redundancies arising from the recession so far appear to be concentrated in manufacturing and retail, with these two industries accounting for over 50% of reported redundancies between November 2008 and April 2009, according to the Department of Labour's media monitor service.

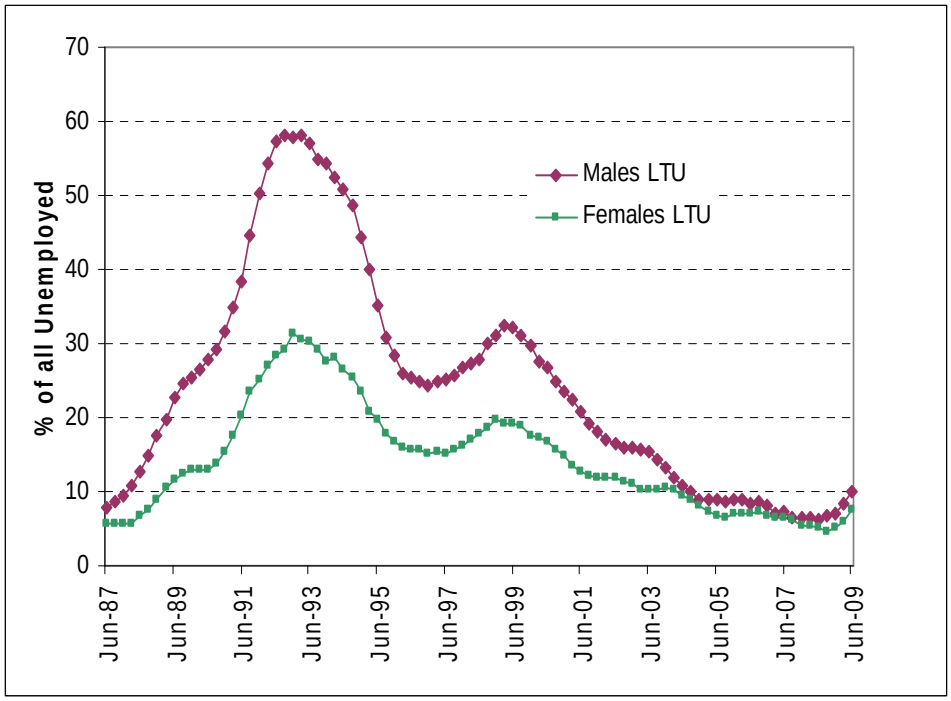
1.2 A rise in the long-term unemployed

In a prolonged recession, the proportion of people who become long-term unemployed increases steadily, with relatively fewer in short-term 'frictional' spells between jobs. Longer term unemployment discourages workers from job search, accelerates skills loss and creates a group with greater need for special assistance. Some may end up leaving the labour market prematurely.[4] To employers, long-term unemployment indicates that work skills and other important attributes may have deteriorated. The longer a person is unemployed, the deeper the spiral of labour market disadvantage will be, leading to an erosion of work skills as well as worsening individual wellbeing.

[4] For example, OECD (2004).

In New Zealand, measures like the active management of job seekers helps significant numbers of people by referring them directly to new work, rather than going onto an unemployment benefit. Nevertheless, more people are becoming longer duration unemployed (unemployed for more than 26 weeks), with the number increasing to 22,100 in the June 2009 quarter, up from 10,300 in the June 2008 quarter. As Figure 2 shows, the proportion of the unemployed who are long-term unemployed (around 10%) is still low compared to what has been experienced over the past 20 years, but there is scope for it to rise substantially.

Figure 2: Trends in the proportion of unemployed who are long-term unemployed 1987–2009



Source: HLFS annualised series.

2. RATIONALE AND METHODS

2.1 Rationale for this work

For policy reasons, it is important to consider the mix of factors that makes workers more or less resilient or adaptable to employment change in order to identify which industries might need greater attention. This enables a more targeted approach to be considered to aid the transition of vulnerable employees and help them to retrain and connect with more stable employment opportunities.

Current unemployment protection initiatives like ReStart[5] provide essential support for recently unemployed workers. However, understanding which industries have more vulnerable workforces may help to better guide policy responses towards at-risk sectors, given a greater share of their workforces face the prospect of long-term, costly, entrenched unemployment. For instance, some industries (such as financial services) employ a high proportion of well qualified people who are better able to adjust without severe social and economic disruption. Other industries have few of these people and may require more training and other options.

The aim of this research is not to identify which industries have firms more at risk of closure (although it will complement this type of research). Instead, it considers the relative vulnerability of workforces following the impact of a firm closure.

2.2 Methodology used to determine results

This report firstly looks at the individual factors that influence the resilience of a workforce in a downturn in the job market, with resilience meaning the ability of a workforce to find other work if job losses occur. It also identifies (as shown in Table 1) the relative differences in the resilience of employees at industry level and provides an assessment of current and future employment growth prospects in each industry. Industry analysis is largely at the highest level using the ANZSIC 06 classification system, but the methodology can be used to produce a finer level of industry detail.

The method followed involved the following steps:

- Factors that are likely to make workers more vulnerable to longer term unemployment following job losses were investigated using both New Zealand and international literature. After considering the available information, five main resilience factors were chosen to examine at an industry level; these were:
    - lower skills

[5] Restart provides financial and job search assistance for people who have been made redundant, or are no longer self-employed, due to the economic downturn.

    - age
    - ethnicity
    - job tenure
    - self-employment prevalence.

- Each industry was ranked from the highest to the lowest according to the incidence of each factor (such as the percentage of lower skilled workers and so on). From this, an unweighted average of the combined scores for each industry was calculated.
- Industry rankings and scores were compiled on this basis for each industry. Those in the top portion of results according to the resilience criteria are called 'strong'. Those in the middle portion are described as 'medium'. Those near the bottom are shown as 'weak'.
- Some industries have a low ranking in some categories but not in others. For instance, education has a high proportion of older, long-duration workers but this is offset by the fact they have very high skill levels. Overall, their workforce resilience to a recession is shown in Table 1 as 'medium'. The incidence factors (8 in total) and their ranking when combined for each industry are shown in Appendix 2.
- The two additional right-hand columns on Table 1 are based on the Department of Labour's own employment trend estimates.[6] These summarise the current and medium-term performance of each industry according to recent job growth in the past 12 months from March 2008 to March 2009 and forecast annual average employment growth from 2008 to 2013.

2.3 Caveats concerning data and method used

Data considerations

The resilience findings are based on using measurable criteria that, according to research, suggests make individuals more vulnerable to long-term unemployment. The criteria included are not exhaustive as the scope is necessarily restricted by what data is available at an industry level, (with variables chosen needed at a 3–digit ANZSIC level of detail). Some individuals recorded in one industry may spend considerable periods working in a range of industries. Some factors like health, disability and family/household composition may have an important impact on employment outcomes, but are not used as they are not available at industry level.

In addition, the industry information referred to is based on more than one Statistics New Zealand source, and there are inevitably small differences in the way their different surveys collect and code industry information, (as noted in Appendix 1).

[6] Department of Labour employment estimates (DEE) and industry employment projections (see Appendix 1 for a breakdown of results according to these estimates).

Issues to consider determining resilience factors

Variables used to indicate risk factors were chosen based on an assessment of the strength of links to workforce vulnerability according to New Zealand and international evidence and research findings. It is important, however, to bear in mind that the results of studies on job loss outcomes are influenced by factors such as:

- the completeness of coverage (for example, including females, temporary workers)
- the type of exit from work (for example, individual versus mass layoffs, complete versus partial firm closure)
- the outcome measure chosen (for example, the different measures of unemployment)
- the phase of the business cycle the study covered
- cyclical versus structural declines in the industries covered.

Where appropriate, some caveats concerning individual studies examined are noted in Section 3.

Weightings were considered for the particular individual characteristics chosen, such as age, for example. However, determining the weights at this stage may entail a more subjective approach and so were not applied. The regional impact is considered but is not currently included in the framework due to measurement issues. However it is noted that this analysis can, and probably should be applied at a regional level, for instance by examining the regional distribution of industries that contain more vulnerable workforces.

In practice, many factors that influence unemployment are highly inter-related, for instance, Māori and Pacific ethnic groups tend to have lower qualifications and some face language barriers, and so on. This research looks at some factors in combination, but data constraints mean this is not always feasible.

3. CHARACTERISTICS THAT AFFECT JOB RESILIENCE

Given increasing long-term unemployment, we firstly identify the main factors that New Zealand and overseas studies suggest increase the risk of becoming less resilient. As noted earlier, the term 'resilience' describes someone's capacity to reattach from one job to another. It is not used in a personal sense, but in terms of the average abilities of groups to match their skills and capabilities to new work areas, thereby avoiding long-term unemployment or exit from the labour market.

The factors will be divided into demographic, firm and other characteristics.

3.1 Human or demographic characteristics

In general, research shows that both younger and older workers appear to have more difficulty regaining employment if they lose their jobs. The reasons for each group facing difficulties are, however, very different.

Older workers

International research shows that older workers (usually defined as aged 55+) laid off appear to have a lower probability of getting back into work. Longer term unemployment is more likely to lead them towards early exit from the labour force. In addition, when they do find jobs, older workers tend to face greater difficulty in finding good job matches to their specific skills, for a variety of reasons. For instance, while older workers are effective in existing jobs, their skills tend to become concentrated over time and may not be as easily recognised in a different work setting.

Older workers may face other barriers such as health barriers, additional caring responsibilities and possible age discrimination, as noted in recent reports.[7]

Typically, older workers have a lower probability of becoming unemployed, although, if made redundant, they tend to find it more difficult to obtain new jobs. As a result, older workers in previous recessions in New Zealand have been more likely to become long-term unemployed than younger people meaning that the longer term effects of unemployment are more severe. For example, in the year ended March 1993, (when long-term unemployment peaked, as Figure 2 shows) 64.8% of unemployed persons aged 55 and over were long-term unemployed whereas only 49.9% of the unemployed in all age groups were long-term unemployed.

An additional reason to regard older workers as vulnerable is that many who lose their jobs may move into early retirement and therefore be 'hidden' in official figures. A US study that tracked long-tenured (three years plus in the same job) workers who had lost their job in 1999–2000 found that 35% of those who had lost their job aged 55 and over were not in the labour force in 2002. This compared with 15% of displaced people at all ages. This was considered to be

[7] Department of Labour (2009b).

due to the fact that many older individuals retire following job loss.[8] Another US study showed that, two years after losing their job at age 55, just 60% of men and 55% of women were employed, compared with employment rates of over 80% for non-displaced people working at age 55.[9] This study concluded that job losses led to large and lasting reductions in employment caused by firm closure for older workers.

A recent New Zealand study into the consequences of job losses caused by firm closures[10] found that younger age groups were more negatively affected by job loss than older workers. However, although youth are also vulnerable, the weight of overseas evidence suggests older workers are generally more vulnerable, both in terms of longer employment spells and reduced pay when they re-enter work. There is thus a risk that a period of increased job losses may disadvantage the older workforce in New Zealand if their unique labour market features lead to longer term unemployment, early retirement or poor job matches.

Younger workers

Youth (usually defined as those aged 15–24) face considerable risk of job losses during a recession. This is because they have a lower level of work experience and tend to work in more vulnerable segments of the job market. For instance, in the previous two recessions in New Zealand, the unemployment rate for youth rose by around double that of the overall increase while their employment rate (employed divided by the working-age population) fell twice as far as the average.[11]

One of the reasons young job seekers may be disadvantaged is that they are newer to the job and may have higher training and monitoring costs compared to their more experienced counterparts.[12]

The current recession has had an immediate impact upon younger people, partly because reported redundancies have been high in the retail industry, which, along with the hospitality industry, employs a high proportion of young and unskilled people.

However, while youth tend to have a high unemployment rate, a high proportion of this is short-term 'churning' between jobs. Youth comprise a relatively low proportion of the longer term unemployed despite experiencing a very high unemployment rate during recessions. Since 1993, the proportion of youth who are long-term unemployed has consistently been lower than the proportion of people at all ages who are long-term unemployed. This is partly because study is a more available substitute for work among youth (particularly as many of them already study part-time). For instance, in the recession in the early 1990s there was a significant increase in senior secondary school and in higher tertiary-level participation, particularly among those in younger age groups.[13] Returning to

[8] Helwig (2004).

[9] Chan and Stevens (2001).

[10] Dixon and Stillman (2008).

[11] Department of Labour (2009a).

[12] Helwig (2004).

[13] Smart (2009).

technical or higher education institutes to retrain is probably a sound response to a tightening job market.

In summary, older workers laid off are likely to have less job market resilience than average. Youth workers who get laid off face a high risk of short-term unemployment, although they have a better chance of moving on to more positive outcomes in the longer term. Therefore industries with a high incidence of people in both younger and older age groups are likely to be relatively vulnerable in a recession.

Skills and education

Formal educational qualifications in a workforce are easily measured and so tend to be widely used as a proxy for skill level. Having a formal school qualification is a measure of the extent to which someone meets the basic prerequisite of literacy and numeracy for many entry-level jobs, while post-school qualifications indicate the more in-depth skills increasingly required in many fields of work.

Internationally, studies have shown that people with degrees who have lost their jobs appear to have better re-employment prospects than those without degrees.[14] For instance a US study on displaced workers between 1984 and 2004 (Farber, 2005) found that the likelihood of being out of the labour force following a layoff falls with education, although the advantage an education offers has narrowed slightly over time.

Interestingly, US research on job losses in what was only a mild recession in the early 2000s (Helwig, 2004) indicates that the displacement rate (or the likelihood of losing a job) for those with no schooling was actually similar to what it was for those with schooling. The difference was that time out of work was higher for those with less education. Degree holders displaced from their jobs spent a median of 5.5 weeks without a job, compared with a median of 10.5 weeks for displaced workers without high school qualifications.

Examining New Zealand educational qualifications using Census data shows that those with qualifications are more likely to be in full-time employment, while those with few or no education qualifications are disproportionately represented among the unemployed.[15]

New Zealand employment trends back overseas evidence regarding the advantage afforded by higher education. Those most affected in a downturn are people who have few or no qualifications and are employed in lower skilled occupations. Educational attainment reduces the length of unemployment because it demonstrates a worker's accumulated skills and knowledge and signals specific skills and motivation to employers. Higher education is also likely to improve a job seeker's access to better information, job networks and job search techniques. Furthermore, the labour market advantage of higher education widens in recessions. During the downturn of the late 1980s/early 1990s and the downturn associated with the Asian financial crisis, there was continued growth in employment for people who held post-school qualifications compared with

[14] Kletzer (1998).

[15] Hampl (2000).

declines for those with no qualifications or school qualifications only. A similar trend can be seen in the current downturn, with a 2% rise in post-school qualifications over the year to March 2009, compared with a 4% fall for those with no qualifications only.[16]

New Zealand's increasing levels of education may help to counter the effects of a recession on longer term unemployment. For example, the number of graduates produced nearly tripled from 1990 to 2006. In addition, high labour demand and skill shortages experienced in New Zealand over the past few years are likely to have helped the lower skilled because employers have been forced to rely on less qualified sources of labour. This access to valuable work experience and in-work training opportunities will have improved the human capital and marketability of workers with lower skills and qualifications. Nevertheless, more long-term unemployment is still likely to erode the benefits of both higher education and greater job experience.

Skills and age

People in higher and lower age groups appear particularly at risk if they hold few formal qualifications.

Young people without qualifications are likely to have difficulty returning to the workforce unless they have spent enough time in a workplace to prove they have the required skills and abilities.

Older workers are more likely to lack formal educational qualifications or hold obsolete qualifications, (for instance around 40% of the 55+ workforce held post-school qualifications in 2006 compared with 50% of "prime aged" workers aged 25-54). It is therefore more difficult to signal their skills to recruiters. Having years of work experience is a substitute for educational qualifications, however new employers may find it difficult to measure the value of that experience. In addition, some older workers may have acquired highly firm-specific skills and be unwilling to move away from long-term specialisation. Unlike younger people, with a shorter remaining working life, they are less likely to study unless there are immediate economic gains.

Skills and industry effects

When a recession results in a rapid decline, skilled workers can be affected as quickly as unskilled workers, especially if they are concentrated in cyclically sensitive industries such as construction.

Workers with highly specialised skills may find they have difficulty in being re-employed (or may be reluctant to accept a poor match for their skills, especially if they expect a wage premium for their specific skills). Regional effects exacerbate this if they are in a region with few new openings for jobs tailored to their skill sets.

Overall, the evidence shows that lower rates of educational attainment are associated with higher rates of unemployment. While the chances of someone with lower skills losing their job might not be much higher than average in a

[16] Department of Labour (2009a).

sudden employment 'shock', their long-term prospects of re-entering employment are likely to be lower. As a result, skill level indicators are likely to be an important signal of workforce resilience in a recession, especially at higher or lower age groups.

Ethnicity

New Zealand employment and unemployment data shows considerable ethnic disparities, although these have significantly reduced in recent years.

A growing proportion of the population lie outside the New Zealand European ethnic group, which has the lowest overall unemployment rate. The gap with other ethnic groups has widened in the past year, with all ethnic groups other than New Zealand European showing above-average increases in their unemployment rates over this period. The June 2009 quarter saw large increases in the unemployment rates for Māori (up from 7.3% to 12.0% a year earlier), Pacific people (up to 12.8% from 6.7% a year earlier). This is a rise of over 6 percentage points for Pacific people, compared with an overall rise of less than two percentage points.

Many inter-related factors are likely to contribute towards higher unemployment for these groups, such as fewer qualifications, a youthful population, and the decline of industries like manufacturing and forestry that have traditionally employed high proportions of Pacific and Māori workers.

Generally, New Zealand research shows that people with non-European ethnicity (predominantly Māori and Pacific people) are more likely to be among the longer term unemployed, in part, because they are likely to have one or a combination of the following factors: lower educational qualifications, being recent migrants, facing language difficulties or being affected by discrimination (perceived or otherwise). These attributes result in them being less resilient in a downturn. As a result, ethnicity is included as a factor determining workforce resilience.

Job tenure

Job tenure is measured by the length of service with a particular employer and can be measured using the LEED dataset.[17] The average length of tenure is influenced by a variety of factors, such as the changing age and ethnic structure of the population, changing mix of occupations within industries, changes to seasonal work patterns, legislative arrangements and the economic cycle. But while there are other influences, longer tenure in a job usually indicates a greater risk of non-employment if a worker is displaced.[18] This is consistent with the development of more concentrated human capital (firm-specific skills) over time, making it harder for an unemployed person to find new job matches.

In New Zealand, the study by Dixon and Stillman (2008) also supported international findings by identifying that workers most negatively affected by closures tended to have above average job tenure (as measured in LEED).

[17] For details on how it can be used, see Papadopoulos (2008). LEED data may tend to understate the length of tenure by recording breaks of over one month as a break in tenure, when they may in fact be due to seasonal work or a short-term break in service.

[18] For instance, see Farber (2005).

To put it differently, in an economic downturn, newer (often younger) entrants are more likely to lose their jobs than longer tenure workers, but longer-tenure workers are more likely to face long-term unemployment if they are laid off. Therefore, other things being equal, an industry with a high proportion of longer serving workers will be vulnerable if faced with a sudden employment 'shock', particularly in a context of rapidly rising overall job losses.

Given that longer tenure tends to make a worker find it harder to shift into new work if displaced, tenure is included as a factor that influences workforce resilience in a recession. Higher ages and longer tenure combined is also included as a separate risk factor, as research shows that a combination of the two tends to worsen the job prospects for some workers.

Gender

The effect of gender on the likelihood of re-employment after job loss has been studied extensively overseas, and some studies indicate that displaced women are, on average, less likely to be re-employed than men.[19]

In New Zealand, there seems to be little difference between men and women in the likelihood of being unemployed, and (as shown in Figure 2) the proportion of men who are long-term unemployed has been considerably higher in past recessions. In June 2009 female unemployment moved ahead of male unemployment, with their unemployment rate at 6.3% versus 5.7% for men, although 18.0% of unemployed males compared with 15.0% of unemployed females were long-term unemployed.

Women in New Zealand tend to have fewer qualifications (although the gap is narrowing), and they tend to be more concentrated in lower skilled occupations. Against this, they tend to be over represented in service industries with better long-term job growth prospects (such as education and caregiving). They are generally under-represented in sectors associated with longer term structural job change, such as forestry and manufacturing. Women also tend to be less likely to hold long-tenure jobs (a median tenure of about three years versus four years for men), which is a factor that may increase their resilience following job losses.

On balance, because closely related factors such as job tenure and education are also used to determine resilience, gender is not chosen as a separate variable in this study.

3.2 Firm characteristics

Self-employment

The extent of self-employment available within an industry is of particular interest in a recession because self-employment levels held up better than wage and salary employment in past recessions. Compositional effects might explain some of this, but a plausible reason for this is that self-employed are better able to keep working by trading at a lower level of earnings, lowering charge-out rates

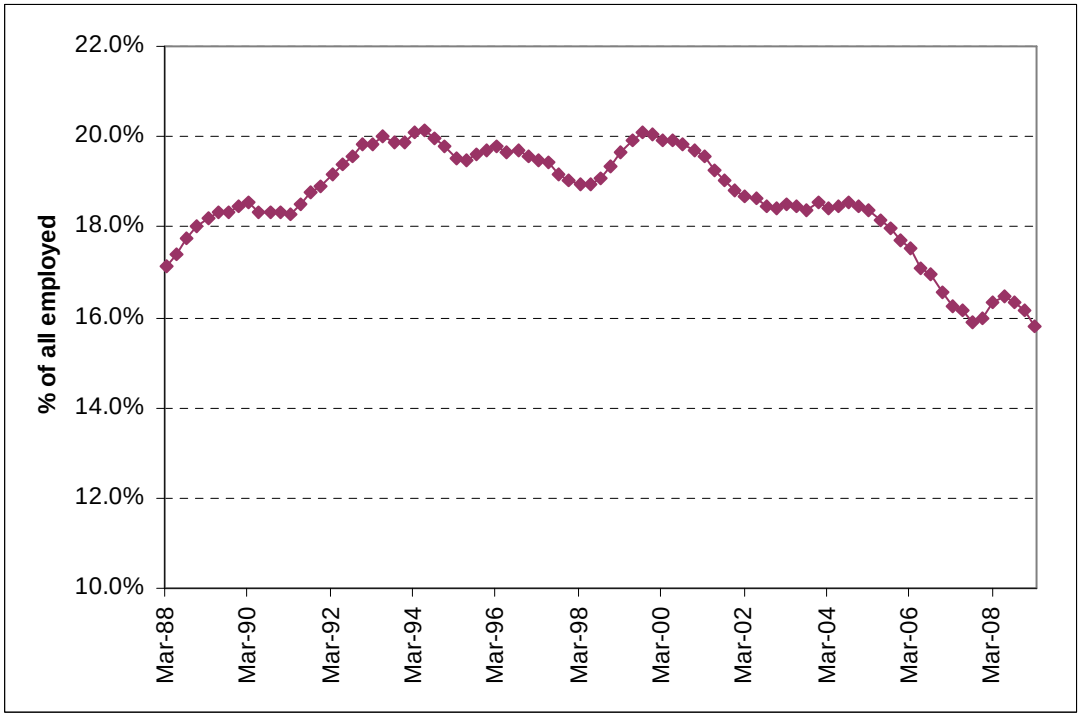
[19] Kletzer (1998).

and/or hours of work.[20] Managing such flexibility is harder for salaried employees. This means that, by adapting their personal circumstances, some self-employed are able to 'ride out' conditions by adopting a more flexible work approach.

New Zealand has a relatively high number of self-employed, even outside agriculture, which traditionally favours self-employment. In 2006, 15.8% of New Zealand non-agricultural workers were self-employed, which was a higher percentage than in most OECD countries.[21]

Figure 3 shows that, in the past two recessions in the early 1990s and the late 1990s, the proportion of the workforce who are self-employed increased slightly.[22] The reason may be that employees who are self-employed stay in work more easily or that those who lose their job and cannot find another job move into self-employment. Whichever reason holds, workers in an industry with many opportunities for self-employment are likely to have more employment resilience in a recession. No increase is so far evident in 2009, although it may be too early to tell from an annualised series.

Figure 3: Trends in the proportion who are self-employed, 1989–2009



Source: HLFS annualised series.

The reason that the proportion of people who are self-employed fell over the past few years is that wage and salary jobs have become widely available and provide more security in a buoyant labour market. However, it seems probable that the percentage of self-employed will rise again if the wage and salary job market continues to soften, particularly given the older age structure of the workforce.

[20] Savage (1990).

[21] OECD labour force statistics – http://stats.oecd.org/Index.aspx?DatasetCode=ALFS_SUMTAB.

[22] This figure includes those who are employers and self-employed without employees

Older workers are, on average, better placed to try out self-employment because they are more likely to have the capital, skills and experience needed for running a business.

Those working in industries that offer more opportunities for self-employment may therefore be better placed to absorb the impact of a recession. As a result, self-employment is included as a variable for determining workforce resilience.

Firm size

Smaller firms (SMEs) are defined as those who employ fewer than 50 staff. They employ a large proportion of the total workforce employed in New Zealand (44% of all employees in 2008). While they can grow rapidly, their lack of size makes them more vulnerable, and fewer small firms remain in business. Therefore, industries where employment is highly concentrated in SMEs can become more exposed to short-term shocks.

Using the LEED dataset, Dixon and Stillman (2008) found that employees from smaller firms who lost their jobs took longer to be re-employed than those from larger firms. However, this may not always be the case. For instance, a study into displaced male workers in Australian firms[23] indicated that workers from larger firms faced greater difficulties in returning to work than those from smaller firms, possibly due to other factors, such as workers in larger firms having longer tenure than workers in smaller firms, or location (see section 3.3 below). Dixon and Stillman's study case covered a period with relatively few large-scale firm closures, so the impact has perhaps not been fully examined in a New Zealand setting.

The extent to which firm size influences the employee's ability to return to work is likely to be linked to the characteristics of people who work in small firms. In certain fields of human capital, it could be argued that employees in small firms are able to develop a wide range of generic skills, thereby enhancing their long-term employability. However, it may also be the case that work experience is restricted by firm size, due to smaller firms having more limited internal labour markets (and perhaps inferior management and human resource capabilities).

On balance, it seems hard to infer that someone from a small firm in New Zealand faces more or less difficulty returning to work, so firm size is not included as a measure of resilience.

Industry effects

An important question is how much the features in an industry will affect workers who lose their jobs. For instance, work in some industries may have few close substitutes, due to technological change or extreme specialisation.

Green and Leeves' Australian study found that male workers displaced from manufacturing faced greater likelihood of staying out of work longer. This was considered to be due to the fact that job losses in manufacturing were more often structural and associated with a long-term decline in plant competitiveness. The study found that those with more industry-specific skills were less likely to get

[23] Green and Leeves (2003).

new jobs than managers and those with more general skills. Workers losing jobs in manufacturing tended to have longer job tenure and lower skills – all features that increased their risk of long-term joblessness. In contrast, job losses in other industries tend to affect a more diverse range of more skilled professional and semi-professional workers, many of whom had lower tenure.

This same study identified the construction industry workforce as being able to cope relatively well despite frequent firm closures. This was postulated as being due to volatile cyclical effects more commonly influencing job losses in construction, enabling workers to become more used to applying for other jobs.

A US study (Helwig) of the incidence and outcomes of job losses in 1999–2000 (covering a comparatively mild recession) identified broad similarities to the Australian study in terms of the industries where workers suffered the most. Generally, the industries whose workforce experienced the greatest number of weeks out of work following displacement were manufacturing, followed by finance, insurance and real estate. Workers in construction, and also transport and power utilities, tended to spend the least time out of work.[24]

Other firm characteristics that may affect resilience but are less easily measurable include:

- the ability of some firms to be flexible, for example, reducing hours at the margin rather than employing full-time or none at all – for instance, there has been a particularly sharp decline in average hours worked so far in this recession
- the degree of unionisation in firms, which may affect the bargaining ability of workers.

3.3 Other characteristics – does location matter?

For displaced workers, the state of the local labour market is likely to be an important factor. Regions with few or a limited range of jobs in demand are likely to have fewer opportunities for re-employment. This is more likely for people with very firm-specific skills, leading to localised skill mismatches between industries.

A concentration of employment in a few firms can reduce employment options in some regions. In Australia, there is evidence that the effect of a large scale plant closure can 'swamp' a local labour market.[25] Features of the local labour market can have a negative effect on re-employment, because, as people seek jobs in industries and occupations where they previously had found stable employment, those employed in regions with a narrow range of jobs suited to their industry-specific skills, or just few jobs generally, will be disadvantaged. This suggests that workers in more rural areas, whether specialised or not, may face particular disadvantages due to the limited range of jobs and employers available.

Current conditions in the local labour market are also a factor. These can be measured by the unemployment rate (which measures the excess supply of labour). Therefore, if regional disparities in unemployment rates widen as a result of the recession, then individuals' job prospects will be increasingly influenced by

[24] Helwig (2004).

[25] Green and Leeves (2003).

where they live. Evidence from earlier recessions suggests that regional variation in the unemployment rate in New Zealand does increase in a recession, and regional disparities have been widening recently. Over the year to June 2009, the difference in regional council-defined unemployment rates had widened to 4.8 percentage points (3.0% in Southland versus 7.8% in Northland). A year earlier, the difference was 2.8 percentage points. Examining regional employment measures could also highlight differing labour demand trends at a regional level emerging in this recession. For example, in the year to June 2009 employment in the Auckland Regional Council area contracted by 21,000 whereas, in the rest of the country, job numbers rose by 32,000.

The condition of the local labour market is an important factor, and regions with fewer jobs and employers appear to be potentially more vulnerable in a downturn. A preliminary regional measure is therefore discussed in Section 4.

3.4 Summary of factors that affect resilience

Clearly, many identifiable factors contribute to the resilience of a workforce in a recession. Based on New Zealand and international research, the most important are as follows:

- Lower skilled workers are often at risk of long-term joblessness. However, the link tends to weaken at higher ages, with some more skilled older workers also at risk of long-term joblessness due to factors such as the specificity of their skills.
- Generally, younger people tend to be more at risk of unemployment in a recession, as they are less well established in their jobs, but they are also more likely to be able to return to work and to explore other options such as studying while they are out of a job.
- Older workers are less likely to be laid off, but if they do they have a lower probability of reattaching to work.
- Longer job tenure is associated with greater difficulty in regaining employment according to New Zealand and international studies - partly because it signals more specialised skill sets. It becomes a heightened risk if linked with higher age groups and lower skills.
- Ethnicity is linked to longer spells off work although it is inter-related with other factors such as educational qualifications. For example, non-NZ European ethnic groups (predominantly Māori and Pacific people) are over represented among the unemployed.
- Self-employment tends to rise in recessions, suggesting that people in work that offers opportunities for self-employment may be slightly more resilient if laid off. There is some New Zealand evidence that smaller firm size is correlated with a longer time out of work, while international evidence is mixed.
- Location in regions with fewer job opportunities increases vulnerability to long-term joblessness.
- A concentration of risk factors will compound the problems some face in returning to employment during a recession.

4. INDIVIDUAL RESILIENCE FACTORS BY INDUSTRY

This section of the report provides an industry-based analysis of the selected resilience factors. Factors that appear closely inter-related and that share the same data source (such as age and skills) have, in some cases, been grouped together. Results in this report are restricted to large industry groupings; therefore, they may not always apply to some subsets within each industry.

4.1 Education qualifications and skills by age

Lower education levels are strongly associated with poor labour market outcomes. Table 2, therefore, looks at the incidence of workers who have few educational qualifications, ranked according to the proportion in each industry who reported no post-school qualifications in the 2006 Population Census. Given that some age groups present an enhanced risk factor, three categories are shown: lower skilled youth (aged 15–24), lower skilled older people (aged 55 plus) and lower skilled all ages.

Table 2: Employment by skill (education) level in 2006[26]

Industry name	Total employed	Lower skill youth	Lower skill older	Lower skill total	% LS youth	% LS older	% LS total
Retail trade	196,074	53,508	19,131	132,534	27.3%	9.8%	67.6%
Agriculture, forestry and fishing	135,426	13,449	19,773	88,818	9.9%	14.6%	65.6%
Accommodation	111,105	35,313	8,139	72,330	31.8%	7.3%	65.1%
Transport, postal and warehousing	81,774	7,368	10,962	52,917	9.0%	13.4%	64.7%
Manufacturing	217,773	24,813	20,925	129,864	11.4%	9.6%	59.6%
Wholesale trade	98,334	9,477	9,987	57,441	9.6%	10.2%	58.4%
Mining	4,155	243	315	2,400	5.8%	7.6%	57.8%
Administrative and support services	66,195	7,065	7,053	36,732	10.7%	10.7%	55.5%
Rental, hiring and real estate services	54,546	4,836	6,894	29,049	8.9%	12.6%	53.3%
Construction	149,364	20,802	10,965	78,441	13.9%	7.3%	52.5%
Financial and insurance services	64,143	4,674	5,130	32,370	7.3%	8.0%	50.5%
Arts and recreation services	32,679	4,947	2,721	16,398	15.1%	8.3%	50.2%
Electricity, gas, water and waste services	9,732	537	720	4,794	5.5%	7.4%	49.3%
Other services	77,805	8,568	6,411	34,668	11.0%	8.2%	44.6%
Information media and telecommunications	37,647	3,663	2,031	16,365	9.7%	5.4%	43.5%
Public administration and safety	81,318	5,550	6,060	35,328	6.8%	7.5%	43.4%
Health care and social assistance	160,287	7,113	14,511	54792	4.4%	9.1%	34.2%
Professional, scientific and technical services	154,215	8,760	9,603	50,073	5.7%	6.2%	32.5%
Education and training	142,119	5,043	6,963	32,973	3.5%	4.9%	23.2%
All industries	**1,874,691**	**225,729**	**168,294**	**958,287**	**12.0%**	**9.0%**	**51.1%**

Source: 2006 Population Census.

Retail trade is the largest employer of lower skilled workers overall (133,000), followed by manufacturing with 130,000. In four industries – retail, agriculture,

[26] Over 100,000 people employed in unclassified industries have been excluded from this and other industry-based Census tables.

accommodation, and transport and warehousing – around two thirds of the workforce is lower skilled. The industry with the highest proportion of lower skilled youth is accommodation, followed by retail trade, and arts and recreation. Construction is another industry slightly skewed towards a younger, lower skilled workforce (13.9%). In retail trade, 27% of its workforce is lower skilled youth. However, a reasonable share of these may be students who work part-time while they study. Arts and recreation is interesting because it doesn't have a lower skilled workforce overall, but it contains an above average proportion of lower skilled youth. Again, a high proportion may be students.

The three industries that employ the greatest proportion of lower skilled older workers are agriculture, transport, and rental, hiring and real estate services.

Interestingly, while health overall contains a highly skilled workforce, it also contains an above average proportion of lower skilled older workers (9.1%). This reflects the aged care subsector, which relies heavily on an older, lower skilled (and largely female) workforce.

At the other end of the skill spectrum, less than a quarter of education workers have no post-school qualifications so on this factor we would expect their workforce to be more resilient.

Skill levels can also be looked at according to occupations. There should be a strong correlation between occupational skills and educational qualifications given that, for example, most cleaners will not hold degrees. However, occupational skills can provide a further dimension of skills to examine at industry level because a considerable number of highly skilled people (older managers, for example) may possess no formal qualifications. Table 3 shows the incidence of occupational skill levels across industries.[27] These are grouped into elementary skilled occupations (such as labouring), medium skilled occupations and the highest skilled (such as managers and skilled professionals) and ranked by low skill.

[27] This is based on the ANZSCO 2006 skill classification, where each occupation has been allocated a skill level between 1 (highest) and 5 (lowest). Occupations at skill level 1 are described as high skilled, levels 2, 3 and 4 are medium skilled and Level 5 is lower skilled.

Table 3: Employment by occupational skill level in 2006

Industry name	Total employed	% high skilled	% medium skilled	% lower skilled
Retail	196,074	13.5%	38.3%	46.9%
Administrative services	66,195	23.9%	43.2%	30.6%
Accommodation	111,105	7.1%	60.4%	30.4%
Agriculture	135,426	46.9%	21.2%	27.7%
Manufacturing	217,773	20.2%	53.2%	23.1%
Transport, postal and warehousing	81,774	16.8%	62.0%	19.7%
Wholesale trade	98,334	32.5%	49.5%	16.3%
Mining	4,155	24.1%	57.3%	16.1%
Rental and property services	54,546	25.5%	56.5%	15.8%
Electricity, gas	9,732	30.9%	52.7%	13.7%
Arts and recreation	32,679	32.6%	53.4%	12.7%
Construction	149,364	27.2%	60.0%	11.2%
Other services	77,805	25.0%	64.5%	8.8%
Information media and telecommunications	37,647	52.8%	36.9%	8.8%
Public administration and safety	81,318	35.4%	53.4%	7.2%
Professional, scientific	154,215	58.6%	33.0%	6.0%
Health care and social assistance	160,287	49.1%	45.1%	4.8%
Education	142,119	68.6%	24.1%	4.6%
Financial and insurance services	64,143	34.1%	60.1%	4.5%
Total	**1,874,691**	**33.6%**	**46.1%**	**18.1%**

Source: 2006 Population Census.

Table 3 shows that retail trade again has the highest proportion of lower skilled occupation groups in its workforce (46.9% of its workforce). Administration,

accommodation and agriculture also feature prominently in the proportion of lower skilled workers.

Administrative and support services is one industry that changes its ranking compared to the previous table. While a slightly above average proportion is lower skilled in terms of educational qualifications, a well above average share of people belong to lower skilled occupation groups. Interestingly, financial and insurance services – an industry already hard hit in this recession – contains only a small proportion of lower skilled employees (4.5% versus an all industry average of 18.1%). However, Table 2 showed 51% of its workforce has no post-school qualifications. This suggests an industry with more scope for upskilling its workforce. It also suggests that a measure based on skills will be strongly affected by the weighting on the two skill measures, (currently, both skill definitions are used without weights applied.)

Whether measured by education qualifications or by occupational skills, the retail industry is over represented with lower skilled workers. This may reflect it being a stepping stone for workers to move onto other jobs, which is supported by information showing retail workers are younger and less likely to have long tenure (as shown in Table 4). Agriculture and transport contain many older workers with limited skills and qualifications who may be less able to move into other work areas, while manufacturing does not show an especially lower skilled workforce on either measure.

4.2 Long-tenure workers

According to the majority of studies, older high tenured workers tend to take longer to find jobs and are more at risk of permanent exit from the labour market following layoffs.

Table 4 shows the distribution of New Zealand high tenure wage and salary workers according to each major industry as at February 2007. Long tenure is defined here as a 36 month or more unbroken link to the same employer. Because age and high tenure increases the risk of longer term unemployment, older long-term workers are highlighted as a particular at-risk group. The incidence of low qualifications would be valuable to cross-tabulate, but qualifications information is currently not available in the LEED dataset.

Table 4: Employment by proportion of long-duration (LD) and older workers in 2007

Industry name	Total employed	LD older	All older	LD all ages	% LD older	% all older	% LD all ages
Manufacturing	227,675	19,658	33,505	90,558	8.6%	14.7%	39.8%
Public administration and safety	84,580	7,343	12,409	33,356	8.7%	14.7%	39.4%
Education and training	153,430	16,818	31,576	57,791	11.0%	20.6%	37.7%
Health care and social assistance	170,830	19,662	38,436	61,926	11.5%	22.5%	36.3%
Wholesale trade	98,230	7,634	14,090	33,451	7.8%	14.3%	34.1%
Transport, postal and warehousing	77,372	7,134	14,722	25,807	9.2%	19.0%	33.4%
Other services	62,175	5,382	10,420	20,576	8.7%	16.8%	33.1%
Professional, scientific and technical services	135,890	9,340	16,800	44,314	6.9%	12.4%	32.6%
Mining	4,482	328	665	1,404	7.3%	14.8%	31.3%
Electricity, gas, water and waste services	10,004	750	1,585	3,077	7.5%	15.8%	30.8%
Information media and telecommunications	36,459	2,324	4,101	11,222	6.4%	11.2%	30.8%
Construction	115,436	6,705	13,730	34,220	5.8%	11.9%	29.6%
Financial and insurance services	47,950	2,704	5,567	13,324	5.6%	11.6%	27.8%
Arts and recreation services	30,781	2,240	4,652	8,129	7.3%	15.1%	26.4%
Retail trade	182,394	10,451	21,895	44,159	5.7%	12.0%	24.2%
Rental, hiring and real estate services	26,936	1,721	4,448	6,047	6.4%	16.5%	22.4%
Agriculture, forestry and fishing	77,871	3,493	9,481	17,094	4.5%	12.2%	22.0%
Administrative and support services	89,445	3,418	11,101	13,906	3.8%	12.4%	15.5%
Accommodation	115,597	3,491	9,334	15,231	3.0%	8.1%	13.2%
All industries	**1,747,537**	**130,596**	**258,517**	**535,592**	**7.5%**	**14.8%**	**30.6%**

Source: LEED Annual Dataset (wage and salary workers, excluding the self-employed).

Table 4 shows that manufacturing has the highest proportion of long-tenured wage and salary workers – nearly 40% of their workforce have worked at their jobs for three or more years compared with an all industry average of about 30% – and it is unusual amongst the higher-tenured industries in that it contains a relatively lower skilled workforce. The next three industries all have a relatively highly skilled workforce, which probably reflects the high proportion of longer-serving professional workers in these industries.

Industries with a high proportion of long-serving older workers are health care followed by education and transport. The first two can be regarded as among the more recession-proof industries, and both contain an above average proportion of higher-skilled workers. However, transport, postal and warehousing faces more uncertain employment prospects and also contains a relatively lower skilled workforce. In most other industries, the proportion of older long-tenure workers is below the overall average of 7.5%.

Three lower skilled industries – retail and accommodation and agriculture – also contain relatively few high tenure workers. This reflects the high churn of short-term and possibly seasonal work occurring in these industries. A high proportion of the workforce are therefore used to spells of non-employment or job switching, which may make them more resilient to downturns.

The LEED data can be examined in more detail to reveal other features of long-tenured workers. For instance, long-tenured older workers in New Zealand are almost as likely to be female as male (67,000 males and 64,000 females). Many older long-tenured females work in very different areas to males, such as health and residential aged care, which are regarded as more recession-proof industries. However, other industries contain many at-risk females. Out of 15,500 people in textile and clothing manufacturing – an industry more likely to face long-term employment decline – nearly 10% were older long-tenured females. They are especially at risk if (as seems likely) they have relatively low education qualifications. Older long-tenured males are more likely to be found in different parts of manufacturing, such as pulp and paper, machinery and metal product manufacturing, as well as in mining and transport services.

4.3 Ethnicity

Table 5 shows the proportion of people who have selected the Māori and Pacific ethnic group, by industry, ranked by the proportion of Māori plus Pacific ethnic grouping. It shows transport and warehousing followed by manufacturing have the highest proportions of Māori and Pacific people. Indeed, over a quarter of Pacific workers (24,000 out of 85,000) are in these two industries, which employ less than one-sixth of the New Zealand labour force. Numerically, manufacturing employs far more Māori and Pacific people than any other industry and is also the industry in which Pacific people are the most over represented.

Table 5: Employment of Māori and Pacific ethnic groups in 2006

Industry name	Total employed	Sum of Māori	Sum of Pacific	% Māori	% Pacific	% Māori + Pacific
Transport, postal and warehousing	81,768	12,258	6,012	15.0%	7.4%	22.3%
Manufacturing	217,764	30,294	18,165	13.9%	8.3%	22.3%
Mining	4,152	723	75	17.4%	1.8%	19.2%
Electricity, gas, water and waste services	9,738	1,482	372	15.2%	3.8%	19.1%
Public administration and safety	81,318	11,058	4,317	13.6%	5.3%	18.9%
Administrative and support services	66,195	8,130	4,206	12.3%	6.4%	18.6%
Accommodation	111,102	14,145	5,418	12.7%	4.9%	17.6%
Construction	149,358	19,908	5,961	13.3%	4.0%	17.3%
Health care and social assistance	160,287	17,589	7,110	11.0%	4.4%	15.4%
Arts and recreation services	32,679	3,753	1,209	11.5%	3.7%	15.2%
Education and training	142,116	16,557	4,758	11.7%	3.3%	15.0%
Other services	77,814	7,728	2,907	9.9%	3.7%	13.7%
Retail trade	196,065	18,606	7,305	9.5%	3.7%	13.2%
Wholesale trade	98,346	7,977	4,920	8.1%	5.0%	13.1%
Agriculture, forestry and fishing	135,423	15,516	2,064	11.5%	1.5%	13.0%
Information media and telecommunications	37,641	3,180	1,560	8.4%	4.1%	12.6%
Rental, hiring and real estate services	54,543	4,533	1,599	8.3%	2.9%	11.2%
Financial and insurance services	64,143	4,236	2,913	6.6%	4.5%	11.1%
Professional, scientific and technical services	154,215	9,033	3,774	5.9%	2.4%	8.3%
Total	**1,874,691**	**206,706**	**84,645**	**11.0%**	**4.5%**	**15.5%**

Source: 2006 Population Census.

Māori and Pacific people combined are over represented in several industries that have experienced weak recent employment growth (such as mining, electricity

and construction). They are also over represented in a number of lower skilled industries where workforces have already been identified as vulnerable (such as transport and warehousing).

Despite their lower than average skill profile, Pacific people are under-represented in several relatively lower skilled industries such as agriculture, construction and retail trade. Some of these have better prospects than manufacturing over the longer term. However, given that the main population centre for Pacific people is South Auckland, which retains a strong manufacturing base, their ability to reattach into other sectors without assistance may be more limited.

4.4 Self-employment

As noted earlier, a high prevalence of self-employment in a particular industry can assist work attachment through a drop in demand.

Table 6: Self-employed in 2000 and 2007

Industry name	2000	2007	2000 % self-employed	2007 % self-employed	P.P. change
Rental, hiring and real estate services	27,636	27,663	58%	50%	-8%
Agriculture, forestry and fishing	76,782	55,869	48%	35%	-13%
Construction	50,055	62,040	40%	33%	-7%
Professional, scientific and technical services	35,811	48,171	26%	25%	-1%
Other services	16,239	17,571	26%	23%	-3%
Information media and telecommunications	5,916	7,425	14%	16%	2%
Arts and recreation services	4,725	5,994	18%	16%	-2%
Transport, postal and warehousing	14,733	14,346	18%	15%	-3%
Administrative and support services	12,399	16,047	15%	13%	-2%
Financial and insurance services	5,826	7,401	12%	13%	1%
Wholesale trade	15,237	14,979	14%	12%	-2%
Retail trade	28,179	26,172	15%	12%	-4%
Accommodation and food services	14,781	15,861	14%	11%	-4%
Manufacturing	27,174	24,597	10%	9%	-1%
Electricity, gas, water and waste services	981	891	9%	8%	-1%
Health care and social assistance	10,809	13,245	8%	7%	0%
Mining	231	258	6%	5%	-1%
Education and training	3,783	4,605	3%	3%	0%
Public administration and safety	2,340	2,478	3%	3%	-1%
Total	**353,637**	**365,613**	**19%**	**16%**	**-3%**

Source: LEED dataset, main earnings source by industry, Statistics New Zealand.

Table 6 shows the proportion of the workforce who are self-employed[28] in each industry, from the highest to the lowest percentage. In 2007, around 366,000 jobs were filled by people recorded as self-employed. Public administration contains the lowest proportion of self-employed at 3% of total employment. Agriculture, construction and general hire services (including real estate) have the highest proportion of self-employed, although there was a fall of 13 percentage points in this period.

Table 6 also shows that the general shift away from self-employment over the period 2000–2007 (observed in Figure 3) has occurred in all industries except for two – finance, and telecommunications. As mentioned earlier, this shift is what one would expect over a period of labour market growth.

Clearly, there are wide differences in opportunities for self-employment even at this broad industry level. Of the industries with few self-employed, manufacturing, retailing and accommodation are facing current employment weakness. On the other hand, industries like construction, agriculture and real estate have a relatively high proportion that is self-employed. These industries offer more opportunities for the kind of work that could act as a possible buffer against the effects of this downturn.

4.5 Geographic location

Based on the assumption discussed in Section 3 that employment outside major populated areas increases vulnerability in a recession (due to a narrower range of jobs or employers), Table 7 identifies industries with over 50% of employment lying outside a main urban centre. As noted earlier, the thinking here is that, while so far Auckland has suffered the greatest drop in employment, a workforce concentrated in such an urban area probably has a greater range of new opportunities than one located in areas containing more vulnerable communities like Gisborne or the West Coast.

Industries are shown here at a more detailed level, as broad industry groups may mask sizeable subgroups (like pulp mills) that lie outside main urban areas. By doing so, it attempts to establish which industries contain a workforce who, on average, may find new work opportunities more limited if laid off. The result is heavily influenced by the chosen urban areas and their boundaries. The definition for main urban area is a territorial authority within which more than 50,000 people worked at the 2006 Population Census or one closely aligned to – and therefore easily commutable to – a major metropolitan area (including Upper Hutt, for example).[29]

Not surprisingly, Table 7 shows that agricultural industries are concentrated in non-urban areas. Leaving aside agriculture, two large manufacturing-related industries are also concentrated in highly predominantly rural areas – wood product manufacturing and food product manufacturing. This concentration in

[28] Self-employed are defined in the LEED as those who derived the majority of their taxable income from self-employment over a 12-month period.

[29] Using this methodology the following territorial authorities were classed as urban areas: North Shore, Waitakere, Auckland City, Manukau, Papakura, Hamilton City, Tauranga, Christchurch, Dunedin, Porirua, Upper Hutt, Lower Hutt, and Wellington.

more rural regions adds a risk to the workforce if a large-scale closure were to occur. Accommodation employment also occurs mainly outside the main urban areas, reflecting the tourist market it serves.

Regional factors have not yet been built into the resilience summary shown in Table 1. However, these are worth more exploration in future as indicators of potential vulnerability. Such a measure might be useful in the context of other regional labour market measures such as job vacancies, redundancies, export exposure and local unemployment rates.

Table 7: Top 10 industries with employment outside main urban centres in 2006

Industry name (ANZSIC 06 Level 3)	% employed outside main urban area	Total employed
Agriculture	95%	80,890
Agriculture, forestry and fishing support services	90%	24,080
Fishing, hunting and trapping	85%	1,680
Aquaculture	85%	770
Wood product manufacturing	68%	19,810
Food product manufacturing	62%	73,370
Primary metal and metal product manufacturing	57%	5,280
Accommodation	56%	34,180
Non-store retailing and retail commission based buying and/or selling	53%	1,310
Fuel retailing	52%	10,270

Source: 2006 Population Census.

4.6 Which industry workforces have less resilience?

Analysis of risk factors, even at a broad industry level, shows there is a wide difference in the incidence of at-risk workers.

Manufacturing performs relatively poorly in most of the chosen measures and comes out lowest in terms of its overall score. Setting aside the obvious influence of agriculture, several manufacturing industries are more concentrated in rural areas, including wood, food and primary metal manufacturing. If a regional measure was added to overall results, the manufacturing workforce would therefore look even less resilient.

Manufacturing has so far suffered relatively fewer net losses in employment in the past year than other industries such as finance and utilities, (Appendix A1). However, if manufacturing starts to suffer greater job losses as a result of this recession, this analysis suggests that the effects on long-term unemployment are likely to be disproportionately higher, particularly as it has a large workforce of nearly a quarter of a million people.

Other industries are weak in certain respects but strong in others. For instance, education has many high-skilled workers but average age is quite high, job tenure is high and there are relatively few opportunities for self-employment.

Retail has many young lower skilled workers (both in terms of occupational and education level) but, arguably, its short average job tenure makes the workforce more adaptable and flexible. Agriculture in contrast contains many older workers but also tends to have shorter average job tenure (and high levels of self employment).

Finance and telecommunications, hard hit in this downturn so far, appear to have more resilient workforces with more people who are relatively flexible and higher skilled. The same applies to construction (where cyclical changes in employment are common).

While manufacturing is generally not the lowest ranked in each category, a reasonably low ranking across the five main resilience factors makes it highly vulnerable overall. In addition, a considerable proportion of its workforce is located in thinner labour markets in more rural areas. Of course, there are some smaller niche areas of manufacturing that will continue to do well, but on average, this industry appears particularly vulnerable in this recession.

Given manufacturing contains a vulnerable workforce combined with weaker current and longer term prospects, there is an option to consider retraining some of the lower skilled working in some of the most vulnerable areas such as wood and meat processing and textiles. It may also be advisable to encourage the workforce in some areas to consider options for alternative jobs in areas which have only moderate educational requirements but better employment growth prospects – for example the aged care industry.

5. CONCLUSIONS

This paper has brought together a framework which, at a preliminary level, uses a range of indicators to identify parts of the workforce potentially at greater risk of unemployment if they lose their jobs.

The consequences of job loss can have long-lasting flow-on effects and long-term unemployment imposes societal as well as individual costs. More people will require more government income support and job search assistance than before. In addition, as they start losing skills acquired in the workplace, they will have increasing difficulty matching to new jobs, lowering output when the upturn eventually arrives.

There has been little recent material on the features of the New Zealand workforce that might influence reattachment to work if they lose their jobs, yet the relevance of worker characteristics in determining unemployment experiences is well documented across a variety of international economic literature.

By bringing together and examining a range of resilience factors, this report has highlighted the following points concerning workforce resilience:

- Manufacturing and transport are industries containing a relatively high proportion of workers likely to face greater difficulty reattaching to work. This is important for manufacturing in particular as it has a large workforce and is facing weaker longer term labour market prospects than most industries.
- Finance and telecommunications, hard hit in this downturn so far, appear to have more resilient workforces with more people who are higher skilled.
- Construction is another industry facing job losses but contains people who are relatively skilled, more flexible and more used to changing jobs.
- Accommodation, agriculture and retail face mixed current and future employment conditions, but have workforces that are fairly resilient to downturns as they contain a high proportion of workers with more experience of shifting to other work areas.

6. TAKING THIS WORK FORWARD

Stakeholders, in particular those working at an operational level with affected industries, are interested in industry-based information in order to:

- identify sectors where they can direct their resources to apply programmes such as work-based training through industry partnerships
- provide a range of other training and assistance programmes designed to help with job preparation and specific skills training activities with the aim of improving employability
- work more effectively to develop partnerships with vulnerable regions and communities reliant on a narrow range of sectors or with sectors subject to a decline in demand.

In order to increase the operational use of this industry-based resilience framework, users want it available in an accessible format at a finer level of detail. To achieve this, we intend to incorporate the framework into a new sector based information tool. When launched, this sector tool will enable users to more closely examine the relative vulnerability of workforces.

A regional element will be included. For example, regions where a few firm closures are likely to have a severe impact will be identified as well as the regional distribution of industries with vulnerable workforces. Discussions with stakeholders on the preferred format of this tool are being held at present.

APPENDIX 1

Table A1: Department of Labour estimates of current and medium-term employment trends by industry (used to determine Table 1)

ANZSIC industry (96) description	Last 12 months employment change (annual average)	Total employed estimate March 200930	Projected employment change31 2008-2013 (annual average)
A Agriculture, forestry and fishing	1.2%	156,281	-3.7%
B Mining	-4.1%	5,347	-0.7%
C Manufacturing	-1.9%	254,521	-0.7%
D Electricity, gas and water supply	-10.9%	5,944	-0.2%
E Construction	-0.2%	169,214	-4.1%
F Wholesale trade	-0.2%	125,275	1.0%
G Retail trade	1.9%	262,037	0.6%
H Accommodation, cafés and restaurants	3.6%	125,811	-0.4%
I Transport and storage	0.7%	84,528	1.7%
J Communication services	-3.9%	24,823	4.1%
K Finance and insurance	-5.2%	55,578	3.6%
L Property and business services	3.4%	337,474	3.3%
M Government admin and defence	0.6%	69,768	0.9%
N Education	1.2%	165,839	-0.9%
O Health and community services	0.3%	176,836	4.6%
P Cultural and recreational services	2.6%	60,090	1.9%
Q Personal and other services	0.1%	75,086	2.5%
Total	**0.8%**	**2,165,877**	**0.7%**

Source: Department of Labour employment estimates (DEE) and 2008–2013 employment projections.

[30] These DoL Employment Estimates are the result of benchmarking Statistics New Zealand's Linked Employer Employee Data of person counts (including the self-employed) to the Household Labour Force Survey official total employment estimates. Details on the methodology behind these estimates can be obtained from the Department of Labour (Email: Dirk.VanSeventer@dol.govt.nz).

[31] These forecasts are partly based on GDP forecasts by industry produced by NZIER but also take into account recent productivity trends within industries. As with all forecasts, there is some uncertainty attached to these industry projections.

APPENDIX 2

Table A2: Industry workforce resilience ranking (provisional) [32] used to determine Table 1

ANZSIC Industry (06) Description	% Lower skill youth	% Lower skill older	% Lower skill total	% Lower skill occupations	% Māori & Pacific	% >3 years tenure older	% >3 years tenure total	% self-employed	Combined ranking	Resilience
Professional, scienti & technical services	5.7	6.2	32.5	6.0	8.3	6.9	32.6	25.0	121	Strong
Financial & insurance services	7.3	8.0	50.5	4.5	11.1	5.6	27.8	12.6	111	Strong
Information media telecommunications	9.7	5.4	43.5	8.8	12.6	6.4	30.8	15.8	109	Strong
Rental, hiring & real estate services	8.9	12.6	53.3	15.8	11.2	6.4	22.4	49.7	97	Strong
Education & training	3.5	4.9	23.2	4.6	15.0	11.0	37.7	2.7	93	Medium
Construction	13.9	7.3	52.5	11.2	17.3	5.8	29.6	33.5	92	Medium
Other services	11.0	8.2	44.6	8.8	13.7	8.7	33.1	22.7	82	Medium
Electricity, gas, water & waste	5.5	7.4	49.2	13.7	19.0	7.5	30.8	8.0	82	Medium
Arts & recreation services	15.1	8.3	50.2	12.7	15.2	7.3	26.4	15.5	82	Medium
Agriculture, forestry & fishing	9.9	14.6	65.6	27.7	13.0	4.5	22.0	35.1	82	Medium
Health care & social assistance	4.4	9.1	34.2	4.8	15.4	11.5	36.3	7.3	78	Medium
Accommodation	31.8	7.3	65.1	30.4	17.6	3.0	13.2	10.8	75	Medium
Administrative & support services	10.7	10.7	55.5	30.6	18.6	3.8	15.5	13.3	74	Medium
Public administration & safety	6.8	7.5	43.4	7.2	18.9	8.7	39.4	2.7	70	Medium
Mining	5.9	7.6	57.8	16.1	19.2	7.3	31.3	4.8	66	Medium
Wholesale trade	9.6	10.2	58.4	16.3	13.1	7.8	34.1	12.4	63	Medium
Retail trade	27.3	9.8	67.6	46.9	13.2	5.7	24.2	11.6	61	Medium
Transport, postal & warehousing	9.0	13.4	64.7	19.7	22.3	9.2	33.4	15.0	45	Weak
Manufacturing	11.4	9.6	59.6	23.1	22.3	8.6	39.8	9.0	37	Weak

[32] The Combined ranking column represents the combined unweighted score based on the rankings for each of the eight separate variables. The higher the score the lower the risk. A reverse ranking was applied to the self-employed (a higher % self employed represents a lower risk). The sensitivity of results was tested by adding a weight to each variable. In each case, only a minor change to the rankings occurred at broad industry level and no change at the top and bottom ranked industries.

APPENDIX 3: DATA SOURCES USED

The main sources of data used to examine resilience information are:

- The Linked Employer Employee Dataset (LEED) – This is an administrative dataset containing monthly earnings data for every employer-employee match in New Zealand from April 1999 to the present. It covers all individuals in the formal labour market (via their taxable earnings). LEED information can be used to identify job tenure (successive monthly spells of employment with the same employer), thanks to its ability to longitudinally examine data. However, it has some weaknesses, for instance, records can alter over time for administrative rather than economic reasons. For example, in LEED, the movement from self-employment to wage and salaries may be partially affected by changes in how people report their earnings for tax purposes, rather than for solely economic reasons. In addition, LEED lacks information on ethnicity, qualifications data or occupation.
- The NZ Population Census 2006 – The latest five-yearly snapshot of the entire population in New Zealand is used to identify demographic factors like qualifications and ethnicity.
- The Household Labour Force Survey (HLFS) – This has been used to identify some trends and differences in the composition of the employed and unemployed workforce.

All industries are grouped using the ANZSIC 2006 industry classification, at the 1-digit level of detail, except the employment estimates and forecasts (as shown in Appendix 1).[33] Although not without limitations, LEED and the Population Census provide a very rich source of data that can be used to analyse workforces and the industries they are in.

[33] Note that industry of employment is derived slightly differently in each source. For instance, LEED is derived from the Business Frame and, as such, should have the most accurate industry information. Most Census 2006 industry information was also derived from the Business Frame, with the rest coming from coding an individual's own description of the main activity of their employer. In the HLFS, most industry information comes from coding individuals' descriptions.

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