Michigan COVID-19 Recovery Surveillance Study

October 2020

Executive Summary

The Michigan COVID-19 Recovery Surveillance Study (MI CReSS) is a joint project between the University of Michigan School of Public Health and the Michigan Department of Health and Human Services (MDHHS).

The goals of MI CReSS are to:

- Conduct public health surveillance to learn about Michiganders' experiences with COVID-19 using a representative sample of confirmed cases within the state.
- Document sociodemographic inequities in COVID-19 treatment and the differential impact of COVID-19 illness on communities throughout the state.
- Disseminate findings broadly to lay the foundation for data-driven change.

The initial probability sample of 2,000 cases was drawn from the Michigan Disease Surveillance System in June 2020. The sample consisted of noninstitutionalized adults from Michigan with COVID-19 onset on or before April 15, 2020, who were alive at the time of the study. A total of 638 surveys were completed, for a participation rate of 31.9%. Responses were weighted to be representative of adults with COVID-19 onset during the designated timeframe who met our inclusion criteria. The average age of respondents was 52 years (range 18-98 years). More than half the respondents were female (56.6%). Most respondents identified as either non-Hispanic/non-Arab White (43.7%) or non-Hispanic/non-Arab Black (32.6%), while 5.8% identified as Hispanic and 4.2% identified as Arab and/or Middle Eastern.

Key findings include:

- Nearly a quarter (23.0%) of respondents waited more than a week to seek medical care following COVID-19 symptom onset.
- At the time of survey completion, 26.2% of respondents had not recovered from COVID-19 to their usual state of health. Among those who had recovered, there was a wide range in symptom duration, ranging from less than 1 week to 18 weeks.
- The COVID-19 outbreak worsened stress levels and mental health for 52.7% of respondents.
- When asked about challenges faced by themselves or their family members since the pandemic began, nearly 60% reported experiencing a loss of employment or reduction in hours worked and nearly 20% reported being unable to pay important bills.
- Prior to their illness, more than two-thirds (68.6%) of employed respondents had to physically report to work following the "Stay Home, Stay Safe" executive order. Among employed respondents, 34.0% did not take sick leave during their COVID-19 illness.

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BASIC QUESTIONS

What is MI CReSS?

The Michigan COVID-19 Recovery Surveillance Study (MI CReSS) is a joint project between the University of Michigan School of Public Health and the Michigan Department of Health and Human Services (MDHHS) that aims to:

- Conduct public health surveillance to learn about Michiganders' experiences with COVID-19 using a representative sample of confirmed cases within the state.
- Document sociodemographic inequities in COVID-19 treatment and the differential impact of COVID-19 illness on communities throughout the state.
- Disseminate findings broadly to lay the foundation for data-driven change.

Who was included in the MI CReSS sample?

The sample consisted of 2,000 non-institutionalized adults with COVID-19 onset on or before April 15, 2020, who were alive at the time of the study. Surveys were completed between June 22 and September 27, 2020.

How was the survey completed?

Participants completed the survey on the phone with a trained interviewer or online.

How many from the sample completed the survey?

A total of 638 participants from the initial sample of 2,000 adults in Michigan with COVID-19 onset on or before April 15, 2020 completed the survey.

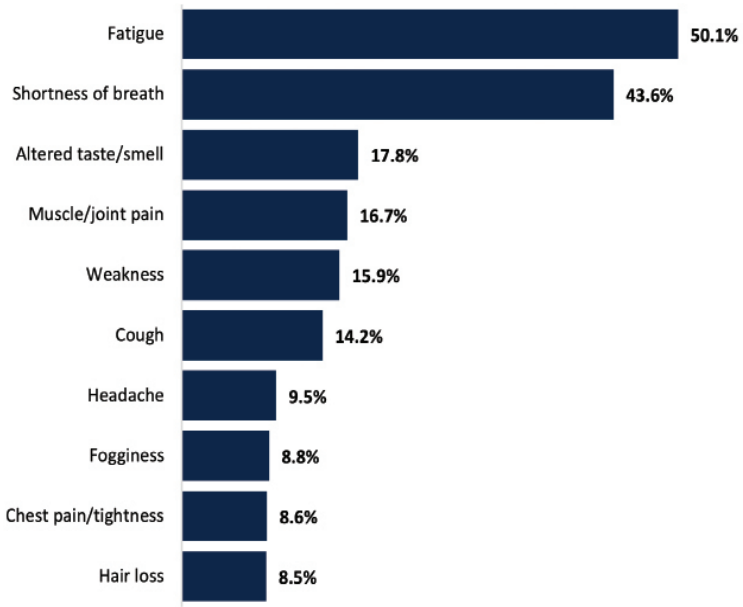
What do you plan to look at next in the survey?

In the next phase, we will examine data from an equity perspective to determine differences in experiences by age, sex, race/ethnicity, and socioeconomic status.

What have you learned about the COVID-19 recovery process?

Among respondents who responded to the survey 10-29 weeks post COVID-19 onset, 26.2% had not recovered to their usual state of health at the time of interview. Among the respondents who had recovered to their usual state of health, the recovery process took four weeks on average, ranging from less than 1 week to 18 weeks.

Among respondents who had not yet recovered, the most common ongoing symptoms were fatigue and shortness of breath. Other common symptoms were altered taste and/or smell, muscle or joint pain, weakness, and cough.



Based on your findings, what does this mean for the long term health of Michiganders who contract COVID-19?

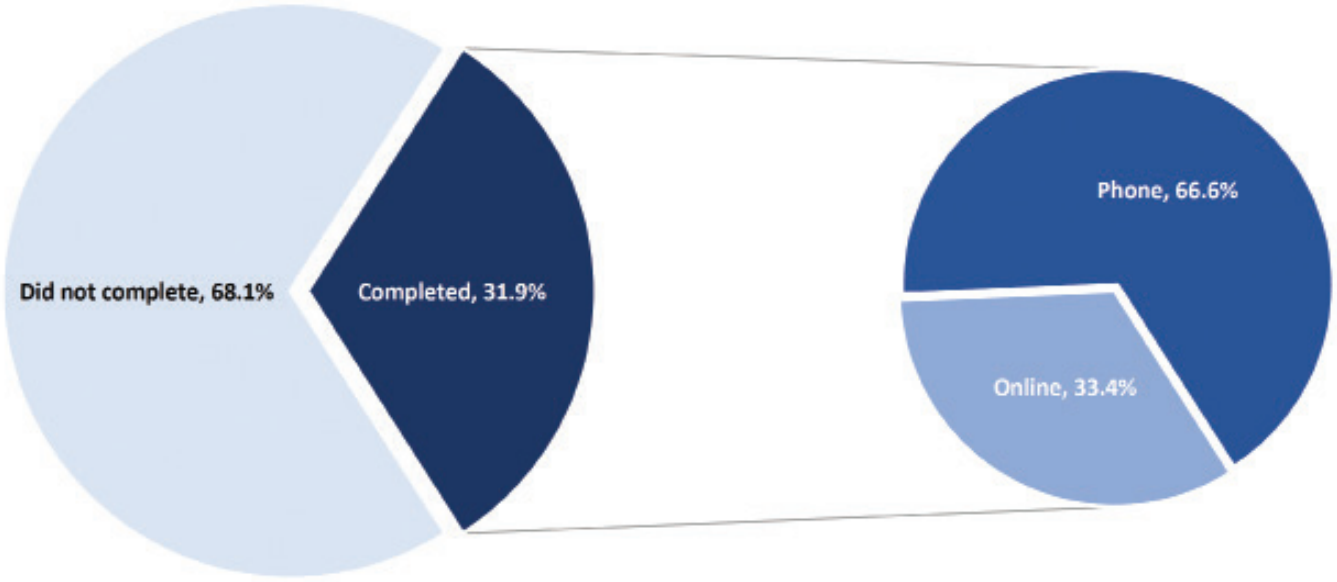
Collecting these data is the first step needed to document and quantify the long term effects of COVID-19. We can then use this information to make informed decisions about how to best support Michiganders during the ongoing pandemic. Although COVID-19 affects people differently, it can be a debilitating illness among those who survive. We need to continue to be vigilant with the things we know work: (1) wearing a mask, (2) social distancing, (3) limiting the size of gatherings, and (4) frequent hand washing.

PROGRESS TO DATE

A total of 638 participants from the initial sample of 2,000 adults in Michigan with COVID-19 onset on or before April 15, 2020 completed the survey.

Participation. As of September 28, 2020, all 2,000 cases in the initial sample were finalized, with a 31.9% response rate (638 completed surveys). Two-thirds of respondents completed the survey on the phone with a trained interviewer, while the remaining one-third completed the survey online (figure 1). Most telephone interviews were conducted in English (93%), with 22 interviews conducted in Spanish and 7 in Arabic.

Figure 1. Survey completion among the initial MI CReSS sample by survey mode (n=2,000)



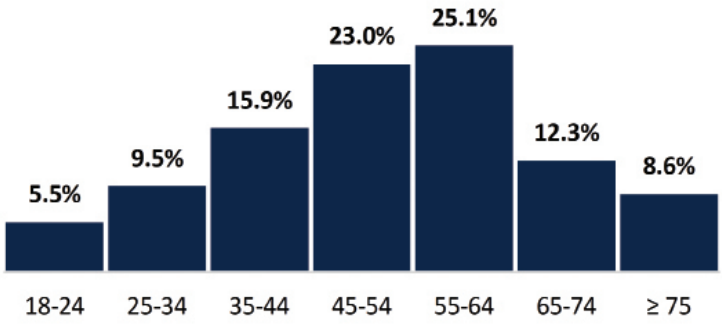
PRELIMINARY RESULTS

Respondent Demographics

Responses were weighted to be representative of non-institutionalized adults in Michigan with COVID-19 onset on or before April 15, 2020, who were alive at the time of the study.

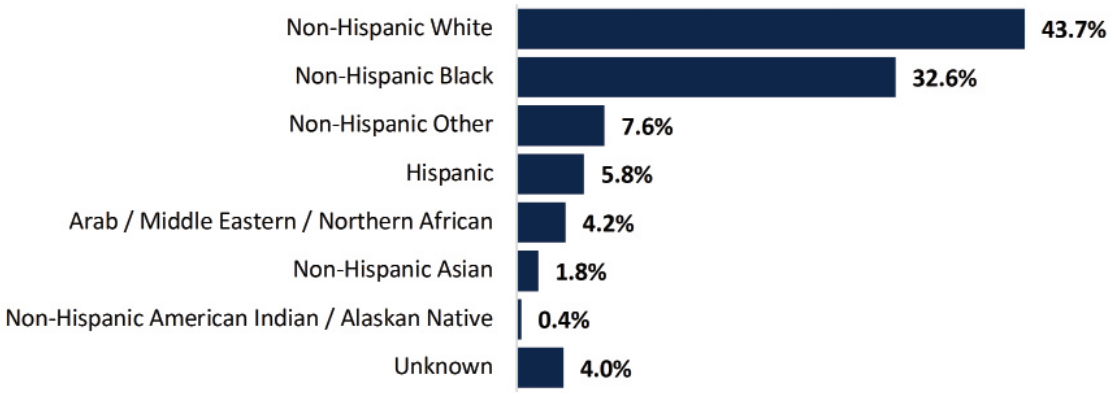
Age and Sex. The age of respondents ranged from 18 to 98 years (figure 2), with an average age of 52. More than half of respondents were female (56.6%) and 40.2% were male (3.2% missing).

Figure 2. Age distribution of MI CReSS respondents (n=638)



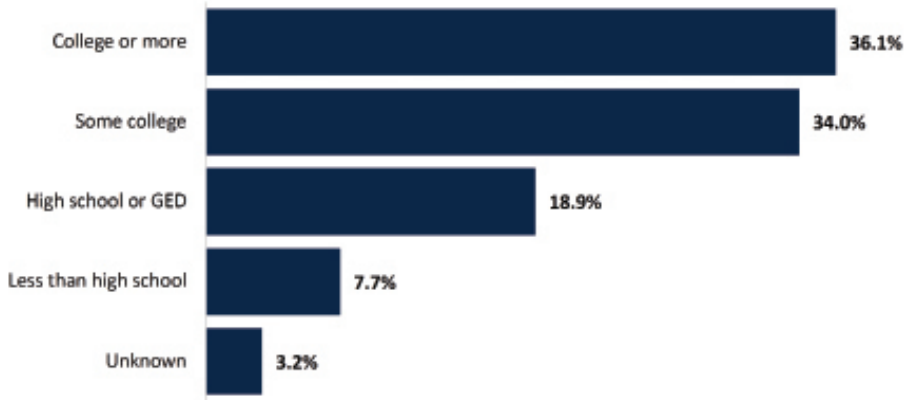
Race, Ethnicity, and Nativity. Most respondents identified as either non-Hispanic/non-Arab White (43.7%) or non-Hispanic/non-Arab Black (32.6%), while 5.8% identified as Hispanic and 4.2% identified as Arab and/or Middle Eastern (figure 3). 12.4% of respondents were born outside of the United States.

Figure 3. Race and ethnicity of MI CReSS respondents (n=638)



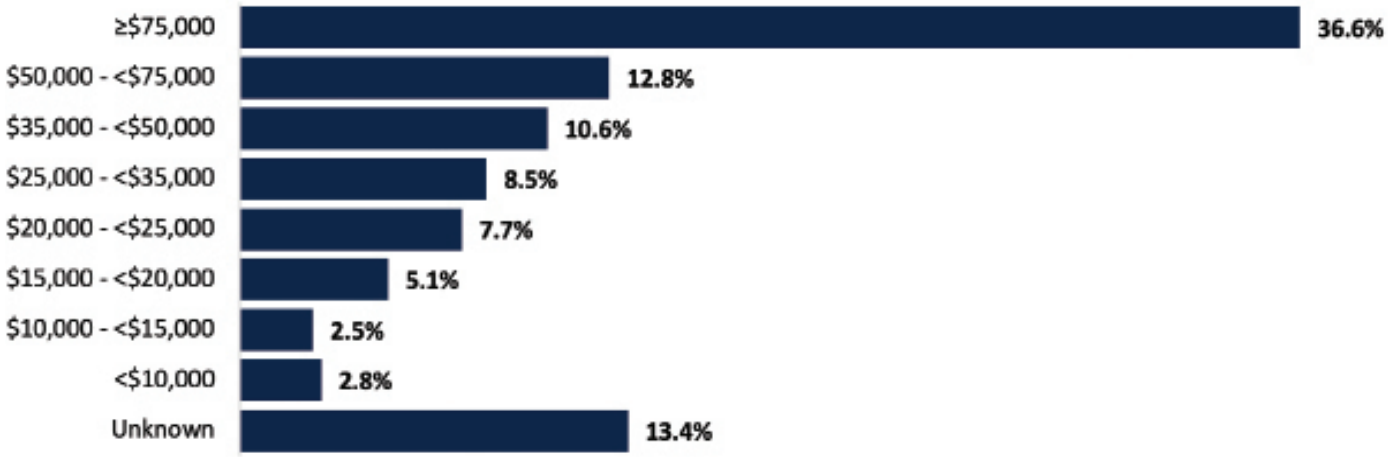
Education. Most respondents had some college education (34.0%) or a college degree (36.1%) (figure 4).

Figure 4. Educational attainment among MI CReSS respondents (n=638)



Annual Income. Among respondents, 36.6% had an annual household income of $75,000 or more, while 18.1% had an annual income of less than $25,000 (figure 5).

Figure 5. Annual income among MI CReSS respondents (n=638)

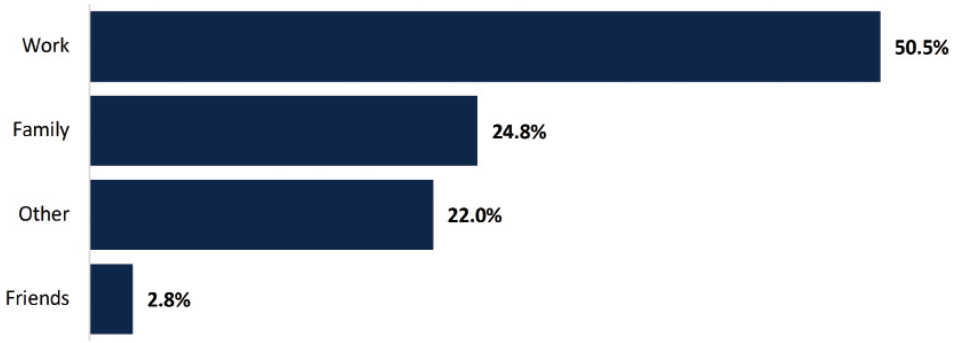


Access to Health Care

Among respondents who knew the source of their exposure to SARS-CoV-2, 50.5% reported work as the source of exposure. Additionally, nearly a quarter (23.0%) of respondents waited more than a week to seek medical care following COVID-19 symptom onset.

Source of Exposure. Respondents were asked about the suspected source of their exposure to SARS-CoV-2. Among respondents who reported knowing the source of their exposure (57.9%), the majority said they were exposed at work (50.5%) or from family members (24.8%) (figure 6).

Figure 6. Source of initial coronavirus exposure among respondents who reported knowing the source of their exposure (n=353)



Note. Other category included responses such as social engagements, hair salon, dental office, and grocery store.

Testing for COVID-19. Over half of respondents (58.6%) made multiple attempts (as many as 10) before receiving a COVID-19 test (figure 7). Respondents received their first COVID-19 test most commonly at emergency rooms (38.7%), followed by curbside and drive-thru testing sites (27.8%) (see figure 8 on page 7). Respondents who received a test at some other place reported locations such as the workplace or hospital (e.g., at a hospital drive-thru testing site or as an admitted patient).

Figure 7. Number of attempts before receiving a COVID-19 test (n=629)

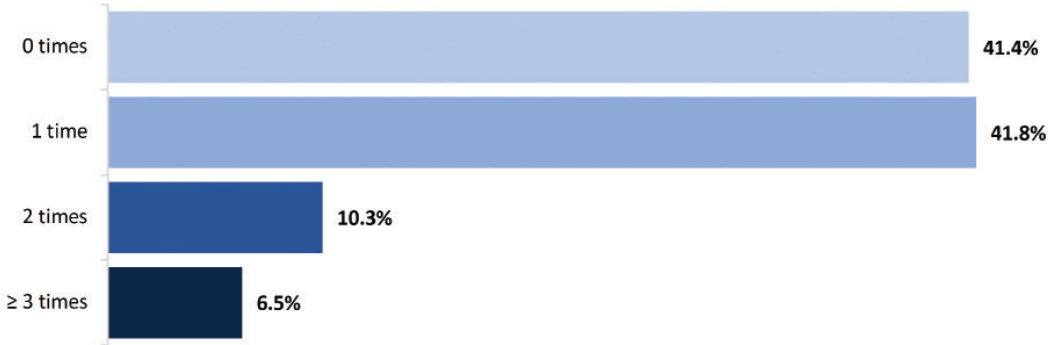
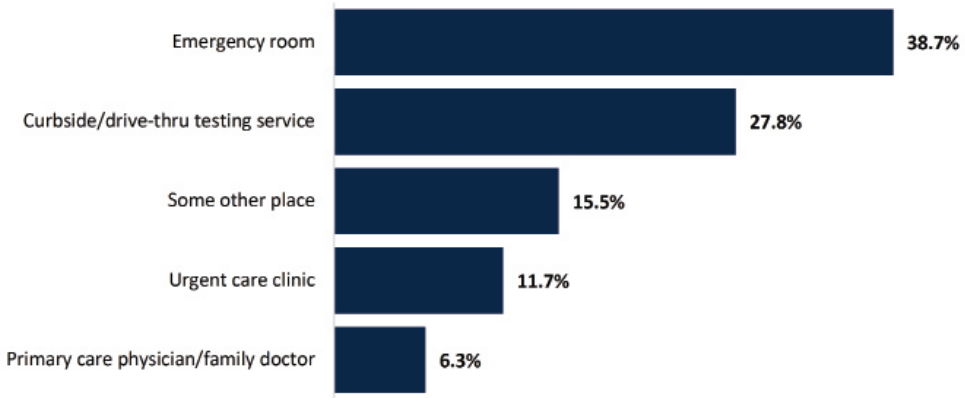


Figure 8. Location of COVID-19 testing site (n=635)



Health Care Coverage and Access to Treatment. The majority of respondents had health care coverage when diagnosed with COVID-19 (94.2%). Nearly a quarter of respondents waited more than a week to seek medical care following COVID-19 symptom onset (figure 9). Although cost was only a barrier for 5.7% of respondents, numerous other challenges contributed to delays in seeking treatment (see figure 10 on page 8). Among those who did seek care, about 8% reported being turned away from an emergency room or primary care physician when they felt they needed further treatment (see figure 11 on page 8).

Figure 9. Number of days following COVID-19 symptom onset before seeking medical care (n=605)

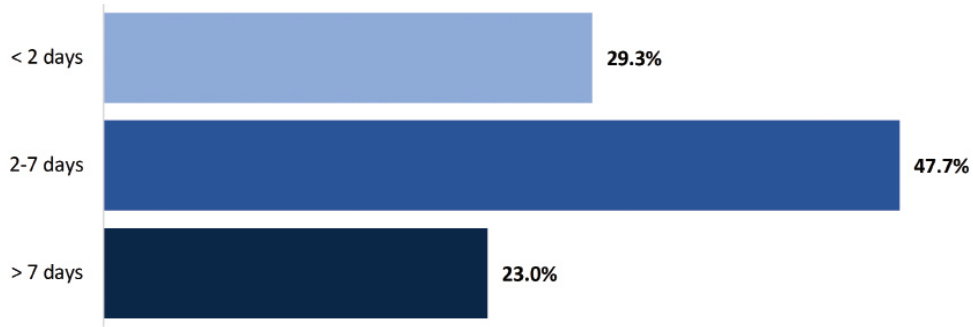
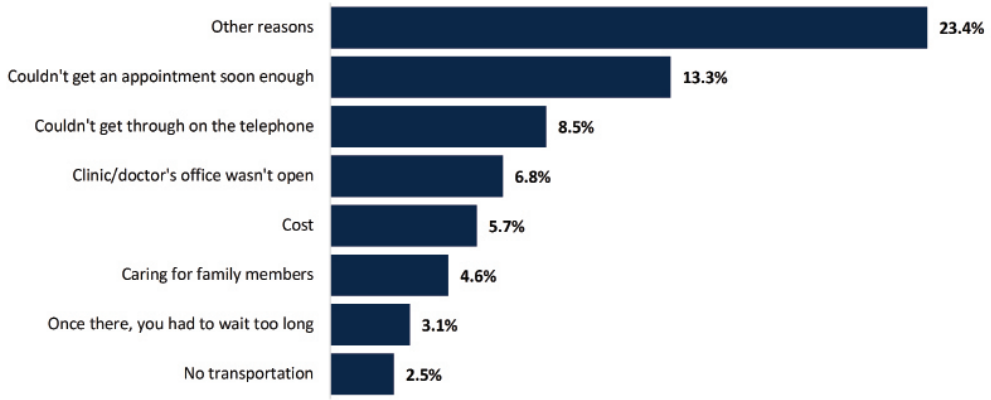
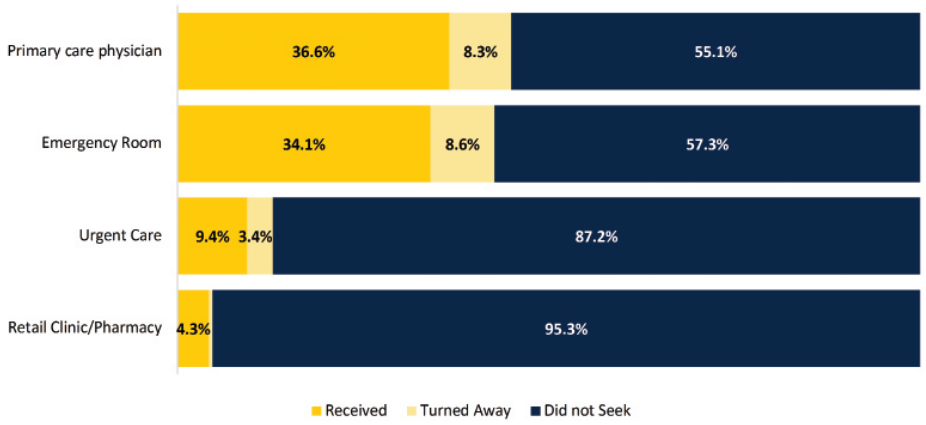


Figure 10. Reasons for delaying medical care for COVID-19



Note. Respondents could choose more than one option. Other reason category included lack of typical symptoms and fear of diagnosis. Number of respondents providing an answer for each option ranged from 618 to 634.

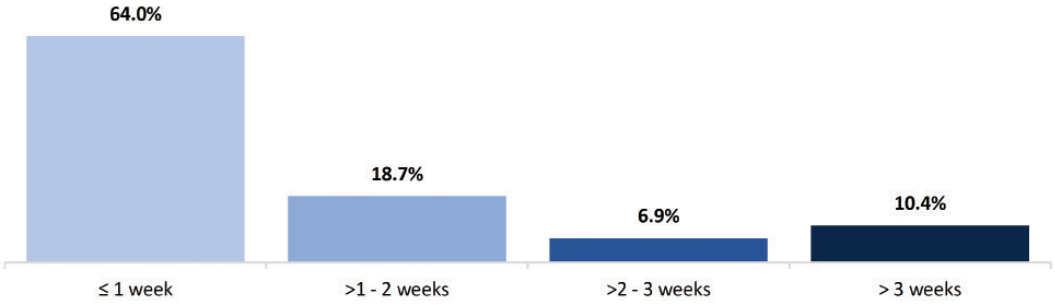
Figure 11. Percent of respondents who received, were turned away from, or did not seek COVID-19 treatment other than testing, by facility type



Note. Respondents could choose more than one option. Number of respondents providing an answer for each option ranged from 628 to 633.

Hospital Stay. 32.3% of respondents had an overnight stay in a hospital, with stays lasting an average of 10 nights (range 1–90 nights) (figure 12). Among respondents who required an overnight hospital stay, 28.2% required intensive care unit (ICU) monitoring. Also among respondents who required an overnight hospital stay, 20.6% needed a breathing tube or ventilator.[1]

Figure 12. Length of hospital stay in weeks among respondents who were hospitalized (n=187)



1. The question on need for a ventilator or breathing tube was added after the study launched and only asked among a subset of respondents.

Symptoms and Medications

At the time of survey completion, 26.2% of respondents had not recovered from COVID-19 to their usual state of health. Among those who had recovered, there was a wide range in symptom duration, ranging from less than 1 week to 18 weeks.

Symptom Severity and Duration. The majority of respondents reported that symptoms were very severe (25.8%) or severe (39.0%) when symptoms were at their worst (figure 13). At the time of the interview, 26.2% of respondents had not yet recovered from COVID-19 to their usual state of health. Among those who had recovered (73.8%), there was a wide range in symptom duration, from less than 1 week to 18 weeks (figure 14).

Figure 13. Symptom severity when symptoms were at their worst (n=619)

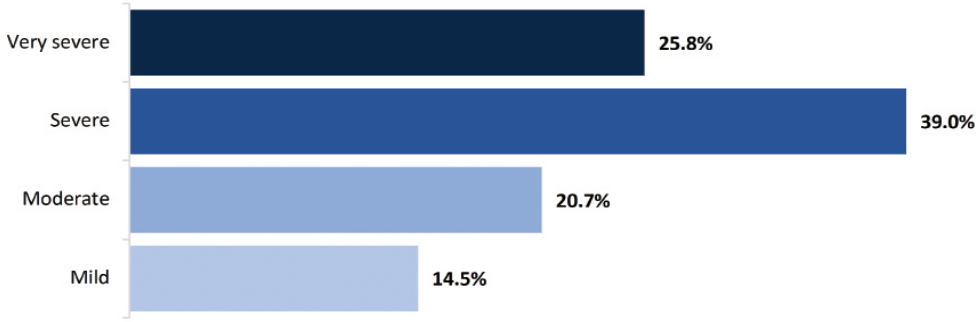
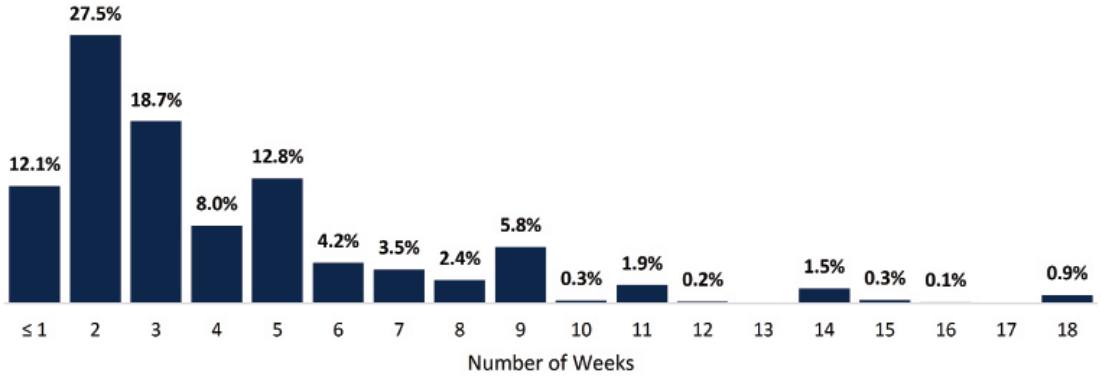


Figure 14. Length of recovery time among respondents who had recovered from COVID-19 to their usual state of health at the time of the interview (n=420)



Social Engagement/Psychosocial

The COVID-19 outbreak worsened stress levels and mental health for 52.7% of respondents. Additionally, when asked about challenges faced by themselves or their family members since the pandemic began, nearly 60% reported experiencing a loss of employment or reduction in hours worked and nearly 20% reported being unable to pay important bills.

Mental Health. More than half of respondents (52.7%) experienced worse stress levels or mental health following the COVID-19 outbreak (figure 15). 7-8% of respondents experienced symptoms of depression or anxiety nearly every day during the past 2 weeks (figure 16).

Figure 15. Change in stress levels or mental health following COVID-19 outbreak (n=614)

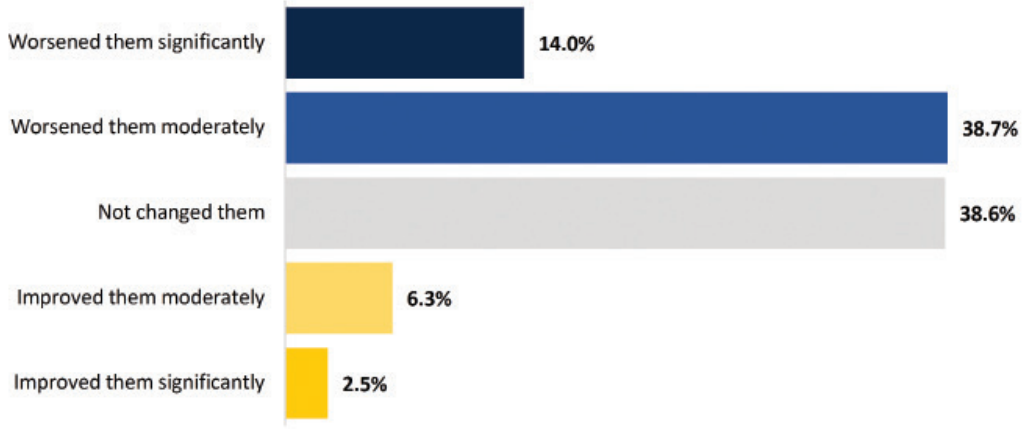
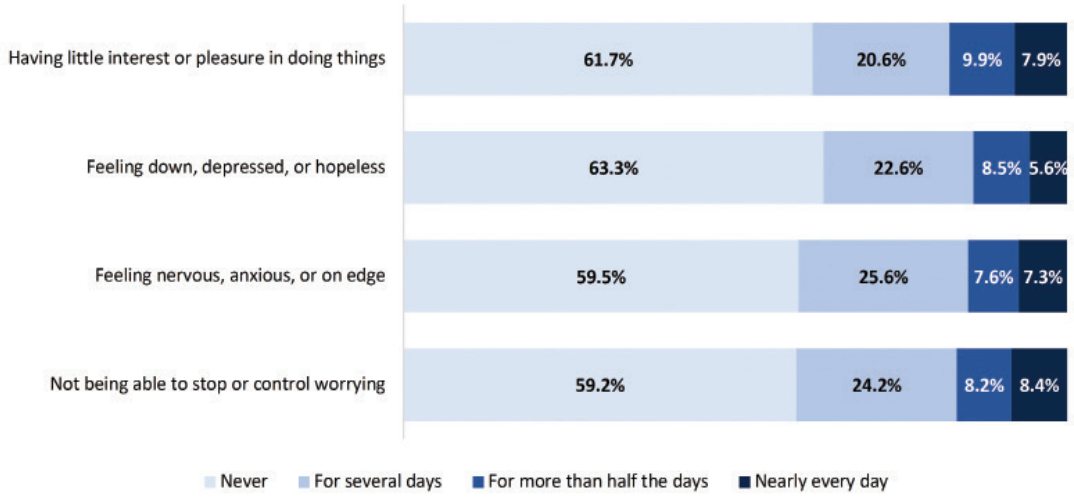


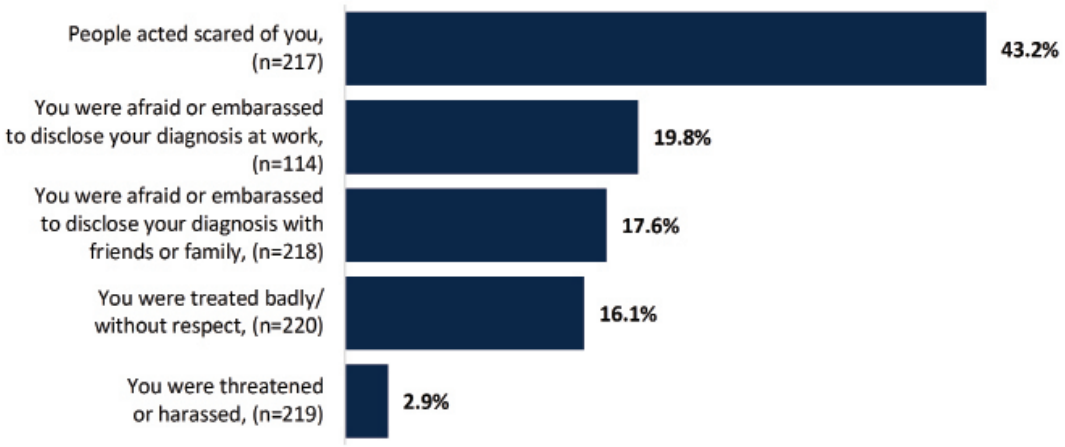
Figure 16. Frequency of symptoms of depression or anxiety in the past 2 weeks



Note. Number of respondents providing an answer for each question ranged from 614 to 619.

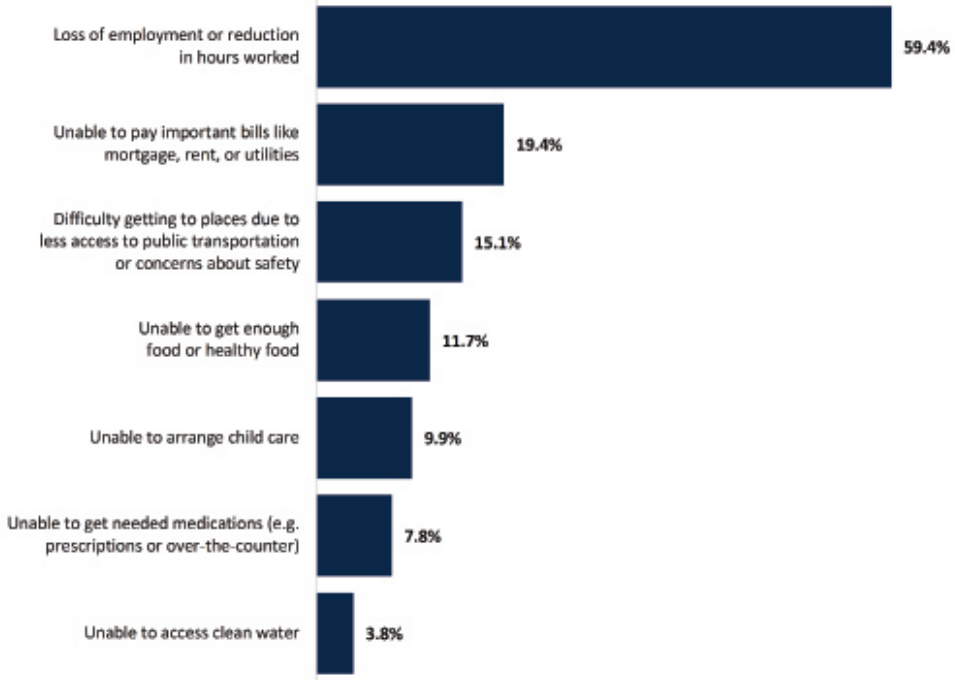
Social Stigma. Beyond the symptoms and recovery process, a positive COVID-19 diagnosis may come with social stigma. Nearly half of respondents (43.2%) reported that others acted scared of them due to their COVID-19 status. Moreover, 19.8% and 17.6% of respondents were afraid or embarrassed to disclose their COVID-19 diagnosis at work or with friends or family, respectively (figure 17).[2]

Figure 17. Social stigma due to COVID-19 status



Stressors. When asked about challenges faced by themselves or their family members since the pandemic began, nearly 60% reported experiencing a loss of employment or reduction in hours worked and nearly 20% reported being unable to pay important bills (figure 18).

Figure 18. Challenges for respondents or their family since the start of the COVID-19 pandemic



Note. Respondents could choose more than one option. Number of respondents providing an answer for each option ranged from 614 to 618.

2. Questions on social stigma were added after the survey was launched and were only asked among a subset of respondents.

Employment

Prior to their illness, more than two-thirds (68.6%) of employed respondents had to physically report to work following the "Stay Home, Stay Safe" executive order. Among employed respondents, 34.0% did not take sick leave during their COVID-19 illness.

Employment Status. The majority of respondents were employed for wages (68.7%) or self-employed (5.2%) prior to their COVID-19 illness (figure 19). Among employed respondents, 68.6% had to physically report to work following the "Stay Home, Stay Safe" executive order prior to their illness (87.5% of these workers were designated as essential employees) (figure 20). Notably, of the respondents who were employed prior to their COVID-19 illness, 34.0% did not take sick leave. Of the two-thirds of employed respondents who took sick leave, 17.6% had to take unpaid leave (see figure 21 on page 13).

Figure 19. Employment status directly prior to COVID-19 illness (n=616)

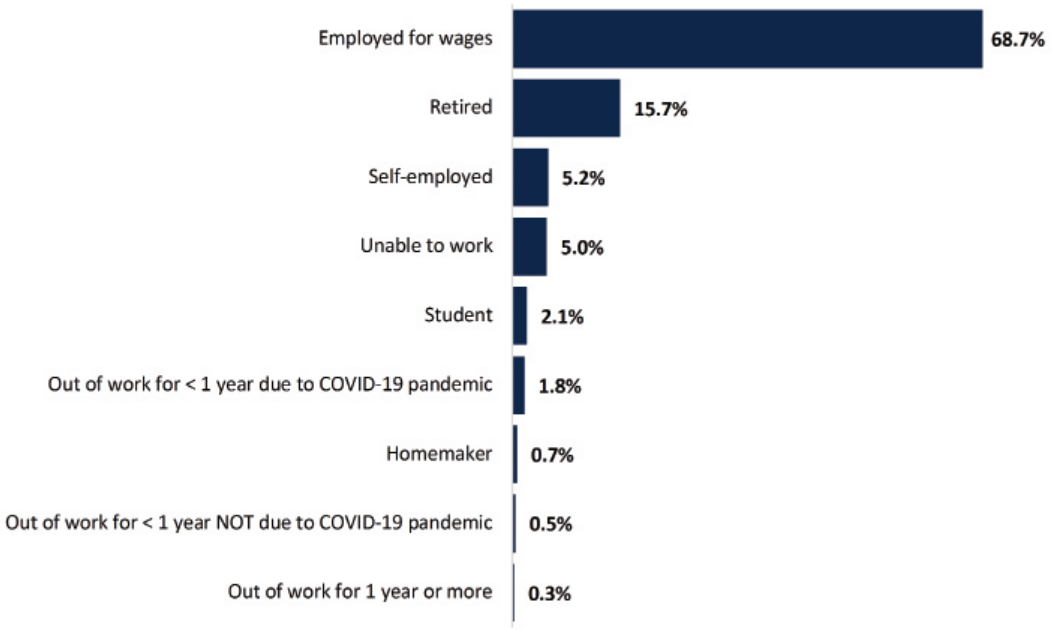


Figure 20. Proportion of employed respondents whose physical presence was required at work following the "Stay Home, Stay Safe" executive order (n=456)

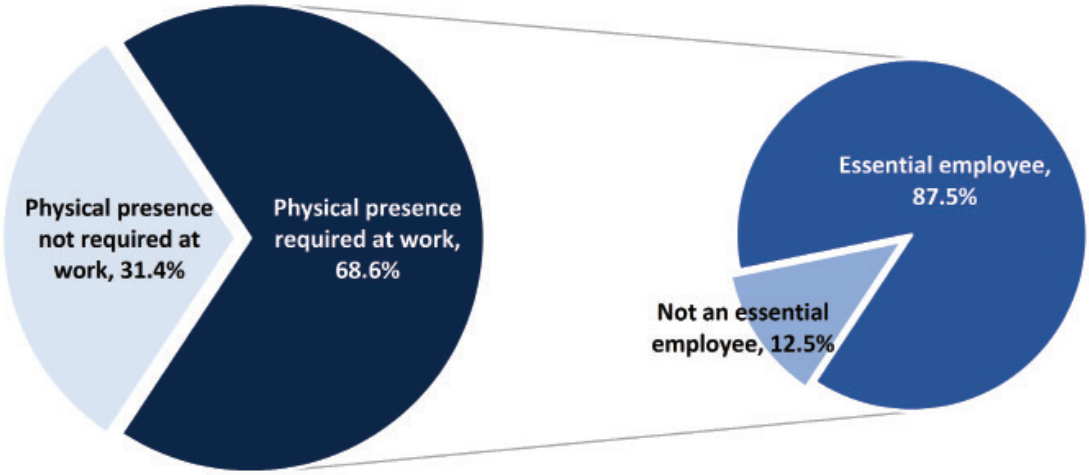
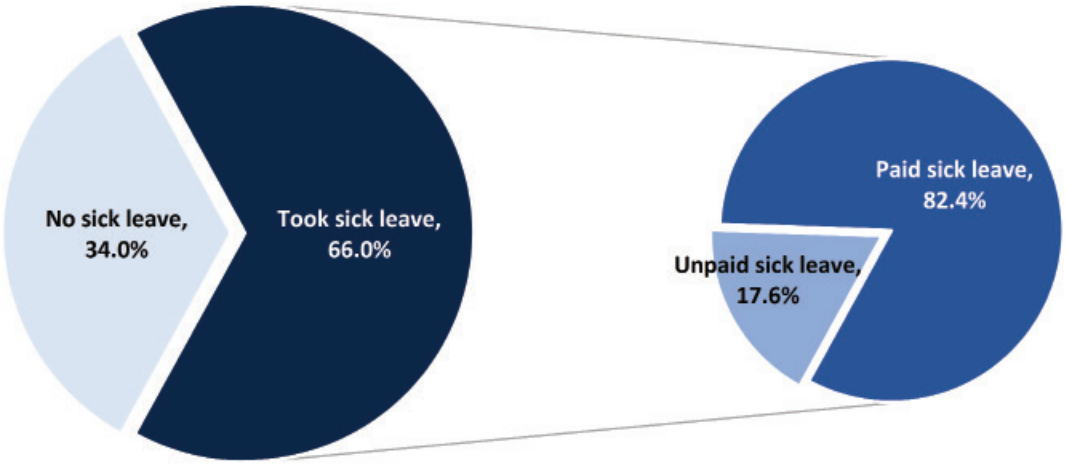
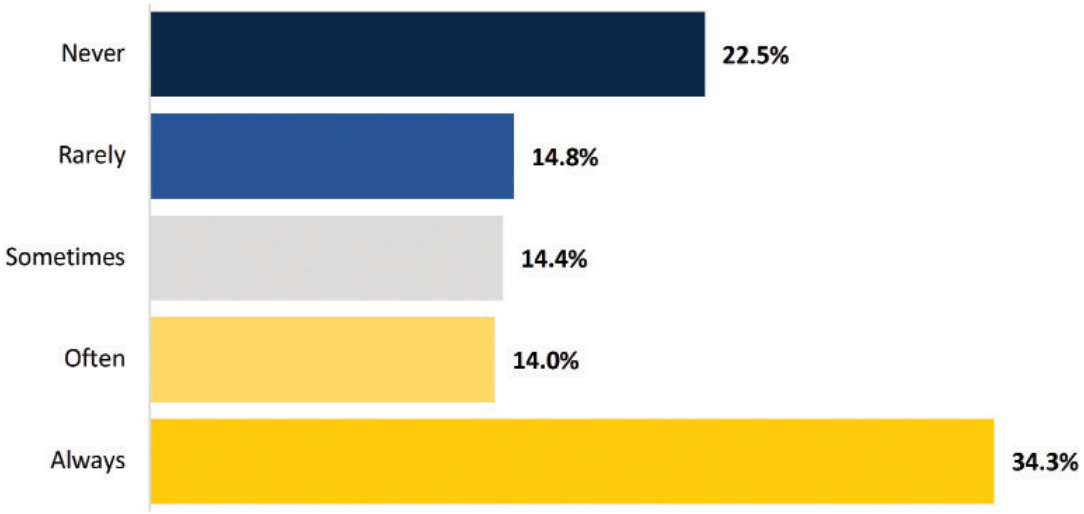


Figure 21. Proportion of employed respondents who took sick leave during COVID-19 illness (n=458)



Personal Protective Equipment (PPE). Among the respondents whose physical presence was required at work, adequate personal protective equipment was not always readily available (figure 22).

Figure 22. Availability of adequate personal protective equipment prior to their COVID-19 illness among respondents whose physical presence was required at work (n=310)



Communication and Trust in Health Care Providers

Communication, trust in healthcare providers, and treatment experiences varied. More than 90% of respondents agreed that they received the best treatment available, although nearly 30% of respondents disagreed that providers would tell them if a mistake was made about their treatment.

Communication and Trust. Respondents who required an overnight stay in a hospital felt more confident with the instructions they were given upon discharge on how to manage their illness at home in comparison to respondents who did not require an overnight hospital stay (figure 23). A majority of respondents (90.4%) agreed or strongly agreed that they received the best treatment available (figure 24). At the same time, nearly 30% of respondents disagreed or strongly disagreed that health care providers would tell them if a mistake was made about their medical treatment (figure 24). Most respondents (81.7%) perceived that their experience seeking healthcare for COVID-19 was the same as people from other races (figure 25).

Figure 23. Clarity in instructions on how to manage COVID-19 illness at home after receiving treatment

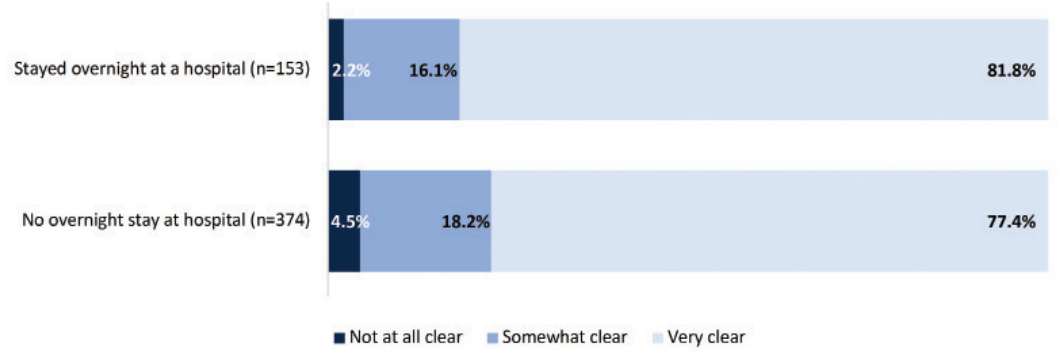
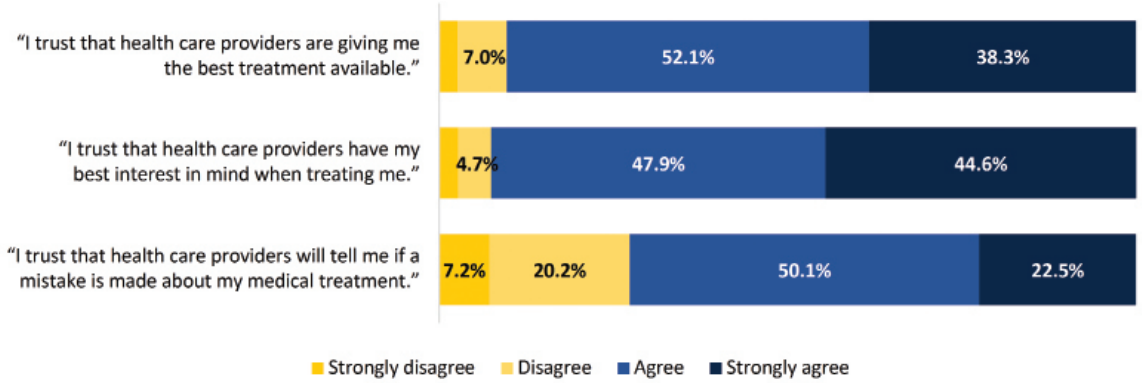
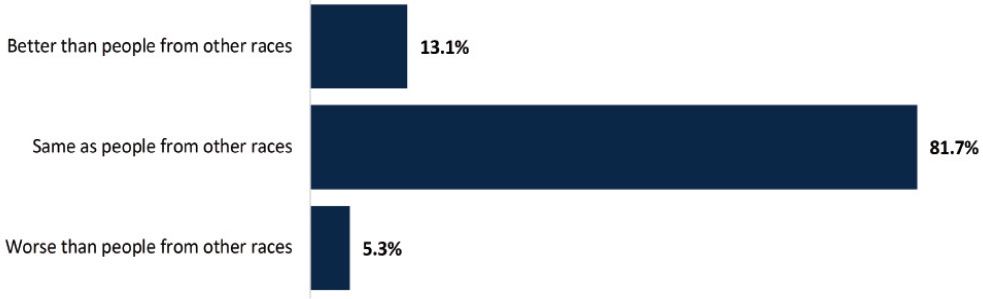


Figure 24. Level of trust in health care providers



Note. Number of respondents providing an answer for each question ranged from 614 to 622.

Figure 25. Perceptions of COVID-19 healthcare seeking experiences compared to people of other races (n=568)



NEXT STEPS FOR MI CRESS

Analysis from the first sample is ongoing. A second probability sample of 1,000 cases with COVID-19 onset diagnosis in the Michigan Disease Surveillance System (MDSS) database reported between April 16, 2020, and May 31, 2020, was drawn in September 2020. An initial recruitment letter was sent to selected individuals in the second sample on September 14, 2020.

SURVEY METHODS

An initial sample of 2,000 adults with COVID-19 onset in the MDSS was drawn in June of 2020. The sample included individuals who had COVID-19 onset on or before April 15, 2020, based on self-reported date of illness onset. If the illness onset date was not available, the collection date for the individual's first positive COVID-19 test was used; if the collection date was not available, the date of case referral to MDHHS was used. All Michigan adults 18 years and older who were confirmed as cases of COVID-19 infection in the MDSS with a date of birth, phone number, and geographic information (county and/or zip code) were eligible for the survey sample. Deceased cases and institutionalized individuals (e.g., people in prisons or psychiatric hospitals) were excluded from the sampling frame. The frame was then divided into geographic strata, including Public Health Preparedness Regions 1, 3, 5, 6, 7, and 8, the counties of Macomb, Oakland, Saint Clair, Monroe, Washtenaw, and Wayne (excluding Detroit), and the city of Detroit. A total of 28,000 adults were eligible for the sample. A base number of cases was sampled from each geographic stratum to support reporting of stratum-level results, and the remainder of the sample was drawn proportionally.

All individuals in the sample were sent an introductory recruitment letter and consent document. Participants were given a website and unique code to take the survey online if they chose. Surveys were completed between June 22 and September 27, 2020. Attempts to reach the entire sample included two mailings and up to five call attempts by telephone. Upon contact with potential participants, the sample was further limited to respondents who spoke English, Spanish, or Arabic, or who had a proxy available to translate from another language into English, Spanish, or Arabic.

Reported results incorporate survey weights that have been calibrated to represent the total population within the sampling frame, as well as the population size within geographic stratum, overall, and by sex and age.

ACKNOWLEDGEMENTS

We would like to acknowledge the respondents who took time to share with us their personal and often difficult experiences with COVID-19 for the purpose of this study. We would also like to thank the team of interviewers, our collaborators at MDHHS and the University of Michigan, and the funding we received to launch and continue this study.

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Suggested Citation

Laskaris Z, Patel A, Hirschtick JL, Titus A, Elliott MR, Fleischer NL. *Michigan COVID-19 Recovery Surveillance Study. Data Report 1: Key Descriptive Findings.* Ann Arbor, MI. October 2020.