

Determinants of Family Stress and Domestic Violence: Lessons from the COVID-19 Outbreak

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Dans cet article, nous nous intéressons à l'impact de la maladie à coronavirus 2019 (COVID-19) sur la violence familiale et le stress familial. Notre analyse empirique repose sur une enquête unique menée en ligne, la Série d'enquêtes sur les perspectives canadiennes (SEPC) qui nous permet d'étudier les facteurs de préoccupation quant au stress et à la violence au sein de la famille au cours du premier confinement du COVID-19. Nous n'avons pas constaté que les changements apportés aux modalités de travail avaient une incidence sur la violence ou le stress au sein de la famille. Au contraire, nous avons trouvé que l'incapacité d'assumer les obligations financières et le souci de maintenir des liens sociaux étaient reliés de manière significative aux préoccupations quant au stress familial et à la violence familiale.

Mots clés : confinement, COVID-19, isolement, stress familial, travail à distance, violence familiale

In this article, we examine Canadians' concerns regarding the impact of coronavirus disease 2019 (COVID-19) on domestic violence and family stress. Our empirical analysis relies on a unique survey conducted online, the Canadian Perspective Survey Series, which allows us to investigate the determinants of concerns regarding family stress and domestic violence during the first COVID-19 lockdown. We find no evidence that changes in work arrangements are related to concerns regarding family stress and violence in the home. In contrast, we find that the inability to meet financial obligations and concerns about maintaining social ties are significantly related to concerns about family stress and domestic violence.

Keywords: COVID-19, domestic violence, family stress, isolation, lockdown, remote work

Introduction

The surge in domestic violence incidents as a result of coronavirus disease 2019 (COVID-19) has been discussed widely in the media in several countries. The alleged causes of increasing domestic violence range from lockdowns to remote work, social isolation, and economic distress (Peterman et al. 2020). For instance, the *New York Times* recently cited the founder of a foundation helping victims of domestic violence: "We've been getting some

very distressing calls, showing us clearly just how intense psychological as well as physical mistreatment can get when people are kept 24 hours a day together within a reduced space" (Taub 2020).

Isolation may be only a contributor to the increase in domestic violence. Economic factors such as being laid off or working from home are thought to increase the domestic violence rates as stress and interactions within families increase.¹ "As the worldwide pandemic spawns

mass quarantines, dire income loss and uncertainty, experts cautioned that all these conditions can intensify stress and abuse in homes where violence already existed or was imminent” (Bielski 2020).

In this article, we rely on a unique survey conducted online, the Canadian Perspective Survey Series (CPSS), to study Canadians’ concerns regarding the impact of COVID-19 on domestic violence and family stress. This survey was conducted from 29 March 2020 to 3 April 2020 using a random sample of households from Statistics Canada’s Labour Force Survey (LFS), and it included questions about the effects of COVID-19 and confinement on family stress, all types of violence inside the home (termed *domestic violence*), worries about financial obligations, remote work, and other relevant socio-economic variables. Respondents did not know that the survey would include questions about family stress or violence in the home before their participation. Our study and findings may therefore be more representative of the entire population than surveys specifically targeting victims of domestic violence. Of note, the CPSS survey’s questions do not allow us to disentangle whether Canadians who responded to the survey believed that these questions reflected social concerns rather than personal risk. Our study thus investigates the relationship among confinement, socio-economic characteristics, and social and individual concerns about domestic violence and family stress.

Our results suggest that employment status and work arrangements such as working from home are not related to concerns about COVID-19’s impacts on family stress and domestic violence.² This result provides suggestive evidence that the large increase in remote work is not related to the rise in concerns about the impact of COVID-19 on domestic violence. In contrast, our results suggest that an individual’s inability to meet financial obligations is significantly related to concerns about family stress and domestic violence. We find that both men and women see an increase in concerns about family stress, but the relationship appears larger in magnitude for women.

We further offer a new perspective on the impact of social isolation on family violence. For this analysis, we rely on a question about concerns regarding COVID-19’s impact on respondents’ ability to maintain social ties. We find that an increase in concerns about maintaining social ties is positively associated with concerns regarding domestic violence and family stress from confinement. These results are consistent with prior research showing that women’s social isolation decreases perpetrators’ costs of domestic violence and increases its incidence (e.g., Gelles 1983; Gelles and Straus 1979; Usher et al. 2020).

We contribute to a growing literature on the effects of COVID-19 on mental health, well-being, and domestic violence (Boserup, McKenney, and Elkbuli 2020; Brodeur, Clark, et al. 2021; Hamermesh 2020; Payne, Morgan, and Piquero 2020; Tubadji, Boy, and Webber 2020). Three

relevant articles regarding police calls and helpline contacts are Leslie and Wilson (2020), Armbruster and Klotzbucher (2020), and Bullinger, Carr, and Packham (2021). Leslie and Wilson (2020) provide evidence that COVID-19 and lockdowns in the United States led to a large increase in domestic violence calls. Armbruster and Klotzbucher (2020) provide evidence that in Germany helpline contacts increased by around 20 percent in the week after the implementation of the lockdown, reflecting heightened loneliness, anxiety, and suicidal ideation. Bullinger et al. (2021) examine the impacts of the shelter-in-place order in Chicago. They use a difference-in-differences approach and document a 7.5 percent increase in domestic violence-related 911 calls over the first 12 weeks but a 13 percent decrease in reported domestic violence crimes and police arrests.³ We contribute to this growing literature by providing evidence from Canada that the pandemic affects concerns about domestic violence and family stress through increased financial worries and concerns about maintaining social ties.⁴

Last, we contribute to a growing literature on the impacts of COVID-19 on gender equality (e.g., Alon et al. 2020), the supply of and demand for child care (e.g., Ali, Herbst, and Makridis 2020; Sevilla and Smith 2020), and fertility (Schwandt 2020).

The rest of the article is structured as follows. In the next section, we briefly discuss the COVID-19 pandemic in Canada. We then describe the data set and our empirical model and present our findings. The last section concludes.

COVID-19 and Domestic Violence in Canada

Canada has been no exception to the global pandemic caused by COVID-19.¹ Provincial governments closed public schools and ordered a shutdown of businesses deemed not essential by mid-March 2020. Additional policies, such as restricting the size of public and private gatherings and enforcing social and physical distancing laws were simultaneously rolled out.

On 18 March 2020, the federal government provided the first announcement of Canada’s COVID-19 Economic Response Plan: Support for Canadians and Businesses (Canada 2020). This plan includes support directly to individuals and businesses and is primarily aimed at reducing the negative short-run effects anticipated by all as a result of COVID-19. Additional major policies subsequently added to the economic response plan by the federal government include the Canada Emergency Response Benefit (CERB), Canada Emergency Wage Subsidy (CEWS), and Canada Emergency Student Benefit (CESB).⁶ Still, these policies were met with severe increases in the unemployment rate of Canadians, which rose to 13 percent in April 2020, a further increase from 7.8 percent in March 2020 and 5.6 percent in February 2020 (Beland, Brodeur, Mikola, et al. 2020).

According to Statistics Canada, during 2018 there were 99,000 reported incidents of intimate partner violence offences and 60,651 reported incidents of police-reported family violence with child and youth victims (aged 17 y and younger) in Canada.⁷ Reports in the media document a significant increase in domestic violence incidents as a result of COVID-19 (e.g., Patel 2020).

Data and Methodology

Study Selection and Summary Statistics

We rely on the CPSS to investigate how COVID-19 might affect Canadians' social and individual concerns about domestic violence and family stress.⁸ The CPSS surveyed Canadians between 29 March 2020 and 3 April 2020 using randomly sampled households from the LFS's outgoing rotation group. The survey sampled 7,242 of 31,896 individuals who had a valid email address on file at Statistics Canada. The final number of respondents available in the CPSS dataset is 4,627 individuals, which has been weighted to be representative of the Canadian population.⁹

The website for the CPSS states that the "surveys will cover a variety of social topics, such as education, health, and justice" (see Statistics Canada 2021). Respondents were thus not aware that they would be asked questions about domestic violence and family stress. The collection method gives respondents flexibility in answering the survey and possibly the privacy needed to answer these questions if they believe they relate to their personal risk. Unfortunately, the survey questions from CPSS do not allow us to determine whether respondents believed they were asked about their social concerns about or their personal risk of domestic violence and family stress.

Data on domestic violence, family stress, and maintaining social ties are taken from answers to the question "How concerned are you about each of the following impacts of COVID-19: (Violence in the home)? (Family stress from confinement?) (Maintaining social ties)?" We provide summary statistics for concerns regarding the impact of COVID-19 on family stress as a result of confinement and on violence in the home.

Figure 1 displays respondents' answers separately by sex to the question about family stress and domestic violence. About 28 percent, 41 percent, 20 percent, and 11 percent of male respondents and 27 percent, 39 percent, 20 percent, and 13 percent of female respondents report being "not at all," "somewhat," "very," and "extremely" concerned about family stress, respectively. Both sexes are most likely to report being somewhat concerned. With respect to domestic violence, Figure 1 documents that the largest proportion of respondents (both male and female) report being "not at all" concerned about violence in the home. Female respondents are more likely than male respondents to report being "very" and "extremely"

concerned (5.5 percent and 4.6 percent vs. 3.6 percent and 2.5 percent, respectively).

We rely on answers about COVID-19's impacts on respondents' ability to meet financial obligations. Possible answers include "major impact," "moderate impact," "minor impact," "no impact," and "too soon to tell." Moreover, we include in our analysis respondents' answers regarding concerns about maintaining social ties as a result of COVID-19. Respondents are offered four response options ranging from "not at all" to "extremely." Last, we use a question that asks employed respondents whether they think they might lose their main job or their main self-employment income sources over the next four weeks. Throughout our analysis, we refer to this as *job security*.

We present summary statistics for these variables as well as respondents' employment status and work arrangements by sex for our entire sample and for only those who report being employed. Table 1 shows that for our entire sample of respondents, male and female respondents are most likely to report "no impact" for the ability to meet financial obligations.

The second largest proportion of male and female respondents report that it is too soon to tell. Male respondents who report a moderate impact of COVID-19 on their ability to meet financial obligations constitute 15.6 percent of the sample; female respondents who report this constitute 15.2 percent. Unlike male respondents, women are more likely to report a minor impact than a moderate impact. These percentages are similar to those for our sample of employed individuals.

With respect to concerns about maintaining social ties, both sexes, both across the entire sample and only those who are employed, are most likely to report being somewhat concerned. The proportions of female respondents, irrespective of their employment status, who report being very and extremely concerned are larger than those for the male respondents. Last, statistics for the question related to job security reported in Table 1 show that male respondents, both from the entire sample and only the employed, are more likely than female respondents to agree that they might lose their job as a result of COVID-19.

In Table 2, we tabulate individuals' characteristics by their answers to the question related to concerns about family stress as a result of confinement. We do so for our entire sample of respondents (i.e., for both sexes). We find that, regardless of respondents' age category, respondents are most likely to report being somewhat concerned about family stress. We also document that, except for respondents who report living in a common-law marriage, individuals are most likely to report being somewhat concerned about family stress.

Next, we display demographic characteristics of male and female respondents in our sample. Recall that our data are weighted to be a representative sample of the Canadian population. Table 3 shows that the largest

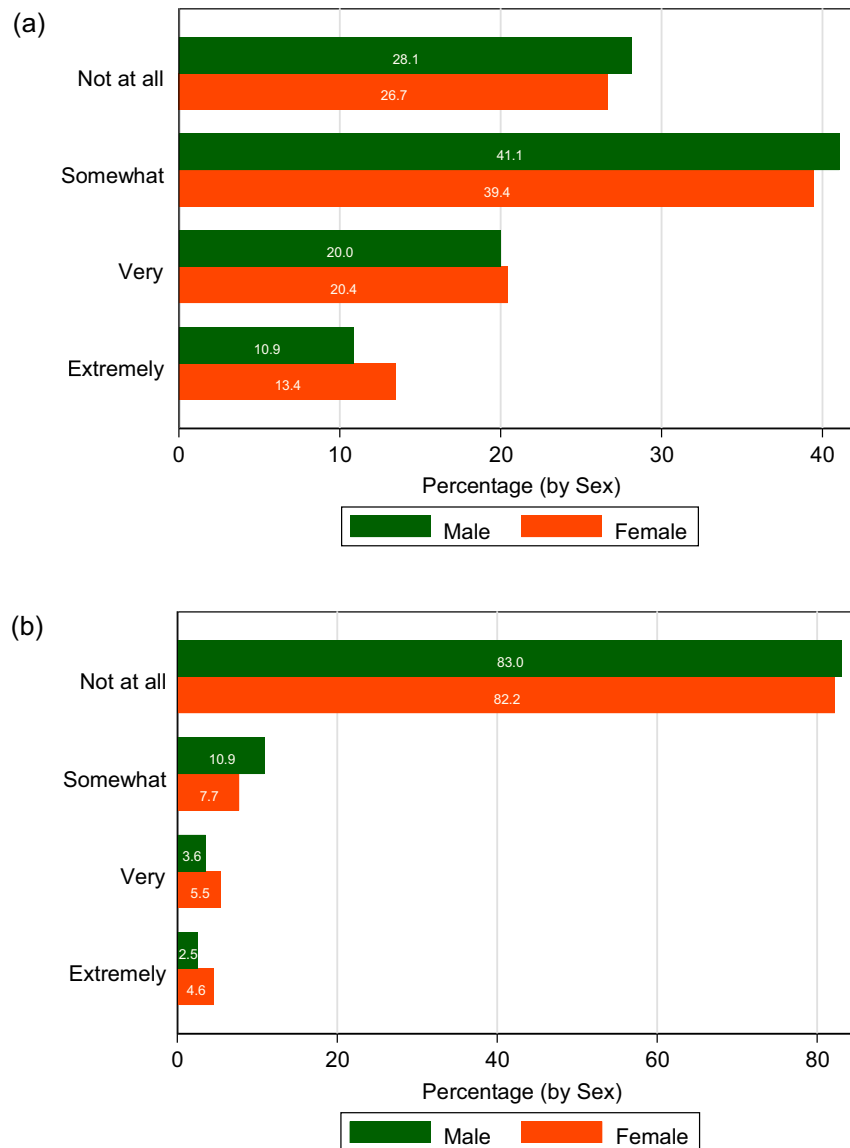


Figure 1: Concerns about (a) Family Stress Due to Confinement and (b) Violence in the Home
 Source: Authors' calculations with data from the Canadian Perspectives Survey Series I with final weights applied to all sub-graphs.

Table 1: Summary Statistics for Dependent Variables and Main Independent Variables

Independent Variables	Family Stress Due to Confinement, %					
	All Observations			Employed		
	Men	Women	Total	Men	Women	Total
Employment status						
Employed	52.4	37.1	44.5	83.3	70.3	77.2
Employed, absent, not COVID-19	2.8	4.2	3.5	4.5	7.9	6.1
Employed, absent, COVID-19	6.7	10.6	8.7	10.7	20.0	15.1
Not employed	36.9	46.5	41.8			
Not stated	1.2	1.7	1.5	1.5	1.7	1.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

(Continued)

Table 1: Continued

Independent Variables	Family Stress Due to Confinement, %					
	All Observations			Employed		
	Men	Women	Total	Men	Women	Total
Telework status						
Work location changed to home	17.4	13.0	15.1	27.6	24.7	26.2
Work location remains at home	6.7	6.7	6.7	10.7	12.8	11.7
Work remains outside home	27.5	16.0	21.6	43.7	30.4	37.4
Absent from work	9.6	14.8	12.3	15.3	28.0	21.3
Not stated	38.8	49.5	44.3	2.7	4.2	3.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
Concerned with maintaining social ties						
Not at all	23.2	21.8	22.5	23.5	22.2	22.9
Somewhat	43.8	42.0	42.9	43.7	42.3	43.0
Very	22.6	23.9	23.3	22.2	22.8	22.5
Extremely	9.1	11.1	10.1	10.0	12.1	11.0
Not stated	1.3	1.3	1.3	0.7	0.5	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0
Might lose job						
Strongly agree	12.4	10.9	11.6	19.7	20.7	20.2
Agree	9.9	6.5	8.1	15.7	12.4	14.1
Neither agree nor disagree	12.3	9.0	10.6	19.5	17.2	18.4
Disagree	13.9	12.8	13.3	22.1	24.4	23.2
Strongly disagree	14.4	12.9	13.6	22.8	24.4	23.6
Valid skip	37.1	47.3	42.4			
Not stated	0.1	0.5	0.3	0.2	1.0	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0
Ability to meet financial obligations						
Major impact	14.7	12.5	13.6	16.3	16.2	16.3
Moderate impact	15.6	15.2	15.4	16.4	16.3	16.4
Minor impact	15.2	16.1	15.7	16.7	15.4	16.1
No impact	30.9	32.0	31.5	28.5	28.5	28.5
Too soon to tell	23.5	24.0	23.8	22.0	23.5	22.7
Not stated	0.1	0.2	0.1	0.1	0.0	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Notes: All statistics are constructed using weights. The independent variables are calculated on the “family stress due to confinement” sample. The “All Observations” columns represent the whole sample, and the “Employed” columns represent only those who are employed. Some percentages do not add to exactly to 100.0 because of rounding. COVID-19 = coronavirus disease 2019.

Source: Authors' calculations; data from the Canadian Perspective Survey Series.

Table 2: Demographic Characteristics for Both Sexes by Responses to Family Stress Due to Confinement

Control Variables	Family Stress Due to Confinement, All Observations (%)				
	Not at All	Somewhat	Very	Extremely	Total
Sex					
Male	28.1	41.1	20.0	10.9	100
Female	26.7	39.4	20.4	13.4	100
Total	27.4	40.2	20.2	12.2	100

(Continued)

Table 2: Continued

Control Variables	Family Stress Due to Confinement, All Observations (%)				
	Not at All	Somewhat	Very	Extremely	Total
Age category, y					
15–34	26.1	37.1	21.0	15.8	100
35–54	23.5	38.8	23.8	13.8	100
≥ 55	31.7	44.1	16.5	7.7	100
Marital status					
Married	24.8	43.9	20.6	10.6	100
Living in common-law relationship	37.2	35.3	20.4	7.0	100
Widowed, separated, divorced	32.8	36.5	20.5	10.1	100
Single, never married	26.2	36.5	19.2	18.1	100
Child aged < 18 y present in dwelling					
No child aged < 18 y	30.5	40.9	17.4	11.2	100
Child aged < 18 y	21.5	38.9	25.6	14.1	100
Highest level of education ever attained					
< High school	26.2	31.5	21.0	21.2	100
High school diploma or a high school equivalency certificate	26.7	41.4	19.7	12.2	100
Trade certificate or diploma	31.2	39.8	20.6	8.4	100
College, CEGEP, other non-university certificate or diploma	28.4	39.1	20.7	11.7	100
University certificate or diploma below the bachelor's level	26.3	30.9	32.9	9.8	100
Bachelor's degree (e.g., BA, BSc, LLB)	25.2	45.4	19.5	10.0	100
University certificate, diploma, degree above the BA level	30.0	44.1	16.9	9.0	100

Notes: All statistics are constructed using weights. The control variables are calculated on the “family stress due to confinement” sample that includes employed and unemployed respondents. CEGEP = Collège d'enseignement général et professionnel.

Source: Authors' calculations; data from the Canadian Perspective Survey Series.

Table 3: Demographic Characteristics by Sex

Demographic Characteristics	Family Stress Due to Confinement		
	Men	Women	Total
Age categories, y			
15–34	30.9	32.0	31.4
35–54	32.6	30.6	31.5
≥ 55	36.6	37.4	37.0
Total	100.0	100.0	100.0
Marital status			
Married	55.3	48.4	51.7
Living in a common-law relationship	10.8	11.9	11.3
Widowed, separated, divorced	6.7	12.0	9.5
Single, never married	27.3	27.7	27.5
Total	100.0	100.0	100.0
Child aged < 18 y present in dwelling			
No child aged < 18 y	67.1	63.3	65.2
Child aged < 18 y	32.9	36.7	34.8
Total	100.0	100.0	100.0
Highest level of education ever completed			
< High school diploma or its equivalent	12.3	14.5	13.5

(Continued)

Table 3: Continued

Demographic Characteristics	Family Stress Due to Confinement		
	Men	Women	Total
High school diploma or a high school equivalent	25.8	28.0	26.9
Trade certificate or diploma	12.4	6.7	9.5
College, CEGEP, other non-university certificate or diploma	18.0	20.5	19.3
University certificate or diploma below the bachelor's level	2.3	2.6	2.5
Bachelor's degree (e.g., BA, BSc, LLB)	20.0	19.1	19.5
University certificate, diploma, degree above the BA level	9.1	8.5	8.8
Total	100.0	100.0	100.0

Notes: All statistics are constructed using weights. The control variables are calculated on the “family stress due to confinement” sample that includes employed or unemployed respondents. CEGEP = Collège d'enseignement général et professionnel.

Source: Authors' calculations; data from the CPSS.

proportion of respondents, across both sexes, are aged 55 years and older. About 55 percent of male respondents and 48 percent of female respondents are married, respectively. The majority of respondents report not having a child aged younger than 18 years present in their dwelling.

Model

The dependent variables are answers to questions about (social and individual) concerns regarding COVID-19's impact on family stress and domestic violence. Specifically, we estimate

$$Y_i = a + \beta EmploymentStatus_i + \theta WorkArrangement_i + \varphi JobSecurity_i + \zeta FinancialPressure_i + X_i^0 \gamma + \varepsilon_i \quad (1)$$

where Y_i is individual i 's response to the question related to the concerns about family stress or violence in the home. $EmploymentStatus_i$ is a dummy variable that captures individual i 's employment status: employed, employed and absent as a result of COVID or employed and absent not as a result of COVID or not employed. $WorkArrangement_i$ is a dummy variable indicating whether individual i 's work location has changed from outside the home to at home, remains at home, or remains outside the home or whether individual i is absent from work. $JobSecurity_i$ captures whether respondent i thinks that they might lose their main job or self-employment income sources over the next four weeks. $FinancialPressure_i$ captures COVID-19's impacts on individual i 's ability to meet financial obligations or essential needs. Throughout, we rely on ordered probit models. We additionally estimate ordinary least squares (OLS) models in which the dependent variables are standardized to have a mean of zero and a standard deviation of one. The estimates are not shown because of space considerations. X_i^0 is a set of demographic controls at the individual level, including age group dummies, marital status of respondent, dummies for having a child aged younger than 18 years residing in the dwelling in the reference week, and highest level of education ever completed. Of note, each independent variable of interest also contains a "not stated" category, which was controlled for but is not shown because of space considerations when displaying our results. The base category for each variable is indicated in the Notes to each table.

We also rely on an alternative specification in which we omit $FinancialPressure_i$ and instead include dummy variables for answers to the question regarding concerns about maintaining social ties.

Results

In this section, we first present the results for the relationship among confinement, socio-economic characteristics, and social and individual concerns for domestic violence and family stress. We then investigate the social isolation

mechanism and provide a heterogeneity analysis by respondents' marital status.

Employment, Work Arrangements, and Financial Pressures

We present estimates of Equation (1) for our two outcome variables of interest: family stress due to confinement and domestic violence. We first test whether employment status, work arrangements (work location), job security (worries about losing one's job), and financial pressure (respondents' answers to the question regarding COVID-19's impacts on their ability to meet financial obligations or essential needs) are related to concerns about family stress and domestic violence. In Tables 4 and 5, the dependent variable is respondents' concerns regarding the impact of COVID-19 on family stress resulting from confinement for, respectively, female and male respondents. In Tables 6 and 7, concerns about domestic violence is the dependent variable for, respectively, female and male respondents. All columns include our set of individual controls.

We first describe Table 4 regarding concerns about family stress for women and Table 6 regarding concerns for domestic violence for women. Both tables are structured identically. Column 1 of Tables 4 and 6 shows the relationship between employment status and family stress and domestic violence. We find that women who are not employed, employed but absent from work as a result of COVID-19, and employed but absent for reasons other than COVID-19 were not significantly more likely to report higher concerns regarding the impact of COVID-19 on family stress as a result of confinement or concerns about domestic violence than women who are employed.

As women increasingly work from home because of social distancing, they may be more concerned about losing access to support from co-workers. We test whether work arrangements are related to concerns about family stress and domestic violence in column 2 of Tables 4 and 6. We find no evidence that women whose work location changed to home because of COVID-19 report different concerns regarding the impact of COVID-19 on family stress and domestic violence than women whose work location remains outside the home (reference category) and those already working from home before the pandemic.

So far, our findings suggest that employment status and work arrangements are not related to women's concerns regarding COVID-19's impact on family stress and domestic violence. This is counter to the assumption that increased concerns about domestic violence might be related to work-at-home conditions and employment status linked to lockdowns and isolation.

To understand the mechanisms through which COVID-19 might affect the family's well-being, we examine in columns 3 and 5 whether COVID-19's impacts on respondents' ability to meet financial obligations or essential needs and job security are key determinants of

Table 4: Women's Concerns about Family Stress: Employment, Work Arrangements, and Financial Worries, Ordered Probit

Characteristics	All Observations			Employed		
	(1)	(2)	(3)	(4)	(5)	(6)
Employment status						
Employed, absent, not COVID-19	0.289 (0.196)					
Employed, absent, COVID-19	0.100 (0.112)					
Not employed	0.091 (0.085)					
Work from home						
Work location changed to home		0.006 (0.113)		-0.009 (0.114)		0.038 (0.109)
Work location remains at home		-0.041 (0.143)		-0.117 (0.142)		-0.102 (0.142)
Absent from work		0.141 (0.121)		-0.001 (0.127)		0.131 (0.120)
Ability to meet financial obligations						
Major impact			0.555*** (0.121)	0.564*** (0.125)		
Moderate impact			0.452*** (0.109)	0.453*** (0.111)		
Minor impact			0.234** (0.110)	0.239** (0.111)		
Too soon to tell			0.300*** (0.095)	0.303*** (0.097)		
Might lose job						
Strongly agree					0.264* (0.136)	0.230* (0.135)
Agree					0.215 (0.144)	0.209 (0.145)
Neither agree nor disagree					0.300** (0.141)	0.308** (0.141)
Disagree					0.146 (0.122)	0.165 (0.123)
No. of observations	2,433	2,433	2,433	2,433	1,448	1,448
Pseudo-R ²	0.025	0.025	0.036	0.037	0.020	0.021
Individual controls	X	X	X	X	X	X

Notes: Dependent variable: family stress resulting from confinement. All regressions are estimated using an ordered probit with robust standard errors and weights applied. All observations are women. Columns 1–4 are all observations; columns 5–6 are the subsample who are employed. The dependent variable asks individuals about their concern about the impact of COVID-19 on family stress due to confinement. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). All columns include dummies for age, marital status, whether the dwelling has a child aged <18 y residing in it, and highest education level attained by the respondent. Each independent variable of interest also contains a “not stated” category that was controlled for (not shown). Column 1 appends the controls with a categorical variable describing the employment status of the respondent. The base category is “employed.” Column 2 appends the controls with a categorical variable describing whether the location of where the respondent worked has changed. The base category is “work location remains outside the home.” Column 3 appends the controls with a categorical variable describing whether COVID-19 had an impact on the respondent’s ability to meet financial obligations or essential needs. The base category is “no impact.” Column 4 appends the controls with the work from home and ability to meet financial obligations variables. Column 5 appends the controls with a categorical variable describing whether respondents feel they will lose their main job or main self-employment income in the next 4 weeks. The base category is “strongly disagree.” Observations are fewer because we omit those who are not valid. Column 6 appends the controls with the work from home and might lose job variables. COVID-19 = coronavirus disease 2019.

* $p = 0.1$; ** $p = 0.05$; *** $p = 0.01$.

Source: Authors’ calculations; data from the Canadian Perspective Survey Series.

Table 5: Men's Concerns about Family Stress: Employment, Work Arrangements and Financial Worries, Ordered Probit

Characteristics	All Observations				Employed	
	(1)	(2)	(3)	(4)	(5)	(6)
Employment status						
Employed, absent, not COVID-19	0.293*					
	(0.161)					
Employed, absent, COVID-19	-0.260					
	(0.192)					
Not employed	-0.040					
	(0.108)					
Work from home						
Work location changed to home		-0.244**		-0.202*		-0.200*
		(0.120)		(0.120)		(0.115)
Work location remains at home		-0.392***		-0.408***		-0.405***
		(0.146)		(0.152)		(0.139)
Absent from work		-0.202		-0.359**		-0.232
		(0.163)		(0.166)		(0.166)
Ability to meet financial obligations						
Major impact			0.658***	0.709***		
			(0.125)	(0.130)		
Moderate impact			0.447***	0.484***		
			(0.122)	(0.121)		
Minor impact			0.287**	0.283**		
			(0.129)	(0.127)		
Too soon to tell			0.575***	0.579***		
			(0.118)	(0.118)		
Might lose job						
Strongly agree					0.156	0.199
					(0.147)	(0.152)
Agree					0.422***	0.438***
					(0.154)	(0.151)
Neither agree nor disagree					0.102	0.092
					(0.168)	(0.165)
Disagree					-0.070	-0.072
					(0.118)	(0.117)
No. of observations	2,128	2,128	2,128	2,128	1,322	1,322
Pseudo-R ²	0.018	0.020	0.036	0.041	0.032	0.039
Individual controls	X	X	X	X	X	X

Notes: Dependent variable: family stress from confinement. All regressions are estimated using an ordered probit with robust standard errors and weights applied. All observations are men. Columns 1–4 are all observations, and columns 5–6 are only the subsample who are employed. The dependent variable asks individuals about their concern about the impact of COVID-19 on family stress due to confinement. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). All columns include dummies for age, marital status, whether the dwelling has a child aged < 18 y residing in it, and highest education level attained by the respondent. Each independent variable of interest also contains a “not stated” category that was controlled for (not shown). Column 1 appends the controls with a categorical variable describing the employment status of the respondent. The base category is “employed.” Column 2 appends the controls with a categorical variable describing whether the location of where the respondent worked has changed. The base category is “work location remains outside the home.” Column 3 appends the controls with a categorical variable describing whether COVID-19 had an impact on the respondent's ability to meet financial obligations or essential needs. The base category is “no impact.” Column 4 appends the controls with the work from home and ability to meet financial obligations variables. Column 5 appends the controls with a categorical variable describing whether respondents feel they will lose their main job or main self-employment income in the next 4 weeks. The base category is “strongly disagree.” Observations are fewer because we omit those who are not valid. Column 6 appends the controls with the work from home and might lose job variables. COVID-19 = coronavirus disease 2019.

* $p = 0.1$; ** $p = 0.05$; *** $p = 0.01$.

Source: Authors' calculations; data from the Canadian Perspective Survey Series.

Table 6: Women's Concerns about Violence in the Home: Employment, Work Arrangements, and Financial Worries, Ordered Probit

Characteristics	All Observations				Employed	
	(1)	(2)	(3)	(4)	(5)	(6)
Employment status						
Employed, absent, not COVID-19	-0.148 (0.194)					
Employed, absent, COVID-19	0.071 (0.170)					
Not employed	-0.041 (0.112)					
Work from home						
Work location changed to home		-0.057 (0.148)		-0.052 (0.152)		-0.043 (0.147)
Work location remains at home		-0.0350 (0.198)		-0.082 (0.201)		-0.036 (0.191)
Absent from work		0.010 (0.164)		-0.081 (0.160)		0.036 (0.170)
Ability to meet financial obligations						
Major impact			0.331** (0.161)	0.348** (0.163)		
Moderate impact			0.189 (0.146)	0.198 (0.147)		
Minor impact			0.049 (0.146)	0.055 (0.143)		
Too soon to tell			0.045 (0.125)	0.051 (0.126)		
Might lose job						
Strongly agree					-0.122 (0.154)	-0.208 (0.160)
Agree					0.068 (0.168)	0.0570 (0.168)
Neither agree nor disagree					-0.016 (0.219)	-0.002 (0.218)
Disagree					-0.240 (0.160)	-0.218 (0.158)
No. of observations	2,429	2,429	2,429	2,429	1,446	1,446
Pseudo-R ²	0.011	0.010	0.015	0.015	0.018	0.025
Individual controls	X	X	X	X	X	X

Notes: Dependent variable: violence in the home. All regressions are estimated using an ordered probit with robust standard errors and weights applied. All observations are women. Columns 1–4 are all observations, and columns 5–6 are only the subsample who are employed. The dependent variable asks individuals about their concern about the impact of COVID-19 on violence in the home. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). All columns include dummies for age, marital status, whether the dwelling has a child aged < 18 y residing in it, and highest education level attained by the respondent. Each independent variable of interest also contains a “not stated” category that was controlled for (not shown). Column 1 appends the controls with a categorical variable describing the employment status of the respondent. The base category is “employed.” Column 2 appends the controls with a categorical variable describing whether the location of where the respondent worked has changed. The base category is “work location remains outside the home.” Column 3 appends the controls with a categorical variable describing whether COVID-19 had an impact on the respondent's ability to meet financial obligations or essential needs. The base category is “no impact.” Column 4 appends the controls with the work from home and ability to meet financial obligations variables. Column 5 appends the controls with a categorical variable describing whether respondents feel they will lose their main job or main self-employment income in the next 4 weeks. The base category is “strongly disagree.” Observations are fewer because we omit those who are not valid. Column 6 appends the controls with the work from home and might lose job variables. COVID-19 = coronavirus disease 2019.

** $p = 0.05$

Source: Authors' calculations; data from the Canadian Perspective Survey Series.

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Table 7: Men's Concerns about Violence in the Home: Employment, Work Arrangements and Financial Worries, Ordered Probit

Characteristics	All Observations			Employed		
	(1)	(2)	(3)	(4)	(5)	(6)
Employment status						
Employed, absent, not COVID-19	0.183 (0.323)					
Employed, absent, COVID-19	-0.088 (0.192)					
Not employed	0.090 (0.135)					
Work from home						
Work location changed to home		-0.280* (0.150)		-0.260* (0.152)		-0.256* (0.151)
Work location remains at home		-0.226 (0.186)		-0.186 (0.191)		-0.208 (0.187)
Absent from work		-0.121 (0.187)		-0.140 (0.188)		-0.204 (0.200)
Ability to meet financial obligations						
Major impact			0.138 (0.152)	0.134 (0.154)		
Moderate impact			0.143 (0.155)	0.139 (0.157)		
Minor impact			0.228 (0.160)	0.222 (0.160)		
Too soon to tell			0.398** (0.155)	0.388** (0.155)		
Might lose job						
Strongly agree					0.277 (0.187)	0.339* (0.194)
Agree					-0.180 (0.193)	-0.175 (0.195)
Neither agree nor disagree					0.155 (0.199)	0.153 (0.200)
Disagree					-0.043 (0.191)	-0.051 (0.189)
No. of observations	2,121	2,121	2,121	2,121	1,320	1,320
Pseudo-R ²	0.020	0.022	0.028	0.030	0.033	0.046
Individual controls	X	X	X	X	X	X

Notes: Dependent variable: violence in the home. All regressions are estimated using an ordered probit with robust standard errors and weights applied. All observations are men. Columns 1–4 are all observations, and columns 5–6 are only the subsample who are employed. The dependent variable asks individuals about their concern about the impact of COVID-19 on violence in the home. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). All columns include dummies for age, marital status, whether the dwelling has a child aged < 18 y residing in it, and highest education level attained by the respondent. Each independent variable of interest also contains a “not stated” category that was controlled for (not shown). Column 1 appends the controls with a categorical variable describing the employment status of the respondent. The base category is “employed.” Column 2 appends the controls with a categorical variable describing whether the location of where the respondent worked has changed. The base category is “work location remains outside the home.” Column 3 appends the controls with a categorical variable describing whether COVID-19 had an impact on the respondent’s ability to meet financial obligations or essential needs. The base category is “no impact.” Column 4 appends the controls with the work from home and ability to meet financial obligations variables. Column 5 appends the controls with a categorical variable describing whether respondents feel they will lose their main job or main self-employment income in the next 4 weeks. The base category is “strongly disagree.” Observations are fewer because we omit those who are not valid. Column 6 appends the controls with the work from home and might lose job variables. COVID-19 = coronavirus disease 2019.

* $p = 0.1$; ** $p = 0.05$.

Source: Authors’ calculations; data from the Canadian Perspective Survey Series.

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concerns about family stress and domestic violence. In column 3 of [Tables 4](#) and [6](#), we include dummies in our model for answers to questions about COVID-19's impacts on the ability to meet financial obligations. We find that women answering "major impact" are significantly more likely to report higher concerns regarding the impact of COVID-19 on family stress and violence in the home than those answering "no impact" (reference category).

In column 4 of [Tables 4](#) and [6](#), we include in the model our work arrangements dummies as in column 2 and responses regarding COVID-19's impacts on the ability to meet financial obligations. Our results from column 3 remain robust. In column 5 of [Tables 4](#) and [6](#), we restrict the sample to employed female respondents and include our dummy variables for concerns about losing one's job. Our findings suggest that employed women who strongly agree that they will lose their main job or main self-employment income in the next four weeks are also more likely to report higher concerns about COVID-19 impacts on family stress than those who strongly disagree. However, we find no evidence in support of higher concerns about violence in the home.

Last, the estimates in column 6 of [Tables 4](#) and [6](#) suggest that our findings for the relationship between women's worries about job security and concerns regarding the impact of COVID-19 on family stress and domestic violence are robust to the inclusion of work arrangements dummies.

In [Tables 5](#) and [7](#), we repeat this analysis for male respondents. In many respects, we find similar results. The ability to meet financial obligations is a main factor associated with concerns about family stress. We also find that employment status is weakly related to concerns about family stress and not significantly related to concerns about domestic violence.

Although our findings for female respondents document that concerns about family stress and domestic violence are not related to work arrangements, we find that men who are now working from home because of COVID-19 are significantly less likely to report higher concerns regarding the impact of COVID-19 on family stress and domestic violence. This is robust to controlling for respondents' ability to meet financial obligations and risk of losing their job. This finding suggests that men's work arrangements affect their social and individual concerns regarding family stress and domestic violence as a result of COVID-19 through non-economic channels.¹⁰

Overall, our findings provide suggestive evidence that remote work is not one of the key determinants driving men's and women's increased concerns about family stress and domestic violence.¹¹

Another interesting difference between men and women is the relationship between losing one's job and concerns about domestic violence. Both men and women who believe that they will lose their main job within

the next few weeks are also more likely to report higher social and individual concerns regarding the impact of COVID-19 on family stress, but only men report higher concerns about domestic violence. This may be related to intra-household bargaining as the relative labour market outcomes (wage or employment) of women increase in the couple. [Anderberg et al. \(2016\)](#)'s intra-household bargaining model predicts that women's unemployment probability and expected future earnings affect the risk of domestic violence through changes in women's bargaining power relative to that of their male partner. Many previous articles document a negative link between women's employment and domestic violence against them (e.g., [Aizer 2010](#); [Bowlus and Seitz 2006](#); [Heise and Kotsadam 2015](#)).¹²

Social Isolation

To investigate the social isolation mechanism, we rely on questions from the CPSS that ask respondents about concerns regarding the impact of COVID-19 on the ability to maintain social ties. Results using ordered probit estimation are reported in [Table 8](#) for our outcomes of interest: family stress and violence in the home. Our estimates show that women who report higher concerns about maintaining social ties are significantly more likely to report higher concerns about family stress due to confinement and domestic violence. Conditional on work arrangement dummies, and controlling for individual-level demographic controls, we find that women who report being extremely concerned about COVID-19's impacts on the ability to maintain social ties are also more likely to report higher concerns regarding the impact of COVID-19 on family stress and domestic violence, respectively, than women who report not being concerned at all.¹³

We repeat this analysis for male respondents. Results using ordered probit models are reported in [Appendix Table A.1](#). Our outcome of interest in columns (1) and (2) is family stress; in columns (3) and (4), it is violence in the home. We document evidence in support of a positive relationship between being concerned about COVID-19's impacts on the ability to maintain social ties and concerns about family stress and domestic violence for men.

We show the estimates for our control variables in [Appendix Table A.2](#) for concerns about family stress (in columns [1] and [2]) and violence in the home (in columns [3] and [4]) for male and female respondents, respectively. The list of individual-level characteristics includes age group dummies, respondent marital status, dummies for having a child aged younger than 18 years residing in the dwelling in the reference week, and highest level of education ever completed. We find that male respondents who report living in common-law relationships are less likely to report concerns about the impact of COVID-19 on domestic violence and more likely to

report concerns about its impact on family stress. We document that older women are more concerned with domestic violence, whereas age does not correlate with their social and individual concerns about family stress. We also show that female respondents with a child aged younger than 18 years present in the dwelling are more likely to be concerned about family stress. Last, education does not seem to correlate with concerns about family stress for both men and women.

Our findings suggest that financial pressures resulting from COVID-19 are positively related to concerns (both societal and individual) about the impact of COVID-19 on family stress resulting from confinement irrespective of gender. We also document key socio-economic determinants of respondents' concerns about domestic violence as a result of COVID-19. Last, we provide evidence that concerns about social isolation (through concerns about COVID-19's impact on the ability to maintain social ties) positively correlate with concerns about family stress and domestic violence for both men and women.

Heterogeneity by Marital Status

In this section, we investigate how the relationship between concerns about domestic violence and financial pressures resulting from COVID-19 and social isolation differ depending on respondents' marital status, because marital status might affect concerns about violence in the home.

First, we examine the relationship of concerns about domestic violence with financial pressure and employment status for our sample of female respondents in Table 9. Second, we check whether concerns about social isolation due to COVID-19 relate to respondents' societal and individual concerns about domestic violence by marital status. We report this analysis in Table 10 for women.

In these tables, the columns (1) and (2) represent the sample of individuals who are either single, widowed, separated, or divorced, and columns (3) and (4) represent the sample of individuals who are either married or in a common-law relationship. We first test whether employment status relates to concerns about domestic violence.

Table 8: Women's Concerns about Family Stress and Violence in the Home: Social Isolation, Ordered Probit

Characteristics	Family Stress Due to Confinement		Violence in the Home	
	(1)	(2)	(3)	(4)
Concerned with maintaining social ties				
Somewhat	0.437*** (0.094)	0.438*** (0.093)	0.381*** (0.129)	0.381*** (0.129)
Very	0.822*** (0.111)	0.822*** (0.111)	0.518*** (0.136)	0.520*** (0.136)
Extremely	1.396*** (0.180)	1.393*** (0.179)	0.883*** (0.188)	0.889*** (0.190)
Work from home				
Work location changed to home		0.002 (0.119)		-0.083 (0.146)
Work location remains at home		-0.062 (0.148)		-0.039 (0.204)
Absent from work		0.028 (0.129)		-0.0634 (0.174)
No. of observations	2,433	2,433	2,429	2,429
Pseudo-R ²	0.073	0.074	0.033	0.033
Individual controls	X	X	X	X

Notes: All regressions are estimated using an ordered probit with robust standard errors and weights applied. All observations are women. The dependent variable in columns 1 and 2 asks individuals about their concern about the impact of COVID-19 on family stress due to confinement. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). The dependent variable in columns 3 and 4 asks individuals about their concern about the impact of COVID-19 on violence in the home. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). Columns 1 and 3 append the controls with a categorical variable describing how concerned the respondents are with maintaining social ties after the impacts of COVID-19. The base category is "not at all." Columns 2 and 4 append the controls with the work from home and the concerned with maintaining social ties variables. COVID-19 = coronavirus disease 2019.

*** $p = 0.01$.

Source: Authors' calculations; data from the Canadian Perspective Survey Series.

Table 9: Concerns about Violence in the Home: Employment, Work from Home, and Financial Worries for Women by Marital Status

Characteristics	Single, Widowed, Separated, or Divorced			Married or in Common-Law Relationship		
	All Observations		Employed	All Observations		Employed
	(1)	(2)	(3)	(4)	(5)	(6)
Employment status						
Employed, absent, not COVID	-0.297 (0.290)			-0.005 (0.259)		
Employed, absent, COVID	-0.153 (0.219)			0.271 (0.236)		
Not employed	-0.161 (0.175)			-0.001 (0.140)		
Work from home						
Work location changed to home		-0.245 (0.246)	-0.256 (0.226)		0.061 (0.185)	0.031 (0.175)
Work location remains at home		0.304 (0.324)	0.225 (0.293)		-0.322 (0.252)	-0.316 (0.257)
Absent from work		-0.285 (0.223)	-0.108 (0.222)		0.112 (0.215)	0.176 (0.223)
Ability to meet financial obligations						
Major impact		0.205 (0.253)			0.422** (0.211)	
Moderate impact		0.348 (0.226)			0.034 (0.168)	
Minor impact		-0.101 (0.224)			0.106 (0.171)	
Too soon to tell		0.002 (0.196)			0.092 (0.159)	
Might lose job						
Strongly agree			-0.161 (0.250)			-0.182 (0.212)
Agree			0.088 (0.282)			-0.018 (0.217)
Neither agree nor disagree			-0.282 (0.270)			0.255 (0.282)
Disagree			-0.113 (0.259)			-0.296* (0.174)
No. of observations	1,022	1,022	627	1,407	1,407	819
Pseudo-R ²	0.027	0.036	0.065	0.008	0.014	0.031
Individual Controls	X	X	X	X	X	X

Notes: Dependent variable: violence in the home. All regressions are estimated using an ordered probit with robust standard errors and weights applied. Observations are only women. Columns 1–3 is the sample who are single, widowed, separated, or divorced. Columns 4–6 is the sample of women who are married or common-law. Columns 1, 2, 4, and 5 are all observations, and those in columns 3 and 6 are only those who are employed. The dependent variable asks individuals about their concern about the impact of COVID-19 on violence in the home. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). All columns include dummies for age, marital status, whether the dwelling has a child aged < 18 y residing in it, and highest education level attained by the respondent. Each independent variable of interest also contains a “not stated” category that was controlled for (not shown). Columns 1 and 4 append the controls with a categorical variable describing the employment status of the respondent. The base category is “employed.” Columns 2 and 5 append the controls with the work from home and ability to meet financial obligations variables. Columns 3 and 6 append the controls with the work from home and might lose job variables. COVID-19 = coronavirus disease 2019.

* $p = 0.1$; ** $p = 0.05$.

Source: Authors' calculations; data from the Canadian Perspective Survey Series.

Table 10: Concerns about Violence in the Home: Social Isolation for Women by Marital Status

Characteristics	Single, Widowed, Separated, or Divorced		Married or in Common-Law Relationship	
	(1)	(2)	(3)	(4)
Concerned with maintaining social ties				
Somewhat	0.326 (0.208)	0.289 (0.210)	0.378** (0.163)	0.380** (0.161)
Very	0.043 (0.229)	0.043 (0.232)	0.696*** (0.172)	0.696*** (0.173)
Extremely	0.711*** (0.270)	0.728*** (0.275)	0.920*** (0.253)	0.903*** (0.255)
Work from home				
Work location changed to home		-0.274 (0.232)		0.054 (0.183)
Work location remains at home		0.324 (0.319)		-0.291 (0.249)
Absent from work		-0.232 (0.234)		0.140 (0.231)
No. of observations	1,018	1,018	1,400	1,400
Pseudo-R ²	0.041	0.048	0.033	0.036
Individual controls	X	X	X	X

Notes: Dependent variable: violence in the home. All regressions are estimated using an ordered probit with robust standard errors and weights applied. Observations are only women. Columns 1 and 2 are the sample of women who are single, widowed, separated, or divorced. Columns 3 and 4 are the sample of women who are married or common-law. The dependent variable asks individuals about their concern about the impact of COVID-19 on violence in the home. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). All columns include dummies for age, marital status, whether the dwelling has a child aged < 18 y residing in it, and highest education level attained by the respondent. Each independent variable of interest also contains a “not stated” category that was controlled for (not shown). Columns 1–4 append the controls with a categorical variable describing how concerned the respondents are with maintaining social ties after the impacts of COVID-19. The base category is “not at all.” Columns 2 and 4 append the controls with the work from home and the concerned with maintaining social ties variable. COVID-19 = coronavirus disease 2019.

** $p = 0.05$; *** $p = 0.01$.

Source: Authors' calculations; data from the Canadian Perspective Survey Series.

Then, we introduce information about respondents' ability to meet financial obligations and work arrangements.

The results for female respondents in Table 9 show no evidence in support of a relationship between financial pressures resulting from COVID-19 and concerns about domestic violence for our sample of single, widowed, separated, or divorced women. For women who are married

or in a common-law relationship, those who report a “major impact” for financial pressure are significantly more likely to report higher concerns about domestic violence. We generally do not document a relationship between job security and concerns about domestic violence for female respondents irrespective of their marital status.

When we carry out this analysis for male respondents by marital status (Appendix Table A.3), we find some evidence that male individuals who are single, widowed, separated, or divorced who report an impact of COVID-19 on their ability to meet financial obligations are more likely to report higher concerns regarding the impact of COVID-19 on domestic violence. In contrast, we do not find evidence in support of a link between financial pressure and concerns of domestic violence for male respondents who are married or in a common-law relationship. Overall, we find no evidence for a relationship between employment status and concerns about domestic violence for both married and non-married male respondents.

Next, we investigate the social isolation mechanism by marital status for female respondents in Table 10. We document a positive association between concerns about maintaining social ties and concerns about domestic violence for both married and non-married female respondents answering “extremely.” The relationship appears somewhat stronger for female respondents who are married or in a common-law relationship than for single, widowed, separated, or divorced women. For male respondents, we find that for both respondents who are single, widowed, separated, or divorced and respondents who are married or in a common-law relationship, there is a strong positive association between concerns about maintaining social ties and concerns about domestic violence (Appendix Table A.4).

To sum up, our findings document that concerns about domestic violence for both sexes vary by marital status. Interestingly, for female respondents, our results suggest that concerns about maintaining social ties are positively associated with concerns about domestic violence and that the relationship is stronger for female respondents who are married or in a common-law relationship than for single, widowed, separated, or divorced women.

Discussion

This article documents the determinants of Canadians' concerns (social and individual) regarding the impact of COVID-19 on family stress and domestic violence. Our article thus contributes to the growing literature documenting an increase in domestic violence incidents after COVID-19 in other jurisdictions, such as Leslie and Wilson (2020), Armbruster and Klotzbucher (2020), and Bullinger et al. (2021). We rely on a unique survey, the CPSS, which includes questions regarding concerns about the effect of COVID-19 on family stress, domestic violence,

and social isolation and on respondents' ability to meet financial obligations, their work arrangements, and their demographic characteristics. Our results provide suggestive evidence that work arrangements such as remote work are not related to Canadians' concerns regarding the impact of COVID-19 on family stress and domestic violence. These results are important given the large and widespread increase in remote work and the potential for a long-lasting increase in work-from-home arrangements (e.g., [Sachedina and Cousins 2020](#)). Our results suggest that the inability to meet financial obligations as a result of COVID-19 are significantly (positively) related to (societal and individual) concerns regarding COVID-19's impacts on family stress and domestic violence.

The Canadian government has pledged up to \$50 million in its COVID-19 Economic Response Plan to women's shelters and sexual assault centres, with \$40 million being given out by 16 May 2020.¹⁴ Our analysis suggests that this is a step in the right direction to help mitigate the negative effect of COVID-19 on family stress and violence.

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Notes

- 1 The impacts of COVID-19 on the labour market have been documented in Canada, Europe, and the United States (e.g., [Beland, Brodeur, Mikola, et al. 2020](#); [Beland, Brodeur, and Wright 2020](#); [Gupta et al. 2020](#); [Lewandowski 2020](#)), with large increases in unemployment.
- 2 We use *domestic violence* and *family violence* interchangeably in the text. Our question refers to family violence and can refer to any act committed by a family member or intimate partner against another member of the family.
- 3 [Hoehn-Velasco, Silverio-Murillo, and Balmori de la Miyar \(2021\)](#) find an increase in crime against women in Mexico. Similarly, [Bullinger et al. \(2020\)](#) document the effect of COVID-19 lockdown on child maltreatment.
- 4 We also contribute to the literature (e.g., [Beland, Brodeur, Mikola, et al. 2020](#); [Beland, Fakorede, and Mikola 2020](#); [Lemieux et al. 2020](#); [Qian and Fuller 2020](#); [Leach, Rivers, and Shaffer 2020](#)) documenting the effect of COVID-19 on several outcomes in Canada. See [Brodeur, Gray, et al. \(2021\)](#) for a literature review.
- 5 As of 15 January 2021, COVID-19 has caused more than 19,500 deaths, and there have been 17,000,000 confirmed cases. See [Canada \(2021a\)](#) for updated information.
- 6 The CERB provides short-term income support for those individuals displaced in the labour market as a result of COVID-19. The CEWS provides businesses with temporary wage subsidies to aid in worker retention. The CESB

provides income support to those in, finishing, or beginning post-secondary education because many of these individuals may not qualify for the CERB.

- 7 For additional statistics, see [Conroy, Burczycka, and Savage \(2019\)](#).
- 8 The CPSS 1–Impacts of COVID-19 is the first of six surveys being administered approximately every two months as parts of the CPSS. The second survey does not include questions about domestic violence or family stress.
- 9 The CPSS invited valid individuals from the LFS to participate in this survey through the mail. The mail invitations provided individuals with a secure access code and invited them to complete an online sign-up form. Participants could choose not to participate online after filling out the basic demographic information and providing a valid email address. Attempts were made to follow up with those who did not access the online sign-up by mail, email, and telephone. The CPSS might not be fully representative of the Canadian population. The cumulative response rate (14.6 percent) is lower than those of other surveys by Statistics Canada. Moreover, the sample also under-represents people with less than a high school education and who are not in the labour force and over-represents those who are Canadian born.
- 10 Another plausible mechanism is increased alcohol and drug consumption. Self-reported data from CPSS suggest that COVID-19 led to an increase in consumption. More precisely, 14 percent and 7 percent of men report increased weekly alcohol and cannabis consumption, respectively.
- 11 A related mechanism is that a decrease in employment and an increase in work from home as a result of COVID-19 may induce intimate partner violence by increasing the time partners spend together. This is related to the theory of exposure reduction developed by criminologists (see [Dugan, Nagin, and Rosenfeld 1999](#), for instance). We do not find empirical evidence supporting this mechanism.
- 12 We repeat this analysis and estimate a linear model using OLS in which the dependent variables are standardized to have a mean of zero and a standard deviation of one. We do not report these results because of space considerations. Our conclusions, however, remain the same. As an additional sensitivity analysis, we code our dependent variable of interest (violence in the home) as a binary indicator that takes on a value of zero if an individual responded “not at all” and one if an individual responded “somewhat,” “very,” or “extremely.” We estimate a probit model as well as OLS estimations for women and men. The results are qualitatively similar in these alternative specifications. Results are available upon request.
- 13 Results using OLS and an alternative specification using probit models with a binary dummy indicator for violence in the home confirm the validity of our findings. We do not show these results because of space considerations.
- 14 See [Canada \(2021b\)](#) for additional details.

References

- [Aizer, A. 2010.](#) “The Gender Wage Gap and Domestic Violence.” *American Economic Review* 100(4):1847–59. <https://doi.org/10.1257/aer.100.4.1847>.

- Ali, U., C.M. Herbst, and C.A. Makridis. 2020. "The Impact of COVID-19 on the US Child Care Market: Evidence from Stay-at-Home Orders." IZA Discussion Paper 13261, Institute of Labor Economics, Bonn, Germany.
- Alon, T., M. Doepke, J. Olmstead-Rumsey, and M. Tertilt. 2020. "The Impact of COVID-19 on Gender Equality." *Covid Economics: Vetted and Real-Time Papers* (4):62–85. At <https://www.nber.org/papers/w26947>.
- Anderberg, D., H. Rainer, J. Wadsworth, and T. Wilson. 2016. "Unemployment and Domestic Violence: Theory and Evidence." *Economic Journal* 126(597):1947–79. <https://doi.org/10.1111/eoj.12246>.
- Armbruster, S., and V. Klotzbucher. 2020. "Lost in Lockdown? Covid-19, Social Distancing, and Mental Health in Germany." *Covid Economics: Vetted and Real-Time Papers* (22):117–53. At <https://cepr.org/sites/default/files/CovidEconomics22.pdf>.
- Beland, L.-P., A. Brodeur, D. Mikola, and T. Wright. 2020. "The Short-Term Economic Consequences of COVID-19: Occupation Tasks and Mental Health in Canada." IZA Discussion Paper 13254, Institute of Labor Economics, Bonn, Germany.
- Beland, L.-P., A. Brodeur, and T. Wright. 2020. "The Short-Term Economic Consequences of COVID-19: Exposure to Disease, Remote Work and Government Response." IZA Discussion Paper 13282, Institute of Labor Economics, Bonn, Germany.
- Beland, L.-P., O. Fakorede, and D. Mikola. 2020. "Short-Term Effect of Covid-19 on Self-Employed Workers in Canada." *Canadian Public Policy/Analyse de politiques* 46(S1):S66–S81. <https://doi.org/10.3138/cpp.2020-076>.
- Bielski, Z. 2020. "Self-Isolation Directives Increase Risk for Women Facing Domestic Violence, Experts Warn." *Globe and Mail*, March 23. At <https://www.theglobeandmail.com/canada/article-self-isolation-directives-increase-risk-for-women-facing-domestic/>.
- Boserup, B., M. McKenney, and A. Elkbuli. 2020. "Alarming Trends in US Domestic Violence during the Covid-19 Pandemic." *American Journal of Emergency Medicine* 38(12):2753–55. <https://doi.org/10.1016/j.ajem.2020.04.077>.
- Bowlus, A.J., and S. Seitz. 2006. "Domestic Violence, Employment, and Divorce." *International Economic Review* 47(4):1113–49. <https://doi.org/10.1111/j.1468-2354.2006.00408.x>.
- Brodeur, A., A.E. Clark, S. Fleche, and N. Powdthavee. 2021. "Covid-19, Lockdowns and Well-Being: Evidence from Google Trends." *Journal of Public Economics* 193:104346. <https://doi.org/10.1016/j.jpubeco.2020.104346>.
- Brodeur, A., D.M. Gray, A. Islam, and S.J. Bhuiyan. 2021. "A Literature Review of the Economics of COVID-19." *Journal of Economic Surveys*. Online version of record before inclusion in an issue, 18 April. <https://doi.org/10.1111/joes.12423>
- Bullinger, L.R., J.B. Carr, and A. Packham. 2021. "Covid-19 and Crime: Effects of Stay-at-Home Orders on Domestic Violence." *American Journal of Health Economics*. Ahead of print. <https://doi.org/10.1086/714359>.
- Bullinger, L.R., K. Raissian, M. Feely, and W. Schneider. 2020. "The Neglected Ones: Time at Home During Covid-19 and Child Maltreatment." <https://dx.doi.org/10.2139/ssrn.3674064>.
- Canada. 2020. "Canada's COVID-19 Economic Response Plan: Support for Canadians and Businesses." At <https://www.canada.ca/en/department-finance/news/2020/03/canadas-covid-19-economic-response-plan-support-for-canadians-and-businesses.html>.
- Canada. 2021a. "Coronavirus Disease (COVID-19)." At <https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19.html>.
- Canada. 2021b. "Supporting Women and Children Experiencing Violence during COVID-19." At <https://cfc-swc.gc.ca/fun-fin/shelters-refuges-en.html>.
- Conroy, S., M. Burczycka, and L. Savage. 2019. "Family Violence in Canada: A Statistical Profile, 2018." *Juristat*. Statistics Canada Cat. No. 85-002-X. Ottawa: Statistics Canada. At <https://www150.statcan.gc.ca/n1/pub/85-002-x/2019001/article/00018-eng.pdf>.
- Dugan, L., D.S. Nagin, and R. Rosenfeld. 1999. "Explaining the Decline in Intimate Partner Homicide: The Effects of Changing Domesticity, Women's Status, and Domestic Violence Resources." *Homicide Studies* 3(3):187–214. <https://doi.org/10.1177/1088767999003003001>.
- Gelles, R.J. 1983. "An Exchange/Social Control Theory." In *The Dark Side of Families: Current Family Violence Research*, ed. D. Finkelhor, R.J. Gelles, G.T. Hotaling, and M.A. Straus, 151–65. Newbury Park, CA: Sage.
- Gelles, R.J., and M. Straus. 1979. "Determinants of Violence in the Family: Toward a Theoretical Integration." In *Contemporary Theories about the Family*, ed. W.R. Burr, R. Hill, F.I. Nye, and I.L. Reiss, 550–81. New York: Free Press.
- Gupta, S., L. Montenovio, T.D. Nguyen, F.L. Rojas, I.M. Schmutte, K.I. Simon, B.A. Weinberg, and C. Wing. 2020. "Effects of Social Distancing Policy on Labor Market Outcomes." Working Paper 27280, National Bureau of Economics, Cambridge, MA.
- Hamermesh, D.S. 2020. "Life Satisfaction, Loneliness and Togetherness, with an Application to Covid-19 Lockdowns." *Review of Economics of the Household* 18:983–1000. <https://doi.org/10.1007/s11150-020-09495-x>.
- Heise, L., and A. Kotsadam. 2015. "Cross-National and Multilevel Correlates of Partner Violence: An Analysis of Data from Population-Based Surveys." *Lancet Global Health* 3(6):332–40. [https://doi.org/10.1016/S2214-109X\(15\)00013-3](https://doi.org/10.1016/S2214-109X(15)00013-3).
- Hoehn-Velasco, L., A. Silverio-Murillo, and J.R. Balmori de la Miyar. 2021. "The Great Crime Recovery: Crimes against Women During, and After, the COVID-19 Lockdown in Mexico." *Economics and Human Biology* 41:100991. <https://doi.org/10.1016/j.ehb.2021.100991>.
- Leach, A., N. Rivers, and B. Shaffer. 2020. "Canadian Electricity Markets during the Covid-19 Pandemic: An Initial Assessment." *Canadian Public Policy/Analyse de politiques* 46(Supplement 2):S145–59. <https://doi.org/10.3138/cpp.2020-060>
- Lemieux, T., K. Milligan, T. Schirle, and M. Skuterud. 2020. "Initial Impacts of the Covid-19 Pandemic on the Canadian Labour Market." *Canadian Public Policy/Analyse de politiques* 46(S1):S55–65. <https://doi.org/10.3138/cpp.2020-049>

- Leslie, E., and R. Wilson. 2020. "Sheltering in Place and Domestic Violence: Evidence from Calls for Service during Covid-19." *Journal of Public Economics* 189:104241. <https://doi.org/10.1016/j.jpubeco.2020.104241>.
- Lewandowski, P. 2020. "Occupational Exposure to Contagion and the Spread of Covid-19 in Europe." IZA Discussion Paper 13227, Institute of Labor Economics, Bonn, Germany.
- Patel, R. 2020. "Minister Says COVID-19 Is Empowering Domestic Violence Abusers as Rates Rise in Parts of Canada." *CBC*, 27 April. At <https://www.cbc.ca/news/politics/domestic-violence-rates-rising-due-to-covid19-1.5545851>.
- Payne, J., A. Morgan, and A.R. Piquero. 2020. "Covid-19 and Social Distancing Measures in Queensland Australia Are Associated with Short-Term Decreases in Recorded Violent Crime." *SocArXiv*. <https://doi.org/10.31219/osf.io/z4m8t>.
- Peterman, A., A. Potts, M. O'Donnell, K. Thompson, N. Shah, S. Oertelt-Prigione, and N. van Gelder. 2020. "Pandemics and Violence against Women and Children." Working Paper 528, Center for Global Development, Washington, DC.
- Qian, Y., and S. Fuller. 2020. "Covid-19 and the Gender Employment Gap among Parents of Young Children." *Canadian Public Policy/Analyse de politiques* 46(S2):S89–101. <https://doi.org/10.3138/cpp.2020-077>.
- Sachedina, O., and B. Cousins. 2020. "Will the COVID-19 Pandemic Lead to a Permanent Revolution in Working from Home?" *CTV News*, May 25. At <https://www.ctvnews.ca/business/will-the-covid-19-pandemic-lead-to-a-permanent-revolution-in-working-from-home-1.4954518>.
- Schwandt, H. 2020. "Pregnancy during the Pandemic." IZA Policy Paper 161, Institute of Labor Economics, Bonn, Germany.
- Sevilla, A., and S. Smith. 2020. "Baby Steps: The Gender Division of Childcare during the COVID-19 Pandemic." *Oxford Review of Economic Policy* 36(S1):S169–86. <https://doi.org/10.1093/oxrep/gra027>.
- Statistics Canada. 2021. "Canadian Perspective Survey Series (CPSS)." At <https://www.statcan.gc.ca/eng/survey/household/5311>.
- Taub, A. 2020. "A New Covid-19 Crisis: Domestic Abuse." *New York Times*, 6 April. At <https://www.nytimes.com/2020/04/06/world/coronavirus-domestic-violence.html>.
- Tubadji, A., F. Boy, and D.J. Webber. 2020. "Narrative Economics, Public Policy and Mental Health." *Covid Economics: Vetted and Real-Time Papers* 20:120–42. At <https://cepr.org/sites/default/files/CovidEconomics20.pdf>.
- Usher, K., N. Bhullar, J. Durkin, N. Gyamfi, and D. Jackson. 2020. "Family Violence and COVID-19: Increased Vulnerability and Reduced Options for Support." *International Journal of Mental Health Nursing* 29(4):549–52. <https://doi.org/10.1111/inm.12735>.

Appendix A

Table A.1: Men’s Concerns about Family Stress and Violence in the Home: Social Isolation, Ordered Probit

Characteristics	Family Stress Due to Confinement		Violence in the Home	
	(1)	(2)	(3)	(4)
Concerned with maintaining social ties				
Somewhat	0.479*** (0.107)	0.481*** (0.106)	0.343** (0.149)	0.353** (0.148)
Very	1.015*** (0.121)	1.020*** (0.121)	0.694*** (0.171)	0.702*** (0.170)
Extremely	1.676*** (0.231)	1.664*** (0.230)	0.953*** (0.204)	0.949*** (0.204)
Work from home				
Work location changed to home		-0.215* (0.120)		-0.260* (0.154)
Work location remains at home		-0.258 (0.160)		-0.134 (0.183)
Absent from work		-0.258* (0.150)		-0.161 (0.187)
No. of observations	2,128	2,128	2,121	2,121
Pseudo-R ²	0.085	0.088	0.050	0.053
Individual controls	X	X	X	X

Notes: All regressions are estimated using an ordered probit with robust standard errors and weights applied. All observations are men. The dependent variable in columns 1 and 2 asks individuals about their concern about the impact of COVID-19 on family stress due to confinement. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). The dependent variable in columns 3 and 4 asks individuals about their concern about the impact of COVID-19 on violence in the home. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). Columns 1 and 3 append the controls with a categorical variable describing how concerned the respondents are for maintaining social ties after the impacts of COVID-19. The base category is “not at all.” Columns 2 and 4 append the controls with the work from home and the concerned with maintaining social ties variable. COVID-19 = coronavirus disease 2019.

* $p = 0.1$; ** $p = 0.05$; *** $p = 0.01$.

Source: Authors’ calculations; data from the CPSS.

Table A.2: Controls by Outcome and Sex, Ordered Probit

Controls	Family Stress Due to Confinement		Violence in the Home	
	Women (1)	Men (2)	Women (3)	Men (4)
Age category, y				
35–54	-0.030 (0.099)	0.214* (0.129)	0.221* (0.126)	0.033 (0.143)
≥ 55	-0.102 (0.107)	-0.267* (0.143)	0.293** (0.137)	0.035 (0.170)
Marital status				
Living in common-law relationship	-0.199* (0.103)	-0.390*** (0.128)	0.386*** (0.125)	0.296** (0.146)
Widowed, separated, divorced	-0.001 (0.099)	-0.133 (0.118)	0.183 (0.142)	0.176 (0.149)
Single, never married	0.156 (0.102)	-0.123 (0.140)	0.345*** (0.127)	0.275** (0.138)
Child aged < 18 y present in dwelling	0.370*** (0.094)	-0.142 (0.121)	0.104 (0.129)	0.015 (0.157)
Highest level of education ever completed				
High school diploma or a high school equivalency certificate	-0.096 (0.159)	-0.136 (0.236)	-0.135 (0.205)	-0.061 (0.278)
Trade certificate or diploma	-0.345* (0.180)	-0.139 (0.235)	0.002 (0.220)	0.024 (0.294)
College, CEGEP, other non-university certificate or diploma	-0.116 (0.159)	-0.177 (0.236)	-0.148 (0.199)	-0.325 (0.271)
University certificate or diploma below the bachelor’s level	-0.092 (0.211)	0.032 (0.272)	0.042 (0.306)	0.476 (0.464)
Bachelor’s degree (e.g., BA, BSc, LLB)	-0.286* (0.156)	-0.067 (0.232)	-0.091 (0.196)	0.125 (0.276)
University certificate, diploma, degree above the BA level	-0.257 (0.169)	-0.280 (0.235)	-0.049 (0.208)	0.328 (0.274)
No. of observations	2,433	2,128	2,429	2,121
Pseudo-R ²	0.024	0.016	0.010	0.019

Notes: All regressions are estimated using an ordered probit with robust standard errors and weights applied. Columns 1 and 3 use the sample of only women; columns 2 and 4 use the sample of only men. The dependent variable in columns 1 and 2 asks individuals their concern about the impact of COVID-19 on family stress due to confinement. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). The dependent variable in columns 3 and 4 asks individuals about their concern about the impact of COVID-19 on violence in the home. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). CEGEP = Collège d’enseignement général et professionnel; COVID-19 = coronavirus disease 2019.

* $p = 0.1$; ** $p = 0.05$; *** $p = 0.01$.

Source: Authors’ calculations; data from the Canadian Perspective Survey Series.

Table A.3: Concerns about Violence in the Home: Employment, Work from Home, and Financial Worries for Men by Marital Status

Characteristics	Single, Widowed, Separated, or Divorced			Married or in Common-Law Relationship		
	All Observations		Employed	All Observations		Employed
	(1)	(2)	(3)	(4)	(5)	(6)
Employment status						
Employed, absent, not COVID	-0.707 (0.453)			0.468 (0.359)		
Employed, absent, COVID	-0.139 (0.280)			0.056 (0.235)		
Not employed	0.132 (0.231)			0.091 (0.155)		
Work from home						
Work location changed to home		0.246 (0.273)	0.143 (0.267)		-0.388** (0.182)	-0.379** (0.182)
Work location remains at home		0.162 (0.307)	0.226 (0.289)		-0.406* (0.236)	-0.436* (0.231)
Absent from work		-0.291 (0.300)	-0.367 (0.295)		0.029 (0.224)	-0.005 (0.221)
Ability to meet financial obligations						
Major impact		0.408* (0.247)			0.021 (0.183)	
Moderate impact		0.306 (0.270)			0.090 (0.187)	
Minor impact		0.678*** (0.260)			-0.013 (0.191)	
Too soon to tell		0.794*** (0.259)			0.192 (0.173)	
Might lose job						
Strongly agree			0.550* (0.320)			0.150 (0.225)
Agree			-0.457 (0.354)			-0.145 (0.219)
Neither agree nor disagree			0.214 (0.355)			0.113 (0.229)
Disagree			0.072 (0.329)			-0.148 (0.228)
No. of observations	717	717	439	1,404	1,404	881
Pseudo-R ²	0.040	0.069	0.092	0.033	0.042	0.056
Individual controls	X	X	X	X	X	X

Notes: Dependent variable: violence in the home. All regressions are estimated using an ordered probit with robust standard errors and weights applied. Observations are only men. Columns 1–3 are the sample who are single, widowed, separated, or divorced. Columns 4–6 are the sample of men who are married or common-law. Columns 1, 2, 4, and 5 are all of the observations, and those in columns 3 and 6 are only those who are employed. The dependent variable asks individuals about their concern about the impact of COVID-19 on violence in the home. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). All columns include dummies for age, marital status, whether the dwelling has a child aged < 18 y residing in it, and highest education level attained by the respondent. Each independent variable of interest also contains a “not stated” category that was controlled for (not shown). Columns 1 and 4 append the controls with a categorical variable describing the employment status of the respondent. The base category is “employed.” Columns 2 and 5 append the controls with the work from home and ability to meet financial obligations variables. Columns 3 and 6 append the controls with the work from home and might lose job variables. COVID-19 = coronavirus disease 2019.

* $p = 0.1$; ** $p = 0.05$.

Source: Authors' calculations; data from the Canadian Perspective Survey Series.

Table A.4: Concerns about Violence in the Home: Social Isolation for Men by Marital Status

Characteristics	Single, Widowed, Separated, or Divorced		Married or in Common-Law Relationship	
	(1)	(2)	(3)	(4)
Concerned with maintaining social ties				
Somewhat	0.732*** (0.269)	0.758*** (0.266)	0.148 (0.168)	0.148 (0.167)
Very	1.425*** (0.315)	1.455*** (0.317)	0.312* (0.183)	0.312* (0.181)
Extremely	1.121*** (0.383)	1.203*** (0.349)	0.886*** (0.234)	0.862*** (0.230)
Work from home				
Work location changed to home		0.201 (0.265)		-0.386** (0.189)
Work location remains at home		0.299 (0.297)		-0.351 (0.237)
Absent from work		-0.129 (0.297)		-0.004 (0.224)
No. of observations	711	711	1,383	1,383
Pseudo-R ²	0.111	0.117	0.052	0.059
Individual controls	X	X	X	X

Notes: Dependent variable: violence in the home. All regressions are estimated using an ordered probit with robust standard errors and weights applied. Observations are only men. Columns 1 and 2 is the sample of men who are single, widowed, separated, or divorced. Columns 3 and 4 are the sample of men who are married or common-law. The dependent variable asks individuals about their concern about the impact of COVID-19 on violence in the home. The dependent variable takes on the values 1 (*not at all*), 2 (*somewhat*), 3 (*very*), and 4 (*extremely*). All columns include dummies for age, marital status, whether the dwelling has a child aged < 18 y residing in it, and highest education level attained by the respondent. Each independent variable of interest also contains a “not stated” category that was controlled for (not shown). Columns 1–4 append the controls with a categorical variable describing how concerned the respondents are about maintaining social ties after the impacts of COVID-19. The base category is “not at all.” Columns 2 and 4 append the controls with the work from home and the concerned with maintaining social ties variable. COVID-19 = coronavirus disease 2019.

* $p = 0.1$; ** $p = 0.05$; *** $p = 0.01$.

Source: Authors' calculations; data from the Canadian Perspective Survey Series.