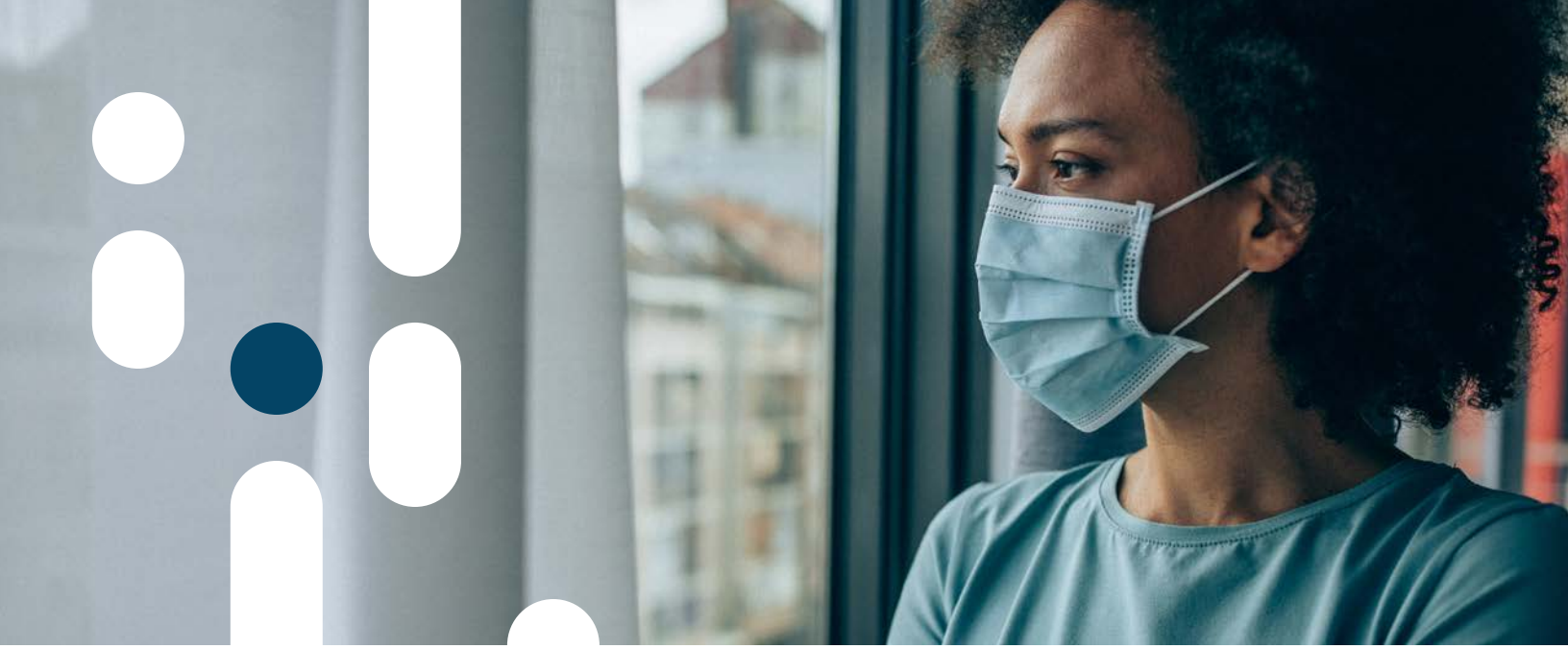

DIFFERENT BOATS IN A STORMY SEA:

The mental health impacts of COVID-19 on Nova Scotians

October 18, 2021

MSSU
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PROJECT INFORMATION

PROJECT TITLE

Different boats in a stormy sea: The mental health impacts of COVID-19 on Nova Scotians

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The survey data analyzed as part of this report was provided in partnership with Mental Health Research Canada (MHRC) and Research Nova Scotia (RNS). RNS partnered with MHRC and Pollara Insights to collect additional data for our mental health research community to utilize on the state of mental health in Nova Scotia during the COVID-19 pandemic. All interpretation of data represents the views of the authors only, and not MHRC.

As a research organization, RNS recognizes that understanding the specific mental health challenges facing Canadians is critical. We must continue to invest in mental health services and gaining real-time data to help improve service delivery.

We would also like to recognize all the community organizations who supported individuals living with mental illness and those seeking mental health support since the COVID-19 pandemic began. These organizations have pivoted to provide the support and resources needed to the community – from securing donations of technology for those who did not have access to virtual supports at home, to provision of virtual support, navigating individuals through the use of new services associated with COVID-19 (e.g., COVID-19 testing, vaccination), and supporting social needs (e.g., housing challenges, food security) through partnerships and collaboration with other community organizations. Although this report does not focus on the supports provided by these organizations, we want to acknowledge this area of service provision that was not described in the current work. Thanks to Bev Cadham and Marg Murray for providing additional information on behalf of the Canadian Mental Health Association in Nova Scotia.

Also, special thanks to our Patient Partners for sharing their experiences during the pandemic, for their contributions to this report, and for highlighting what matters.

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HOW TO CITE THIS REPORT

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ABBREVIATIONS

COVID/COVID-19	Coronavirus Disease
ED	Emergency Department
E-Mental Health	Electronic-Mental Health
FSA	Forward Sortation Area
GP	General Practitioner
HRM	Halifax Regional Municipality
ICD	International Classification of Disease
MH	Mental Health
MHA	Mental Health and Addictions
MHRC	Mental Health Research Canada
MSI	Medical Services Insurance (health card)
NS	Nova Scotia
ODCC	On Demand Call Centre
PSYC	Psychiatry/psychiatrist
PTSD	Post-traumatic Stress Disorder
TAO	Therapy Assistance Online
WHO	World Health Organization

EXECUTIVE SUMMARY

The pandemic response has profoundly impacted the way we live, work, and connect with each other. Many health professionals have predicted an 'echo pandemic' of mental health impacts as a result of this. The objectives of the study were:

1) To study the self-reported impact that physical, social, and economic factors have had on the mental health of Nova Scotians during the COVID-19 pandemic using survey data.
2) To examine trends in mental health service utilization throughout the COVID-19 pandemic using a) administrative health data and b) mental health system utilization data.

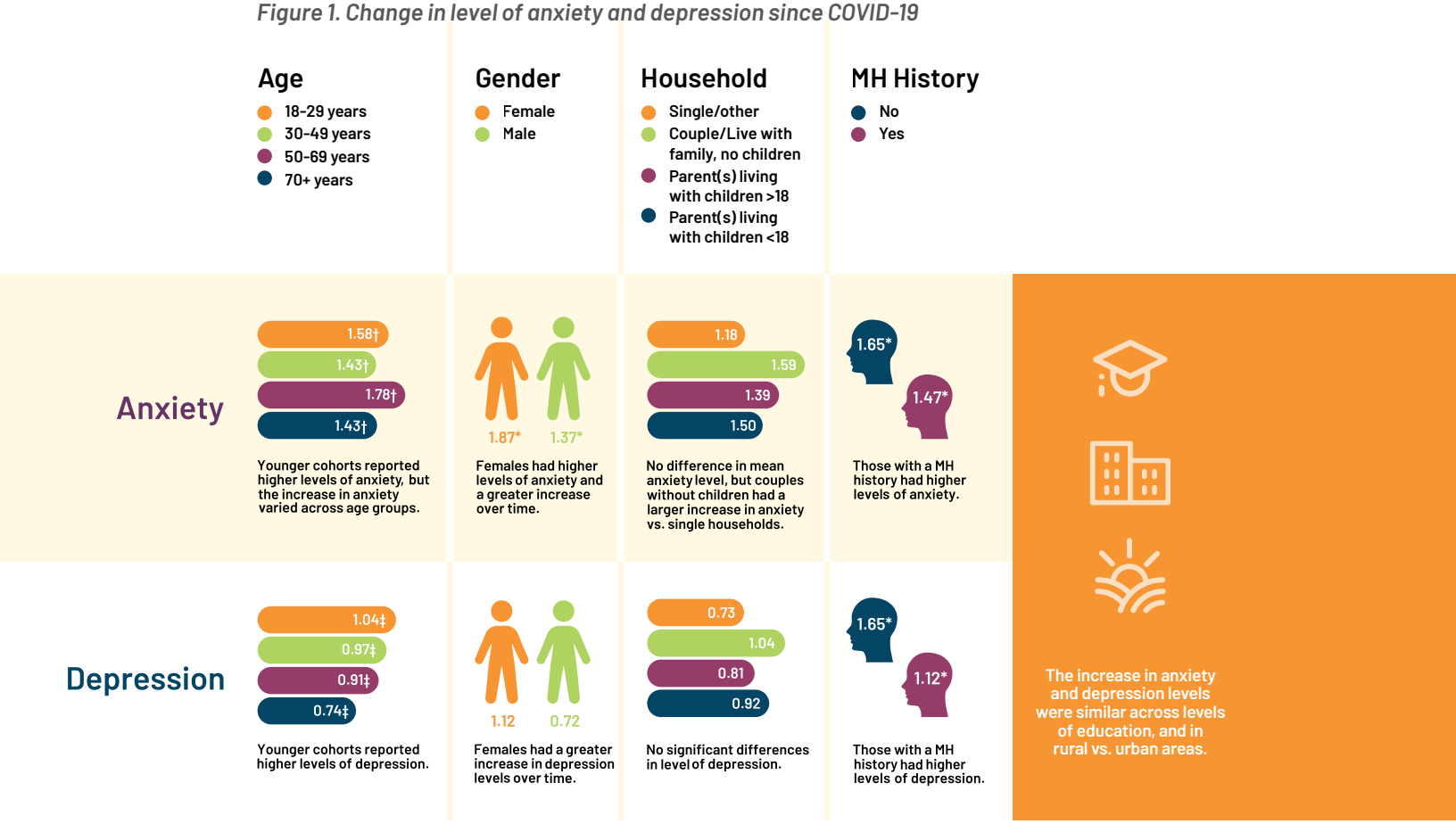
Objective 1: Self-Reported Online Survey

Methods: Mental Health Research Canada administered a survey to residents in August 2020 asking questions about mental health history, health care utilization, and the impact of COVID-19 on mental health (which included questions related to economic, social, and recreational impacts). We computed survey responses for all respondents and compared these across sociodemographic factors.

Results: A total of 505 participants responded to the survey. Questions which had the highest proportion of respondents reporting a negative impact included: fear of a family member catching COVID-19 (45%; Social), the economic downturn (41%; Economic), social isolation (38%; Social), and watching or reading the news daily (36%; Recreational). More individuals with a history of a mental health diagnosis, and younger adults reported negative impacts of social isolation, and watching/reading the daily news. Some mental health impacts were possibly protective, where reading was more often reported as a positive impact (22%).

In terms of overall impact on mental health, anxiety and depression increased for all subgroups since the pandemic began (Figure 1). Changes in substance use were also reported. Males, those with higher educational attainment, and those with a mental health history more commonly reported an increase in alcohol use. Cannabis use increased more for younger adults and for those with a mental health history. Increases in household conflict were reported more often for females, by parents living with children < 18 years of age, and by couples without children. Despite the negative impacts reported, participants were very confident in the ability to recover (67%) from the COVID-19 pandemic.

Figure 1. Change in level of anxiety and depression since COVID-19



Note: Numbers shown represent increases in self-reported anxiety and depression levels on a 10-point Likert scale.
*Significant at p<0.05
†Significant differences in anxiety levels at p<0.05 in sub-groups: 18-29 < 50-69, 70+; 30-49 < 50-69, 70+; 50-69 >70+
‡Significant differences in depression levels at p<0.05 in sub-groups: 18-29 < 59-69 & 70+, -30-49 < 50-69 & 70+

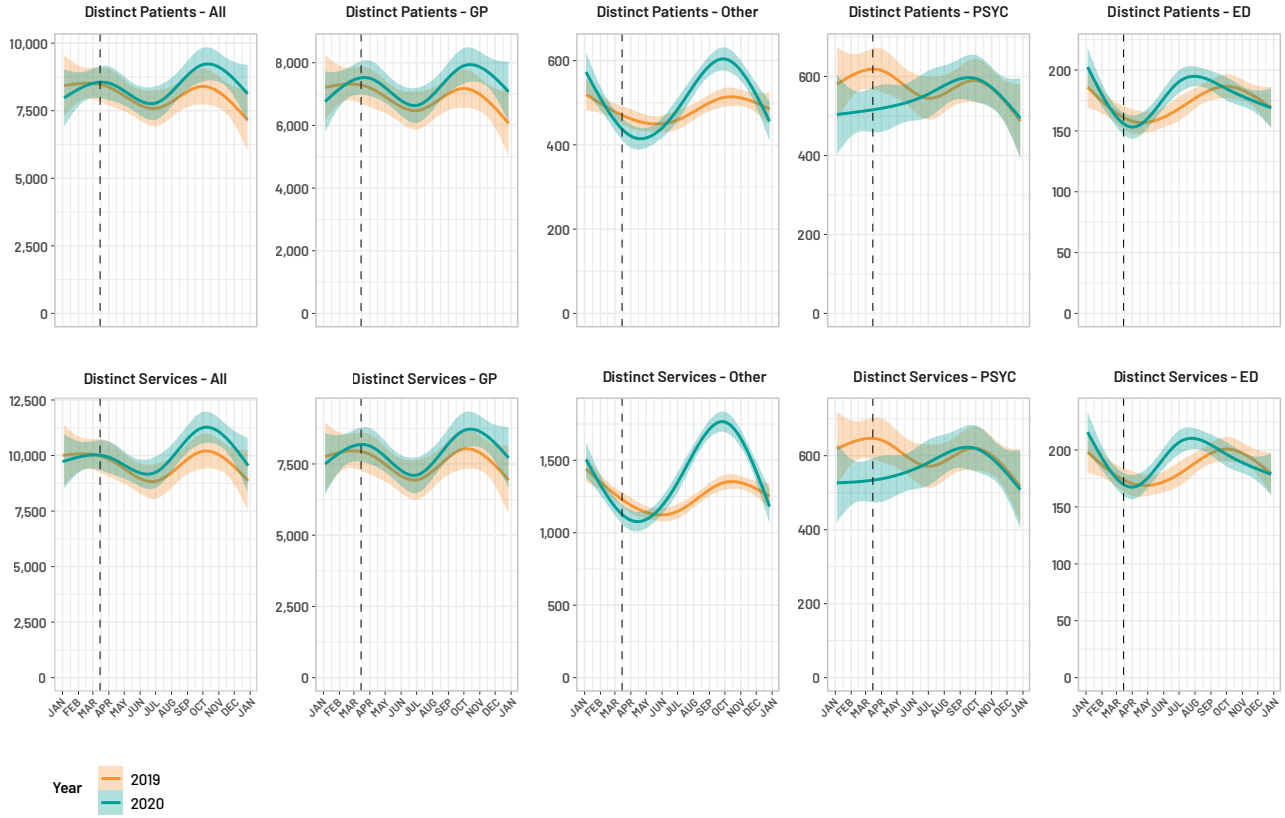
Objective 2a: Nova Scotia Department of Health & Wellness - Administrative Health Data

Methods: We accessed physician billing data available through administrative health data to examine changes in mental health related visits before (January 1, 2019 – March 15, 2020) and after the start of the COVID-19 pandemic (March 15, 2020 – December 31, 2020). Visits were also examined by provider type and by 'disorder types' using the International Classification for Diseases (ICD) 9 codes.

The percentage change in the number of distinct patients and services billed with an ICD-9 code was analyzed, as well as trends in service use by sex, age, and health management zone.

Results: The number of distinct patients who received mental health services was slightly higher in 2020 for 'All specialist types', as well as for General Practitioner (GP) and Emergency Department (ED) visits, but was lower for Psychiatrist (PSYCH) and 'Other' visits (Figure 2). There was an increase in billings for anxiety disorders, organic disorders (e.g., dementia), and personality disorders (e.g., borderline personality disorder) in 2020 versus 2019. Billings for anxiety disorders increased significantly for males age 60 years of age or older, and for females across all age groups (18 years of age or older). These results were similar across health management zones, however, in the Northern Zone, there was no change in the number of distinct patients accessing care, but there were increases in services billed for anxiety, organic, and personality disorders.

Figure 2. Distinct patients and distinct services across, 'All specialty types', GP, PSYCH, ED and 'Other'.

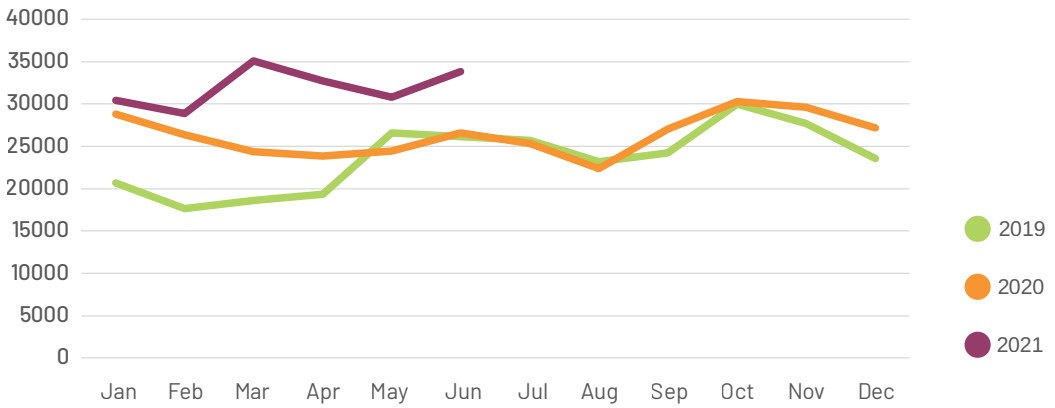


Objective 2b: Nova Scotia Health - Mental Health System Utilization Data

Methods: The Mental Health and Addictions (MHA) Program team at Nova Scotia Health pulled data on mental health services accessed. We compared the percentage change in the volume of services accessed before and after COVID-19.

Results: We found that there was an increase in most services accessed in 2020 compared to 2019, however there were dips in service use that coincide with waves of the pandemic. The total number of outpatient visits to the MHA Program increased by 6% between March and December of 2020, compared to 2019 (Figure 3). There was also a significant increase (31%) in the percentage of provincial crisis line interventions in 2020 compared to 2019. Other service increases include a 2% increase in attended intake appointments (April to December 2020 vs. 2019), and a 585% increase in the use of virtual care (March to December 2020 vs. 2019).

Figure 3. Total number of outpatient visits to NS Health MHA programs (January 2019 – June 2021)



Conclusion

Overall, we found that after the COVID-19 pandemic began in Nova Scotia, there was an increase in self-reported anxiety and depression, an increase in anxiety and organic disorder physician billings, and an increase in most mental health services accessed through Nova Scotia Health MHA Program. Triangulation of this data points to significant negative mental health impacts in the population, with specific areas being more impactful to certain population sub-groups than others. There were also positive impacts reported (e.g., reading, communicating with one's household/family), highlighting some of the positive outcomes and coping strategies related to COVID-19 lifestyle changes.

Despite the negative impacts reported and increases in mental health service use, Nova Scotians were confident in the ability to recover from the pandemic. This may be indicative of the strong public health response, and positive outlook on a return to what life was like prior to the pandemic. Areas of concern to monitor as we continue towards our pre-pandemic lifestyle are impacts on substance use, anxiety, and depression. Future work may wish to examine whether the mental health care needs of Nova Scotians are being met as we move towards recovery.

BACKGROUND

The World Health Organization (WHO) declared coronavirus disease (COVID-19), caused by the SARS-CoV-2 virus, a global pandemic on March 11, 2020 [1]. The immediate impacts of COVID-19 are being closely tracked across Canada, with a focus on confirmed positive cases, recovered cases, and deaths. As of September 16, 2021 over 219,456,675 cases have been reported worldwide with 4,547,782 deaths [2]. In Canada, this has amounted to 1,561,072 cases and 27,310 deaths. Although case rates in Nova Scotia have been lower than the rest of Canada (644.4 cases/100K vs. 4110.3 cases/100K in Canada overall) [3], the impact of COVID-19 on mental health of the population due to risk, fear, and public health restrictions may still be significant given our rapid and strict response to controlling the pandemic.

In response to limiting the spread of disease and controlling impact on the health care system, drastic public health measures have been taken in order to reduce person-to-person spread of disease. Across Canada, this has involved practices such as physical distancing, gathering limits, wearing a mask, reduction or changes to recreational activities, remote work, and periodic changes to childcare and school access in response to rising case numbers [4]. In Nova Scotia, this has also involved strict isolation requirements after travel, and after exposure to confirmed cases. Due to these changes and the impact of COVID-19 itself, many health professionals have predicted an 'echo pandemic' related to increased mental health needs [5]. Given the length of time the pandemic has persisted, the fluctuating restrictions and their potential impacts on mental health, this research sought to examine changes in self-reported mental health status and mental health service use in Nova Scotia over the course of the COVID-19 pandemic.

The effects of quarantine

Early on, worldwide government efforts to control the pandemic were primarily focused on either a 'suppression' or an 'elimination' approach. The goal of suppression is to 'flatten the curve' without expecting to end community transmission [6]. This approach is consistent with how health systems mitigate or suppress pandemic influenza and is often referred to as 'living with COVID.' In contrast, the elimination approach aims to eradicate the virus entirely–an approach successfully implemented by New Zealand in the first 18 months of the pandemic. These two approaches necessitated different degrees of public health restrictions, closures, and quarantine rules.

In Canada, a 'flatten the curve' approach was taken. Quarantine, after international travel or potential exposure, involved self-isolating at home for 14 days and avoiding contact with others as a means of reducing the risk of infection to the larger population [7]. In the Atlantic provinces, an approach termed 'COVID Zero' [8] was taken, which involved use of rapid testing, asymptomatic testing, and quick reaction to outbreaks (e.g., indoor dining closures, school closures) which aimed to keep COVID-19 cases low and to not overburden the health care system.

Negative psychological effects, including post-traumatic stress (PTSD) symptoms, confusion, and anger have been reported as impacts of quarantine from previous epidemics and pandemics (e.g., SARS, Ebola, H1N1) [9]. Stressors previously reported included inadequate supplies, information, financial loss, and stigma. In research specific to Canada during the COVID-19 pandemic, researchers found that individuals self-isolating due to recent travel did not have higher odds of suicidal ideation or self-harm [10]. Furthermore, a review of evidence found that optimizing quarantine periods, providing clear rationale and protocols to quarantine, ensuring access to necessities, and using altruism as a means to appeal to the public during quarantine have been reported to minimize negative effects [11]. This evidence shows that some of the previously reported stressors to quarantine may not be as applicable to the COVID-19 pandemic response in Canada, given the strategies implemented to mitigate such effects (e.g., public health messaging, federal income subsidies, grocery delivery).

Mental health burden of the COVID-19 pandemic

A recent review of evidence reported that anxiety, depression, and psychological distress increased in the first few months in the pandemic, but decreased to baseline levels mid-way through 2020 [12]. Additionally, suicide rates have remained stable across over 20 high-income countries [12,13], along with similar rates of loneliness and degree of life satisfaction before versus after the onset of the pandemic [12]. With respect to health care providers—who undoubtedly faced a high degree of stress over the course of the pandemic—early research reported similar prevalence of anxiety, depression, and PTSD compared to the general public during the pandemic [14]. One of the largest contributors to poor mental health amongst health care providers has been exposure to COVID-19, with social support presenting as the largest protective factor for fewer mental health problems [15]. The problems reported by health care providers include anxiety, depression, sleep problems, and distress [15], which are similar to those reported by the general public.

Other impacts of the pandemic on mental health include increases in overdose deaths related to substance use, which have been frequently reported in the press and the subject of public discussion [16–18]. Yet, peer-reviewed literature has reported less systematic variation in substance use changes over this period. In a Canadian sample collected in May and June of 2020, use of cannabis remained stable in the overall population compared to before the pandemic [19]. However, half of cannabis users reported an increase in use, and risk factors for this increase included younger age (< 50 years of age), lower educational level, and being worried about the impact of the pandemic on finances. Other research has similarly found no change in overall consumption of alcohol or tobacco, with stress about confinement and working from home increasing odds of higher alcohol use [20]. Substance use has also been tied to increases in anxiety, depression, and stress symptoms in the context of COVID-19 [21], and has important implications for mental health response.

Risk factors for negative mental health outcomes

In further understanding the impact of the COVID-19 pandemic on mental health, risk factors for more negative outcomes need to be understood to tailor response and supports to those who need care the most. Risk factors amongst the general public that have had a negative impact on mental health during COVID-19 include knowing who has been affected by COVID-19, knowing who was living in a high-risk setting, a history of stressful situations and having medical problems [22,23]. In other research, risk factors for depression, anxiety, and distress specifically included female gender, negative affect (i.e., experiencing intense negative moods and emotions), and detachment [22]. Similarly, in older adults, being female was associated with higher rates of anxiety, depression [24], and emotional distress, with rates of emotional distress being higher in those over the age of 60 [25]. In the latter study, the research was carried out during a period of lockdown in Spain, which found these older adults were at lower risk of developing depressive and stress consequences from COVID-19 and lockdown than younger adults [25]. In other research, loneliness and decreased physical activity were risk factors for worsening mental health during the pandemic for older adults [26]. For younger adults, daily use of social media was associated with an increased likelihood of experiencing depression symptoms [23].

During periods of lockdown in the United Kingdom, clinically significant levels of mental distress rose, with increases greatest for younger adults, those living with children, and women [27]. A national poll in Canada, found that women, youth, individuals with physical health conditions, and those who were concerned with family stress were less likely to report positive mental health [28].

For women in particular, the burden of the pandemic may have been exacerbated when living with young children–balancing childcare demands, homeschooling, and employment. Other Canadian research reported increased conflict for couples who were homeschooling, with increases in alcohol use for women who spent more time homeschooling, with cross-over effects onto male partners who consumed more alcohol when their female partners spent more time homeschooling [29]. This effect did not hold true for male partners who spent more time homeschooling, showing a protective effect of a more equal division of labour during this period.

People with previous mental health diagnoses reported greater fear, socioeconomic consequences and PTSD symptoms than those without a previous diagnosis—representing another potential risk factor for negative mental health impacts of COVID-19 [30].

Impacts on the health care system

When examining the mental health impacts of COVID-19, it is important to understand how this is translating to stress on our mental health care system. To date, very little has been published about the impacts of COVID-19 on the health care system as it relates to mental health both in Canada and abroad. A recent study conducted in Italy found that outpatient mental health services continued to work normally during the pandemic, while hospital services decreased their activities [31].

In Nova Scotia, mental health services are organized in tiers with each tier representing a progression in severity of illness [32]. For example, Tier 1 aims to promote mental health at the population-level. In contrast, Tier 5 is targeted to those at the highest risk–patients that tend to have more complex needs requiring specialist intervention or inpatient care. People may initially reach out to access care at the level of their family practice provider, and then move up to a higher tier of care, for example seeing a psychiatrist. Given the broad impact of the COVID-19 pandemic on the health system, it is important to understand how access within different levels or tiers of care has been affected.

OBJECTIVES

This research has two main objectives, described below.

Objective 1. To determine the self-reported impact that physical, social, and economic factors have had on the mental health of Nova Scotians through survey data.

Objective 2a. To examine trends in mental health service use before and after the COVID-19 pandemic began through administrative health data

Objective 2b. To examine trends in mental health service use before and after the COVID-19 pandemic began through mental health system use data.

ETHICS

This work fell under the category of Quality Improvement, and as such was approved by Nova Scotia Health on June 10, 2021 as a Quality Improvement project.

PATIENT ENGAGEMENT

An invitation to join the research team was sent to the MSSU Patient Partners in July 2021. Four Patient Partners agreed to become involved in this study. Patient Partners shared their personal experiences, perspectives, and interpretation of the data through guided conversations, occurring during four separate meetings. Patient Partners perspectives were incorporated into the interpretation of results, conclusions and recommendations, and knowledge products.

OBJECTIVE 1

METHODS

Data Sources

Survey data was collected by Pollara Strategic Insights, a research company who worked in partnership with Mental Health Research Canada (MHRC) to carry out a series of 13 online surveys on the mental health impacts of COVID-19. Data from "Poll 2" of data collection, carried out between August 20-31, 2020, was used for this study (see Appendix 1 for survey questions). Funding from Research Nova Scotia enabled oversampling of the population in Nova Scotia for this wave of data collection. Oversampling is planned again for June 2021 ("Poll 7") to allow for examination of longer-term impacts. A follow-up study will subsequently be carried out to examine changes over these two waves of data collection.

Demographics

Analysis of survey data focused on comparing the impacts of COVID-19 across population subgroups, and across groups of outcome variables. Subgroups were identified based on the data available, sample size (i.e., ensuring each subgroup identified had a minimum sample size of 50 participants), and to explore hypothesized differences in COVID-19 impacts on mental health.

Age: Respondents' self-reported age was categorized into four categories:

- 18-29 years,
- 30-49 years,
- 50-69 years, and
- 70+ years.

Gender: Respondents were asked to indicate which gender they identify with most. Given the low number of responses within "another gender identity" or "don't know/unsure," subgroup analysis for gender was only carried out for those who reported gender as female or male.

Education: Highest level of education completed was collapsed into three categories:

- High School or less (includes elementary, high school completion),
- College/Trade/Apprenticeship, and
- University degree (Undergraduate, Graduate, or Professional degree).

Geographic Location: Respondents provided the first three digits of their postal code, also called Forward Sortation Area (FSA). In Nova Scotia, FSAs often cover large heterogenous populations, and offers limited ability to identify particular communities or even health zones. In the absence of the full postal code, FSA data was used to broadly categorize respondents as living in either a rural or urban area based on the middle digit of the FSA (0 = wide rural area; all other digits = urban area) [33].

Household Status: Respondents' household composition was categorized into four groups:

- Single/other (live alone, with roommates that are not family, other),
- Couple/live with family (live with partner – no children, live with parent(s) or sibling(s), live with child(ren) without partner),
- Parent(s) with children < 18 years old (includes part- and full-time custody, single parents), and
- Parent(s) with children ≥ 18 years old.

Mental Health History: Respondents were asked if they had been diagnosed with an anxiety disorder, depression, or another mood disorder prior to the beginning of the COVID-19 pandemic. For this analysis, respondents were categorized as having a previous mental health diagnosis or not.

Outcome Variables

Mental health impact of COVID-19: Respondents were asked to rate the level of impact that 18 factors related to COVID-19 had on their mental health (Table 1), on a scale of 0-10 from very negative to very positive. Responses were grouped on a 3-point scale to simplify presentation and analysis: negative (0-3), neutral (4-6), positive (7-10). These 18 factors were then divided into the following categories.

Table 1. Factors related to COVID-19 that were used to examine mental health impact

ECONOMIC FACTORS	SOCIAL FACTORS	RECREATIONAL ACTIVITIES
• The economic downturn	• Possibility of family member catching COVID-19	• Daily news about COVID-19
• Possibility of family member losing their job	• Possibility of catching COVID-19	• Physical activity/exercise
• Challenges in paying household bills	• Social isolation	• Social media use
• Possibility of losing job/pay/ hours at work	• Challenges of getting necessities	• Entertainment (e.g., television, movies)
• Challenges in working from home	• Interacting with members of household in-person	• Reading (not related to COVID-19)
• Recent job loss	• Communicating with family outside of household virtually	
	• Supporting child's needs/schoolwork	

Anxiety and Depression: Respondents were asked to indicate on a 10-point scale, ranging from none (0) to extremely high (10), their level of anxiety and/or depression before and since the pandemic began in Canada. The survey included definitions for anxiety and depression to facilitate shared understanding of these terms.

Kessler Scale: This validated measure was used to assess psychological distress and involves a series of 10 questions about emotional states (e.g., fatigue, nervousness, hopelessness, sadness). Each question is scored on a 5-point Likert scale ranging from 'none of the time' (1) to 'all of the time' (5). Responses across questions were summed to determine a total scale score, which ranges from 10-50. Only respondents who indicated they had high levels of depression or anxiety (a score of 8, 9, or 10 on the questions above) were able to complete the Kessler scale questions. Scores for participants who responded to less than eight questions on the Kessler scale were not included in the analysis.

Substance Use: The survey assessed the extent to which recreational use of cannabis and alcohol changed since the beginning of the COVID-19 pandemic. Respondents were asked to indicate on a 5-point scale, ranging from major increase (1) to major decrease (5), the change in substance use in a typical week since COVID-19. This scale was collapsed into a 3-point scale for presentation and analysis: increase (1-2), no change (3), decrease (4-5). When respondents indicated that they did not use substances, this was noted in the analysis.

Household Conflict: Similar to substance use, respondents were asked to use a 5-point scale to indicate the extent to which household conflict changed in a typical week, since the COVID-19 pandemic began. This was collapsed into a 3-point scale for analysis: increase (1-2), no change (3), decrease (4-5).

Resilience: On a 10-point scale, respondents were asked to indicate how confident they were in their ability to manage and recover from the COVID-19 pandemic. This was collapsed into a 3-point scale for analysis: not confident (0-3), neutral (4-6), and confident (7-10).

Health Care Use for Mental Health Reasons: Respondents were asked to indicate if and where they have accessed mental health support before and since the pandemic. There were 10 possible responses, including in-person support with a mental health professional, various types of virtual support provided by a mental health professional, support from a family doctor, other types of therapy (e.g., group therapy, peer support), or the option to indicate they did not access support. For analysis, these response options were grouped to compare changes in access to support before and since the pandemic: 1. Group therapy/peer support/other support, 2. In-person support from a mental health professional and a family doctor, 3. In-person support from a family doctor, 4. In-person and/or virtual support from a mental health professional, or 5. Did not access support.

Data Analysis

We calculated descriptive statistics (frequencies and percentages) for respondent demographic characteristics. Descriptive statistics were also calculated to describe impacts of COVID-19 on mental health, including frequencies and percentages for Likert-scale collapsed responses, as well as means and standard deviations to responses around the degree of anxiety, depression, and psychological distress experienced. Differences in impact across subgroups were compared via Mann Whitney U-tests and Kruskal-Wallis tests, as appropriate. Bonferroni corrections were carried out to correct for multiple comparisons on the Kruskal-Wallis pairwise comparisons. Paired samples t-tests and Repeated Measures ANOVAs were run on questions concerning self-reported levels of anxiety and depression before and since the pandemic, across patient subgroups. Comparisons to national data were reported qualitatively.

Results

The results are presented as follows:

a. Sample Characteristics
b. Mental Health Impacts of COVID-19
c. Effects on Anxiety and Depression
d. Substance Use
e. Household Conflict
f. Confidence in Ability to Recover
g. Mental Health Care Use

A summary of the subgroup analyses is described in this section. Additional figures and graphs that detail results across subgroups are presented in Supplementary Figures S.1 to S.29.

a. Sample Characteristics

A total of 505 individuals responded to the survey in Nova Scotia (see Table 2). There was representation across different demographic characteristics including age, gender, highest educational level achieved, household status and geographic location.

Table 2. Demographics of survey sample

SUBGROUP ANALYSIS VARIABLES	N (%)
AGE, YEARS	
18-29	50 (9.9)
30-49	149 (29.5)
50-69	239 (47.3)
70+	67 (13.3)
GENDER*	
Male	252 (49.9)
Female	252 (49.9)
Other gender/Did not indicate	<5 (0.2)
EDUCATION	
High School or less	113 (22.4)
College/Trade	187 (37.0)
University (undergraduate or graduate)	201 (39.8)
Missing	<5 (0.8)

SUBGROUP ANALYSIS VARIABLES	N (%)
GEOGRAPHIC LOCATION	
Rural	115 (22.8)
Urban	390 (77.2)
HOUSEHOLD STATUS	
Single/Other	127 (25.1)
Couple/Live with family, no children	247 (48.9)
Parent(s) living with children <18 years old	66 (13.1)
Parent(s) living with children ≥18 years old	65 (12.9)
PREVIOUS MENTAL HEALTH DIAGNOSIS	
Yes	131 (25.9)
No	374 (74.1)

Table 2 cont.

ADDITIONAL DEMOGRAPHICS	N (%)
IMMIGRATION STATUS	
Not born outside Canada	440 (87.1)
Born outside Canada	60 (11.9)
Don't know/Prefer not to say	5 (1.0)
HOUSEHOLD INCOME/YEAR (GROSS)	
<$30,000	96 (19.0)
$30-50,000	84 (16.6)
$50-80,000	119 (23.6)
$80,000+	178 (35.2)
Missing	28 (5.5)

**For subgroup analysis, only those who identified as male or female were included. There were too few respondents who identified with a different gender to allow for additional subgroup analysis.*

ADDITIONAL DEMOGRAPHICS	N (%)
EMPLOYMENT STATUS	
Full-time	171 (33.9)
Part-time/Seasonal	44 (8.7)
Self-employed	27 (5.3)
Not working/Not working outside of home	59 (11.7)
Retired	179 (35.4)
Student/Other	25 (5.0)
PHYSICAL DISABILITY	
Myself	104 (20.6)
Someone in family	102 (20.2)
No one in family/ Prefer not to answer	299 (59.2)
HOUSEHOLD AGE OF CHILDREN <30	
< 9 years old	43 (37.7)
9-17 years old	30 (26.3)
18-29	41 (36.0)

b. Mental Health Impacts of COVID-19

i. Social

A significant proportion of people reported feeling negative effects on social aspects of mental health as a result of the COVID-19 pandemic (Figure 1a). Fear of a family member catching COVID-19 was one of the most commonly reported negative social impacts (45.0%), which was higher than the fear of catching COVID-19 themselves (38.4%). Social isolation (38.4%) and getting/accessing necessities (31.5%) were also reported has having a negative impact. Supporting children's needs was not reported as a negative impact by many respondents overall (6.1%), however this question was not applicable to many respondents, thus for those who did respond, there was a higher percentage who reported this as a negative impact (37.3%) (Figure 1b). Amongst some factors, there was also a sizeable portion of the sample that reported positive effects, such as on communicating with their household (15.4%) and communicating with family (16.8%).

Table 3. Selected provincial and national comparison of the negative impact of social factors on mental health

NEGATIVE IMPACT, REPORTED BY PROVINCE AND NATIONALLY				TAKE-AWAY
	NS	NB	CANADA	
Fear of catching COVID-19	38%	37%	40%	Impacts in Nova Scotia (NS) are similar to New Brunswick (NB), and lower than national comparative data, which may reflect fewer cases of COVID-19 in the Maritimes, and/or trust in public health response to the pandemic.
Fear of family member catching COVID-19	45%	41%	47%	
Social isolation	38%	37%	44%	
Getting/accessing necessities	32%	25%	30%	

Figure 1a. Self-reported social impacts of COVID-19

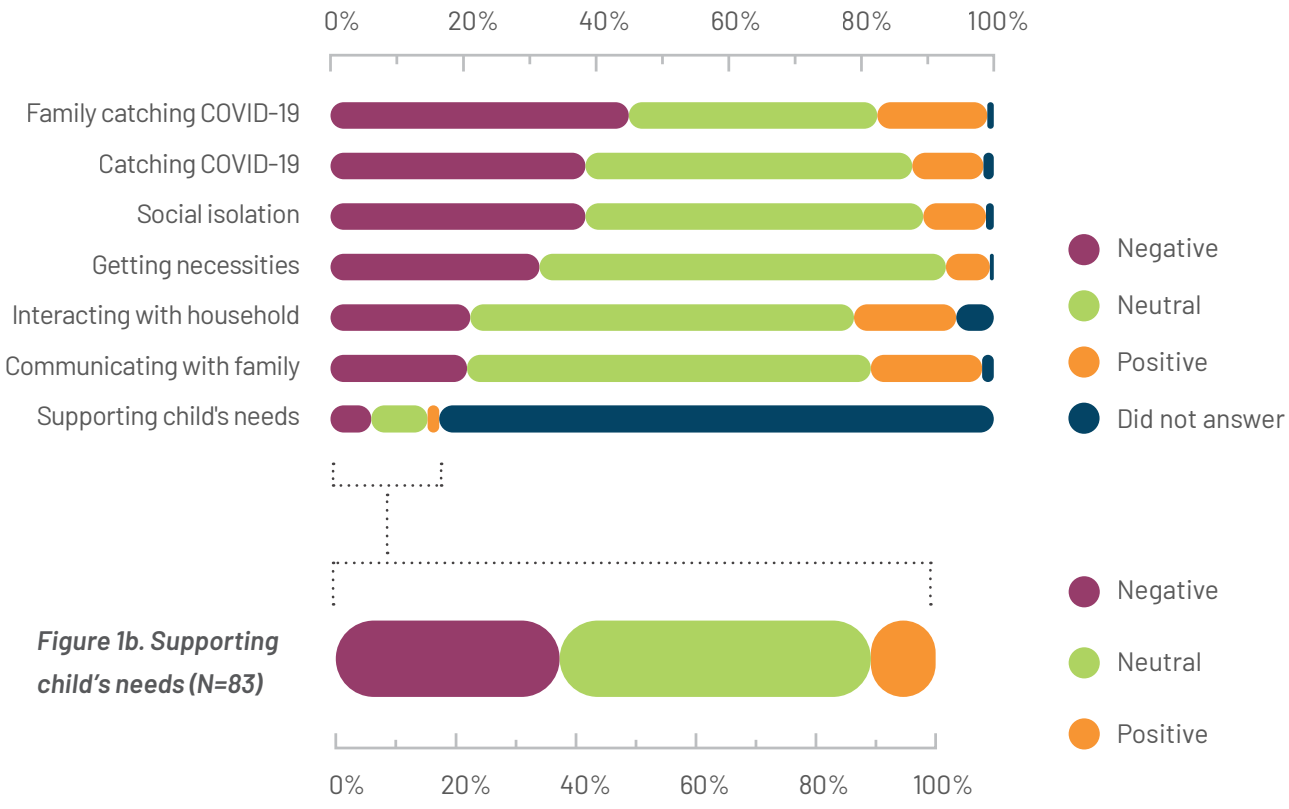


Figure 1b. Supporting child's needs (N=83)

Social impacts were also examined by participant subgroup, with significant findings highlighted below (see Figure 2). Although differences across subgroups varied for the social factors examined, individuals who reported having a current or previous mental health diagnosis reported more negative impacts with respect to communicating with family, getting necessities, and social isolation than those without a previous mental health diagnosis. In addition, for younger age cohorts, the impact of getting necessities and social isolation were reported as more negative than older cohorts.

Figure 2. Infographic summary of social impacts of COVID-19

Some social factors impacted groups more significantly than others.

Respondents were asked to rate the level of impact that factors had on their mental health, on a scale of 0-10. Responses were categorized as negative (0-3), neutral (4-6), or positive (7-10). The percentage of respondents who reported a negative impact are reported below.

CATCHING COVID-19

Individuals with a high school education or less ranked the possibility of catching COVID-19 more negatively compared to individuals with a college/trade education* or university degree.*

COMMUNICATING WITH FAMILY

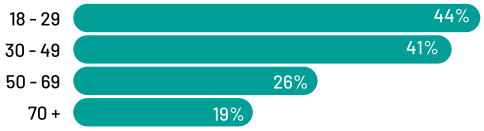
Communicating outside of an individuals household (phone, email, video chats, etc.) had more of a negative impact on individuals if they had a mental health diagnosis compared to those who did not.

CHALLENGE GETTING NECESSITIES

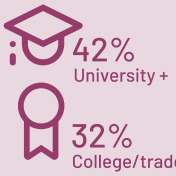
42%

of individuals with history of a mental health diagnosis reported that accessing necessities had a negative impact on their mental health, compared to 28% of those without*.

Younger adults ranked accessing necessities as more negative on their mental health compared to older adults[1].*

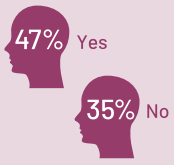


SOCIAL ISOLATION was ranked more negatively for certain groups including...

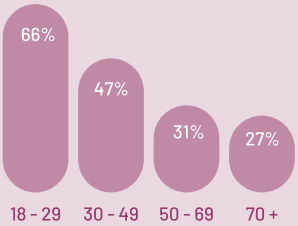


individuals with a university degree compared to college/ trade education.*

individuals who lived in an urban versus rural location.*



individuals with a history of a mental health diagnosis versus those who do not.*



younger adults compared to most older adult groups[2].*

*Significant at p<0.05
[1]Significant differences for accessing necessities at p <0.05 in sub-group: 18-29 vs. 50-69; 18-29 vs. 70+; 30-49 vs. 50-69; 30-49 vs. 70+
[2]Significant differences for social isolate at p < 0.05 in sub-group: 18-29 vs. 50-69; 18-29 vs. 70+; 30-49 vs. 50-69

ii. Economic

Economic impacts of the pandemic garnered significant media attention and was an important concern, especially with respect to the need to balance 'living with COVID' versus an 'elimination approach'[34–37]. Use of different approaches and resulting public health restrictions (e.g., closures) may have different economic impacts. In turn, it is important to understand what related economic mental health impacts the population in Nova Scotia may have felt as a result of these restrictions and approaches used locally. Respondents ranked several economic factors as having a negative impact (see Figure 3a), including the economic downturn (41.2%), possibility of a family member losing their job (33.5%), and the possibility of not being able to pay bills (29.7%). Only individuals who reported not being employed were asked about the impact of losing their job, which was a small portion of the sample (5.1%). However, amongst those who responded as unemployed, a large percentage of those reported a neutral impact (57.7%) followed by a negative impact (34.6%) (see Figure 3b). For individuals who reported working full-time, part-time or seasonally, the possibility of losing their job had a similar reported negative impact (33.8%). The economic impacts reported were similar between NS and NB, but typically lower than the impacts reported nationally (see Table 4).

Table 4. Selected provincial and national comparison of the negative impact of economic factors on mental health

NEGATIVE IMPACT, REPORTED BY PROVINCE AND NATIONALLY				TAKE-AWAY
	NS	NB	CANADA	
The economic downturn	41%	42%	44%	Similar to NB and nationally, the economic downturn had the most negative impact on mental health in NS. In NS, people reported the possibility of a family member losing their job as having the next highest negative impact on mental health, whereas in NB and nationally, the next largest effect was fear of losing one's own job (36% and 43%, respectively). The impact of recent job loss was much higher nationally than what was reported in NS.
Possibility of a family member losing their job	34%	34%	38%	
Possibility of not being able to pay bills	30%	27%	28%	
Recent job loss (if applicable)	35%	N/A	54%	

Figure 3a. Self-reported economic impacts of COVID-19

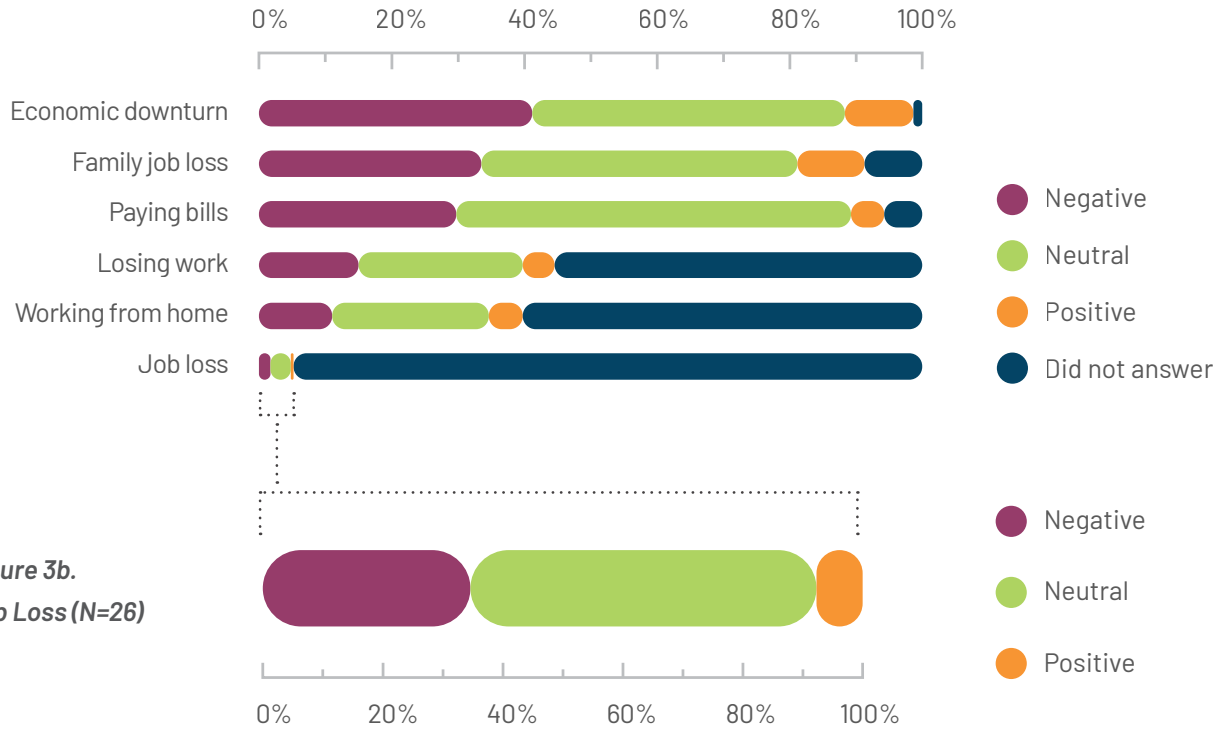


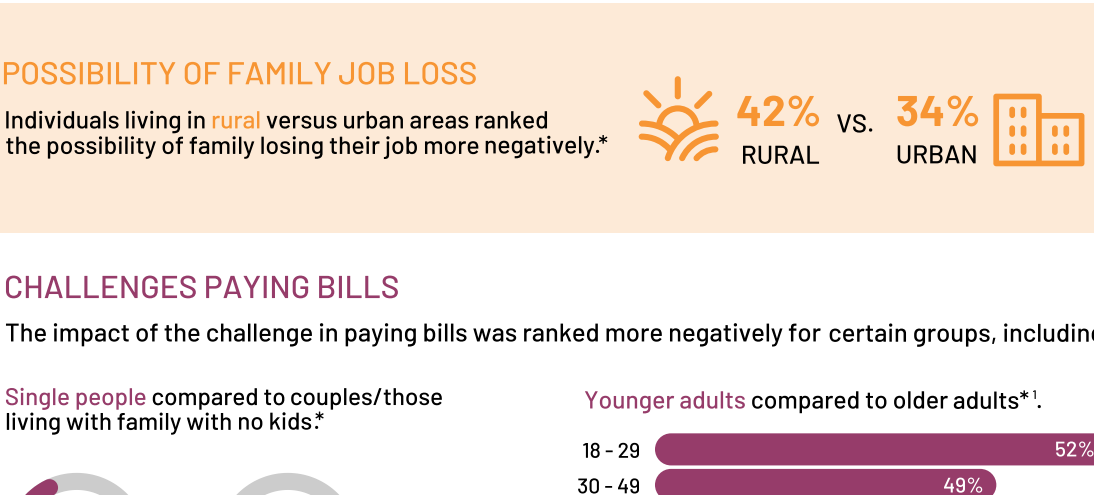
Figure 3b.
Job Loss (N=26)

There were fewer subgroup differences reported across the economic factors studied in NS (see Figures S.8 to S.13 and Figure 4). However, those in rural areas reported a more negative mental health impact around the possibility of a family member losing a job than those in urban areas. In addition, more respondents in younger cohorts, those who reported being single, and those with a history of a mental health diagnosis reported a negative impact of the challenges associated with paying bills.

Figure 4. Infographic summary of the economic impacts of COVID-19

Some economic factors impacted groups more significantly than others.

Respondents were asked to rate the level of impact that factors had on their mental health, on a scale of 0-10. Responses were categorized as negative (0-3), neutral (4-6), or positive (7-10). The percentage of respondents who reported a negative impact are reported below.



*Significant at p <0.05

[1]Significant differences for paying billings at p < 0.05 in sub-group: 18-29 vs. 50-69, 18-29 vs. 70+, 30-49 vs. 50-69, 30-49 vs. 70+

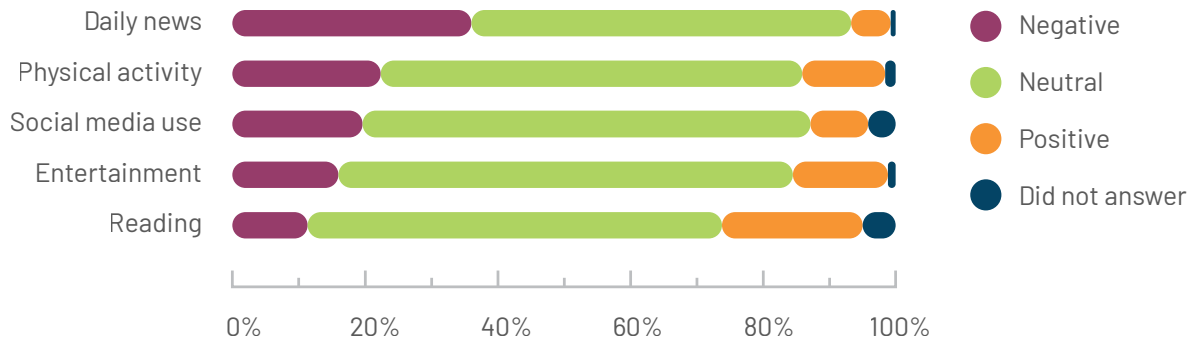
iii. Recreation

Social media has been reported as both a source of increased anxiety, but also as a means of staying connected with family and friends [38,39]. In the context of COVID-19, the impacts of social media on mental health reported from participants in Nova Scotia were largely neutral (67.5%) (see Figure 5). However, the impact of daily news was the most negative impact reported (36.0%) amongst the recreational factors explored. One factor which seemed to offer a more positive than negative impact was reading (22.3% positive vs. 11.9% negative). Interestingly, exercise, which was often touted during the pandemic as a means of reducing stress still had a higher proportion of people who reported this as a negative (22.7%) than positive impact (12.7%). Increased demands of working at home, managing childcare, and the loss of social access to recreational and exercise facilities, may have made it more difficult to stay active or exercise and may have contributed to this negative impact.

Table 5. Selected provincial and national comparison of the negative impact of recreational factors on mental health

NEGATIVE IMPACT, REPORTED BY PROVINCE AND NATIONALLY				TAKE-AWAY
	NS	NB	CANADA	
Daily news about COVID-19	36%	36%	39%	Daily news about COVID-19 was the most negatively reported recreational factor for NS, NB, and Canada. The impact of physical activity was also similar across all three, having a more negative than positive impact.
Exercise/physical activity	23%	23%	28%	
Social media	20%	19%	23%	
Entertainment (e.g., television, movies, music, podcasts, etc.)	16%	17%	19%	
Reading books	12%	11%	11%	

Figure 5. Self-reported recreational impacts of COVID-19

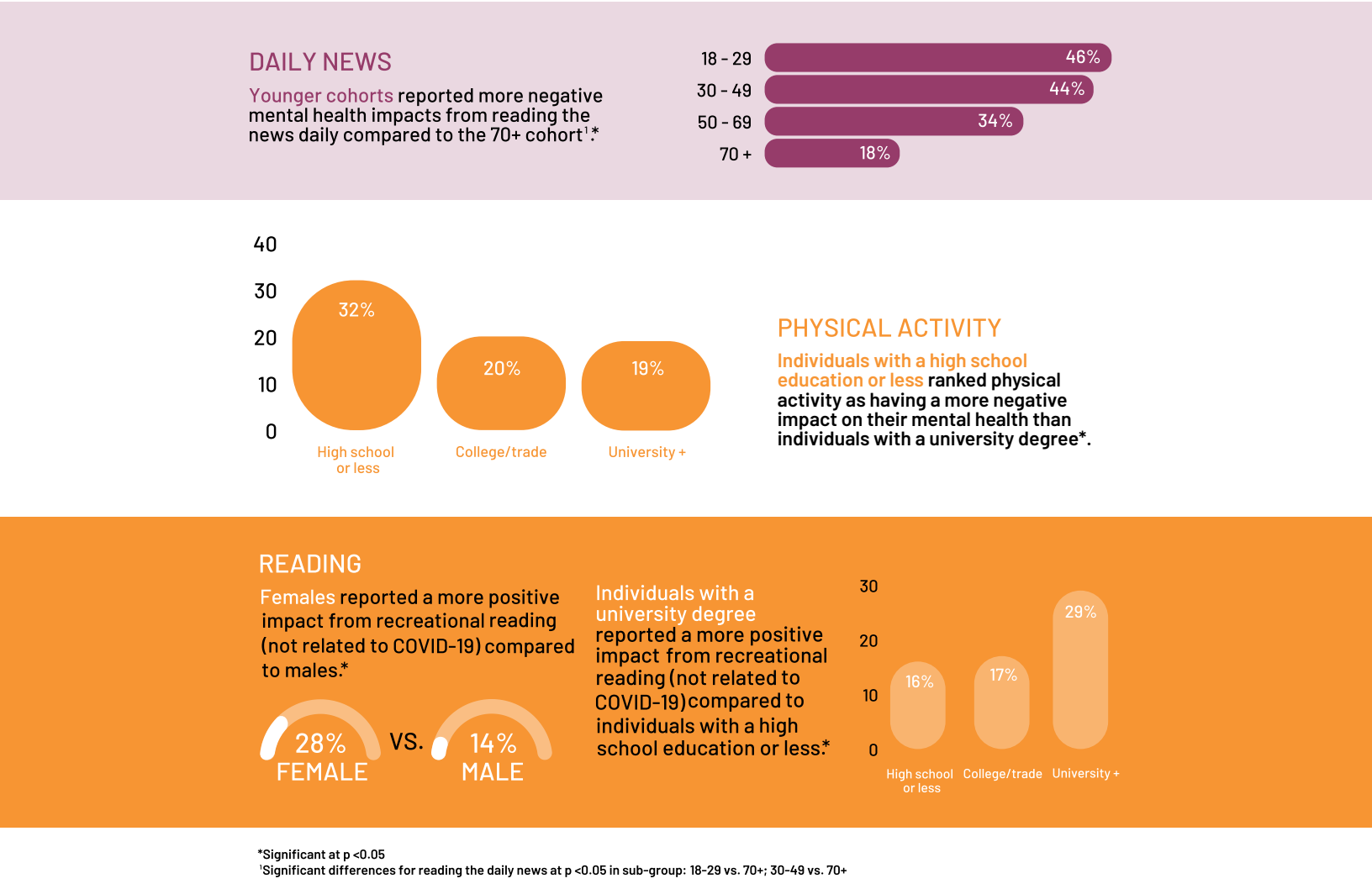


Overall, recreational factors had more positive mental health impacts than social and economic factors during COVID-19. Some behaviours, such as reading, had more of a positive impact for females and for those with a university degree (see Figure 6). In NB, young adults, those from single person households and those with a previous mental health diagnosis also reported more positive impacts of reading, showing the potential impact of this activity on mental health. The impact of physical activity on mental health was reported to be more negative for those with lower educational attainment.

Figure 6. Infographic summary of the recreational impacts of COVID-19

Some recreational factors impacted groups more significantly than others.

Respondents were asked to rate the level of impact that factors had on their mental health, on a scale of 0-10. Responses were categorized as negative (0-3), neutral (4-6), or positive (7-10). The percentage of respondents who reported a negative impact are reported below.



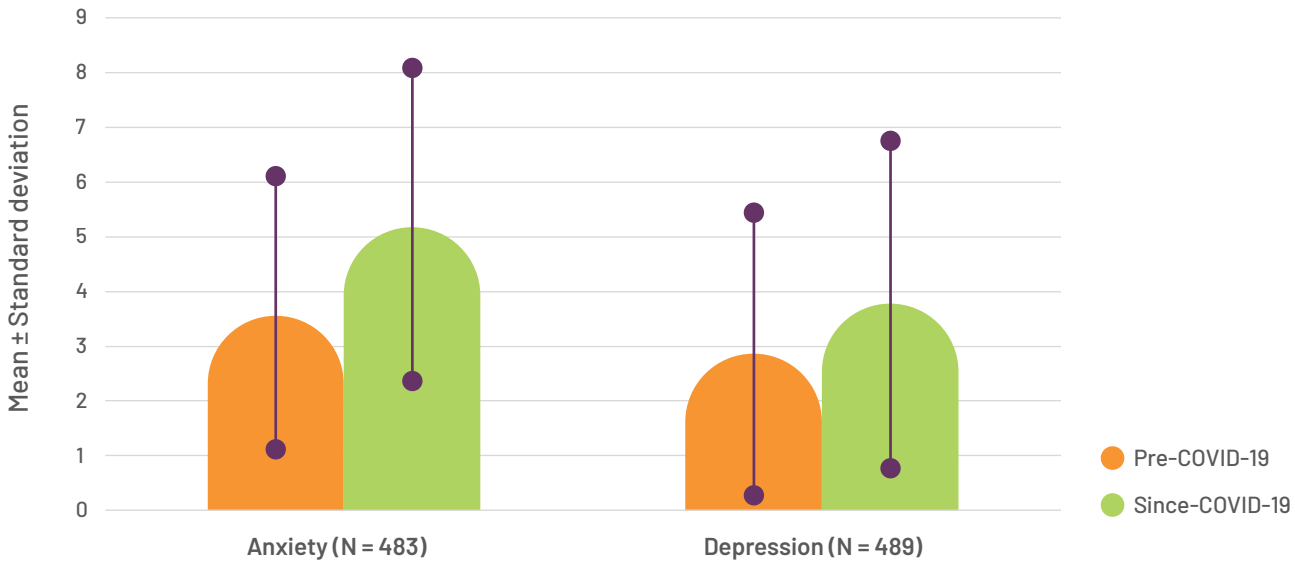
*Significant at p <0.05
[1]Significant differences for reading the daily news at p <0.05 in sub-group: 18-29 vs. 70+; 30-49 vs. 70+

c. Changes in Self-reported Anxiety and Depression

i. Anxiety & Depression Levels

People who responded to the survey were also asked to describe their anxiety and depression levels both before and since COVID-19 began in Canada. Mean levels of anxiety and depression are presented below (see Figure 7), and subgroup analysis results are summarized in text with detailed graphs in Supplementary Figures S.19 to S.24. Self-reported levels of anxiety increased significantly after the onset of the COVID-19 pandemic (Before: mean=3.56±2.56; Since COVID-19 began: mean=5.17±2.95; $p < .001$). There was a similar increase ($p < .001$) in self-reported levels of depression before since COVID-19 began (Before: mean=2.86±2.72; Since COVID-19 began mean=3.78±3.15; $p < .001$). It is important to interpret the findings related to anxiety and depression with some caution. Although this measure does tell us whether people experienced a change in symptoms, this is not a clinically validated scale and does not indicate whether participants were experiencing a level of anxiety or depression that would meet criteria for clinical diagnosis.

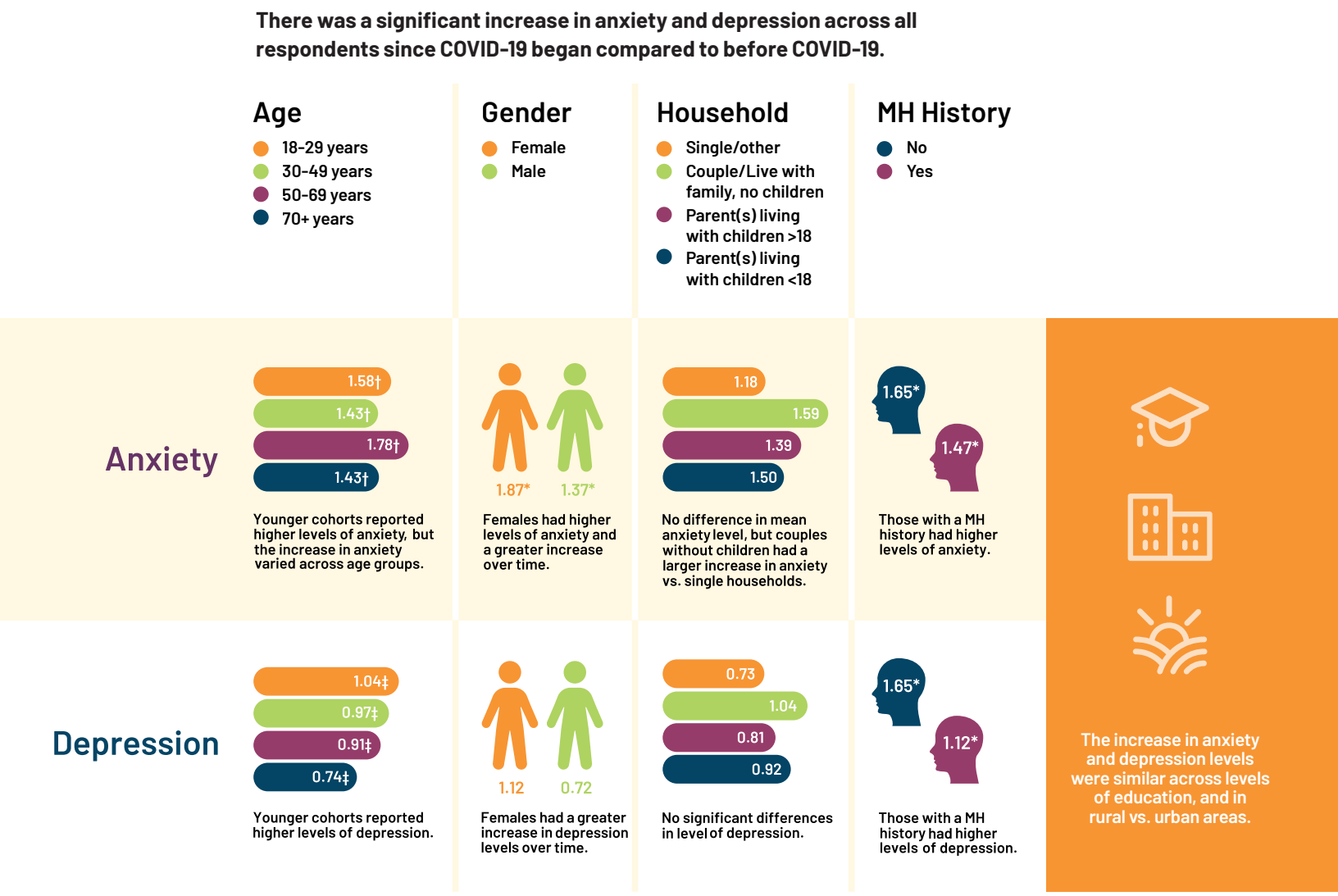
Figure 7. Self-reported anxiety and depression: before vs. since COVID-19



Changes in both anxiety and depression before and since COVID-19 were also compared across subgroups to determine whether there were differences in the extent to which different groups felt their mental health was impacted by the pandemic (see Figure 8 for summary and Supplementary Figures S.19 to S.24 for individual subgroup figures).

There were significant increases in anxiety and depression reported over time for all subgroups (all $p \leq .001$). However, anxiety was higher overall for younger versus older age cohorts, for females versus males, and for those with a previous mental health diagnosis compared to those without. In addition, the degree of change over time differed across household status. Couples without children or those living with family had a greater increase in anxiety level over time than households indicating they were single or had another living situation. In addition, females exhibited a greater increase in anxiety over time compared to males. Overall, younger age cohorts and those with a mental health diagnosis had higher levels of depression. Females and males did not differ in the mean level of depression reported, but females did show a greater degree of change over the course of the pandemic compared to males.

Figure 8. Infographic summary of the changes in anxiety and depression before and since COVID-19

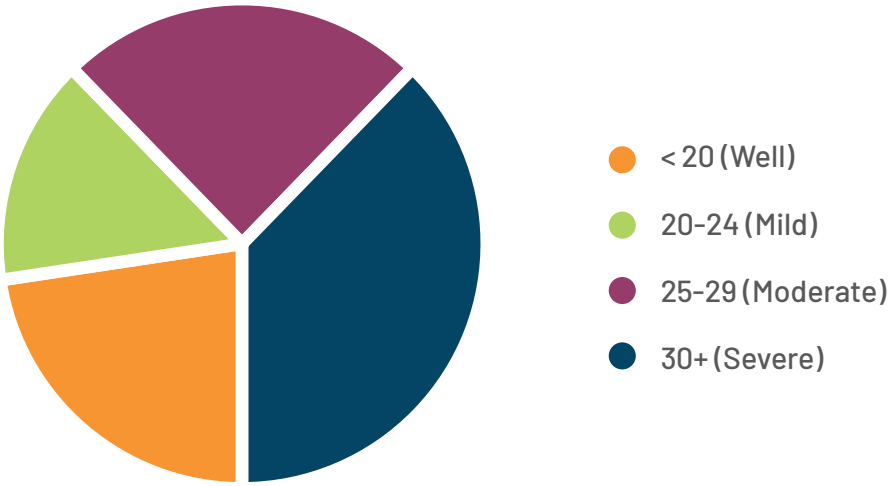


Note: Numbers shown represent increases in self-reported anxiety and depression levels on a 10-point Likert scale.
*Significant at $p<0.05$
†Significant differences in anxiety levels at $p<0.05$ in sub-groups: 18-29 < 50-69, 70+; 30-49 < 50-69, 70+; 50-69 >70+
‡Significant differences in depression levels at $p<0.05$ in sub-groups: 18-29 < 59-69 & 70+, -30-49 < 50-69 & 70+

ii. Kessler Scale

For respondents who reported high levels of anxiety or depression (scores of 8 or higher), a series of follow-up questions were asked to elucidate the clinical level of distress via the Kessler Scale [40]. For these respondents, 77.3% scored above the 'well' cut-off, indicating these respondents were likely to have a mild to severe mental disorder (see Figure 9). Nationally, of those who responded with high levels of anxiety or depression, the majority were classified as having moderate (21%), which was slightly lower than in NS (25%), to severe (42%) mental disorders, which was slightly higher than in NS (38%). Given that only those with high levels of anxiety or depression completed this scale, it is not possible to make comparisons to data collected pre-pandemic at the population level. In NS, the sample size for each subgroup was too small to facilitate subgroup analysis across the subgroups previously described.

Figure 9. Clinical level of distress via the Kessler Scale (N=59)



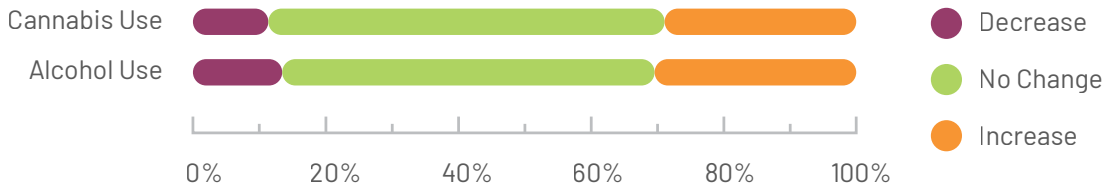
d. Substance Use

A large proportion of respondents indicated they did not use alcohol (26.7%) or cannabis (70.5%) (data not shown). Of those who reported consuming alcohol, the majority indicated their weekly alcohol use did not change in frequency since the pandemic began (56.2%). However, some respondents did indicate an increase in use (30.3%) (see Figure 10). Similarly, for those who did report using cannabis, most reported no change (59.7%) with some reporting an increase (28.9%) and the remainder reporting a decrease (11.4%).

Table 6. Selected provincial and national comparison of the increase in substance use

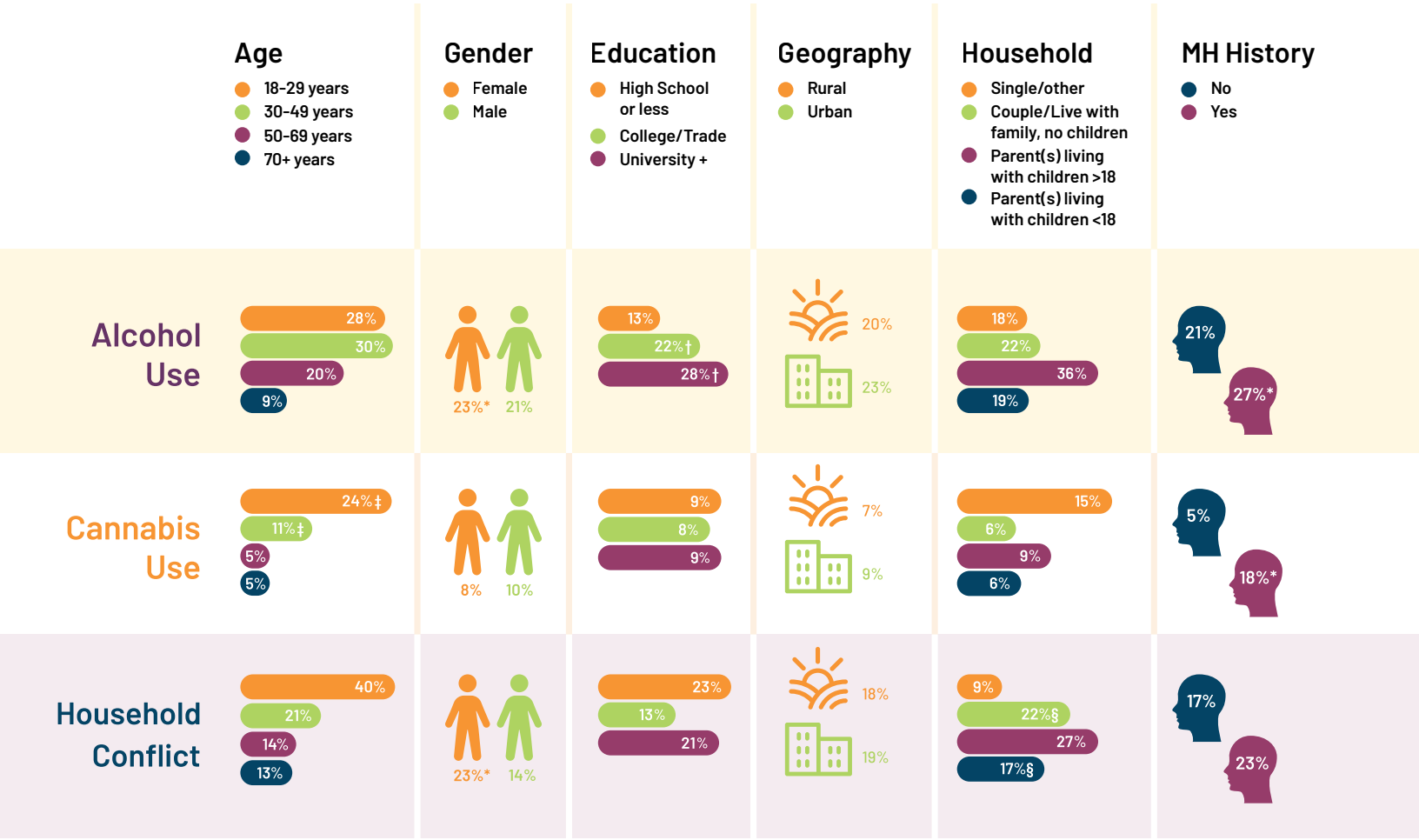
INCREASE IN SUBSTANCE USE, REPORTED BY PROVINCE AND NATIONALLY				TAKE-AWAY
	NS	NB	CANADA	Alcohol use in NS was reported to increase more than in NB or nationally. Cannabis use increased similarly in NS and NB, but this was higher than what was reported nationally.
Alcohol	30%	24%	22%	
Cannabis	29%	31%	20%	

Figure 10. Change in self-reported substance use since COVID-19 for those who report using substances



Change in substance use was also compared across subgroups to identify whether certain subgroups were more likely to change their substance use patterns over the course of the pandemic (see Figure 11). Females, those with a university education, and those who reported a history of a mental health diagnosis reported a greater increase in alcohol use since-the pandemic began. For cannabis use, younger age groups were more likely to report an increase in use, along with individuals with a history of a mental health diagnosis. The subgroup analysis for cannabis use was limited by a low sample size for older age groups (as a smaller percentage reported using alcohol or cannabis) and for those who reported using cannabis overall.

Figure 11. Infographic summary of changes in substance use and household conflict



*Significant at p<0.05
†Significant differences in alcohol intake at p<0.05 in sub-groups: high school vs. university; college/trade vs. university
‡Significant differences in cannabis use at p<0.05 in sub-groups: 18-20 vs. 50-69, 70+; 30-40 vs. 50-69, 70+
§Significant differences in household conflict at p<0.05 in sub-groups: parents w kids <18 vs. single; couple/live with family no kids vs. single.

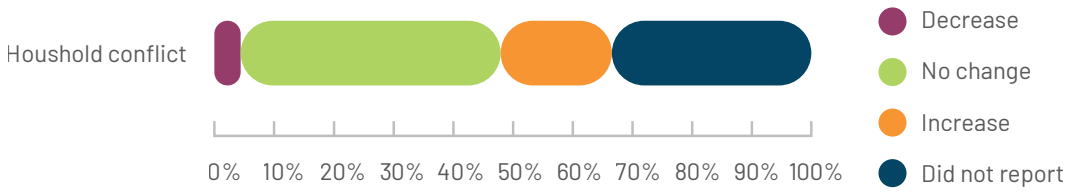
e. Household Conflict

Survey respondents were asked to indicate whether the degree of household conflict has changed since COVID-19 began. The majority reported no change (43.6%), however many also reported an increase (18.6%) (see Figure 12). Change in self-reported household conflict was also examined across subgroups (see Figure 11). Females were more likely to report an increase in conflict compared to males. Parents with children who were less than 18 years old reported the highest increase in conflict within the household subgroups compared. This increase was greater than the increase reported for single households, where couples without children reported a greater increase than single households as well.

Table 7. Provincial and national comparison of self-reported household conflict

INCREASE IN HOUSEHOLD CONFLICT, REPORTED BY PROVINCE AND NATIONALLY			TAKE-AWAY
NS	NB	CANADA	The increase in household conflict in NS and NB were similar (approximately 1 in 5 households experiencing an increase), and the national rate was higher (almost 1 in 3 households).
19%	18%	29%	

Figure 12. Change in household conflict since COVID-19



f. Confidence in Ability to Recover (Resiliency)

Most participants reported confidence in the ability to recover from the effects of the COVID-19 pandemic (67.4%) (see Figure 13). There were differences across subgroups (see Figure 14), where older age cohorts, those with a higher education, and those without a history of a mental health diagnosis were more confident in their ability to recover.

Table 8. Provincial and national comparison of confidence in ability to recover (resiliency)

CONFIDENCE IN ABILITY TO RECOVER, REPORTED BY PROVINCE AND NATIONALLY			TAKE-AWAY
NS	NB	CANADA	Confidence in the ability to recover was slightly higher in NS compared to NB and national data.
67%	60%	60%	

Figure 13. Confidence in ability to recover from COVID-19 (resiliency)

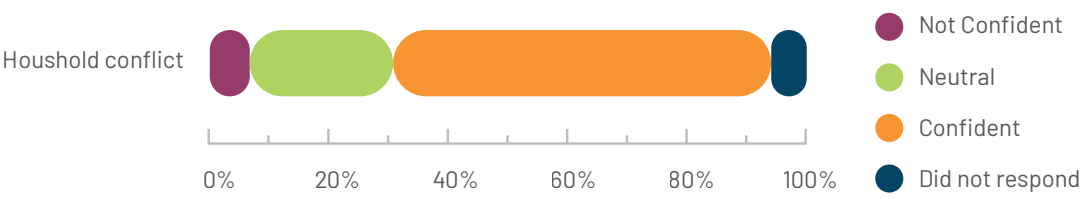


Figure 14. Infographic on confidence in ability to recover from COVID-19

Individuals with no history of a mental health diagnosis were more confident in their ability to recover from COVID-19 than those with a history.

Most older cohorts were more confident in the ability to recover compared to younger cohorts[1].*

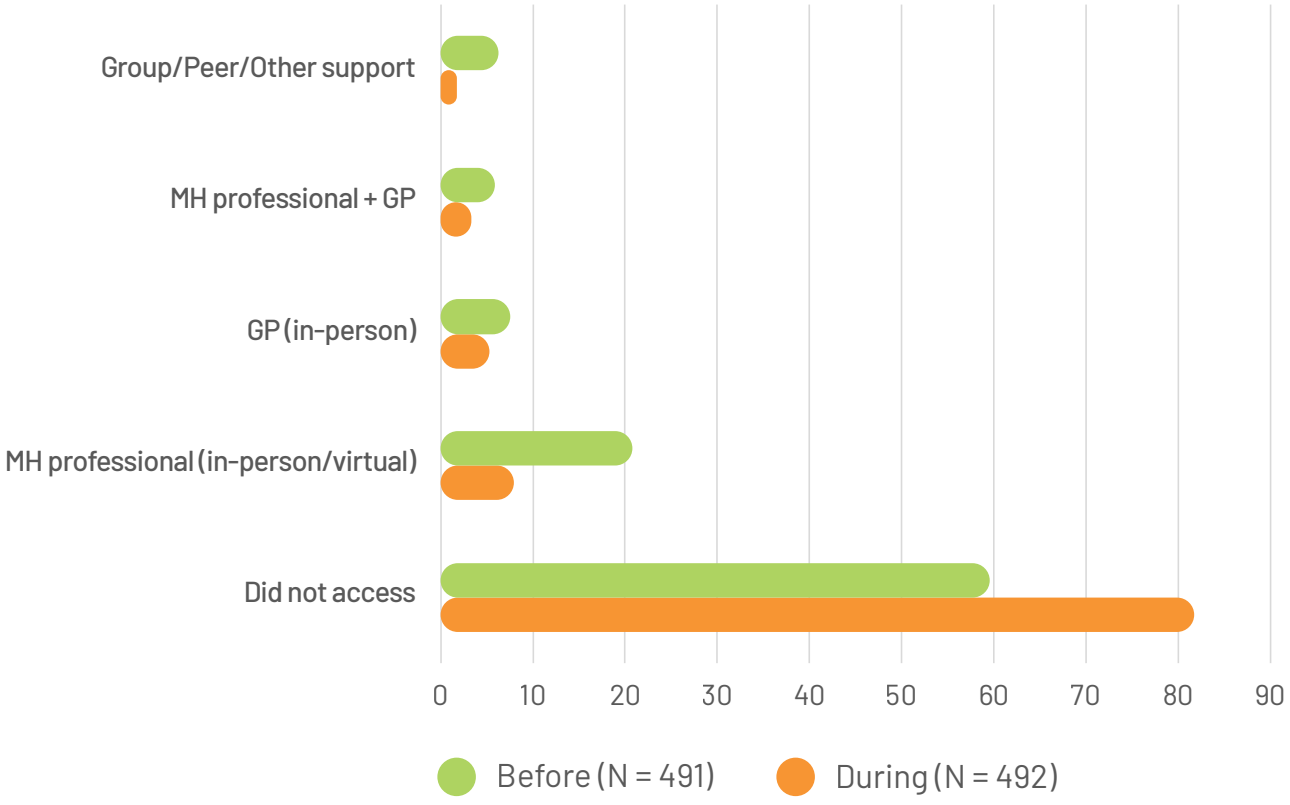
Individuals with a college/trade education were more confident in recovering from COVID-19 than individuals with a high school education or less.*

*Significant at p <0.05
[1]Significant differences for resiliency at p <0.05 in sub-groups: 18 - 29 vs. 70+; 30 - 49 vs. 50 - 69; 30 - 49 vs. 70 +

g. Self-reported Mental Health Service Use

Respondents were asked whether they received mental health support before and since the COVID-19 pandemic began. Approximately 60% of respondents indicated they did not access mental health supports prior to COVID-19, indicating they were either "needed but did not access" or "did not need/did not access" (see Figure 15). Since COVID-19, this number increased to 82% - reflecting decreased access of services. Correspondingly, accessing care by any means was reported to decrease since COVID-19, where 21% reported seeing a mental health care professional before COVID-19, and only 8% since. However, for those who accessed supports, the time range for which people reported accessing care ranged from in the year before the outbreak (47%), 2 to 5 years before (23%), 6 to 10 years before (16%), and more than 10 years before (15%). Thus, many respondents interpreted the "time before COVID-19" to be a long-period, and it is difficult to gauge the degree of decrease in access to these supports. In addition, for those who reported accessing mental health care since COVID-19, only 61% indicated they were still receiving supports.

Figure 15. Self-reported mental health care use before and during COVID-19



OBJECTIVE 2A: ADMINISTRATIVE HEALTH DATA

Data Sources

Administrative health data was accessed at the Nova Scotia Department of Health and Wellness to examine changes in mental health related visits before (January 1, 2019 – March 15, 2020) and after the start of the COVID-19 pandemic (March 15, 2020 – December 31, 2020). Visits to a primary care provider, as well as visits to acute/ambulatory care (Emergency Department, Psychiatric visits) were assessed through physician billing data. The billing information used to define the type of practitioner, which includes the location in which they practice (since location helps to specify the practitioner type – e.g., general practitioner in a family practice vs. general practitioner operating as a hospitalist) is outlined in Table 9.

Table 9. Practitioner service location

PRACTITIONER TYPE	PROVIDER SPECIALTY CODE	LOCATION
General Practitioners (GP)	"GENP"	Location code not "HOSP"
Psychiatrist (PSYC)	"PSYC"	Functional centre code not "EMCC"
Emergency Department (ED)	any	Location code "HOSP" and functional centre code "EMCC"
Other	All provider specialty and location combinations that do not meet any of the above definitions	All provider specialty and location combinations that do not meet any of the above definitions

Mental Health Billing Codes

Health care use for mental health reasons was defined according to Statistics Canada disorder groupings and corresponding to the International Classification of Disease (ICD-9) codes (see Table 10) [41].

Table 10. Mental health related ICD-9 codes

BILLING REASON	CONDITIONS INCLUDED	PHYSICIAN BILLING – DIAGNOSIS CODES (ICD-9)
Anxiety disorders	Anxiety, acute stress	300.0, 300.2, 300.3, 309.8
Personality disorders	Personality disorders (e.g., borderline personality disorder)	301.0–301.9
Psychotic disorders	Schizophrenia, psychotic, paranoia	295.0-295.9, 298.8-298.9, 297.1-297.3
Organic disorders	Senile and pre-senile psychotic conditions, transient/other organic psychotic conditions	290.0-290.9, 293.0, 293.1, 293.8, 293.9, 294.0, 294.1, 294.8, 294.9
Mood disorders	Bipolar, depression, other	296.0-296.9, 300.4, 311
Substance-related disorders	Alcoholic/drug/ psychoses, alcohol/drug dependence, nondependent abuse of drugs	291.0-291.9, 292.0-292.9, 303.0-303.9, 304.0-304.9, 305.0-305.9
Other mental health disorders	Adjustment, sexual, delusional disorders, non-organic psychoses, disturbance of conduct not otherwise specified, all other psychiatric disorders	anything with an ICD-9 code between 290.0 and 319.9 not listed above

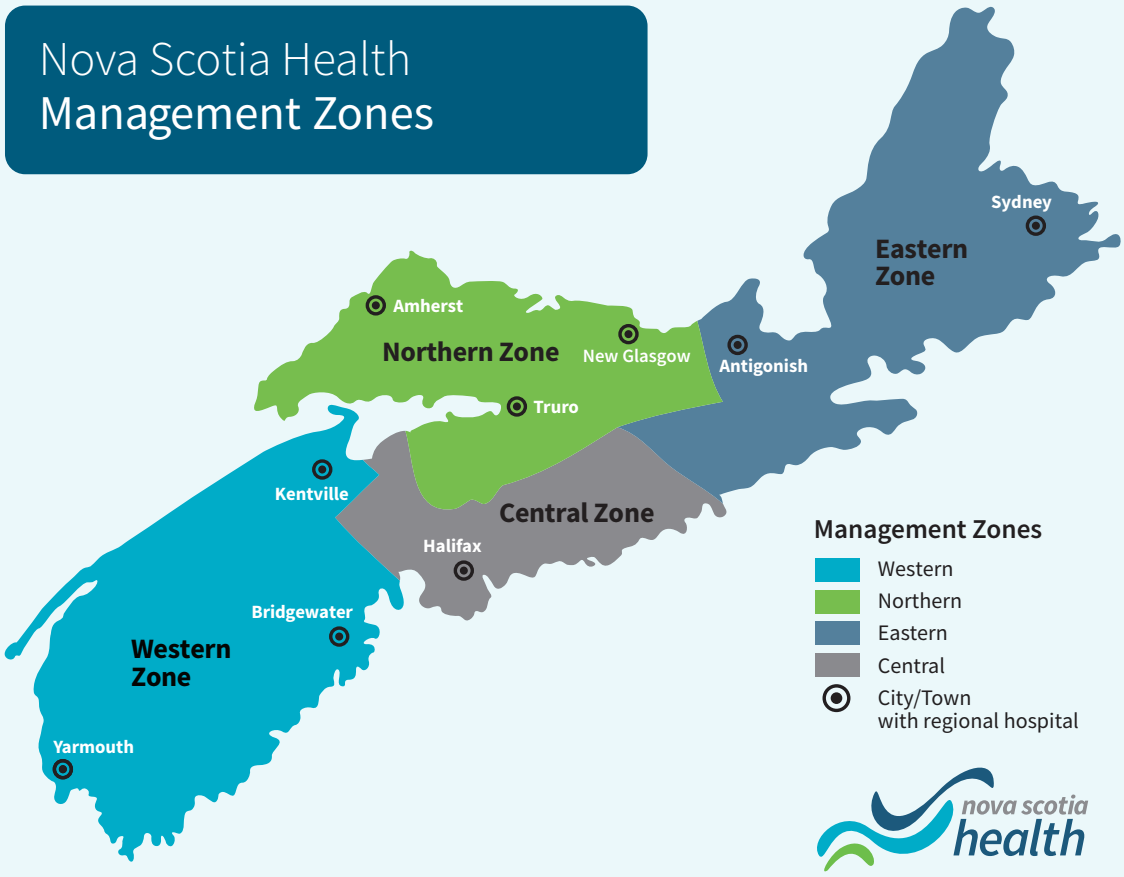
Demographic Indicators

Sex: This was defined as biological sex according to individual patient registration data attached to Medical Services Insurance (MSI) in Nova Scotia.

Age: Cohorts spanning approximately 10 years were defined as follows: 18-29, 30-39, 40-49, 50-59, 60-69, 70-79, and 80 or older. When possible, data was analyzed for each age cohort. However, if a disorder had an insufficient sample size, age cohorts were collapsed for analysis.

Geographical Location: Each patient's full postal code attached to their MSI registration data was used to define geographic location. Postal codes were then categorized into one of four health management zones (Figure 16) using Statistics Canada's Postal Code Conversion File Plus 2018 version [42].

Figure 16. Nova Scotia Health Management Zones



Statistical Analysis

The number of distinct patients and distinct services billed with a mental health diagnostic code was computed for each week from January 1, 2019 to December 31, 2020. This analysis was done to examine seasonal variation in mental health billings and to investigate the impact of the pandemic on mental health billings.

The percentage change in distinct patients and distinct services billed with a mental health diagnostic code was compared between March 15 – December 31, 2020 (since the pandemic) and March 15 – December 31, 2019 (before the pandemic). Two-sided exact binomial tests were used to reject, or fail to reject, the null hypothesis that the expected counts (distinct patients or distinct services) were the same in 2019 and 2020. Most figures in the results section contain multiple comparisons. For each figure, a Bonferroni correction was applied such that the family-wise error rate was less than or equal to 0.05. For example, a figure consisting of a single comparison (bar) used a p-value threshold of 0.05; a figure consisting of ten comparisons (bars) used a p-value threshold of 0.005 (0.05/10).

Results

Both the number of distinct patients and the number of distinct services were analyzed to assess changes in the number of patients accessing care, and the number of services that were billed in 2019 versus 2020. The number of distinct patients may indicate whether more people accessed mental health services in one year versus another, and the number of distinct services gives a picture of whether these patients received more or fewer services in 2019 versus 2020.

Table 11. Population included in administrative data

SPECIALTY	DISTINCT PATIENT COUNT		DISTINCT SERVICE COUNT	
YEAR	MAR 15 -DEC 31, 2019	MAR 15 -DEC 31, 2020	MAR 15 -DEC 31, 2019	MAR 15 -DEC 31, 2020
All Specialties	139,953	142,535	394,434	419,713
GP	129,929	133,133	310,646	329,825
PSYC	7,261	7,115	24,666	23,877
ED	5,535	5,600	7,717	7,900
OTHER	8,488	8,067	51,405	58,111
All (not mental health)	**635,563**	**592,089**	**4,835,307**	**4,242,349**

The number of distinct patients who received mental health services was slightly higher in 2020 (N=142,535) compared to 2019 (N=139,953) for all specialty billings (see Table 11). Though the number of distinct patients who accessed care by PSYCs and in the 'Other' category were slightly lower in 2020 versus 2019. It is important to note that patients may access care from multiple specialists, and thus would be included in the distinct patient count once for each type. However, they would only be counted once in the patient count for 'all specialties' and thus the counts for each provider type do not sum to the count for all specialties. Similarly, the number of distinct mental health services billed was higher for all specialties, GP billings, ED billings and Other in 2020 versus 2019, but was lower for PSYC visits (see Table 11).

The size of the population in Nova Scotia has been increasing for the past 15 years [43]. Given this, as a measure of population size, we examined the number of active NS health cards from March 15, 2019 to December 31, 2020. If the population size is larger each year, one would expect more patients to access health care. Thus, it is important to consider how much the population size changes when looking at changes in health service use.

On average there were 1.036 million active health cards in this 2019 period compared to 1.053 active health cards in the 2020 period, which corresponds to an increase of 1.68%. Although the number of active health cards was higher in 2020 than in 2019, the number of distinct patients billing for services decreased by 6.8%, and the number of distinct services billed decreased by 12.3% in 2020 versus 2019. Thus, it is unlikely that the increase in the number of active health cards is accounting for any significant increases in the number of distinct billings and services in 2020 but should be considered when interpreting results.

Volume of distinct patients and services across provider types

The trends observed for the number of distinct patients seen and the number of distinct services provided were similar for all mental health billings across provider types (GP, PSYC, ED, and Other) (see Figure 17). However, volume of both patients and services fluctuated over time, across provider types.

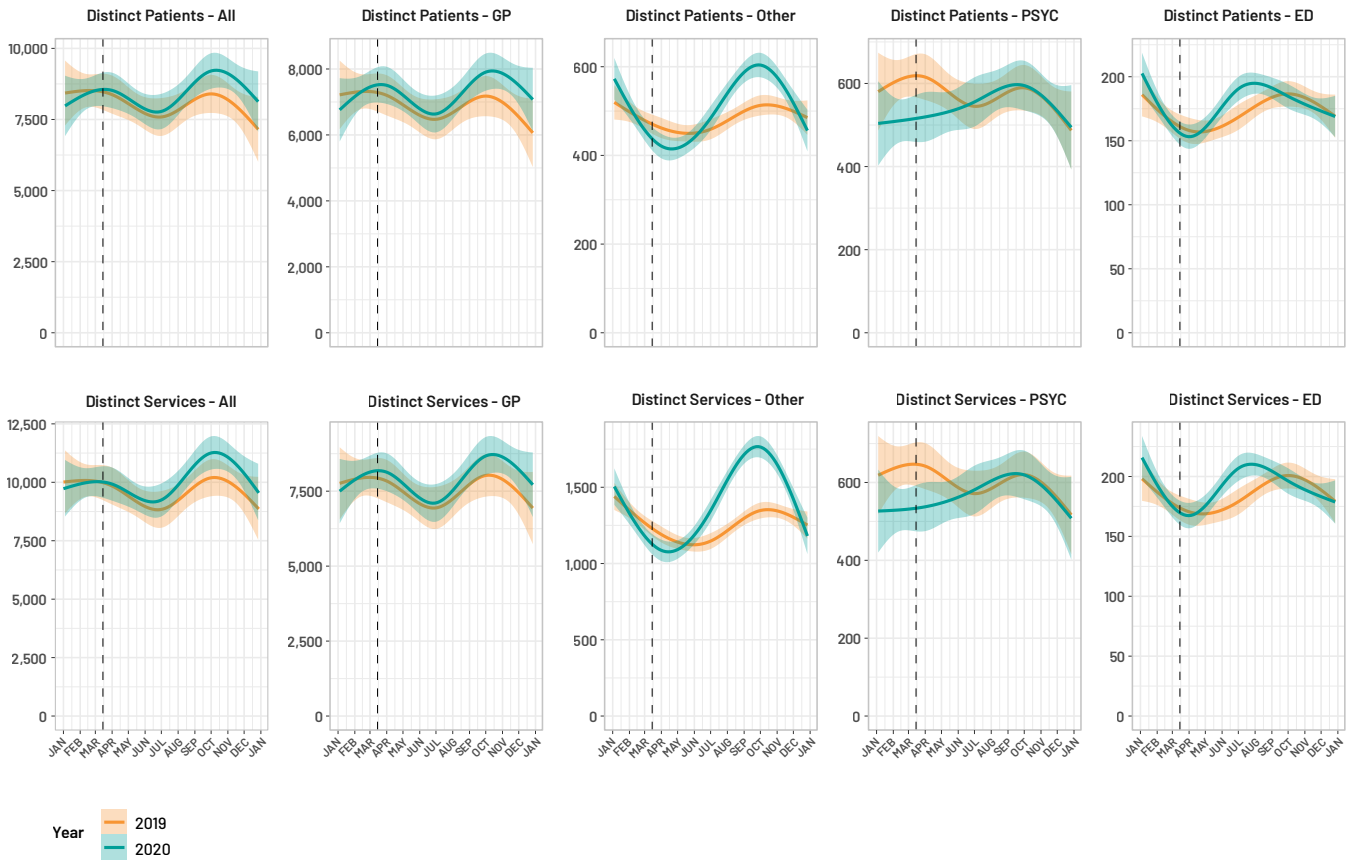
GP billings: For mental health services from GPs, there was a gradual reduction in 2020 billings beginning in March (the start of the pandemic). However, this seasonal pattern was similar to that observed in 2019 with corresponding increases in the fall months–though 2020 volumes did exceed those in 2019.

ED billings: The pattern was similar for mental health ED visits, though the decrease in patients and services was sharper at the beginning of the pandemic period with an earlier and sharper increase during the early summer months of 2020. This increase in ED visits likely corresponds to a period of decreasing epidemiology of COVID-19 in NS, with a similar decrease in 2020 ED use during the second wave of COVID-19 in NS in November 2020.

PSYC billings: The number of distinct patients and services began at lower levels in 2020 compared to 2019, but gradually increased over the course of the pandemic in 2020. This may represent an increased demand for services during that time, or an increased provision of virtual care, which may have allowed PSYC visits to continue at volumes similar to 2019.

Other provider billings: The pattern demonstrated for 'Other' mental health billings was more distinct than for each provider type. With this data, there was a sharper decrease at the beginning of the pandemic and then a much sharper increase beginning in June 2020 rising far above 2019 levels.

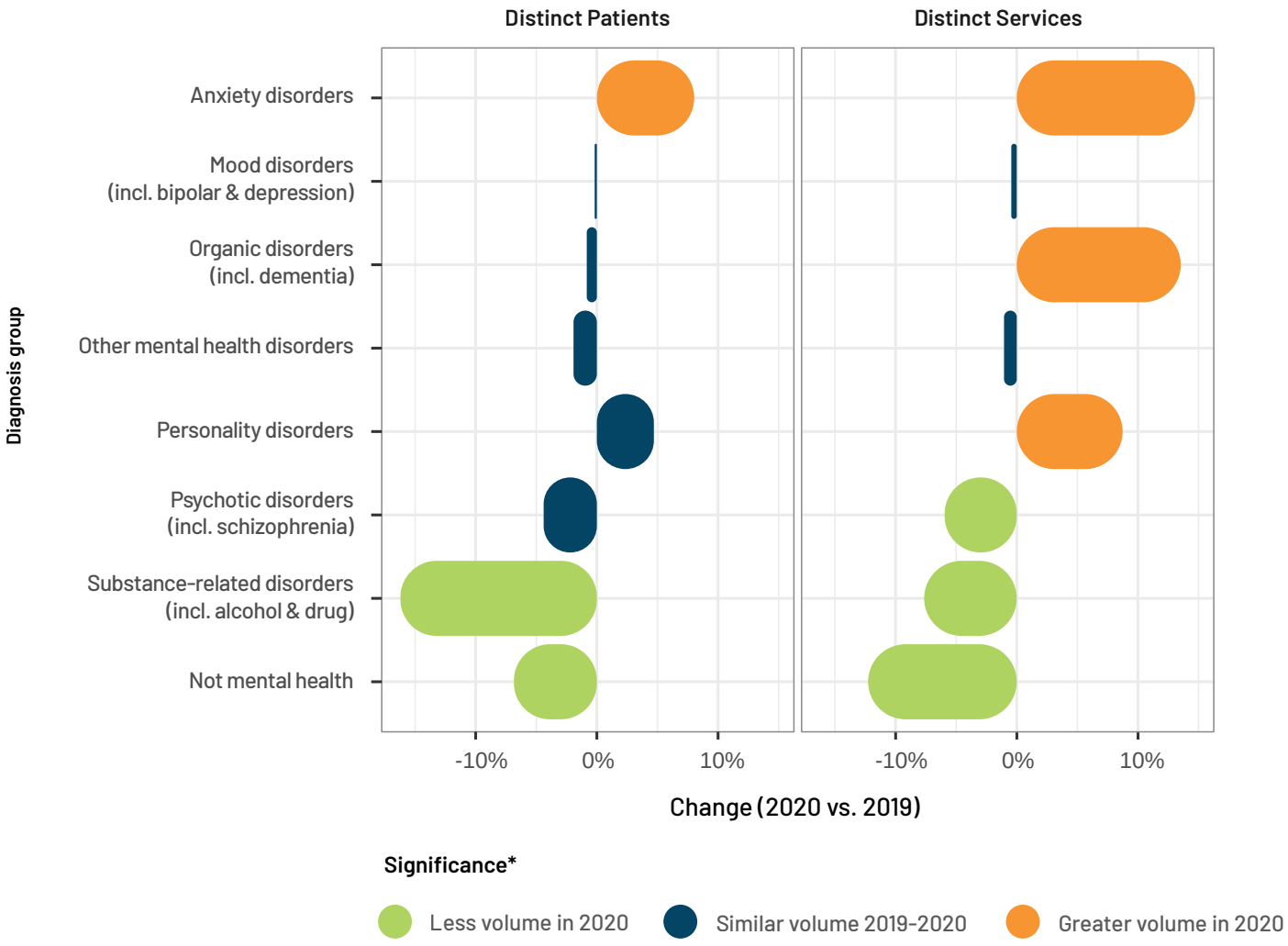
Figure 17. Distinct patients and distinct services by provider type



Subgroup analysis by diagnosis group

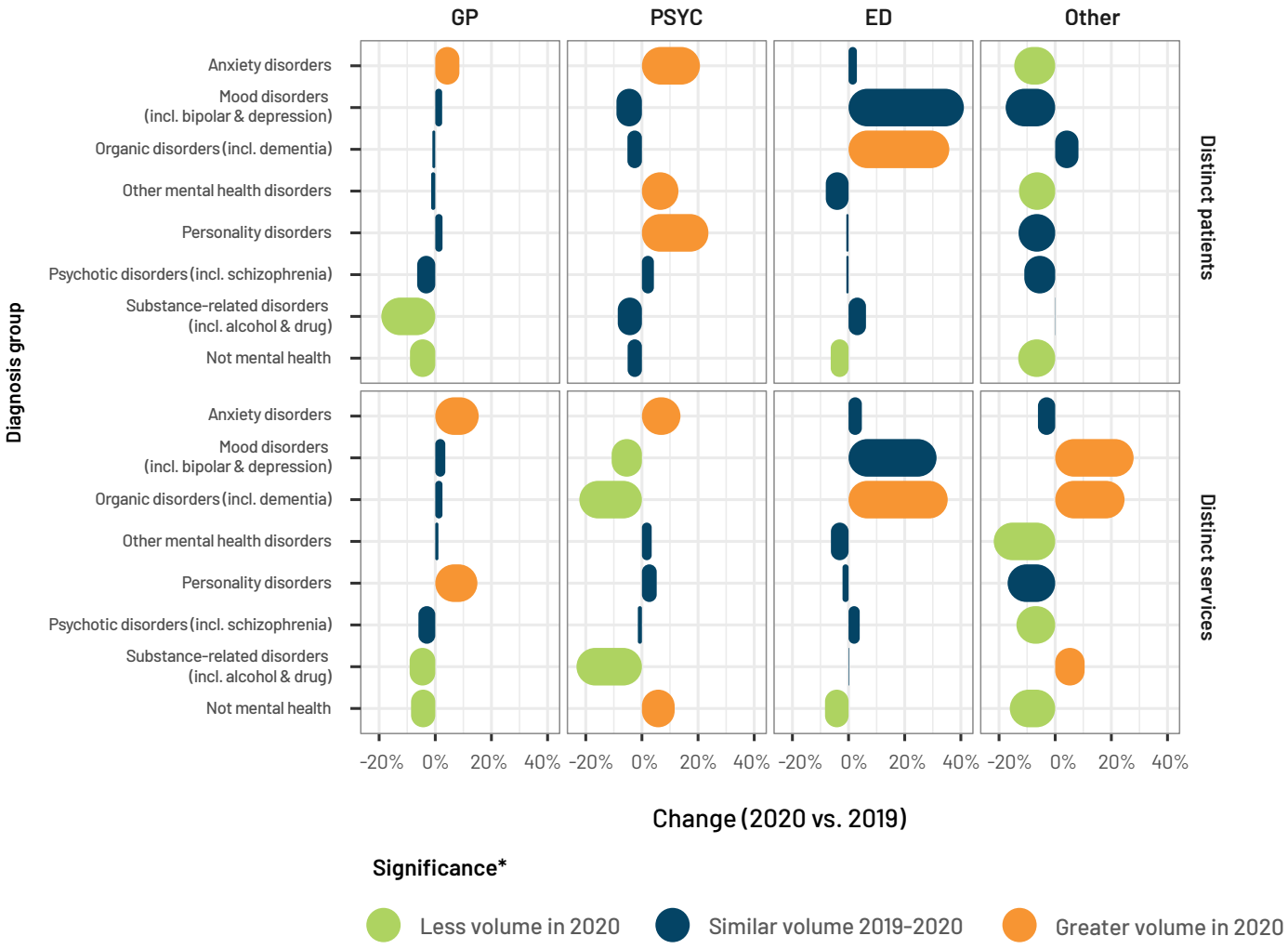
To facilitate our understanding of the ebb and flow of patient volumes and services billed, we examined these changes by breaking down billings into 'disorder types.' These billings are labelled by disorder type, but do not indicate whether a patient meets diagnostic criteria for a clinical level/diagnosable disorder (e.g., a patient may present with anxiety but they may not meet criteria for being diagnosed with an anxiety disorder), rather they indicate a corresponding billing code associated with each disorder type. There was a significant increase in the distinct services billed for anxiety disorders, organic disorders and personality disorders in 2020 versus 2019 (see Figure 18). For the other disorders shown, there was a significant decrease or a similar volume.

Figure 18. Change in distinct patient and distinct service volumes by diagnosis group from March 15, 2019 – December 31, 2020



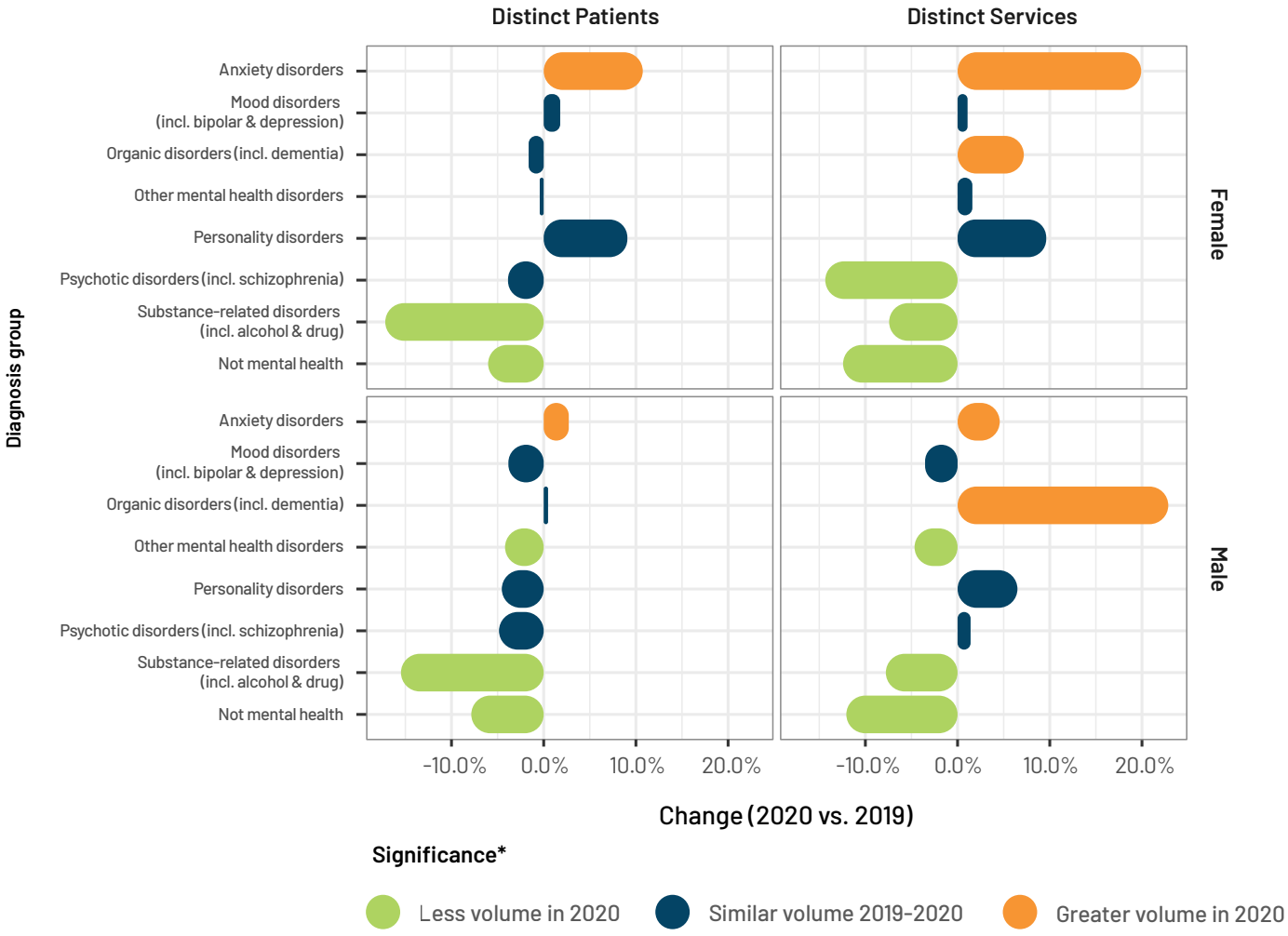
These patterns were similar across provider type with some unique findings of note. Those seeking care for anxiety were doing so through GPs and PSYC visits, but not necessarily through EDs more in 2020 compared to 2019 (see Figure 19). The relative increase in services for organic disorders was largest in EDs compared to other settings. However, the largest absolute change in organic disorder services in 2020 versus 2019 was in the "Other" specialty category. The number of distinct services billed for mood disorders and organic disorders was significantly higher for other provider types in 2020 versus 2019.

Figure 19. Change in distinct patient and distinct service volumes by diagnosis group and provider type from March 15, 2019 – December 31, 2020



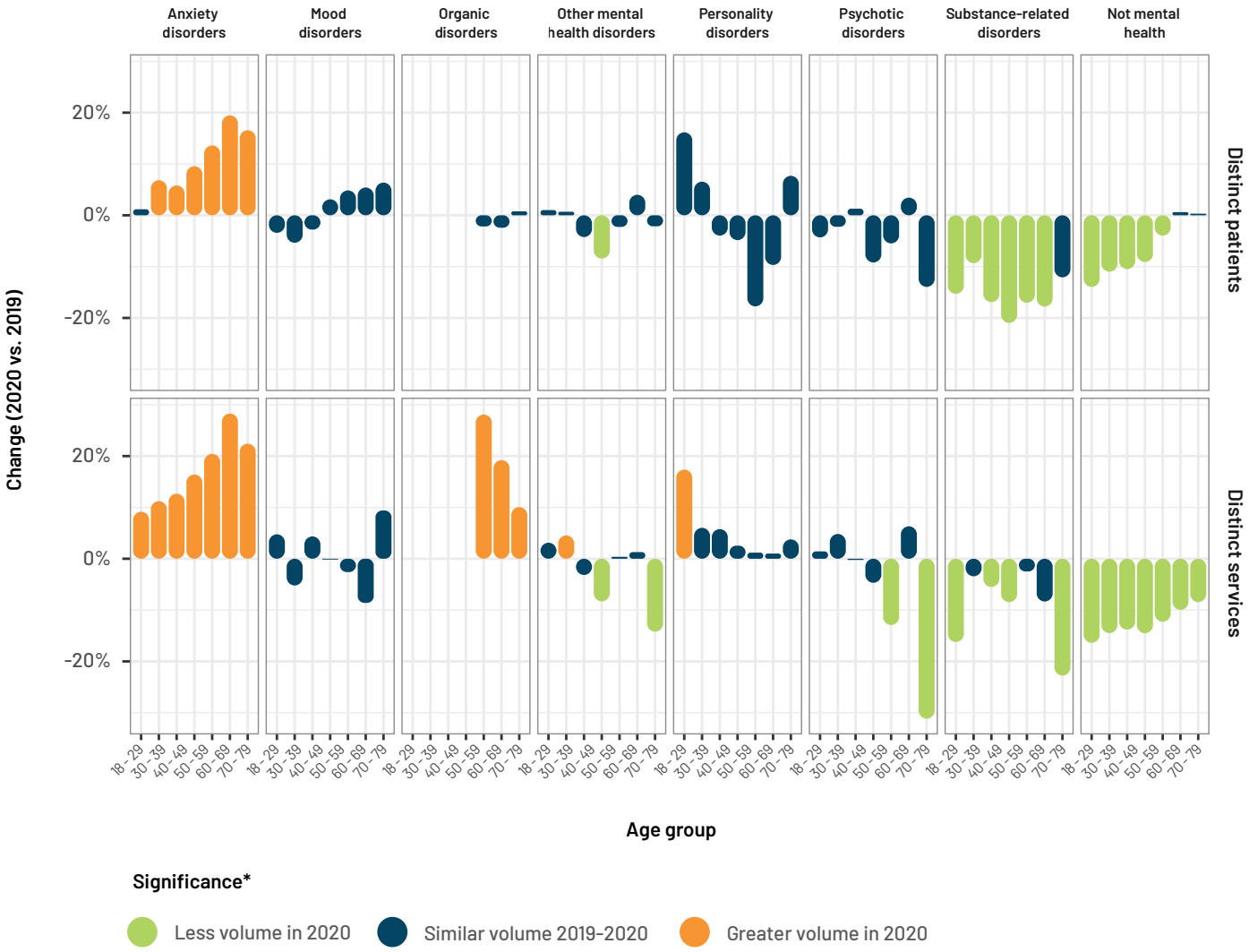
Patterns in billing volumes were also analyzed by available patient demographic characteristics. For anxiety disorders, the number of distinct patients and services was significantly higher for both males and females in 2020 versus 2019, while the volume of services for organic disorders was also significantly higher for males and females (see Figure 20).

Figure 20. Change in distinct patient and distinct service volumes by diagnosis group and sex from March 15, 2019 – December 31, 2020



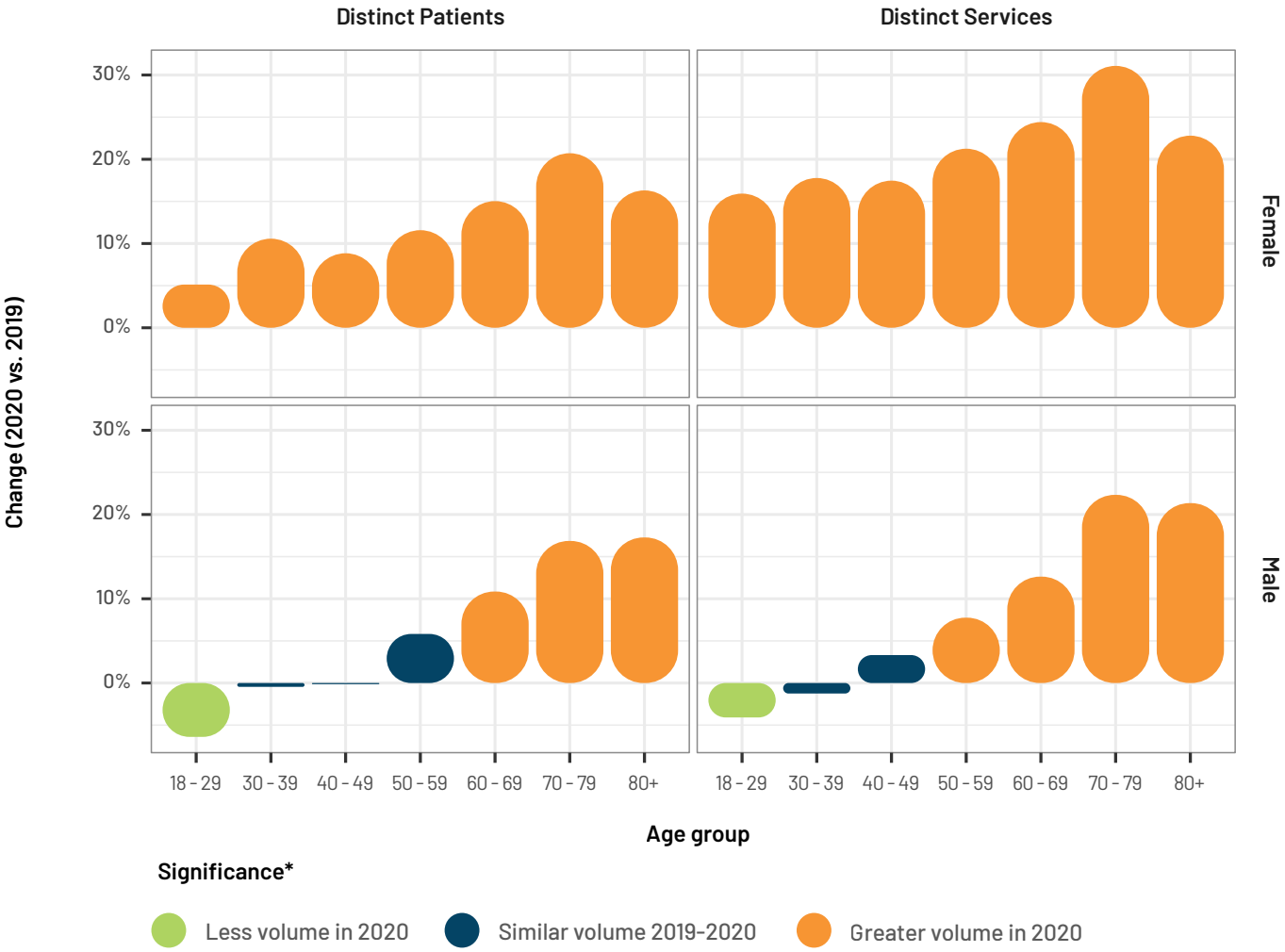
These patterns were similar when analyzed by age cohort (see Figure 21). Almost all age groups showed an increase in the volume of distinct patients for anxiety billings except for 18-29 year-olds, though the number of distinct services was significantly higher for all age groups in 2020. For organic disorders (limited to those age 60 or older given very low incidence of organic disorders in younger age groups), the number of distinct services was significantly higher for all those 60 or older.

Figure 21. Change in distinct patient and distinct service volumes by diagnosis group and age from March 15, 2019 – December 31, 2020



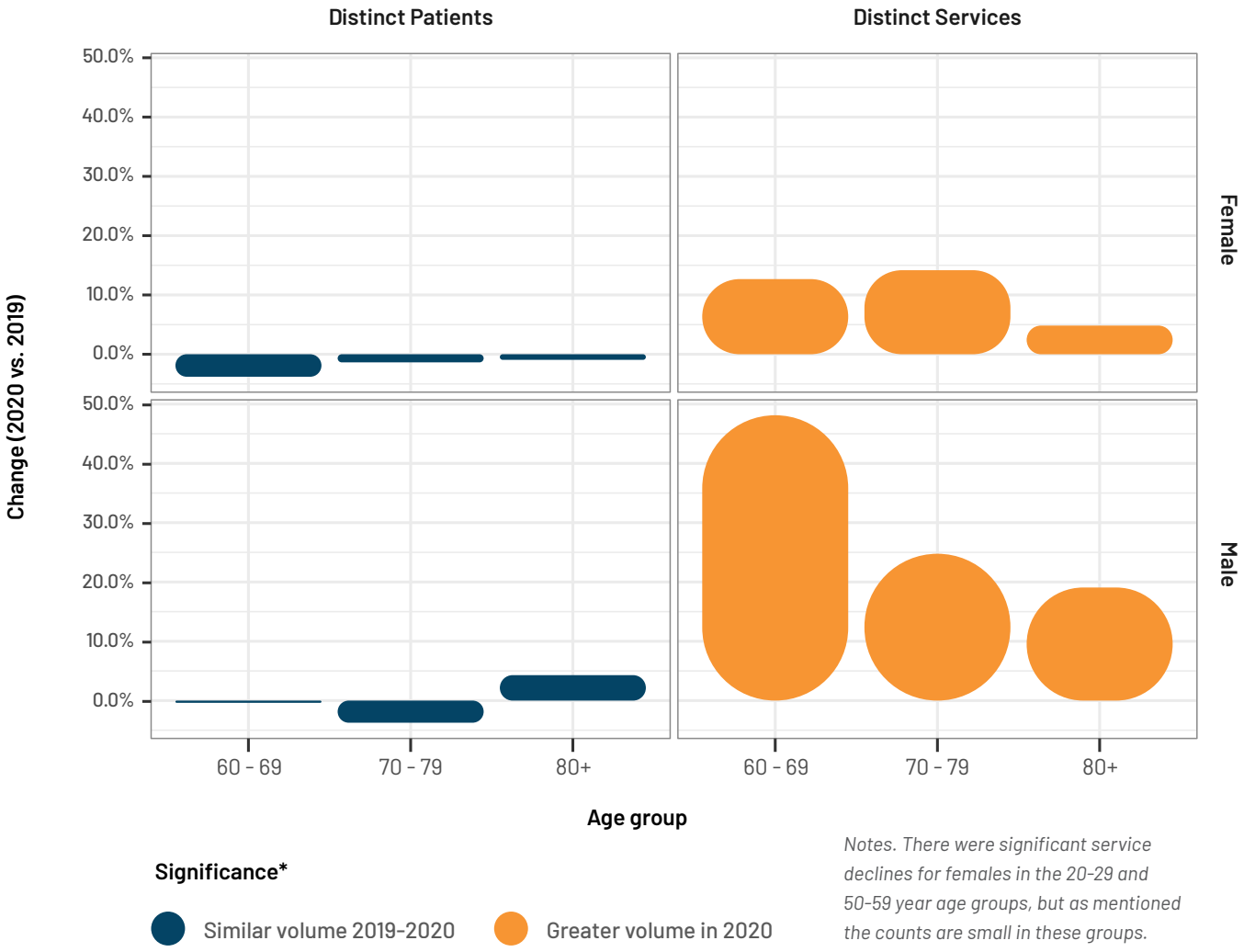
For anxiety disorders specifically, increases in the number of distinct patients and services was higher for females than for males (see Figure 22). For males, the increases were only significant for those age 60 or older for the number of distinct patients and those age 50 or older for the number of distinct services. These differences may represent differential impacts of the pandemic on anxiety for males in younger age groups or a difference in help-seeking behaviour.

Figure 22. Change in distinct patient and distinct service volumes for anxiety billing codes, by age and sex from March 15, 2019 – December 31, 2020



To examine increases in organic disorder billings, these were also broken down by age and sex (see Figure 23). Significant increases were only observed for the number of distinct services billed but were significant for both males and females and all age groups 60 or older. Thus, it appears that those who were seeking services for dementia or other related billings received more services in 2020. In combination with Figure 23, showing this increase in ED settings, it appears that this was driven by an increased frequency of care needs in 2020.

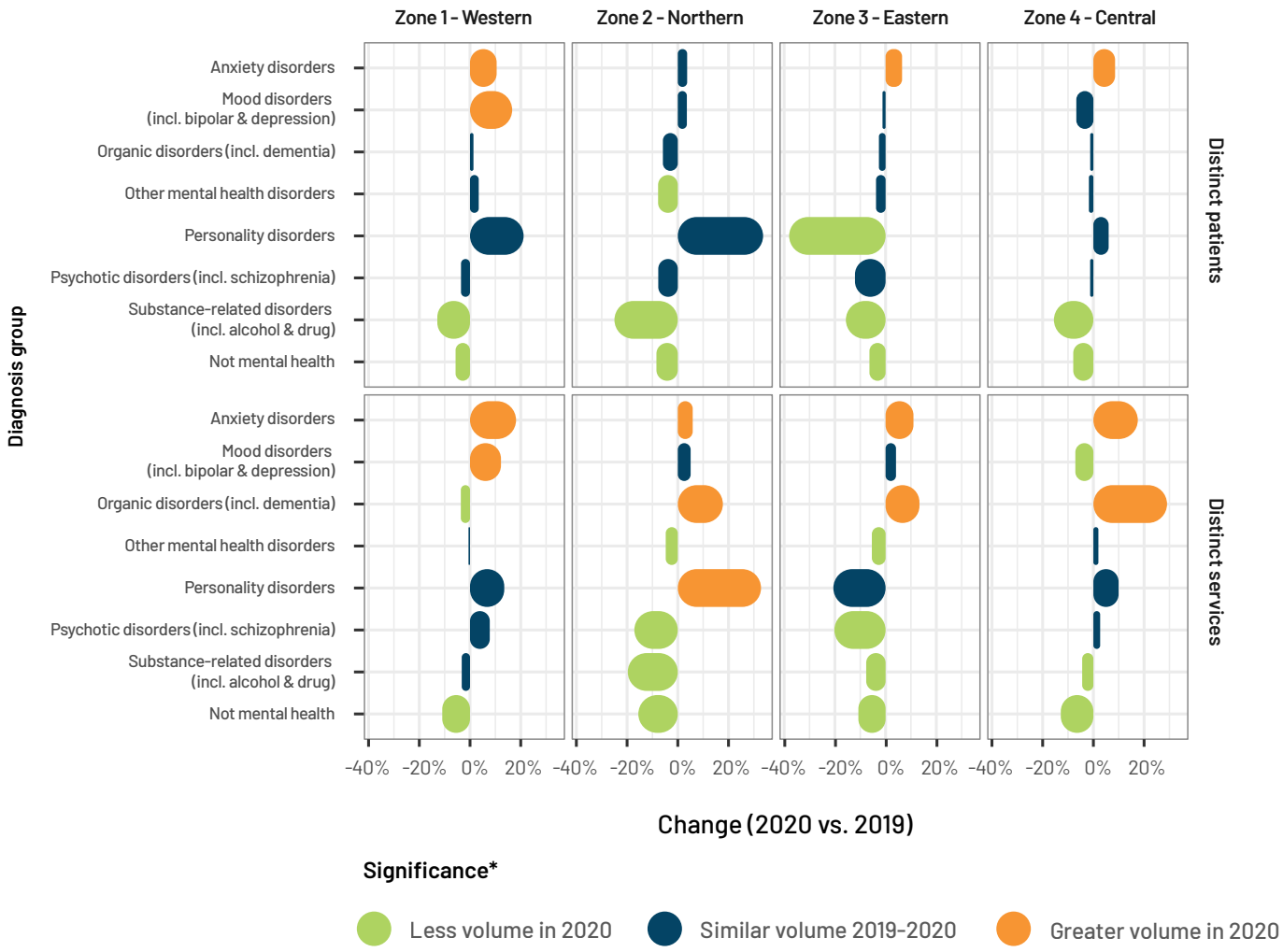
Figure 23. Change in distinct patient and distinct service volumes for organic disorders (including dementia) billing codes, by age and sex from March 15, 2019 – December 31, 2020



Notes. There were significant service declines for females in the 20-29 and 50-59 year age groups, but as mentioned the counts are small in these groups.

Given differences in COVID-19 epidemiology in different areas of the province, and differences in access to a family practice provider [44], mental health care billings were also analyzed by provincial zone. Although patterns in the number of distinct patients seen and services billed were similar across diagnosis group, there were notable differences (see Figure 24). For example, in the Northern Zone, there were no significant increases in the number of distinct patients for any disorder, although there were increases in the number of services billed for anxiety, organic and personality disorders.

Figure 24. Change in distinct patient and distinct service volumes by diagnosis group and zone from March 15, 2019 – December 31, 2020



OBJECTIVE 2B: NOVA SCOTIA HEALTH METRICS

Data Sources

Nova Scotia Health administrative data was accessed by the Mental Health and Addictions (MHA) Program team at Nova Scotia Health. Data on provincial crisis line interventions, intake calls, and virtual care use was accessed (Table 12). The data available for each service varied with respect to earliest and latest data available, and thus the reporting periods for each data source vary. For intake calls, On Demand Call Centre (ODCC) reporting began in July 2019 and intake reporting began in April 2019 with a phased roll-out across the provincial health zones between April 1, 2019 and May 15, 2019. Thus, the comprehensiveness of this data may vary slightly in those periods but represents the best data available on those services. A description of each service is provided at the beginning of each section below.

Table 12: Nova Scotia Health data elements and sources

DATA ELEMENT	DATA SOURCE
Provincial Crisis Line interventions	Provincial Crisis Line database
Intake appointments attended	Central Zone: Pathways Healthcare Scheduling Eastern, Northern, Western Zone: Meditech Community Wide Scheduling
Intake line – inbound calls	Bell On Demand Call Centre (ODCC)
Virtual care access	Central Zone: Pathways Healthcare Scheduling Eastern, Northern, Western Zone: Meditech Community Wide Scheduling
Electronic Mental Health (E-MH)	Enrollment data from the individual e-MH options and pageviews from MHA program website tracking

Analysis

The volume of services accessed was examined over time, from as early as January 1, 2017 up to June 30, 2021 based on available data for each service. Trends in annual service use (from March 1, 2019 to December 31, 2019 and March 1, 2020 to December 31, 2020) were compared to account for seasonal variability in mental health use before and after the COVID-19 pandemic began. The percentage change in the volume of services accessed was compared using z-tests for proportions.

Results

Total Outpatient Visits

The total number of outpatient visits to the MHA program across Nova Scotia Health was evaluated from January 2019 to June 2021 (Figure 25). Overall, there was a 6.50% (95% CI 6.42– 6.57%) increase in visits between March – December 2019 and 2020 (p<.001). There is not enough data for 2021 to facilitate an additional comparison across this period, given the temporal fluctuation that exists in visits over the course of a calendar year. However, the percentage change in visits in 2019 vs. 2020, and 2020 vs. 2021 to date was evaluated to show the change in visits over the course of the pandemic compared to before the pandemic (Figure 26). Before the pandemic, there was an increase in visits in 2020 vs. 2019, however, as the pandemic began (March 2020) there was a decrease in the number of visits compared to the previous year. To date for 2021, there appears to be an increase in the number of visits compared to 2020 and 2019.

Figure 25. Total number of outpatient visits to NS Health MHA programs from January 2019 – June 2021

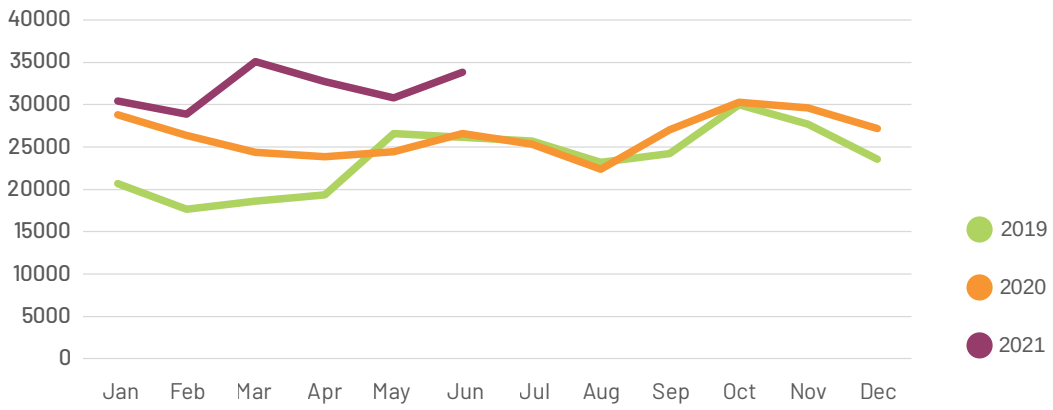
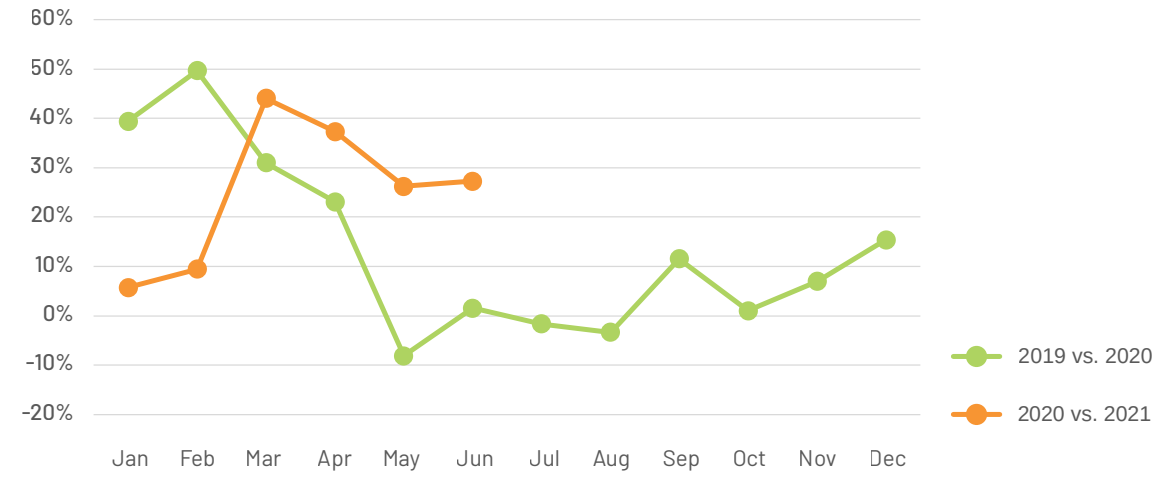


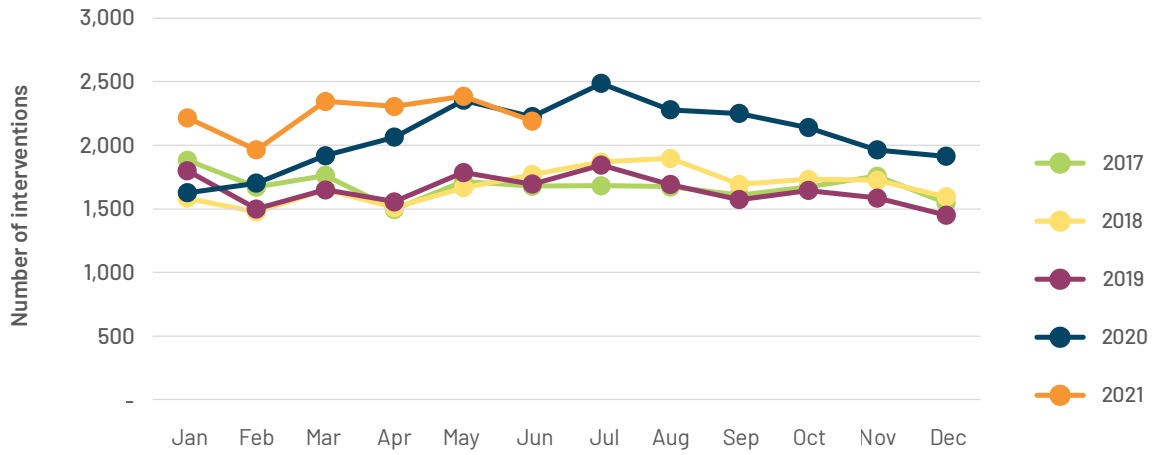
Figure 26. Percentage change in total outpatient visits to NS Health MHA programs from January 2019 – June 2021



Provincial Crisis Line Interventions

The Nova Scotia Health Provincial Crisis Line is available 24/7 for anyone experiencing a mental health crisis or for someone who is concerned about anyone experiencing a crisis [45]. The figures below represent the volume of interventions carried out by the crisis line over the telephone for the entire province, and the mobile crisis team which is only available in the Halifax Regional Municipality (HRM) of the Central Zone (Figure 27). Comparing the change in volume before (March 2019) and during the first year (December of 2020) of the pandemic, there was a significant 31.03% increase (95% CI 30.82 – 31.24%) in provincial crisis line interventions (p<.001).

Figure 27. Total number of NS Health provincial crisis line interventions from January 2017 – June 2021



MHA Intake Services

The Intake Service of the MHA Program provides triage, screening, and navigation for mental health and addiction programs offered through Nova Scotia Health and IWK Health. Individuals can self-refer by calling the MHA Intake toll-free telephone line, or a referral can be made on the individuals' behalf by their doctor, other health care professionals, a community agency or families. The On-Demand Call Centre is an application used by the MHA Intake Service which facilitates and routes all incoming calls from individuals calling the toll-free intake line to the most appropriate MHA Intake team. The call is then routed through the On-Demand Call Centre based on a caller's geographic area, and if MHA intake staff are available, the caller will be able to speak with a member of the intake team. During the process of intake, MHA Intake clinicians will ask questions that help determine what services and supports best meet the needs of the individual seeking help. This service can link the individual seeking help with community MHA clinics, withdrawal management services, or opioid replacement and treatment programs as well as refer them to other appropriate resources in their community. If no staff are available (e.g., agents are busy with other callers) or if the caller calls outside of the business hours of the MHA Intake, the call will be routed to voicemail; voicemails will be followed up upon during business hours. Additionally, not all calls received or outgoing will be for the purposes of intake, clients may cancel their intake, or clients may not return calls made by the team. Thus, the volume of intakes attended, as described below, represents all intakes that were completed (excluding those that were cancelled or those pre-arranged intakes that clients did not answer).

The volume of inbound calls (Figure 28) received by the MHA Intake Teams (includes all answered, unanswered, and abandoned calls), and the volume of attended appointments (Figure 29) was also examined from 2019 to 2021, with some variation in data available. Given this variation, changes in service use were examined for shorter periods than previous analysis to allow for evaluation of change over the pandemic period.

There was a significant 3.5% decrease (95% CI -3.65 – -3.46%) in the volume of inbound calls to the MHA intake line from July to December 2019 vs. 2020 (p<.001) (Figure 28). However, from January to June 2020 vs. 2021, there was a 27.58% increase (95% CI 27.10 – 28.06%) (p<.001). There was also a significant 1.78% (95% CI 1.16 – 2.41%) increase in the number of attended intake appointments from April to December 2019 vs. 2020 (p<.001) (Figure 29). Trends in the volume of inbound calls and attended intake appointments are also shown in relation to increasing case numbers of COVID-19 in the province for each wave of the pandemic to date (see Supplementary Figure S.30). There was a notable decrease for each wave, with the largest decrease evident for the first wave in March 2020. There does appear to be an increase in services between each wave, but this is in comparison to the decrease prior to each wave and does not account for variations over time.

Figure 28. Total number of inbound calls to NS Health MHA intake line from July 2019 – June 2021

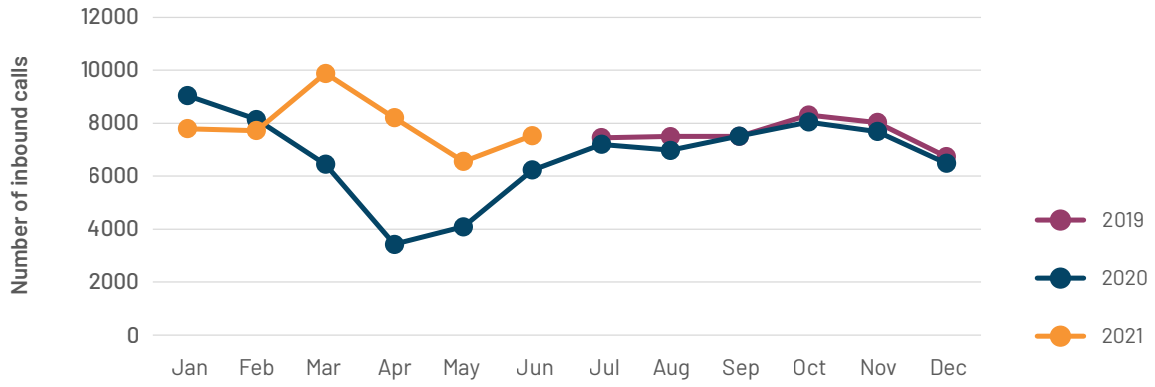
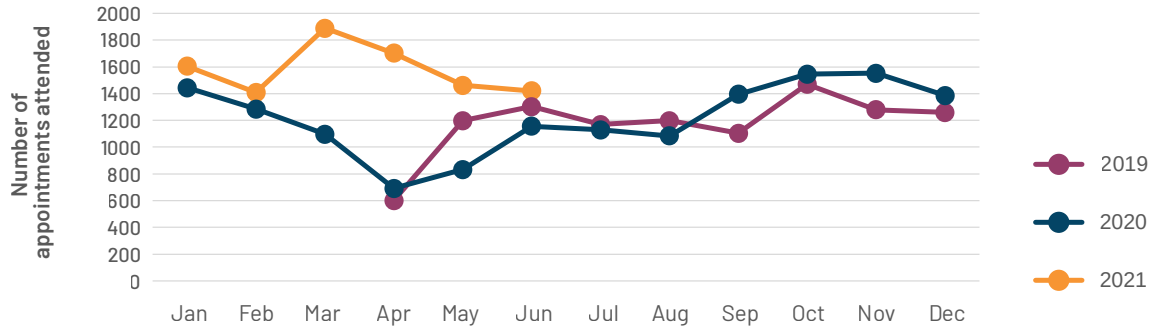


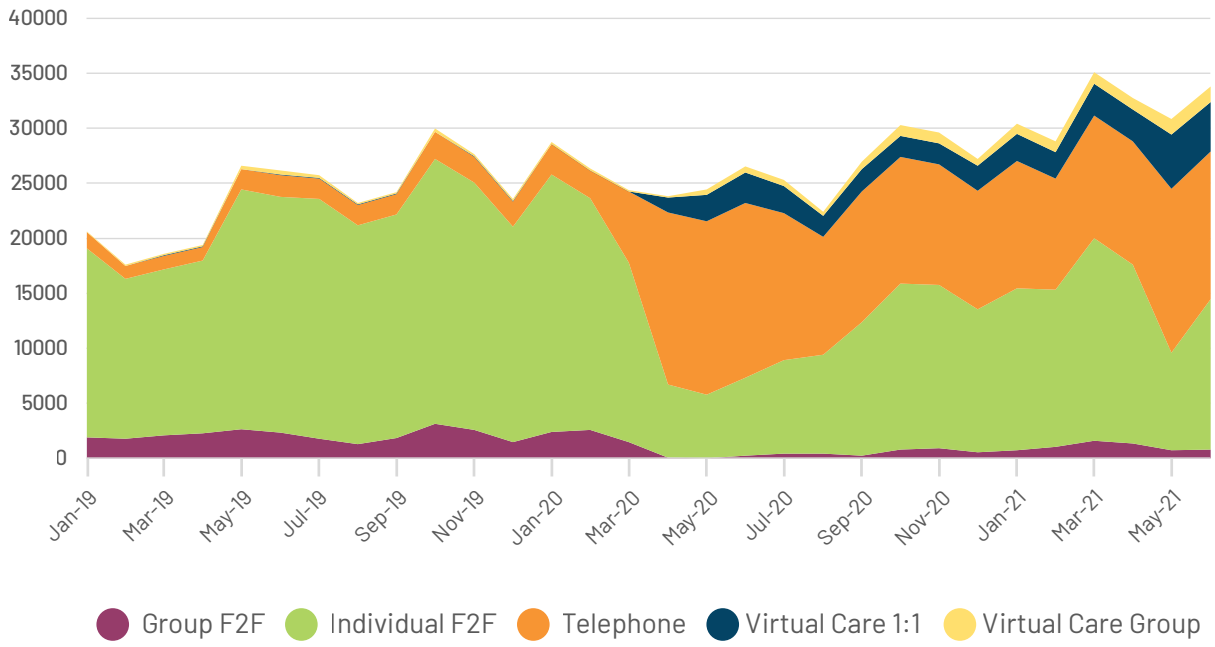
Figure 29. Total number of attended NS Health MHA intake appointments from April 2019 – June 2021



Virtual Care Use

In response to the COVID-19 pandemic, MHA services expedited the roll out of the Zoom platform and also encouraged clinics to increase use of telehealth and Medeo services. Patients are able to choose if they want to meet with a clinician in-person or through a virtual care platform – either via an online service (e.g., Zoom) or through telephone. This provided flexibility to choose a method that is comfortable and may have also reduced barriers to attendance, such as transportation and inclement weather. In response to the pandemic, there was a significant increase in virtual care use both for individual and group therapy, and an even larger increase in the volume of calls via telephone (Figure 30).

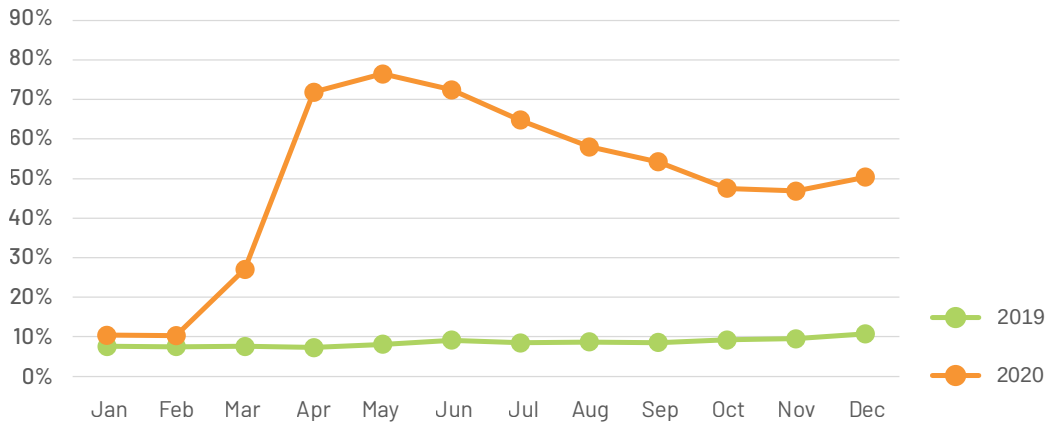
Figure 30. Total number of attended NS Health MHA outpatient visits, by method of delivery from January 2020 – June 2021



Notes. F2F = Face to Face; Individual = 1:1 with patient and provider; Group = two or more patients with at least one provider; Virtual care = software to facilitate online communication, does not include telephone.

Overall, there was a 585.59% (95%CI 583.44 – 587.75%) increase in the use of virtual care (including telephone and virtual visits) for mental health services from March to December of 2019 vs. 2020 (p<.001) (see Figure 31).

Figure 31. Percentage of NS Health MHA Program visits delivered by phone or virtually from January 2019 – December 2020



E-mental Health Tools

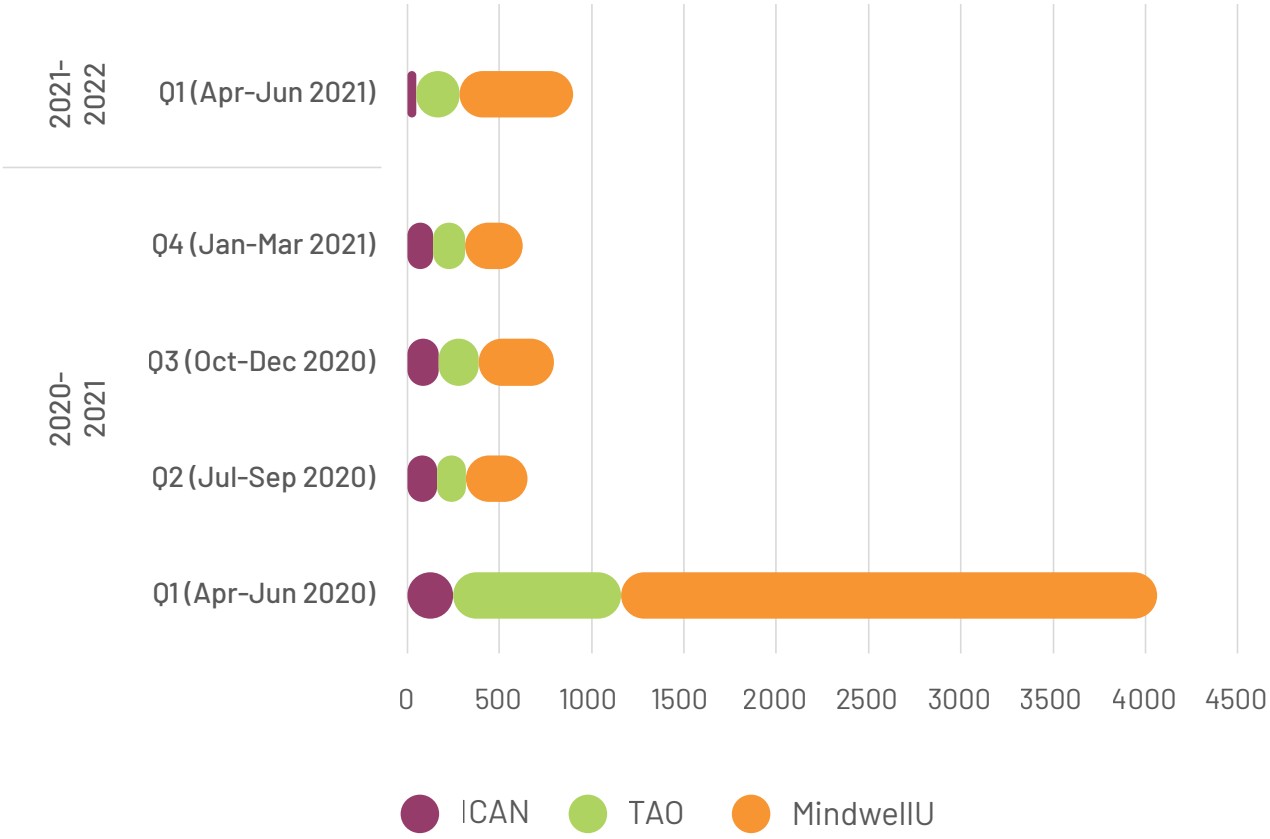
In addition to the use of virtual care, online programs were also made available in response to the pandemic in order to meet the MHA needs of the NS population (see Box 1).

BOX 1: ONLINE MHA PROGRAMS OFFERED

- ***ICAN (Conquer Anxiety and Nervousness) – Anxiety Program: People looking for help for anxiety and depression can benefit from this program. In this program, participants will learn and understand anxiety.***
- ***Mindwell U: A free online challenge that takes just five minutes a day and can be accessed anywhere and on any device.***
- ***Therapy Assistance Online (TAO): A free and private online resource available to Nova Scotians. It includes interactive activities and videos for people having challenges with their mental health.***

Given the recent launch of these programs, the same data is not available for 2020 and 2021 to date, thus only descriptive comparison over time is possible. The initial uptake of these programs was higher in the first quarter of the launch, but subsequently has been accessed at a stable level since then, with a slight uptick in this last fiscal quarter (April to June 2021) during wave 3 of the pandemic in Nova Scotia (see Figure 32).

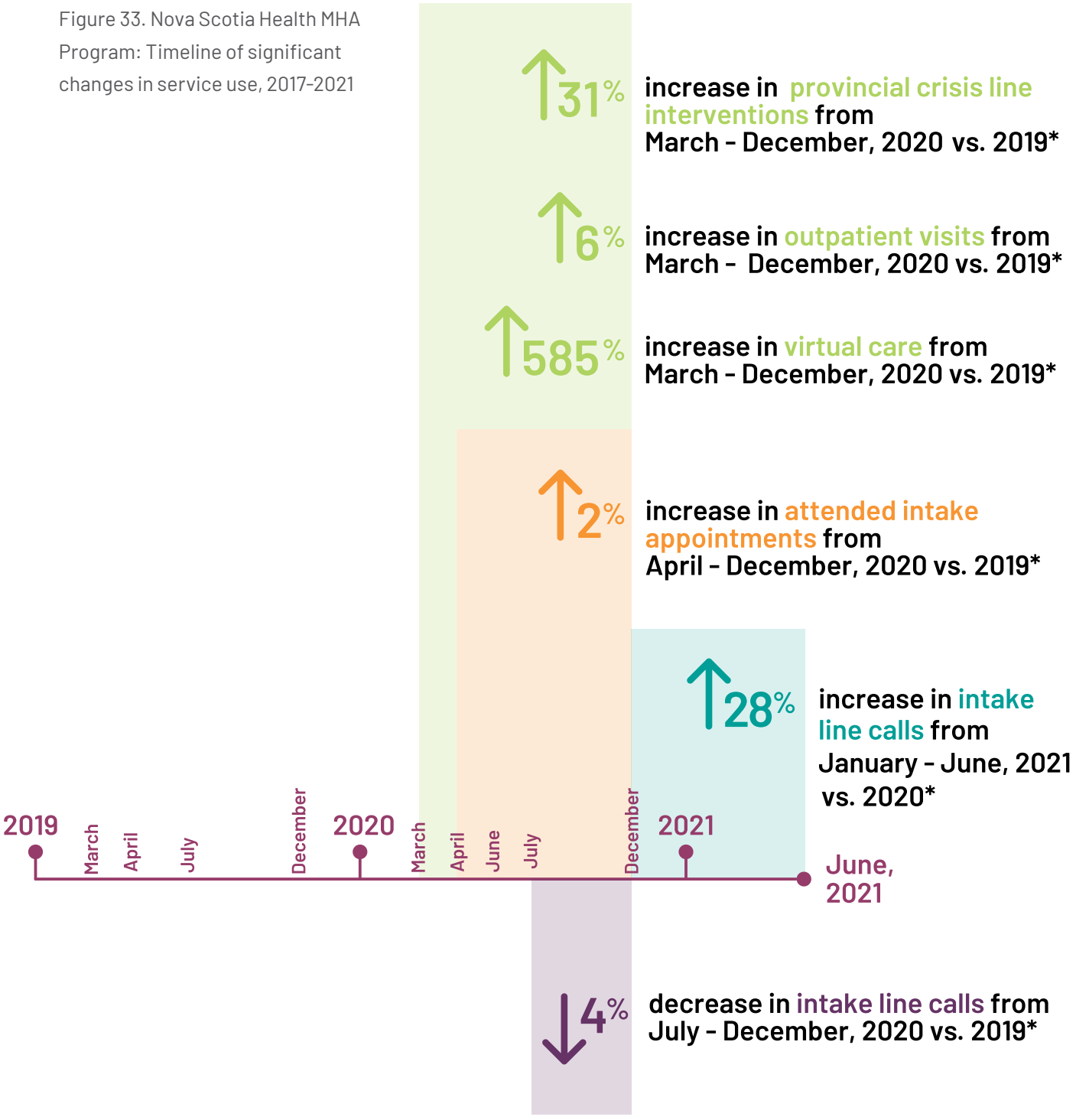
Figure 32. Total number of enrollments for NS Health E-mental health programs iCAN, TAO, and Mindwell U from April 2020 – June 2021



A new MHA website (MHAhelpNS.ca) was also launched to act as a one-stop shop for all MHA information, and to facilitate connections between NSH and other resources (e.g., SSNS Navigation guide) and community partners. This also serves as a hub for access to lower intensity of care E-Mental Health tools 24/7. Data tracking the number of page views shows an increase from an average of 31,789 page views per month from June to December of 2020 to 45,856 page views per month from January to June of 2021.

A summary of these changes in mental health service use are presented below (see Figure 33).

Figure 33. Nova Scotia Health MHA Program: Timeline of significant changes in service use, 2017-2021



*Significant at p <0.05

KEY FINDINGS

Self-reported Impacts

- Fear of a family member catching COVID-19, fear of personally catching COVID-19, and social isolation were reported as the most negative social impacts of the pandemic.
- The economic downturn, concern over a family member losing their job, and not being able to pay bills were the most negative reported economic impacts.
- Negative recreational impacts reported included reading the daily news, and exercise which had more people reporting negative than positive impacts – but was still primarily neutral.
- Fewer people in Nova Scotia reported negative social and economic mental health impacts compared to national data.
- The mental health impacts of the pandemic varied across population subgroups, with younger cohorts and those with a previous mental health diagnosis often reporting more negative impacts on certain areas of concern.
- There were also some possible protective factors reported including reading and communicating with one's household and family. However, these positive impacts varied across population subgroups and may not be protective for all.
- There has been a significant increase in anxiety and depression since the pandemic began.
- For those who reported using substances (alcohol and cannabis), the majority reported no change in use since the pandemic began. However, a significant percentage (approximately 30%) reported an increase.
- Nova Scotians were very confident in their ability to recover from the pandemic.

Health System Service Use

- Overall, more distinct patients and services were billed for mental health reasons in 2020 than in 2019.
- The increase in mental health billings appears to be driven mainly by increases in service use for anxiety and organic disorders.
- Increase in anxiety disorder billings were larger for females of all age groups and for males ages 50+.
- For organic disorder billings, there were significant increases for the number of distinct services billed, but not the number of distinct patients, for both males and females ages 60+.
- All other disorders had less volume, or similar volumes between 2019 and 2020 dates studied.
- Data looking at service use within Nova Scotia Health also found increases in services accessed in 2020 compared to 2019.

Limitations

The survey data from this report was collected in August of 2020, which can now be considered in the early stages of the pandemic. Follow-up survey data is now available, which will allow our research team to determine what changes in mental health impacts have occurred since then, in future research. Thus, the results of the current report are limited to this period. Additionally, although the survey sample was balanced across sociodemographic factors (i.e., sex, age, educational level), survey data is still less likely to include individuals from marginalized groups and may not be representative of the larger population.

The administrative and health system billing data reported in this study provide a snapshot

of mental health service use but are limited to those who were able to access care, and do not necessarily reflect the demand for care. Thus, it is not possible to determine whether mental health services needs were met over this period. This report captures services accessed rather than demand for services. Additionally, private care (e.g., psychologists, care accessed through workers compensation) and the work of community organizations (e.g., Canadian Mental Health Association) who provide support and care to individuals who need mental health service support was not captured in the current study. However, these groups continued to provide care over the course of the pandemic and pivoted towards providing virtual or safe in-person support as needed.

Conclusions

The objectives of this work were to better understand what the self-reported impacts of the COVID-19 pandemic have been on the mental health of Nova Scotians, and what the mental health service impacts have been on the health care system. The increase in anxiety and organic disorder billings as well as self-reported anxiety and depression signal a response to acute stress within the population. Health system use for anxiety related reasons may have been higher for females given differences in help-seeking behavior or may have represented differences in response and coping to the stressors of the pandemic. Increases in stress and anxiety can lead to temporary increases in substance use and increased risk of related substance use disorders [47,48]. Given the higher levels of increased alcohol use in Nova Scotians during the pandemic compared to NB and the rest of Canada, this trend points to an area of concern to monitor as the pandemic continues.

The data allowed us to examine temporal trends and relative increases in service use across two periods of time in 2019 (before the pandemic) and 2020 (since the pandemic). The fluctuation in billings over the calendar months overall was similar to the temporal pattern shown in 2019. However, there were differences in patterns of use across different types of service providers. Although increases in service use were reported in several areas, some of these trends may represent an expected natural increase in service use on an annual basis. There was also significant promotional work (e.g., promotion of intake services on social media, billboards, magnets etc.) in the spring and fall of 2020 that may have contributed to the increased use of services. There were periods of decreased service use corresponding to waves of the pandemic, which may signal less accessibility of care – or a lower demand for services during those periods of time. The use of virtual care greatly increased over the course of the pandemic, showing how the health system was able to pivot care to keep patients and staff safe. Although there were increases in virtual care use, there were still increases in outpatient visits in 2020, showing demand for in-person services and flexibility in meeting patients' needs. The accessibility of providers may have also differed across provider type, based on physician billings data accessed. Public health messaging around reducing stigma around asking for help may have also impacted help-seeking for some groups, contributing to increased service use.

Further work to examine the acceptability of the care provided, and to determine whether the health system and community support organizations are meeting the mental health needs of Nova Scotians would further support efforts towards recovery and identification of resources needed to support population mental health.

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SUPPLEMENTARY FIGURES

Social Factors

Figure S.1: Social isolation

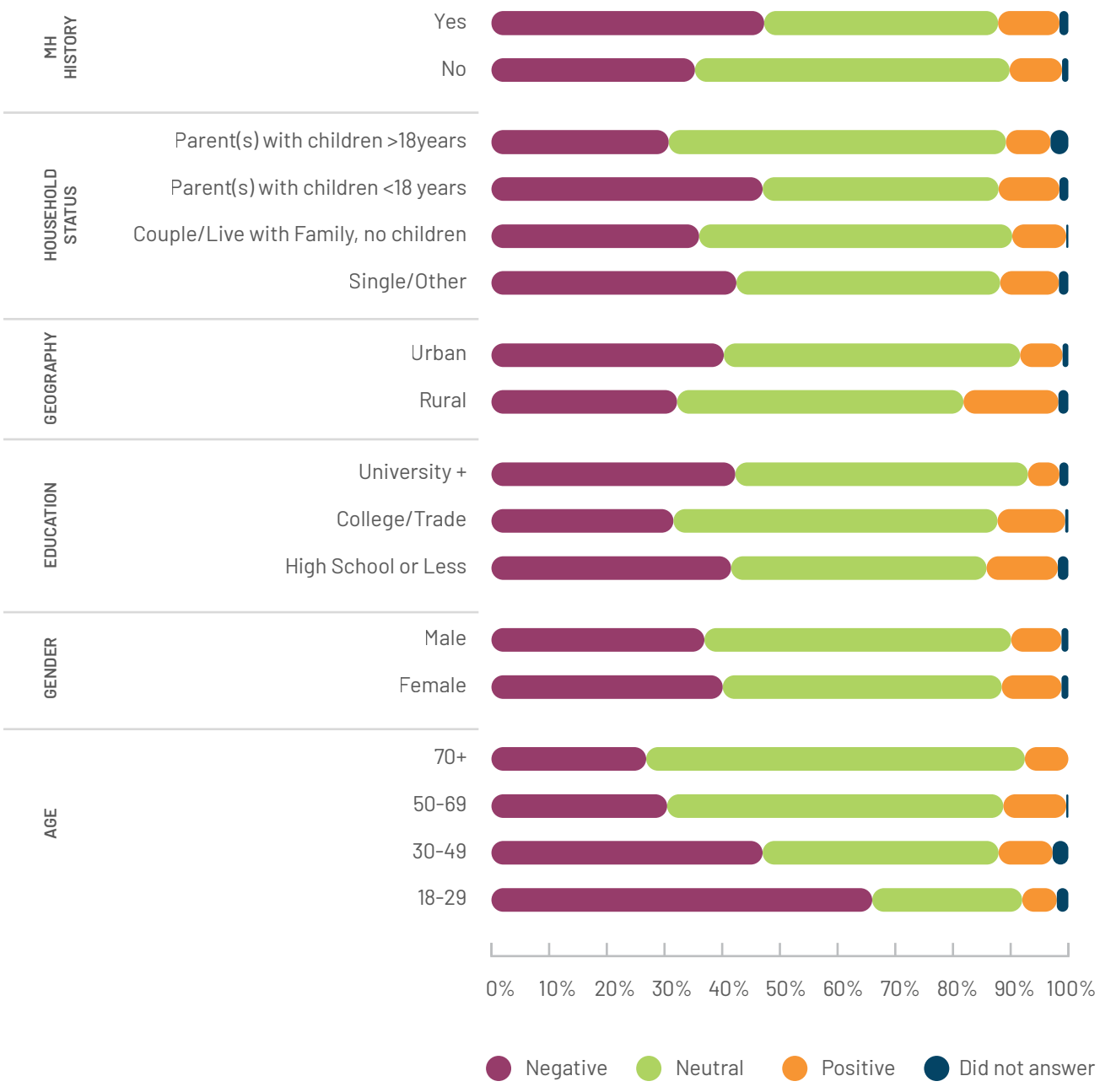


Figure S.2: Getting necessities

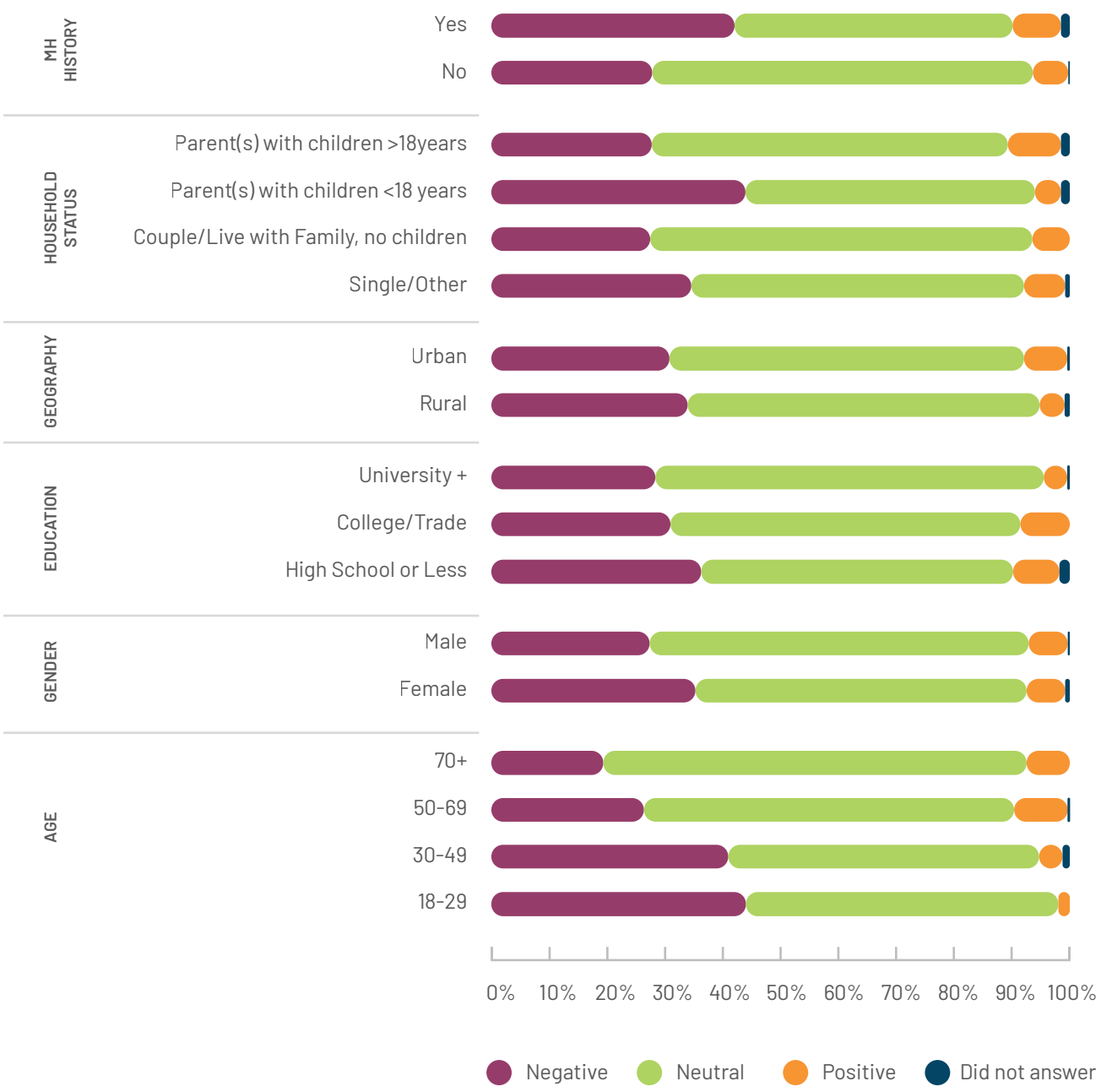


Figure S.3: Communicating with family/friends outside of household

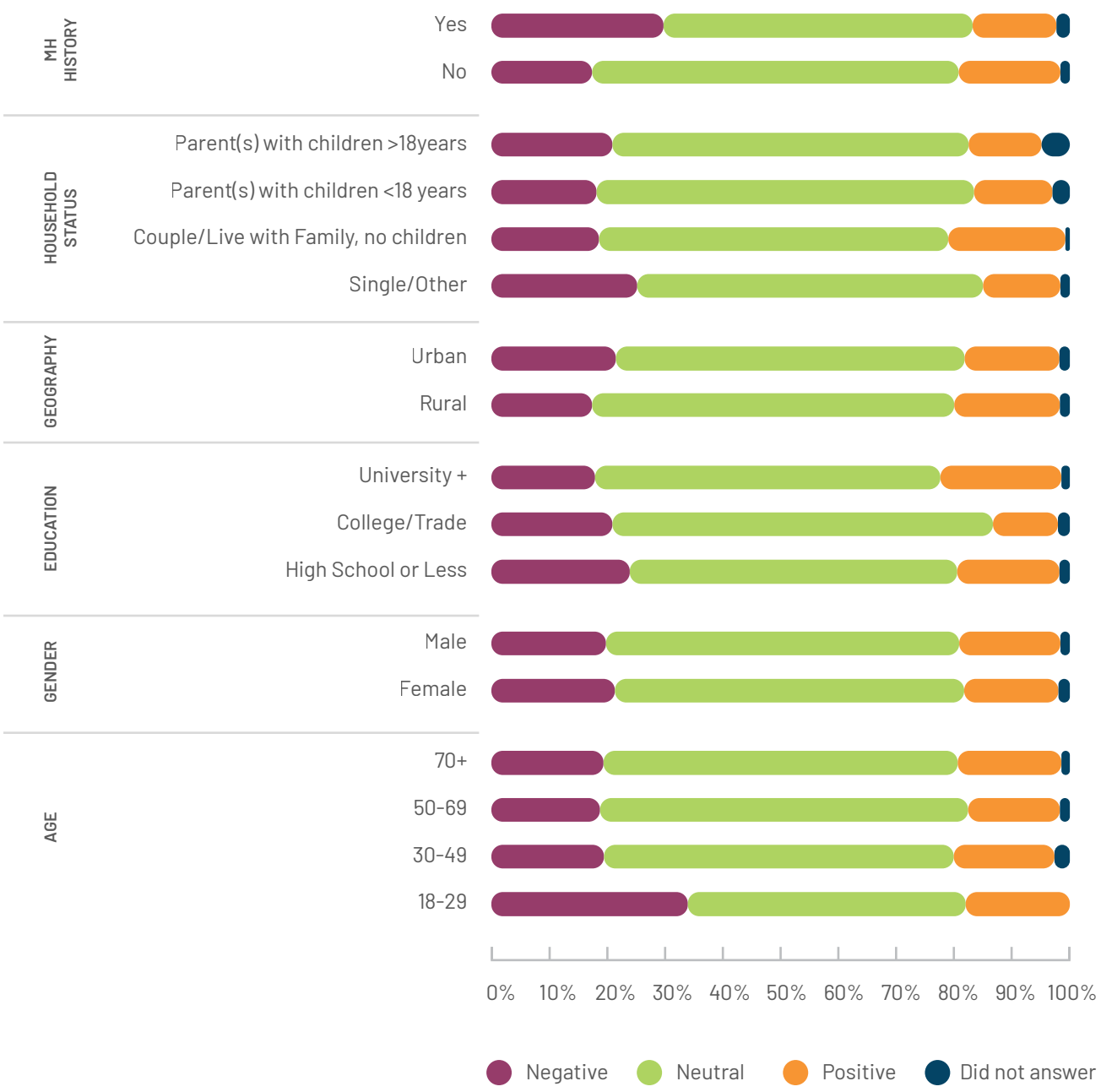


Figure S.4: Supporting child's needs (N=83)

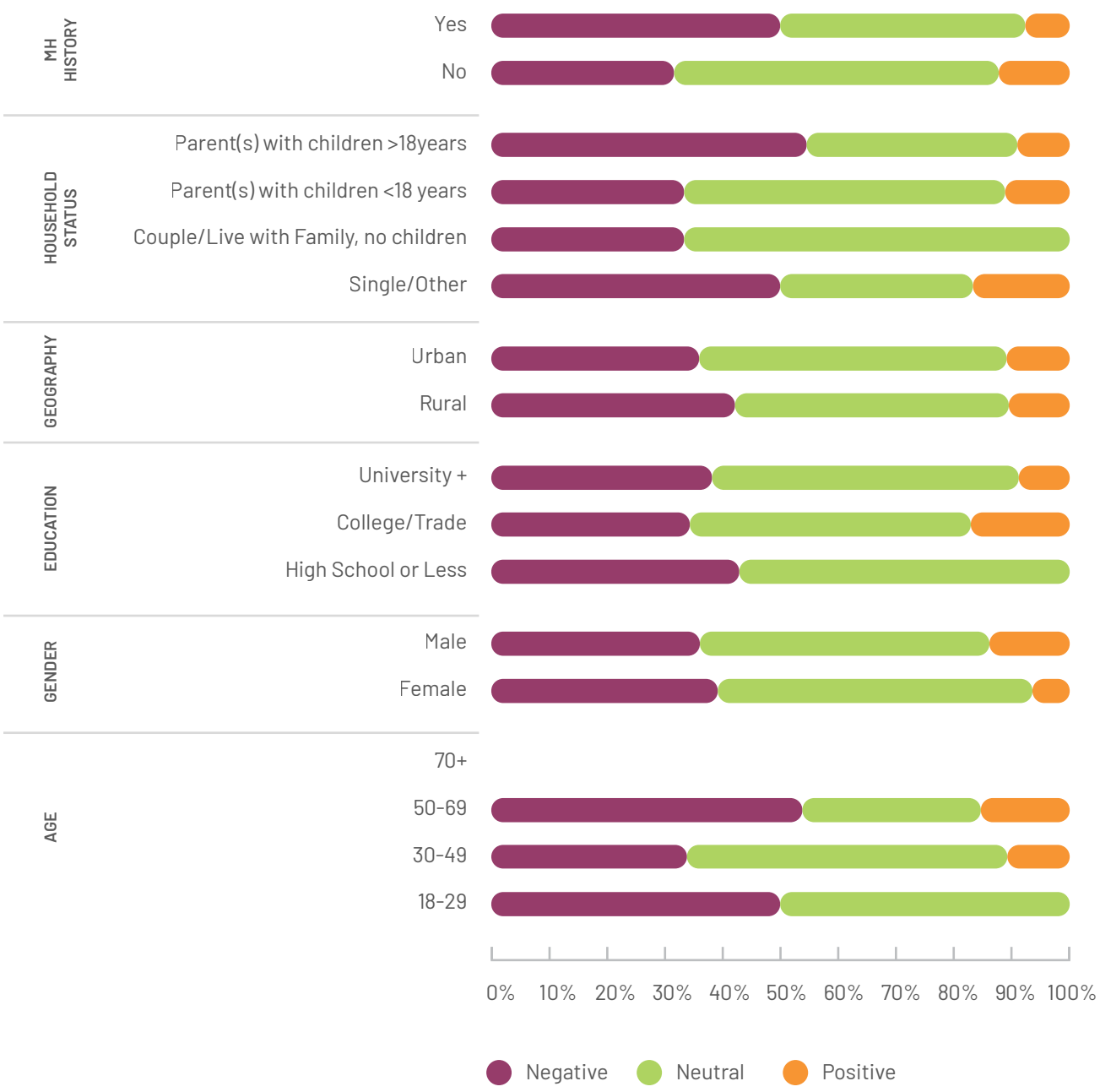


Figure S.5: Interacting with household

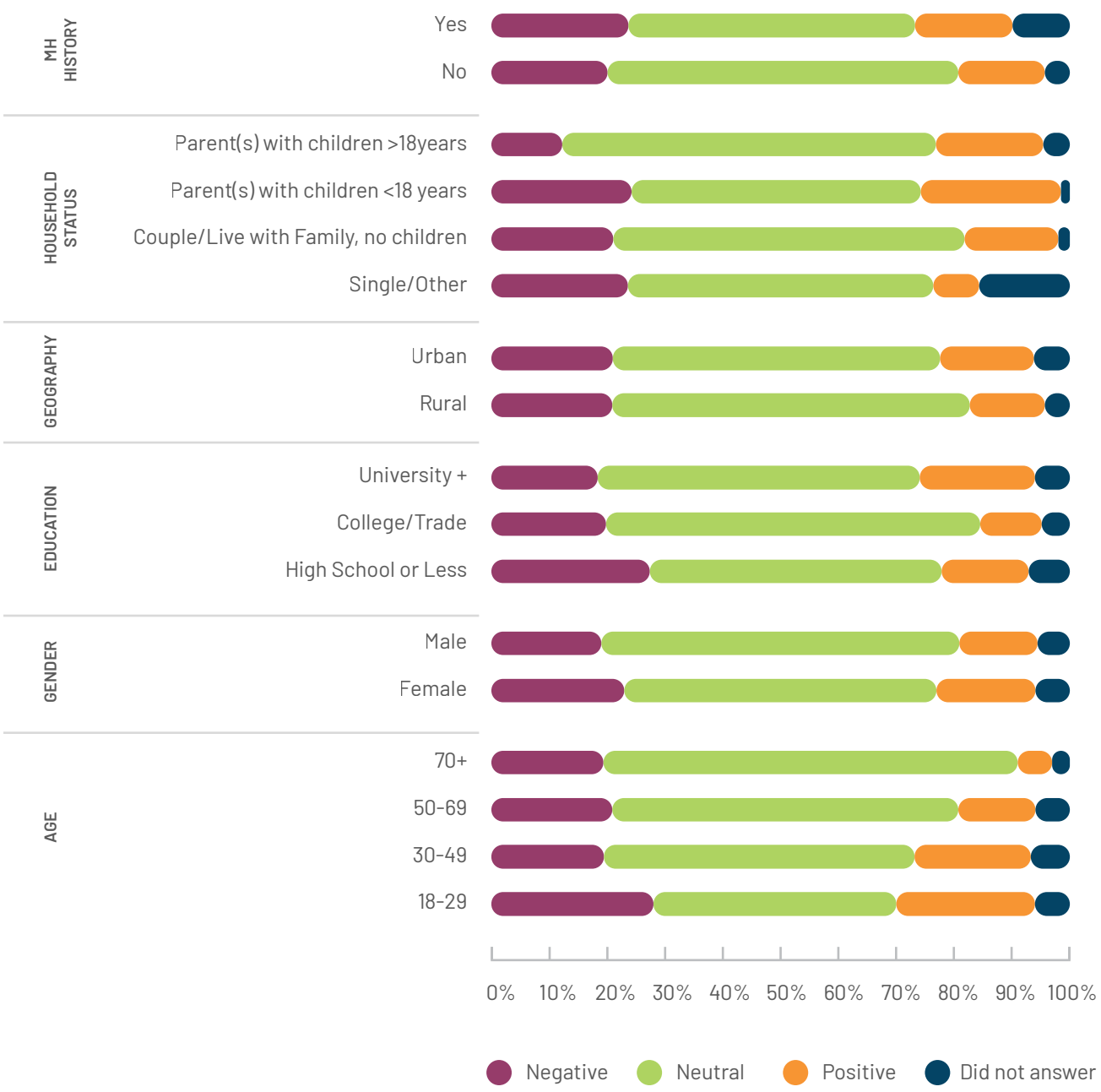


Figure S.6: Family catching COVID-19

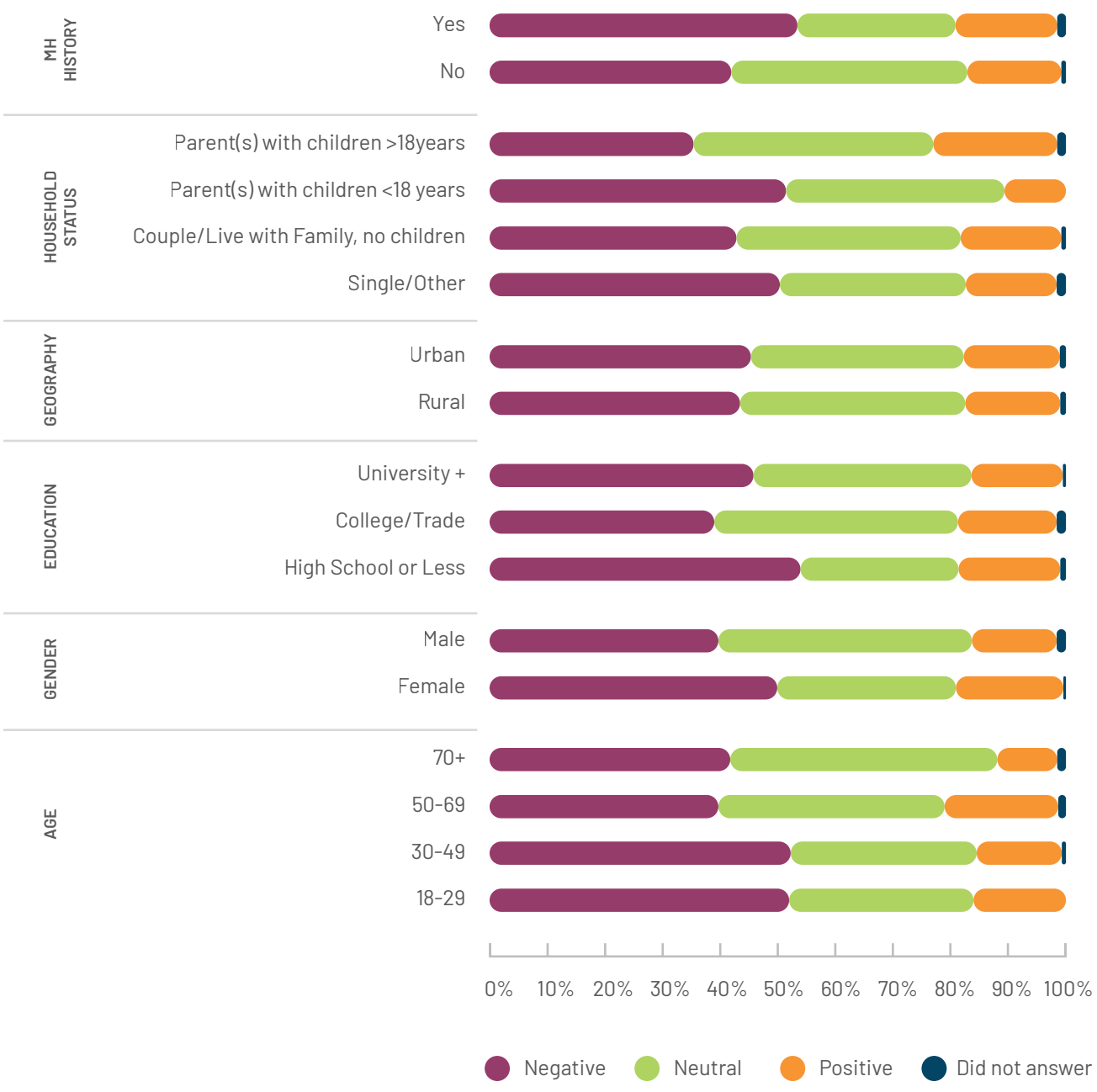
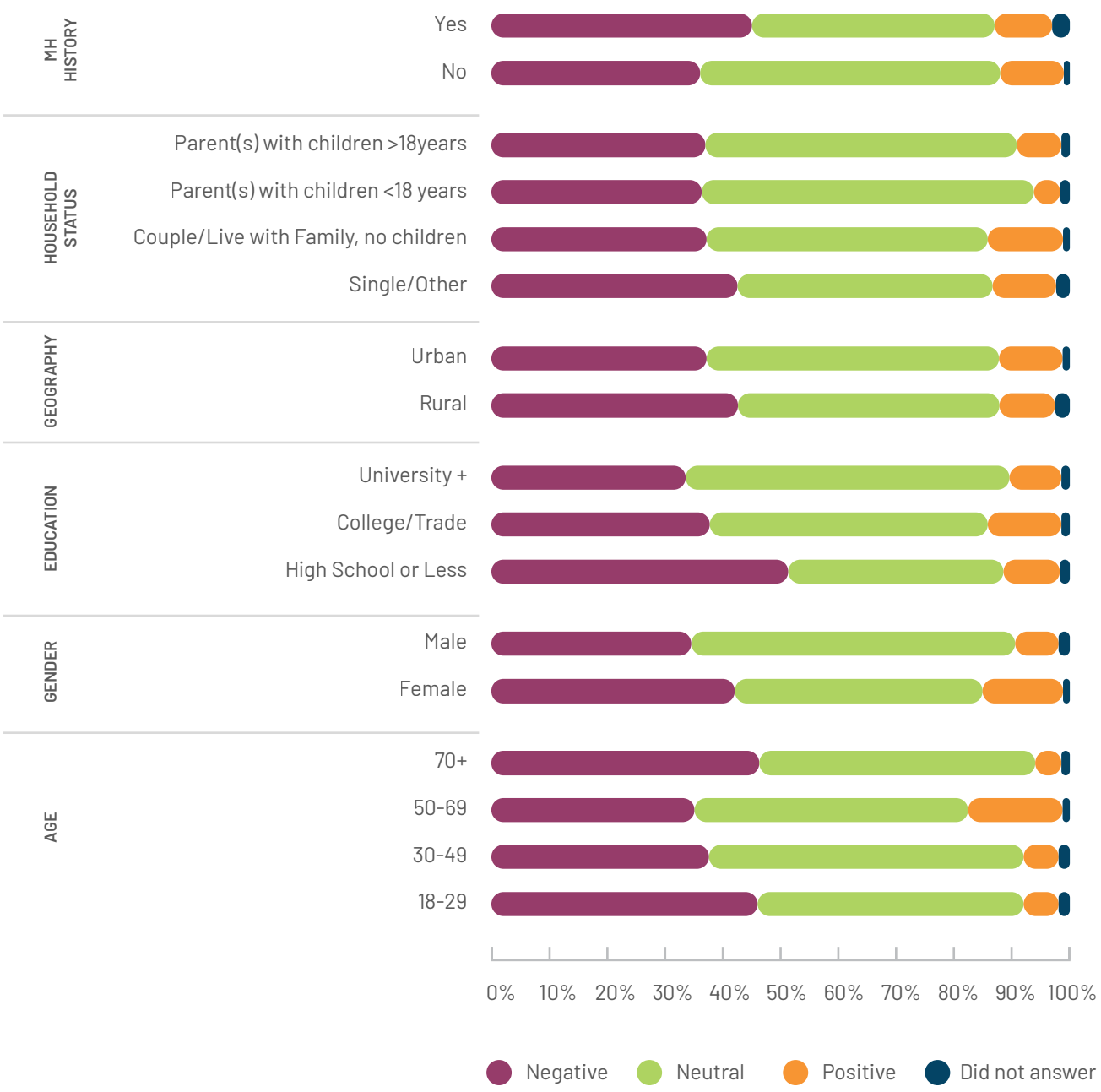


Figure S.7 Catching COVID-19



Economic Factors

Figure S.8: Working from home

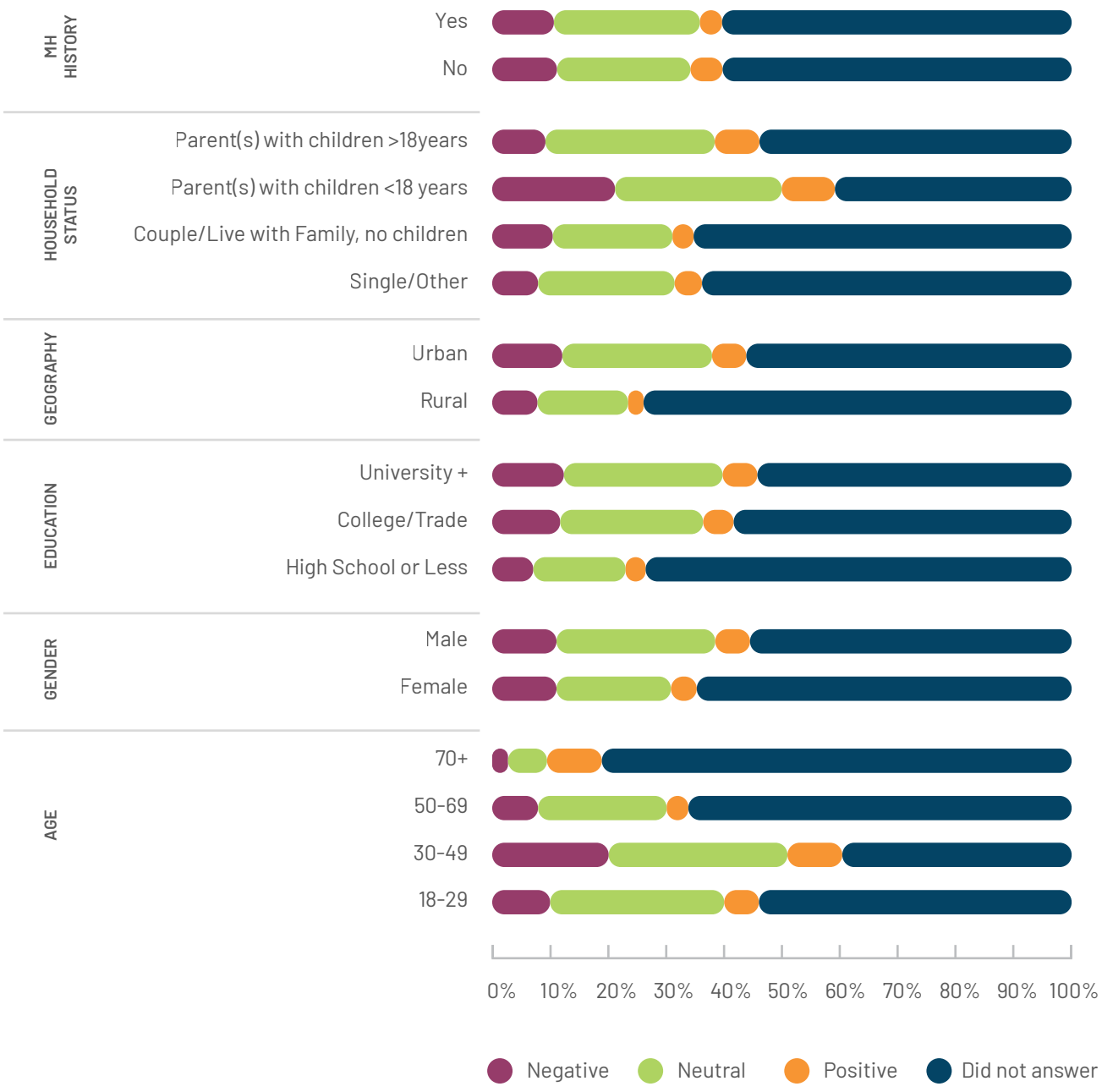


Figure S.9: Paying bills

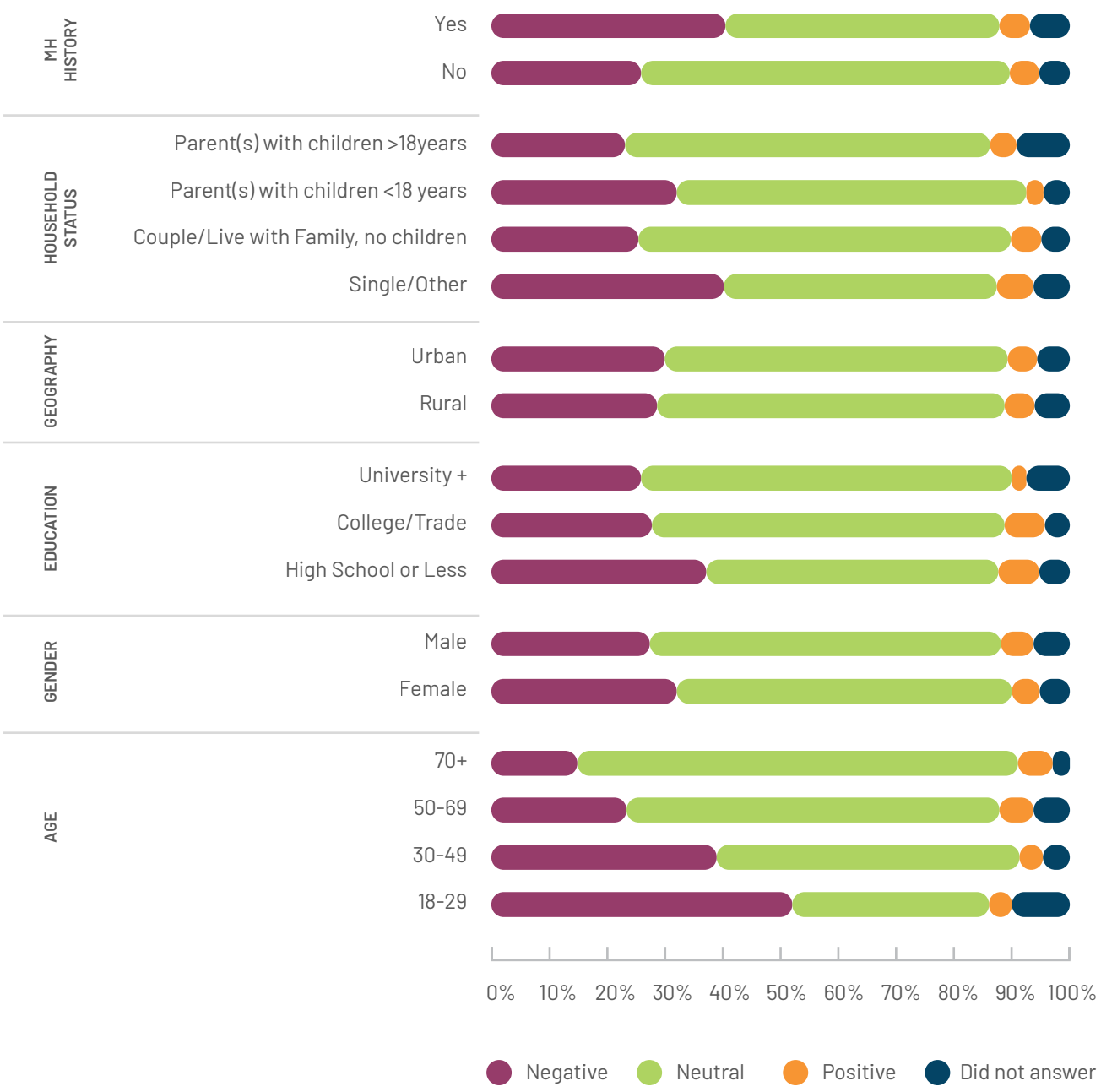


Figure S.10: Family job loss

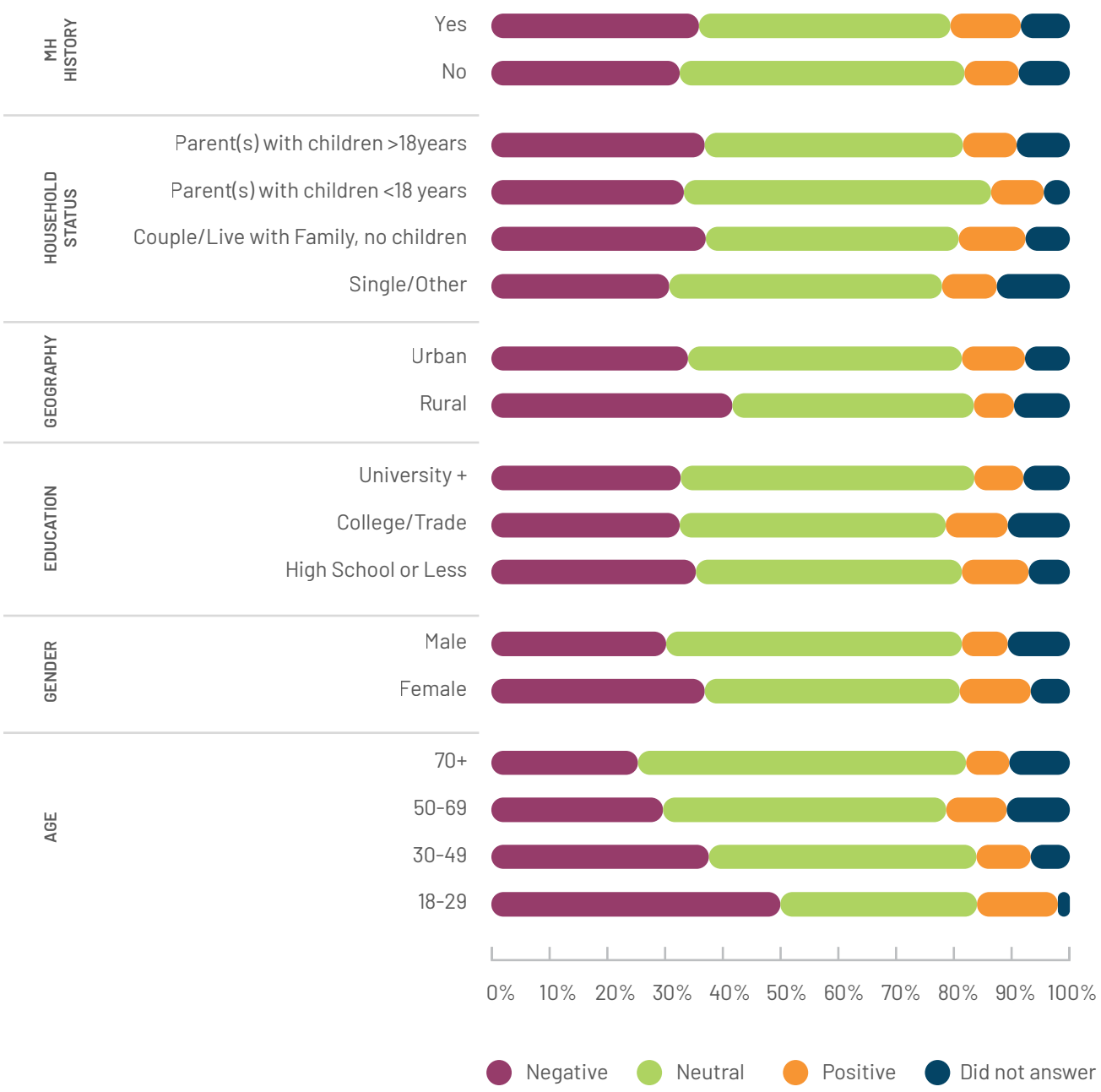


Figure S.11: Job loss (N=26)

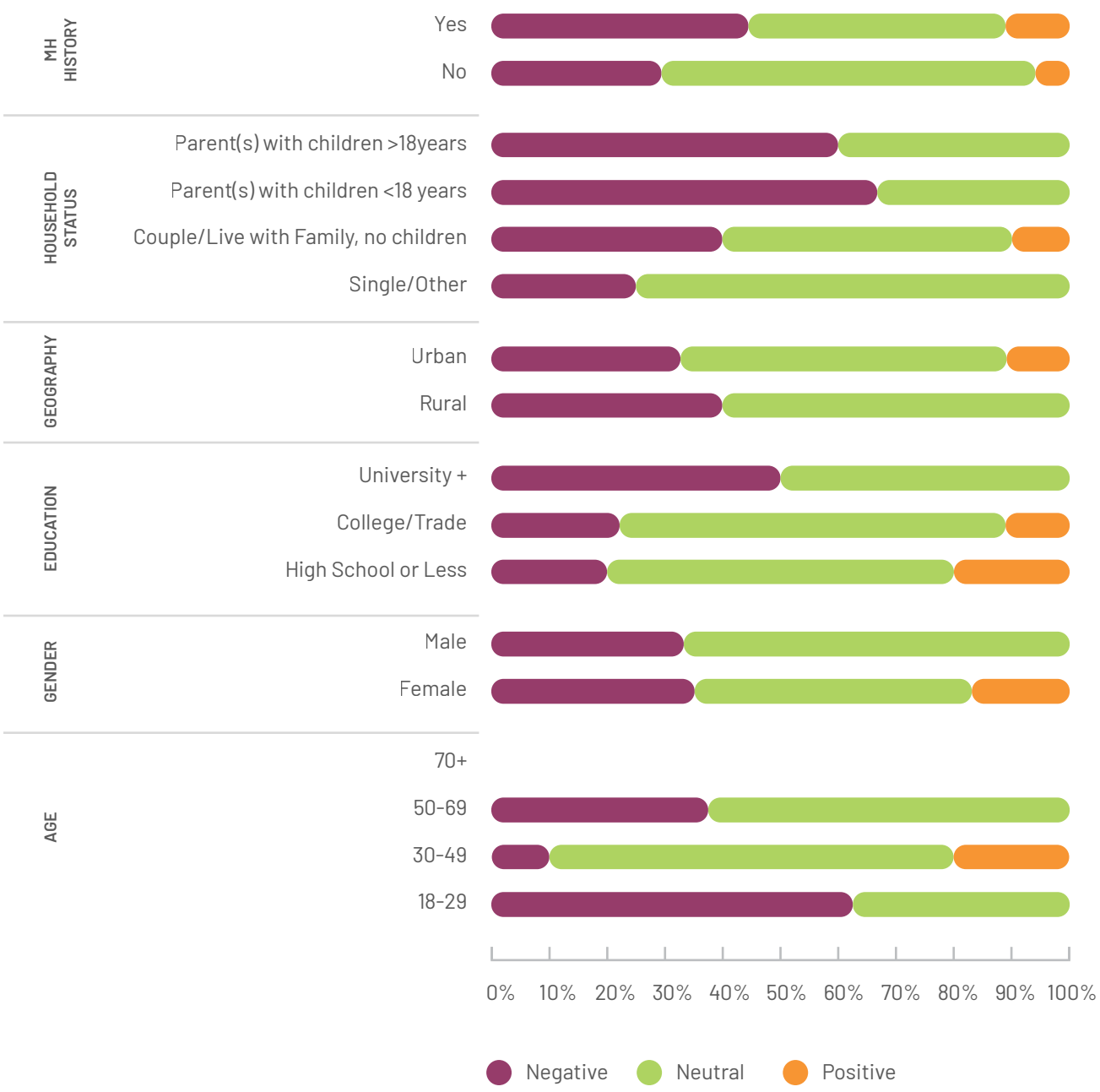


Figure S.12: Risk of losing job/work

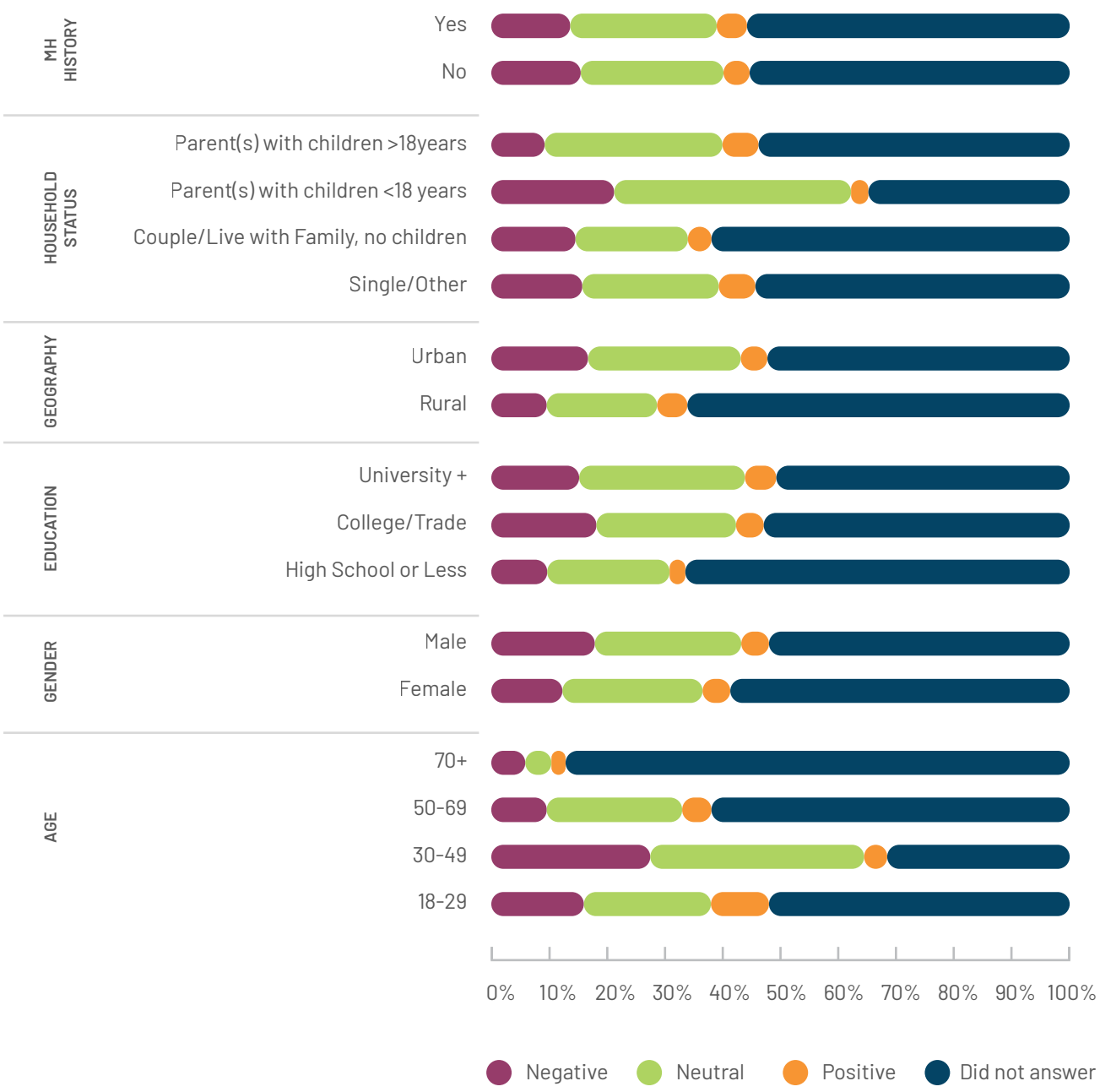
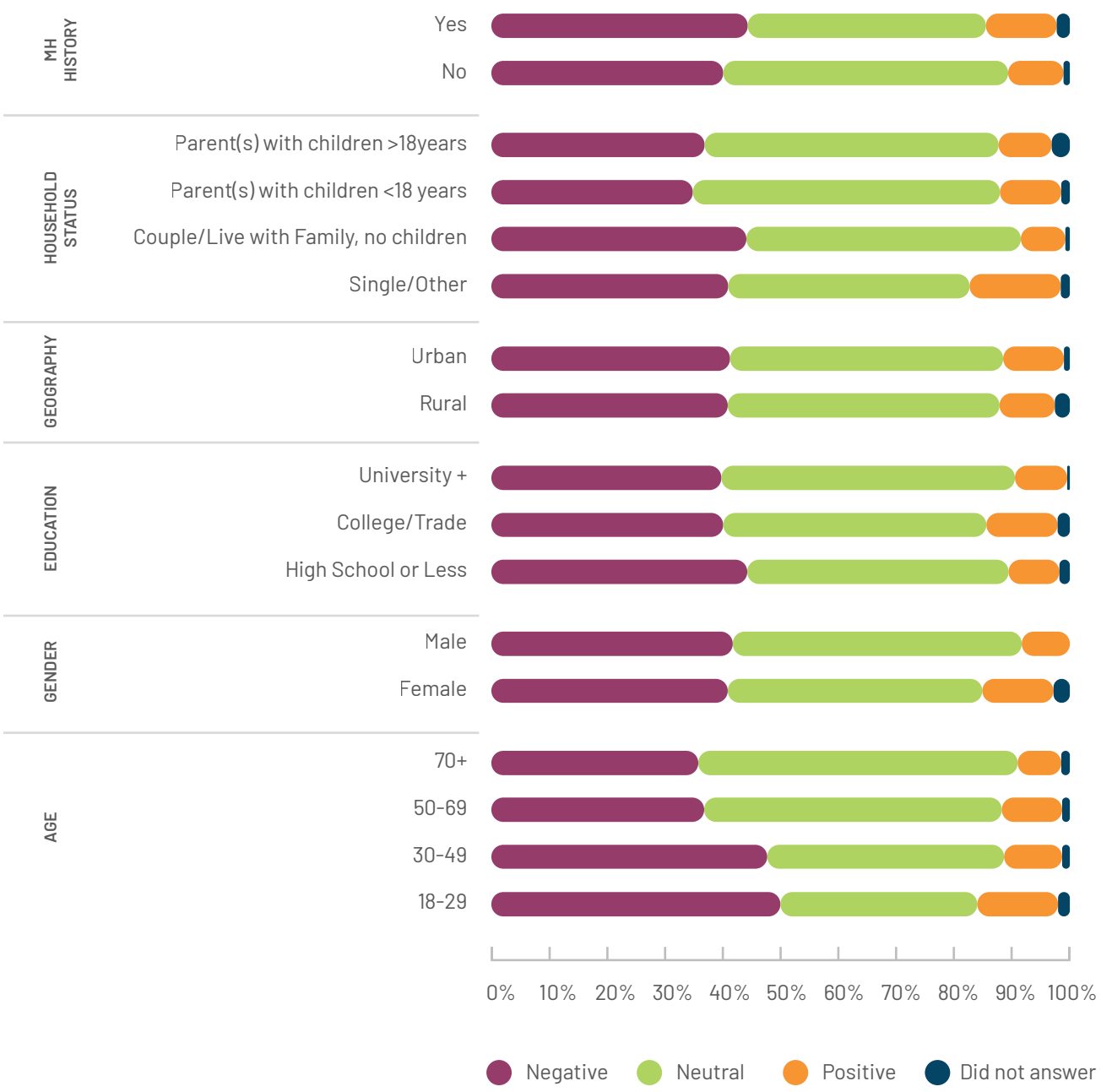


Figure S.13: Economic downturn



Recreational Factors

Figure S.14: Reading (topics not related to COVID-19)

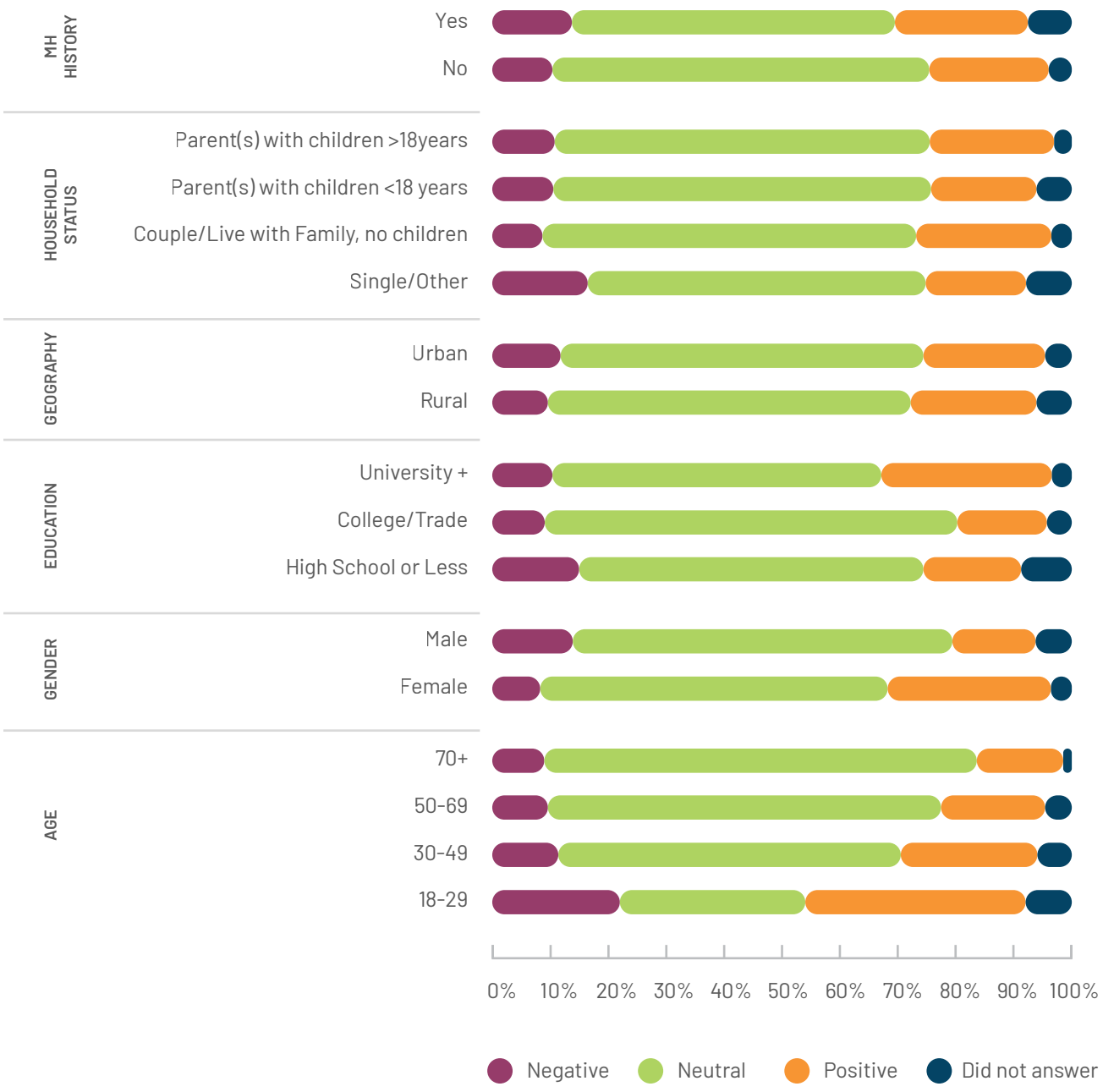


Figure S.15: Entertainment

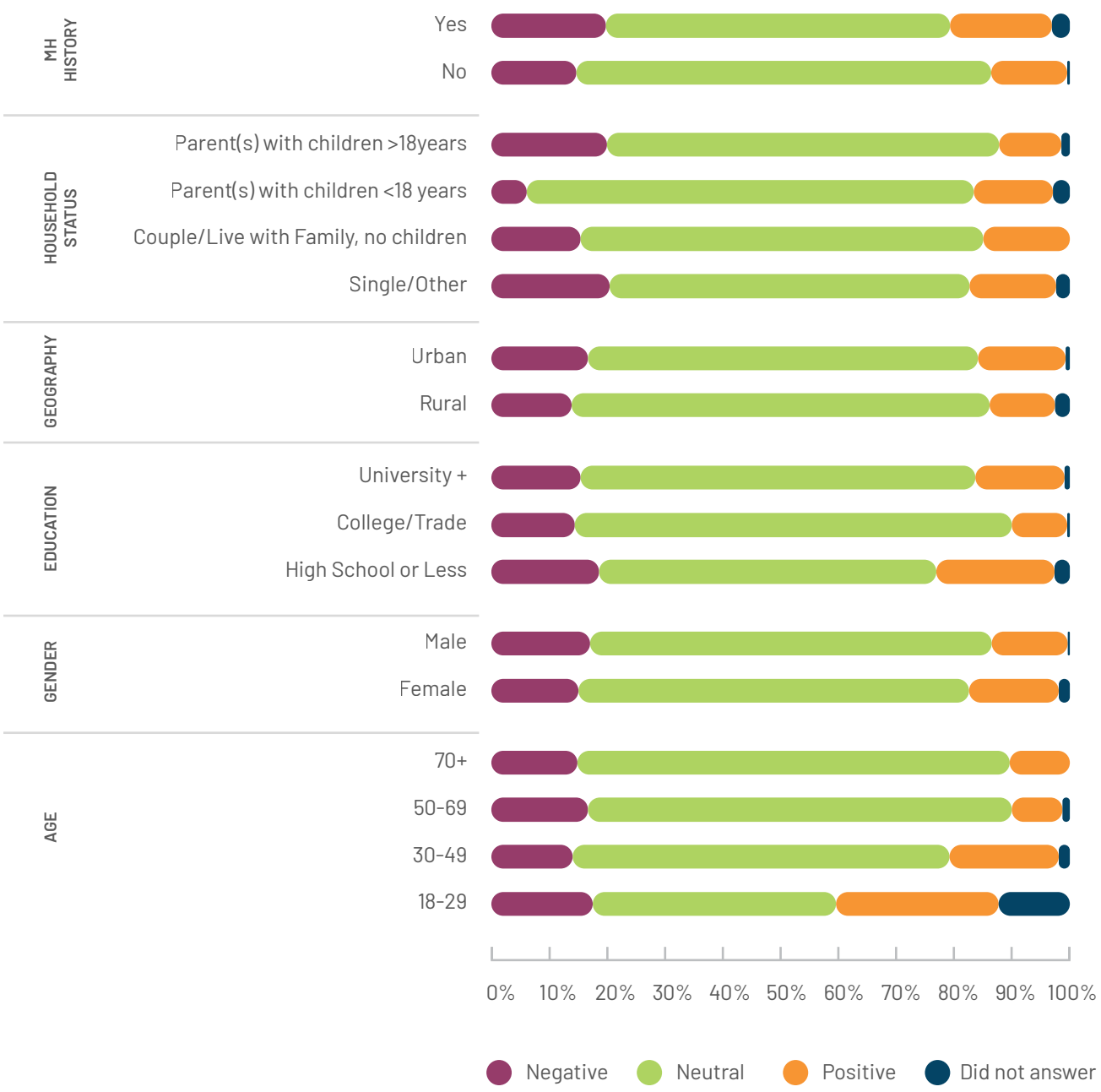


Figure S.16: Physical activity

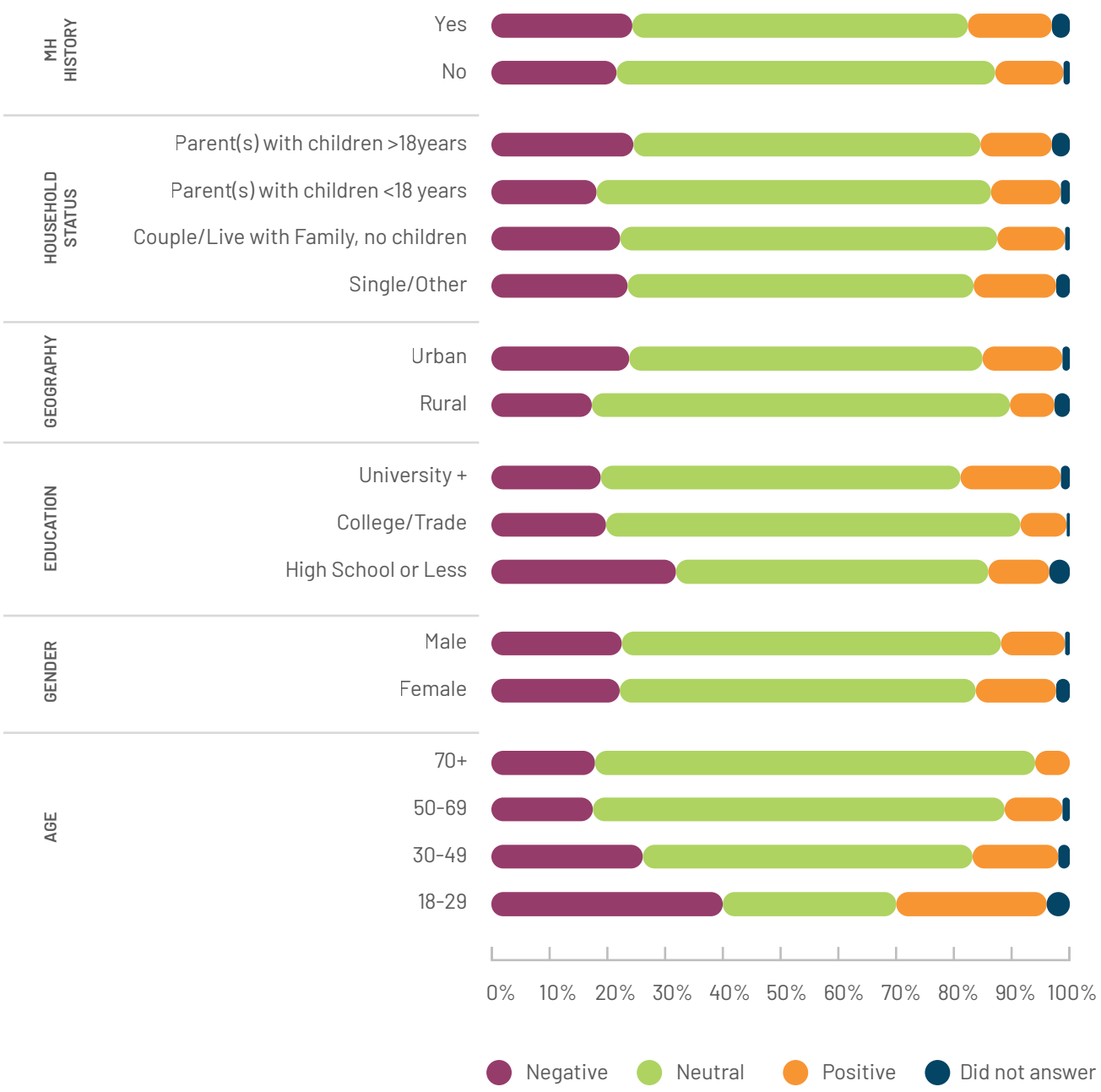


Figure S.17: Social media use

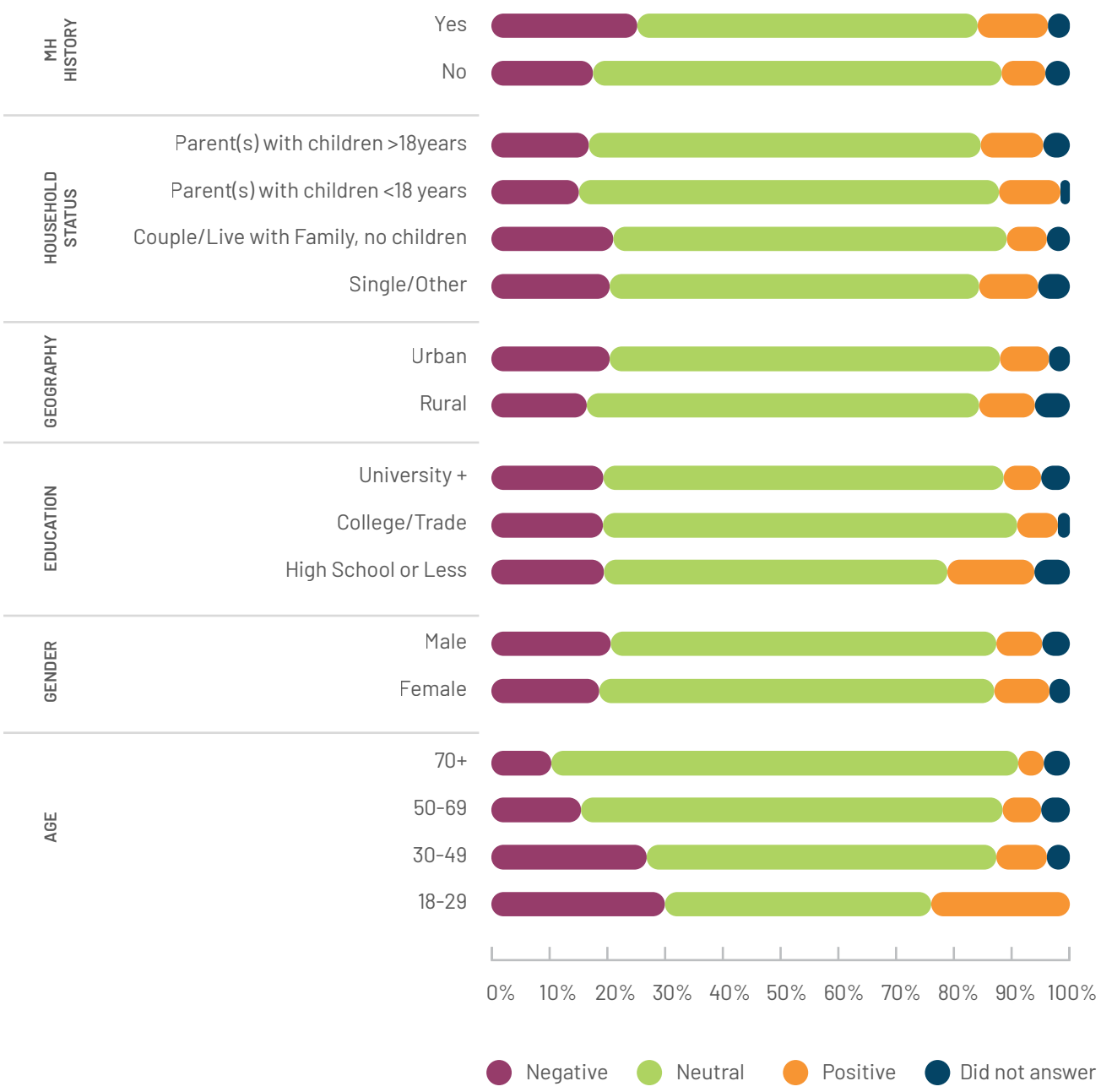
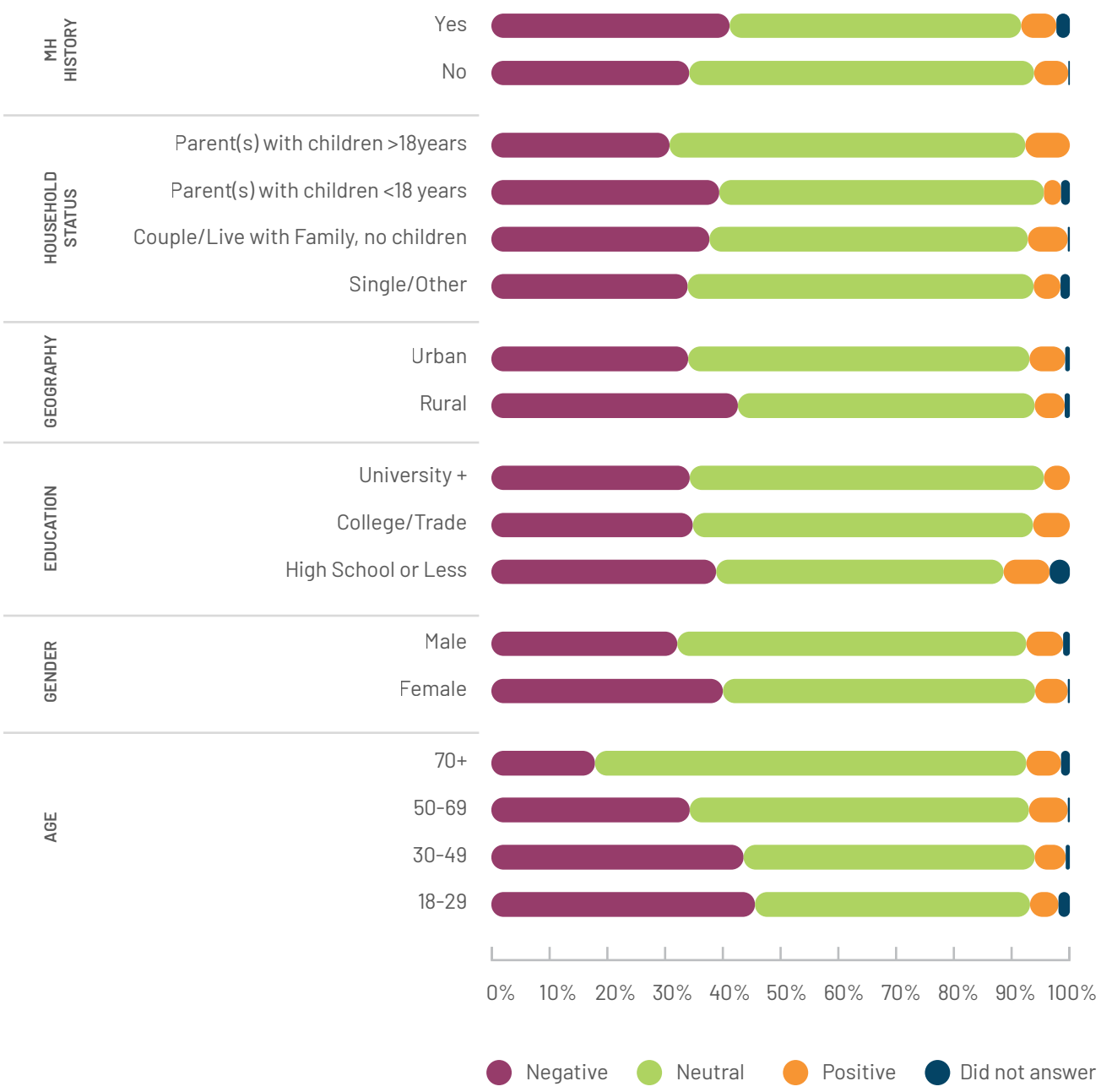
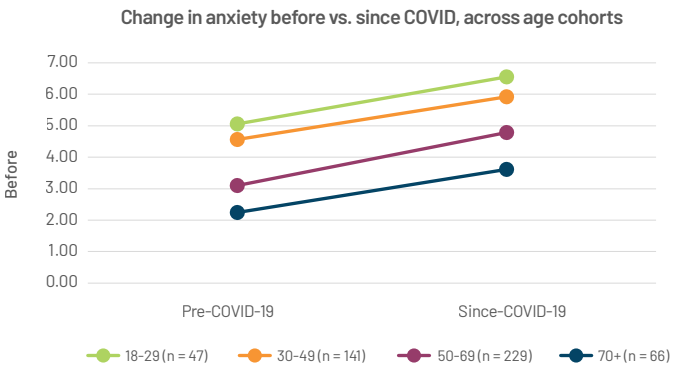


Figure S.18: Daily news



Anxiety and Depression Supplementary Figures

Figure S.19: Age



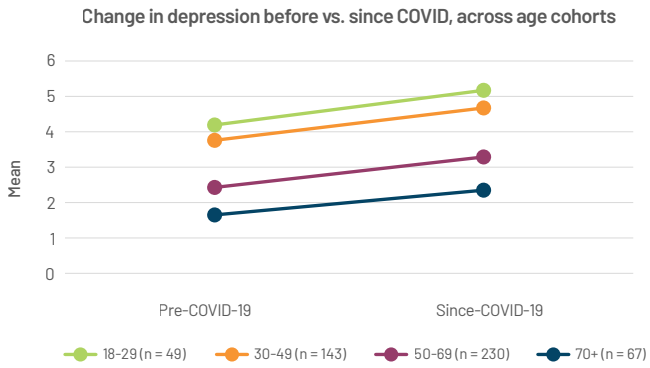
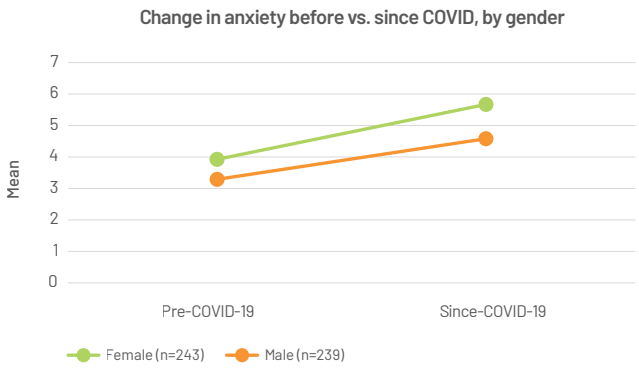


Figure S.20: Gender



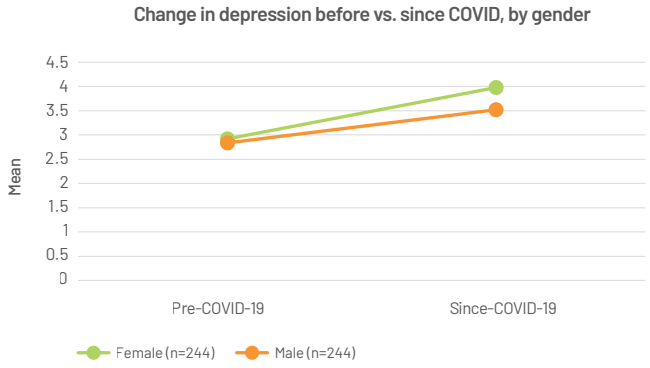
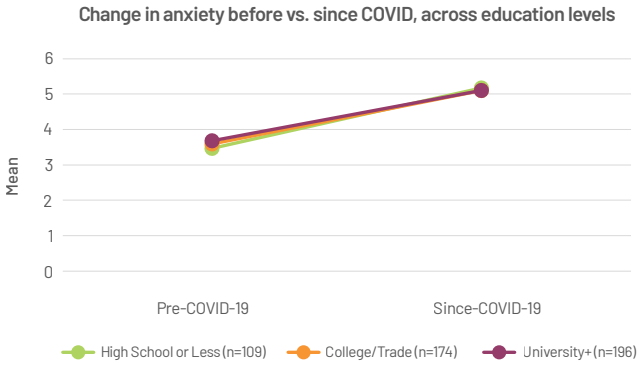


Figure S.21: Education



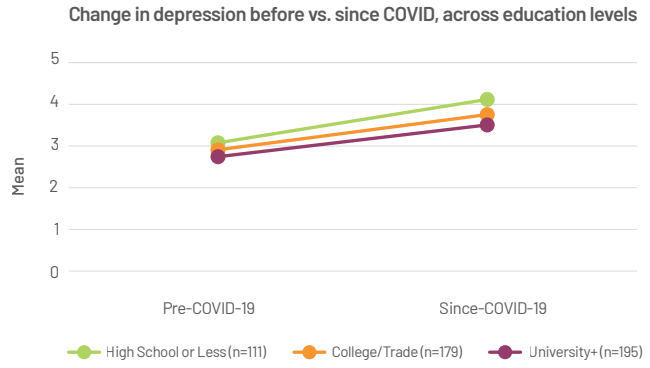
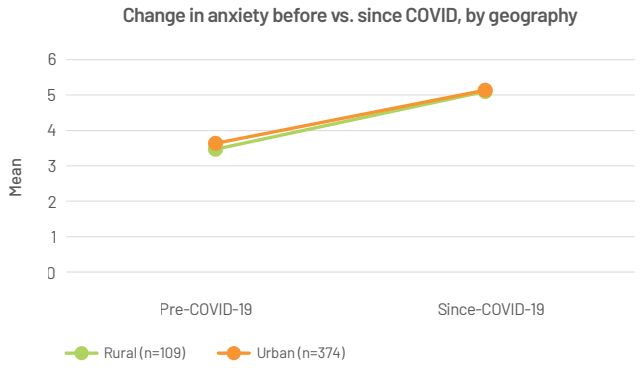


Figure S.22: Geography



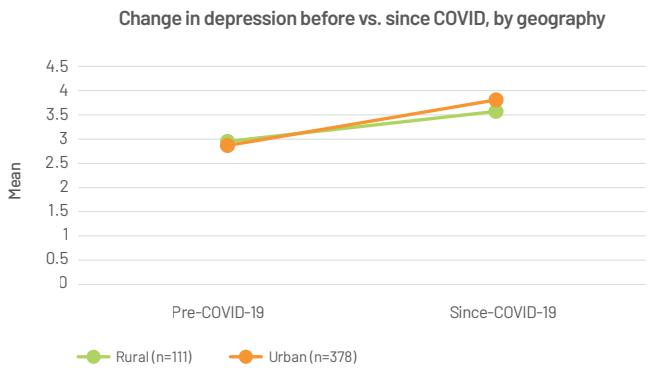
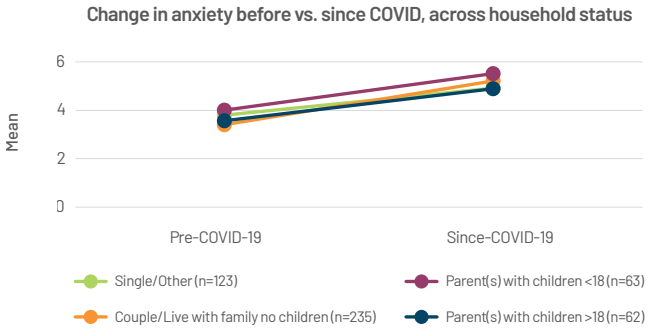


Figure S.23: Household status



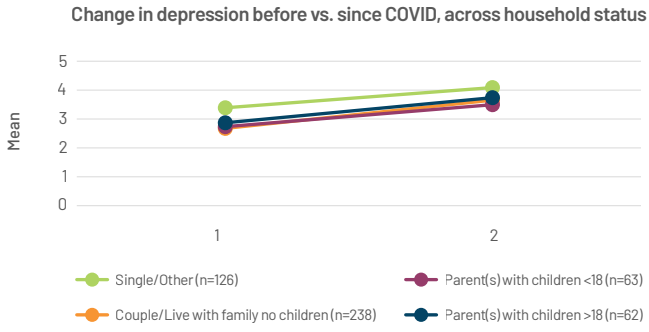
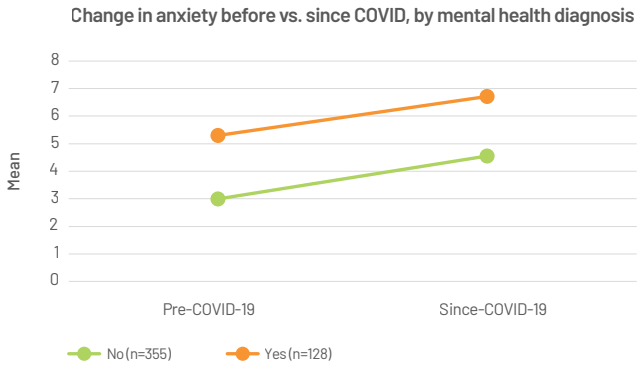
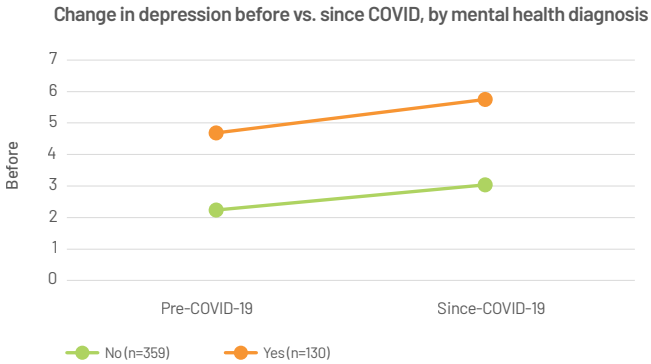


Figure S.24: MH History





Substance Use Supplementary Figures

Figure S.25: Alcohol Use

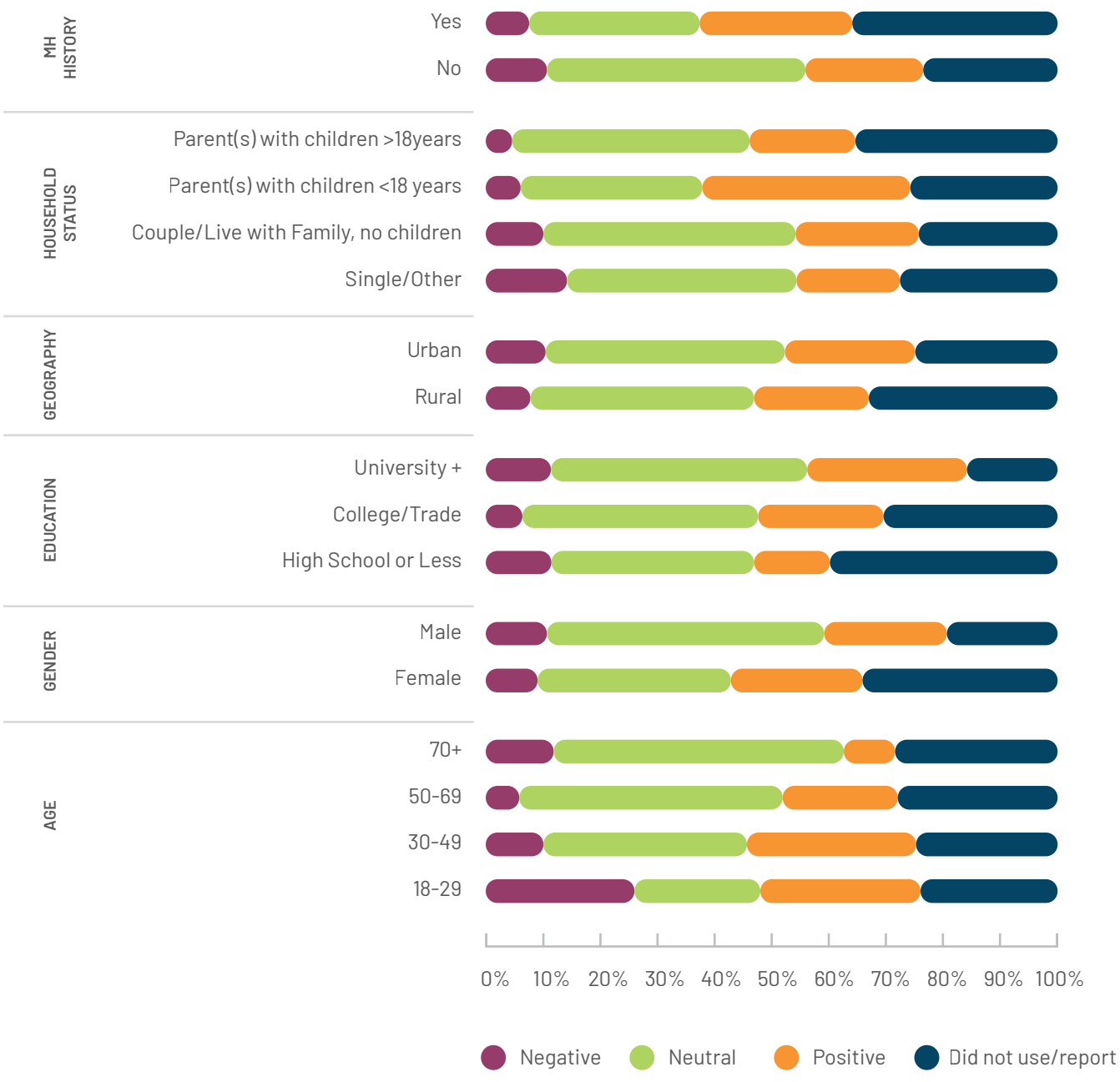
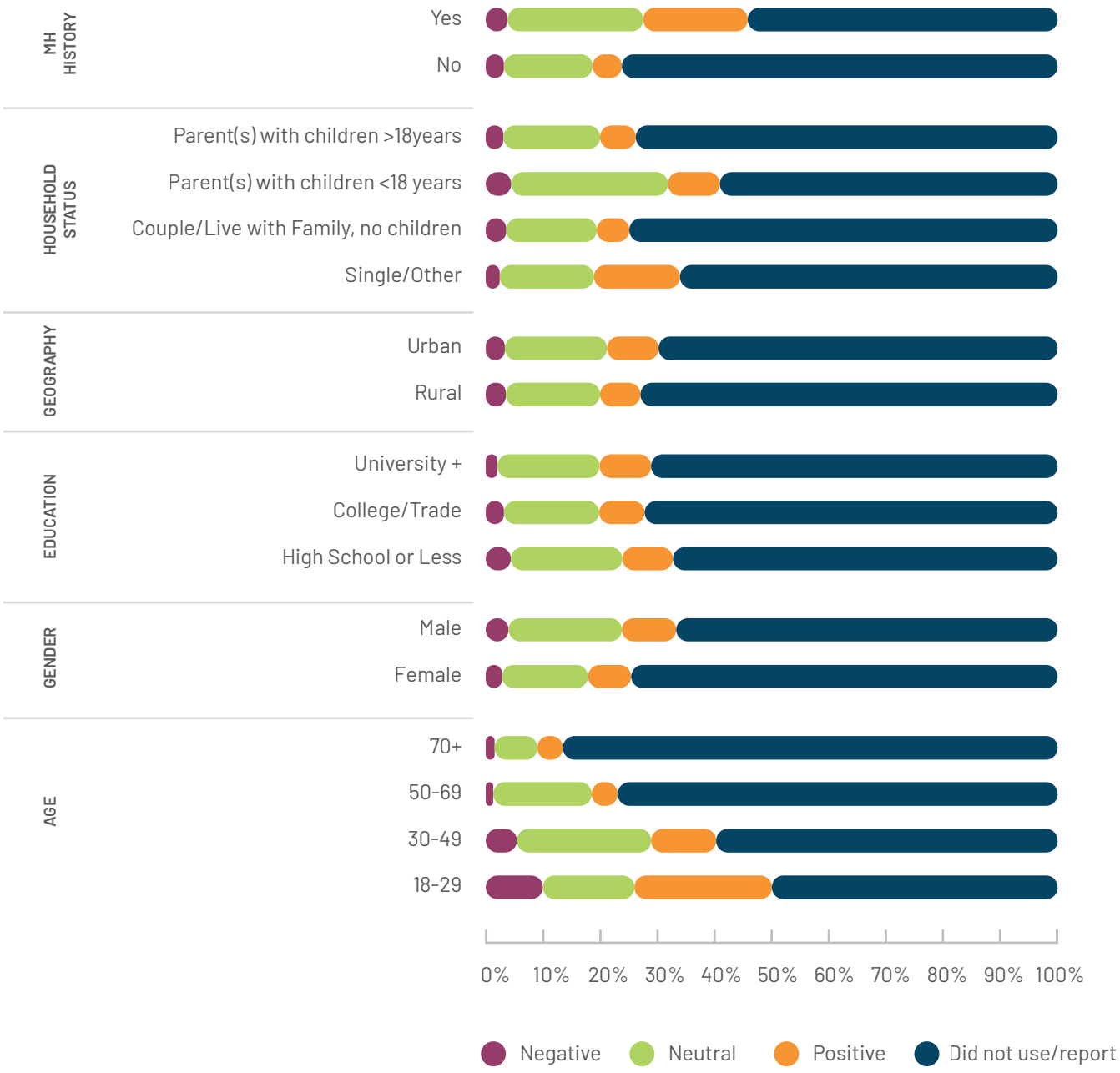
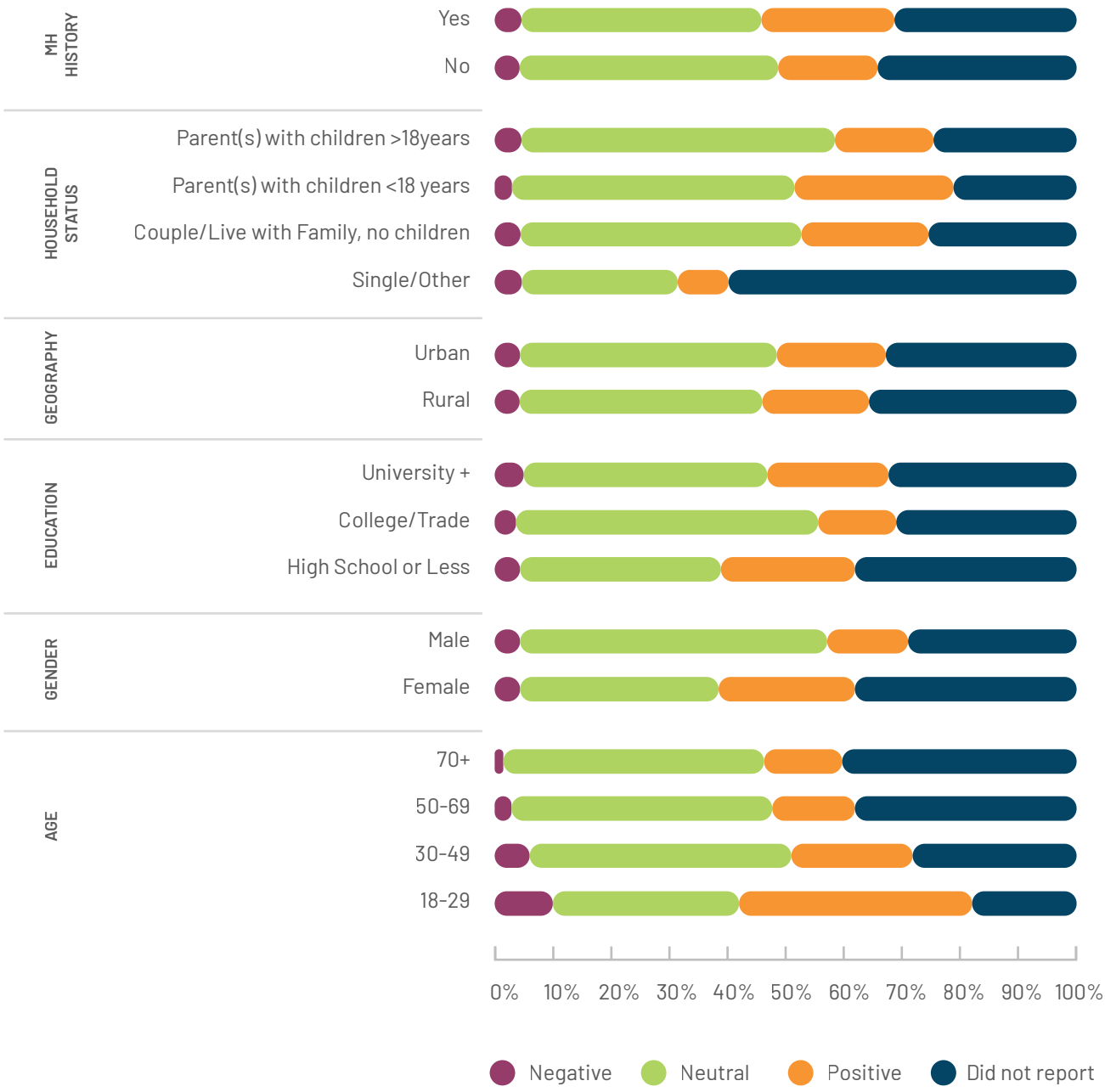


Figure S.26: Cannabis Use



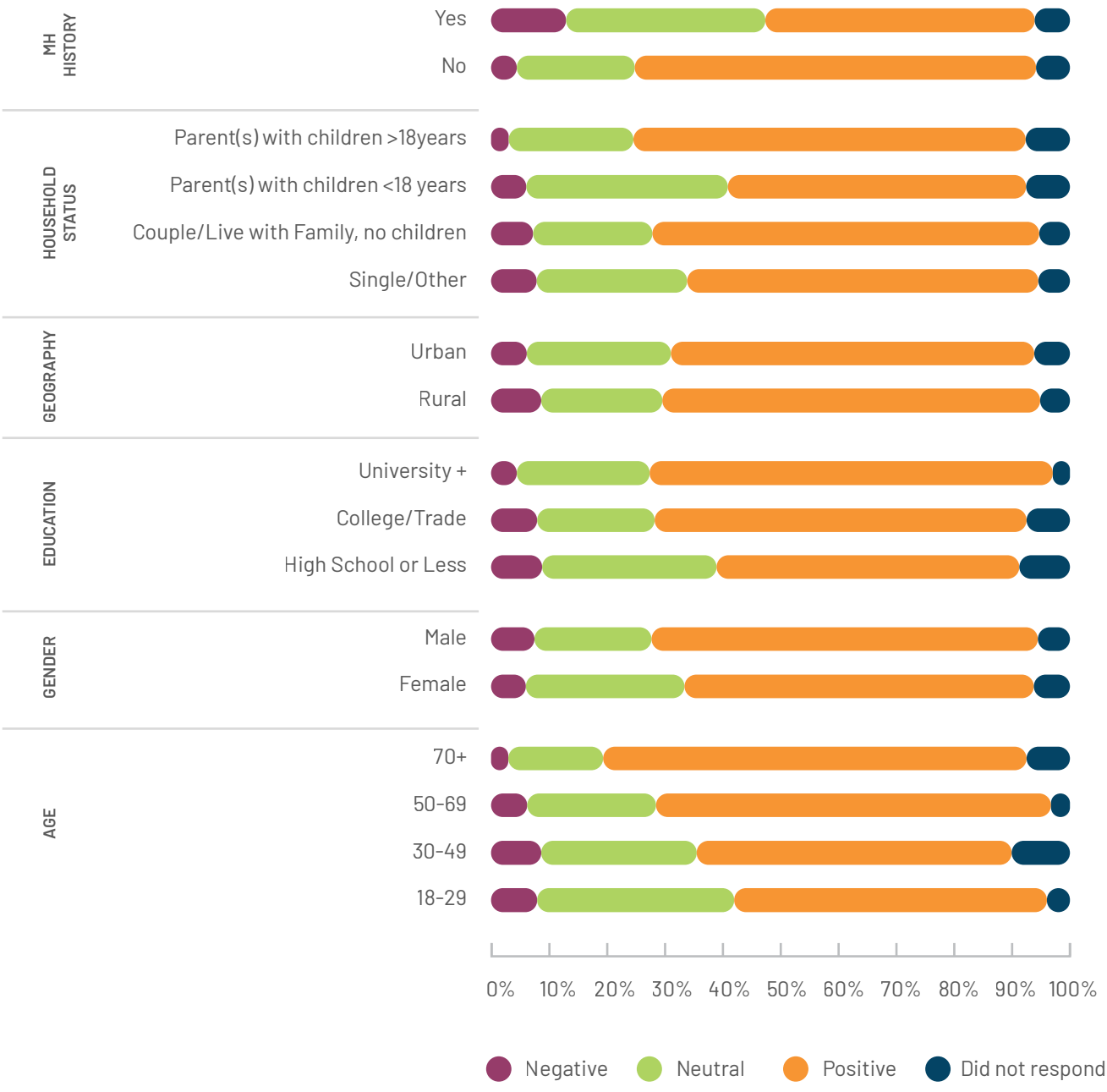
Household Conflict Supplementary Figure

Figure S.27: Household Conflict



Resiliency Supplementary Figure

Figure S.28: Resiliency



Nova Scotia Health Mental Health and Addictions Program Supplementary Graphs

Figure S.29: NSHealth Mental Health & Addictions: Volume of inbound calls to MHA Intake line (June 2019 - June 2021)

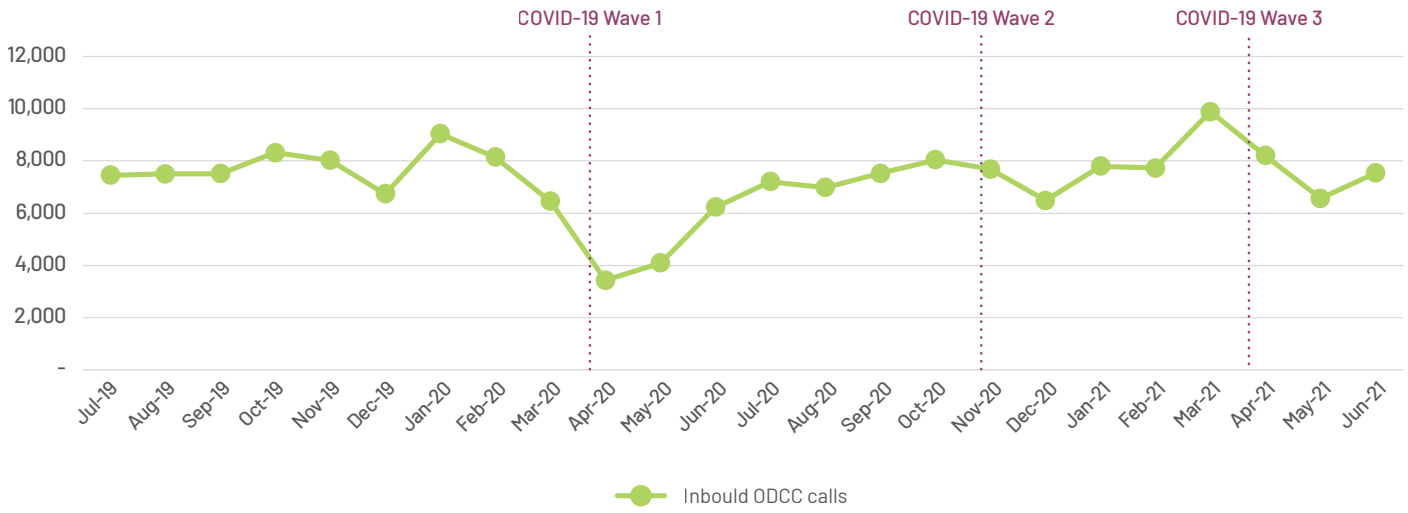
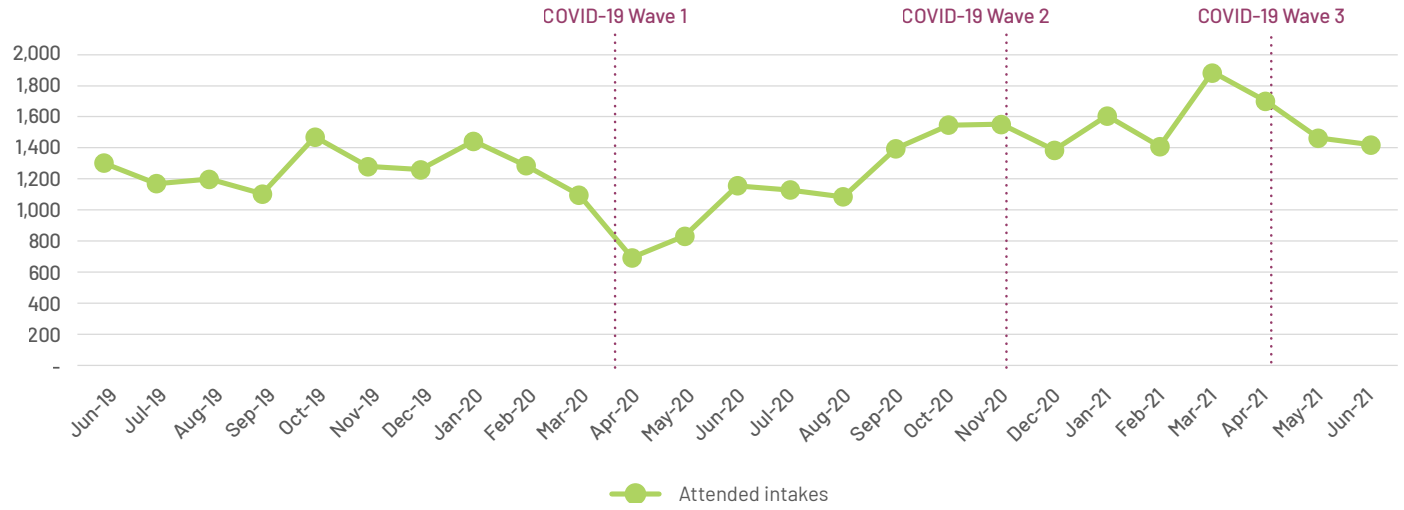


Figure S.30: NSHealth Mental Health & Addictions: Volume of attended intake appointments (June 2019 - June 2021)



APPENDIX 1: QUESTIONNAIRE

SCR 1. Are you – or anyone in your household – employed in any of the following sectors? Please check all that apply:

- A media outlet (that is, TV, radio, newspapers, magazines, or online media)
- A public opinion or market research firm
- A public relations, branding, or advertising firm
- None of the above

SCR 2. What is your current age?

SCR 3. Please indicate which gender you most identify with:

- Female
- Male
- Another gender identity
- Don't know/Unsure

SCR 4. Do you or anyone in your immediate family have a physical impairment or disability? That is have you or a member of your family been diagnosed by a medical professional with any current disabilities, impairments, or health conditions that have lasted for at least 6 months or are expected to last for at least 6 months and typically cause some difficulty or limitation in daily activities.

- I have
- Someone in my immediate family has
- No one has
- Prefer not to answer

SCR 5. Please enter the first 3 digits of your postal code. (i.e. A1A)

SCR 6. Which of the following types of household composition best describe your household?

- I live alone
- I live with one or more roommates that are not family relations
- I live with my parent(s) and/or sibling(s)
- I live with my partner/spouse, no children
- I live with my partner/spouse, with child or children (either part-time or full-time)
- I live with my partner/spouse and/or child(ren), and also have parents or other older family members living with us
- I live with my child or children, no partner/spouse living with us
- Some other situation
- Prefer not to say

SCR 7. Are you the parent of any children in any of the following age brackets, who live with you part-time or full-time? Please click all that apply.

- Yes, Under 9 years old
- Yes, 9-17 years old
- Yes, 18-29 years old
- Yes, 30 or older
- No
- Prefer not to say

SCR 8. Which one of the following best describes your employment status? If you have more than one job, please click all that apply.

- Full-time employee, with 1 employer
- Part-time employee, with 1 employer
- Part-time employee, with more than 1 employer (multiple part-time jobs at once)
- Seasonal employee
- Self-employed – 1 job

- Self-employed – More than 1 (self-employed) job
- Unemployed, not because of the COVID-19 pandemic – looking for work
- Unemployed, because of the COVID-19 pandemic – looking for work
- Not employed – Was looking for work, but not anymore
- Not employed – Homemaker/ household manager / caring for children (while partner/spouse works)
- Retired
- Student
- Don't know / Unsure
- Prefer not to say

SCR 9. And which one of the following sectors do you primarily work in?

- Health Care – Front-line Health Care Worker caring for COVID-19 patients
- Health Care – Patient-facing Health Care Worker, but are not caring for COVID-19 patients
- Health Care – Back-office Health Care Workers who are not patient-facing
- Health Care – Other
- Emergency / protective services – police, fire, EMT
- Janitorial and maintenance services
- Education – elementary or secondary
- Education – post-secondary
- Retail – Grocery Store
- Retail – Convenience Store
- Retail – Gas station
- Retail – Other
- Restaurants
- Manufacturing – Food
- Manufacturing – Other
- Trade & Distribution – Wholesale
- Trade & Distribution – Food
- Agriculture
- Livestock and meat production
- Delivery Services – Groceries
- Delivery Services – Food/Meals
- Delivery Services – Other
- Transportation / Trucking
- Technology / IT
- Government
- Another sector
- Prefer not to say

A: MENTAL HEALTH

A 1. Before the current Coronavirus (COVID-19) outbreak in Canada… have you or has a close family member ever received a diagnosis from a healthcare professional stating that you/they are affected by any of the following:

- An anxiety disorder
- Depression
- Another mood disorder

I have

- A close family member has
- No one in my family has
- Don't know / Unsure
- Prefer not to say

A 1b. When did you/your family member receive the latest diagnosis of anxiety, depression or another mood disorder?

- In the past year
- Between 1 and 2 years ago

- Between 3 and 5 years ago
- Between 6 and 10 years ago
- More than 10 years ago
- Don't know
- Prefer not to answer

A 1c. What, if anything, are you/your family member currently doing to treat the anxiety, depression or other mood disorder? Please click all that apply.

- Taking prescription medication
- Taking non-prescription or natural mediations
- Talking to a doctor on a regular basis
- Talking to a therapist, counsellor, or social worker on a regular basis
- Am still suffering from the condition but am not longer being treated
- No longer suffering from the condition
- Don't know
- Prefer not to answer

A 2a. Please rate each of the following using the scale below: Rated on a scale of 0 to 10 with 0 being "None" and 10 being "Extremely High"; able to choose "Don't know/Unsure".

Anxiety is defined as an emotional state in which you feel threatened by the potential occurrence of a future negative event and experience tension, worried thoughts, and physical sensations (e.g., increased heart rate).

- Your level of anxiety before the Coronavirus (COVID-19) outbreak in Canada
- Your level of anxiety since the Coronavirus (COVID-19) outbreak in Canada

Depression is defined as a persistent feeling of sadness and loss of interest.

- Your level of depression before the Coronavirus (COVID-19) outbreak in Canada
- Your level of depression since the Coronavirus (COVID-19) outbreak in Canada

A 2b. In the past 4 weeks, how often did you feel…: Reported using a 5 point scale with "None of the time", "A little of the time", "Some of the time", "Most of the Time" and "All of the time" with the option to select "Don't know/Unsure"

- Tired out for no good reason
- Nervous
- So nervous that nothing could calm you down
- Hopeless
- Restless or fidgety
- So restless you could not sit still
- Depressed
- That everything was an effort
- So sad that nothing could cheer you up
- Worthless

A 2c. And, using the scale below… if COVID-19 – and the associated government guidelines and laws (ex. social distancing, social bubbles/circles, masks, quarantines, etc.) – remains in your province for 2 more months… what do you expect the following to be? Rated on a scale of 0 to 10 with 0 being "None" and 10 being "Extremely High"; able to choose "Not Applicable" or "Don't know/Unsure".

- Your level of anxiety
- Your level of depression

A 3a. During the current Coronavirus (COVID-19) outbreak in Canada, please rate each of the following in terms of the impact they are currently having on your mental health, if any:

Rated using a scale of 0 to 10 with 0 being "Very NEGATIVE Impact", 5 being "Neutral/No Impact" and 10 being "Very POSITIVE Impact", with option to select "Not Applicable" or "Don't Know/Unsure".

- The possibility of you catching COVID-19
- The possibility of a family member catching COVID-19
- The economic downturn
- The possibility of you losing your job or losing pay and/or hours at your job
- The challenges of working from home (if you are)
- Your recent job loss
- The possibility of a family member losing their job
- Interacting with members of your household in-person
- Supporting my child's needs and schoolwork
- Communicating with family/friends outside of your household via phone, email, video chats, etc.
- Social isolation / Being apart from others
- The difficulties and challenges of getting necessities (groceries, prescriptions, other household items)
- The possibility of not being able to fully pay household bills owed in 2020 (ex. mortgage, rent, property tax, and utilities)
- Daily news about the coronavirus (COVID-19) pandemic
- Physical activity / exercise
- Entertainment, such as television, movies, music, podcasts, etc.
- Social media, such as Facebook, Twitter, Instagram, etc.
- Reading books, short stories, essays, etc. that are not about the COVID-19 pandemic

A 3b. Thinking about challenges and unexpected troubles that you have faced in your life… Overall, how would you rate your ability to manage and bounce back from these challenges and unexpected troubles? Rated on a scale of 0 to 10 with 0 being "Excellent" and 10 being "Very Poor" and the option to select "Don't Know/Unsure".

A 4. Since the Coronavirus (COVID-19) outbreak in Canada, have the following increased, decreased or stayed the same in your life? Rated using a scale of Major Increase, Moderate Increase, About the Same, Moderate Decrease, Major Decrease, Not Applicable, or Don't Know/Unsure

- The quantity of alcohol beverages (beer, wine, spirits) you drink in a typical week
- The quantity of cannabis you use/ consume (in any form) in a typical week
- The frequency of conflict between household members in a typical week

A 5. How well are you complying with government COVID-19 guidelines and laws (ex. social distancing, social bubbles/circles, masks, quarantines, etc.) in your area? Rated on a scale of 0 with "Not Complying at All" and 10 being "Strict Compliance"; able to choose Not Applicable or Don't know/Unsure.

B: Mental Health Treatments

B 1. **BEFORE** the outbreak of Coronavirus in Canada, have you ever had mental health support from any health care professionals? Please select all that apply.

- Yes, one-to-one in-person with mental health professional (i.e. counsellor, psychologist, psychiatrist, etc.)
- Yes, one-to-one virtually VIA ONLINE (i.e. video chat) with mental health professional (i.e. counsellor, psychologist, psychiatrist, etc.)
- Yes, one-to-one virtually VIA VERBAL PHONE CALLS with mental health professional (i.e. counsellor, psychologist, psychiatrist, etc.)
- Yes, one-to-one virtually VIA TEXTING/ MESSAGING with mental health professional (i.e. counsellor, psychologist, psychiatrist, etc.)
- Yes, my family doctor / GP
- Yes, group treatment/therapy
- Yes, trained peer support
- Yes, other mental health supports
- No - Needed mental health supports, but did not access any such supports
- No - Did not need mental health supports (and did not access any)
- Prefer not to answer

B 2. And, when did you last seek the support of a mental health professional in the time **BEFORE** the Coronavirus (COVID-19) outbreak in Canada?

- In the year before the Coronavirus outbreak
- 2 to 5 years before
- 6 to 10 years before
- More than 10 years before the Coronavirus outbreak
- Don't know / Unsure
- Prefer not to answer

B 3. **SINCE** the outbreak of the Coronavirus in Canada, have you had any support from any mental health professionals?

- Yes, one-to-one in-person with mental health professional (i.e. counsellor, psychologist, psychiatrist, etc.)
- Yes, one-to-one virtually VIA ONLINE (i.e. video chat) with mental health professional (i.e. counsellor, psychologist, psychiatrist, etc.)
- Yes, one-to-one virtually VIA VERBAL PHONE CALLS with mental health professional (i.e. counsellor, psychologist, psychiatrist, etc.)
- Yes, one-to-one virtually VIA TEXTING/ MESSAGING with mental health professional (i.e. counsellor, psychologist, psychiatrist, etc.)
- Yes, my family doctor / GP
- Yes, group treatment/therapy
- Yes, trained peer support
- Yes, other mental health supports
- No – Have needed mental health supports, but did not access any such support
- No – Did not need mental health supports (and did not access any)
- Prefer not to answer

B 4. Are you currently still receiving these mental health supports?

- Yes
- No
- Prefer not to answer

B 5. How familiar are you with the Federal Government's Wellness Together Canada program for free virtual mental health care?

- Very familiar – know a great deal about what it is offering
- Somewhat familiar – know some details about it
- Have heard of it, but do not know what it is
- Have never heard of it
- Prefer not to answer

B 6. Have you visited the Wellness Together Canada Website?

- Have visited the website, but did not register
- Have visited the website and registered, but am not accessing any resources
- Have visited the website, registered, and am currently accessing resources
- Have not visited the website
- Prefer not to answer

B 7. How interested would you be in obtaining more information about each of the following mental health services that are available for free through Wellness Together Canada, either for yourself or to get information for someone else? Using a scale of Very Interested, Somewhat Interested Not Very Interested, Not at All Interested, Prefer Not to Answer or Not Applicable

- Information about specific concerns you have regarding yourself or someone else
- Activities you can do on your own (ex. videos, exercises)
- Connecting with someone or a group of people who have similar experiences
- Group activities with the support of a coach or teacher
- Support through text messaging
- Self-help activities with the support of a mental health professional
- Group counselling led by a person with lived experience
- Group counselling led by a mental health professional
- One-to-one counselling with a mental health professional

B 8. Are there any other health services you would like to see offered by Wellness Together Canada?

B 9. How likely are you to go to the Wellness Together Website for each of the following on a scale of Very Likely, Somewhat Likely, Not Very Likely, Not at All Likely, Don't Know/Aren't sure, or Not Applicable:

- To find out more information about what is offered for yourself
- To find out more information about what is offered to tell someone else
- To access services

B 10. Please indicate if you have concerns about any of the following when it comes to accessing services on Wellness Together Canada. Please click all that apply

- Do not want to risk my data privacy – my personal information and contact information
- Do not want to risk my data privacy – my personal health/mental health information
- Discussing mental health issues online
- The stigma or embarrassment of obtaining mental health support

- Too much of a burden / No time
- I am/would not be comfortable with online services, generally speaking
- I have tried virtual/online health supports in the past and have not liked them
- Technical issues (Ex. slow internet, slow computers, have to share computer with others)
- Lack of available technology (phone, internet, computer)
- Services hard to navigate or unavailable
- At some point, it may cost money
- Uncomfortable using technology
- Some other concerns
- Some level of interest in Wellness Together Canada program – No concerns about accessing their services
- No interest in Wellness Together Canada program

B 11. A registration process is often necessary to provide specialized and ongoing mental health services. What could be done to increase your comfort with registering for virtual mental health services by providing your name and e-mail?

Demographics:

Now, before the survey concludes, a few confidential questions for statistical categorization purposes…

Z 1. What is the highest level of education that you have completed? Elementary School

- High School
- College
- Technical/Trade School/Apprenticeship
- University – Undergraduate Degree
- University – Graduate/Professional Degree
- Prefer Not To Say

Z 2. Approximately, what was your total household income from all sources in 2019, before taxes?

- No income
- Under $20,000
- $20,000 - Less than $30,000
- $30,000 - Less than $50,000
- $50,000 - Less than $80,000
- $80,000 - Less than $100,000
- $100,000 – Less than $150,000
- $150,000 or More
- Don't know

Z 3. Were you or your parents born outside of Canada?

- Yes – I was born outside Canada
- Yes – One or both of my parents were born outside Canada
- Yes – both myself and at least one of my parents were born outside Canada
- No
- Don't know
- Prefer not to say

Z 4. And thinking of when you came to live in Canada, how long ago did you arrive in Canada?