NBER WORKING PAPER SERIES

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Working Paper 29098
http://www.nber.org/papers/w29098

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
July 2021

We thank Ronit Mukherji for outstanding research assistance and the UBC Centre for Innovative Data in Economics Research (CIDER) for financial support. We also thank FRDC Analysts Adam Howe, Bin Hu, and Christos Koritsaris for disclosures. Fabian Lange acknowledges that this research was undertaken, in part, thanks to funding from the Canada Research Chairs Program. The views in this paper are those of the authors and do not necessarily reflect those of the National Bureau of Economic Research. All errors are our own.

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NBER Working Paper No. 29098
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JEL No. E24,E32,I14,I18,I3,J21,J23,J31,J63

## ABSTRACT

The Canadian labor market experienced a period of unprecedented turmoil following the onset of the COVID-19 pandemic. We analyze the main changes using standard labor force statistics and new data on job postings. Envisaging a phase of temporary severing of employment relationships followed by a phase of more standard labor market search and matching, we use stock and flow data to understand key developments. We find dramatic changes in employment, unemployment and labor market attachment in 2020 and, looking forward to 2021, signs of an unusual recovery with co-existing strong labor demand and stubborn persistence in depressed employment rates.

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# 1 Introduction

In this paper, we document the turmoil in the Canadian labour market since the onset of COVID-19 using key labour force statistics constructed from the Labour Force Survey as well as data on job postings obtained from Burning Glass Technologies (BGT). In 2020 and 2021, the Canadian labour market saw dramatic flows out of and back into employment and accompanying swings in key labour force statistics. This was also a period during which labour economists had to question traditional ways of measuring and understanding the health of the labour market.[1]

A key feature of our study involves examining not only movements in labour force stocks but also flows among labour force states. Based on this analysis we conceptually distinguish (i) the process of temporarily severing and then re-forming employment relationships from (ii) the search process of matching workers to new positions in the job market. We believe that this distinction allows us to make sense of the rapidly evolving situation in the labour market and synthesize in a useful way many of the key developments.[2]

In March 2020, the first wave of infections and associated lockdown measures forced large parts of the economy to shut down. During the first six months of the pandemic, the process of temporarily severing employment relationships dominated the flows observed in the labour market. Between February and April 2020, almost 5% of the population were temporarily laid-off from their former jobs while a further 5% were forced to absent themselves from their employment even though they continued to be formally employed by their former employers. In addition, by April 2020

[1] Jones et al. (2020) address some of these measurement and classification issues using data from the initial phase of the pandemic.

[2] Forsythe et al. (2020) employ a similar conceptual distinction to describe the evolution of the US labour market over the COVID pandemic.

the share of persons marginally attached to the labour force – those not searching but who desire work – tripled to reach 4 percentage points above the level observed during the pre-COVID 2015-19 period, which we use as a counterfactual. For reasons we discuss below, a substantial share of this flow into marginal attachment represents temporary separations. All told, within a very short time-frame, around a quarter of those working in February stopped working by April 2020, but remained tethered in some way to their former workplace.

As early as May 2020, this process of temporarily severing employment relationships began to reverse rapidly and within just a few months the large majority of those on temporary layoff and those absent from work rejoined employment. Our analysis indicates they largely returned to their former employment (even if often by working from home). Similarly, the share of discouraged and other marginally attached workers rapidly declined and was only slightly elevated by the end of the summer.

During the first few months of the crisis, the number of those actively searching for work remained low. However, labour demand in the search market as measured by job postings contracted sharply and job finding rates among the unemployed job searchers declined during the initial months of the pandemic. By April, flows from temporary forms of separations as well as reduced job finding rates started to contribute to a build-up in the stock of search unemployment. By August 2020, the share of search unemployed in the population almost doubled. However, the increase in search unemployment was smaller than the flows out of temporary unemployment so that unemployment rates overall declined from May 2020 onward.

Two factors limited the increase in search unemployment up to the end of 2020. First, employers increasingly started to post many more jobs after April. By July,

the number of postings had recovered to about 90% of the pre-pandemic levels. Consequently, job finding rates among unemployed searchers returned to levels observed in the pre-COVID period. Second, a large majority of those on temporary unemployment were rehired rather than transitioning to search unemployment. By April and May 2020, rates of reemployment among those temporarily unemployed were roughly 50% per month, comparable to levels seen in 2015-19.

By the end of the summer of 2020, the phase dominated by temporary separations had passed. At this point, the spikes in temporary layoff unemployment and marginal attachment had abated, as had the increase in the share of those employed but absent from work. However, in August 2020, about 6% of the population were unemployed and searching for work, compared to 3.5% in February 2020 and 4% for the pre-COVID monthly average for August. On the other hand, job postings and job finding rates had returned to pre-pandemic levels, leading to a gradual decline in the stock of search unemployment to about 4.7% in May 2021.

Where do we stand in May 2021? Several signs point to a continued recovery in the labour market over the next few months. Job finding rates conditional on unemployed job search have recovered to the levels seen in 2015-19. This is driven by unusually strong labour demand as measured by job postings. Thus, even while restrictions from the third wave are still in place, the search market seems to be in increasingly good shape. It is likely, however, that the pandemic restrictions are still holding back the labour market from a full recovery. In particular, the share of marginally attached still exceeds the 2015-19 average – many of these individuals might rejoin the labour force once pandemic risks recede. We also still observe that the fraction of the population on temporary layoff remains elevated, as do job loss rates among those employed and absent from work. We believe that progressive

reopening of the economy is likely to reduce these factors weighing on the labour market in the next months.

However, there are reasons to worry. In particular, during 2020 and 2021 the share of long-term unemployed among the unemployed has started to increase and currently stands at a very high level. To the extent that unemployment is a self-reinforcing state, long unemployment durations can hold back job finding rates and slow the recovery. Further, over the next few months, the sizeable federal programs supporting workers and employers, in particular the Canada Recovery Benefit and Canada Emergency Wage Subsidy programs, will progressively be unwound. The extent to which the gains in the labour market will be reduced as these support programs are unwound is a critical question going forward.

The paper is organized as follows. Section 2 uses Labour Force Survey (LFS) data to examine monthly movements in key labour force aggregates. It addresses employment and hours changes, the changing composition of unemployment and its effects, and the importance of attachment to the labour market by various groups of non-participants. This detailed examination of labour market information leads us to distinguish between two broad groups of jobless individuals: (i) those who have been separated from, but remain tied to, their previous employment and in many cases return to their previous work, and (ii) those who enter the open market and engage in active job search. A striking finding is that it is possible to identify groups within those normally classified as employed, unemployed, or not-in-the labour force that form part of the "temporarily severed from their usual employment" group. We then use the LFS longitudinal feature to examine what happened to workers employed in February 2020 during the turbulent period from February to June 2020 during which Canada's labour market experienced an unprecedented drop in employment

followed by an impressive but partial recovery. Section 3 utilizes job vacancy data to document that, following an initial collapse, the demand for labour in Canada recovered quickly and that the recovery in labour demand was broad based across provinces, industries, and occupations. The final section assesses where we stand as of May 2021.

## 2 Labour Force Behaviour During COVID-19

This section uses the monthly Labour Force Survey to examine in detail how Canada's labour market evolved since the onset of the pandemic in February 2020. The LFS has several advantageous features for this purpose. One is that it provides detailed data for a representative sample of the adult (15+) population and does so in a timely fashion with results released within a few weeks of the survey.[3] Another is that responding households remain in the LFS for 6 consecutive months before exiting. We utilize the longitudinal dimension to examine not only the cross-sectional dimension that provides a snapshot at a point in time but also the longitudinal dimension to investigate transitions from one time period to another.[4]

Owing to the highly seasonal nature of Canada's labour market, we use seasonally unadjusted data and compare each month during the COVID period to average behaviour for that month pre-COVID.[5] Doing so allows us to distinguish between behaviour that can be attributed to the COVID downturn and recovery versus month-

[3]The reference week for the LFS is usually the week containing the 15th of each month.

[4]Brochu (2021) is a valuable guide to the evolving LFS and to the use of the master files for longitudinal analysis.

[5]Lemieux et al. (2020) is an important early contribution to the analysis of the COVID-19 era that used a double differences approach. Differences between April and February in 2020 were compared to the same monthly difference in 2018 to assess the impact of the pandemic on employment and aggregate hours.

to-month changes that reflect usual seasonal patterns. Rather than relying on one or two pre-COVID years as the basis for comparison, we use the average monthly outcomes for the 5-year period 2015-19, a relatively stable period in Canada's economy and labour market (Riddell, 2018).[6] The COVID-19 period runs from March 2020 to the most recently available data for May 2021.

The principal framework within which we will assess recent labour force behaviour contrasts (i) the process of temporarily separating and re-forming employment relationships from (ii) the process of matching workers to new positions in the search market. In the former "tied" or attached phase of adaptation, firms and employees maintain linkages of varying strength through the continuation of employment even when the employee is absent (and may even be unpaid) and through widespread use of temporary layoff unemployment.[7] This phase, characteristic of the initial response to the COVID-19 shock, posed challenges for many conventional measures of economic activity. In the latter, "non-tied" phase, the labour market reverted gradually to an unattached search and matching model more familiar to economists. Nonetheless, vestiges of the attachment model have persisted in both the labour market and in government policy with respect to the labour market.

[6]Averaging over a longer period of time could include turbulent periods such as the global financial crisis in 2008-9, often referred to as the Great Recession in the US, and the resource boom of 1999-2014 which had a substantial impact on Canada's economy and labour market.

[7]Federal government policies encouraged maintaining ties between employers and employees. For example, the Canada Emergency Response Benefit paid EI-type benefits without imposing the usual job search requirement and the Canada Emergency Wage Subsidy program subsidized the wages of workers maintained on the payroll.

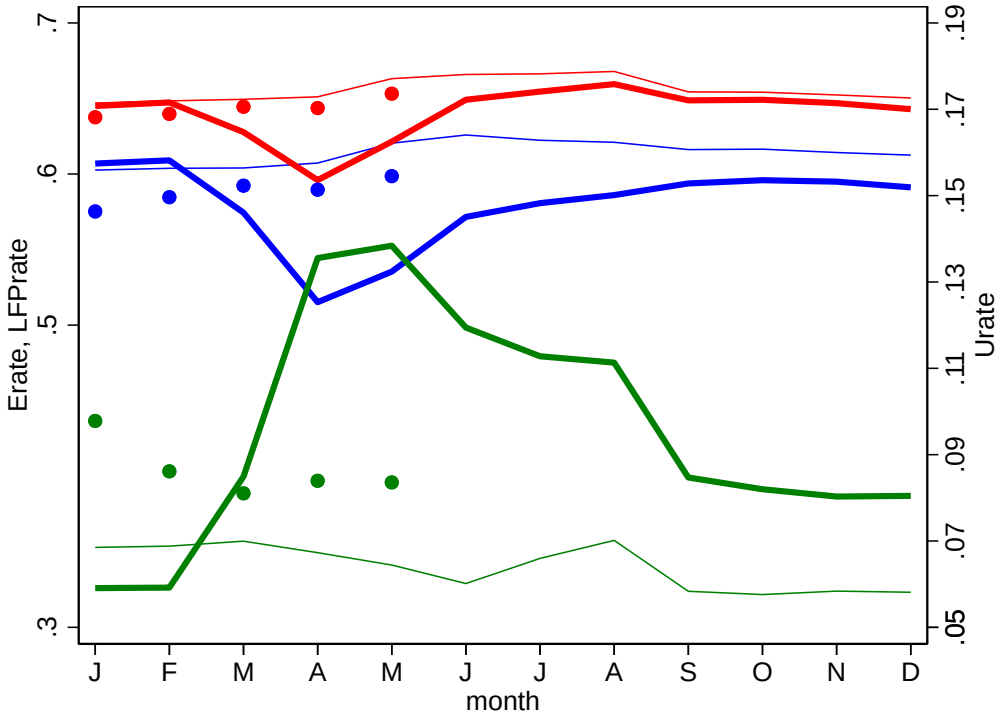
## 2.1 Movements in Labour Force Aggregates

We illustrate key developments in Canada's labour market during the COVID pandemic in a series of figures, where light lines denote the 2015-19 average rates, by month, heavy lines denote the monthly experience in 2020, and heavy dots denote the monthly observations to date in 2021. The behaviour of the employment rate (or employment/population ratio) Erate, the unemployment rate Urate, and the labour force participation rate LFPrate are shown in Figure 1. In broad terms, we think of the behaviour of these magnitudes until May/June of 2020 in terms of the "tied" model linking individuals and their current/former employers, and we envisage the recovery period since then using a more standard search and matching framework.

The employment/population ratio Erate was slightly higher in January and February 2020 than during those months in 2015-19. It then plummeted by almost 10 percentage points during the initial lockdown in March and April, a decline that is unprecedented in the post-World War Two period. This dramatic decline was followed by a substantial recovery, first rapid during the April to July period and then more gradual until mid-Fall 2020. By October the Erate was approximately two percentage points below its pre-COVID average level for the month. With further restrictions imposed late fall and early winter the gap increased to almost 3 percentage points before narrowing in February and March 2021 and then widening again in April and May to the most recent level of 2.2 percentage points below the 2015-19 average level.

The behaviour of the unemployment rate Urate is largely a mirror image of that for employment. In the pre-COVID lockdown months of January and February 2020, the Urate was about 0.4 percentage points lower than its 2015-19 average for those months. It rose dramatically in March and April, with a further modest increase in

Figure 1: Employment Rate, Unemployment Rate and Labour Force Participation Rate




Notes: The Employment rate (Employment/Population) is in blue, the Labour Force Participation rate is in red, and both are measured on the left axis. The Unemployment rate is in green and is measured on the right axis. For all series, the light line denotes average values by month for the 2015-19 reference period, the heavy line denotes the values by month for 2020, and the heavy dots denote the monthly values for 2021.

May, reaching the unprecedented level of almost 14% in May. Unemployment rates then declined throughout the remainder of 2020, reaching about 8% in December. Note that some of this fall in the unemployment rate – such as the large declines in May-June and August-September – reflected normal seasonal patterns. Likewise, the more modest decline from June to August in part reflects the normal seasonal pattern of a rise in measured unemployment during that period. With additional restrictions after the Christmas period unemployment rose to almost 10% in January

2021, fell to about 8% in March before rising again in May to its current level of 8.4%.

A striking feature of the unprecedented deterioration of the labour market in March 2020 was that many of those who lost or left jobs in March-April 2020 did not join the ranks of the officially unemployed. This was because they were neither searching for work nor were they classified as being on temporary layoff.[8] In the usual three-state model of classification of labour force activities, these individuals are treated as having exited the labour force, resulting in a precipitous decline in labour force participation. As shown in the figure, Canada's participation rate LFPrate in early 2020 was slightly lower than the previous five-year average and dropped dramatically from about 65 per cent in February to below 60 per cent in April. By June, only two months later, the decline was reversed and LFPrate again stood at its February 2020 level, about 65%, though still well below its normal level for that month (66.6%). Further increases in participation took place in July and August, in part reflecting the usual seasonal pattern of a rise in participation in those months. Nonetheless, the gap in LFPrate relative to its longer run 2015-19 average was close to a percentage point, remained at this level through the Fall and then widened further in December 2020 and January 2021. By May 2021, however, the LFPrate was only 0.1 percentage points below its 2015-19 level.

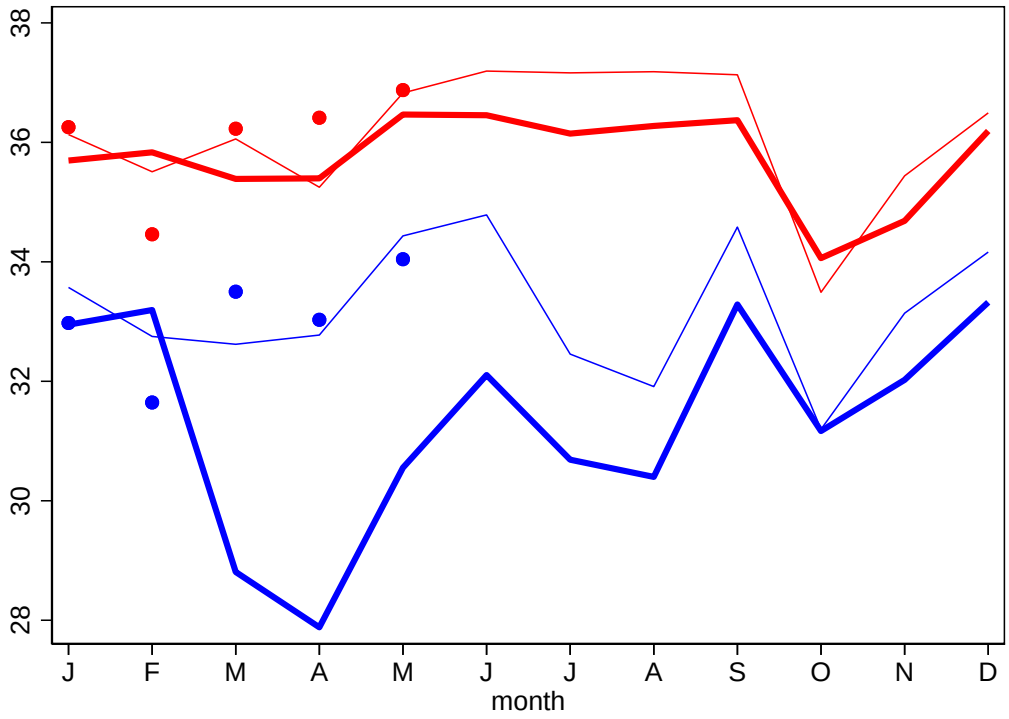
The rapid decline in measured participation early in the COVID-19 downturn together with the equally substantial rise in participation in April and May of 2020 suggests that many of these individuals remained 'attached' to the labour force, and perhaps warranted being classified as unemployed rather than non-participants. We

[8]To be classified as temporary layoffs those laid off must have a definite recall date or an indication from the employer that they will be recalled within the next 12 months. Job search is not required for this group to be counted as unemployed.

explore this issue further below.

## 2.2 Employment Changes: Hours Worked and Absence from Work

Figure 2: Actual Hours, Employed and Employed-Working




Notes: Actual hours mean values are in blue for the Employed (including those recorded as Employed-Absent) and in red for the Employed-Working subset of the Employed. For both series, the light line denotes average values by month for the 2015-19 reference period, the heavy line denotes the values by month for 2020, and the heavy dots denote the monthly values for 2021.

Erate, Urate and LFPrate are 'head count' measures of the extensive margin of labour force activity and do not account for the intensive (hours worked) margin. The LFS asks those classified as employed to report their usual and actual hours of work.

The enormous decline in employment in March-April 2020 was accompanied by a large decline in actual hours worked.[9] Figure 2 graphs mean actual hours worked by the Employed (in blue). While there are usually seasonal variations in hours worked, the dramatic decline in average hours by the Employed in 2020 is without precedent in the period under study. The fall from around 33 hours per week at the start of 2020 to around 28 hours by April is dramatic, and is followed by a steady recovery through the summer, converging back to the pre-pandemic levels by early fall. However, it is important to note that almost all of this dramatic movement stems from the changing importance of the Employed-Absent group, who work zero hours. Figure 2 also shows mean actual hours by month for the Employed-Working sample (in red), all of whom have non-zero hours, and excluding the Employed-Absent group. Once individuals categorized as Employed-Absent are excluded, there is surprisingly little evidence of a COVID-19 effect on hours among the Employed-Working group. Both in 2015-19 and in 2020, mean actual hours show some seasonal variation but remain around 36 hours in all months except for the Thanksgiving effect in October. Moreover, the recent evidence from 2021 shows levels close to the pre-pandemic period.[10]

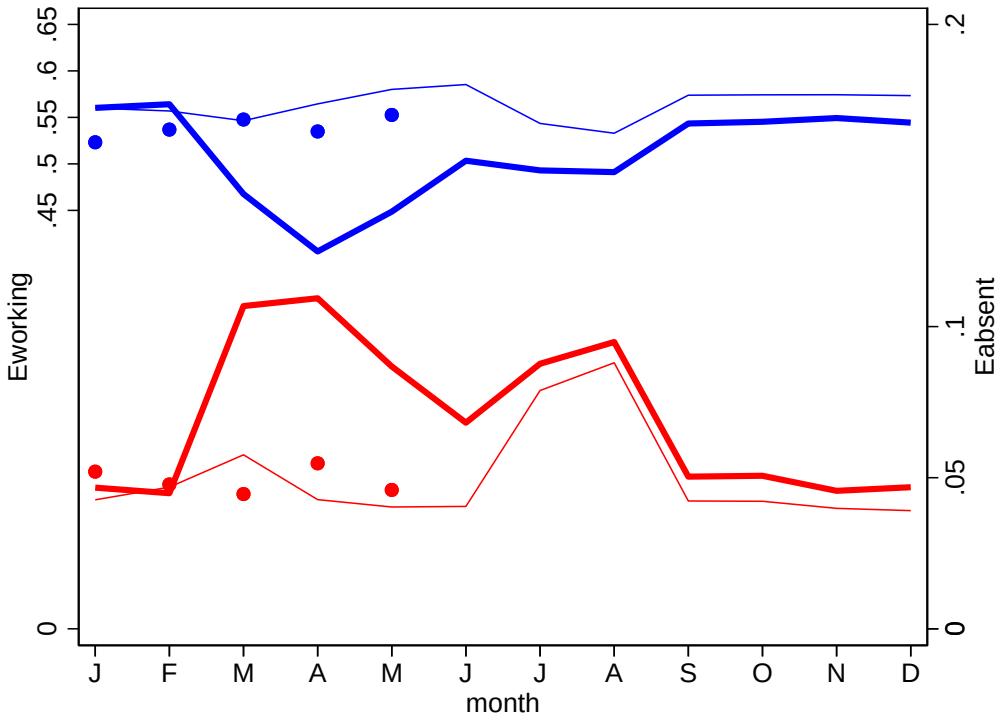
In summary, the dramatic decline in the employment early during the pandemic understates how much work activity actually declined because hours worked conditional on employment declined substantially as well. However, this decline in hours is entirely through employment absences without any change along the intensive margin. Figure 3 shows directly how the rate of those employed and at work and

[9]Throughout both 2015-19 and the COVID-19 era, there was comparatively little movement in mean "usual" hours which hovered between 36 and 37 for the whole period. For this reason, we address changes in actual hours, rather than usual hours, in this paper.

[10]The one exception in these hours data is February 2021, when both actual hours measures lie about an hour below the pre-pandemic norm. We suspect this is due to Family Day and related provincial holidays, which affect about two-thirds of the population, falling in the LFS reference week in 2021, although not in earlier years.

those employed but absent from work evolved. Both are expressed as a proportion of the population, so the sum of the two measures equals the employment to population ratio shown in the first figure. In this context it is important to distinguish between those 'working from home' — who are employed and at work, albeit perhaps not physically at their usual place of work — and those classified as 'Employed but absent from work.'

Figure 3: Employed, Working and Absent




Notes: The Employed-Working rate, relative to the population, is in blue and is measured on the left axis. The Employed-Absent rate is in red and is measured on the right axis. For both series, the light line denotes average values by month for the 2015-19 reference period, the heavy line denotes the values by month for 2020, and the heavy dots denote the monthly values for 2021.

Prior to Covid, the fraction of Employed-Working (relative to the population) fell in the 56-58% range, with seasonal dips to about 55% in March and more substantial

temporary declines to around 53-54% during July and August when many workers take vacations. However, after March 2020, the Employed-Working rate fell to just over 40% in April. Since that time the population share of the Employed-Working has recovered to more normal levels, even during July and August when the usual seasonal decline was smaller than normal. Although by March 2021 this rate had returned to its normal level, that convergence was short-lived. In May 2021 the Employed-Working rate remained almost 3 percentage points below normal.

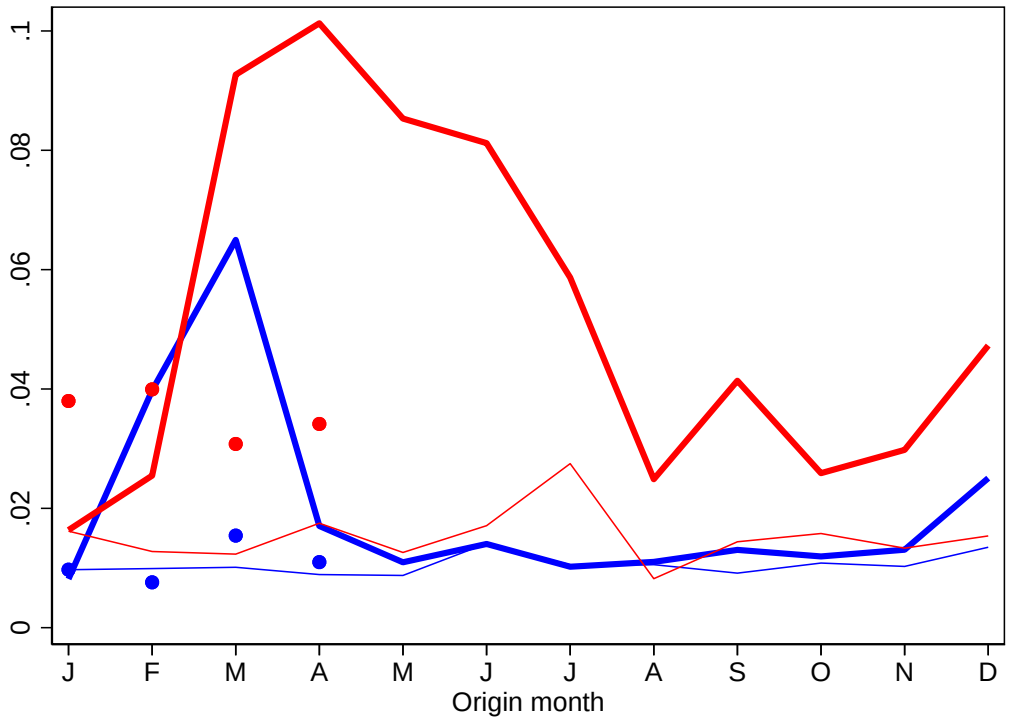
As would be expected, the Employed-Absent rate moves inversely to the Employed-Working rate. This Employed-Absent rate usually lies in a narrow range from about 4.0 to 4.7%, with seasonal increases in March and July-August. However, the rate rose substantially during the initial lockdown during March and April 2020, and has remained somewhat above normal since that time with the exception of March 2021. This behaviour – individuals who report that they "have a job" and remain attached to their (former) employer but are furloughed – provides a vivid illustration of the "tied" model of worker-firm relationships during the early COVID period. It is also critical to the overall movement of actual hours of work, as in Figure 2 above, where most of the movement in this intensive margin figure is actually driven by the changing importance of those Employed-Absent at an extensive margin. Since the late summer of 2020, however, the gap between the COVID era and normal Employed-Absent rate has generally narrowed.

The next figure displays month-to-month transitions between pairs of labour force states, utilizing the longitudinal dimension of the LFS discussed previously.[11] Transition behaviour is expressed as a rate or probability; for example, the transition rate from unemployment U to employment E, pUE, is the fraction of those unemployed

[11]Below, we also address some longer horizon longitudinal behaviour, studying the consequences for those separated from jobs early in the pandemic over the subsequent five months.

in month $t$ who are employed in month $t+1$. Transitions are labelled by their origin month.

Figure 4: Transitions from Employed-Working/Employed-Absent to Unemployment




Notes: The mean transition rate from Employed-Working to Unemployment is in blue and the mean transition rate from Employed-Absent to Unemployment is in red. For both series, the light line denotes average values by month for the 2015-19 reference period, the heavy line denotes the values by month for 2020, and the heavy dots denote the monthly values for 2021.

The composition of employment changed in a dramatic and unusual fashion in 2020 (Figure 3, above), especially during the initial downturn in March and April and the subsequent partial recovery over the May to July period, with those classified as Employed-Working declining and the Employed-Absent rising during March-April and the reverse occurring in May-July. Figure 4 explores these unusual changes by examining transitions between these two categories of employment and unemploy-

ment. As shown, the job loss rate from Employed-Working is generally very stable throughout the year at about 0.01 with a small seasonal increase in June to July. A huge increase in this transition rate is observed during the initial lockdown, with the job loss rate rising to .04 in February-March and to over .06 in March-April. However, it was a short, sharp shock. The risk of further job loss had declined to its 2015-19 average as quickly as May 2020 and remained at normal levels throughout the rest of the year. Only in December 2020 and March-April 2021 was there a modest increase in this rate relative to normal levels.

Transitions from Employed-Absent to unemployment are also typically low, in the range 0.1-0.2, for most of the year, with more pronounced seasonal changes in March and July-August when many families take holidays. During the COVID-19 era, however, enormous increases in the likelihood of moving from Employed-Absent to unemployed are observed, with the probability of LFS respondents reporting job loss rising from below 2% in the first two months of 2020 to 9% and 10% in April and May. As the initial lockdown persisted, many of the furloughed workers who initially reported that they "have a job" reported in the following month that they were unemployed job seekers or on temporary layoff. Note that the Employed-Absent group is usually small in size, typically 4 to 5% of the population. As Figure 4 illustrates, this small group was much more likely to transition from being furloughed to unemployed during the initial COVID-related downturn. Furthermore, although their likelihood of transitioning to unemployed has fallen since its peak in April to May, it has remained elevated compared to its 2015-19 average level as well as compared to the risk of job loss among the Employed-Working group.[12] The evolution of the month-to-month transition rates of this group provides further evidence that

[12] An implication of these results might be that the Employed-Absent group constitutes a buffer group that is the first to be separated and the last to be recalled.

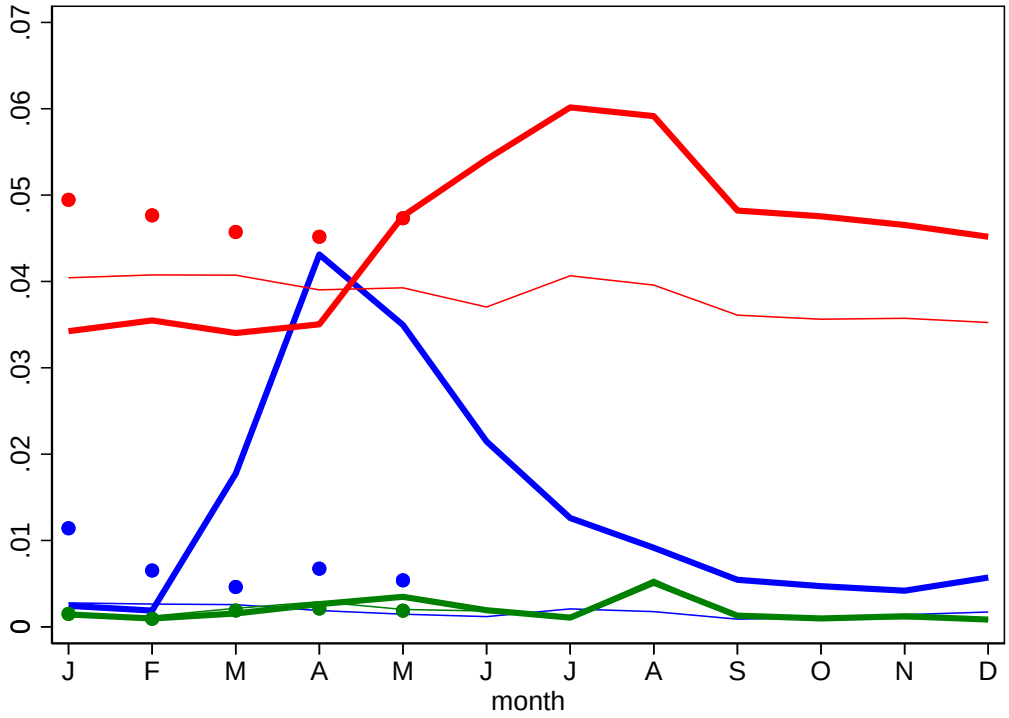
their initial surge in March and April 2020 (shown in Figure 3) constituted a form of temporary layoff or recall unemployment that was labeled as employment because of the strength of the attachment to the previous employer.

## 2.3 Two Phases of Unemployment

Dramatic change in the composition of the unemployed has been a particularly noteworthy feature of the COVID era, and we illustrate this in Figure 5. In normal times, as indicated by the pre-pandemic 2015-19 monthly averages, those engaged in active job search constitute by far the largest group among the unemployed, usually in the range of 3.5 to 4.1% of the population. The remaining two groups – those on temporary layoff and future job starts (those with a job to start at a definite date in the next month) – are minor by comparison, usually accounting for 0.1 to 0.2% of the population. However, during the initial COVID-related downturn, temporary layoff unemployment surged to an unprecedented 4.3% of the population in April 2020, more than the number of unemployed job seekers. Again, this is consistent with a short but important period of "tied" labour market arrangement where many of those without jobs simply waited for recall from the former employer. The importance of recall unemployment has since declined but remains elevated compared to pre-COVID levels and an important vestige of the initial COVID-19 shock.

Another noteworthy feature of Figure 5 is the rising importance of unemployed job searchers since April 2020. During the January to April 2020 period unemployed job search was consistently lower than during the same months pre-COVID, but after rising substantially in May 2020 has since remained above pre-pandemic levels, as well as constituting the largest component of the unemployed, followed by temporary layoffs.

Figure 5: Sizes of Unemployment Categories

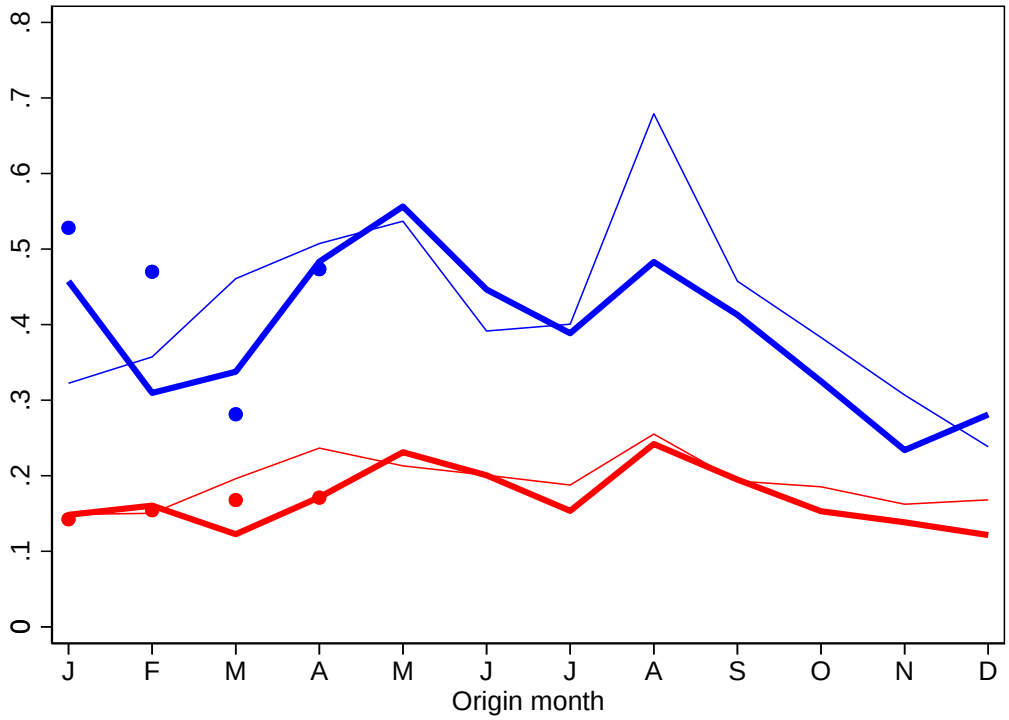



Notes: Job Search Unemployment is in red, Temporary Layoff/Recall Unemployment is in blue, and Future Job Starts are in green. All series are presented as a proportion of the population. For all series, the light line denotes average values by month for the 2015-19 reference period, the heavy line denotes the values by month for 2020, and the heavy dots denote the monthly values for 2021.

We next examine the rates of job finding for these different groups within the unemployed. In usual times, while job searchers are by far the largest of the three components, the greater attachment to an employer typically means that the temporary layoff and future start unemployed have higher transition rates into employment than those engaged in (unattached) job search. We address how this changed in the COVID-19 era in Figure 6.

The probability of being employed in the following month for those on temporary layoff typically lies in the 0.3 to 0.5 range, with some seasonal rise in the first part of

Figure 6: Transitions from Unemployment Categories to Employment

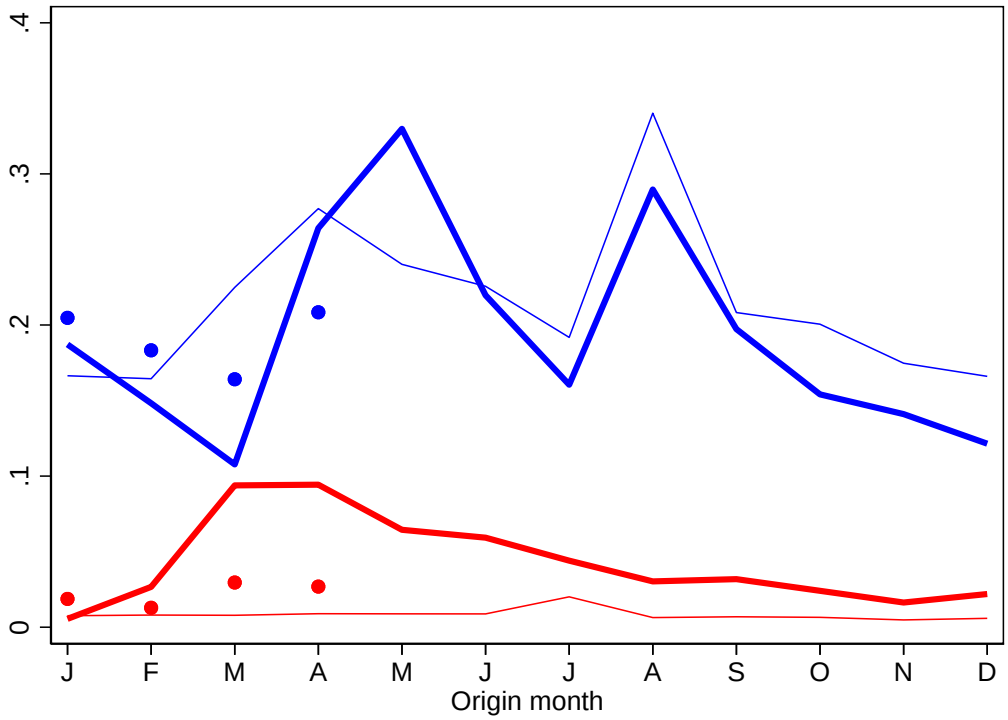



Notes: The mean transition rate from Unemployment-Temporary Layoff to Employment is in blue, the mean transition rate from Unemployment-Job Search to Employment is in red. For both series, the light line denotes average values by month for the 2015-19 reference period, the heavy line denotes the values by month for 2020, and the heavy dots denote the monthly values for 2021.

the year, a decline during the summer months and a large spike to about 0.7 in the August to September transition rate, followed by a steady decline in the remainder of the year. Transition rates during the COVID-19 period follow a broadly similar seasonal pattern, albeit with a much smaller spike in August-September. They were also below average early in the COVID downturn (February-March and March-April) as well as throughout the fall and early winter months. Job-finding rates of active searchers also followed a similar seasonal pattern during COVID compared to that observed in the 2015-19 period, with the exception of the March-April transition that

was substantially lower in 2020 than its 2015-19 average. The most recent months of 2021 show a downturn in job-finding rates, relative to monthly norms, for both job searchers and those on temporary layoff.[13]

Figure 7: Transitions from Unemployment to Employed-Working/Employed-Absent




Notes: The mean transition rate from Unemployment to Employed-Working is in blue, the mean transition rate from Unemployment to Employed-Absent is in red. For both series, the light line denotes average values by month for the 2015-19 reference period, the heavy line denotes the values by month for 2020, and the heavy dots denote the monthly values for 2021.

Finally, we probe the nature of transition behaviour from Unemployment to Employed-Working and Employed-Absent, paralleling the analysis of Figure 4 above.

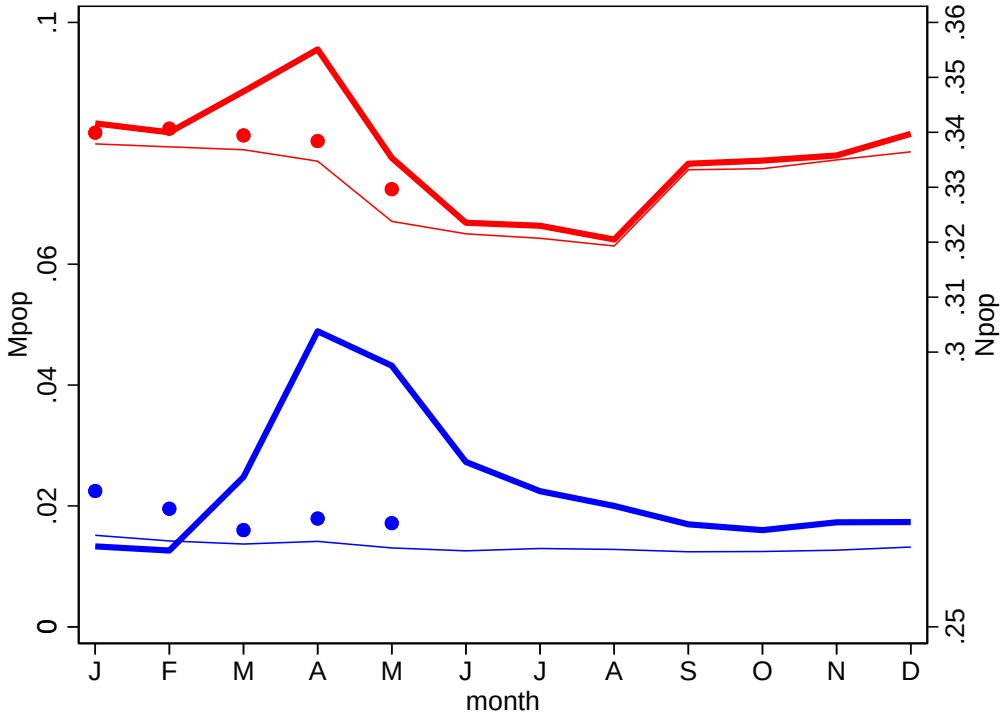
[13]Since the future job start category of unemployment is so small, we present only the transition rates from job search and temporary layoff unemployment in Figure 6. The job-finding rate from future job starts typically lies in the 0.6-0.8 range, with some seasonal variation. In the COVID era, this rate was more volatile and dipped briefly to 0.3 in April 2020 as planned job starts were hit by the pandemic shutdown.

The job-finding rate into these two categories of Employment is shown in Figure 7. The probability of moving from unemployment to employed-absent is typically very low – close to zero - and stable over the year except for a small seasonal increase in July to August. During the initial months of COVID, however, this likelihood rises substantially to about 0.1 in March-April and April-May 2020. This sharp increase is followed by a gradual decline toward average levels, although remaining above those 2015-19 averages in the rest of 2020 and most months in 2021. Unemployed to Employed-Working transition rates are much higher throughout the year – typically in the range 0.15 to 0.3 with a pronounced seasonal pattern with spikes in April-May and August-September. A similar seasonal pattern is observed in 2020, with the principal exception being the depressed job-finding rate in March-April and the unusually high rate in May-June. After the summer months on 2020, job-finding rates follow a similar seasonal pattern to that observed in 2015-19 but remain somewhat lower than the pre-COVID average.

## 2.4 Adjustment by Attachment of Non-Participants

As noted previously, the massive job losses in March and April 2020 were accompanied not only by a steep rise in unemployment but also by an enormous decline in labour force participation. Figure 8 decomposes non-participants into two main components: the non-employed who are not searching but state that they want work, referred to as the marginally attached, and the non-employed who report that they do not want work, referred to as the non-attached. Both magnitudes are expressed relative to the population. Huge changes in both series, especially in Mpop, are evident during the COVID-19 period. Monthly Mpop levels remained in a narrow range between 0.012 and 0.015 during 2015-19 and were slightly below their pre-COVID

Figure 8: Size of Non-Participant Categories




Notes: The Marginally Attached rate Mpop is in blue and is measured on the left axis. The Non-Attached rate Npop is in red and is measured on the right axis. Both series are presented as a proportion of the population.For both series, the light line denotes average values by month for the 2015-19 reference period, the heavy line denotes the values by month for 2020, and the heavy dots denote the monthly values for 2021.

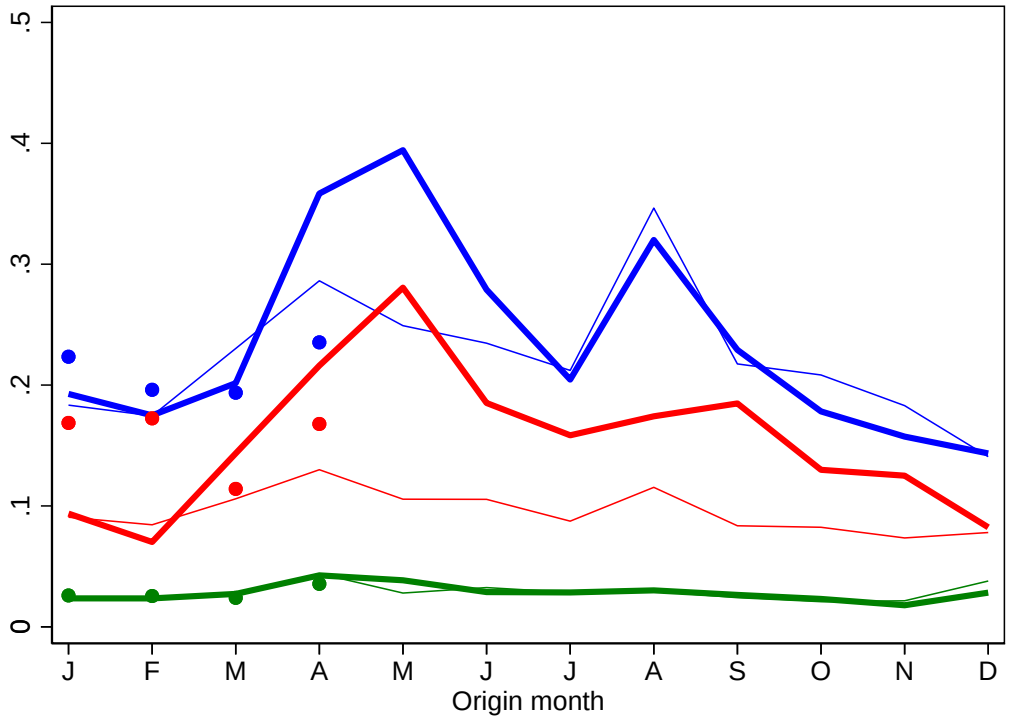
average levels in January and February 2020. In March and April of 2020, though, Mpop rose to unprecedented levels, peaking at almost 0.05 in April, then falling substantially over the next five months to 0.017 in September. Since that time, Mpop has fluctuated with no evident trend but has remained above its 2015-19 average level. Overall, this pattern in Mpop is consistent with greater attachment to the labour market in the initial months of the pandemic and suggests that, even in May 2021, non-participants retain more than usual attachment to the workforce.

Npop levels, in contrast to Mpop, were slightly above their previous average in January and February 2020, but like Mpop rose steeply in March and April, peaking at 0.36 versus a 2015-19 average value of 0.33 for that month. The fraction of the population that neither searched for nor desired work then declined during May to August, in part reflecting a normal seasonal drop during that period. Since that time Npop has remained at average levels (from August to November 2002) or slightly higher than average (from December 2020 to May 2021).

We next examine job-finding transition rates from these two non-participation states, relative to the rate from Unemployment. In Figure 9 we show transitions rates into Employment from three broad categories of the non-employed – unemployment U, marginal attachment M and non-attachment N. Together M + N sum to those classified as non-participants, or Out of the labour force. Previous research for several countries, including both Canada and the US, has concluded that U, M and N exhibit distinct transition behaviour, with M falling between U and N in terms of the likelihood of being employed in the future (Jones and Riddell, 1999, 2019).

The probability of moving from U to E in the following month is very similar in January and February 2020 to its average level in the 2015-19 period. With the introduction of widespread restrictions in March 2020, the March-April 2020 transition rate is distinctly lower than average (0.20 vs 0.23). However, the job-finding rate jumps substantially in April-May and May-June to levels far above normal and, although it drops substantially in June-July, it nonetheless remains higher than average for those months. Job finding rates in July-August, August-September and September-October display the usual seasonal patterns and are very similar to the average rates observed during the 2015-19 period. The end of 2020 is characterized by below average transition rates and, although rates rose in January-

Figure 9: Transitions from Non-Employment Categories to Employment




Notes: Mean transition rates to Employment from Unemployment (in blue), Marginal Attachment (in red), and Non-Attachment (in green). For all series, the light line denotes average values by month for the 2015-19 reference period, the heavy line denotes the values by month for 2020, and the heavy dots denote the monthly values for 2021.

February and February-March, the job finding rate from Unemployment was again below the pre-pandemic level in the most recent months of 2021.

During the COVID period the transition rate behaviour of the marginally attached group differs even more substantially from its pre-pandemic value than was the case for transitions from unemployed job searchers. As was the case with pUE, the mean transition rate pME has values in January and February 2020 similar to the 2015-19 averages, but is dramatically higher in the subsequent three months, peaking in May-June at 0.28 versus an average level of about 0.1. Job-finding rates

of the marginally attached decline in subsequent months, as was the case for the unemployed, but unlike pUE remain much higher than normal throughout the remainder of 2020 and in the early months of 2021. Only in March-April 2021 do these transition rates fall back to their average level of just above 0.1. This suggests that the marginally attached group remained much more attached to the workforce than in previous periods.

In contrast, the transition rate pNE, the job-finding rate of the Non-Attached, remained largely unchanged throughout the turbulent COVID-19 period, relative to transition rates seen in the 2015-19. Together, these results imply that the sharp rise in non-participation early in the pandemic period, together with its subsequent substantial decline, were driven by the Marginally Attached group.

## 2.5 Labour Force Behaviour: Summary and Implications

The previous sections documented the dramatic changes in labour market activity brought about by the pandemic. The rapid decline in employment, increase in unemployment and fall in labour force participation, especially in March and April 2020, were unprecedented. Furthermore, standard measures of activity that perform well in more normal downturns were less well suited for the unusual pandemic-related circumstances and as a consequence arguably understate the magnitudes of the changes that occurred during the COVID period. The drop in the employment rate would be larger if the large increase in the Employed-Absent category were treated as temporary layoffs rather than employed. Similarly, the increase in unemployment would be larger if the Employed-Absent and the Marginally Attached were classified as unemployed rather than employed and out-of-the-labour force respectively. Finally, the drop in labour force participation is arguably overstated given that the Marginally

Attached retained a strong attachment to the labour force during these very unusual circumstances.

## 2.6 Characteristics of Transitions at the Peak of the COVID-19 Turmoil

Finally in this Section, we use the panel aspect of the LFS to probe more closely into the period of turmoil at the onset of the pandemic. In so doing, we construct novel labour market groupings that depart from the standard LFS classifications but which are, we think, more informative about the processes in operation in the labour market during the initial months of the COVID-19 era.[14]

We examine workers who were in paid employment in February 2020 and study their initial labour market outcomes in the heart of the recession. In order to have sufficient observations, we use the January and February 2020 in-rotation cohorts and we follow these individuals until June 2020. We identify their first change away from paid employment and then determine who was able to return to paid employment by June, at a point where the labour market had already recovered more than halfway back to the February employment rate. Further, we study the type of job to which these workers returned in terms of earnings, actual hours worked, industry, occupation, and occupational characteristics.

Our labour market groupings for this analysis are as follows: those in paid employment, workers actively searching, workers waiting for some type of recall and those with no direct labour market attachment. The first group contains workers who were "employed and paid" in all five months and make up around 63% of this

[14]These groupings are closely related to those employed by Kahn, Lange and Wiczer (2020) in their analysis of the turbulence of the US labour market.

sample. This group is comprised mainly of workers who were Employed-Working, but also include the Employed-Absent *if they were paid*. With the obvious exception of actual hours worked, workers who were Employed-Absent but paid are on average very similar to the workers who were Employed-Working in terms of their February labour market characteristics.

The remaining three categories group individuals who experienced a movement away from paid employment, based on their first status other than paid employment between March and June 2020. The Unemployed-Searching group, which makes up 3.6% of the sample, consists of the job search Unemployed, as conventionally measured. The No Search/Recall group, which makes up almost of a quarter of the sample, includes the Unemployed-Temporary Layoffs, the Unemployed-Future-Starts, the Employed-Absent who were unpaid, and the "awaiting recall" subset of the Marginally Attached. The final grouping (NILF) is the residual and is composed mainly of the the Non-Attached as previously discussed. They make up around 9% of the sample.

Table 1 presents the February 2020 labour market characteristics of these four groups. There are notable differences between workers who were able to maintain paid employment during the peak period of economic turmoil and those that transitioned away from paid employment. Workers who were able to maintain paid employment over the five months covered by the panel had much higher earnings in February, the month prior to the start of the COVID-19 recession. These individuals also worked more hours in the February reference week.[15]

We also compare these groups in terms of the occupational skills requirements of

[15]These differences are largely unchanged if workers who are Employed-Absent but paid, a small group, are excluded from the analysis.

Table 1: February characteristics by first labour market status change for workers employed in February

| | Employed paid | Unemployed search | No search/ recall | NILF |
|---|---|---|---|---|
| Weekly earnings | 1224.0 | 857.2 | 781.0 | 735.9 |
| | (7.13) | (30.08) | (9.13) | (17.33) |
| Hourly earnings | 32.41 | 24.09 | 23.17 | 22.71 |
| | (0.166) | (0.556) | (0.198) | (0.337) |
| Actual hours worked | 36.9 | 33.62 | 31.28 | 29.26 |
| | (0.134) | (0.786) | (0.262) | (0.478) |
| Occupational skill requirements‡ | | | | |
| Interpersonal skills | 0.245 | -0.254 | -0.391 | -0.341 |
| | (0.01) | (0.047) | (0.016) | (0.026) |
| Quantitative skills | 0.262 | -0.264 | -0.375 | -0.407 |
| | (0.01) | (0.048) | (0.015) | (0.026) |
| Physical strength | -0.190 | 0.174 | 0.319 | 0.197 |
| | (0.01) | (0.048) | (0.016) | (0.026) |
| Percent of sample | 63.0 | 3.6 | 24.3 | 9.1 |

Notes: [1] Sample: workers who were in paid employment in February 2020 and were in the LFS each subsequent cycle until June 2020. [2] Employed paid includes workers who in each of the 5 months of the analysis were either *employed and at work* or *away from work but paid*. [3] The other 3 categories are based on the first non-paid employment status between March and June 2020 for workers who left paid employment. The second group is "unemployed who were actively searching for employment". The third group is "no search/recall" which includes *unemployed waiting for recall* or *future start*, *employed but away from work and not paid*, and *not in the labour force but waiting for recall*. The final group, "not in the labour force", includes those *initially moving out of the labour force (and not waiting for recall)*. [4] Standard errors are in parentheses. [5] ‡ Constructed with variables from the O*NET using factor analysis weighted by the employed population from the 2016 Census. Scores are mean zero and have a unit variance. A unit of a derived factor score is equal to one standard deviation in the skill distribution for the 2016 May Canadian population.

their February 2020 occupation and report the results in Table 1. Using the variables from the O*NET, we employ factor analysis and construct three skills: quantitative, interpersonal and physical strength requirements. We updated the skills constructed

in Imai et al. (2019) who used the 2001 Census as weights.[16] The scores are mean zero and have a unit variance. A unit of a derived factor score is equal to one standard deviation in the skill distribution for the May 2016 Canadian population based on the employed population from the 2016 Census Masterfile.

Our results on these occupational skill requirements also highlight important differences in the labour market characteristics between these four groups. Workers who managed to maintain paid employment during the worst part of the COVID-19 recession tended to work in jobs with higher cognitive skill requirements and lower manual skill requirements (as measured by physical strength requirements[17]). For example, workers in the "Employed paid" group were employed in February in jobs that require around 0.26 standard deviations more quantitative skills than the average of Canadian workers in 2016, and work in jobs requiring more than half a standard deviation greater quantitative skills than workers who end up in unemployed search. This gap is even larger relative to workers in the No Search/Recall and NILF groupings.

Potentially, the large differences in February labour market characteristics between workers who maintained paid employment and those that end up displaced in the early part of the recession may be due to sectoral differences. Accordingly, we estimate various specifications of the following equation:

$$Y_i = \alpha + \delta_1 Search_i + \delta_2 Recall_i + \delta_3 NILF_i + \beta Age_i \ + \lambda Ind_i \ + \gamma Occ_i \ + \epsilon_i \quad (1)$$

where we include indicators for the first labour force status movement away from paid

[16] See Warman and Worswick (2015) for additional detail on the factor analysis and methods used.

[17] A similar pattern is found for visual and motor skill requirements.

employment: Search unemployment, Recall unemployment and Not in the labour force. Workers who were in paid employment in each of the five months constitute the default category. We also present estimates where we add age dummies (15 to 24; 55 to 60; 70 plus, with 25 to 54 year olds as the default category), February industry fixed effects, and February occupational fixed effects. The dependent variable $Y_i$ is the June value.

We present the estimates of equation (1) for June weekly earnings in Table 2.[18] The first column without any controls replicates the weekly earnings results of Table 1. In column 2, when we account for age differences, we observe the earnings gap relative to the always employed group declines slightly, potentially reflecting that younger or older workers are more susceptible to being laid off during the downturn. From the P-value from a joint F-test, we can see that the differences between the three groups that move away from paid employment is statistically significant. Industry fixed effects are included in column 3,[19] and produce a further reduction in the differences in February weekly earnings. While there is still a sizeable gap relative to the workers who maintained paid employment, the differences between the other three groups are no longer statistically or economically significant. Finally, we add occupational fixed effects in column 4; this produces a further reduction relative to the workers who maintained paid employed.[20]

Overall, the differential impact of the initial turmoil of the COVID-19 recession is important in explaining much of the dramatic change shown earlier in this paper in Table 1. Accounting for the February 2020 industry of employment eliminates the February earning differential between the workers who moved away from paid

[18] In Appendix Table A1, we present the results for the June occupational skill requirements.
[19] We include 478 industry fixed effects.
[20] We include 281 occupational fixed effects.

Table 2: February weekly earnings by first labour market status change for workers employed in February

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Search unemployment | -366.7** | -293.0** | -230.1** | -152.7** |
| | (29.22) | (27.76) | (25.45) | (21.77) |
| Recall unemployment | -442.9** | -368.6** | -248.4** | -148.5** |
| | (12.84) | (12.36) | (12.10) | (10.47) |
| Not in the labour force | -488.0** | -380.7** | -269.5** | -155.7** |
| | (19.07) | (18.32) | (17.30) | (14.91) |
| Constant | 1,224** | 1,293** | 1,222** | 1,957** |
| | (6.780) | (7.152) | (6.730) | (362.1) |
| Age dummies | No | Yes | Yes | Yes |
| February characteristics | | | | |
| Industry fixed effects | No | No | Yes | Yes |
| Occupation fixed effects | No | No | No | Yes |
| | | | | |
| P-values from F-test | | | | |
| All equal | 0.001 | 0.017 | 0.326 | 0.326 |
| Joint zero | 0.000 | 0.000 | 0.000 | 0.000 |
| | | | | |
| Observations | 14,001 | 14,001 | 14,001 | 14,001 |
| R-squared | 0.104 | 0.197 | 0.377 | 0.588 |

Notes: [1] Sample: workers who were in paid employment in February 2020 and were in the LFS each subsequent cycle until June 2020. [2] Default category is workers who in each of the five months were either *employed at work* or *away from work but paid* [3] The other three categories are based on the first non-paid employment status between March and June 2020 for workers who left paid employment. The second group is "unemployed who were actively searching for employment". The third group is "no search/recall" which includes *unemployed waiting for recall* or *future start*, *employed but away from work and not paid*, and *not in the labour force but waiting for recall.* The final group, "not in the labour force", includes those *initially moving out of the labour force (and not waiting for recall).* [4] Age dummies for 15 to 24 year olds, 55 to 60 year olds and 70 plus, with 25 to 54 year olds as the default category. [5] Standard errors are in parentheses. Statistical significance is denoted by: ** at 1% level, * at 5% level, + at 10% level.

employment. Further, while accounting for industry and occupational differences reduces the large February earning differential between workers who maintained paid employment and those who lost paid employed, a sizeable gap still remains.

In Table 3, we examine the type of employment workers from our February 2020 sample obtain by June 2020. We exclude cells that may not be replenished for workers that maintain employment with the same employer.[21] Examining changes in compensation, workers who are able to re-enter paid employment do not on average appear to suffer any loss in compensation in terms of either weekly, hourly earnings or actual hours worked.[22]

We next examine what fraction of workers report being employed in the same industry, industry and occupation, and then by industry and occupation and either firm size or establishment size between February and June 2020. Around 83% of workers who maintained paid employment in all five months remain in the same industry but this figure is much lower for other categories, particularly the Unemployed-Searching group. The match rate when occupation and firm size or establishment size is considered is only around 25% for the Unemployed-Searching group.

As is well known, occupation and industry coding is susceptible to measurement error. We therefore examine occupational skill requirements which are less impacted by this measurement error. If an occupations is miscoded, the chosen occupation code is likely to be similar in terms of skill requirements relative to the true occupation, resulting in a small gap due to miscoding. Examining the skill requirements again suggest that workers that are employed in June tend to end up occupations requiring

[21] See Brochu (2021) for a clear description of the LFS data and these issues.

[22] Changes in hours worked should be interpreted with caution since the measure of actual hours worked may be low in February 2020 due to the LFS reference week in that month including a statutory holiday in many provinces.

Table 3: Paid workers, June relative to February employment related values

| | Employed paid | Unemployed searching | No search/ recall | NILF |
|---|---|---|---|---|
| Weekly earnings | | -1.878 | 20.52 | -3.817 |
| | | (38.37) | (9.77) | (18.13) |
| Log weekly earnings | | 0.027 | 0.055 | 0.085 |
| | | (0.048) | (0.013) | (0.031) |
| Hourly earnings | | 0.972 | 0.050 | 0.042 |
| | | (0.724) | (0.219) | (0.363) |
| Log hourly earnings | | 0.028 | 0.004 | 0.014 |
| | | (0.023) | (0.007) | (0.014) |
| Actual hours worked | -0.400 | 0.094 | -1.160 | -0.807 |
| | (0.150) | (1.297) | (0.384) | (0.721) |
| Matching based on:† | | | | |
| Industry | 0.831 | 0.555 | 0.762 | 0.744 |
| | (0.004) | (0.039) | (0.01) | (0.02) |
| Industry/Occupation | 0.752 | 0.357 | 0.699 | 0.613 |
| | (0.005) | (0.038) | (0.011) | (0.023) |
| Industry/Occupation/Firm size | | 0.247 | 0.529 | 0.444 |
| | | (0.034) | (0.012) | (0.023) |
| Industry/Occupation/Establish. size | | 0.234 | 0.540 | 0.452 |
| | | (0.033) | (0.012) | (0.023) |
| Occupational skill requirements‡ | | | | |
| Interpersonal skills | 0.021 | -0.032 | -0.038 | -0.007 |
| | (0.005) | (0.059) | (0.014) | (0.027) |
| Quantitative skills | 0.021 | 0.038 | -0.030 | 0.011 |
| | (0.005) | (0.065) | (0.013) | (0.028) |
| Physical strength | -0.005 | 0.080 | 0.014 | 0.080 |
| | (0.005) | (0.052) | (0.014) | (0.027) |

Notes: [1] Sample: workers who were in paid employment in February 2020 and June 2020 and were in the LFS in each of the in between cycles. [2] Employed paid includes workers who in each of the 5 months of the analysis were either *employed and at work* or *away from work but paid*. [3] The other 3 categories are based on the first non-paid employment status between March and June 2020 for workers who left paid employment. The second group is "unemployed who were actively searching for employment". The third group is "no search/recall" which includes *unemployed waiting for recall* or *future start*, *employed but away from work and not paid*, and *not in the labour force but waiting for recall*. The final group, "not in the labour force", includes those *initially moving out of the labour force (and not waiting for recall)*. [4] Standard errors are in parentheses. [5] Reported are the fraction of individuals in each cell that report being employed in the same the category of employment as indicated by the row headers. For example, 55.5% of those employed in February who transitioned to unemployed searching in the following months before being reemployed in June, employment in June was in the same industry as in February. [6] ‡ Constructed with variables from the O*NET using factor analysis weighted by the employed population from the 2016 Census. Scores are mean zero and have a unit variance. A unit of a derived factor score is equal to one standard deviation in the skill distribution for the 2016 May Canadian population.

very similar skills to their February employment.

Together, this evidence suggests that workers who were able to stay in paid employment or had a separation from paid employment at the start of the COVID recession but were able to regain paid employment by June 2020 did not see much change in the quality of their job in terms of measures such as earnings and occupational skill requirements. However, selection issues may influence these results if more capable workers were better able to maintain employment, remain tied to their former workplace, or quickly attain new employment.

Initial results in Appendix Table A2 suggest that selection may be an important issue since a large fraction of workers who moved away from paid employment after February 2020 were still unemployed by June.[23] In this Table, we use a linear probability model to assess factors affecting the likelihood that workers who moved away from paid employment at the start of the COVID-19 recession were able to find employment by June 2020. When only labour force status indicators are included (column 1), we find that around 40% of workers that initially moved to unemployment search were able to find work by June 2020. Workers who moved out of the labour force had similar success in securing paid employment by June 2020. For workers with some type of recall or attachment to the employer, their probability of June employment was around 15 percentage points higher. In subsequent columns when we add controls for age, month of first employment status change and finally introduce industry and occupation fixed effects, we find that such controls do not fully account for the reemployment gap.

[23] Baylis et al. (2021) examine the probability of employment in June 2020 based on non-work state in April 2020 by different demographic groups.

# 3 Measuring Labour Demand: Vacancies

We assess the strength of labour demand through the COVID-19 era using counts of jobs posted provided by Burning Glass Technologies (BGT). Burning Glass Technologies is a private company that scrapes the web for all new positions and expends significant effort removing duplicates.[24] We think of job postings as an indicator of how employers assess the profitability of new employment relationships. As such, this indicator is forward looking as it depends on expectations about future market conditions.[25]

An alternative source on job openings is the Statistics Canada Job Vacancy and Wage Survey (JVWS). This has the advantage that it is based on a representative survey of all business locations operative in Canada. In addition, the JVWS reports a stock of open positions, whereas the BGT measure represents a flow. Finally, the JVWS is a measure of open positions, whereas BGT measures job postings which can at times refer to multiple positions.

However, at the time of writing, the JVWS is available only up to February 2021, whereas we have BGT data up to and including May 2021. Further, the JVWS ceased collecting data in Q2 and Q3 2020 and is thus not suited for examining conditions during crucial months of the COVID-19 pandemic. Another advantage of the BGT

[24]BGT data has become a fairly standard source of data on hiring intentions in the United States. Kahn et al. (2020) and Forsythe et al. (2020) for example use the BGT for the US in their reports on the state of the US labour market during the COVID recession. Hershbein and Kahn (2018) use BGT data to show that during the Great recessions employers increased skill requirements for new positions and engaged in skill upgrading. Hershbein and Kahn (2018) report that the data is of high quality, even though it is somewhat biased towards high skill occupations compared to job openings reported in JOLTS.

[25]Employers can adjust their workforce through other measures than through posting vacancies, for example through firing part of their work-force and through measures to reduce turnover. Our measure of job postings does not capture these manifestations of labour demand. We can also not speak to the intensity of employer's recruiting effort.

data is that is we can use it to measure job postings by province, occupation, and industry and day of posting, whereas the JVWS is only available at the month level for industry and province, but not for their interaction.

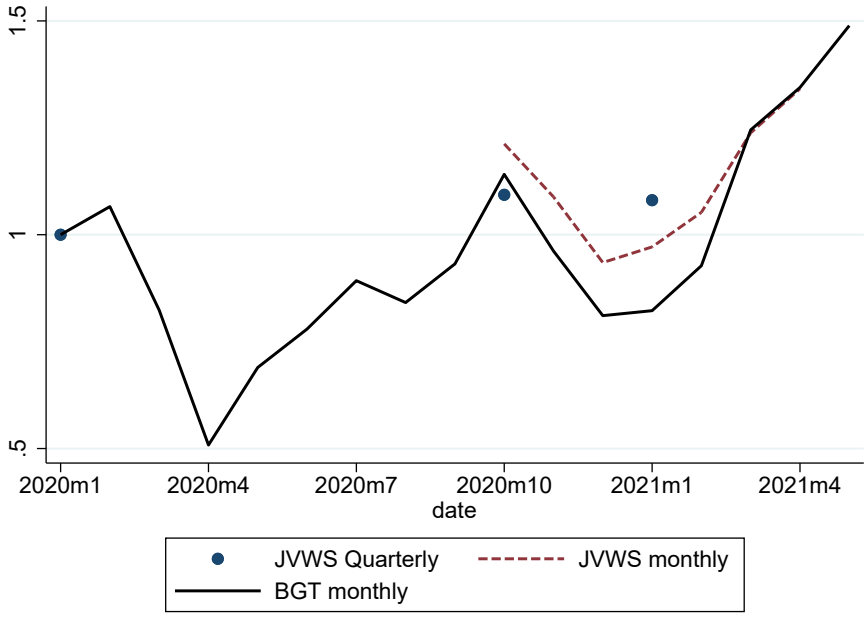
We therefore rely primarily on the BGT data because it allows us to examine job postings by occupation-industry-province and because it is timely and available throughout the pandemic.

Figure 10 shows the data from JVWS and from BGT on job openings and job postings (normalized to January 2020 levels) to May 2021 for the BGT data and February 2021 for JVWS. The JVWS series is consistent with the BGT during the time-periods that they are both being collected, increasing our confidence in the BGT data.

The BGT data-series indicates a rapid, precipitous decline late spring of 2020 with job postings bottoming out at about 50% of the pre-crisis levels in April 2020. However, at this point job postings started to increase again. They attained their pre-crisis levels by October 2020. The more current BGT data further suggests that labour demand has continued to increase subsequently, with a particularly rapid increase in postings observed in March through May 2021.

We next address how uniform this pattern in Job Postings was across provinces, industries and occupations. The following figures, constructed using the BGT data, show that this pattern, and notable the recent increase in postings, is broad-based both geographically and across industries and occupations. Figure 11 shows that by May 2021, the rate of postings exceeds that in February 2020 by about 30% across Canada. In the 15 months between February 2020 and May 2021, postings followed the nationwide course of the epidemic fairly closely with relatively little variation depending on the specific course of the pandemic in the different parts of

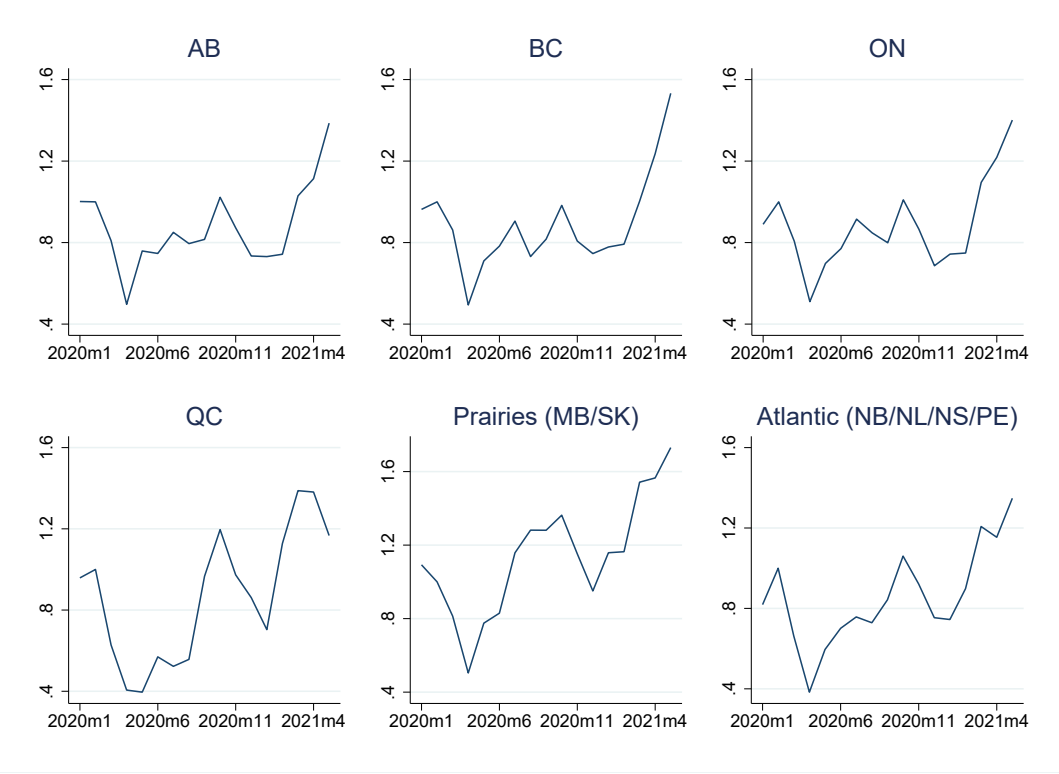
Figure 10: Job Openings and Job Postings




Notes: Job Openings (JVWS) and Job Postings (BGT) are normalized against January 2020 levels. Prior to October 2020, the JVWS only reported quarterly data. Owing to the pandemic, the JVWS ceased collecting data altogether in Q2 and Q3 2020.

the country. The decline in postings in Québec was not noticeably more pronounced during the first wave when COVID case rates in Québec were significantly higher than in the rest of the country. Likewise, postings in the Atlantic provinces closely followed the national trend despite the fact that these provinces were for a long time spared the worst impact of the pandemic itself.

Figure 11: Job Postings across Provinces

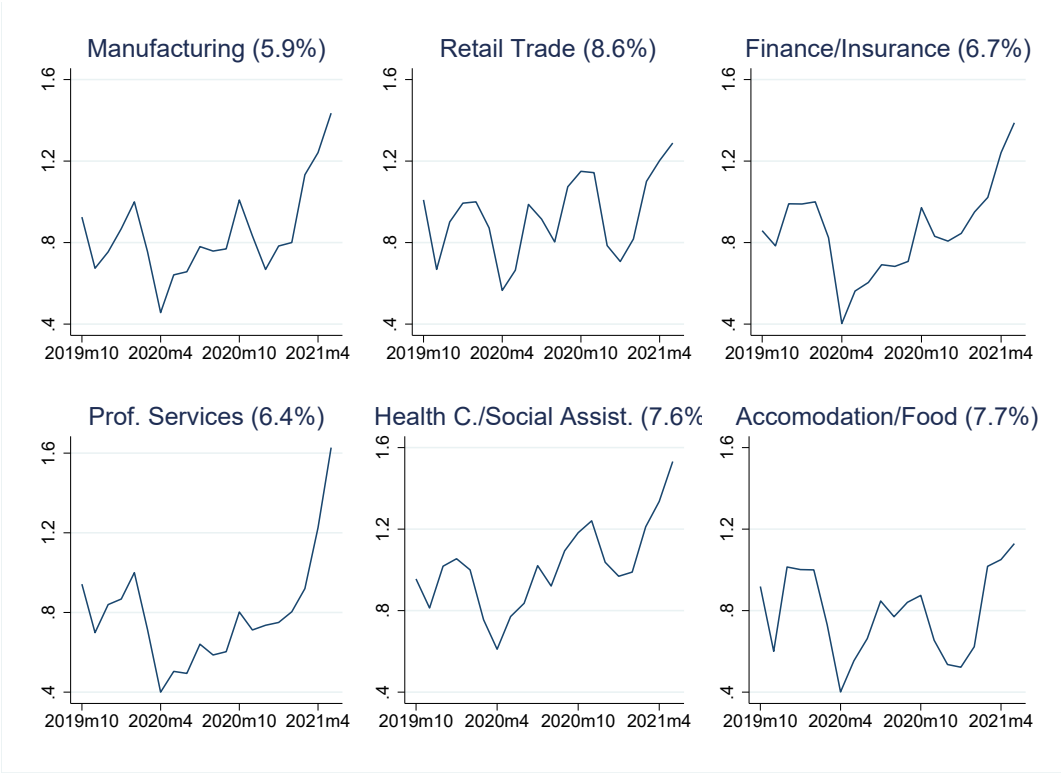



Notes: Data from Burning Glass Technology normalized against 2/2020.

The recovery in postings is broad-based, not just across provinces, but also across industries and across broad occupation groups. The following two figures show the time-series of postings for the six two-digit industries as well as the six broad occupation groups (NOC10) that account for the most postings during the period October 2019 to February 2020.[26]

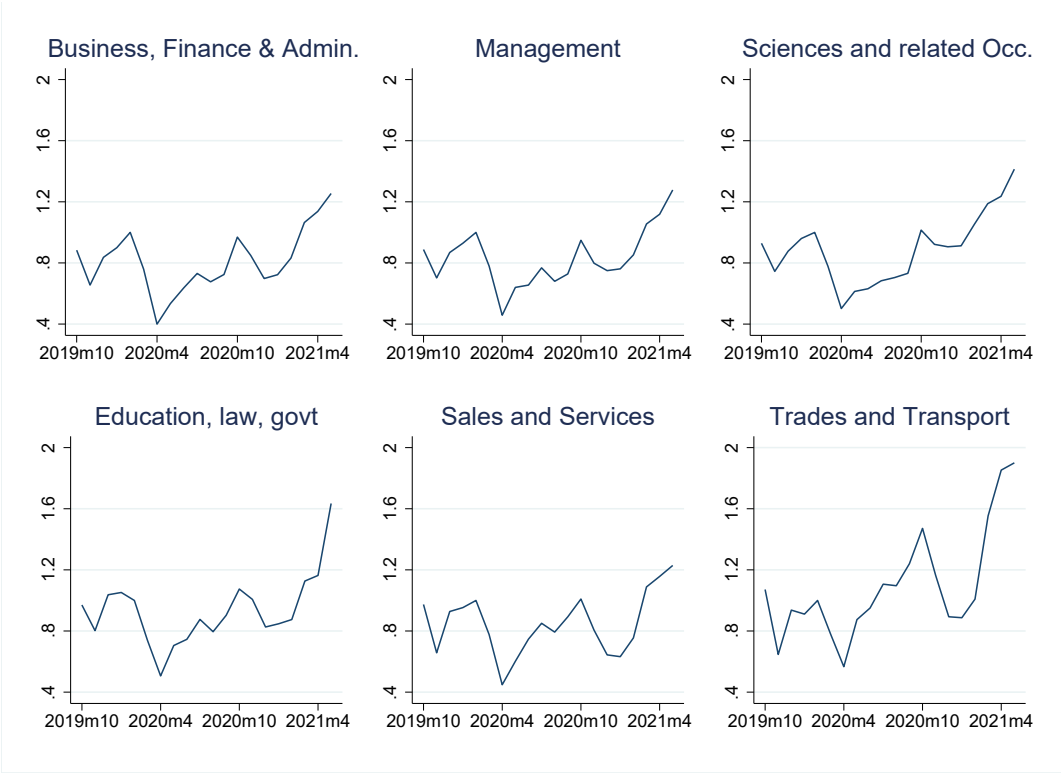
[26]The graphs for all broad industry and occupation groups can be found in the appendix.

Figure 12: Job Postings of Six Largest Industries




Notes: Data from Burning Glass Technology normalized against 2/2020.

Figure 13: Job Postings of Six Largest Occupation Groups




Notes: Data from Burning Glass Technology normalized against 2/2020.

Overall, much has been made in popular accounts of the variety in the experience of COVID-19 across Canada, and in provincial policy responses to the pandemic. Much has also been made of the differential impact of the pandemic recession on different industries and occupations. In light of this, we regard this evidence of substantial comparative similarity in both the decline and then recovery of labour demand by province, industry and occupation as important.

# 4 The Situation in May 2021

We close by presenting some findings related to the situation in May 2021.

First, while the labour market has improved, the consequences of the events of 2020 are still very clear. In particular, as we have discussed above, employment remains about 2 percentage points below the levels observed prior to the pandemic. How do these lasting effects vary by gender and age? Tables 4 and 5 show evidence that this decline is fairly broad based across the age distribution. These Tables show the change difference in the share of the population employed, unemployed, or not-in-the-labour force between March-April 2021 and average observed during the 5 months preceding the pandemic (October 2019-February 2020). For both females (Table 4) and males (Table 5), we see declines in employment across the age distribution, with the largest among those aged 15-24.

While the declines among older age-groups are relatively small as a fraction of the population, there is a clear gradient in the decline in employment as a fraction of the employment-share in the pre-period. The share of women and men aged 65 or older employed declined by around 10% between the pre-pandemic period and March-April 2021.

Table 4: LFS Changes by Age-group: Females

| | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $\Delta(NILF)$ | 0.032 | 0.041 | 0.011 | -0.030 | 0.004 | 0.008 | 0.009 | -0.005 | -0.006 | 0.004 | 0.011 | 0.006 |
| | (0.008 ) | (0.008) | (0.006) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.006) | (0.006) | (0.006) | (0.002) |
| $\Delta(U)$ | 0.033 | 0.027 | 0.023 | 0.011 | 0.016 | 0.005 | 0.028 | 0.018 | 0.016 | 0.018 | 0.008 | 0.000 |
| | (0.004) | (0.004) | (0.004) | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.002) | (0.002) | (0.000) |
| $\Delta(E)$ | -0.065 | -0.068 | -0.034 | 0.019 | -0.020 | -0.013 | -0.037 | -0.013 | -0.010 | -0.022 | -0.019 | -0.006 |
| | (0.008) | (0.008) | (0.007) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.005) | (0.002) |
| $\Delta(E)/E_{pre}$ | -0.154 | -0.097 | -0.042 | 0.024 | -0.025 | -0.016 | -0.045 | -0.016 | -0.015 | -0.046 | -0.087 | -0.124 |

Shown are changes in shares of individuals with specified labour status between the 10/2019-2/2020 average and the 3-4/2021 average. Standard errors in parentheses. The top left entry for example signifies that in March/April 2021 the share of 15-19 year olds not in the labour force was 3.2 percentage points larger than the average observed between 10/2019-2/2020. The last row shows the change in employment as a proportion of the pre-period employment in that age-group.

Table 5: LFS Changes by Age-group: Males

| | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $\Delta(NILF)$ | -0.013 | 0.003 | -0.005 | 0.014 | -0.010 | 0.011 | -0.010 | -0.010 | -0.025 | -0.005 | 0.015 | 0.006 |
| | (0.008) | (0.007) | (0.005) | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) | (0.005) | (0.006) | (0.007) | (0.003) |
| $\Delta(U)$ | 0.031 | 0.028 | 0.024 | 0.031 | 0.020 | 0.017 | 0.027 | 0.016 | 0.023 | 0.018 | 0.012 | 0.005 |
| | (0.004) | (0.005) | (0.004) | (0.004) | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.002) | (0.001) |
| $\Delta(E)$ | -0.018 | -0.032 | -0.019 | -0.044 | -0.011 | -0.027 | -0.017 | -0.006 | 0.002 | -0.014 | -0.027 | -0.011 |
| | (0.007) | (0.008) | (0.006) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.006) | (0.006) | (0.006) | (0.003) |
| $\Delta(E)/E_{pre}$ | -0.048 | -0.047 | -0.023 | -0.050 | -0.012 | -0.030 | -0.019 | -0.008 | 0.003 | -0.022 | -0.081 | -0.096 |

See notes for table 4.

Second, Table 6 shows how much employment changed conditional on gender and whether a child is present in the household. This table suggests that the decline in employment observed today since the pre-period is not primarily due to child-care responsibilities due to school closures: Employment declined from pre-pandemic levels among both women and men and for those with and without a child present in the household.[27,28] We thus find ourselves today with a relatively broad-based decline in employment across demographic groups of about 2 percentage points compared to the period between October 2019 and February 2020.

Table 6: Changes in Labour Force Status by Gender and Presence of a Child

| | Female | | Male | |
|---|---|---|---|---|
| Child $\leq$ 12 in Household? | No | Yes | No | Yes |
| $\Delta(NILF)$ | 0.009 | -0.001 | -0.001 | -0.002 |
| | (0.002) | (0.004) | (0.002) | (0.002) |
| $\Delta(U)$ | 0.016 | 0.011 | 0.021 | 0.014 |
| | (0.001) | (0.002) | (0.001) | (0.002) |
| $\Delta(E)$ | -0.025 | -0.010 | -0.020 | -0.012 |
| | (0.002) | (0.004) | (0.002) | (0.003) |
| $\Delta(E)/E_{pre}$ | -0.047 | -0.013 | -0.033 | -0.013 |

See notes for table 4.

Third, we turn to COVID era evolution in the price of labour. Figure 14 presents median hourly earnings by month between January 2018 and April 2021.[29] The sharp

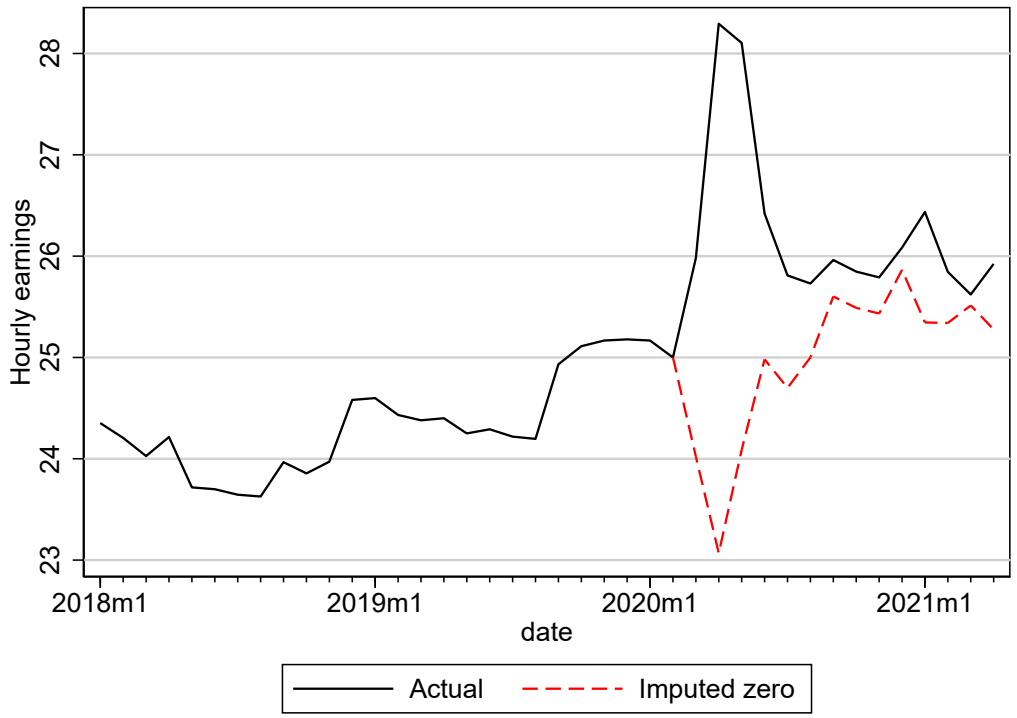
[27] What this table does *not* show is that the presence of having a child did and does not contribute to declines in employment. This is because the table does not control for any confounding factors, in particular the age, occupation, and industry distribution.

[28] See Beauregard et al. (2021) for an empirical analysis of the impact of school reopenings on parental labour market outcomes.

[29] When we examine the weekly wages, we find similar patterns.

increase in wages observed during the first few months of the crisis is clearly due to the selectivity of work-separations in the initial turmoil of the pandemic. And, as we have shown in Section 2.6, much of this is due to the occupation-industry distribution of separations.

Figure 14: Median Hourly Earnings

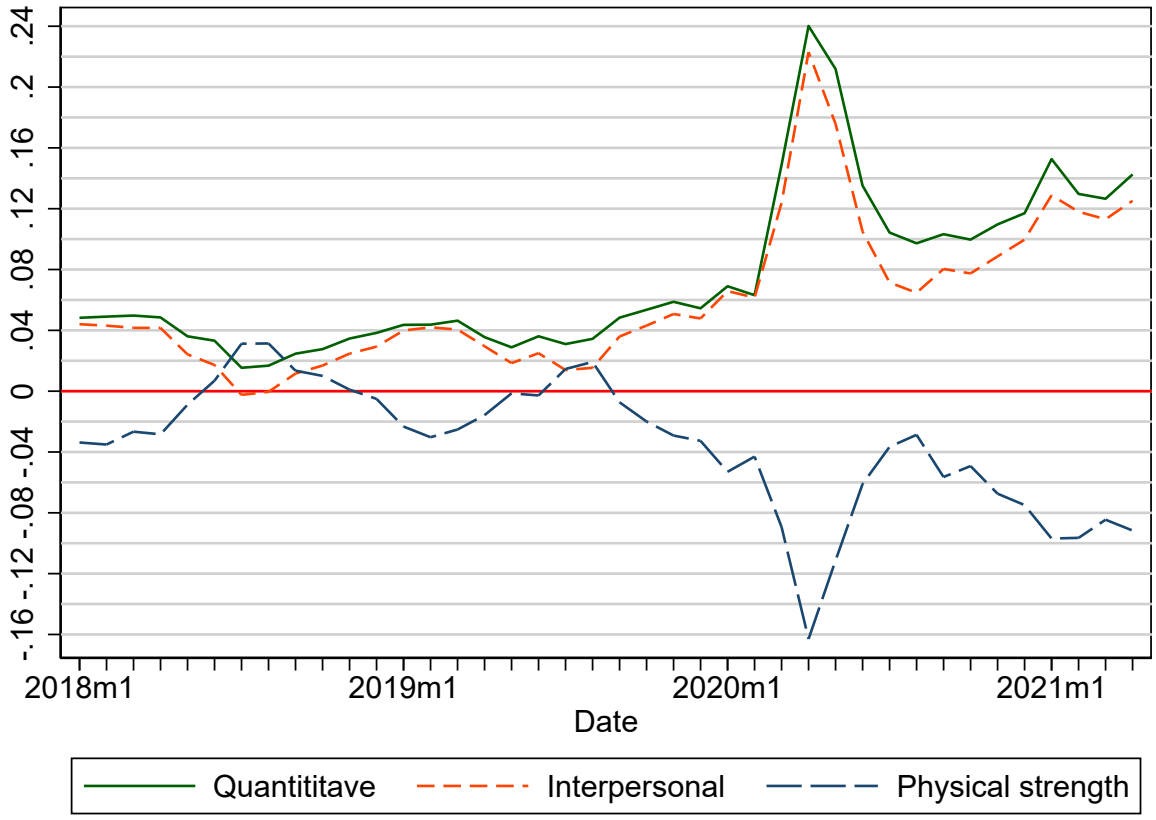



Notes: Imputed zero line: employment kept at the February 2020 levels and residual are assigned weekly earnings of $0. See text for details.

However, the figure also shows that median wages in April 2021 exceed those in the period immediately preceding the pandemic. To investigate whether this could plausibly be due to selection, we assumed all employment losses after February 2020 occurred among those with below median earnings. We thus adjusted the median weekly earnings by augmenting the population with a group sufficiently large to keep

employment at the February 2020 levels and assigned them weekly earnings of $0. We think this approach provides a lower bound for a selection corrected estimate of median earnings. It indicates that earnings in April 2021 are at least as high as those observed just prior to the COVID downturn.

Figure 15: Occupational Skill Requirements




Notes: The quantitative, interpersonal and physical strength requirement of the occupation were constructed from the O*NET using factor analysis.

The fourth and final finding we present in this paper concerns COVID era changes in the occupation skill-mix of employment. In particular, we show in Figure 15 a skill-index of the employed population based on the skill requirements constructed

from the O*NET described in Section 2.6.

Figure 15 shows that the employment distribution shifted towards occupations with high interpersonal and quantitative skills in March and April 2020. It also shows that, as employment recovered in the summer of 2020, much of this shift was undone. However, since Fall 2020, employment trends have started to again favour occupations demanding interpersonal or quantitative skills. At this point, it is difficult to say whether this is selection, but we do note that this shift towards occupations requiring significant quantitative and interpersonal skills occurred even as the employment share in the population has grown. It suggests that the COVID-19 pandemic entailed a structural shift towards occupations that require high quantitative and interpersonal skills.

# 5 Conclusion

This paper has documented how the COVID-19 pandemic has buffeted the Canadian Labour Market since early 2020. This downturn has been unusual in many respects, not least in how rapidly the situation evolved. By mid-2021, the pace of change seems to have slowed somewhat, but the situation is still highly unusual.

In particular, the labour market in mid-2021 is characterized by both elevated rates of unemployment and unusually high demand for labour. The high rates of job postings do suggest that the labour market might rapidly rebound in the coming months with rapidly declining rates of non-employment. The notion that labour markets are actually quite tight is also consistent with the observation that wages are rising, even net of selection effects.

However, there are also reasons for concern about how broad based the labour market recovery will be and whether there will be longer-run scarring effects. First, the share of long-term unemployed has rapidly increased. In April 2021, more than 30% of the unemployed have been unemployed in excess of 27 weeks, compared to about 15% prior to the pandemic. It is not clear how easily these unemployed can be incorporated back into the workforce. Second, employment declined proportionally substantially more among workers aged 60 or older; it is doubtful that many of these individuals will return to work again. Third, the recovery has been uneven across the skill distribution. Specifically, although labour demand appears quite strong across occupations and industries, employment has shifted away from occupations requiring physical skills towards occupations requiring interpersonal or quantitative/abstract reasoning skills.

In summary, in July 2021 the labour market overall seems to be poised to continue its recovery, but how broad the reach of this recovery will be is very much an open question.

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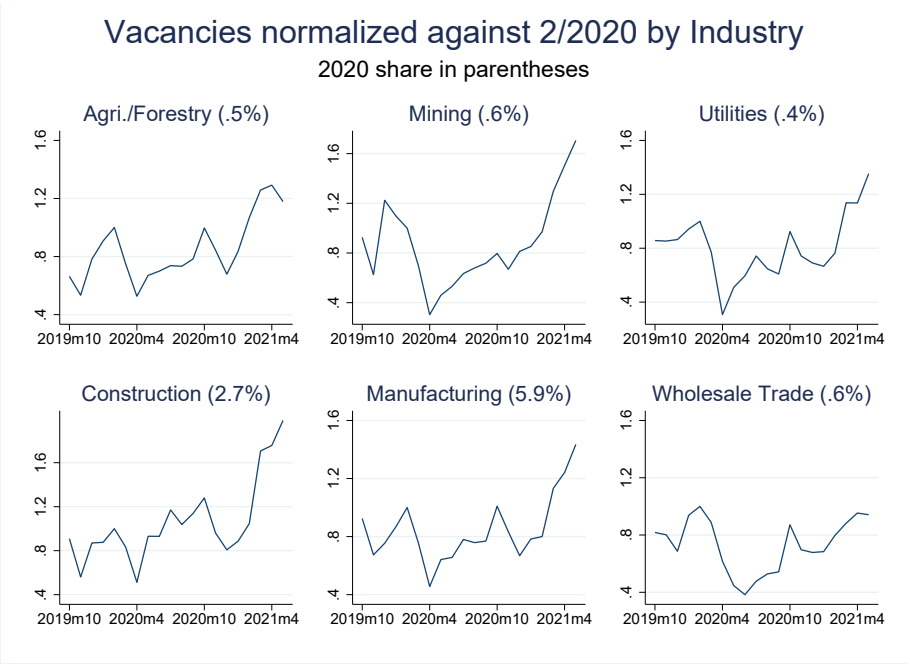
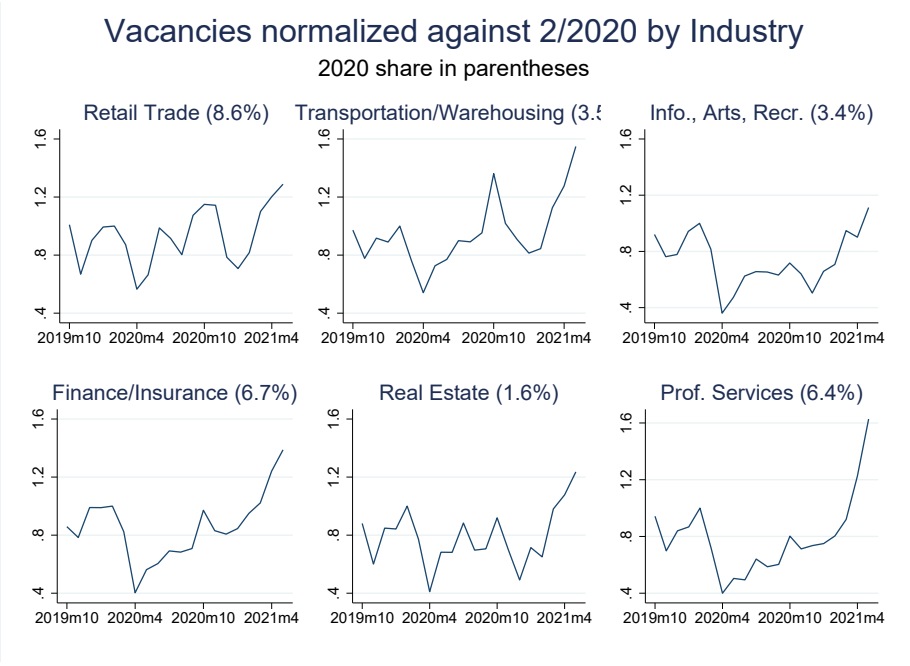
# 6 Appendix


Vacancies normalized against 2/2020 by Industry
2020 share in parentheses
Agri./Forestry (.5%)
Mining (.6%)
Utilities (.4%)
Construction (2.7%)
Manufacturing (5.9%)
Wholesale Trade (.6%)
.4
.8
1.2
1.6
2019m10
2020m4
2020m10
2021m4


Vacancies normalized against 2/2020 by Industry
2020 share in parentheses
Retail Trade (8.6%)
Transportation/Warehousing (3.
Info., Arts, Recr. (3.4%)
Finance/Insurance (6.7%)
Real Estate (1.6%)
Prof. Services (6.4%)
.4
.8
1.2
1.6
2019m10
2020m4
2020m10
2021m4

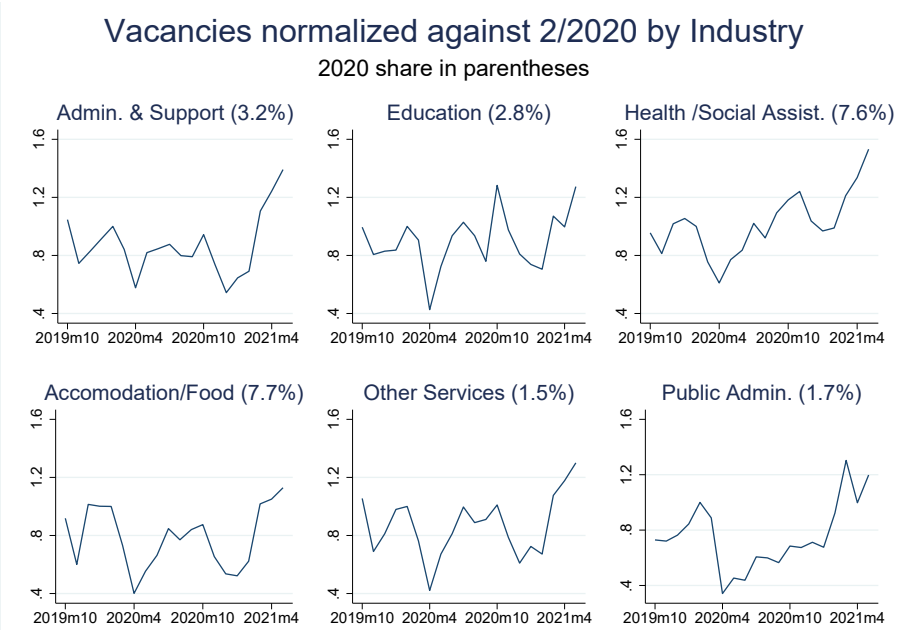

Vacancies normalized against 2/2020 by Industry
2020 share in parentheses
Admin. & Support (3.2%)
Education (2.8%)
Health /Social Assist. (7.6%)
Accomodation/Food (7.7%)
Other Services (1.5%)
Public Admin. (1.7%)
.4
.8
1.2
1.6
2019m10
2020m4
2020m10
2021m4

Table A1: February occupational skill requirements by first labour market status change for workers employed in February

| | Interpersonal | | | Quantitative | | | Physical strength | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Search unemployment | -0.498** | -0.432** | -0.197** | -0.525** | -0.458** | -0.230** | 0.364** | 0.321** | 0.125** |
| | (0.042) | (0.041) | (0.034) | (0.043) | (0.042) | (0.035) | (0.044) | (0.044) | (0.036) |
| Recall unemployment | -0.635** | -0.566** | -0.259** | -0.637** | -0.562** | -0.261** | 0.509** | 0.468** | 0.193** |
| | (0.019) | (0.018) | (0.016) | (0.019) | (0.019) | (0.017) | (0.019) | (0.020) | (0.017) |
| Not in the labour force | -0.585** | -0.482** | -0.256** | -0.668** | -0.553** | -0.289** | 0.387** | 0.330** | 0.160** |
| Age dummies | (0.027) | (0.027) | (0.023) | (0.028) | (0.027) | (0.024) | (0.029) | (0.029) | (0.024) |
| | 0.245** | 0.325** | 0.188** | 0.261** | 0.359** | 0.208** | -0.190** | -0.224** | -0.108** |
| | (0.010) | (0.011) | (0.009) | (0.010) | (0.011) | (0.009) | (0.010) | (0.011) | (0.009) |
| Additional controls | | | | | | | | | |
| Age dummies | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| February characteristics | | | | | | | | | |
| Industry fixed effects | No | No | Yes | No | No | Yes | No | No | Yes |
| Occupation fixed effects | No | No | No | No | No | No | No | No | No |
| P-values from F-test | | | | | | | | | |
| All equal | 0.004 | 0.000 | 0.214 | 0.013 | 0.053 | 0.297 | 0.000 | 0.000 | 0.114 |
| Joint zero | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Observations | 14,001 | 14,001 | 14,001 | 14,001 | 14,001 | 14,001 | 14,001 | 14,001 | 14,001 |
| R-squared | 0.095 | 0.135 | 0.446 | 0.099 | 0.149 | 0.430 | 0.053 | 0.067 | 0.428 |

See Table 3 for notes.

Table A2: Probability of Paid Employment in June 2020 for workers who were employed in February 2020 but moved to non-paid employment in the early stages of the COVID recession

| | Employed paid | Unemployed searching | No search/ recall | NILF |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Default (Unemployed search) | | | | |
| No search/recall | 0.155** | 0.160** | 0.113** | 0.113** |
| | (0.025) | (0.025) | (0.024) | (0.027) |
| NILF | 0.005 | 0.015 | -0.037 | 0.016 |
| | (0.027) | (0.027) | (0.027) | (0.030) |
| Constant | 0.402** | 0.412** | 0.442** | 0.682 |
| | (0.023) | (0.023) | (0.025) | (0.689) |
| Additional controls | | | | |
| Age dummies | No | Yes | Yes | Yes |
| Month of change | No | No | Yes | Yes |
| February characteristics | | | | |
| Industry fixed effects | No | No | No | Yes |
| Occupation fixed effects | No | No | No | Yes |
| P-values from F-test | | | | |
| Recall=NILF | 0.000 | 0.000 | 0.000 | 0.000 |
| Joint zero | 0.000 | 0.000 | 0.000 | 0.000 |
| Observations | 4,825 | 4,825 | 4,825 | 4,652 |
| R-squared | 0.021 | 0.025 | 0.084 | 0.308 |

Notes: [1] Sample: workers who were in paid employment in February 2020 and were in the LFS in each of the in between cycles. [2] 3 categories are based on the first non-paid employment status between March and June 2020 for workers who left paid employment. The default category is "unemployed who were actively searching for employment". The second group is "no search/recall" which includes *unemployed waiting for recall* or *future start*, *employed but away from work and not paid*, and *not in the labour force but waiting for recall.* The final group, "not in the labour force", includes those *initially moving out of the labour force (and not waiting for recall).* [3] Estimates from linear probability models. [4] Standard errors are in parentheses. Statistical significance is denoted by: ** at 1% level, * at 5% level, + at 10% level.