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The labour market

Impacts and responses in economic shocks, including recessions and pandemics

A rapid review, April 2020

CONTENTS

INTRODUCTION

ATTEMPTS TO 'FLATTEN THE CURVE' OF COVID-19 INFECTIONS HAS LED TO JOB UNCERTAINTY FOR MANY

The COVID-19 global pandemic and state of national emergency in Aotearoa | New Zealand are unprecedented events for our country and the world. While many key services and industries are still operating, including here in New Zealand, the crisis has severely curtailed much economic, social and cultural activity across the globe.

New Zealand's relatively small size and geographical isolation mean that a physical lockdown has been relatively easy to achieve. But our heavy reliance on international trade and tourism has highlighted our economy's sensitivity to changes.

The national and regional economic impacts will be far-reaching and enduring. New Zealand's labour market pre-COVID-19 has been tight.

Unemployment has been trending down and businesses have been turning to migrant labour to fill skill and labour shortages. With COVID-19 and lockdown measures, some economists estimate that unemployment will increase from the current 4% to somewhere between 10 and 15% (NZIER and Westpac economists) and 15 – 30% (being in line with The Great Depression, Sense Partners economists) (RNZ, 2020).

Once we get past the pandemic, these numbers should recover. The questions are: will it be a full or only a partial recovery, how long will it take, and will the recovered economy be different from what it was before?

The economic scenarios released by The Treasury on 13 April suggest that the unemployment rate may range from 13% to nearly 26% depending on the scenario (Riches & Gardiner, 2020). The scenarios modify the length of different alert levels, length of border control measures and annual average real GDP growth levels. The scenarios assume the current level of government fiscal support at $20 billion, with two scenarios raising this support to $20 billion.

That is an additional 300,000 to 720,000 people left jobless across the country.

THIS RAPID REVIEW IS THE FIRST IN A SERIES OF FOUR

DISCLAIMER

These rapid reviews are limited in scope due to the need to provide timely considerations to decision makers. **The results reported in this document must be taken as initial and indicative, and not as outputs of a comprehensive literature review.**

The Government has swiftly introduced wage subsidies and leave support to essential workers to support businesses so they can resist laying off staff or reducing hours. As at 6 April 2020, the wage subsidy scheme had paid out $5.6 billion to almost 880,000 employees (Neville, 2020) – 32% of the labour force.

Unemployment data for the March 2020 quarter is not expected to be released by Stats NZ until 6 May with Ministry of Social Development Benefit data due to be released 23 April 2020.

In the absence of that data, based on what is currently occurring internationally and nationally, our series of labour market rapid reviews will address the following questions:

1. What are the **likely immediate and longer-term impacts** on labour markets, based on what is occurring and what has occurred in previous economic shocks?
2. What effective **labour market policy and intervention responses** have been instituted at the national level?
3. What is the **role of regions, districts and cities**?
4. What is the situation for **vulnerable workers, and what may aid** workers who tend to be most impacted by economic shocks?

RAPID REVIEWS

01	02	03	04
Labour market impacts	Central government responses	Role of cities and regions	Impact on vulnerable workers
Labour market impacts from COVID-19 Lessons from The Great Depression Lessons from SARS Lessons from the global financial crisis (GFC) Modelling impacts	Future rapid reviews in this series		

Labour market impacts

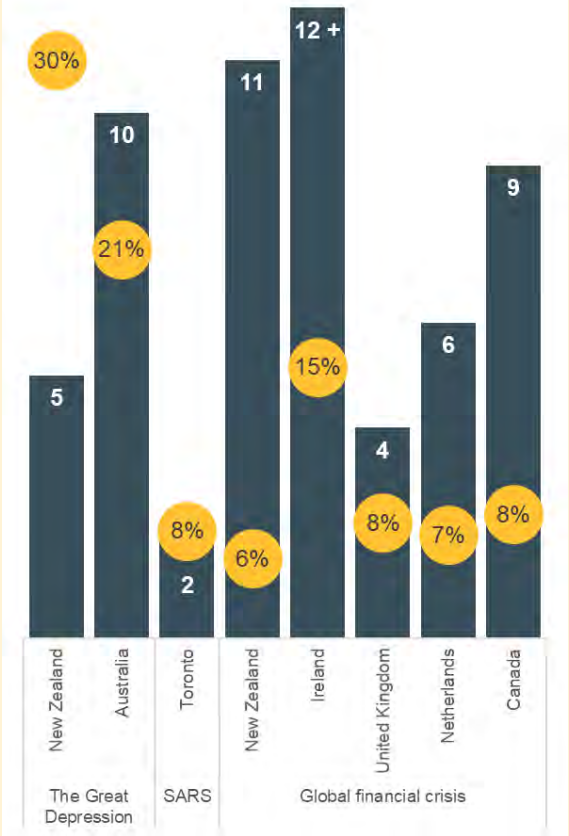
- Labour market impacts from COVID-19
- Lessons from The Great Depression
- Lessons from SARS
- Lessons from the global financial crisis (GFC)
- Modelling impacts

01

EXECUTIVE SUMMARY

ATTEMPTS TO 'FLATTEN THE CURVE' OF COVID-19 INFECTIONS HAS LED TO JOB UNCERTAINTY FOR MANY

Figure 1. Past economic shocks: Years of recovery and unemployment rate



The spread of COVID-19 in New Zealand and the Level 4 lockdown has affected our consumption patterns, work life, school and travel. Job losses have already been well-publicised in relation to businesses like Bauer Media, Hobbiton, Air New Zealand and many small enterprises. In other areas and sectors, there have been increases in job demand – for example, essential service workers in supermarkets, the food and beverage manufacturing and supply chain, goods delivery and health care. What does COVID-19 mean for New Zealand's labour market in the short and long-term?

In this first rapid review in our labour market series, **we cast back to see what occurred in previous economic shocks: The Great Depression, SARS (severe acute respiratory syndrome) and the global financial crisis (GFC).** The effects on New Zealand, as well as other comparative economies are outlined. We also provide an overview of the results of econometric modelling applied to pandemics.

Our findings suggest that it will be a bumpy road ahead, the effects of which may last for a good 5 to 10 years**. As a lagging indicator, unemployment can linger for many years** – long after the economy may have turned around (see Figure 1 for how labour markets have fared in previous economic shocks). New Zealand's unemployment rate may increase from 4% in the December 2019 quarter to 15% for the year.

There are many ways governments may mitigate and/or manage these predictions. Effective labour market policies and programmes at the national level will be covered in our second rapid review, the role of regional and local government in the third rapid review and interventions for vulnerable workers will be discussed in the fourth, and last, rapid review.

LABOUR MARKET IMPACTS

The World Health Organisation classified the spread of COVID-19 as a pandemic on 11 March 2020. A dictionary of epidemiology defines a pandemic as 'an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people'; this is usually marked by simultaneous worldwide transmission (Kelly, 2011). While pandemics can cause high mortality rates and can flood public health systems, they can also have profound labour market impacts – in both the short term and long term.

The determinants of unemployment are related to general macroeconomic conditions, such as GDP growth and productivity dynamics.

To provide insight into the types of short-term and long-term impacts on New Zealand's labour market, we look to the impacts of past and recent economic shocks. These economic shocks include:

1. The impacts of The Great Depression
2. The impacts of severe acute respiratory syndrome (SARS)
3. The impacts of the global financial crisis (GFC)

Lastly, we review what econometric modelling tells us about influenza epidemics and the economy.

But first, what is happening in New Zealand and around the world with COVID-19?

ECONOMISTS ARE ALREADY PREDICTING SIGNIFICANT JOB LOSSES DUE TO COVID-19

The Treasury's economic scenarios indicate that at its peak, **New Zealand** unemployment may be at nearly 26% (Riches & Gardiner, 2020), about 710,000 people.

Full or partial lockdown measures are affecting almost 2.7 billion workers (about 81% of the world's workforce (ILO, 2020b). **Globally**, the International Labour Organisation (ILO) has predicted that almost 25 million jobs could be lost as a result of the virus (ILO, 2020a). As of 1 April 2020, the ILO's new global estimates indicate that working hours will decline by 6.7% in the second quarter of 2020 (equivalent to 195 million full-time workers) (ILO, 2020b).

In **Australia**, economists predict unemployment will reach 9.4% this year (1.2 million people) and the economy will shrink by 3% (Patrick, 2020). Other analysts are predicting a 20% unemployment rate (Beveridge, 2020).

This will be the worst recession most living Australians have experienced, after being relatively protected during the global financial crisis (GFC).

Meanwhile in the **UK**, an unemployment rate of around 21% is predicted – more than five times the current rate of 3.9% (Blanchflower & Bell, 2020). This is estimated to be unemployment number of around 5 million workers from 1.34 million to over 6 million by the end of May.

Goldman Sachs were predicting a 5.5 percentage-point increase in joblessness in the **US** (Neumann, 2020), but all those predictions are likely to be revised upwards as the number of unemployed rose from 1.4 million to 7.1 million in March (US Bureau of Labor Statistics, 2020). The 0.9% rise in unemployment rate over one month to 4.4% is the largest one month rise since January 1975.

A former chief economist at the US Department of Labor indicates that the unemployment rate has already reached around 17% (Rushe & Aratani, 2020).

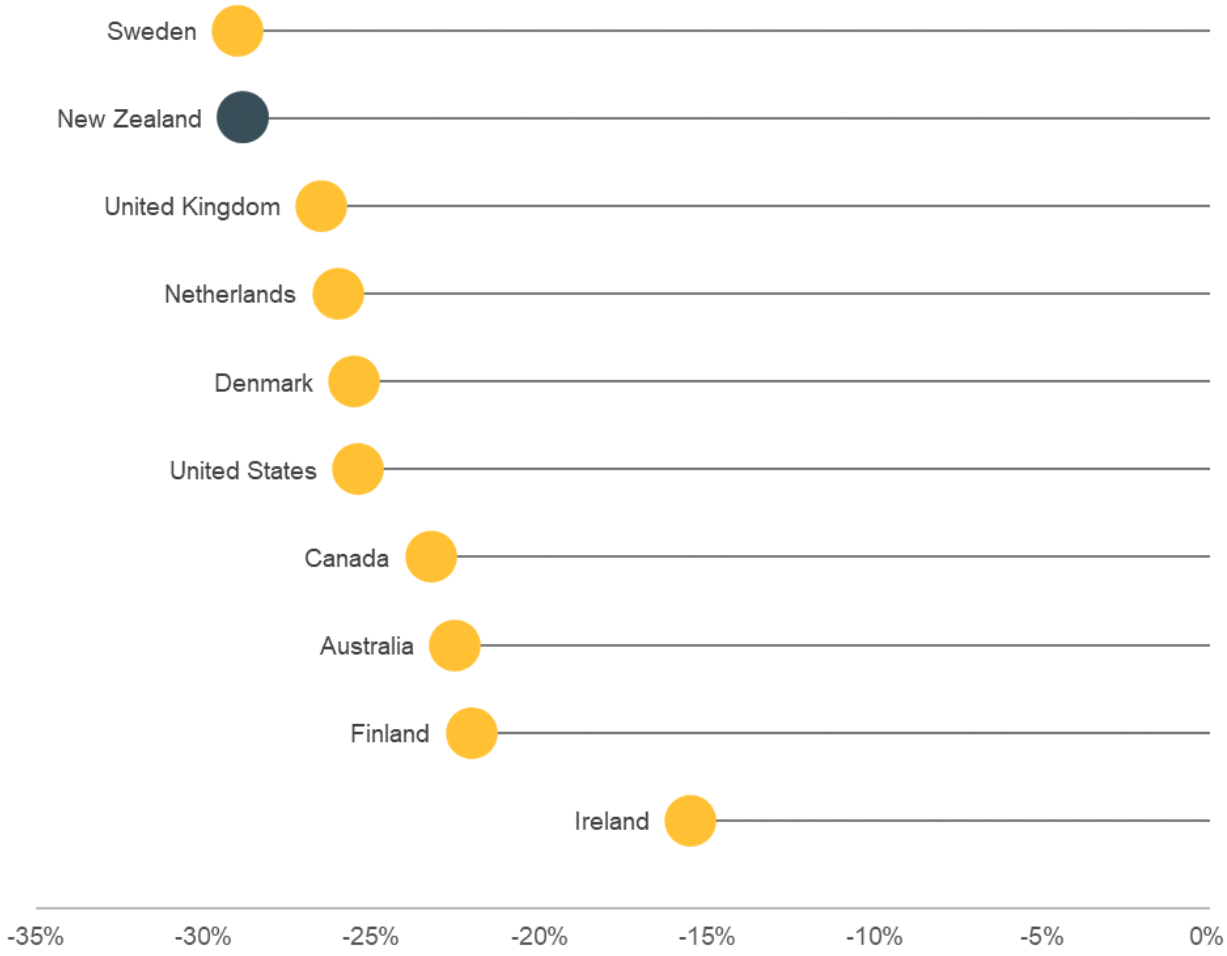
In **Canada**, in the week beginning 16 March 2020, almost one million people joined the unemployment line and surveys suggest that the economic shutdown has resulted in job loss or reduced work for 44% of Canadian households (Hagan, 2020). And for most, there is no emergency support available. The unemployment rate is expected to climb within the vicinity of 20%, more than tripling the near-record low of 5.6% prior to the emergence of COVID-19 (Bakx, 2020; Hagan, 2020). While most economists expect growth to bounce back in Canada in the second half of the year (Hagan, 2020), the big question is how long it will take to curb the spread of the pandemic and at what point will normal activity resume.

The lockdowns occurring around the world are also estimated to have significant impacts on GDP. The OECD estimates that initial impacts of our Level 4 lockdown will result in almost 30% reduction in GDP (OECD Economics Department, 2020) (Figure 2). Our negative GDP impact is estimated as one of the largest amongst the economies we tend to follow.

When will it all bounce back? And how can governments shore up the labour market? **Our second rapid review will discuss mechanisms at the national level.**

Rapid Review 02

Figure 2. The potential initial impact on activity of partial or complete shutdowns on activity in selected economies, percent of GDP at constant prices



Source: OECD Economics Department (2020)

THE GREAT DEPRESSION

THE BEST PREDICTOR OF FUTURE BEHAVIOUR IS PAST BEHAVIOUR

The Great Depression is the benchmark for depressions. It was the worst economic downturn in the history of the industrialised world, lasting from 1929 to 1939. Between 1929 and 1933, the US unemployment rate rose from 3.2% to 24.9%. Over those four years, unemployment increased from 1.6 million Americans to 12.8 million. In the UK, unemployment rose from 7.2% to 15.4% between 1929 and 1932 (Blanchflower & Bell, 2020).

New Zealand was impacted severely by the Great Depression over 1931 to 1933. **At its peak, in 1933, it has been estimated that nearly 30% of the potential workforce was unemployed** (Rankin, 1995; Wright, 2009).

Against a backdrop of per capita GDP falls as large as the US (31%), Australia (21%), Germany (25%) and Canada (35%), New Zealand's 18% fall over the 1929-32 period (Wright, 2009) suggests that **New Zealand was affected relatively mildly**.

Wright (2009) suggests that the Great Depression in New Zealand was relatively brief, with sharp recovery over 1934 to 1936. It is unclear what mechanisms contributed to New Zealand's recovery, but it is likely a world turnaround that ultimately had downstream effects for New Zealand, devaluation of the New Zealand pound against the sterling, and formation of public entities like the Dairy Board and public works schemes (Wright, 2009).

The Government at the time also cut back government spending, with significant reductions in pensions, health spend, public service salaries and public works. Private-sector wage rates were also reduced by 10% (Endres, 1990; Wright, 2009).

While GDP increased sharply, unemployment declined at a much slower rate (Wright, 2009). Between 1926 and 1933, unemployment increased from 5% to 28% (Rankin, 1995). By 1936, unemployment declined to 13%. It is difficult to understand total employment and unemployment during these years, as The Official New Zealand Year-Book only reports male unemployment. With a high of around 80,000 unemployed males in October 1933, **this halved in three years (by November 1936), and fell to over 35,000 by February 1937** (Census and Statistics Department, 1937).

The years during and after were referred to as The Sugar Bag Years – a description of the hundreds of unemployed, all job hunting, begging and trying to eke a living with their few belongings in an old sugar sack (Matthews, 1999).

SARS (SEVERE ACUTE RESPIRATORY SYNDROME) IN 2003

The severe acute respiratory syndrome (SARS) epidemic was centred in six countries – Canada, China, Hong Kong, Singapore, Taiwan and Vietnam – in 2003.

In Canada, 438 SARS cases were identified with 224 occurring in Toronto. Of these cases, 44 resulted in death (Gupta et al., 2005). Quarantine was used as a public health intervention in Toronto to control the spread the SARS. For every case of SARS public health officials in Toronto expected to quarantine up to 100 contacts (much more than aimed for in China, with officials in Beijing quarantining about 25 for each case) (Schabas, 2004). Early cases were not effectively quarantined and there was also low compliance with quarantine controls.

SARS hit the tourism sector hard in Toronto and resulted in the loss of 27,000 jobs in the province of Ontario in one month

While quarantining has since been ruled out as an effective way to eradicate SARS (Schabas, 2004), the labour market impacts on Canada, and in Ontario and Toronto specifically, can provide clues as to what may occur in relation to COVID-19.

Canada's economy and job market declined with 19,000 jobs disappearing in April 2003, **raising the unemployment rate to 7.5%** from 7.2% in 2001 (Figure 3). The province of Ontario (of which Toronto is the capital), with a population of 12.25 million at that time, experienced employment drops of 27,000 jobs.

Jobs were lost across Ontario's economy with health sector declines (14,000 jobs lost in April), as well as job loss in the accommodation and food sectors (12,000) and in manufacturing (7,500) – and indeed in most sectors of the economy (Little, 2003). Toronto's unemployment rate rose the most from 6.3% in 2001 to 7.6% in 2003.

Like New Zealand during the COVID-19 lockdown, tourism was highly affected. Across Canada, over two million room nights were lost. The accommodation sector in the Greater Toronto Area was hardest hit with occupancy rates down 20 points to 48%, equating to a loss of 1 million rooms and $111 million in lost revenue (Johnson Tew et al., 2008). **Strategies used by hoteliers and other tourism-related businesses were to cut costs, reduce workers' hours, implement work share agreements, lay off workers and close facilities.**

In a small survey of hotel management in the Greater Toronto Area, the second most frequently used measure was asking employees to take annual leave or unpaid leave. Over half laid off employees and 12% cut management salaries (Johnson Tew et al., 2008).

These results are consistent with other data. For example, the Toronto Board of Trade reported that the SARS impact was considerable. An online survey conducted by the Board canvassed 930 businesses in the city which indicated that 75% of businesses in the city suffered losses from SARS, including 43% who had lost revenue. Other challenges included delayed or lost contracts, lost customers, employee absenteeism and higher operating costs as a result of having to alter business practices (Muhtadie, 2003). Approximately 10% of employers had to lay off staff with another 10% expecting to do so in the near future, and 20% implemented a hiring freeze.

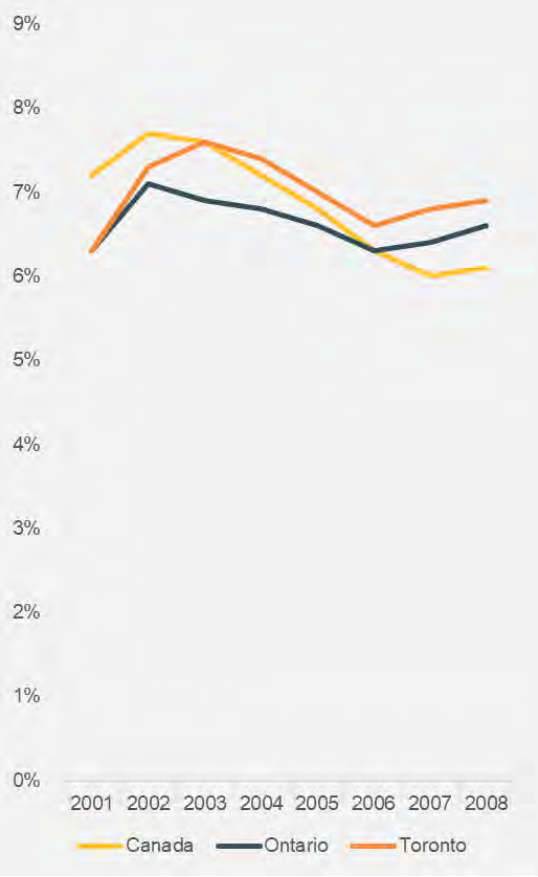
Longer-term effects of SARS include employment discrimination and financial losses

In all the countries at the centre of SARS, SARS-based employment discrimination was found (Rothstein et al., 2003). Recovered SARS patients, particularly health care workers, were subject to employment discrimination. Many healthcare providers were shunned by their communities too because they were potentially exposed to SARS (Gupta et al., 2005). There are lasting emotional and psychological costs that are difficult to quantify.

Additionally, more than a year after SARS outbreaks were identified, governments were still compensating businesses for SARS-related financial losses (Gupta et al., 2005).

Toronto's unemployment rate recovered within two years.

Figure 3. Canada, Ontario and Toronto's unemployment rate, 2001 – 2008



Source: Statistics Canada. Table 14-10-0090-01 Labour force characteristics by province, territory and economic region, annual

THE GLOBAL FINANCIAL CRISIS (GFC) 2008-10

THE GFC WAS ASSOCIATED WITH SIGNIFICANT JOB LOSSES AND DISPLACEMENTS – BUT MAGNITUDES OF LOSSES VARIED

RECESSION

A recession is a prolonged period of time in which a country's economic activity declines. This is often measured by two quarters in a row of negative growth.

Recessions force reductions in labour demand which lead to reductions in wages or employment, or to lowered productivity and profitability. Firms, especially small and young firms, have limited ability to absorb continual losses.

When the global financial crisis (GFC) began in 2008, the OECD predicted that total unemployment in OECD countries would grow from 34 million in 2008 to 42.1 million in 2010 (OECD, 2008). The actual numbers of unemployed would surpass these predictions, increasing from 30.6 million in the last quarter of 2007 to 47 million in the second quarter of 2010 (Hur, 2019).

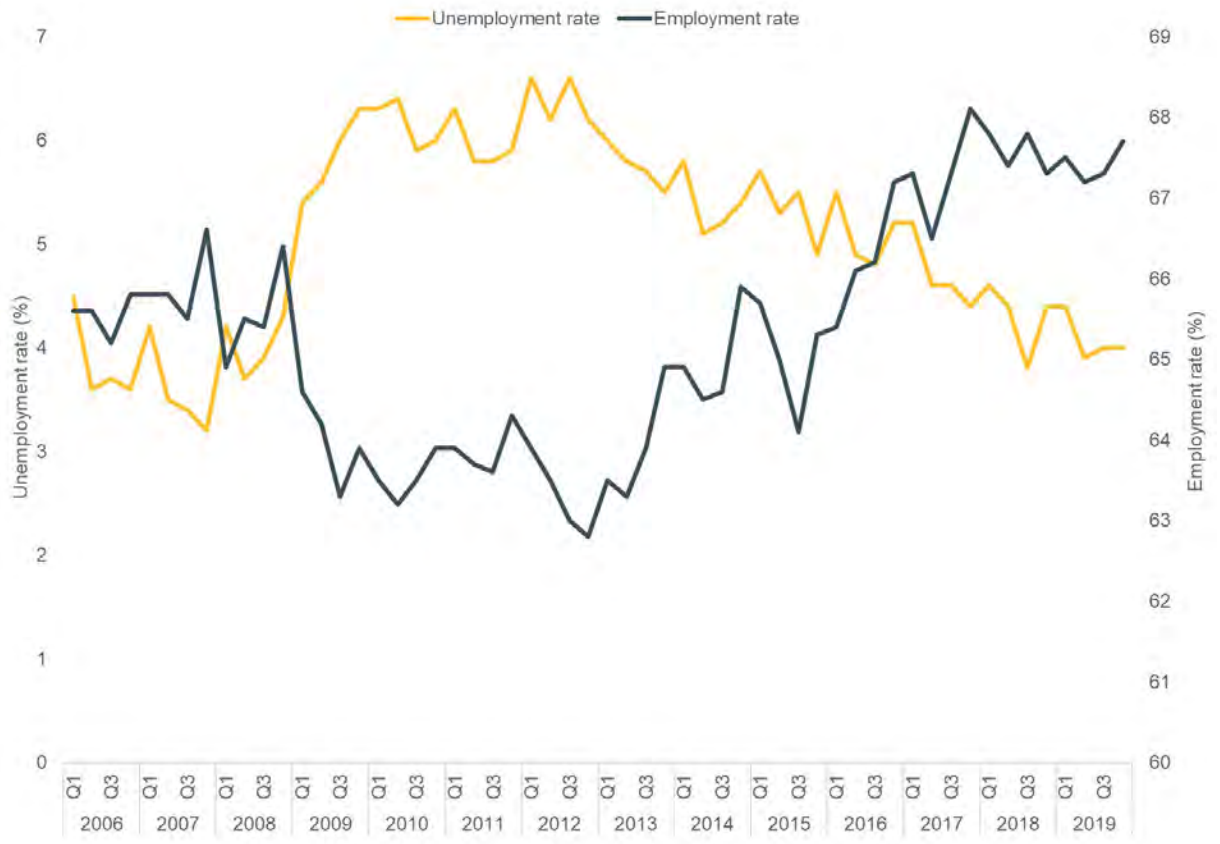
The GFC impacted on the New Zealand labour market, but with a lag (Fabling & Maré, 2012). Employment had been increasing since 1998, but the rate of employment growth had slowed by 2005, with the recession making its mark in 2009 (Figure 4). Wage growth continued to rise until late 2008, then also slowed in 2009 (Fabling & Maré, 2012).

Businesses' employment intentions fell almost immediately, and while wage growth was positive in the early stages of the recession, this slowed in 2009 and has remained low (Fabling & Maré, 2012). As seen in economic downturns, the impacts on workers were, and have been, uneven – low-wage workers, young workers and workers who had not been in their jobs for long suffered greater employment losses (Fabling & Maré, 2012). **We will revisit these impacts on vulnerable workers in our fourth rapid review.**

Rapid Review 04

For New Zealand, the GFC was less severe at its outset, but the effects were prolonged (Figure 4). Unemployment rose sharply from below 4% in quarter two of 2008 to around 7% from quarter four of 2009. **But New Zealand's unemployment rate did not return to its pre-recession rate until 11 years later in 2019.** This is alongside ongoing concerns of labour and skill shortages suggesting that structural shifts have occurred.

Figure 4. New Zealand's unemployment and employment rates before, during and after the global financial crisis



Source: Stats NZ, Household labour force survey

The New Zealand labour market was affected in many ways by the GFC:

- people worked fewer hours
- the number of jobs available fell
- unemployment rose
- more people went into study
- there were fewer, and smaller, wage rises
- labour market turnover slowed.

The first visible effect that the recession had on the labour market was that people began to work fewer hours, beginning in mid-2008 (Stats NZ, 2012). Employers hired fewer new employees and tried to retain existing staff. Also, fewer employees were leaving their jobs. Worker turnover rates during this period showed that smaller firms were impacted the most.

Impacts were felt differentially across industries and regions

Unemployment grew in a number of New Zealand's regions in the 10 years post-GFC – Southland (7.4% per annum), Taranaki (5.4% per annum), Northland (4.4% per annum) and Otago (4.1% per annum) (Figure 5).

Auckland experienced the strongest employment declines, but also recovered the fastest. Strong job creation and immigration facilitated Auckland's recovery. By October 2009, business confidence had boosted, exporters experienced a rise in orders from Australia and further afield, the construction sector and housing market started to pick up again, and the number of job ads across all industries rose.

Figure 5. Regional unemployment rate compound average growth rate, 2008 - 2018

Source: Stats NZ, Labour market statistics
Notes: Stats NZ regional data groups together the following regions – Tasman, Nelson, Marlborough and West Coast, and Gisborne and Hawke's Bay

The number of redundancies and organisational restructures in Auckland stabilised as businesses focused on keeping hold of staff and preparing their businesses for the upswing. But at that time, business and financial services were steeling themselves for a second round of restructuring, driven by their offshore head offices.

Table 1. Industrial employment growth, 2008 – 2018

Industry	Employment (FTEs)		
	2008	2018	pa growth
Professional services	111,321	152,172	2.8%
Construction services	91,730	126,152	3.2%
Preschool and school education	83,161	118,580	3.2%
Food and beverage services	74,132	105,987	3.6%
Hospitals	51,559	78,655	4.3%
Admin services	59,833	79,636	2.9%
Public admin	51,525	70,965	3.3%
Medical and health care services	45,538	64,600	3.6%
Computer sys design services	19,688	36,148	6.3%
Residential care services	31,125	46,115	4.0%

Source: BERL (H. Dixon, 2018)

Canterbury had strong employment growth in the middle part of the last 10 years, largely driven by the rebuild after the 2011 and 2012 Earthquakes (H. Dixon, 2018). This has since tapered off (1.4% per annual growth in people employed in the labour force between 2008 and 2018) (Figure 6).

Industries with the greatest employment declines over the Great Recession were manufacturing, construction, trade and accommodation. Over the 10-year period following the recession, growth in employment was in service-based industries, such as professional, scientific and technical services and construction services. Overall the top 10 fastest growing industries averaged 3.7% per annum growth in FTE numbers (H. Dixon, 2018).

We will canvas the role of regions, cities and districts in recovery in our third rapid review.

Rapid Review 03

Figure 6. Persons employed in labour force, by region, CAGR 2008 – 2018

Source: Stats NZ, Labour market statistics
Notes: Stats NZ regional data groups together the following regions – Tasman, Nelson, Marlborough and West Coast, and Gisborne and Hawke's Bay

WHAT HAPPENED AROUND THE WORLD?

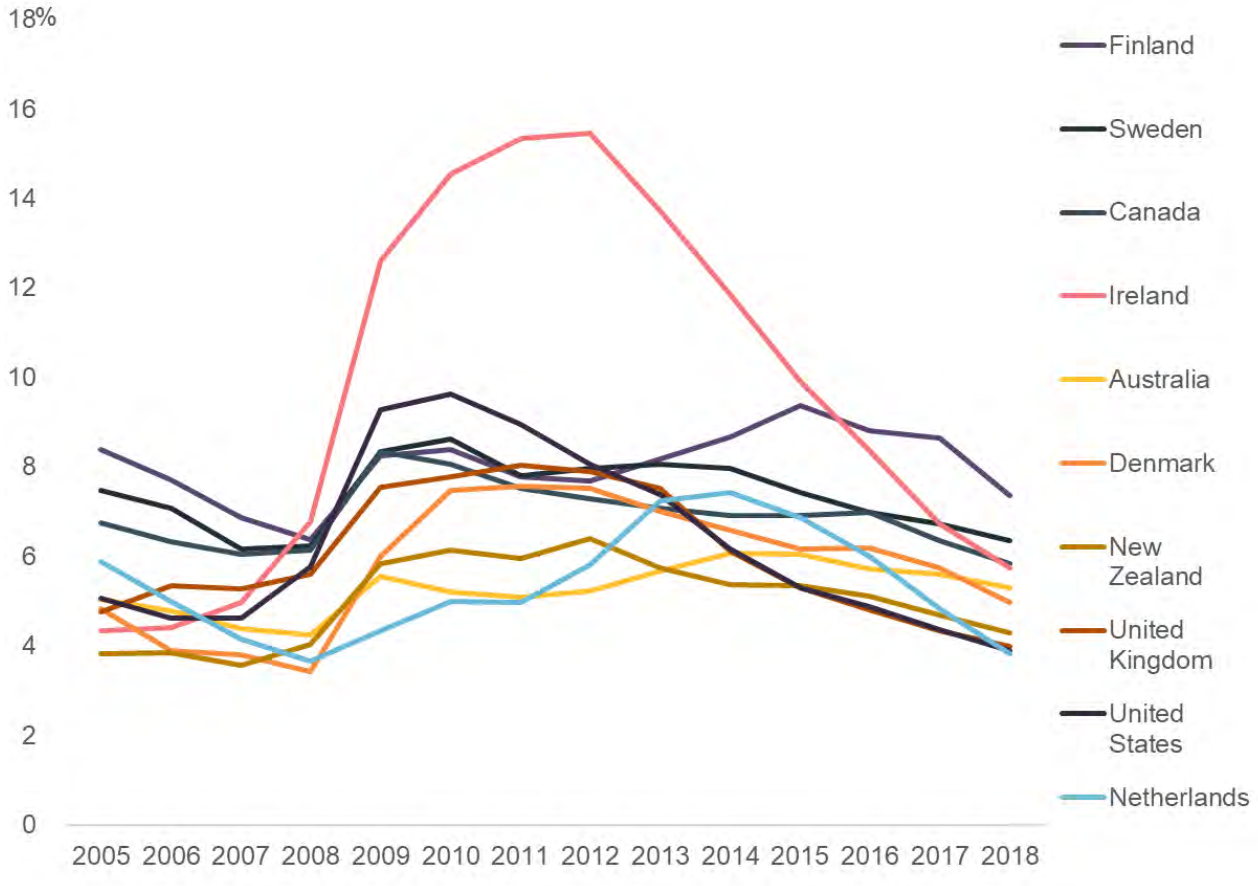
For many European countries, the GFC led to a strong and persistent increase in unemployment (Bachmann & Felder, 2017). The average unemployment rate in the EU rose from an average of 7% in 2008 to almost 11% in 2013. But there was also great divergence in labour market reactions, with Austria, Belgium, Germany, Luxembourg and Norway's unemployment rate hardly increasing, while in Estonia, Greece and Spain unemployment rates reached 25%.

For some European countries, this led to persistent unemployment, particularly for youth. This cohort is still suffering from high joblessness and disengagement (Ghoshray et al., 2016; O'Higgins, 2015). **See our fourth rapid review for more on this group of workers.**

Rapid Review 04

Australia was one of three OECD countries (the others being Korea and Poland) that were not affected by the recession (Keeley & Love, 2010).

Figure 7. Rate of unemployment as a percentage of the labour force, selected countries



Source: OECD.Stat

Ireland

Ireland's joblessness has been the most protracted with a very late peak at 15% in 2011 and 2012; its first significant increase occurred in 2008 (to 7% from 5% the year before) (Figure 7). Between 2008 and 2009, Ireland's gross national product fell by close to 9% and this had knock on effects to the labour market (Bergin et al., 2015). Ireland's property and construction sector was hit the hardest, with the male labour force suffering high job losses. It has been reported that employment in the construction sector fell by over 61% between 2007 and 2012 (McGinnity et al., 2014, as cited in Bergin et al., 2015). While most other sectors experienced job loss, ICT, education, health and the arts remained relatively stable.

Ireland has not yet recovered.

Netherlands

The Netherlands faced more long-term unemployment than other countries and its highest unemployment levels peaked in later years – unemployment increased from 4% in 2008 to 7% in 2014 (Figure 7). Unemployment in the Dutch labour market rose relatively slowly during the Great Recession but 'double dipped' in 2012 (Erken et al., 2015) to grow rapidly thereafter. With a tight labour market before the crisis, employers tended to 'labour hoard' and those self-employed reduced their income rather than moving to unemployment (Erken et al., 2015). A study by Erken et al. (2015) suggests that almost 10% of the Dutch unemployment rise is due to sector mismatch (for example, not enough science and technology workers).

Recovery took 6 years.

Canada

The GFC affected Canada quickly in 2008. **It lasted just seven months in Canada** (compared with 18 months in the US) (Bein, 2019). Unemployment did not rise as much as other countries, from 6% in 2007 to 8% in 2009 (Figure 7). However, **Canada has only just returned to pre-recession unemployment rates of 6% in 2017**.

Again, regional impacts differed – the timing and depth of employment recession varied across provinces (Kneebone & Gres, 2013). Kneebone and Gres' (2013) labour market analysis shows that national strategies can only go so far, and regional responses need to be targeted to the particular challenges, industries and economic variables of a particular area. One province, New Brunswick, wasn't effected at all by the GFC.

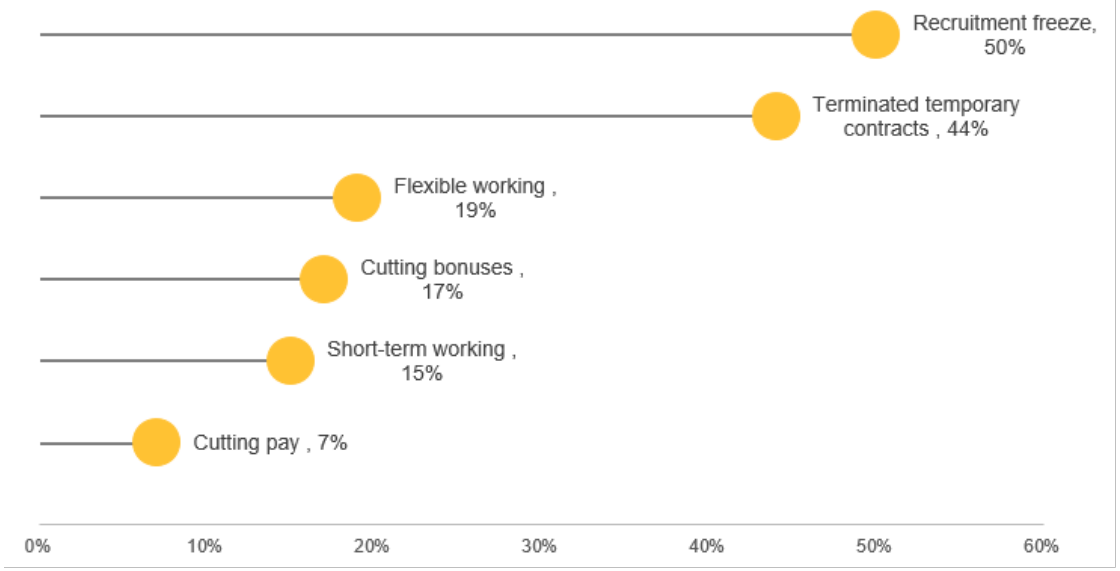
United Kingdom

In the UK, the GFC was the deepest recession since World War II. The UK entered recession in quarter two of 2008 and exited in 2009. However, GDP remained below pre-recession rates for longer, taking almost six years to recover (Bell & Eiser, 2016). In contrast**, the labour market performed strongly – unemployment rose by 2% and recovered within four years** (Figure 7).

The Great Recession impacted regions in different ways. Several of the sub-regions and cities of the North of England had higher levels of unemployment, as well as high levels or underemployment and over-education (Rafferty et al., 2013). The unemployment benefit and other data suggested that rather than reducing their workforce, employers adjusted to reduced demand through reductions of working hours (Rafferty et al., 2013).

This was supported by an employer survey (Figure 8) which showed that a range of measures were used by employers seeking to hold on to workers rather than make them redundant. Redundancy can lead to higher recruitment and training costs in the longer term. This also means that later job creation may not necessarily follow GDP growth as employers increase working hours (and use other measures) when they require more labour.

Figure 8. UK employers' use of main alternatives to redundancy, 2009



Source: CIPD/KPMG Labour Market Outlook Survey, 2009 as cited in Usher et al. (2009)

MODELLING THE IMPACTS OF AN INFLUENZA PANDEMIC

A number of input-output (IO), computational general equilibrium (CGE) and other modelling approaches have been applied to estimating the economic and labour market impacts of an influenza pandemic. Most studies, other than the recent release from The Treasury, fail to consider or account for a nation-wide lockdown and the flow on effects of that. If anything, these studies suggest the labour market impacts for New Zealand may be more severe than those modelled.

Simulates the economic effects of two H1N1 epidemics in Australia (Verikios et al., 2012)

Findings

In the 2009 scenario the main effects occur in 2009 and peak in 2009 – **GDP and employment are 0.9% and 0.7% below baseline. By 2011, GDP and employment recovers at 0.0% and 0.1% respectively below baseline.**

In the severe outbreak scenario, the effects are much larger with **GDP and employment 6.2% and 4.1% below baseline**.

Limitations

Applies four types of economic shocks:

(1) a surge in demand for hospital and other medical services;

(2) a temporary upsurge in sick leave and school closures, requiring withdrawal of parents from the labour force;

(3) some deaths with a related permanent reduction in the labour force; and

(4) temporary reductions in inbound and outbound international and business-related travel

Models school closures and labour market behavioural effects in UK (Keogh-Brown et al., 2010)

Findings

Where schools close throughout the pandemic and prophylactic absenteeism lasts for 4 weeks; **losses of 12.27% to GDP and at 1 year the impact on GDP remains at 2.23% loss.**

The most extreme scenario combines severe disease with one quarter of school closure and 4 weeks of prophylactic absenteeism. **This yields GDP impacts for the first quarter and first year of 21.25 and 4.45%, respectively. For the year as a whole, GDP is nearly 5% lower.**

Limitations

Doesn't apply indirect and direct absenteeism of a lockdown more widely.

Does not account for more widespread changes in consumption patterns as a result of being in lockdown and availability of essential services.

Models school closures and labour market behavioural effects in UK (Smith et al., 2009)

Findings

Closure of schools for 15 weeks rather than 4 weeks results in an increased **impact of about 2.5% of GDP.**

Results are not very sensitive to changes in the efficacy of school closures to mitigate the pandemic.

Limitations

This study is by some of the same researchers in the UK study on the previous page. Again, this study doesn't account for consumption affects from avoidance of public places (or being in a 'bubble') and changes in shopping patterns.

Assumes 30% of UK population infected and death rate of 0.4% in 2009 (Oxford Economics, 2009)

Findings

The GDP loss during the six months of the pandemic would amount to around **5% in the UK. GDP growth in the next year could be as low as -7.5%**

The economic loss would be gradually recouped within around 3-4 years.

Limitations

Only considers reductions in discretionary consumption and international travel, of around 20% and 60% respectively

Pandemic influenza in the US (Prager et al., 2017)

Findings

A pandemic influenza outbreak could result in **GDP losses of $45.3 billion without vaccination and $34.4 billion with vaccination.**

Limitations

Considers 'avoidance behaviour' such as minimising close contact with other people – from not taking public transport, not going to public gatherings, reductions in tourism and business-related travel, working from home and keeping children from home. But again, this isn't applied at large.

Simulate the effects of a one-year US border closure (Dixon et al., 2011)

Findings

Cutting all imports by 95% would **reduce GDP by 48%.**

If certain imports (such as oil) were **exempt and real wage cuts were accepted, GDP reduction would be 11%.**

Permanent labour supply loss from one year of no immigration.

Limitations

Models one-year pandemic-induced border closure.
Does not account for subsidies/bailouts of businesses.

Pandemic in Commonwealth of Virginia (south-eastern US state) (Santos et al., 2009)

Findings

A four-week pandemic with 15% attack rate (15% of the population is infected) had an expected **economic loss for all sectors of $4.6 billion (1.3% of GDP) with a minimum of $3.9 billion (1.1% of GDP) and a maximum of $5.5 billion (1.6% of GDP).**

It took **91 days for every sector to recover to 1%** of its maximum inoperability.

'Professional services' and 'other services' are hardest hit because they are very 'people-based'.

Limitations

Focuses explicitly on workforce impacts.

Global event (Verikios et al., 2016)

Findings

1. A High Mortality–Low Infectiousness Scenario. Positive short-run GDP and employment effects of 0.09% and 0.69% respectively.

2: A Low Mortality–High Infectiousness Scenario. Negative short-run GDP and employment effects of -1.43% and -1.16% respectively.

Employment and GDP returns close to business as usual within four to eight quarters, depending on severity and nature of the pandemic.

Limitations

Potentially underestimates the impact of temporary reductions such as demand for international travel and tourism; industry costs due to absenteeism and reduced labour supply due to deaths; and demand for medical services.
Does consider economic integration of regions/countries.

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METHOD

This rapid review is a time-limited examination that draws on a limited research base

The literature reviewed includes journal articles and grey literature. Scholarly and peer reviewed literature was prioritised. This rapid review draws on literature from New Zealand and around the world. Special attention was paid to national, sub-national and vulnerable communities who are likely to be impacted the most from economic shocks.

The review mainly draws on literature from 2000 and later.

The following search terms were used in identifying relevant literature:

Active labour market policy	Infectious disease	Pandemic
Communicable	Influenza	Policy
Depression	Jobs	Recession
Economy	Labour market	Region
Employment	Labour market policy	SARS
Epidemic	Model	Skills
Global financial crisis	New Zealand	Swine flu

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