Food security and Canada’s agricultural system challenged by COVID-19: One year later

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Abstract
This paper assesses the earlier projections made by the authors in March 2020 about the impact of COVID-19 on Canada’s food security. First, as measured in the early part of the second quarter of 2020, COVID-19 is associated with an increased prevalence of household food insecurity as measured by Statistics Canada. Also, as we predicted, we did not observe a rapid general increase in food prices that would have suggested a breakdown in parts of the food system. In this regard, we now develop a general insight that we believe is worthy of ongoing consideration. Put simply, concerns expressed about food insecurity should not be seen as tantamount to a failure of our food supply system. Household income, for example, is an important part of the story. The converse is also true: the success of our food supply system as measured by its capacity to adapt to challenges like COVID-19 or provide a variety of food at relatively low prices—while necessary, and (in our opinion) critical considerations—will not alone eliminate food insecurity in Canada. The oversimplified conflation of food insecurity concerns with the robustness of our food supply system does a disservice to ongoing efforts to address food insecurity as well as our capacity to assess and improve the Canadian food supply system.

Résumé
Cet article évalue les projections antérieures faites par les auteurs en mars 2020 au sujet de l’impact de la COVID-19 sur la sécurité alimentaire du Canada. Premièrement, tel que mesuré au début du deuxième trimestre de 2020, la COVID-19 est associée à une prévalence accrue de l’insécurité alimentaire des ménages telle que mesurée par Statistique Canada. De plus, comme nous l’avions prédit, nous n’avons pas observé une augmentation générale rapide des prix des denrées alimentaires qui aurait suggéré une rupture dans certains maillons du système alimentaire. À cet égard, nous développons maintenant une vision générale qui, à notre avis, mérite d’être maintenue. En termes simples, les préoccupations exprimées au sujet de l’insécurité alimentaire ne doivent pas être considérées comme équivalent à une défaillance de notre système d’approvisionnement alimentaire. Le revenu du ménage, par exemple, est une partie importante de l’histoire. L’inverse est également vrai: le succès de notre
système d’approvisionnement alimentaire tel que mesuré par sa capacité à s’adapter à des défis comme le COVID-19 ou à fournir une variété d’aliments à des prix relativement bas - bien que nécessaire, et (à notre avis) des considérations critiques - n’éliminera pas en soit, l’insécurité alimentaire au Canada. L’association simplifiée à l’extrême des préoccupations liées à l’insécurité alimentaire et à la robustesse de notre système d’approvisionnement alimentaire ne rend pas service aux efforts en cours pour lutter contre l’insécurité alimentaire ainsi qu’à notre capacité d’évaluer et d’améliorer le système d’approvisionnement alimentaire canadien.

1 | INTRODUCTION

In March 2020, in the early stages of the pandemic, the editors of this journal requested we address the following question: *What are the likely effects of COVID-19 on Canadian food security?* Our article of response (Deaton & Deaton, 2020) distilled this broad question into two more focused components: (1) the likely effects of COVID-19 on the prevalence of food insecurity as measured by Statistics Canada over the next year; and (2) an assessment of whether COVID-19 would likely pose a short-term threat to an ample and reasonably priced food supply. At the time, both of these components were in question and speculation abounded, especially in the popular press. Dire warnings about the fundamental resilience of our food system were advanced, raising serious concern among researchers and policymakers. Accordingly, we sought to analyze the component parts of the general question about COVID-19’s impacts on Canadian food security. We examined Canada’s measure of food insecurity and its relation to household income, and, in addition we discussed the way in which present food price information reveals information about food scarcity in the near future.

In this paper, we assess the accuracy of our earlier projections with empirical knowledge of what was, in March 2020, our near future, but is now our near past. In the next section, Section 2, the two general hypotheses derived from our (2020) article are discussed. Drawing from our original article, we clarify how these hypotheses suggested specific expectations about the short-term impact on Canadian food insecurity (readers interested in a more detailed discussion are encouraged to revisit Deaton & Deaton, 2020). Section 3 reviews our earlier projections with empirical measures that are now available. Section 4 concludes by emphasizing some thought-provoking points worthy of ongoing consideration. Put simply, concerns expressed about food insecurity should not be seen as tantamount to a failure of our food supply system. Household income, for example, is an important part of the story. The converse is also true: the success of our food supply system as measured by its capacity to adapt to challenges like COVID-19 or provide a variety of food at relatively low prices—while necessary, and (in our opinion) are critical considerations—will not alone eliminate food insecurity in Canada.

2 | TWO HYPOTHESES REVISITED

In our (2020) article, we first advanced the hypothesis that “...the income shock triggered by COVID-19 is expected to increase the prevalence of household food insecurity” (Deaton & Deaton, 2020, p. 146). Simply put, we argued that food insecurity measures in Canada are tied, in part, to food affordability, which depends heavily on household income. We argued that COVID-19 posed a health threat that directly and indirectly—through policy responses—depressed income through job loss and depressed economic growth in Canada, thus adversely affecting household food security. We also noted that the burden of this “income shock” might not be evenly distributed across the population.

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1 The managing editor of the CJAE is Alan Ker but the special issue, in which our paper was originally published, was coedited by Alan Ker and Ryan Cardwell.

2 Specific examples of articles, written in March and/or early April (2020), that we believe express alarm about the vulnerability of Canada’s food system are available for your own assessment: that is, Fraser (2020) and Harris (2020).

3 Social distance requirements, “shut downs,” travel restrictions, etc.
The second hypothesis developed in our earlier paper addressed a concern that COVID-19 potentially threatened Canadian food security in a more fundamental way, by disabling the capacity of our food system to supply food at reasonable prices. More specifically, we addressed the public uncertainty that: “[h]ouseholds across Canada are now concerned about the capacity of the food system to ensure food availability, both now and in the future, at relatively stable food prices” (p.144). The following statement captures the issue and our basic point made at that time:

“Recent surges in demand (and hoarding behavior) reflect household responses to public health requests for people to stock up on food, in order to comply with social distancing, and reflect public fear that COVID-19 could limit food availability. Such demand surges might, at times, lead to temporary shortages on grocery store shelves. Observations of these shortages by consumers may also reinforce the notion that food availability was under immediate threat. However, these surges will likely be tempered by the fact that shelves will be restocked, and shoppers will not empty them at the same rate, having already stored up on the high demand items. **If this be the case, then food shortages and/or rapid upswing in food prices are unlikely in the short term.** The relative stability of food prices in the later weeks of March is a signal that expectations regarding the demand and supply of food are relatively stable.” (Deaton & Deaton, 2020, p. 147, emphasis added by the authors)

While many shared this perspective, others writing in March and early April 2020 had a less sanguine perspective of the situation and of Canada’s food system. In contrast to this more dismal perspective, we argued (writing in March 2020) that general food prices were not escalating so rapidly as to suggest a general food shortage was imminent. For this reason, we (2020) projected that a “rapid upswing in food prices [was] unlikely in the short run.”

### 3 | EMPIRICAL ASSESSMENT OF OUR HYPOTHESES

We begin with an assessment of our second hypothesis made at the end of March 2020: “food shortages and/or rapid upswing in food prices are unlikely in the short term” (Deaton & Deaton, 2020, p. 147). By reordering our discussion of the hypotheses, we better anticipate the concluding remarks of this paper which underscore an important general insight: that is, the food system’s capacity to be successful—for example, by avoiding spikes in general food prices during a crisis or by delivering ample food at reasonable prices—is a necessary, but not sufficient, condition for addressing food insecurity in Canada.

Figure 1 provides a year-over-year measure of Canada’s food price inflation by month for 2018/19 and 2019/2020. Importantly, the 2018/19 series illustrates percentage changes in the food price measure by month in a time period without the COVID-19 threat. In contrast, the 2019/2020 series illustrates food price inflation between 2019 and 2020, with the latter year defined by COVID-19. With the exception of January and April, the 2019/2020 price inflation was actually lower than the 2018/19 price inflation comparison.
Absent more refined analysis beyond the scope of this paper, the effects of COVID-19 on food prices are indeterminate. However, from our perspective, the evidence from price data does not indicate a failure in the capacity of the Canadian food system to adapt to COVID-19. Indeed, as we predicted, rapid upswings in the general price of food appear to have been avoided.

Ex post, these outcomes are not surprising, as much of the food that was consumed in the short-term was already produced, and trade and transportation channels remained open within Canada and internationally. In our opinion, this is testimony to the resiliency of our food system, which made considerable adjustments (e.g., the switch from eating out to eating at home, etc.). Importantly, these adjustments are the result of adaptations that occur both within the market system and by government action. Coupled together, these actions are central to our food system. As an example, the effort to keep borders open between the United States and Canada allows private companies to support the critical flow of food between our two countries. In this setting, for example, a food shortage in Canada is offset by imports. Hence, governments play an active role in expanding the capacity of our private sector to seek out opportunities that advantage both their companies and their consumers. This important relationship between government, institutions, and the market has been a central theme in economics since the time of Adam Smith.

Unfortunately, the first prediction from our earlier paper—that is, “...the income shock triggered by COVID-19 is expected to increase the prevalence of household food insecurity [as measured by Statistics Canada]” (Deaton & Deaton, 2020, p. 146)—proved to be correct though the income shock was influenced by government efforts in ways that we did not fully anticipate. Briefly stated, we observed that because food insecurity in Canada is largely a measure of economic access to food, income losses due to unemployment associated with COVID-19 were expected to increase the prevalence of food insecurity (even if the food system performed relatively well with respect to food supply). Apparently, this sentiment was widely shared; a popular poll showed Canadians were very concerned about food security primarily because of employment considerations, while rises in the cost of food were a lesser concern. In addition, as we describe more fully below, unemployed households were more likely to be identified as food insecure.

Figures 2 and 3, respectively, provide illustrations that emphasize the employment shock associated with COVID-19 and the increase in Canadian household food insecurity measured in May. In our original paper, we described the loss of employment and income and associated the expected decline in both with increases in the prevalence of household food insecurity. Figure 2 documents the change in employment from February 2020 to January 2021. The initial employment shocks of March and April are now the stuff of economic legend and, though we have gradually returned to something closer to the 19 million employed in Canada pre-COVID, we have yet to recover. This loss of employment is not symmetric across the Canadian population and economic sectors. Employment in the service sector, for example, was particularly hurt by COVID-19.

4 As discussed in more detail in our earlier paper, income has a strong association with food insecurity. That said, income is not a perfect predictor of food insecurity and it is not the only important contributing factor. Literature reference in Deaton and Deaton (2020) provides ample opportunity to explore these issues further.

5 See Food Banks Canada (2020).

6 For example, net employment loss from February to August 2020 in agriculture was 28,000 persons, while it was 260,000 persons in accommodation and food services over that same period (Statistics Canada, 2020a).
In our original paper, we discussed the important role of government policies like CERB\textsuperscript{7} in alleviating food insecurity. That said, we had not fully anticipated the compensating effect that these programs would have on household disposable income. In March of 2020, when we were writing our article, the loss of wage income associated with COVID-19 had reduced household disposable income in Canada (Statistics Canada, 2021a). However, despite the fact that wage income did not fully recover, increases in government support more than offset wage losses in the second and third quarter of 2020 and, as a result, household disposable income increased in both the second and third quarters among both high and low-income earners (Statistics Canada, 2021a).

Writing at the end of the first quarter in 2020, we predicted that the “income shock” associated with the loss of employment and broad economic decline would increase the prevalence of household food insecurity. While data on food security before and after COVID-19 is limited, Figure 3 illustrates an increase in the prevalence of food insecurity as reported by Statistics Canada. The measure of food insecurity was derived from a survey conducted in the first week of May 2020, asking respondents about their food situation over the last 30 days. The timing of the survey, in the beginning of the second quarter, may be important given the above discussion which emphasizes the varying levels of disposable income over the first three quarters of 2020 and the compensating effects of government payments in the second and third quarter. That said, the association between employment and food insecurity, emphasized in our earlier paper, appears to be on relatively solid ground. According to the Statistics Canada report (2020b), “Canadians who were employed during the week of April 26th–May 2nd, but absent from work due to business closure, layoff, or personal circumstances due to COVID-19, were more likely to be food insecure (28.4%) than those who were working (10.7%).”

The increase in household disposable income associated with the second and third quarters of 2020 should be of interest to future researchers examining the effect of COVID-19 on food insecurity. On the one hand, government payments to households are expected to have diminished the prevalence of food insecurity in comparison to a counterfactual scenario where households received no government support\textsuperscript{8}. That said, households likely discount income derived through emergency government payments more heavily than wage income. We look forward to the ongoing effort to better identify the relationship between income and food insecurity during this time period.

\section*{4 | CONCLUSIONS}

Our conclusion at this time is that our food system—which includes farm laborers, farmers, firms along the marketing supply chain (both domestic and international), institutions, and government action—successfully adapted to the awesome challenge of COVID-19 from the perspective of avoiding a rapid escalation of food prices. This success by no means diminishes the significant challenges to labor, health, and production that occurred over the last year. Nor does it mean that all areas in Canada experienced the issue similarly, and/or that all food prices were equally maintained. Nor, as discussed in our last paper, does the response to COVID-19 diminish the ongoing challenge to our food system to reduce

\textsuperscript{7}Canadian Emergency Response Benefit

\textsuperscript{8}“Hypothetically, if the federal government had not introduced its support measures to counteract the negative impacts of the pandemic, overall household disposable income would have fallen by 3.6% in the second quarter”(Statistics Canada, 2021a; pp 2).
food prices in remote food insecure communities (see Naylor et al., 2020). That said, our general assessment of the food system's response to COVID-19 is a positive one.

Despite this success, we provide evidence that food insecurity increased in the early months of COVID-19 compared to results from 2017/18. Indeed, as discussed in our earlier paper, we expected this result because of COVID-19’s deleterious effect on employment and other factors critical to assuring economic access to food. Taken together, these observations highlight an important consideration: the success of our food supply system is a necessary, but not sufficient, condition for addressing food insecurity. The latter issue requires economic access to food which is, importantly, a function of income generation (as well as food prices). Hence, past and present concerns about food insecurity are not tantamount to a failure of our food supply system. The converse is also true: the success of our food supply system measured by its capacity to secure an ample supply of food at reasonable prices, while necessary and (in our opinion) critical, will not eliminate food insecurity in Canada.

Our observation is that the public can be confused by much of the rhetoric observed in popular discussion that conflates food insecurity with a failure of our food system. Indeed, our review of the last year suggests that the relative effectiveness of our food system’s response to COVID-19 did not eliminate the threat of COVID-19 to food insecurity. We fear that some potential policy responses—for example, protectionism and an orientation away from the international competitiveness of the food system (which supports jobs and low food prices)—potentially aggravates efforts to advance key drivers of the food supply system’s success and its capacity to contribute to efforts to improve food security in Canada through low food prices and economic growth. That said, we recognize that policy reform is an evolving aspect of the food system, and issues like food security, environmental quality, and climate change will continue to be important components of our policy dialogue. Moving forward in response to COVID-19, food insecurity and other efforts, we suggest the need for specific measures of the end objectives, and the need for in-depth discussions of the pathways by which these objectives are expected to be achieved.

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