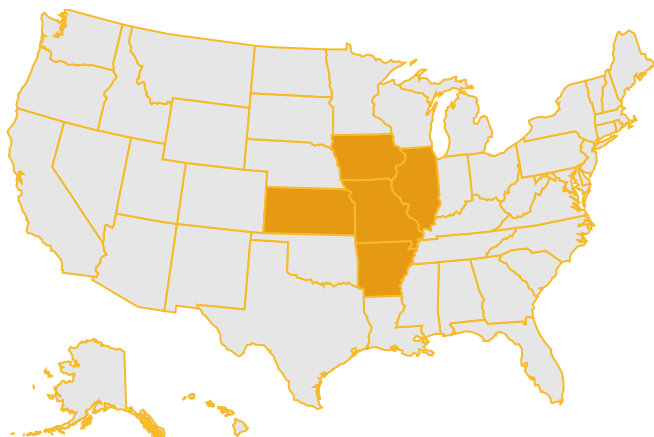




# Perceptions and Behaviors in Response to the Novel Coronavirus Disease 2019 (COVID-19): Findings from Three Survey Waves



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# Introduction

The United States have been affected by an extensive novel coronavirus (COVID-19) outbreak since March 2020. On March 9, 2020 we started an online survey of people's perceptions and behaviors related to this issue in Missouri and adjacent states (Kansas, Iowa, Illinois, and Arkansas). The survey was administered using Qualtrics and mainly distributed through social media (Facebook, Twitter, etc.) and electronic listservs of the University of Missouri. All adult residents 18 years of age or older were eligible to participate. The survey was ended on June 9, 2020 and in total 7,392 surveys were completed.

In order to assess how attitudes and behaviors related to COVID-19 may change over time, two follow-up surveys were conducted with those respondents who indicated interest in the re-surveys and provided an email address. The first re-survey was sent to 2,860 participants who responded to our survey at the early stage of the study (March 9 – April 30). It was open from May 19 to June 1 and received 1,625 responses (a response rate of 56.8%). During July 13 – 31, a second re-survey was emailed to 3,792 respondents of the initial survey, including those 1,625 participants who also completed the first follow-up survey. 2,066 valid responses were returned, yielding a response rate of 54.5%.

This working report summarizes major results of these different survey waves, including respondents' perceived severity of the COVID-19 outbreak, knowledge about COVID-19, relevant information sources, perceptions of COVID-19 risk, satisfaction with management entities, and preventive actions. This research was approved by the University of Missouri-Columbia Institutional Review Board (Project Number: 2020744). Although the survey was conducted by researchers at the University of Missouri-Columbia, the corresponding study was not part of the University's formal response to the COVID-19 pandemic.

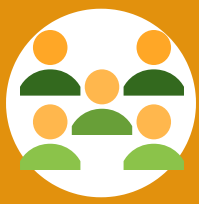




## Highlights

- ✓ Respondents indicated much higher levels of perceived severity of the COVID-19 outbreak in Wave 3 than in the first two survey waves.
- ✓ Survey respondents on average indicated using multiple sources of information to acquire knowledge about COVID-19 and showed high levels of knowledge of the disease.
- ✓ Both perceived likelihood of infection and reported levels of anxiety decreased slightly in Wave 2, but rose above the initial levels in Wave 3.
- ✓ Perceived harmfulness of infection remained the same in Wave 2 and increased slightly in Wave 3.
- ✓ Respondents' satisfaction with state and federal governments' responses to the COVID-19 outbreak declined over time.
- ✓ Reported number of preventive actions and perceived effectiveness of these actions were generally at quite high levels while increasing slightly in Waves 2 and 3.
- ✓ Compared to the initial survey wave, both the adoption rate and perceived effectiveness of face mask wearing increased substantially in the two re-surveys.





# Demographic Characteristics

## Wave 1

For comparison purposes we set the early phase of this survey study (March 9 – April 30) as the first survey wave. Several socio-demographic variables were included in the survey to describe the characteristics of participants. The 5,294 Wave 1 respondents were mostly from Missouri (42.7%), followed by Illinois (21.3%), Iowa (13.4%), Kansas (11.5%), and Arkansas (9.8%). Most of them (85.0%) heard about the survey via Facebook. The average age of all respondents was about 46 years. Females and males accounted for 70.3% and 28.2% in the sample, respectively. Respondents reported living in their communities for an average of about 20 years. A large majority of respondents (94.9%) were white. 58.4% of all respondents attained four-year college or higher degrees. 42.6% of survey participants earned less than \$50,000, and 31.8% earned \$75,000 or more in 2019. 45.9% of respondents described their views as liberal or moderate-liberal, 15.2% as moderate, and 29.5% as moderate-conservative or conservative.

## Wave 2

The second wave of data was collected between May 19 and June 1, 2020. The 1,625 respondents to this re-survey were mostly from Missouri (49.7%), followed by Illinois (18.9%), Iowa (11.9%), Kansas (10.8%), and Arkansas (7.9%). The average age of all respondents was about 44 years. Females and males accounted for 72.2% and 25.9%, respectively, in this sample. Respondents reported living in their communities for an average of about 17 years. 70.0% of all respondents attained four-year college or higher degrees. 43.1% of survey participants earned less than \$50,000, and 33.5% earned \$75,000 or more in 2019. 54.4% of respondents described their views as liberal or moderate-liberal, 15.0% as moderate, and 23.0% as moderate-conservative or conservative.

## Wave 3

The third wave of data collection took place during July 13 – 31, 2020. The 2,066 survey respondents were mostly from Missouri (46.5%), followed by Illinois (21.9%), Kansas (11.8%), Iowa (10.6%), and Arkansas (8.6%). The average age of all respondents was about 45 years. Females and males accounted for 72.8% and 25.3% in this sample, respectively. Respondents reported living in their communities for an average of about 18 years. 72.5% of all respondents attained four-year college or higher degrees. 40.4% of survey participants earned less than \$50,000, and 34.2% earned \$75,000 or more in 2019. 56.6% of respondents described their views as liberal or moderate-liberal, 14.3% as moderate, and 22.1% as moderate-conservative or conservative.



# Perceived Severity of the COVID-19 Outbreak

Respondents were asked to rate the severity of the COVID-19 outbreak in their city, their state, and the whole country on a scale from 1 (not at all severe) to 5 (very severe). Overall, respondents indicated higher degrees of severity for the nation than for their states and cities/towns.

Figure 1. Severity of the COVID-19 outbreak in and around your city/town (%)

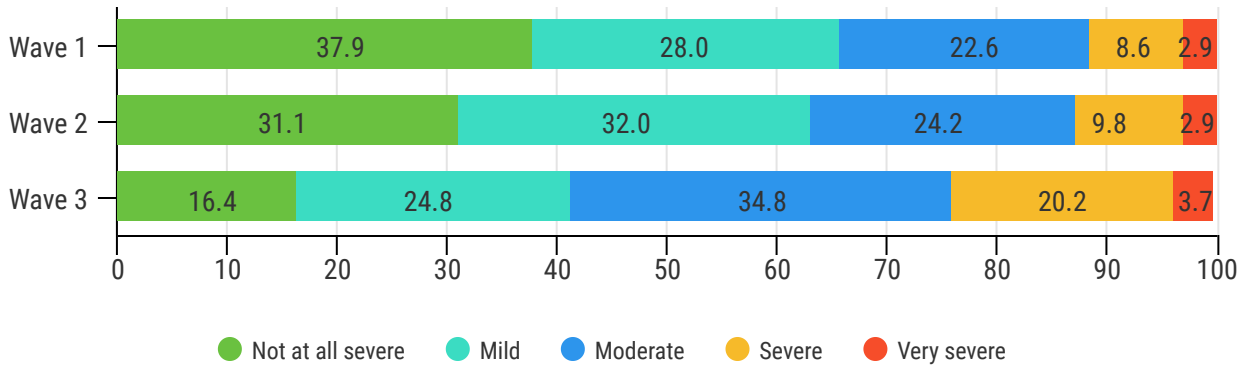


Figure 2. Severity of the COVID-19 outbreak in your state (%)

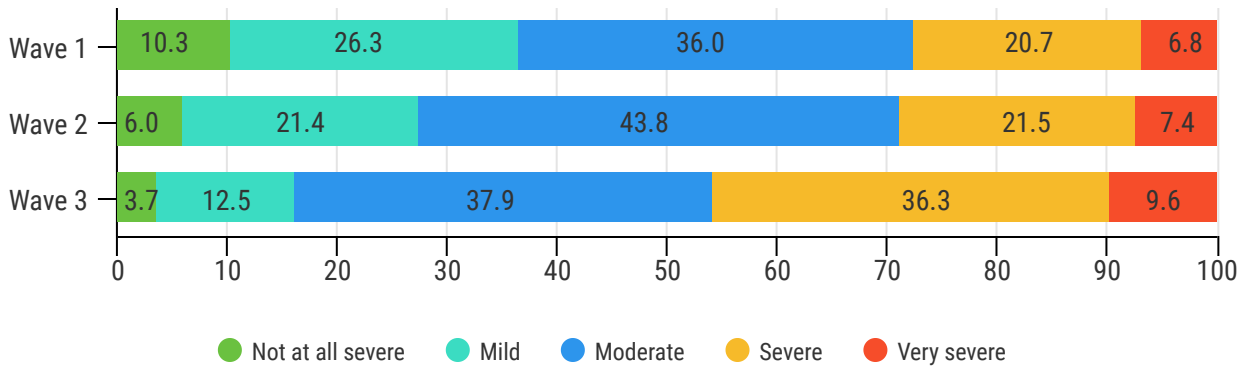
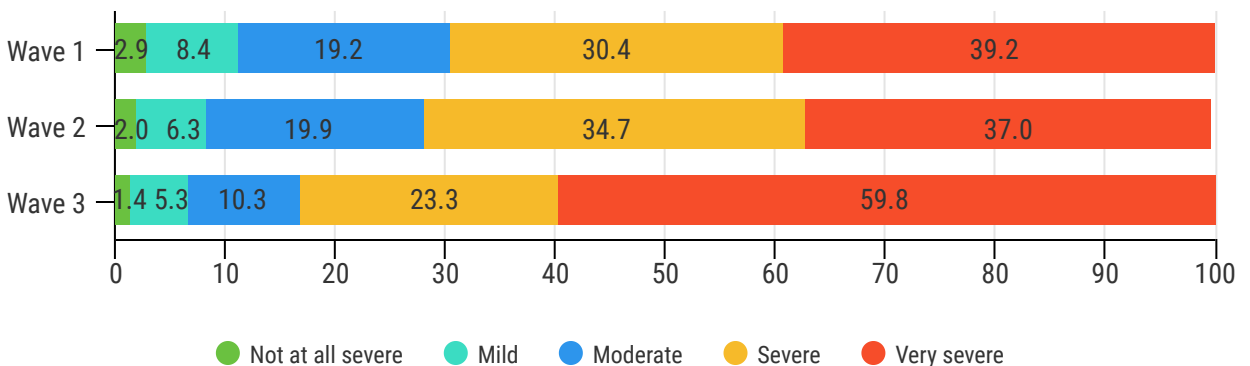


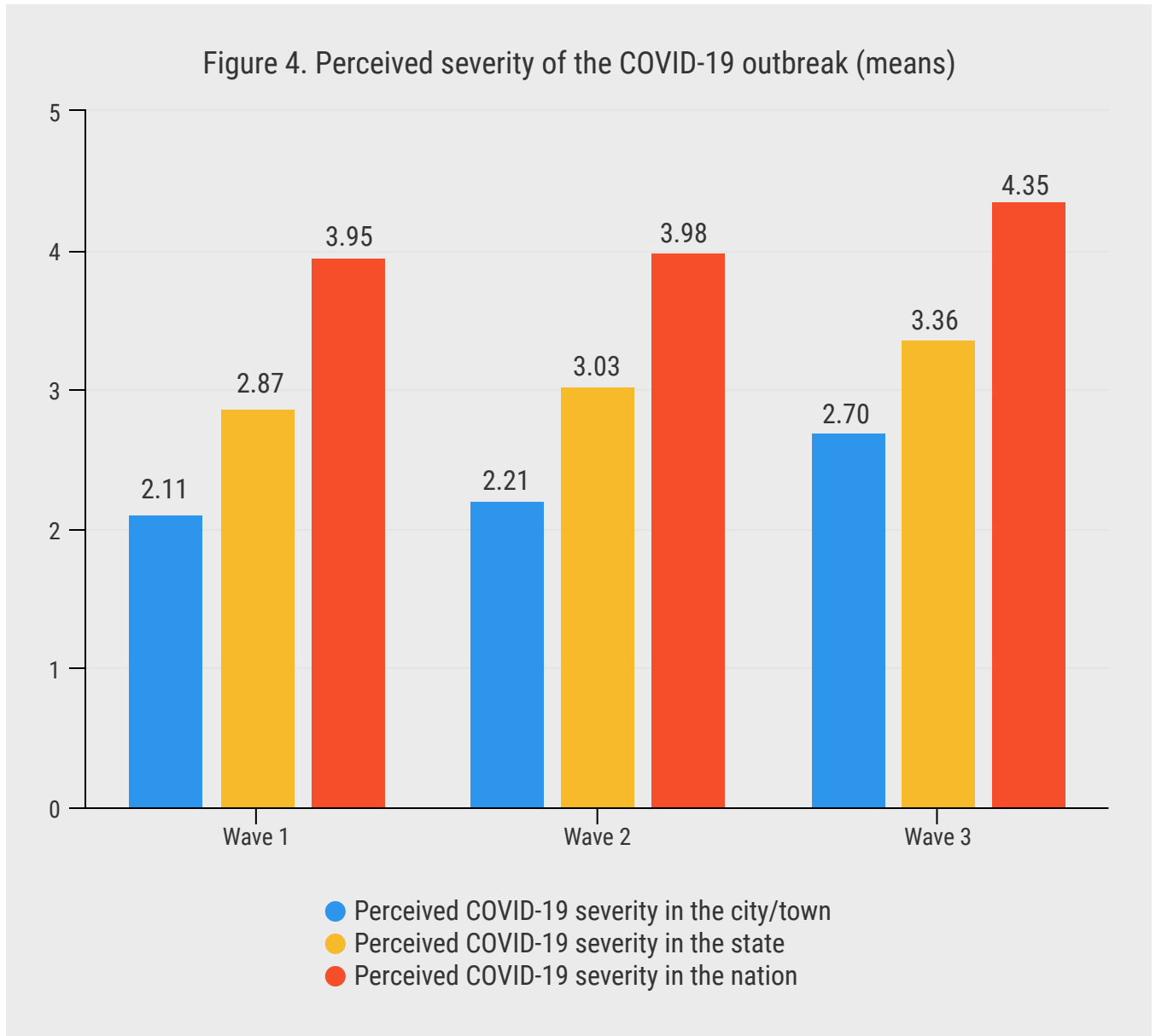
Figure 3. Severity of the COVID-19 outbreak in the nation (%)





# Perceived Severity of the COVID-19 Outbreak (Cont.)

Respondents indicated much higher levels of perceived severity of the COVID-19 outbreak in Wave 3 than in the first two survey waves.

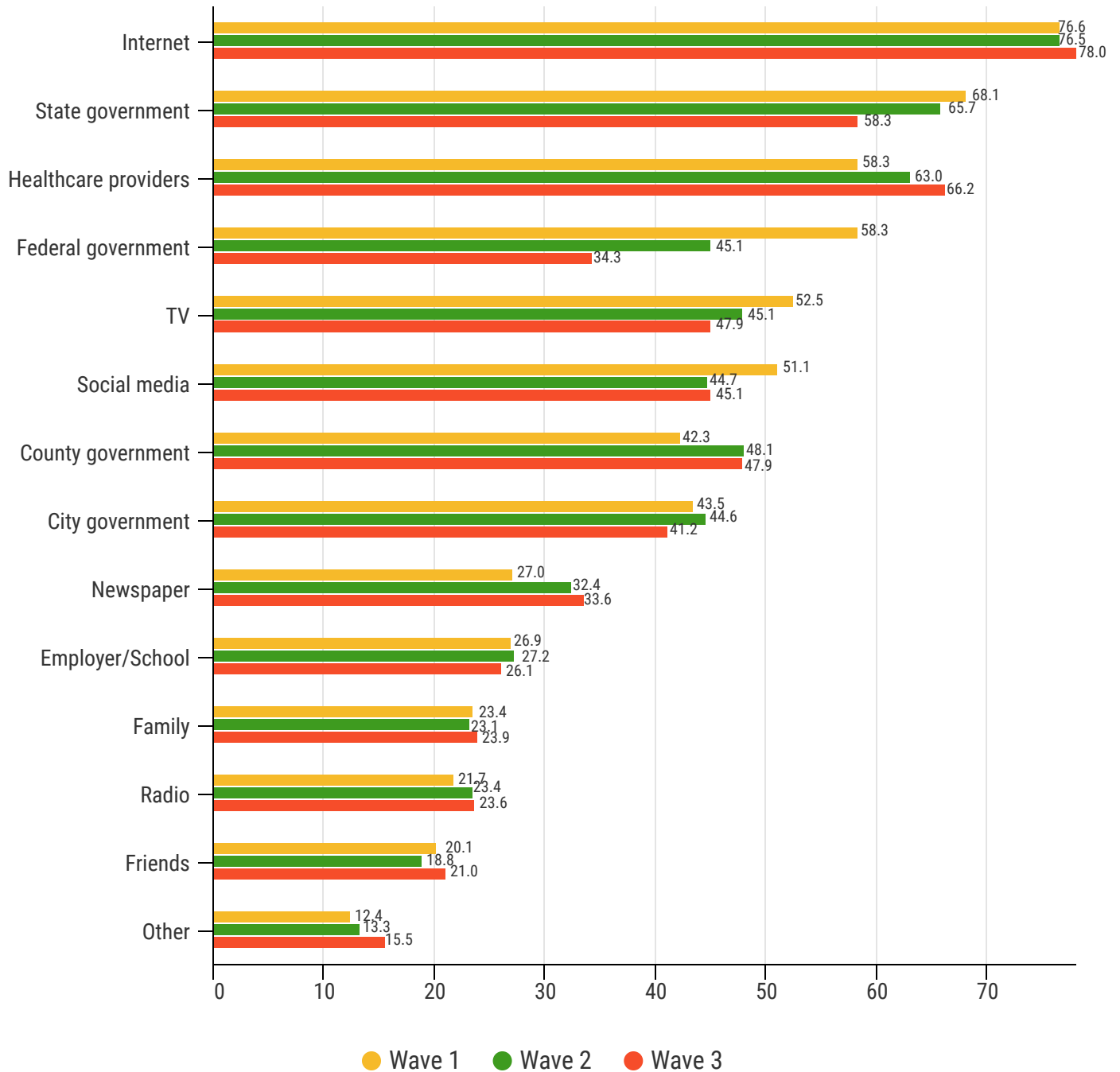




# Sources of Information

Respondents were asked to indicate which sources of information they relied on regarding COVID-19 issues. The most popular sources of information included internet, state government, and healthcare providers. Some of the sources (e.g., federal government, television) appeared to become less important for respondents over time. The sum of percentages is greater than 100.0% as respondents could choose multiple answers.

Figure 5. Sources of information (%)







## Sources of Information (Cont.)

Respondents were also asked about information sources they trusted the most and the least. Figure 6 shows the five information sources deemed most trustworthy by respondents, including healthcare providers, state government, internet, federal government, and newspaper.

Figure 6. Most trusted information sources (%)

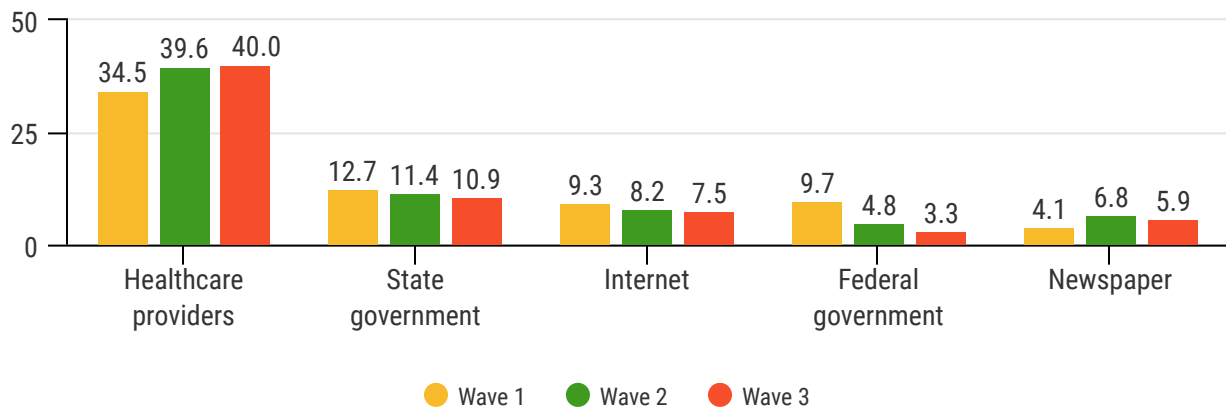
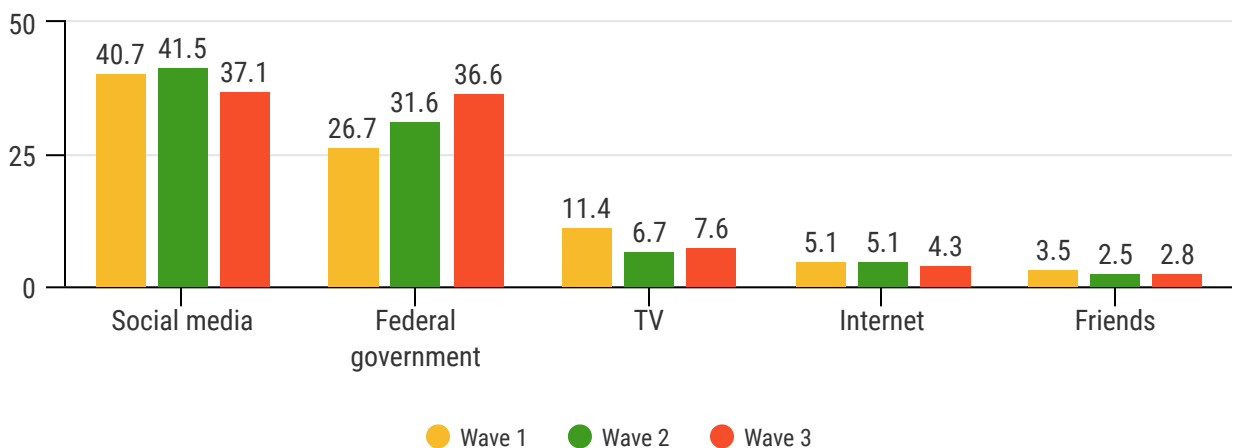


Figure 7 displays respondents' least trusted sources of information. Social media was viewed as the least trustworthy. While internet and federal government were ranked among the most popular sources of information, they were indicated as both the most and least trusted.

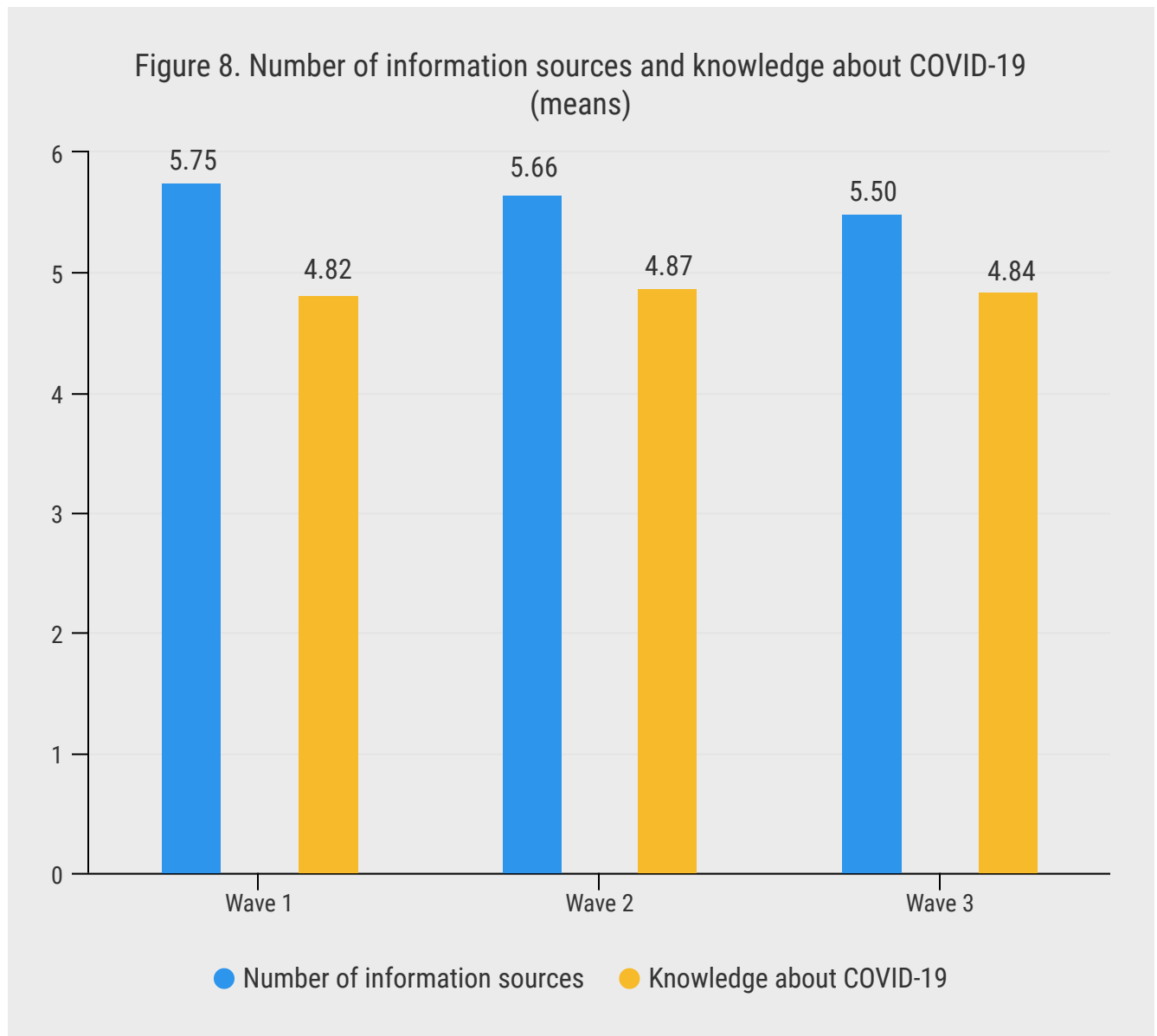
Figure 7. Least trusted information sources (%)





# Information Sources and Knowledge about COVID-19

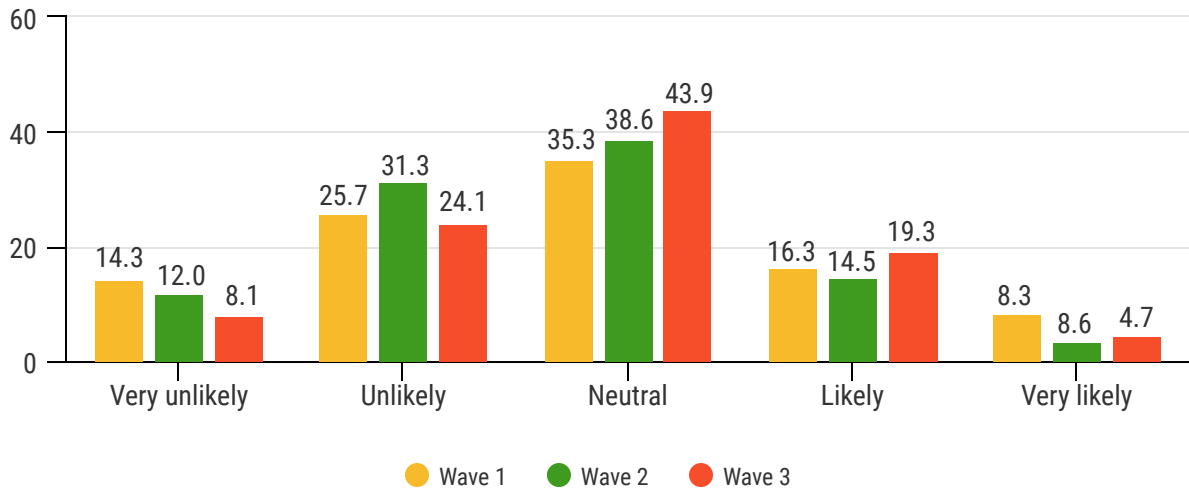
Two new indicators were created using answers to the questions on information sources and the five True/False questions: number of information sources (range: 0 – 13) and knowledge about COVID-19 (range: 0 – 5). Survey respondents on average indicated using multiple sources of information to acquire knowledge about COVID-19 and showed high levels of knowledge of the disease. Both the total number of information sources and the knowledge index remained largely stable across the three survey waves.





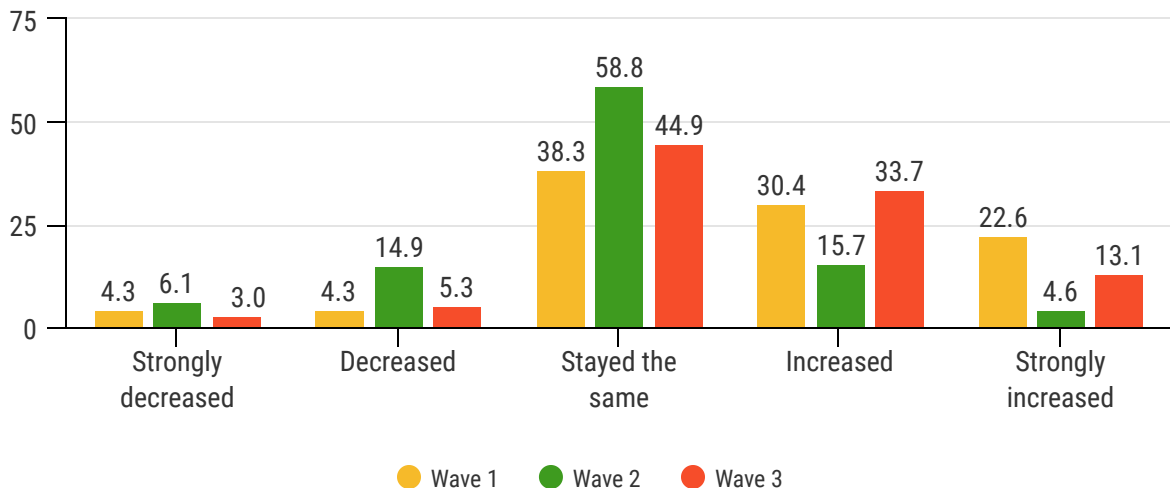
# Perceived Risk of Being Infected

Figure 9. How would you describe your personal risk of being infected by COVID-19? (%)



Perceived risk of being infected by COVID-19 was measured with a scale from 1 (very unlikely) to 5 (very likely). The most frequently selected categories of the perceived risk of being infected were "neutral" and "unlikely." Change of this risk perception during the past month, at the time of the survey, was also represented on a scale from 1 (strongly decreased) to 5 (strongly increased). While a large proportion of respondents indicated their concern about the chance of getting infected stayed the same in all three survey waves, more people reported increased or strongly increased concern in the first and the third survey waves than in Wave 2.

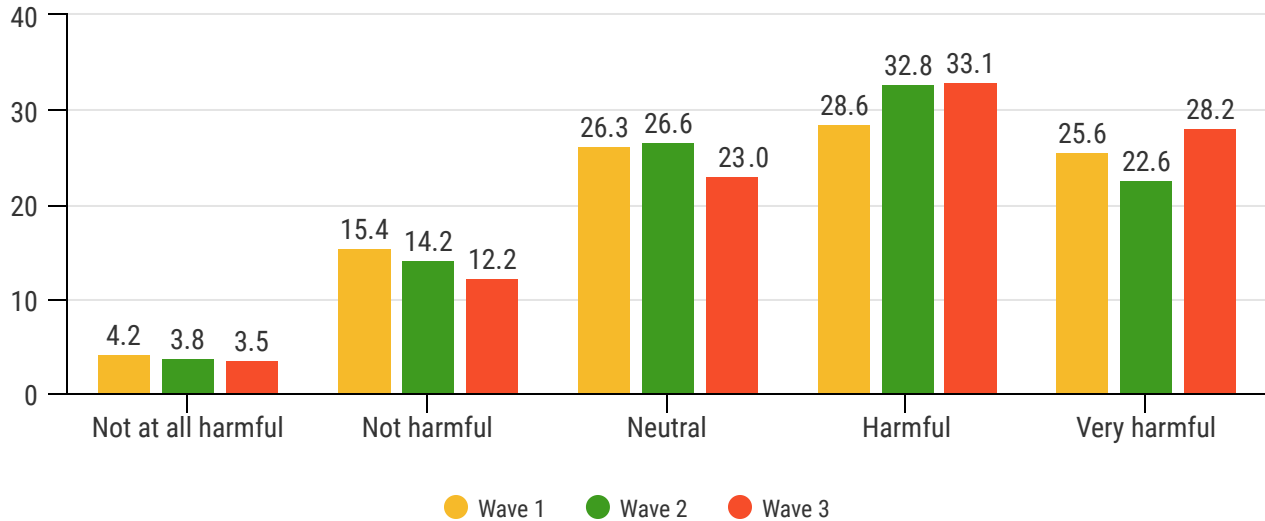
Figure 10. Has your concern about the chance that you may get infected changed during the past month? (%)





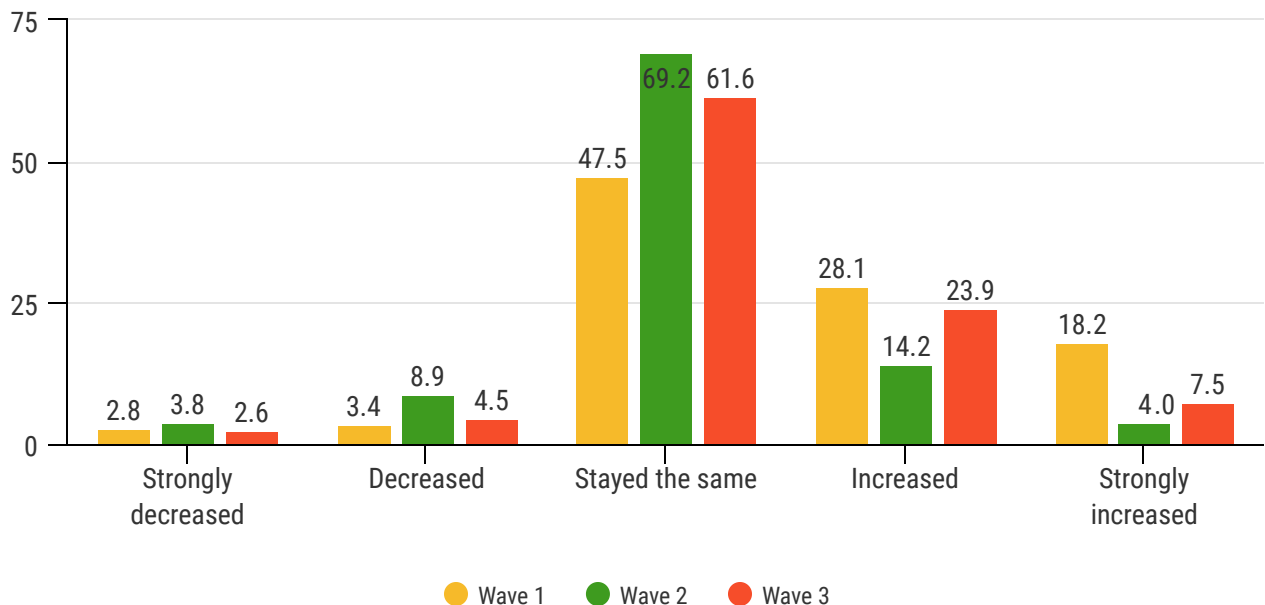
# Perceived Harmfulness of Infection

Figure 11. How harmful do you think an infection with COVID-19 would be? (%)



Perceived harmfulness of a COVID-19 infection was measured with a scale from 1 (not at all harmful) to 5 (very harmful). A majority of respondents considered an infection to be harmful or very harmful in each survey wave. Nearly half or over half of respondents also reported a largely unchanged level of perceived harmfulness if infected with COVID-19 throughout the study period.

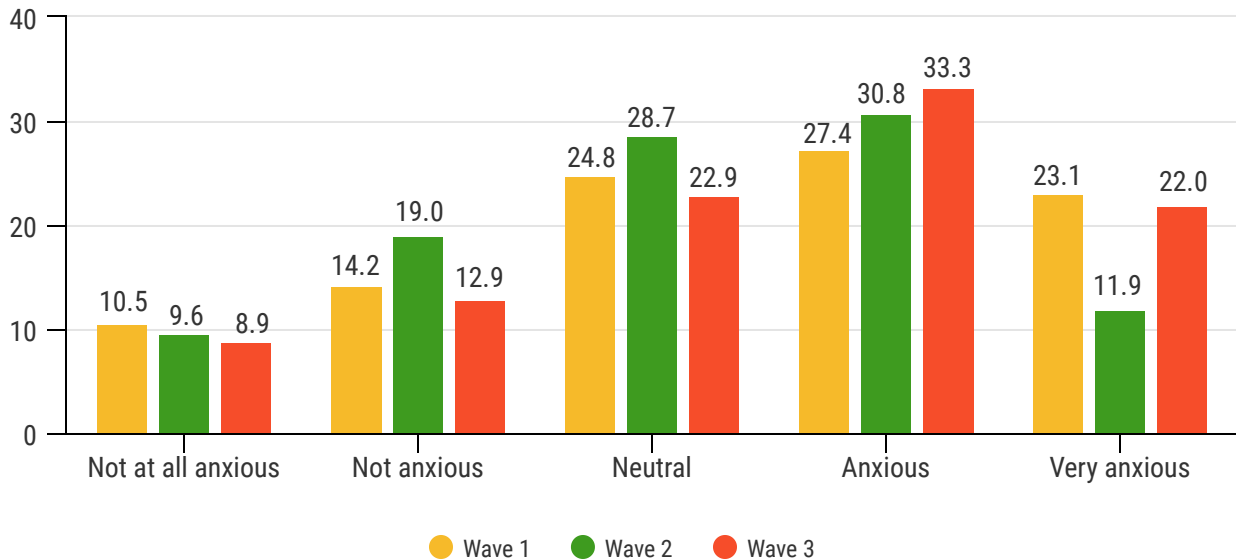
Figure 12. Has your concern about the potential harmfulness of an infection changed during the past month? (%)





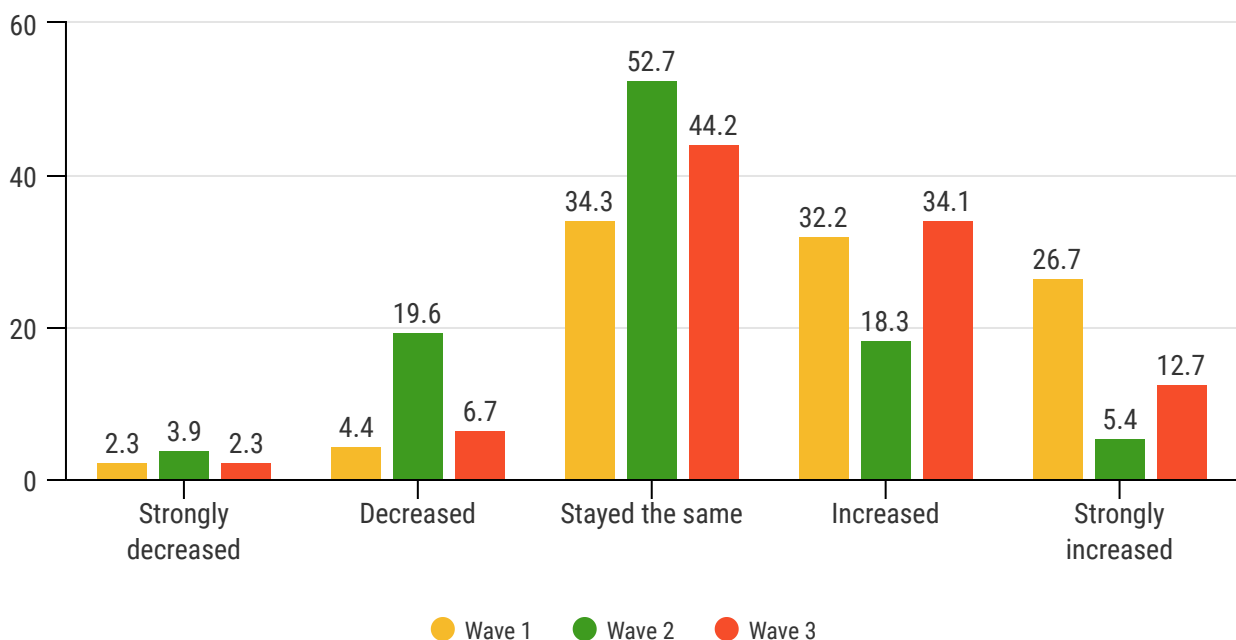
# Level of Anxiety

Figure 13. How anxious are you about the COVID-19 outbreak? (%)



Respondents were also asked about their anxiety due to the COVID-19 outbreak (“1” not at all anxious to “5” very anxious). Overall, relatively larger proportions of respondents indicated anxious/very anxious emotions and increased/strongly increased levels of anxiety in Waves 1 and 3, as compared to Wave 2.

Figure 14. Has your level of anxiety changed during the past month? (%)

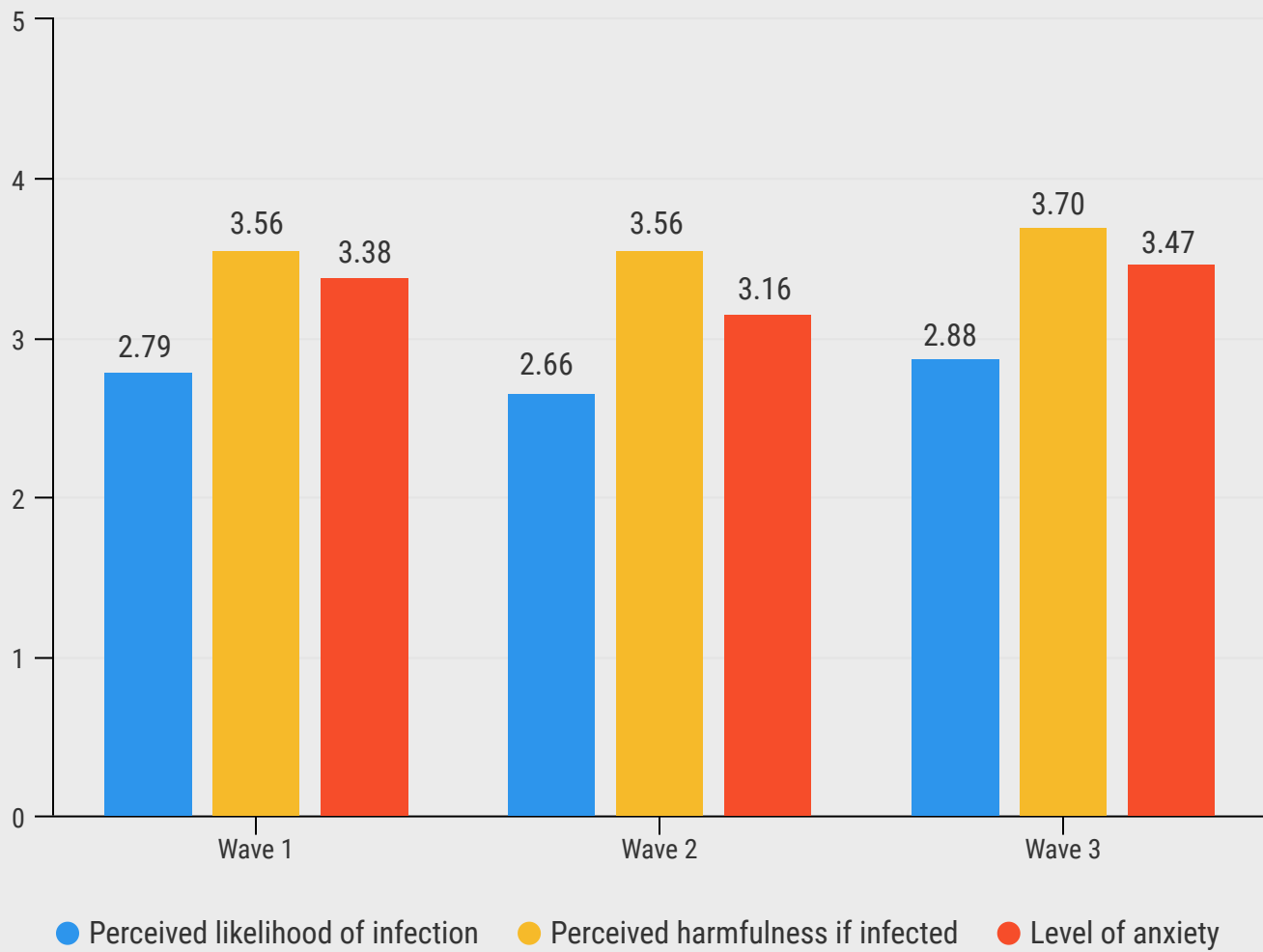




# Perceptions of COVID-19 Risk

Both perceived likelihood of infection and reported levels of anxiety decreased slightly in Wave 2, but rose above the initial levels in Wave 3. Perceived harmfulness of infection remained the same in Wave 2 and increased slightly in Wave 3.

Figure 15. Perceived likelihood of infection, perceived harmfulness if infected, and level of anxiety (means)





# Satisfaction with Management Entities

Respondents also indicated their satisfaction/dissatisfaction with how the COVID-19 outbreak had been managed by a number of entities using a 5-point scale ( “1” very dissatisfied to “5” very satisfied). More than half of respondents were satisfied or very satisfied with school districts and employers/schools in the first two survey waves. However, only 24.7% and 34.4% indicated satisfaction/high satisfaction with these two entities in Wave 3, respectively.

Figure 16. Level of satisfaction with school districts (%)

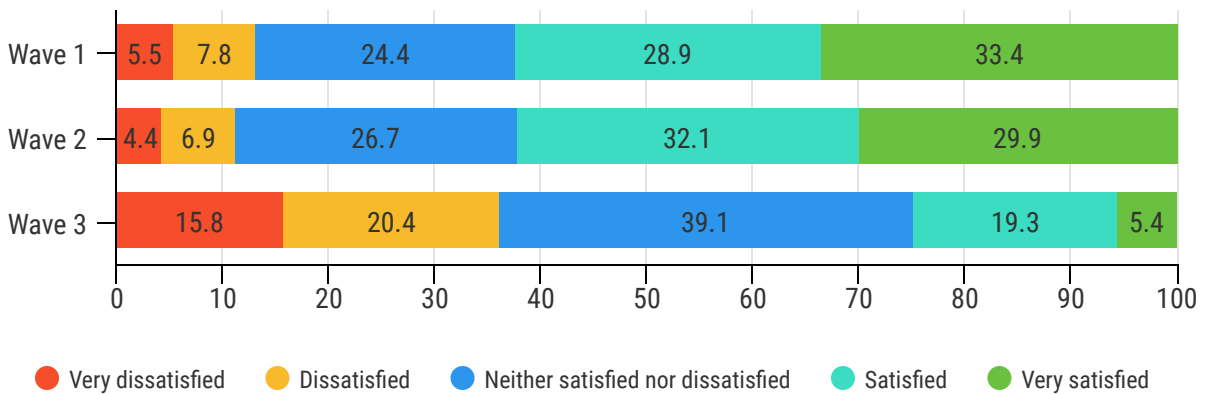
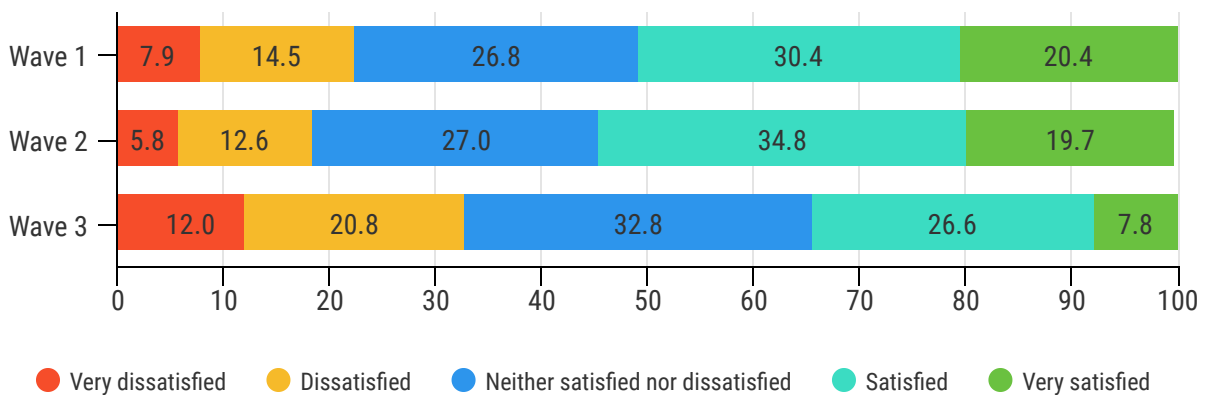


Figure 17. Level of satisfaction with employers/schools (%)

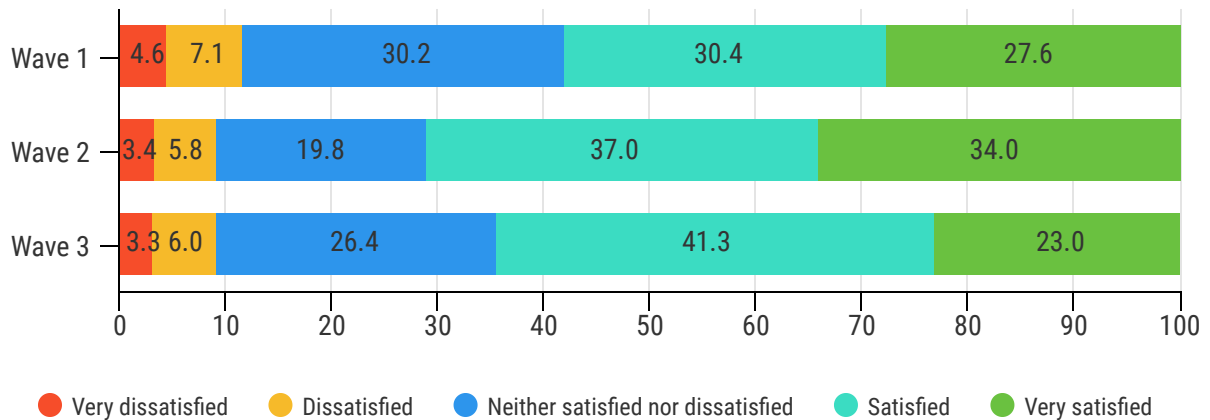




# Satisfaction with Management Entities (Cont.)

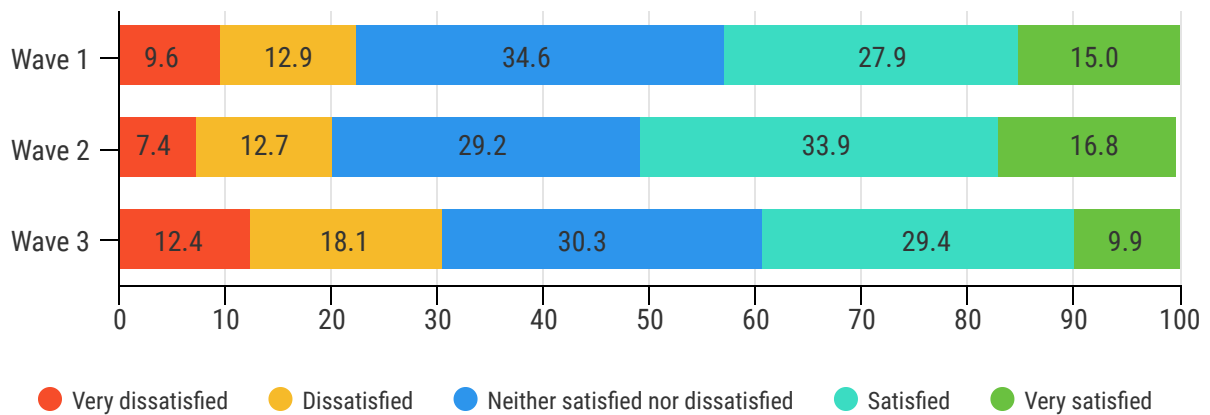
A majority of respondents indicated satisfaction/high satisfaction with local healthcare providers in all three survey waves.

Figure 18. Level of satisfaction with healthcare providers (%)



Respondents were largely positive or neutral in their opinions on the responses of city- and county-level governments to the COVID-19 outbreak.

Figure 19. Level of satisfaction with city government (%)

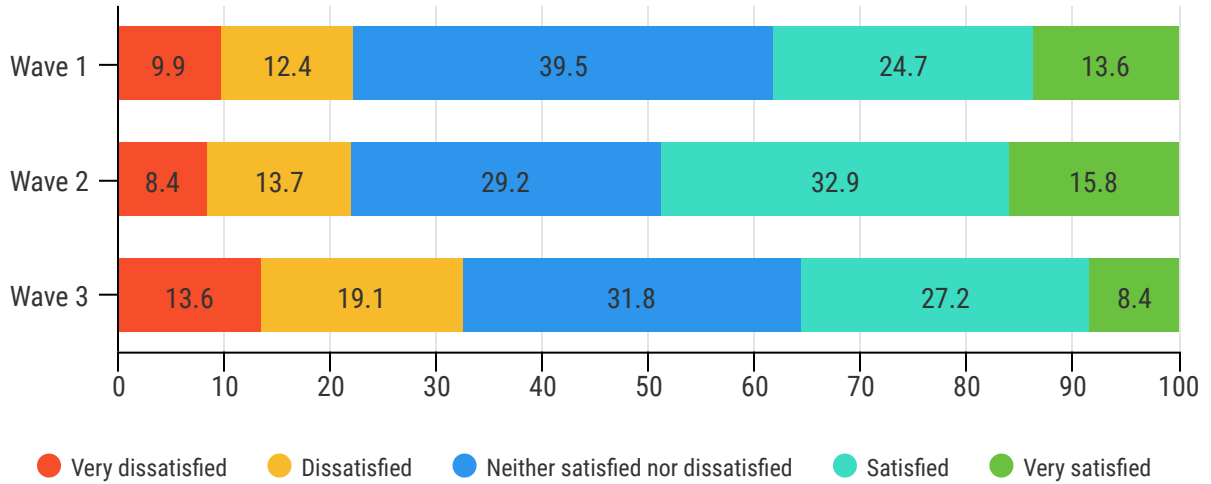






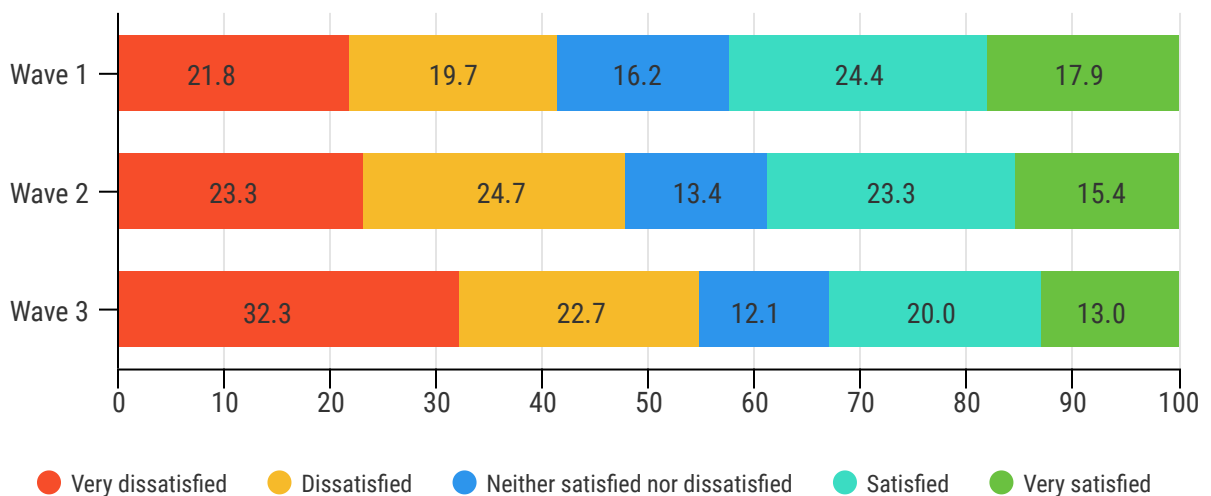
# Satisfaction with Management Entities (Cont.)

Figure 20. Level of satisfaction with county government (%)



Respondents were relatively less satisfied with state government regarding its management of the COVID-19 issue, as compared to city- and county-level governments.

Figure 21. Level of satisfaction with state government (%)

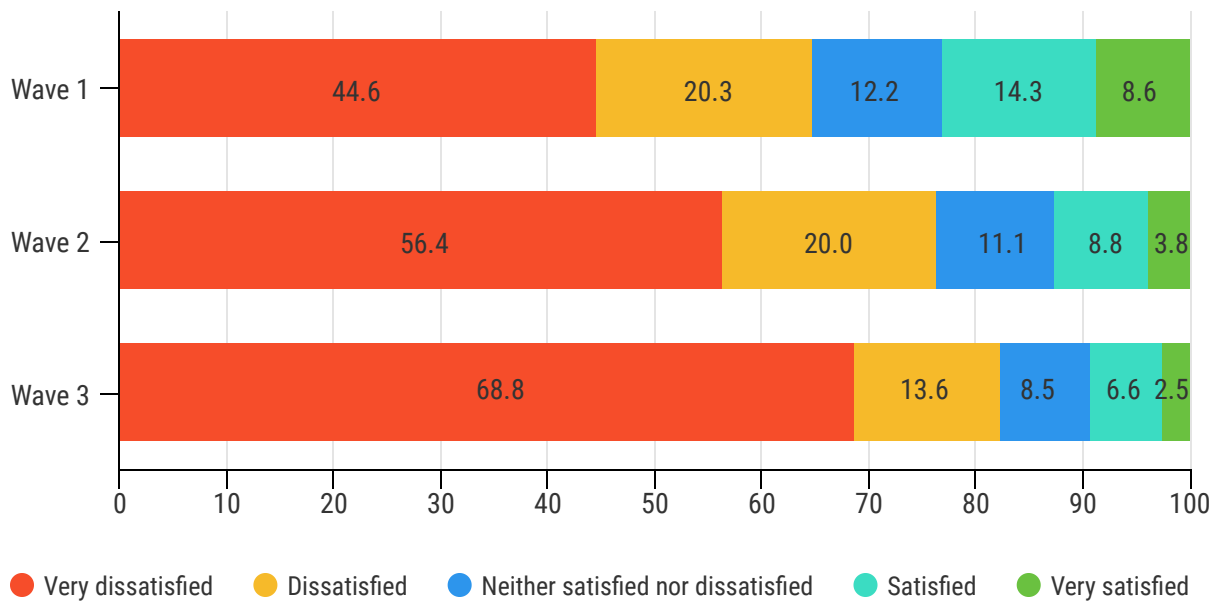




# Satisfaction with Management Entities (Cont.)

In all three survey waves, a large majority of respondents were dissatisfied or very dissatisfied with the federal government's handling of the COVID-19 pandemic.

Figure 22. Level of satisfaction with the federal government (%)

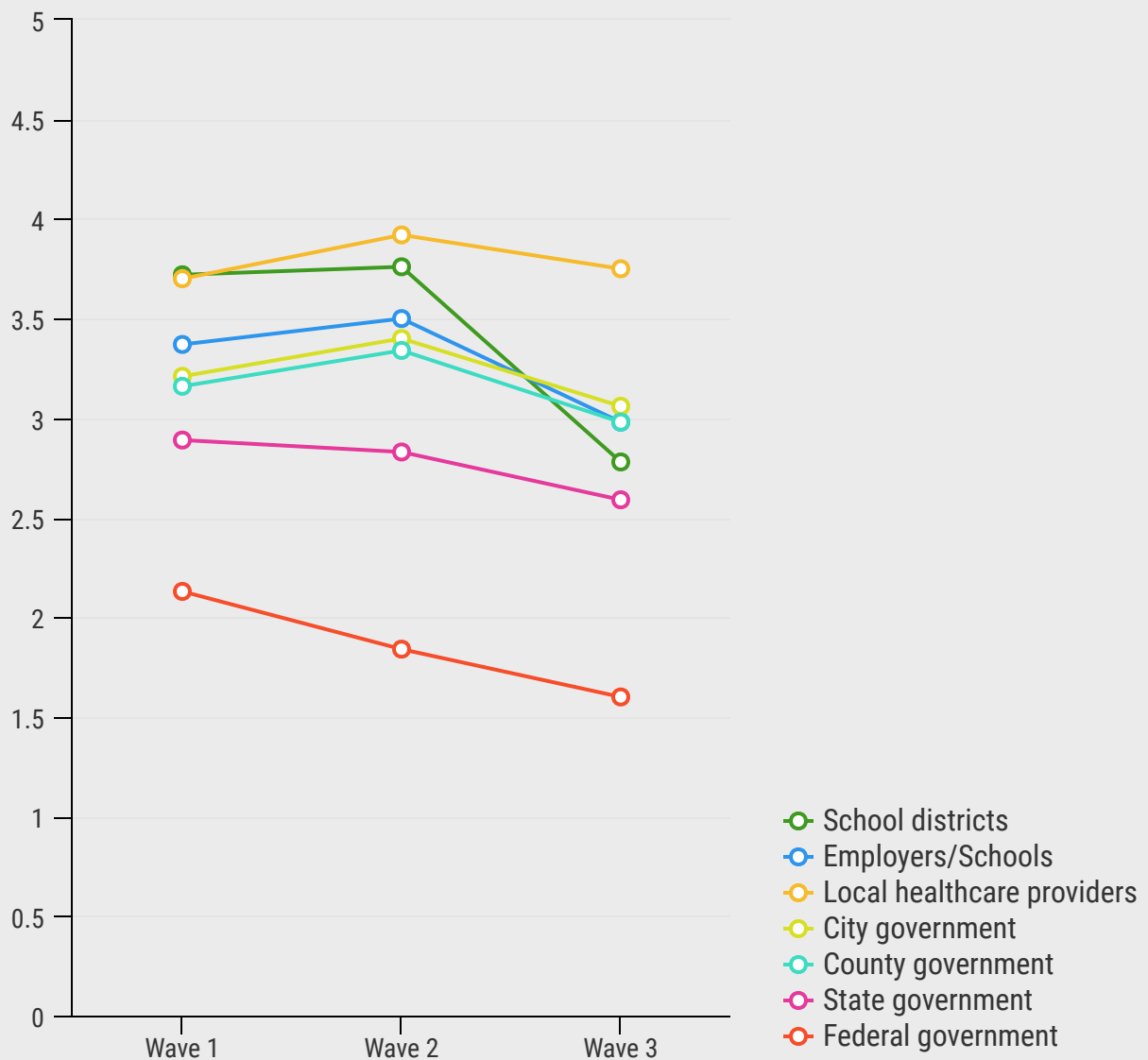




## Satisfaction with Management Entities (Cont.)

As shown in Figure 23, respondents were relatively more satisfied with school districts, employers/schools, and city and county governments in the first two survey waves than in Wave 3. Satisfaction with state and federal governments declined over time. In contrast, respondents were rather positive in their views of local healthcare providers throughout the entire study period.

Figure 23. Levels of satisfaction with management entities (means)

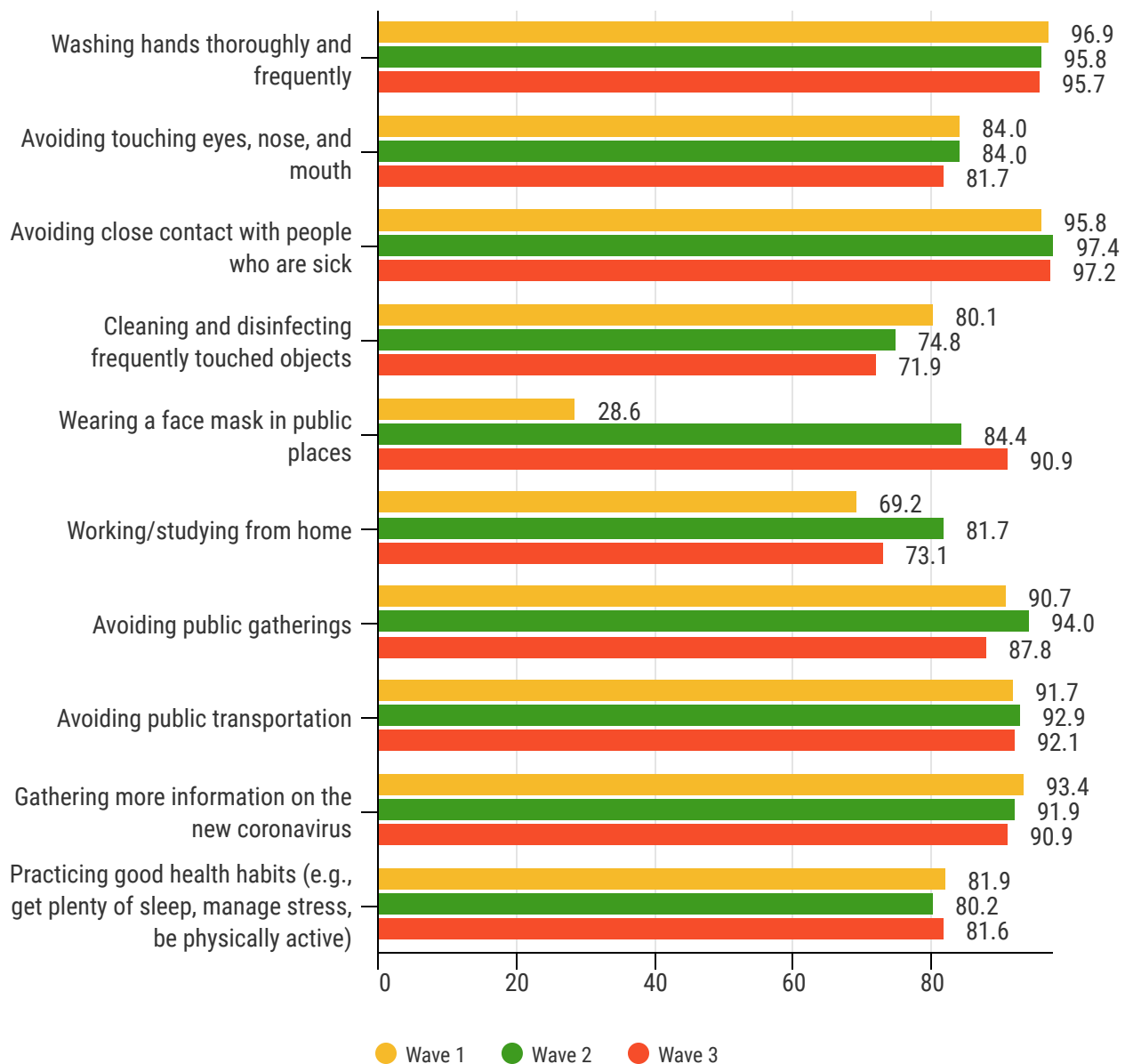




# Adoption of Preventive Actions

Respondents were asked if they had taken a series of preventive actions in response to the COVID-19 pandemic. Figure 24 shows the percentages of all respondents who undertook these actions. Washing hands frequently, avoiding close contact with people who are sick, avoiding public transportation and public gatherings, and gathering more information about COVID-19 were among the most frequently chosen items. Less than 30% of respondents indicated face mask wearing in Wave 1. However, the adoption rate of this action increased substantially in Waves 2 and 3.

Figure 24. Adoption of preventive actions (%)

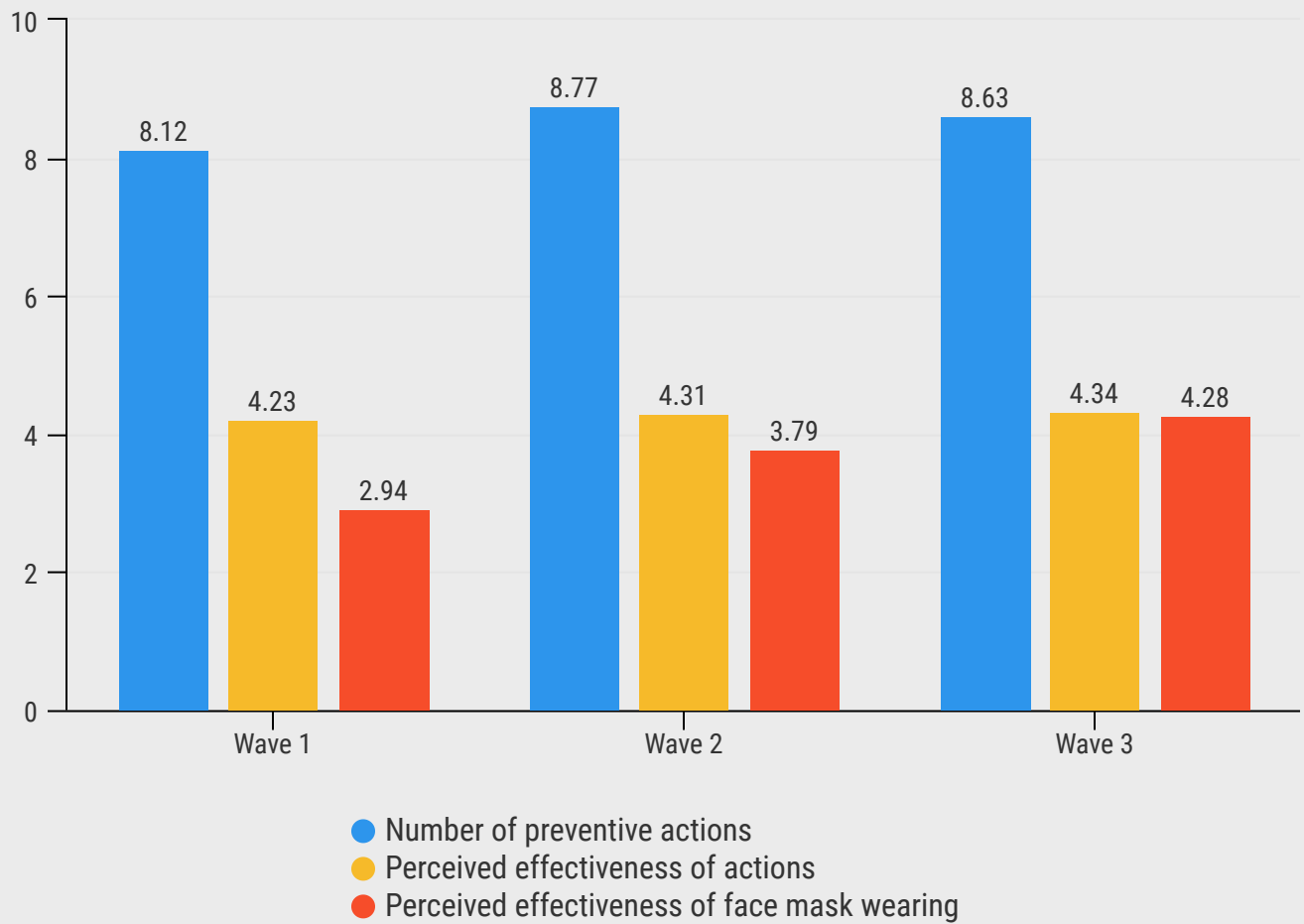


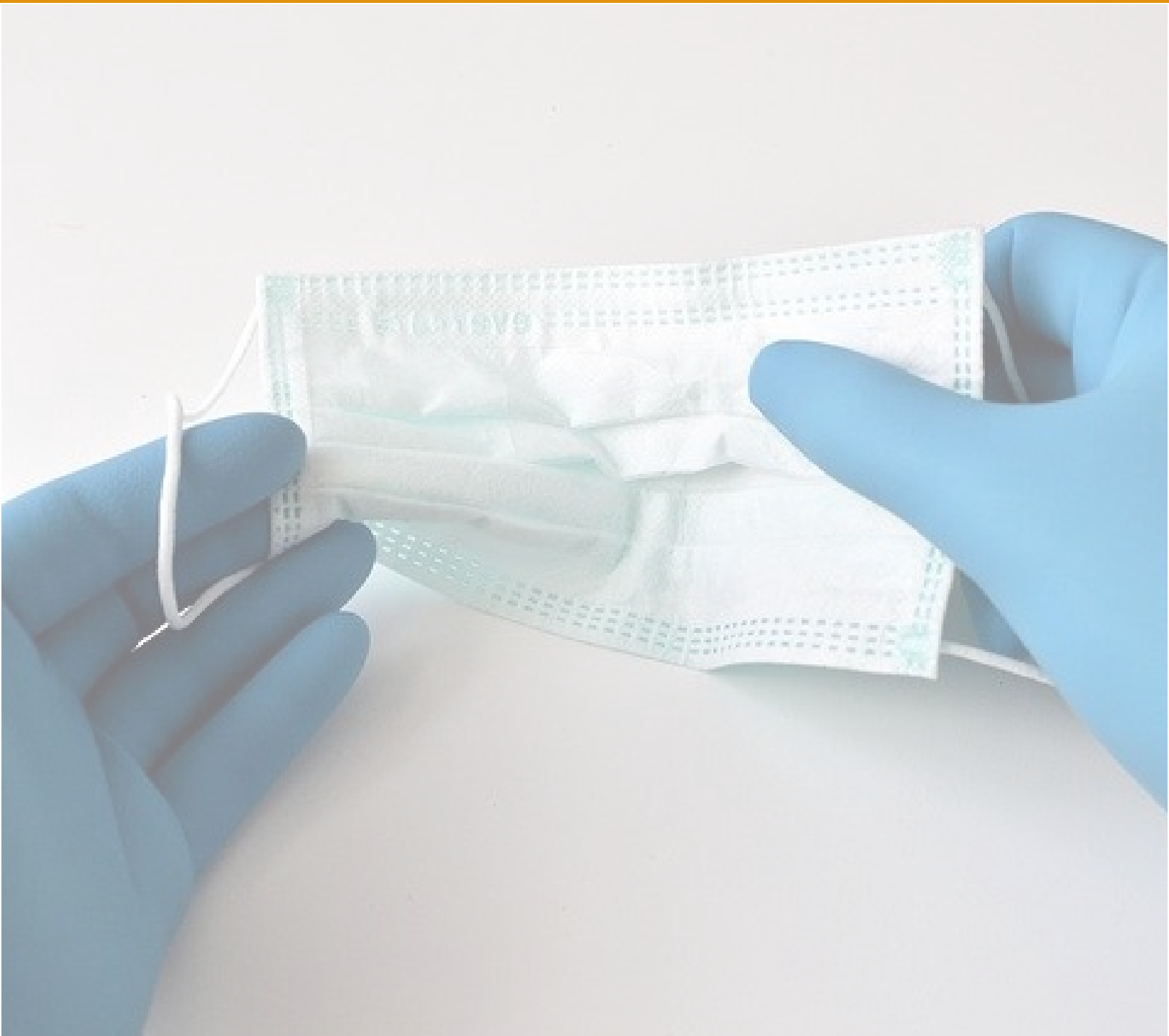


## Adoption of Preventive Actions (Cont.)

Two additional composite indicators were constructed based on answers to questions on the adoption of preventive actions ("0" no; "1" yes) and their potential effectiveness ("1" not at all effective to "5" very effective): total number of preventive actions (range: 0 – 10) and average perceived effectiveness of actions (range: 1 – 5). The mean values of both variables were generally at quite high levels while increasing slightly in Waves 2 and 3. Compared to the initial survey wave, respondents also considered face mask wearing much more effective in preventing COVID-19 infection during the two re-surveys.

Figure 25. Number of preventive actions, perceived effectiveness of actions, and perceived effectiveness of face mask wearing (means)





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