### **Pressure Cooker**

Declining real wages and rising inflation in Canada during the pandemic, 2020–22

David Macdonald

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### **Executive summary**

PRIOR TO RUSSIA'S invasion of Ukraine, rising inflation in Canada was being blamed on rising workers' wages by some quarters. This report examines workers' wages across the private and public sector and finds workers' wages haven't been the driving force behind higher than usual inflation in Canada. In fact, two-thirds of workers' wages in Canada are falling behind inflation, leaving the majority of workers in a pressure cooker situation—especially workers in the public sector, such as teachers and health care workers, who have been putting their health at risk on the front lines of the pandemic.

Since most workers have been experiencing real wage losses over the past two years, it clearly isn't workers' wages that are driving inflation. The "wage-price spiral" is sometimes looked to as explanatory of inflation: the theory that workers' wages drive inflation and then workers seek higher wages to compensate for higher inflation. Since the start of the pandemic, workers' wages haven't kept pace with inflation, a trend that is particularly true for public sector workers.

Among the findings in this report:

### Wages haven't kept pace

Adjusting for tenure, industry and occupation, average wages have increased by 2.7% a year compared to the 3.4% yearly inflation rate over the past two years. In other words, adjusted wage increases have not kept pace with inflation in Canada. In fact, 64% of workers had wage increases that were less than the 3.4% average inflation over the past two years. That means two-thirds of Canadian workers have seen real wage declines since the start of the pandemic.

### Wage gain winners

Workers in some industries did better than others. Workers in information, culture and recreation experienced the biggest wage gains during this time period: 5.2% a year, far above the general inflation rate. This was driven by IT companies helping businesses adjust to working from home. Workers in manufacturing non-durables, like food, beverages, textiles and paper, saw gains of 4.7% a year as Canadians' buying patterns changed due to lockdowns. Wholesale trade and real estate workers both saw average gains of 4% a year since February 2020. Wholesale trade connected producers to retailers during supply chain disruptions, driving wage gains in some occupations, while real estate agents saw huge commission gains as house prices skyrocketed.

### **Timing matters**

When examining average wage gains by tenure, it is clear that workers with less tenure are receiving higher wages in 2022 compared to a similar group in 2020. Those who were hired in the last five months are making 3.9% more a year than similar workers pre-pandemic. Workers who were hired earlier in the pandemic also show wage gains that are equivalent to the CPI. However, workers who didn't switch jobs during the pandemic experienced lower wage gains of only 2.4% a year—well below the 3.4% change in consumer prices. It's worth noting that those with less tenure get paid less, on average.

Workers who were hired during the pandemic within the real estate, as well as information, culture and recreation industries, saw the largest wage gains. IT professionals hired in the fall of 2021 saw average annual wage gains of 24% compared to pre-pandemic. On the real estate side, those hired in the past five months had 14% higher wages than in February 2020.

#### Wage losses

At the other end of the spectrum, two-thirds of workers are seeing real wages go down, when adjusted for inflation. This is particularly true for workers in the durables manufacturing industry. Workers' wages were hit hard when manufacturing shut down due to automotive chip shortages.

They've only seen yearly wage gains of 1.2%, well below the 3.4% annual CPI. Three industries with the lowest wages gains are in the public sector: public administration, education and health care/social assistance. Workers in these industries have seen wage growth of 2% a year or less. Although this would be considered adequate in normal times, it now falls well behind the 3.4% annual CPI that we've seen during the pandemic. In other words, many of the workers who faced the greatest personal risks during the pandemic, those in health care and teachers, have actually seen the smallest wage gains. In part, lower public sector wage gains are due to several provinces aggressively limiting wage growth in recent collective agreements. This has resulted in large real average wage losses during the pandemic in Alberta, Saskatchewan, Manitoba, Ontario and Newfoundland and Labrador among public sector workers.

### Introduction

DUE TO A number of drivers, inflation has risen rapidly in Canada in the second half of 2021. The headline CPI figure that receives the most attention is the year-to-year figure, the most recent of which is February 2022 versus February 2021, where the average consumer price change was 5.7%. However, this ignores the fact that the CPI stood at only 1.1% between February 2021 and February 2020. This is what is called "base effects": the starting point of today's high CPI was a very low CPI from the previous year. If we track inflation over two years—February 2020 versus February 2022—we get a better picture of inflation trends over the entire first two years of the COVID-19 pandemic and don't get fooled by the base effects. Over this two-year period, inflation rose by 6.8%, meaning it rose by 3.4% a year. This is certainly above the 2% CPI that we've become accustomed to, but not nearly as concerning as the most recent yearly figure on its own.

This paper examines inflation over the first two years of the pandemic as it relates to workers' wages, comparing February 2020 to February 2022. In order to get a clear picture, we need to make adjustments for the substantial changes in labour force composition because of the pandemic. There has been sustained job loss for lower-wage workers, particularly in the food and accommodation industry. If we simply look at average wages from February 2020 to February 2022, we would see large wage gains due to the fact that a large proportion of low-wage workers lost their job and aren't counted in the average wage anymore.

# **Summary results**

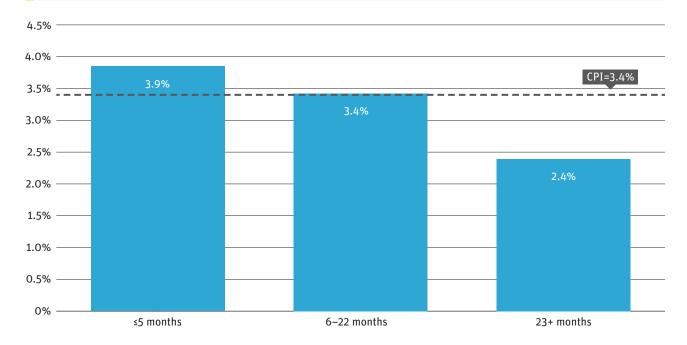
ADJUSTING FOR TENURE, industry and occupation, average wages have increased by 2.7% a year compared to the CPI yearly increase of 3.4% over the past two years. In other words, adjusted wage increases have not kept pace with inflation in Canada. In fact, 64% of workers had wage increases that were less than the 3.4% average CPI over the past two years. That means two-thirds of Canadian workers have seen real wage declines since the start of the pandemic.

When examining average wage gains by tenure, it is clear that workers with less tenure are receiving higher wages in 2022 compared to a similar group in 2020. Those who were hired in the fall of 2021 have less than five months' tenure. They are making 3.9% more a year than similar workers pre-pandemic. Workers who were hired earlier in the pandemic also show wage gains that are equivalent to the CPI. However, workers who didn't switch jobs during the pandemic experienced lower wage gains of only 2.4% a year—well below the 3.4% change in consumer prices.

It's worth noting that those with less tenure get paid less, on average. For example, the average wage for those hired in the last four months is \$22.29 an hour. It's \$32.35 an hour for workers who were hired more than two years ago.

As illustrated in Figure 2, over two-thirds of workers were hired more than 23 months ago. Therefore, the lower wage gains in that longer-tenured group apply to many more workers.

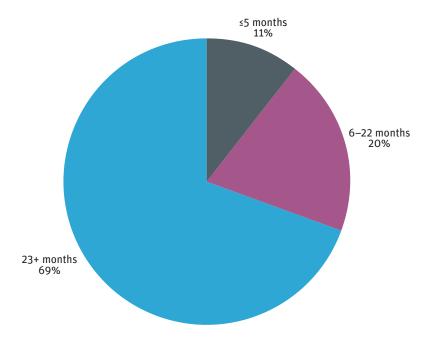
### FIGURE 1 Annualized wage gains, by tenure, February 2020 vs. February 2022



**Source** Labour Force Survey PUMF and author's calculations

Note Three-month rolling average, not seasonally adjusted. Adjusted for February 2020 weighting of tenure, NAICS, NOCS. Compares workers' hourly wage in the same industry, occupation and tenure in February 2022 vs. February 2020.

### FIGURE 2 Proportion of workers, by tenure, February 2022



**Source** Labour Force Survey PUMF and author's calculations

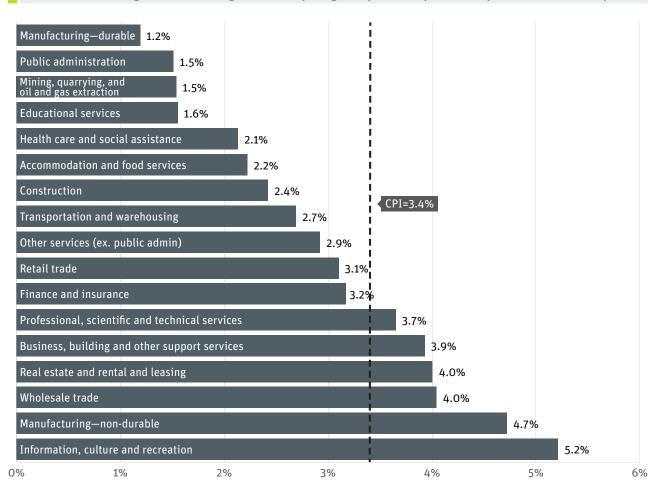
# **Industry gains**

COMPARED TO OTHER industries, workers in information, culture and recreation experienced the largest wage gains during this time period, at 5.2% a year, as shown in Figure 3. This increase is well above the increase in consumer prices. Workers in the manufacturing of non-durables (like food, cleaning and paper products) had average annual wage gains of 4.7%. Workers in wholesale trade and real estate/rental/leasing, on average, had 4% higher wages a year compared to 2020.

At the other end of the spectrum, many workers are seeing real wages go down, when adjusted for inflation. This is particularly true for workers in the manufacturing durables industry. These workers manufacture things that are meant to be used for more than three years, like cars or appliances. They've only seen yearly wage gains of 1.2%, well below the 3.4% annual CPI.

Three industries with the lowest wage gains are in the public sector: public administration, education and health care/social assistance. Workers in these industries have seen at or under 2% wage growth a year. Although this might be considered adequate in normal times, it now falls well behind the 3.4% annual CPI that we've seen during the pandemic. In other words, many of the workers who faced the greatest personal risks during the pandemic, those in health care and teachers, have actually seen the smallest wage gains.

### FIGURE 3 Average annual changes in hourly wages, by industry, February 2022 vs. February 2020



Source Labour Force Survey PUMF and author's calculations

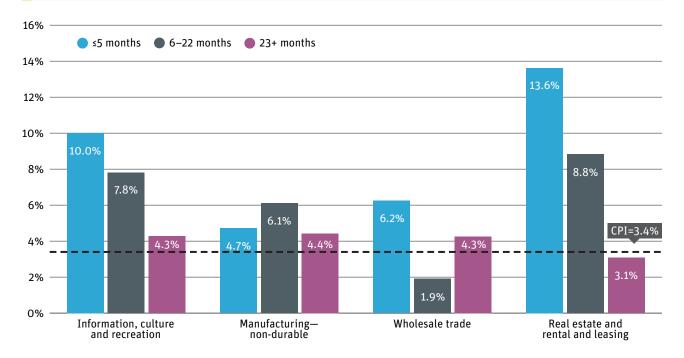
Note Three-month rolling average, not seasonally adjusted. Adjusted for February 2020 weighting of tenure, NAICS, NOCS. Compares workers hourly wage in the same industry, occupation and tenure in February 2022 vs February 2020.

# The biggest winners and the biggest losers

AT FIRST GLANCE, the information, culture and recreation industry would seem like an odd place for large wage gains, given lockdown impacts on large sporting and arts events, not to mention the wholesale shutdown of indoor recreation facilities and sports. However, it is the information part of that industry that is driving wage gains. The sub-industries of data processing/hosting, internet publishing and internet broadcasting are under that information banner. There was a massive upswing in Canadians working from home during the pandemic. It rose from 7% in 2016 to 43% during Omicron wave.¹Combined with many businesses moving more sales online to avoid the impact of lockdowns, there was plenty of demand for IT infrastructure to facilitate these rapid shifts.

Figure 4 shows that workers who were hired during the pandemic within the information, culture and recreation industry saw among highest wage gains of any industry. Occupations within this sector that had the largest wage gains were those in natural and applied sciences. Here, you'll find the technicians for IT, telecommunications and data processing/hosting. For those in the industry who were hired in the past five months, their average increase in wages was 10% a year. But if you look more specifically at professionals in natural and applied sciences, they saw a whopping 24% increase in wages a year since 2020.

FIGURE 4 Average annual wage change by tenure (highest gains), February 2022 vs. February 2020



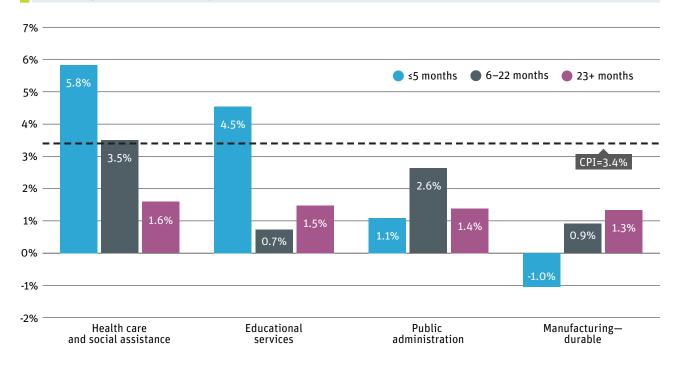
Source: Labour Force Survey PUMF and author's calculations

Note Three-month rolling average, not seasonally adjusted. Adjusted for February 2020 weighting of tenure, NAICS, NOCS. Compares workers hourly wage in the same industry, occupation and tenure in February 2022 vs February 2020.

Workers in the non-durable manufacturing industry saw the second highest increase in wages between 2020 and 2022, at 4.7%. This industry makes goods that last for less than three years, such as food, beverages, textiles, paper and cleaning products. The gains were broad-based across the tenure categories, with all workers seeing wage gains that were at least a point above the CPI, although workers who were hired early in the pandemic saw slightly higher gains. The pandemic drove Canadians to make meals at home, increasing the demand for workers to produce that food. The production of toilet paper is also in this category. Increased wages in this industry were very focused among supervisors and middle managers rather than labourers or machine operators.

Workers in the wholesale trade industry were tied for the third highest annual wage gain, at 4% a year. This industry contains companies that sell goods wholesale to a final retailer, whether it's food, energy, non-durable goods, vehicles, building materials or machinery. In other words, businesses that are in the middle of the supply chain, the go-between for the initial producer and the final consumer. With the supply chain disruptions, the

**FIGURE 5** Average annual wage changes by tenure and industry (lowest gains), February 2022 vs. February 2020



Source Labour Force Survey PUMF and author's calculations

Note Three-month rolling average, not seasonally adjusted. Adjusted for February 2020 weighting of tenure, NAICS, NOCS. Compares workers hourly wage in the same industry, occupation and tenure in February 2022 vs February 2020.

> wholesalers had a front row seat in dealing with these issues and required the staff to do it. Particularly for specialized sales and for those who were hired in the past five months, wage pressures are evident.

> Also, with an average 4% a year higher wages, is the real estate/rental/ leasing industry. These gains were heavily concentrated among workers who entered the industry in the past five months. Real estate agents with less than six months on the job are making more than those hired earlier in the pandemic, due to the unprecedented upswing in house prices. This is one of those rare instances where workers with less tenure make more than workers with more tenure.

> There are plenty of industries in which workers' wages are nowhere near keeping pace with the CPI. These workers are taking an effective pay cut since the price of goods that they buy is now higher relative to their wages.

> The worst performing industry is the manufacturing of durable goods (i.e. goods that are used over several years, like appliances or cars). There, average adjusted annual wage gains have been an abysmal 1.2% a year compared to

the 3.4% increase in CPI. In other words, workers in that industry are taking a 2.2% real wage cut a year. Assemblers, the largest occupation in this industry, who've had their job for over two years have seen wage gains of only 1% a year. However, assemblers who were hired in the past five months have seen annual wage gains of 9% since 2020. Unfortunately, machine operators have seen wages plummet over that same period, offsetting any gains. This trend is likely related to the chip shortage among car and other manufacturing companies, leading to plant shutdowns and other disruptions. There is going to be little pressure on wages when workers aren't even needed because of a lack of parts. The contrast could not be starker between the manufacturing of durables that were hit hard by the chip shortage and the manufacturing of non-durables (like food) that were buoyed by changing consumer behaviour and saw among the largest wage gains.

Public administration is the industry that saw the next lowest wage gains, 1.5% a year, which is roughly half of the 3.4% CPI increase since the start of the pandemic. Workers who were recently hired into public administration have fared worse than average, although those hired earlier in the pandemic, but not in the past five months, have fared slightly better. They had average wage gains of 2.6% a year, although still less than the CPI.

Education and health care workers are seeing adjusted gains of just over 1.6% and 2.1% a year, respectively. In these sectors, those hired in the past five months are seeing larger wage gains compared to pre-pandemic. This isn't due to hiring or retention bonuses, which have been common provincial government reactions to stress on health care workers during pandemic. The Labour Force Survey includes only hourly wages, not bonuses. If additional funding pushed up regular hourly wages, then that would be included. However, flat payouts that occurred one time or occurred at hiring would not be included.

While higher wages are positive for those seeking employment, the reason why there is wage pressure is troubling. Workers in health care and education were hit hard by the increased risk of illness, substantial modifications in the way they work and burnout as a predictable result<sup>2</sup> of those pressures. This has led to a major drive to hire new employees to replace nurses, personal support workers and teachers who were off due to illness and burnout.

Nurses, however, weren't among those workers who experienced the largest wage gains, even among short-tenured health care workers. Nursing occupation wages went up by only 2% a year since the start of the pandemic, no matter the tenure. In other words, those on the very front lines of the pandemic are seeing their pay go down in real terms, despite the risks they've undertaken and continue to undertake.

The largest wage gains among health care workers were in short-tenured technical occupations, like medical lab techs testing for things like COVID-19. They saw average annual wage gains of 9%. Short-tenured assistant occupations (like personal support workers) have seen average wage gains of 6% a year if they were hired at the start of the pandemic. But if those personal support workers started at their present job prior to the pandemic, they saw wage gains of only 2%, well under the CPI of 3.4%.

For teachers, the only bright spot is for those who were hired in the past five months to replace teachers who were off sick or on leave due to burnout. Recently hired teachers have seen wage gains of 4% a year compared to pre-pandemic levels. Teachers with more than two years of tenure have seen wage gains of about half the CPI, at 1.5% a year, compared to pre-pandemic. This is resulting in an real pay cut of 1.1% a year, after adjusting to inflation.

It should come as no surprise that public sector workers in the public service, health care or education are seeing lower real wages once inflation is factored in. Several provincial governments have been actively working to freeze those wages prior to and even during the pandemic. As the public sector is heavily unionized, it is worth examining the major wage settlements that have occurred over the past few years.

Employment and Social Development Canada maintains an extensive database of all wage settlements from collective agreements.3 Figure 6 examines the average wage gains from major public sector settlements since 2018. The average term of wage settlements over that period was 40 months (3 years, 4 months), therefore, these agreements would fit into part of our timeframe of February 2020 through February 2022.

As is clear from Figure 6, the provinces differ markedly in the wage gains they've been offering public sector employees. At the high end, we find average wage settlement raises have been, on average, roughly 2% a year since 2018 in P.E.I., B.C. and Quebec. New Brunswick did not have sufficient new union agreements between 2018 and 2021 to generate an estimate. However, 2022 data will show a major public sector contract yielding 2%-a-year raises that were negotiated in the fall of 2021.4

Annual 2% wage increases would be a fairly standard target in normal times, when the CPI could be expected to increase at about that rate. However, wage increases in the public sector are now well under the 3.4% increase in prices that we've seen during the pandemic. Even at the high end of average provincial wage settlements, the situation ensures that the average public sector worker will take a roughly 1.5% pay cut a year in inflation-adjusted terms.

Ontario, Saskatchewan and Manitoba have built in wage gains of closer to 1% a year for their public sector workers. In these three provinces, public sector workers have suffered real wage losses of roughly 2% a year since the start of the pandemic.

In Manitoba, this is the result of 2017 legislation freezing public sector wages for two years and then increasing them by 0.75% and 1% in the following two years. Although this legislation was never proclaimed into law, the wage increase maximums were enforced through bargaining mandates to some public sector entities. Some collective agreements were settled by binding arbitration that disregarded the legislation and now the government is paying years of retroactive wages since 2017. For example, the Manitoba Nurses Union ratified a new contract this year that will pay out \$216 million in retroactive pay increases going back to 2017. As much as \$157 million for teachers is also owed. Other public sector contract settlements are forthcoming, although initial court rulings on the legality of the wage freeze have been struck down.5

Saskatchewan, for its part, kept its public sector workers under a wage freeze from 2017 to 2020. In 2021, wages finally went up, but not my much. Nurses, for instance, saw a 1% pay raise in 2021.

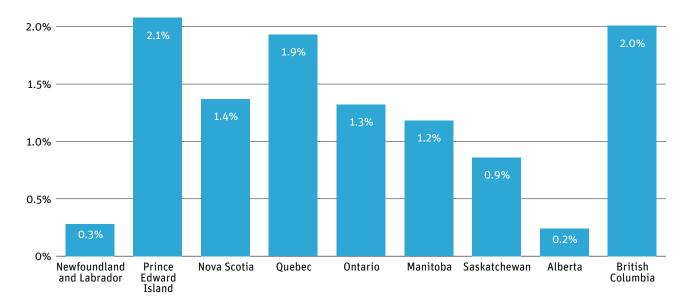
Alberta and Newfoundland and Labrador are at the other end of the spectrum, where there have almost been no average wage gains in contract negotiations since 2018. With inflation increases since 2020, this means public sector workers in those two provinces are seeing real wage cuts of almost 3% a year.

This is likely to continue in Alberta for the rest of 2022. The most recent collective agreement reached with the Alberta Union of Provincial Employees' (AUPE) in October 2022 provides for a wage freeze in 2022, a 1.25% increase in February 2023 and an increase in September 2023 that will be determined by economic conditions but could be as much as 2%.6

Public sector employees, specifically in Newfoundland and Labrador, had pay freezes between 2016 and 2019, although these were lifted in 2020 and 2021.

### FIGURE 6 Average annual wage increase in public sector major wage settlements, by province, 2018-2021





**Source** Employment and Social Development Canada.<sup>7</sup>

Notes Employee weighted average annual percentage adjustment for public sector major wage settlements, 2018–2021. 2018–2020—Annual percentage adjustment, 2021— First year percentage adjustment.

# **Raises unrelated** to hourly pay

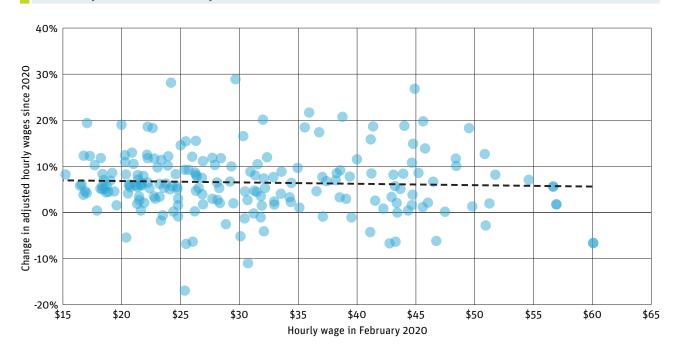
ONE OF THE features of the first year-and-a-half of the pandemic was that job losses were tightly correlated to hourly wages. Workers with low hourly wages were much more likely to have been laid off or to have lost the majority of their working hours during the pandemic.

This analysis fixes the weights to pre-pandemic levels to avoid including the impact of these job losses on average wages. However, it is worth examining whether wage increases were correlated to pre-pandemic hourly wages. For example, were low-paid workers more likely to see a wage increase during the pandemic than higher-paid workers?

There seems to be no relationship between pre-pandemic hourly wages and the change in those wages over the course of the past two years. This lack of any statistical relationship also holds when examining the data by length of tenure.

In other words, there is no silver lining for low-wage workers, despite being much more likely to be laid off, they haven't been any more likely to see a wage increase during the pandemic or in the subsequent rehiring in the fall of 2021.

### FIGURE 7 Wage change by pre-pandemic hourly wage (by NAICS/NOCS category), February 2022 vs. February 2020



**Source** Labour Force Survey PUMF and author's calculations. Note Three-month rolling average, not seasonally adjusted. Adjusted for February 2020 weighting of tenure, NAICS, NOCS. Compares workers' hourly wage in the same industry, occupation and tenure in February 2022 vs February 2020.

### **Conclusion**

SINCE THE START of the pandemic, two-thirds of workers in Canada have not seen their wages keep pace with inflation. In other words, most workers have seen real wage losses during the pandemic, once inflation is factored in. Although workers who were hired during the pandemic, and particularly in the fall of 2021, were more likely to see real wage gains compared to pre-pandemic, their actual wages are lower, given their short tenure. Most workers have been in their job for more than two years and their wages have grown less than inflation.

Wage gains have been linked to areas of increased demand during the pandemic. The rapid shift to working from home has led to substantial wage gains for those who facilitated that shift, particularly in IT infrastructure of various areas in the information, arts and culture industry. Supply chain issues have led to large wage gains for specialized sales people in the wholesale industry. Workers producing non-durable goods, like food, particularly if they were supervisors, saw substantial gains. Real estate agents, especially those who entered the industry in the fall of 2021, have seen huge gains. This reflects massive house price increases during the pandemic and larger commissions paid to agents.

On the other hand, several industries saw wage gains well below inflation. Workers in the manufacturing of durable goods have seen real wage losses as car manufacturing and related industries ground to a halt due to a lack of microchips. Public sector workers, like teachers, public servants and health care workers, have also seen wage gains that are well below inflation, despite many being among the most exposed to illness risk during the pandemic. In part due to higher illness and in part due to burnout, recent hires into both teaching and health care have seen higher wages compared to pre-pandemic levels. However, the largest health care wage gains have gone to lab technicians, not nurses.

In part, lower public sector wage gains are due to several provinces aggressively limiting wage growth in recent collective agreements. This has resulted in large real average wage losses during the pandemic in Alberta, Saskatchewan, Manitoba, Ontario and Newfoundland and Labrador among public sector workers.

In the initial months of the pandemic, those who were working at or near minimum wage were much more likely to lose their job or the majority of their working hours compared to those further up the income spectrum. While job loss during the pandemic was closely associated with hourly wage rates, there seems to be no connection between hourly wage rates and wage gains during the pandemic. Lower-wage workers saw massive job losses, but didn't see any offsetting increase in wages as industries re-opened.

Since most workers have been experiencing real wage losses over the past two years, it clearly isn't workers' wages that are driving inflation. The "wage-price spiral" is sometimes looked to as explanatory of inflation: the theory that workers' wages drive inflation and then workers seek higher wages to compensate for higher inflation. Since the start of the pandemic, workers' wages haven't kept pace with inflation, a trend that is particularly true for public sector workers.

## Methodology

TO GET A clearer picture of wage gains, I'm using a similar methodology to what Statistics Canada first introduced in The Daily, November 2021.8 They hold job tenure (months on the job), industry (NAICS 21) and occupation (NOCS 40) weights constant at February 2020 levels to exclude the massive employment changes.

I'm using the Labour Force Survey (LFS) Public Use Microdata Files (PUMF) to replicate this methodology. I've altered the tenure categories to better align with massive job losses at the start of the pandemic and the rehiring boom of the fall 2021. The three tenure categories were hired in the fall of 2021 (tenure ≤ 5 months), earlier in the pandemic (tenure = 6 to 22 months) and prior to the pandemic (tenure≥23 months). I'm also using a three-month rolling average, just like Statistics Canada's methodology. Any category (NAICS/NOCS/tenure) with fewer than an average of 3,000 workers a month in either 2020 or 2022 is excluded. As with all LFS data, the wages of self-employed workers are excluded.

Statistics Canada estimated the two-year adjusted wage gain of 5.2% in November 2021 using this methodology, whereas in February 2022, it seems to be slightly higher, at 5.3% (although with slightly different tenure thresholds and slightly more recent data).

The Labour Force Survey does not track individual people for more than six months. As such, this analysis compares the group in February 2022 with the same industry, occupation and tenure to the comparable group in February 2020, as opposed to doing a true longitudinal comparison.

In this analysis, figures will be on an annualized basis, comparing February 2020 to February 2022 for both CPI and wages. All average wage figures are adjusted, as described above, to maintain a constant employment weighting from February 2020.

### Notes

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