

## **Mental Health and Life Stress of Working Atlantic Canadians at the Onset of the COVID-19 Pandemic**

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### **Abstract**

Using the Statistics Canada survey on the Impacts of COVID-19 on Canadians, this paper examines how mental health and perceived life stress of Atlantic Canadians have been impacted, at the onset of the crisis. Females are found more strongly strained by the pandemic in both of these outcomes. This gender gap is driven by those who do not face an immediate financial concern. In addition, among Aboriginals, regardless of financial vulnerability, larger negative effects on life stress have been observed. These findings call for targeted policy interventions.

**Keywords:** Mental Health; Life Stress; COVID-19; Gender, Immigrants, Visible Minorities

## **I. Introduction**

In the early 2020, the COVID-19 pandemic disrupted lives across the globe in more than one way. Aside from a pervasive concern for health of oneself and others, many have lost their jobs and incomes. Among those who remained employed, most work from home. Household members spend exceptionally more time together, while they are cut-off from other family members and friends. Travel and leisure outside the house have been halted. And, a layer of uncertainty had settled on future outlooks, as it was not clear when the lockdowns will be lifted and when the normal will return. How did this crisis affect the mental health of men and women of different ethnoracial groups? Exploiting a large 2020 survey by Statistics Canada on the impacts of the pandemic on Canadians, the present paper attempts to answer this question regarding those residing an Atlantic Canada (Newfoundland and Labrador, Prince Edward Island, New Brunswick, and Nova Scotia).

While the pervasiveness of the upheaval makes any extrapolation complex, previous literature can provide insights into the possibility of a gendered, ethnoracial, and intersectional effect. One potential culprit for negative effects on mental health is concerns about health of oneself and family members. There are studies which suggest that this concern may be more intense in women who generally bear greater caregiving responsibilities (Cannuscio et al. 2004; Penning & Wu 2016). The same applies to immigrants who, in absence of extended family, must bear the brunt of caregiving responsibilities alone (Majersky 2019). The situation can be expected to be more dire among Aboriginals, as regardless of the pandemic, they were facing a slew of societal and health related problem, ranging from premature death to lack of grief-counselling resources for the surviving family (Poonwassie 2006).

The second negative effect of the COVID-19 pandemic is employment loss and financial strain. With record high layoffs and income losses in Canada and elsewhere in the world, many households face financial challenges. There are studies which suggest that unemployment causes greater mental distress in males than in females (Theodossiou 1998; Artazcoz et al. 2004; Van der Meer 2014; Knabe et al. 2016). The COVID-19 lockdowns have also led to children staying home, imposing greater responsibilities on parents (Carson et al. 2020; Kelley et al. 2021; Moore et al. 2021). In absence of any special circumstances, mothers usually spend more time taking care of children and attending to their needs than fathers, even when they are employed fulltime. Except for essential workers, the lockdowns have led to both parents being home. Evidence is emerging that these circumstances have resulted in a greater involvement of fathers in childcare, who reported enjoying their extra time with children (Bisby 2020; Levs 2020). Hence, for those with dependent children, this aspect of the lockdowns may have positively affected both parents, by relieving mothers from part of their usual responsibilities and by providing fathers the opportunity to spend more time with their children (Dilmaghani 2020). As the multiplicity of these concomitant factors indicate, the question of whether the COVID-19 pandemic has more strongly impacted the mental health of various strata of the population is best answered empirically. The present paper, using a post-pandemic dataset collected by Statistics Canada with 3,622 observations on working men and women of Atlantic Canada, explores this question. The remainder of this paper is organized as follows. The next section presents the data. Section III reports the results. A discussion and the concluding remarks follow.

## **II. Data and Methodology**

The data used in this paper are from the Statistics Canada survey on Impacts of COVID-19 on Canadians (ICC-2020). Starting from April 3<sup>rd</sup>, 2020, Statistics Canada conducted a collection series on the Impacts of the COVID-19 on Canadians. The purpose of this data collection

## ARGEIAD 2022

was to quickly gather information on the pandemic's impacts on the physical and mental health of individuals, as well as on their social and employment circumstances (Statistics Canada 2020). To date, only the mental health component of the ICC-2020 is released. Unlike other Statistics Canada surveys which rely on a carefully designed random sample, the ICC-2020 has been "crowdsourced," i.e. all Canadians were eligible to participate, of their own volition. Given the non-probabilistic nature of the crowdsourced data and the absence of a sample design, based on the February 2020 projections of the number of people by province, sex, and age groups, Statistics Canada has provided a "benchmarking factor" for every survey respondent to compensate for over/underrepresentations (Statistics Canada 2020). The ICC-2020, with 45,989 total observations nationwide, contains gender, immigration and ethnic background, age in 10 categories, employment status, province of residence, residence in rural areas, many questions on mental health, life stress, and anxiety, as well as a list of specific concerns relevant to the effects of the pandemic. But, the ICC-2020 does not contain marital status, education, income, number of children, and household composition.

The mental health question in ICC-2020 is "*In general, how would you describe your mental health?*"; with the identical response items of Excellent, Very Good, Good, Fair, and Poor. The perceived life stress question of the survey is "*Thinking about the amount of stress in your life, how would you describe most of your days?*"; with the response items of Not at all stressful, Not very stressful, A bit stressful, Quite a bit stressful, Extremely stressful. In addition, the ICC-2020 also asks respondents to respond with Strongly agree, Agree, Neutral, Disagree, and Strongly disagree to the question "*I might lose my main job or main self-employment income in the next 4 weeks.*" The respondents who did not work are recorded under "Not working at a job or business," which allowed to identify employment status. The ICC-2020 and GSS-2016 also allow to identify

immigrants, visible minorities (as defined by the Canadian Employment Equity Act, which separately accounts for Aboriginals), and Aboriginals. The province of residence and residence in rural areas also exist in both surveys. Unfortunately, detailed information on sociodemographic indicators, such as marital status, number of children, living arrangement, education, and income did not exist in the ICC-2020. Given these missing information in the ICC-2020, in order to reduce the heterogeneity among respondents, the samples are restricted to the working individuals. With this restriction, and dropping the missing observations (minimal and assumed occurring at random), the number of observations is 3,622 respondents in Atlantic Canada.

To assess the effects of the COVID-19 pandemic, the equation below is estimated:

$$y_i = \delta_0 + \delta_1 \text{Female Dummy} + X\beta + \varepsilon \quad i = 1, 2 \quad (1)$$

The variables denoted by  $y_i$  capture self-rated mental health and perceived life stress, dichotomized to simplify the exposition of the results. Namely,  $y_1$  is a dummy taking the value of 1 for those who report their mental health to be Excellent or Very Good, while  $y_2$  is a dummy taking the value of 1 for those who report life to be Quite a bit stressful or Extremely stressful. The controls included in the vector  $X$  are age, age squared, dummies for immigrants, visible minorities, Aboriginals, province of residence, residence in rural areas, and the responses to the job security question. A linear probability model is assumed, and the equations are estimated using OLS. Standard errors are clustered by the province of residence and the data source. Robustness tests showed that the findings are not sensitive to the choice of dichotomizing the dependent variables and the use of OLS. These estimates are available upon request.

To refine the analysis, the samples are split based on the implied financial vulnerability of the respondents. Particularly, one major consequence of the COVID-19 is financial distress on households. To examine whether the gender gap in mental health and life stress vary by the level

## **ARGEIAD 2022**

of financial vulnerability, the equations are re-estimated, splitting the sample in two. In the ICC-2020, there is a question about the financial concerns of the respondents. This question is “*COVID-19’s impacts on my ability to meet financial obligations or essential needs are,*” with the response items of Major, Moderate, Minor, No impact, and Too soon to tell. Financially vulnerable respondents of ICC-2020 are those who respondent with Major and Moderate Impact (25.98% of the sample).

Before presenting the estimation results, the limitations of this study must be noted. The first limitation relates to the non-random design of the ICC-2020. As this dataset was crowdsourced, certain demographic groups, such as females and the white Canadian-born, have shown a greater tendency to participate. The selectivity may also apply to the distribution of opinions about the impacts of the pandemic. Particularly, as it is the case with most voluntary surveys, those with stronger positive and negative opinions are more likely to participate. Nonetheless, this dataset provides a unique opportunity to gain historical insights into the mental health effects of the pandemic, justifying its use. The hope is that the large sample and the benchmarking factors mitigate this limitation. Second, the dataset did not include adequate information on the respondents’ marital status, number of children, and income. This limitation has restricted the scope of questions which could be examined in this paper. Finally, given the timing of the data collection, the results should be interpreted as pertaining to the onset of the COVID-19 pandemic, and not the evolutions which ensued.

### **III. Results**

Table 1 reports the results of 5 estimations, based on Equation (1), showing the results for the entire region and by province. The dependent variable is a dummy taking the value of 1 for those rating their mental health as Excellent or Very Good (a positive outcome). The controls are

## **ARGEIAD 2022**

a dummy for females, age and age-squared, dummies for immigrants, visible minorities, and Aboriginals, dummies for the rural location of residence and provinces in Column (1). As shown in Column (1), females are less likely to report a positive mental health outcome than men in Atlantic Canada overall. But, as shown in Column (3), the pattern is reversed in the PEI, where the coefficient for female is positive. Overall, Aboriginals also report large tolls on their mental health. But, immigrants report no mental health disadvantage. This pattern might be due to the “healthy immigrant” hypothesis (Dilmaghani 2018; Veenstra 2009).

### **< Table 1 >**

Table 2 changes the dependent variable to life stress. Here, the dependent variable is a dummy taking the value of 1 for those who report life to be Quite a bit stressful or Extremely stressful (a negative outcome). The patterns are largely comparable with greater tolls on women and Visible Minorities residing in Atlantic Canada. However, regarding life stress, the coefficient for Aboriginal is not statistically significant. This stands in contrast with Table 1 where the dependent variable was Mental Health.

### **< Table 3 >**

Table 3 splits the sample by the respondents’ implied financial vulnerability. In the ICC-2020, these respondents are identified based on their expressed concerns about the financial impacts of the COVID-19 (expecting Major and Moderate impacts). In the absence of data on incomes, this analysis allows to somewhat separate the negative financial effects of the COVID-19 pandemic, from its other impacts. Columns (1) and (2) focus on mental health, while Columns (3) and (4) use life stress as the dependent variable. As shown in Column (1), in the subsample of the financially vulnerable, the coefficients for female and Aboriginal are statistically significant and negative, indicating a lower mental health. In contrast, as shown in Column (2), in the



subsample of financially comfortable, only Aboriginals are reporting negative effects on their mental health. The results are similar for females when the dependent variable is life stress. The positive coefficient suggests elevated levels of life stress. Interestingly, immigrants, for both outcomes, do not report negative effects. However, financially comfortable aboriginals report a sizable negative impact on their life stress due to the COVID-19 pandemic. In fact, among those financially unaffected by the pandemic, Aboriginals are the only groups who report the COVID-19 pandemic has increased their life stress level. This pattern deserves further scholarly attention.

< Table 3 >

#### **IV. Conclusion**

The present paper empirically explored how the onset of the COVID-19 pandemic has affected the mental health and life stress of men and women residing in Atlantic Canada. Notwithstanding the limitations of the ICC-2020 survey, the main findings of this study are as follows. First, mental health has deteriorated and life stress has increased greatly, for both men and women. Second, the results are mixed for immigrants and visible minorities. Third, Aboriginals, regardless of financial vulnerability report greater negative effects, for both outcomes of mental health and life stress.

Given the multiplicity of the disruptions during the lockdowns, and the data limitations which did not allow for finer distinctions among demographic groups and the examination of intersectionality, there are several possible explanations for the greater negative impact of the pandemic on women's mental health and life stress. The additional explorations of this study, however, suggest that the explanations likely lie beyond financial vulnerability. Particularly, in the samples restricted to the financially comfortable, gaps remained especially among the Aboriginals. Taken together, the results suggest that, at least in the Canadian context, the reactions to global crises such as this unprecedented pandemic are specific to demographic groups, and are more

likely to cause harm to socioeconomically vulnerable populations such as aboriginals. Further research is however needed to establish how these patterns have evolved as the COVID-19 pandemic lingered.

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**Table 1. The Onset of COVID-19 and Mental Health in Atlantic Canada**

<b>Metal Health: Excellent / Very Good</b>					
	<b>Atlantic</b>	<b>NL</b>	<b>PEI</b>	<b>NB</b>	<b>NS</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>
<b>Female</b>	-0.128* (0.074)	-0.336* (0.195)	0.796** (0.325)	-0.146 (0.145)	-0.139 (0.089)
<b>Age</b>	0.028 (0.018)	0.028 (0.051)	-0.053 (0.070)	0.007 (0.034)	0.041* (0.022)
<b>Age Squared</b>	-0.000 (0.000)	-0.000 (0.001)	0.001 (0.001)	0.000 (0.000)	-0.000 (0.000)
<b>Immigrant</b>	0.388** (0.187)	0.174 (0.642)	-0.081 (0.528)	0.235 (0.373)	0.646*** (0.174)
<b>Visible Minority</b>	-0.131 (0.289)	0.574 (0.821)	000	-0.170 (0.460)	-0.363 (0.351)
<b>Aboriginal</b>	-0.582** (0.285)	-0.326 (0.509)	000	-1.161*** (0.394)	-0.427 (0.351)
<b>Rural</b>	0.114 (0.086)	-0.100 (0.267)	-0.093 (0.309)	0.182 (0.179)	0.166* (0.098)
<b>Observations</b>	3,622	394	144	691	2,393
<b>R-squared</b>	0.079	0.080	0.253	0.057	0.103

**Note:** The data are from the Canadian General Social Survey of 2016 and the Statistics Canada survey on the Impacts of COVID-19 on Canadians, Conducted in April-May 2020. In Column (4) onwards, the dummies for province, if applicable, of residence are suppressed to save space. Robust standard errors in parentheses, with \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 2. The Onset of COVID-19 and Life Stress in Atlantic Canada**

<b>Life Stress: Quite a bit stressful or Extremely stressful</b>					
	<b>Atlantic</b>	<b>NL</b>	<b>PEI</b>	<b>NB</b>	<b>NS</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>
<b>Female</b>	0.113* (0.067)	0.175 (0.180)	-0.342 (0.306)	0.091 (0.128)	0.171** (0.080)
<b>Age</b>	0.055*** (0.015)	0.054 (0.035)	0.163** (0.068)	0.068** (0.028)	0.044** (0.019)
<b>Age Squared</b>	-0.001*** (0.000)	-0.001** (0.000)	-0.002*** (0.001)	-0.001*** (0.000)	-0.001*** (0.000)
<b>Immigrant</b>	-0.287 (0.174)	-0.856** (0.357)	0.791** (0.397)	-0.225 (0.379)	-0.235 (0.196)
<b>Visible Minority</b>	0.436* (0.245)	2.053*** (0.627)	000	0.044 (0.442)	0.293 (0.279)
<b>Aboriginal</b>	0.261 (0.251)	0.080 (0.458)	000	0.415 (0.372)	0.372 (0.272)
<b>Rural</b>	0.068 (0.082)	0.204 (0.251)	-0.408 (0.267)	0.312* (0.160)	-0.136 (0.094)
<b>Observations</b>	3,618	394	144	691	2,389
<b>R-squared</b>	0.033	0.098	0.130	0.037	0.033

**Note:** The data are from the Canadian General Social Survey of 2016 and the Statistics Canada survey on the Impacts of COVID-19 on Canadians, Conducted in April-May 2020. In Column (4) onwards, the dummies for province of residence, if applicable, are suppressed to save space. Robust standard errors in parentheses, with \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 3. Outcomes by Financial Vulnerability to COVID-19**

	<b>Mental Health: Excellent / Very Good</b>		<b>Life Stress: Quite a bit stressful/ Extremely stressful</b>	
	<b>Vulnerable</b>	<b>Comfortable</b>	<b>Vulnerable</b>	<b>Comfortable</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
<b>Female</b>	-0.132* (0.078)	-0.059 (0.162)	0.178** (0.074)	-0.099 (0.134)
<b>Age</b>	0.008 (0.019)	0.073* (0.037)	0.071*** (0.016)	0.025 (0.028)
<b>Age Squared</b>	0.000 (0.000)	-0.001 (0.000)	-0.001*** (0.000)	-0.000 (0.000)
<b>Immigrant</b>	0.410** (0.181)	0.609 (0.395)	-0.287** (0.145)	-0.567 (0.406)
<b>Visible Minority</b>	-0.370 (0.366)	0.199 (0.502)	0.365 (0.277)	0.461 (0.474)
<b>Aboriginal</b>	-0.624* (0.351)	-0.635* (0.353)	0.221 (0.304)	0.553* (0.319)
<b>Rural</b>	0.218** (0.088)	0.061 (0.172)	0.047 (0.094)	-0.042 (0.153)
<b>Observations</b>	2,681	941	2,677	941
<b>R-squared</b>	0.104	0.056	0.047	0.024

**Note:** The data are from the Canadian General Social Survey of 2016 and the Statistics Canada survey on the Impacts of Covid-19 on Canadians (ICC-2020). The dummies for province, if applicable, of residence are suppressed to save space. Robust standard errors in parentheses, with \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .