Catalogue no. 36-28-0001
ISSN 2563-8955

Economic and Social Reports

The net impact of telework on restaurant revenues in Canada

by Tahsin Mehdi and René Morissette

Release date: October 23, 2024

Statistics Canada Statistique Canada

Canada

How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website, www.statcan.gc.ca.

You can also contact us by

Email at infostats@statcan.gc.ca

Telephone, from Monday to Friday, 8:30 a.m. to 4:30 p.m., at the following numbers:

- Statistical Information Service 1-800-263-1136
- National telecommunications device for the hearing impaired 1-800-363-7629
- Fax line 1-514-283-9350

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, Statistics Canada has developed standards of service that its employees observe. To obtain a copy of these service standards, please contact Statistics Canada toll-free at 1-800-263-1136. The service standards are also published on www.statcan.gc.ca under "Contact us" > "Standards of service to the public."

Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

The net impact of telework on restaurant revenues in Canada

by Tahsin Mehdi and René Morissette

DOI: https://doi.org/10.25318/36280001202401000003-eng

Abstract

Using monthly provincial data that cover the period from March 2020 to July 2022, this study quantifies the association between work from home and revenues in the food services and drinking places subsector. Controlling for changes in COVID-19 restrictions and Canadians' health concerns, the study estimates that an increase of 1 percentage point in the monthly incidence of work from home was associated with a 0.55 percentage point reduction in the monthly growth rate of receipts in food services and drinking places in a given province during that period. Simple calculations based on these estimates suggest that the increase in work from home observed from February 2020 to April 2020 accounted for about one-third of the drop in revenues observed in this subsector between these two months.

Keywords: work from home, telework, restaurants, food services and drinking places, COVID-19 pandemic

Author

Tahsin Mehdi and René Morissette are with the Social Analysis and Modelling Division, Analytical Studies and Modelling Branch, at Statistics Canada.

Introduction

In April 2020, total receipts in the food services and drinking places subsector fell dramatically, reaching $2.5 billion, down from $5.7 billion in February 2020 (Statistics Canada Table 21-10-0019-01). Two years later, in February 2022, total receipts in this subsector amounted to $5.3 billion, still below pre-pandemic levels. To what extent, if any, can these changes be associated with work from home, whose incidence increased from 7% before the COVID-19 pandemic to 41% in April 2020?

Answering this question is challenging for several reasons. The increase in work from home observed during the first half of 2020 occurred as governments implemented lockdowns and certain restrictions and as Canadians became increasingly concerned about contracting the COVID-19 virus in public places, such as restaurants and bars. In 2021, inflation started rising, increasing the costs of shelter and food purchased from stores, possibly reducing Canadians' demand for food services from restaurants and food counters. Starting in March 2021, employers' recruitment difficulties—proxied by job vacancy rates—surged in the accommodation and food services sector, possibly constraining the supply of food services.

Fortunately, Statistics Canada compiled monthly provincial data on various restrictions imposed by public health authorities during the COVID-19 pandemic up until July 2022. The Labour Force Survey (LFS) collected data on Canadians' health concerns from October 2020 to June 2021 and started collecting data on work from home in April 2020. Statistics Canada publishes monthly data on food price inflation, shelter cost inflation, and revenues in food services and drinking places at the provincial level. As will be shown below, nationwide increases in employers' recruitment difficulties can be considered in multivariate analyses.

By combining these sources of information, it is possible to examine the association between the growth in telework and changes in receipts in food services and drinking places while controlling for the potential confounders mentioned above. To do so, this study takes advantage of the fact that, during a given month of the COVID-19 pandemic, different provinces sometimes experienced changes in work from home of different magnitudes while undergoing similar changes in COVID-19 restrictions.[1]

Assessing the degree to which, if any, the increase in work from home observed since early 2020 has affected revenues in food services and drinking places is important for a variety of reasons.

Such an assessment helps in understanding the numerous ramifications of work from home. The growth in work from home has potentially important implications for the housing market, office rental space and economic activity in downtown areas, productivity, wage growth, worker turnover, family–work balance and childcare, commuting, public transit, and greenhouse gas emissions. The relationship between the growth in work from home and revenues in the food services and drinking places subsector is one of these ramifications.

Such an assessment also highlights the fact that while some flexible work arrangements—for example, choosing the start and end hours of one's workday—are likely to have no intersectoral linkages, other flexible work arrangements, when applied on a large scale, may potentially affect sectors such as retail trade and subsectors such as food services and drinking places, and real estate. In other words, the degree to which flexible work arrangements affect other sectors and subsectors of the economy depends on the nature and the scale of implementation of these work arrangements.

1. For example, the percentage of workers working most of their hours from home fell by 5.6 percentage points in Quebec and 1.7 percentage points in Ontario from April 2020 to May 2020 even though restrictions on in-person dining in restaurants remained unchanged in both provinces during that period.

This study conducts the assessment using monthly provincial data from numerous surveys. It examines the degree to which monthly increases in work from home were negatively associated with the monthly growth rates of receipts in the food services and drinking places subsector from March 2020 to July 2022.[2]

The increase in work from home may have reduced the revenues of businesses in food services and drinking places by decreasing demand for lunch meals in restaurants and at food counters near offices and by reducing the number of after-work gatherings where workers periodically meet with colleagues or customers to consume food and beverages. Conversely, individuals who started working from home may have spent more money for lunch in cafés and at food counters near their home than they did when they worked mainly onsite. Therefore, telework growth may have led to a spatial reallocation of the demand for food services and drinking places within cities (Alipour et al. 2022; De Fraja et al. 2021, 2022). The magnitude of the net effect at the provincial level remains unknown, and quantifying it is the objective of this study.

Background

From March 2020 to July 2022, monthly provincial increases in the percentage of workers working most of their hours from home were associated with decreases in the monthly provincial growth rates of receipts in food services and drinking places (Figure 1). Monthly changes in the incidence of work from home predicted 64% of the variation in monthly growth rates of receipts observed during that period.

Monthly changes in the overall COVID-19 Restriction Index published by Statistics Canada, which measured various restrictions imposed by public health authorities, were also strongly associated with decreases in the monthly growth rates of receipts Figure 2). Monthly changes in the overall COVID-19 Restriction Index accounted for almost two-thirds of the variation in the monthly growth rates of receipts.

Other changes took place during the period from March 2020 to July 2022. In September 2021, the inflation of prices for food purchased from stores began to rise, reaching almost 10% by July 2022 (Chart 1). Earlier that year, the inflation of shelter costs also began to rise. Both increases may have led Canadians to reduce their food consumption in restaurants. From March 2021 onwards, job vacancy rates in the accommodation and food services sector increased substantially, possibly constraining the supply of food services by restaurants and food counters (Chart 2).

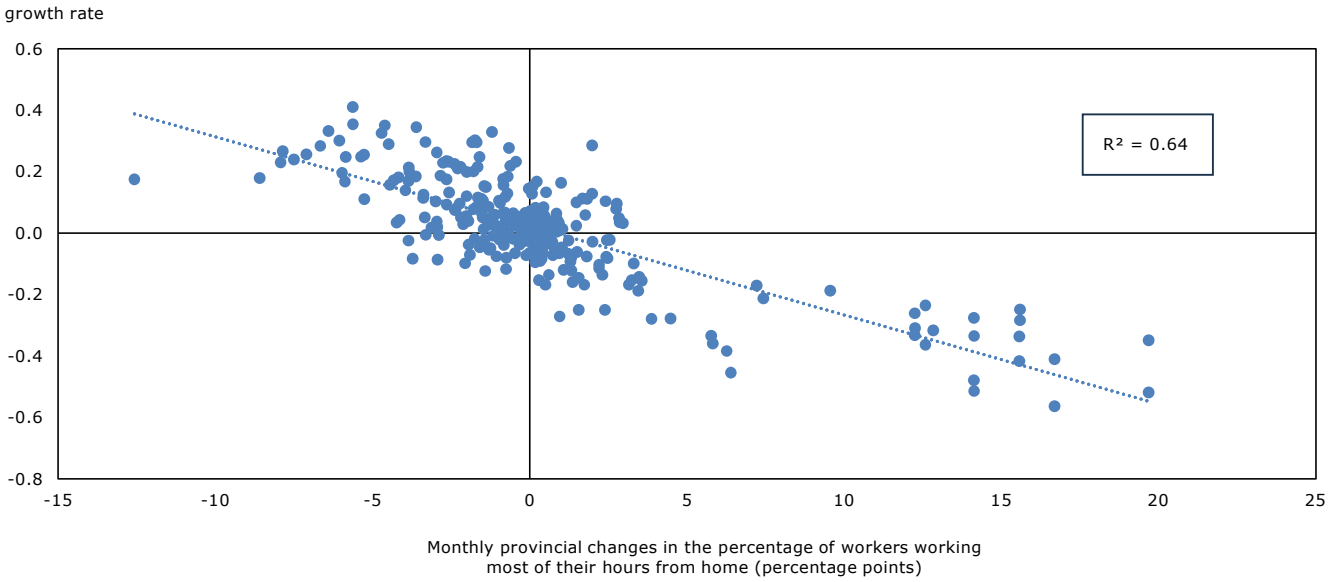
These changes took place in a context where many Canadians were concerned about contracting the COVID-19 virus in public places, such as restaurants and bars, and where these concerns were unevenly distributed across provinces. For example, 60% of Ontario workers aged 15 to 69 years reported being concerned about contracting COVID-19 in a public place in January 2021, compared with 43% of Quebec workers.

Alongside the rise in work from home, heightened health concerns among Canadians, increased COVID-19 restrictions implemented by public health authorities, growth in food price inflation and shelter costs, and increased recruitment difficulties in the accommodation and food services sector may all have contributed to the decline in revenues for businesses in the food services and drinking places subsector

2. Data on the percentage of workers working most of their hours from home come from Morissette, Hardy and Zolkiewski (2022). Estimates before April 2020 combine information from the 2016 Census of Population and the April 2020 LFS. Data on COVID-19 restrictions are obtained from Statistics Canada table 33-10-0497-01. Data on receipts in food services and drinking places come from the Monthly Survey of Food Services and Drinking Places (table 21-10-0019-01), while employment data come from the Survey of Employment, Payrolls and Hours (table 14-10-0202-01).

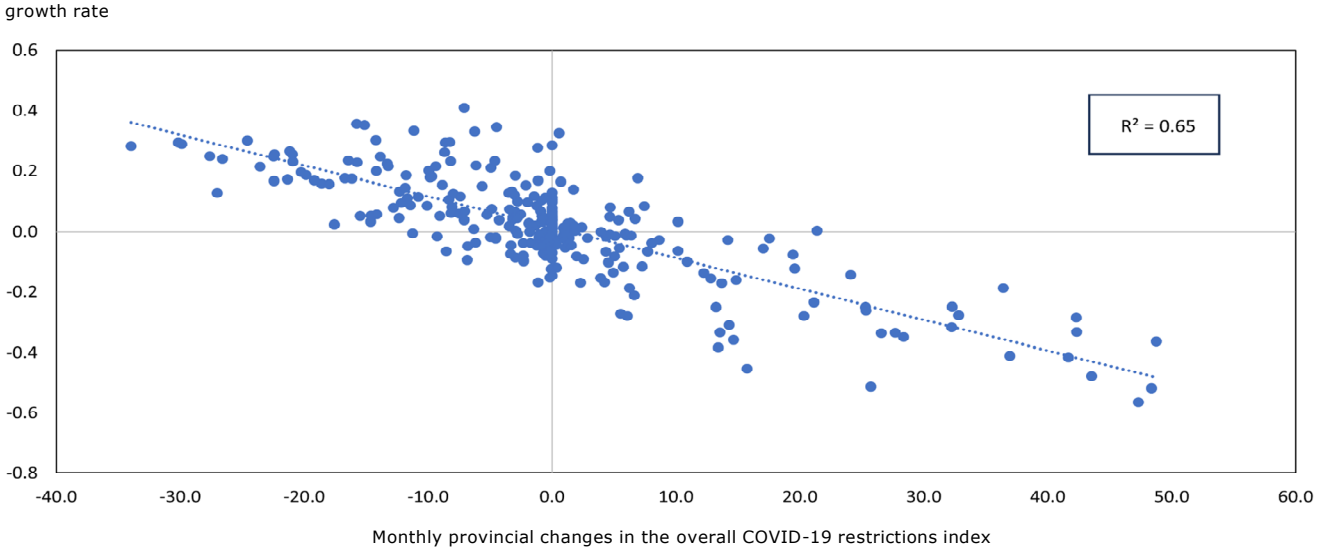
during the observation period. To quantify the contribution of increases in work from home, these factors must be considered in a multivariate analysis.

Figure 1
Monthly provincial changes in the incidence of work from home and monthly provincial growth rates of revenues in food services and drinking places, March 2020 to July 2022



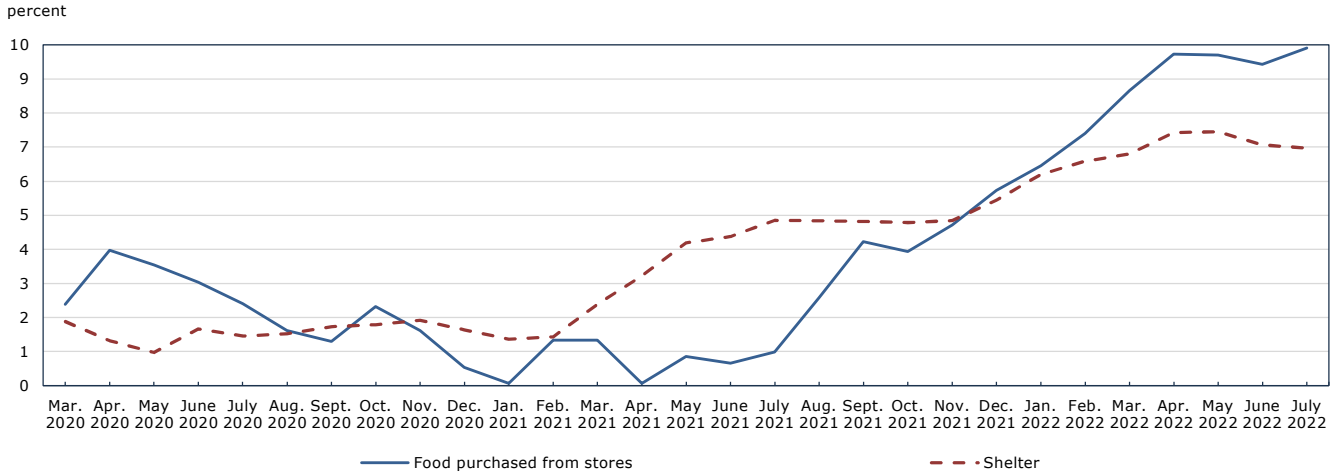
Note: R^2=0.64.
Sources: Statistics Canada, 2016 Census of Population, Labour Force Survey, and Monthly Survey of Food Services and Drinking Places.

Figure 2
Monthly provincial changes in the overall COVID-19 Restriction Index and monthly provincial growth rates of revenues in food services and drinking places, March 2020 to July 2022



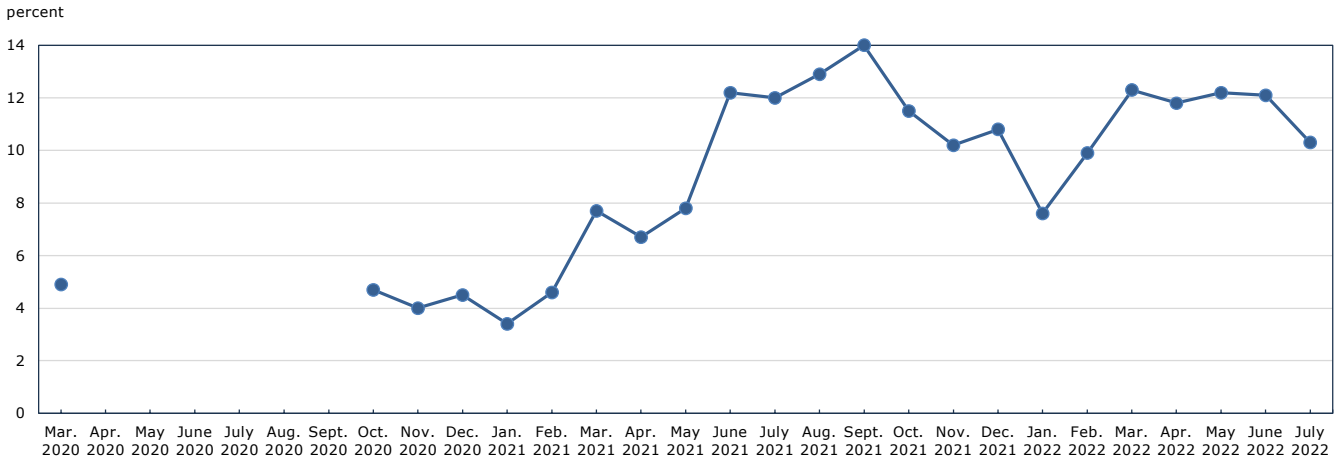
Note: R^2=0.65.
Source: Statistics Canada, 2016 Census Population, Labour Force Survey, and Monthly Survey of Food Services and Drinking Places.

Chart 1
Year-to-year changes in shelter costs and in the price of food purchased from stores, March 2020 to July 2022



Note: Data are not seasonally adjusted.
Source: Statistics Canada, table 18-10-0004-01.

Chart 2
Job vacancy rates in accommodation and food services, March 2020 to July 2022



Notes: Data were not collected from April 2020 to September 2020. Data are not seasonally adjusted.
Source: Statistics Canada, table 14-10-0372-01.

Multivariate analysis

The multivariate analysis conducted in this study starts with the following equation:

$$\Delta ln\_R_{pmt} = \theta_{mt} + \beta_1 * \Delta WFH_{pmt} + \lambda * \Delta RESTR_{pmt} + \Delta X_{pmt} * \delta + u_{pmt} \quad (1)$$

Where $\Delta \ln\_R_{pmt}$ equals the monthly growth rate of receipts in food services and drinking places in a given province from month *m*-1 to month *m* (approximated by changes in the natural logarithm of receipts

from month *m*-1 to month *m*) in year *t* and where ΔWFH_{pmt} measures monthly changes in the percentage of workers aged 15 to 69 years working most of their hours from home in a given province in year *t*.

The term $\Delta RESTR_{pmt}$ captures monthly changes in the COVID-19 Restriction Index at the provincial level. Three versions of $\Delta RESTR_{pmt}$ are considered. The first version captures monthly changes in the index measuring restrictions for in-person dining in restaurants, while the second version measures monthly changes in the **overall** index. The third version measures monthly changes for each of the 15 different restriction indexes for which data have been collected.[3] It leads to the most flexible version of equation (1), which is the focus of the remainder of this article.

The term ΔX_{pmt} includes the following set of control variables, defined as the monthly provincial growth rates of (1) the price of food purchased from stores (to account for food price inflation); (2) shelter costs; (3) employment in sectors other than the accommodation and food services or the arts, entertainment and recreation sectors; and (4) real minimum wages.

The term θ_{mt} is a vector of unrestricted month-by-year effects. It captures seasonal effects and nationwide factors that may affect revenue growth in the food services and drinking places subsector. These factors include national increases in monthly job vacancy rates (Chart 2), nationwide changes in Canadians' health concerns about COVID-19 and national changes in monthly family income. The term u_{pmt} is an error term.

The inclusion of θ_{mt} in equation (1) implies that β_1 is identified from the cross-provincial variation in changes in work from home and in revenue growth occurring in a given month in a given year. In other words, equation (1) answers the following question: considering a given month in a given year, did the provinces with greater increases in work from home experience on average, all else equal, smaller revenue growth in food services and drinking places than other provinces?[4]

Equation (1) is first estimated from March 2020 to July 2022, and the results are shown in the first section of Table 1. The most flexible version of equation (1) indicates that, all else equal, a monthly increase of 1 percentage point in work from home during that period was associated with a 0.55 percentage point reduction in the growth rate of receipts in food services and drinking places in a given province. This means that if receipts were stable before this hypothetical increase in work from home, they would end up falling by 0.55% in the month during which this increase in telework took place. As the percentage of workers working mainly from home in Ontario increased by about 20 percentage points from March 2020 (27%) to April 2020 (47%), this finding suggests that this increase in telework reduced the growth rate of receipts in the subsector in Ontario by 11 percentage points from March 2020 to April 2020. This finding holds in the second and third sections of Table 1, which show results for two periods—March 2020 to July 2022 and May 2020 to July 2022—from a balanced panel of nine provinces (excluding Prince Edward Island) that have complete information on all the variables for the 29 months considered.[5]

3. See Clarke et al. (2022) for details.
4. Adding province fixed effects to equation (1) does not alter any of the findings reported in this study.
5. While telework growth may have increased expenditures in food and beverage stores or in general merchandise stores, a modified version of equation (1) provides no evidence to support this view.

Table 1
Monthly changes in the percentage of workers working most of their hours from home and monthly growth rates of receipts in food services and drinking places, 2020 to 2022

	In-person dining in restaurants	Overall COVID-19 Restriction Index	All 15 restriction indexes
		parameter estimates	
Controls for COVID-19 restrictions			
1. March 2020 to July 2022 (N=287)			
Monthly growth rates of receipts	-0.0100 ***	-0.0069 ***	-0.0055 **
Monthly growth rates of real receipts	-0.0101 ***	-0.0070 ***	-0.0055 **
2. March 2020 to July 2022, excluding Prince Edward Island (N=261)			
Monthly growth rates of receipts	-0.0098 ***	-0.0067 ***	-0.0060 ***
Monthly growth rates of real receipts	-0.0098 ***	-0.0069 ***	-0.0061 ***
3. May 2020 to July 2022, excluding Prince Edward Island (N=243)			
Monthly growth rates of receipts	-0.0085 ***	-0.0050 **	-0.0052 **
Monthly growth rates of real receipts	-0.0085 ***	-0.0051 **	-0.0053 **
4. March 2020 to March 2021, excluding Prince Edward Island (N=117)			
Monthly growth rates of receipts	-0.0110 ***	-0.0060 *	-0.0068 *
Monthly growth rates of real receipts	-0.0109 ***	-0.0061 ***	-0.0070 *
5. November 2020 to June 2021 with controls for monthly changes in health concerns (N=80)			
Monthly growth rates of receipts	-0.0129 ***	-0.0076 *	-0.0101 ***
Monthly growth rates of real receipts	-0.0127 ***	-0.0074 *	-0.0098 ***

† significantly different from zero (p< 0.10)

* significantly different from zero (p < 0.05)

** significantly different from zero (p < 0.01)

*** significantly different from zero (p < 0.001)

Notes: Along with controls for changes in COVID-19 restrictions, all regressions include a vector of month-by-year indicators and monthly growth rates of (1) employment in sectors other than accommodation and food services and arts, entertainment and recreation; (2) real minimum wages; (3) the price of food purchased in stores; and (4) shelter costs. The data are not seasonally adjusted. Robust standard errors are used. Results hold when allowing for first-order serial correlation that is common across provinces. Real receipts are deflated by the Consumer Price Index for food purchased from restaurants.

Sources: Statistics Canada, Survey of Employment, Payrolls and Hours; Labour Force Survey; Monthly Survey of Food Services and Drinking Places; table 33-10-0497-01; and table 18-10-0004-01.

One concern with this finding is that while equation (1) controls for monthly changes in family income at the national level (through θ_{mt}), it does not control for monthly **provincial** changes in family income. If provincial family income fell more in provinces that experienced relatively large increases in work from home in a given month, the estimates of β_1 reported in Table 1 might be biased upwards in absolute value.

One strategy to minimize these concerns is to estimate equation (1) for a period during which family income grew and concerns regarding food price inflation had not yet emerged. During such a period, family income is unlikely to be a significant determinant of the decline in revenues experienced by the food services and drinking places subsector.

As the period from March 2020 to March 2021 satisfies these conditions,[6] the fourth section of Table 1 shows results for this period. These results indicate that, all else equal, a monthly increase of

6. Real average after-tax income of economic families grew by 5.1% from 2019 to 2020, and food price inflation began to rise only in the second half of 2021 (Chart 1).

1 percentage point in work from home was, during that period, associated with a 0.68 percentage point reduction in the growth rate of receipts in food services and drinking places in a given province. This estimate is similar to that obtained in the first three sections of Table 1. It suggests that the omission of monthly changes in provincial family income from equation (1) is unlikely to account for the results obtained in the first three sections of Table 1.

A second issue is that while equation (1) controls for provincial changes in COVID-19 restrictions and national changes in health concerns (through θ_{mt}), it does not control for **provincial** changes in Canadians' concerns about contracting the COVID-19 virus in public places such as restaurants. The fifth section of Table 1 deals with this issue and adds a control variable for monthly provincial changes in health concerns on this issue for a shorter period: November 2020 to June 2021. The results indicate that a monthly increase of 1 percentage point in work from home was, during that period, associated with a 1.01 percentage point reduction in the growth rate of receipts in food services and drinking places in a given province.

Robustness checks

The results shown in Table 1 relate contemporaneous changes in the incidence of work from home to contemporaneous growth rates of revenues. They assume that past changes in work from home do not affect current revenue growth. This assumption will be violated if increases in work from home trigger a dynamic adjustment response from households in terms of food consumption in restaurants and at food counters, leading, for example, teleworkers to eventually start eating in cafés and at food counters near home (or to start ordering food from third-party delivery services) after a few months of eating solely at home.

The results shown in Table 1 also assume that past changes in COVID-19 restrictions do not affect current revenue growth. This assumption will not hold if the lifting of restrictions on in-person dining brings back customers to restaurants with a certain lag.

To account for these dynamic responses, Table 2 uses a more flexible version of equation (1) that adds three lags to ΔWFH_{pmt} and the first two versions of $\Delta RESTR_{pmt}$. The resulting estimates cover the period from May 2020 to July 2022 and use data for all provinces except Prince Edward Island.

Table 2
Monthly changes in the percentage of workers working most of their hours from home and monthly growth rates of receipts in food services and drinking places, 2020 to 2022

	In-person dining in restaurants	Overall COVID-19 Restriction Index
	parameter estimates	
Controls for COVID-19 restrictions		
1. May 2020 to July 2022, excluding Prince Edward Island (N=243)		
Contemporaneous value of ΔWFH_pmt	-0.0085 ***	-0.0050 **
2. May 2020 to July 2022, excluding Prince Edward Island, three lags for changes in COVID-19 restrictions and changes in the incidence of work from home (N=243)		
Contemporaneous value of ΔWFH_pmt	-0.0079 ***	-0.0051 *
One-month lagged value	0.0005	-0.0007
Two-month lagged value	0.0015	0.0009
Three-month lagged value	0.0012	0.0001
3. March 2020 to July 2022, excluding Prince Edward Island (N=261), allowing COVID-19 restrictions to have a different effect after the summer of 2021		
Contemporaneous value of ΔWFH_pmt	-0.0094 ***	-0.0067 ***
4. March 2020 to July 2022, excluding Prince Edward Island (N=261), allowing COVID-19 restrictions to have a different effect across provinces		
Contemporaneous value of ΔWFH_pmt	-0.0095 ***	-0.0069 ***

† significantly different from zero (p< 0.10)

* significantly different from zero (p < 0.05)

** significantly different from zero (p < 0.01)

*** significantly different from zero (p < 0.001)

Notes: Along with controls for changes in COVID-19 restrictions, all regressions include a vector of month-by-year indicators and monthly growth rates of (1) employment in sectors other than accommodation and food services and arts, entertainment and recreation; (2) real minimum wages; (3) the price of food purchased in stores; and (4) shelter costs. The data are not seasonally adjusted. Robust standard errors are used. The results hold when allowing for first-order serial correlation that is common across provinces.

Sources: Statistics Canada, Survey of Employment, Payrolls and Hours; Labour Force Survey; Monthly Survey of Food Services and Drinking Places; table 33-10-0497-01; and table 18-10-0004-01.

The results indicate that adding three lags to ΔWFH_{pmt} and the first two versions of $\Delta RESTR_{pmt}$ has virtually no effect on β_1, the parameter estimate for contemporaneous changes in the incidence of work from home. For example, when the second version of $\Delta RESTR_{pmt}$ is used (overall COVID-19 Restriction Index), this parameter estimate changes from 0.0050 without lags to 0.0051 when lags are introduced.[7]

Additional robustness checks are conducted in the last two sections of Table 2 for the first two versions of $\Delta RESTR_{pmt}$. The third section allows the effect of COVID-19 restrictions to differ after the summer of 2021, compared with previous months. The fourth section allows the effect of COVID-19 restrictions to differ across provinces.[8] Neither change yields parameter estimates that differ markedly from those shown in the second section of Table 1.

7. For ΔWFH_{pmt} and the first two versions of $\Delta RESTR_{pmt}$, none of the lags are jointly statistically significant.

8. Both panels cover the period from March 2020 to July 2022 and use data for all provinces except Prince Edward Island.

To what extent can the decline in revenues in food services and drinking places observed during the onset of the COVID-19 pandemic be accounted for by the increase in telework? Simple calculations based on the first section of Table 1 (third column) suggest that the increase in work from home from February 2020 to April 2020 accounted for about one-third of the $3.2 billion drop in revenues observed during that period.[9]

Conclusion

Controlling for changes in COVID-19 restrictions and Canadians' health concerns, this article finds a robust negative association between monthly increases in work from home during the pandemic and the monthly growth rates of receipts in the food services and drinking places subsector.

Several limitations are worth noting. The sample sizes used for measuring health concerns are relatively small and may lead to measurement error in this variable. Second, these health concerns are not measured over the entire observation period. Lastly, the multivariate analyses controlled for nationwide increases in employers' recruitment difficulties but did not account for province-specific changes in such difficulties. These data limitations may potentially affect the parameter estimates shown in this study.

Despite these limitations, the study adds to a growing body of evidence suggesting that the increase in work from home triggered by the COVID-19 pandemic affected several aspects of the Canadian economy.[10]

References

Alipour, J.V., O. Falck, S. Kraus, C. Krolage and S. Wichert. 2022. "The Future of Work and Consumption in Cities after the Pandemic: Evidence from Germany." CESifo Working Paper, 10000.

Clarke, S., J. Dekker, N. Habli, R. Macdonald and C. McCormack. 2022. "Measuring the correlation between COVID-19 restrictions and economic activity." Analytical Studies: Methods and References, Statistics Canada Catalogue no. 11-633-X, No. 040.

De Fraja, G., J. Matheson, P. Mizen, J.C. Rockey, S. Taneja and G. Thwaites. 2021. "Covid Reallocation of Spending: The Effect of Remote Working on the Retail and Hospitality Sector." *SSRN Working Paper*, 3982122:1–48.

De Fraja, G., J. Matheson, P. Mizen, J. Rockey and S. Taneja. 2022. "Remote Working and the New Geography of Local Service Spending." *CEPR Discussion Paper*, 17431:1–38.

9. Estimates from the 2016 Census of Population and the April 2020 LFS suggest that the percentage of Canadian workers working most of their hours from home increased from 7.2% in February 2020 to 41.1% in April 2020 (Morissette, Hardy and Zolkiewski 2022), an increase of 33.9 percentage points. Multiplying this increase by -0.0055 reduces Δln_R_{pmt} by -0.186. Because total receipts in food services and drinking places were stable at $5.7 billion in January 2020 and February 2020, applying this percentage point reduction of -0.186 to total receipts in February 2020 ($5.7 billion) yields a drop in revenues of $1.1 billion, roughly one-third of the $3.2 billion decline in revenues observed from February 2020 to April 2020. These calculations are based on equation (1) and therefore do not account for increases in work from home that were common across all provinces during that period.
10. See Statistics Canada (2024) for details.

Morissette, R., V. Hardy and V. Zolkiewski. 2022. “Work from home: new estimates for January to April 2022.” Analytical Studies Branch Research Paper No. 472, Statistics Canada Catalogue no. 11F0019M.

Statistics Canada. 2024. “Research to insights: working from home in Canada.” Catalogue no. 11-631-X2024001.