Economic precarity and changing levels of anxiety and stress among Canadians with disabilities and chronic health conditions throughout the COVID-19 pandemic

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Abstract

Early in the COVID-19 pandemic, multiple event stressors converged to exacerbate a growing mental health crisis in Canada with differing effects across status groups. However, less is known about changing mental health situations throughout the pandemic, especially among individuals more likely to experience chronic stress because of their disability and health status. Using data from two waves of a targeted online survey of people with disabilities and chronic health conditions in Canada ($N = 563$ individuals, June 2020 and July 2021), we find that approximately 25% of respondents experienced additional increases in stress and anxiety levels in 2021. These increases were partly explained by worsening perceived financial insecurity and, in the case of stress, additional negative financial effects tied to the pandemic. This paper understands mental health disparities as a function of social status and social group membership. By linking stress process models and a minority stress framework with a social model of disability, we allude to how structural and contextual barriers make functional limitations disabling and in turn, life stressors.

RÉSUMÉ

Au début de la pandémie de COVID-19, de multiples facteurs de stress ont convergé pour exacerber une crise de santé mentale croissante au Canada, avec des effets différents selon les groupes de statut. Cependant, on en sait moins sur l'évolution de la situation en matière de santé mentale tout au long de la pandémie, en particulier chez les personnes plus susceptibles de subir un stress chronique en raison de leur handicap et de leur état de santé. En utilisant les données de deux vagues d'une enquête en ligne ciblée sur les personnes handicapées et atteintes de maladies chroniques au Canada ($N = 563$ personnes, juin 2020 et juillet 2021), nous constatons qu'environ 25% des répondants ont connu des augmentations supplémentaires des niveaux de stress et d'anxiété en 2021. Ces augmentations s'expliquent en partie par l'aggravation de l'insécurité financière perçue et, dans le cas du stress, par les effets financiers négatifs supplémentaires liés à la pandémie. Dans cet article, les disparités en matière de santé mentale sont considérées comme une fonction du statut social et de l'appartenance à un groupe social. En reliant les modèles de processus de stress et un cadre de stress minoritaire à un modèle social du handicap, nous faisons allusion à la manière dont les barrières structurelles et contextuelles rendent les limitations fonctionnelles invalidantes et, à leur tour, les facteurs de stress dans la vie.

INTRODUCTION

The COVID-19 pandemic represented a series of traumatic events affecting everything from work and school to recreation to everyday interactions with family and friends. It led to a convergence of chronic stressors—long-term and ongoing stress often tied to things like work, finances, and family—and event stressors—usually distressful life incidences that include sudden job loss and breaks in social ties. Together, these contributed to negative mental health outcomes, such as increased anxiety and depression, across Canada (Findlay & Arim, 2020; Statistics Canada, 2019, 2020a). As a result, about 20% of all Canadians reported feeling quite a bit or extremely stressed most days during the pandemic (Statistics Canada, 2020), and positive screenings of both depression and anxiety among Canadian adults rose between 2020 and 2021, increasing from 15% to 19% and 13% to 15%, respectively (Statistics Canada, 2021a).

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Both pandemic-related primary stressors connected to the spread of the virus, such as concerns about getting sick, and secondary stressors stemming from the broader effects of the pandemic, like worrying about financial security, had the potential to affect mental health for people during COVID-19. However, life stressors were not distributed equally across the population prior to or during the pandemic. Members of vulnerable communities who are more likely to be economically insecure and already have significant mental health issues—both of which contribute to chronic stress—disproportionately experienced deteriorating states throughout the pandemic (Bierman & Schieman, 2020; Evra & Mongrain, 2020; Moyser, 2020; Statistics Canada, 2020b).

People with disabilities and chronic health conditions too experienced worsening mental and physical wellbeing because of COVID-19 (Kavanagh et al., 2022; Summaka et al., 2021; Turk et al., 2020). As an exogenous shock disrupting people's daily lives, the pandemic jeopardized the health of people with multiple morbidities—a primary pandemic stressor – and it also made perceptions of economic insecurity—a secondary pandemic stressor – more acute, likely contributing to increased stress and anxiety (Kopasker et al., 2018). Furthermore, it contributed to feelings of isolation by limiting social interaction and social ties that act as critical supports and coping mechanisms (Bierman, 2012; Brown, 2017; Maroto et al., 2023; Pfefferbaum & North, 2020).

The pandemic presents a dynamic set of circumstances where many people experienced changing physical and mental health situations over many months, leading to our main research questions. First, how have experiences with anxiety and stress among people with disabilities and chronic health conditions changed throughout the pandemic? Second, how do COVID-19 primary and secondary stressors account for changes in stress and anxiety? We draw from stress process models (Thoits, 2010) and a minority stress framework (Brown, 2017; Meyer, 2003) to address how eventful stressors brought on by the COVID-19 pandemic affected an already vulnerable community experiencing chronic stressors related to their precarity as people with disabilities and chronic health conditions. We follow the stress process model's emphasis on financial strain as one of the most important ongoing stressors by examining the relationship between economic insecurity, anxiety, and stress during the pandemic.

We understand mental health disparities as a function of status and social group membership (Link & Phelan, 1995; Pearlin, 1999; Reichard et al., 2011). The negative consequences of both chronic stressors and stressors tied to life events vary across groups where those with less status and fewer resources are often the most affected. Additionally, we highlight how stress process and minority stress frameworks echo the social model of disability by emphasizing the role of structural barriers and obstacles rather than individual impairments in shaping mental health outcomes (Barnes, 2019; Watson & Shakespeare, 2022). The structural and contextual "conditions of inequality" produce negative outcomes, including stress (Dew et al., 2016, p. 131). According to Mills' (2023) recent study, because disability is socially created by contextual barriers—from discrimination and prejudice to exclusion and inaccessibility– disability is a chronic stressor.

Little quality data about the experiences of Canadians with disabilities during COVID existed at the time of this study. We therefore constructed an original two-wave online survey targeting people with disabilities and chronic health conditions in Canada ($N = 563$ individuals and 1126 observations, June 2020 and July 2021). This allowed us not only to capture broader changing life situations of people with different disabilities and health statuses, but also how perceptions about the pandemic and economic insecurity contributed to feelings of stress and anxiety. By integrating perceptions of economic insecurity within the stress literature, we show how structural conditions like precarity can contribute to feelings of anxiety and stress aggravated by the robust and traumatic events brought on by the shocks of the pandemic.

TABLE 1 Stressors within the stress process model.

General stressors		Project-related stressors	
Chronic stressors: Structurally-based and ongoing	Evident at micro- and macro-levels	Chronic stressors	Role of ableism
	Tied to status characteristics		Number of disabilities
Event stressors: Linked to specific events, often temporary	Primary: Direct components of the event	COVID-19 event stressors	COVID-19 concerns COVID-19 vaccine receipt
	Secondary: Indirect consequences of the event		COVID-19 financial effects COVID-19 financial insecurity

For more detailed discussions see: Meyer (2003), Pearlin (1989), Thoits (2010), and Wheaton (1994).

CHRONIC STRESSORS AND LIFE EVENTS: DISABILITY, PRECARITY, AND MENTAL HEALTH

Thoits (2010) outlined two key contributions of sociological stress research useful for situating economic insecurity, disability, mental health, and crisis within the social determinants of health paradigm (Link & Phelan, 1995). These are chronic stressors and event stressors that, together, make up *life stress* and act as different sources of stress within the stress process model (Wheaton, 1994). As indicated in Table 1, chronic stressors are structurally based and ongoing, placing repeated demands on individuals (Pearlin, 1989). They reflect subjective feelings about the perceived realities of everyday life like financial struggles, workplace discrimination, and chronic health issues (Wheaton, 1994). Traumatic events including unexpectedly losing work, family and friend supports, and getting sick, may generate different and additional feelings of stress. The COVID-19 pandemic precipitated many of these events under extreme conditions.

Social status characteristics, such as gender, class, race, and disability, shape life stress (Turner et al., 1995) where different groups experience chronic stress linked to ongoing economic, political, and social barriers. More traumatic life events too are situated within a social context and experienced differently based on group membership (Hatch & Dohrenwend, 2007; Turner & Lloyd, 1995). This suggests that those already experiencing chronic stress also have greater exposure to event stressors, and they experience these traumatic events more negatively than other groups. Consequently, mental health disparities become rooted in broader group inequalities (Link & Phelan, 1995) and tied to a range of factors including economic insecurity (Pinxten & Lievens, 2014; Verbrugge, 1985).

Economic insecurity refers to the "risk of economic loss faced by workers and households as they encounter the unpredictable events of social life" (Western et al., 2012, p. 342). Extending over significant periods of the life course, feelings of insecurity reflect a disjoint between financial expectations and financial outcomes—a strain between economic resources and meeting obligations. These perceptions contribute to ongoing and cumulative mental health effects, including stress and anxiety (Kahn & Pearlin, 2006; Manski, 2004; Thoits, 2010; Turner & Avison, 2003; Wheaton, 1999, 1994).

Connecting financial insecurity to life stress reveals how insecurity has been conceptualized as both a chronic and event stressor. Subjective feelings of insecurity are tied to objective dimensions of economic volatility and unpredictability. Rising economic unpredictability over the last 50 years coupled with declining social safety nets has pushed more people to the precipice (Hacker, 2006).

As economic insecurity becomes a more regular part of people's everyday lives, stress associated with precarity becomes increasingly enduring. Events like 9/11, the Great Recession, H1N1, and the Coronavirus pandemic add to extant insecurity across segments of the population. These multiple shocks, occurring all at once across different spheres of life, contribute to stress (Koltai & Stuckler, 2019; Settels, 2021; Sherman, 2013).

Events associated with COVID-19 generated primary stressors linked to the spread of the virus itself, including fear and worry associated with exposure, and secondary stressors linked to the larger consequences of the virus, such as feelings of increased economic insecurity, simultaneously affecting everything from health, to work, to spending, to social ties (see Table 1). Groups experiencing chronic stressors tied to chronic health issues and ongoing financial precarity, as is the case among people with disabilities, may more negatively be affected by traumatic events (including financial effects) brought on by COVID-19.

The chronic stress of precarity among people with disabilities

Stress process models point to how chronic stressors disproportionately impact members of minority groups. Race and ethnicity, age, gender, socioeconomic class, and LGBTQ2S+ status all differentially shape exposure to chronic stressors. Extending stress process models, minority stress frameworks emphasize how chronic stressors experienced through status and group membership lead to disproportionate negative mental health outcomes (Meyer, 2003; Meyer & Frost, 2013; Schwartz & Meyer, 2010). Disability, particularly as it intersects with health, is a key axis of inequality (Mauldin, 2023; Maroto & Pettinicchio, 2023; Pettinicchio et al., 2022), affecting everything from jobs, to government supports, to adequate health care.

The sources of stressors affecting people with disabilities and chronic health conditions are a function of their social status and position in the social structure, which shape everyday interactions with social barriers, including those tied to health and economic precarity (Brown, 2017). Recently, Botha and Frost (2020) and Brown and Ciciurcaite (2022) applied a minority stress framework for understanding how disability status heightens exposure to chronic stressors affecting mental health. The former study situated mental health outcomes in the unique sociopolitical experiences of people with autism that include how stigmatized statuses limit opportunities and resources. The latter study examined discrimination at work leading to employment precarity as a specific ongoing contributor to stress among people with disabilities. Both provide important examples of how socially constructed barriers lead to exclusion based on stigmatized identities, reducing social ties and increasing social isolation (Ciciurkaite et al., 2022; Moloney et al., 2019; Schafer, 2018; Shandra, 2017). These studies are grounded in an inherently sociological perspective on how mental health outcomes are a function of societal expectations and values based on social status.

In this vein, stress process and minority stress frameworks share the main tenet of the social model of disability – ableist social, cultural, and institutional barriers individuals encounter in everyday life make disability "disabling" (Barnes, 2019; Watson & Shakespeare, 2021). Like the social model, minority stress emphasizes the interactions between disability and society, as opposed to functional limitations alone in generating health inequality (Altman, 2001; Smart, 2006). In doing so, it highlights how disability and health status limit social, political, and economic opportunities and access to resources that mitigate the effects of chronic stressors and negative life events. Evidence overwhelmingly shows that people with disabilities are more likely

to experience greater stress, anxiety, depression, and loneliness (Cage et al., 2018; Chan et al., 2011; Turner & Beiser, 1990; Turner et al., 2006).

The stress process model posits that subjective feelings of financial insecurity are one of the most significant ongoing stressors negatively affecting mental health throughout the population (Lynch et al., 1997; Pearlin & Bierman, 2013; Pearlin et al., 1981; Schieman, 2019). Perceptions of insecurity are tied to structural inequalities and disadvantage, and while economic precarity has become more salient for many, the experiences of people with disabilities makes those chronic stressors particular to them (Turner et al., 2017). With low employment rates, clustering in low paying jobs (Maroto and Pettinicchio, 2014), and less wealth, Canadians with disabilities often live in precarious states (Liu et al., 2013; Maroto, 2016; Maroto, 2019; Maroto & Pettinicchio, 2020; Morris et al., 2018; Shuey & Jovic, 2013) and are often left to rely on declining and restrictive government benefits (Crawford, 2013; Laidley & Tabbara, 2021; Maroto & Pettinicchio, 2020; Statistics Canada, 2021b; Wood, 2015). Not surprisingly, people with disabilities are also more likely to experience poverty (Pettinicchio and Maroto, 2017; Maroto & Pettinicchio, 2022; Wall, 2017). Poverty and extreme lifestyle deprivation, especially in the absence of adequate supports, are highly linked to stress (Horwitz, 2013; Ross & Mirowski, 2001; Thoits, 2010; Whelan, 1993). Given that many Canadians with disabilities could not rely on economic resources during the pandemic, we would expect their precarious situations to worsen, along with their feelings of insecurity.

COVID-related event stressors, disability, and mental health

A key tenet of the stress process model is that the mental health of those already experiencing chronic stress is made worse when they are confronted with unforeseen traumatic life events (Turner et al., 1995). Although Avison and Turner's (1988) classic study found that chronic stressors had greater effects on depression among people with disabilities than eventful stressors, recent traumatic events still accounted for depressive symptoms within this group. Brown and Turner (2010) similarly concluded that both chronic stressors and recent life events (based on the events described in Turner et al., 1995) shape depression. This means that people with disabilities and chronic health conditions already experiencing chronic stressors tied to health and economic precarity will more deleteriously experience sudden and extreme COVID-19 pandemic-related primary and secondary stressors: from getting the virus and developing related complications to being unexpectedly laid off and losing income.

The uncertainties and unease brought on by the ever-evolving COVID-19 pandemic presented unique sets of challenges for people with disabilities and chronic health conditions. Members of communities with multiple morbidities are differently exposed to pandemic primary stressors. Potential "health anxieties" may stem from the complex and often unmet physical and mental health needs and from lack of access to preventative care that people with disabilities and chronic health conditions experience (Reichard et al., 2011; Selick et al., 2018). Health anxieties associated with COVID-19 contributed to increasing daily stress and anxiety over the course of 2020 and 2021, especially as Canadians with disabilities felt let down by public health measures that ignored their particular health vulnerabilities (Arcaya et al., 2020; Pettinicchio et al., 2021a, 2021b; Solomon et al., 2020).

Our research captures these changing dynamics, stressors, and outcomes over the course of the pandemic. The first survey wave was conducted in June 2020, 3 months after several Canadian provinces saw a rapid increase in COVID cases and the government instituted severe social distancing measures. Not surprisingly, many groups, including people with disabilities, reported

added distress brought on by sudden breaks in social ties and loss of other supports (Bierman & Schieman, 2020; Bierman et al., 2021; Kar et al., 2020; Maroto et al., 2023; Zheng et al., 2021). Thus, our first survey captured a period of heightened concern over contracting COVID and dealing with the newness of many pandemic-related restrictions. COVID-19 testing remained difficult to access and there was barely any discussion of potential plans for vaccine rollouts, leaving especially at-risk individuals worried about their health. National polls at that time already showed that over half of Canadians had experienced declining mental health since the start of the pandemic, with many individuals feeling worried (44%) and anxious (41%).[1]

Well before the first survey wave, businesses closed and work hours among working-age people decreased by one third (Lemieux et al., 2020). For many others, in-person work transitioned to remote work (Statistics Canada, 2020c). For these workers, remote work alleviated some concerns regarding exposure to the virus (St-Denis, 2020), but the option to work remotely was disproportionately available to higher earning workers which tends to exclude people with disabilities (Gallacher & Hossain, 2020). Working from home also posed new challenges to work-life balance and many struggled to have appropriate accommodations to continue their jobs (Maroto et al., 2021; Schieman & Badawy, 2020).

And so, in addition to primary stressors, pandemic-related secondary stressors like work disruptions and job loss, reduced income, and increased living costs, negatively impacted mental health, especially among communities already exposed to chronic stressors tied to health and economic precarity (Grace, 2020; Turcotte &, Hango, 2020). Drawing from a minority stress framework, Brown and Ciciurkaite (2022) show how macro-level stressors, including uncertainty around work and income, disproportionately added to the particular kinds of distress experienced by people with disabilities during the pandemic. More than half of Canadians with disabilities were not working at the onset of the pandemic, and those who were working were clustered in low-paying food and service sectors that were among those most affected by COVID-19 (Mather & Jarsosz, 2020). Many workers with disabilities and chronic health conditions in these precarious lower paying jobs were confronted with the option of either continuing to work and thus increase their exposure to the virus or, leave their jobs, lose income, or seek out emergency government supports like the Canada Emergency Response Benefit (CERB) if applicable (Maroto et al., 2021).

CERB, a taxable income subsidy, was already familiar to first-wave survey respondents, having been introduced about 4 months prior to the survey. By then, it had become widely recognized not only that CERB payments were far higher than regular disability income supports,[2] but that the program was systematically excluding people with disabilities in large part due to strict means-testing (Shakeri, 2020). The provincial disability benefits most Canadians with disabilities relied on remained stagnant throughout the pandemic despite rising living costs (Disability Civil Society Organizations, 2021). Working people with disabilities on provincial income supports who accessed CERB also ran the risk of losing their existing provincial disability benefits because they exceeded their earnings threshold (Laidley & Tabbara, 2021). Many resorted to using food banks during the pandemic, attributing their need to lack of employment and income (Food Banks Canada, 2021).[3] Therefore, our first wave captured the economic struggles among Canadians with disabilities and the initial impacts of COVID-19 on financial insecurity.

The second survey wave, conducted in July 2021 – 1 year later – captured a different pandemic context. By then, CERB had been extended numerous times and incorporated into employment

[1] https://angusreid.org/covid19-mental-health/

[2] https://www.cbc.ca/news/canada/ottawa/covid19-odsp-wage-benefits-1.5552060

[3] https://www.foodbankscanada.ca/Research-Advocacy/HungerCount.aspx

insurance. Yet, it continued to exclude people with disabilities. Between the two survey waves, the federal government announced a $600-dollar one-time cash payment to people with disabilities in part as a response to the outcry from the disability community about lack of supports (Canada, 2020a). Fears about the virus were declining among the general public. Testing had become more readily available, and an increasing number of people got vaccinated, which effectively prevented infection and mitigated the impacts of the virus. Employment rates had rebounded by July 2021, potentially limiting insecurity for some (Statistics Canada, 2021b).

In addition to these developments, there had been several lockdowns and re-openings since the first wave, and individuals were receiving mixed signals about social gathering and masking. As public health restrictions began lifting, it refocused the conversation around public duties and obligations to interact safely in social milieus given that many vulnerable peoples were still at high risk of being infected and developing complications. Anxiety and stress associated with early COVID-19 countermeasures changed as people became more used to them (Aslam, Hall, & the Canadian Press, 2020). However, despite growing optimism in the earlier period between our two survey waves, individuals later seemed less optimistic, experiencing so-called lockdown fatigue (Chan, 2020). Although income supports eventually improved economic security for those who benefited from those policies, many continued to struggle with uncertainty about their economic futures as the pandemic wore on.

Experiences during the pandemic evolved alongside new circumstances, and we therefore expect mental health status to also change. Evidence suggests that mental health status across the entire population worsened throughout the pandemic, also alluding to variation in mental health outcomes among vulnerable populations (Canadian Centre on Substance Use & Addiction, 2021; Jenkins et al., 2022; Statistics Canada, 2021a). What might this mean for changing mental health situations among people with disabilities and chronic health conditions? We examine changes in anxiety and stress levels among people with disabilities and chronic health conditions between 2020 and 2021 with a special focus on how these outcomes are linked to experiences of economic insecurity and concerns about the continuing pandemic, as shown in Table 1. We expect anxiety and stress to rise among those in bad economic situations who still struggled to access supports like community services, adequate housing, and food, while tapping into limited savings and accumulating debt.

DATA

Data for this project come from two waves of a targeted online survey of people with disabilities and chronic health conditions in Canada. Surveys were administered 1 year apart using Qualtrics and paid survey respondents with the first wave collected in June 2020 and the second wave collected in July 2021. Although the first wave contained 1027 adults, attrition in the second wave resulted in 563 cases. Attrition rates were similar to other longitudinal pandemic survey studies (Kovacs et al., 2021; Yu et al., 2022). Data were collected via quota-based sampling to ensure a sample representing all ten Canadian provinces. We do not employ poststratification weights because the lack of random samples of Canadians with disabilities and chronic health conditions limited our ability to determine on which population characteristics we should base any additional quotas or weights (Bethlehem, 2010). However, most characteristics of this group (e.g., age, gender, and education) mirror those for individuals sampled in the Canadian Survey on Disability and Canadian Community Health Survey, a large probability sample.

MEASURES

We examine two outcome variables related to mental health that measure whether a respondent self-reported *any increase in anxiety or stress* within the last 14 days at wave 2 (July 2021). We adapted mental health measures from the joint Vox Pop Labs, MassLBP, and Toronto's St. Michael's Hospital national survey conducted just prior to our survey in March 2020 (Vox Pop Labs, 2020). Specific questions asked, "Have you experienced any changes in [anxiety], [stress] within the last 14 days?" with the options of "decrease," "about the same," and "increase." For the purposes of our analyses, we coded any increases as "1" and all other responses as "0."[4] We also included lagged predictor variables for both *anxiety and stress* measured at wave 1 (June 2020) to assess the potential continuing effects of elevated anxiety and stress and address our first research question regarding changes in mental health outcomes throughout the pandemic.

To address our second research question, we connect these outcomes with two sets of predictor variables capturing primary and secondary stressors associated with COVID-19 (see Table 1). *Changing concerns about contracting COVID-19* is an ordinal variable that indicates whether the respondent reported decreasing, increasing, or similar concerns across waves. *COVID-19 vaccine receipt* indicates whether the respondent had received at least one dose of a COVID-19 vaccine, had not yet received a dose but planned to, or had not received a dose and did not plan to.

We use two measures for changing perceptions of economic insecurity. The first is meant to capture chronic stress as a function of ongoing economic precarity. *Changing financial insecurity* measures whether the respondent indicated that their household's financial situation was better than, worse than, or the same as the previous year. To capture more event-based secondary stressors related to the pandemic, we use *COVID-19-effects on financial outcomes*. This indicates whether COVID-19 affected a respondent's ability to pay down debt, make mortgage or rent payments, pay utility bills, purchase groceries, or contribute to savings to a moderate or great extent. To measure change, we code this variable with the following categories: never any effects, negative effects at wave 1 but not wave 2, negative effects at wave 2 but not wave 1, and negative effects at both waves.

We also included a set of control variables, measured at time 1. We include a measure for the *number of reported disabilities and health conditions*, which indicated whether the respondent reported one, two or three, four or five, or six or more disabilities or chronic health conditions. *Age* was measured as continuous in years. *Gender* was measured as male, female, or non-binary.[5] We include indicators for *race/ethnic minority status* and for whether the respondent completed a *Bachelor's/university degree or higher*. *Region* included the following categories: Ontario, Québec, British Columbia, Prairie provinces, and Atlantic provinces. Table 2 presents the descriptive statistics used in the analyses.

ANALYTIC MODELS

We use a static-score or conditional change score panel model to estimate how changing financial situations and concerns over COVID-19 affect changes in stress and anxiety levels among

[4] We chose simpler logistic regression models to predict any increases instead of mulitinomial logit models that would have used all three outcome categories partly due to smaller sample sizes.

[5] Due to the small number of respondents (4) identifying as "non-binary" or "other," we combined them with female respondents in this analysis. Additional models with a separate category did not change our results.

TABLE 2 Descriptive statistics.

	Sample frequency	Proportion or mean
Wave 2		
Increased anxiety	127	0.226
Increased stress	145	0.258
Wave 1		
Increased anxiety	183	0.325
Increased stress	192	0.341
Change between waves		
COVID-19 concerns		
Same	349	0.620
Increasing	57	0.101
Decreasing	157	0.279
COVID-19 vaccine		
No dose, no plan	40	0.071
No dose, planning	29	0.052
At least one dose	494	0.877
COVID-19 financial effects		
Never any effects	269	0.478
Negative effects at wave 1, not wave 2	87	0.155
Negative effects at wave 2, not wave 1	61	0.108
Negative effects at both waves	146	0.259
Changing financial insecurity		
Better	167	0.297
Same	314	0.558
Worse than previous year	82	0.146
Wave 1 controls		
Number of disabilities or CHCs		
One	52	0.092
Two or three	208	0.369
Four or five	177	0.314
Six or more	126	0.224
Age (mean years, range 18–87)	–	53.3
Female or non-binary	297	0.528
Member of a racial minority group	84	0.149
Bachelor's degree or higher	197	0.350
Province (reduced)		
Ontario	232	0.412
Quebec	114	0.202
BC	75	0.133
Prairie provinces	107	0.190
Atlantic provinces	35	0.062

Notes: Estimates refer to sample data. Estimates provided as proportions unless otherwise specified.
Source: 2020/21 COVID-19 Response Survey of People with Disabilities and Health Conditions, $N = 563$ adults.

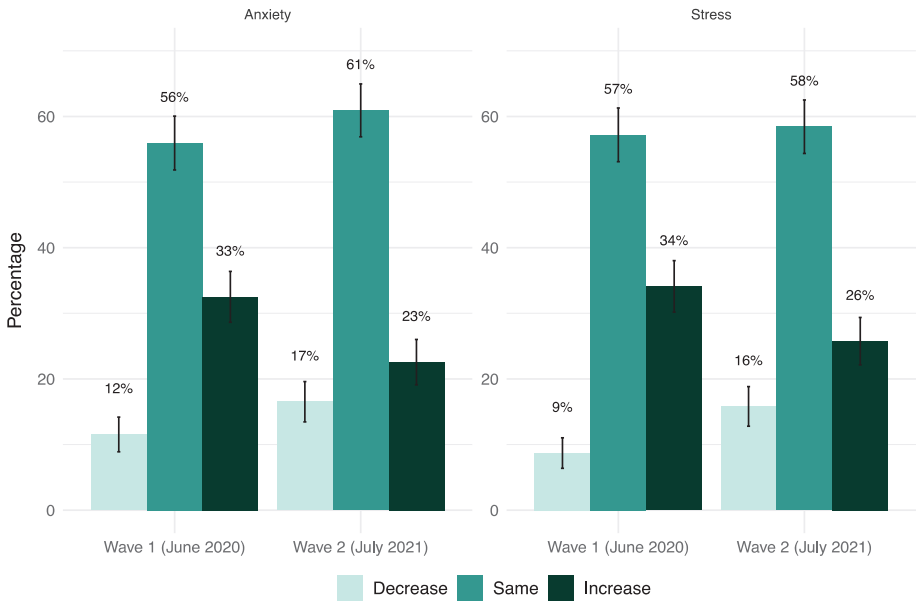

FIGURE 1 Anxiety and stress across survey waves. *Source:* 2020/21 COVID-19 response survey of people with disabilities and health conditions, $N = 563$ adults. Notes: Estimates presented as percentages with 95% confidence intervals. [Color figure can be viewed at wileyonlinelibrary.com]

people with disabilities and chronic health conditions. Expanding on fixed effects models, conditional change score panel models or unconditional change score models explicitly model a lagged outcome variable as a predictor of itself (Allison, 1990; Finkel, 1995).

Because current stress and anxiety levels likely depend on prior stress and anxiety levels, we include lagged predictors of each on the right side of the equation for the two models. Thus, we are analyzing changes in anxiety and stress levels between 2020 and 2021, as displayed by Equation (1),

$$\log\left(\frac{\Pr(Y_t = 1)}{1 - \Pr(Y_t = 1)}\right) = \beta_0 + \beta_1 \Delta X + \beta_2 X_{t-1} + \beta_3 Y_{t-1} + \epsilon_t \quad (1)$$

where time, *t*, refers to July 2021, the outcome time period, and time, *t-1*, refers to June 2020. Y_t refers to increased stress or anxiety measured in 2021 and Y_{t-1} refers to the variables measured in 2020. ΔX accounts for a change in the predictor variables between the two periods, and X_{t-1} refers to the control variables measured in 2020. ϵ_t is the error term, which assumes constant variance, no autocorrelation, and no correlation with the predictor variables.

FINDINGS

Figure 1 plots the percentages of people answering decrease, same, or increase to questions regarding changes in anxiety and stress over the past 14 days. It includes results for both wave 1 and wave 2. Across survey waves, most respondents experienced stability in their anxiety and stress levels; 56%–61% reported that these feelings remained the same in recent weeks. Comparisons across other categories, however, show that respondents were more likely to report increases in both anxiety and stress earlier in the pandemic. In June 2020, 33% of respondents reported increasing anxiety and 34% reported increases in stress. In July 2021, the corresponding percentages were

TABLE 3 Results from logistic regression models predicting increased stress at wave 2.

	Model 1			
	b	**SE**	**AME**	**SE**
Intercept	−2.308***	(0.595)		
Wave 1 increased stress	0.676**	(0.229)	0.103**	(0.039)
COVID-19 concerns (Ref: Same)				
Increasing	0.444	(0.338)	0.074	(0.048)
Decreasing	−0.421	(0.262)	−0.061*	(0.024)
COVID-19 vaccine (Ref: No dose, no plan)				
No dose, planning	−0.846	(0.585)	−0.138	(0.104)
At least one dose	−0.722	(0.380)	−0.120***	(0.030)
COVID-19 financial effects (Ref: Never any)				
Negative effects at wave 1, not wave 2	0.370	(0.335)	0.055	(0.031)
Negative effects at wave 2, not wave 1	0.757*	(0.350)	0.120*	(0.055)
Negative effects at both waves	0.660*	(0.279)	0.103**	(0.036)
Changing financial insecurity (Ref: Better)				
Same	0.290	(0.269)	0.041	(0.028)
Worse	1.571***	(0.357)	0.268***	(0.052)
Number of disabilities or CHCs (Ref: One)				
Two or three	0.590	(0.449)	0.080	(0.042)
Four or five	0.589	(0.461)	0.079*	(0.032)
Six or more	0.954*	(0.476)	0.138***	(0.036)
Age	−0.041***	(0.008)	−0.006***	(0.001)
Female or non-binary	0.366	(0.231)	0.056	(0.031)
Non-white	−0.485	(0.327)	−0.074	(0.080)
Bachelor's degree or higher				
Province/Region (Ref: Ontario)				
Quebec	0.160*	(0.076)	0.025*	(0.012)
BC	0.097	(0.094)	0.015	(0.015)
Prairie provinces	−0.205***	(0.047)	−0.030***	(0.007)
Atlantic provinces	−0.321***	(0.053)	−0.047***	(0.007)
Pseudo R-Squared	0.184			

Notes: Logistic regression models predicting probability of reporting increasing stress at wave 2. Continuous variables are mean centered. AME refers to average marginal effects, which can be interpreted as a percentage point change in the probability of the outcome category associated with a unit change in the predictor variable. Robust standard errors clustered by province are in parentheses.

Source: 2020/21 COVID-19 Response Survey of People with Disabilities and Health Conditions, $N = 563$ adults.

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.

23% and 26%. Respondents were also less likely to report decreasing anxiety or stress during the first survey wave.

Model results in Tables 3 and 4 explore potential explanations for improvements in stress and anxiety among respondents during wave 2. Table 3 presents the results for anxiety, and Table 4 presents the results for stress. Models include all control variables.

TABLE 4 Results from logistic regression models predicting increased anxiety at wave 2.

	Model 1			
	b	**SE**	**AME**	**SE**
Intercept	−2.122***	(0.605)		
Wave 1 increased anxiety	1.147***	(0.288)	0.161***	(0.037)
Wave 1 increased stress	0.180*	(0.086)	0.025*	(0.012)
COVID-19 concerns (Ref: Same)				
Increasing	0.422	(0.395)	0.064	(0.062)
Decreasing	−0.119	(0.267)	−0.016	(0.036)
COVID-19 vaccine (Ref: No dose, no plan)				
No dose, planning	−0.616	(0.391)	−0.097	(0.065)
At least one dose	−0.702	(0.435)	−0.109	(0.073)
COVID-19 financial effects (Ref: Never any)				
Negative effects at wave 1, not wave 2	0.228	(0.301)	0.032	(0.042)
Negative effects at wave 2, not wave 1	0.323	(0.238)	0.046	(0.034)
Negative effects at both waves	0.161	(0.276)	0.022	(0.038)
Changing financial insecurity (Ref: Better)				
Same	0.164	(0.276)	0.021	(0.035)
Worse	1.546***	(0.443)	0.257**	(0.079)
Number of disabilities or CHCs (Ref: One)				
Two or three	0.262**	(0.087)	0.036**	(0.013)
Four or five	0.132	(0.208)	0.018	(0.028)
Six or more	0.252	(0.143)	0.035	(0.019)
Age	−0.026***	(0.007)	−0.004***	(0.001)
Female or non-binary	0.536*	(0.226)	0.075*	(0.033)
Non-white	0.004	(0.440)	0.001	(0.062)
Bachelor's degree or higher				
Province/Region (Ref: Ontario)				
Quebec	0.308***	(0.031)	0.047***	(0.005)
BC	−0.281**	(0.105)	−0.038**	(0.013)
Prairie provinces	−0.028	(0.029)	−0.004	(0.004)
Atlantic provinces	−0.844***	(0.058)	−0.100***	(0.004)
Pseudo R-Squared	0.177			

Notes: Logistic regression models predicting probability of reporting increasing anxiety at wave 2. Continuous variables are mean centered. AME refers to average marginal effects, which can be interpreted as a percentage point change in the probability of the outcome category associated with a unit change in the predictor variable. Robust standard errors clustered by province are in parentheses.

Source: 2020/21 COVID-19 Response Survey of People with Disabilities and Health Conditions, $N = 563$ adults.

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.

Table 3 shows that stress at wave 2 was also associated with stress at wave 1. Individuals who reported increased stress at wave 1 were more likely to report increased stress at wave 2 by 10.3 percentage points. Additional predictor variables were also associated with stress. Respondents who indicated that they were less concerned about contracting COVID-19 at the current wave were 6.1 percentage points less likely to experience increasing stress. Compared to respondents

who had yet to receive a COVID-19 vaccine and had no plans to, respondents who had received at least one dose were less likely to report increased stress by 12.0 percentage points. This finding may also be capturing some of the broader effects on mental health around primary health-related stressors linked to accessing preventative care and improved sense of safety against the virus.

Financial experiences during COVID-19 were also related to increased stress. Recent financial effects showed to be more important than previous effects, highlighting the importance of event based secondary stressors. Compared to individuals who never experienced any negative financial effects, respondents who experienced negative effects only at wave 2 were 12.0 percentage points more likely to report increased stress, and those who experienced negative effects at both waves were 10.3 percentage points more likely. Respondents who reported that their level of insecurity worsened were 26.8 percentage points more likely than respondents with improved financial insecurity to report increased stress at wave 2. Notably, these effects are all net of experiences of increased stress at wave 1.

As shown in Table 4, anxiety at wave 2 was associated with anxiety at wave 1. Individuals who reported increased anxiety at wave 1 were more likely to report increased anxiety at wave 2 by 17.7 percentage points, resulting in additional increases for this group and demonstrating the cumulative effects on mental health throughout the pandemic. Stress at wave 1 was also associated with anxiety at wave 2 where people who reported increased stress earlier in the pandemic were more likely to report increased anxiety a year later by 2.5 percentage points.

Changing concerns about contracting COVID-19, COVID-19 vaccine experiences, and changes in COVID-19 financial effects were not significantly associated with increased anxiety across waves, net of control variables. However, changing perceptions of financial insecurity were associated with anxiety. Compared to respondents who reported improved insecurity between waves, those who reported that their level of security worsened were more likely to report increased anxiety by 25.7 percentage points.

DISCUSSION

This research documents the relationship between ongoing health and financial precarity and stress and anxiety among people with disabilities and chronic health conditions. People with disabilities and chronic health conditions are a group especially at-risk both of dying from COVID and falling into poverty. We show how the COVID-19 pandemic exacerbated already bad situations for many, adding to mental health issues. Across models, previous experiences of increased anxiety and stress were the strongest predictors of more recent increases. About half of respondents saw no change in anxiety or stress throughout the pandemic. However, about one-quarter of the sample experienced continued increases in anxiety and stress as the pandemic wore on, as social distancing measures were lifted, and as vaccines became available. Financial precarity continued for many who were either still not working, struggled with new work arrangements and less income, and/or continued to be denied access to government income supports.

This study draws from a stress process model to inform how perceptions of economic insecurity are linked to anxiety and stress. Primary stressors and concerns about COVID-19 were not key contributors to increasing stress and anxiety over the course of the pandemic. Secondary stressors related to economic insecurity played a much larger role over time. Our approach points to the structural sources of chronic stress disproportionately experienced by socially, politically, and economically marginalized communities. In addition to the chronic nature of mental health

struggles, we also show how the more extreme events associated with the pandemic placed many already vulnerable people in even more precarious states.

Rooted in the social determinants of health, both chronic and event-based stressors highlight the nature of social barriers in producing inequality and precarity. For example, structural factors like enduring low employment and underemployment, occupational clustering into bad jobs, restrictive means-testing associated with social welfare policies, and lack of access to community and health supports contribute to chronic stress. The pandemic certainly added new dimensions to these social barriers, but COVID-19 secondary stressors did much to emphasize extant structural disadvantage and its links to mental health. For instance, the continued lack of economic supports for people with disabilities during the pandemic are not aberrations. Rather, they are an extension of liberal social policy approaches in providing support. In this vein, stress process and minority stress models align with the social model of disability, which emphasizes the disabling nature of the context around impairment—that functional limitations are disabling because individuals encounter systematic barriers. When applied to COVID, these theoretical perspectives make salient the socially constructed barriers and ableist practices implemented during a crisis which compounded mental health disparities.

Despite these contributions, our study has some limitations. First, although our wave 1 survey contained 1027 adults, we were only able to contact approximately half of these respondents in the second wave, which resulted in a final two-wave survey with 563 cases. This smaller sample size limited our ability to examine important variation by disability type, race, and other characteristics, which would have expanded the contributions of this research on minority stress models. Comparing respondents across samples shows that those who participated in the follow-up wave tended to be older and were more likely to be out of the labor force (see Supplemental Appendix). Wave 2 respondents were also less likely to report vision, cognitive, and emotional disabilities, but more likely to report other disabilities or limitations lasting 6 months or longer. As discussed in the Appendix, differences tend to be small and were only statistically significant in regard to employment status.

Second, our use of online panel samples likely missed people without access to the Internet or adaptive technologies in both waves, meaning that more disadvantaged groups and people with the most severe disabilities could have been overlooked. Finally, our measures of anxiety and stress address increases in these specific outcomes only over the past 2 weeks. Following similar surveys conducted at the time, we limited our questions to speak to changes in these mental health outcomes since the onset of the pandemic. Additional larger mental health scales would provide a more comprehensive overview of mental health changes during the pandemic.

CONCLUSION

Life stress can capture problematic relationships between individuals and society. Sociological stress research repeatedly points to the social bases of stress and how, as a result of social inequalities, some communities disproportionately experience negative mental health outcomes. Ableism is a chronic stressor because it reflects attitudinal and structural barriers society puts up and that members of the disability community must navigate in everyday life. As an exogenous shock affecting almost all aspects of life, the COVID-19 pandemic simultaneously created and exacerbated stress and anxiety for many. Precarity and related feelings of economic insecurity reflect important dimensions of chronic and event stressors, explaining why anxiety and stress increased among individuals in our sample.

Contexts and social interactions are not static. Changing circumstances necessitate a longer evaluation of mental health outcomes over the course of the pandemic. On a more positive note, our results do show some improvements. Fewer respondents in 2021 reported increases in anxiety and stress than in 2020. And, social distancing measures, including isolation and staying home from work or school, while having the potential to make mental health worse, were also adaptive coping mechanisms reducing anxiety and stress for many at-risk people (Maroto et al., 2023).

Highlighted in national initiatives, such as the Canadian Mental Health Association's (CMHA) Mental Health Week and Bell's Let's Talk campaign, organizations in both the private and public sectors were already drawing attention to Canadians' ongoing struggles with mental health before the pandemic. The mental health dimensions of COVID-19 have certainly re-focused concern about the role of public policy in addressing disparities in mental health and care. Governments have sought to address obstacles in accessing adequate mental health care. But to improve mental health, policy must be more sensitive to how financial insecurity—a growing concern across the country and especially among the most vulnerable communities—contributes to negative mental health outcomes. On the one hand, COVID-19 countermeasures and policies illustrate some success in keeping people afloat. On the other hand, for those experiencing increased stress and anxiety, these effects simultaneously illustrate policy failures in systematically including the most socially and economically at-risk.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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