LIFE IN LOCKDOWN

HOW COVID-19 HAS IMPACTED DAILY LIFE FOR A SAMPLE OF AMERICAN ADULTS

UMD Data Challenge 2021 - DC21030
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The Pandemic

WIDESPREAD IMPACTS

In March 2020, the United States declared a State of Emergency in response to community transmission of SARS-CoV-2, a novel and potentially lethal coronavirus. "**Lockdown orders**" were enacted to restrict non-essential activities and slow the spread of the virus and its associated disease, COVID-19.

The rhythm of daily life dramatically changed overnight. Tens of millions were laid off, businesses shuttered, and schools closed. The social safety net struggled to keep families afloat. Many jurisdictions adopted mask mandates, and nearly all encouraged social distancing, hoping to prevent overwhelming hospital capacity.

How have different communities adapted to these restrictions? How are people meeting their essential needs and maintaining their well-being? Answering these questions, and more generally understanding behavioral responses to public health measures, is crucial for making life-saving adjustments and preventing future outbreaks. *So that's what we explore!*

Quality of Life Domains & COVID-19

Physical Capacity

... including facets like pain, energy, and sleep.

There is research to suggest that the COVID-19 has led to disrupted sleep and difficulty falling or staying asleep. In one study, over half surveyed reported a change in sleep pattern (Peréz-Carbonell).

Psychological Capacity

... including facets like positive feelings, memory, and concentration.

Early analyses reveal a surge in symptoms of depression and anxiety, as people are isolated from their support systems and reckoning with the crisis (Abbott).

Level of Independence

... including facets like mobility, daily activities, and work capacity.

Unemployment rose as high at 13.0% in May, as business deemed non-essential remained closed and telework only an option in certain industries (Kochhar).

Social Relationships

... including facets like personal relationships and social support.

Even as thousands fought for their lives in ICUs across the country, families tragically could not be by their sides for everyone's safety.

Environment

... including facets like physical security, home environment, and transport.

With such sizable shift to telework, some experts speculate long-term impacts on traffic levels and other public transportation patterns (Calvert).

Spirituality and Personal Beliefs

... including facets like one's faith and living one's personal values.

Churches and other religious institutions are not exempt from restrictions that limit gathering size, prompting outcry from some and new practices from others.

Agenda

Our Sample

We will start off with an introduction to our sample, including a discussion of how participants are or aren't representative of the United States as a whole.

Our Survey Data

We will then show changes in commuting patterns and physical activity, as well as survey reasons that participants had for leaving their homes during lockdown. We discuss how these coincide with WHO QOL domains.

Exploring Other Data

Next, we take a look at other data sets and projects that cover the WHO QOL domains not addressed in our own sample.

Improvements and Questions

Finally, we summarize what we learned from our data set and others about how the COVID-19 crisis has changed daily routines and impacted quality of life.

Our Sample

564 ADULTS SURVEYED BETWEEN APRIL 10TH AND JULY 8TH 2020

65%

of respondents were women

vs. 51% of US population

99%

were college educated

vs. 49% of US population

97%

live in a dense urban area

vs. 31% of US population

7%

were unemployed

vs. 13% of US population

Figure 1: Demographics of Respondents

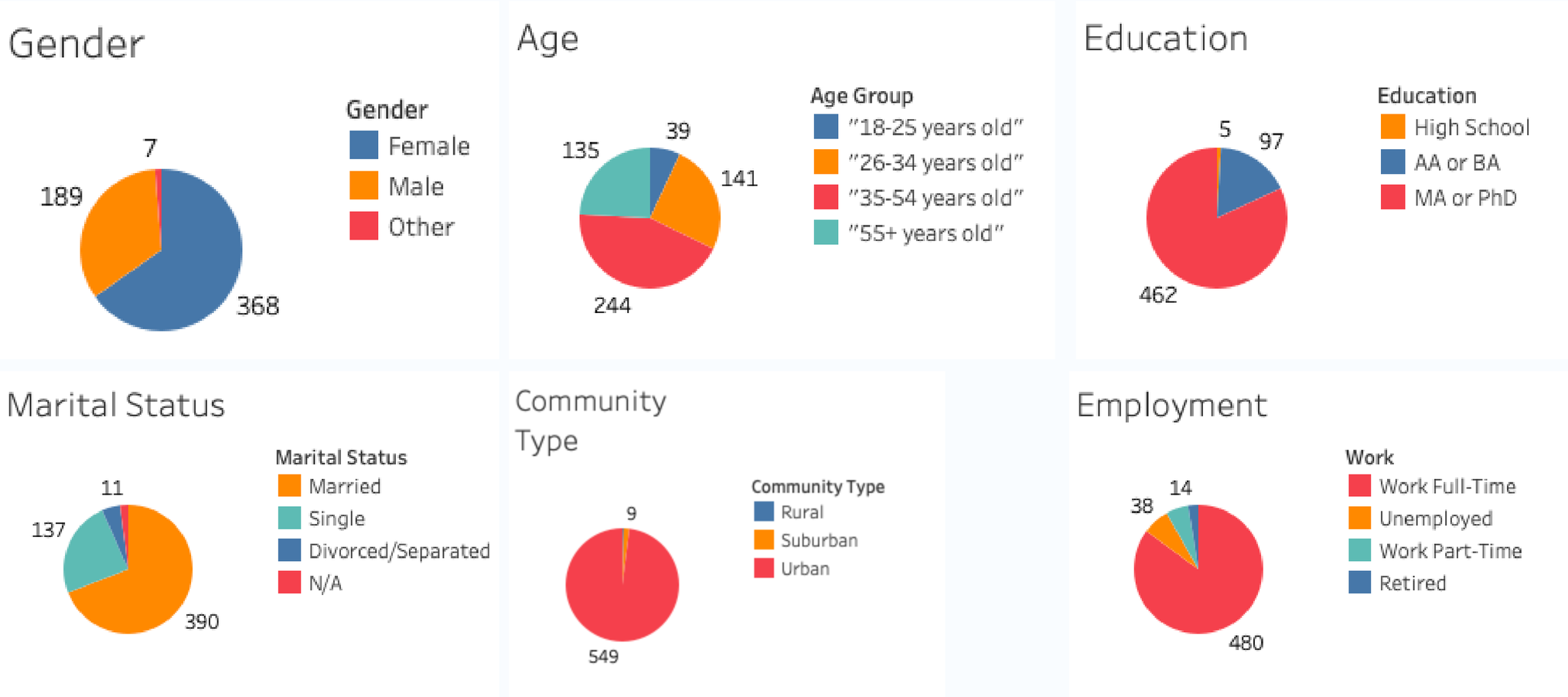


Figure 1 shows a series of pie charts indicating some of the key demographic breakdowns of the respondents of our sample.

Figure 2: Map of Survey Respondents

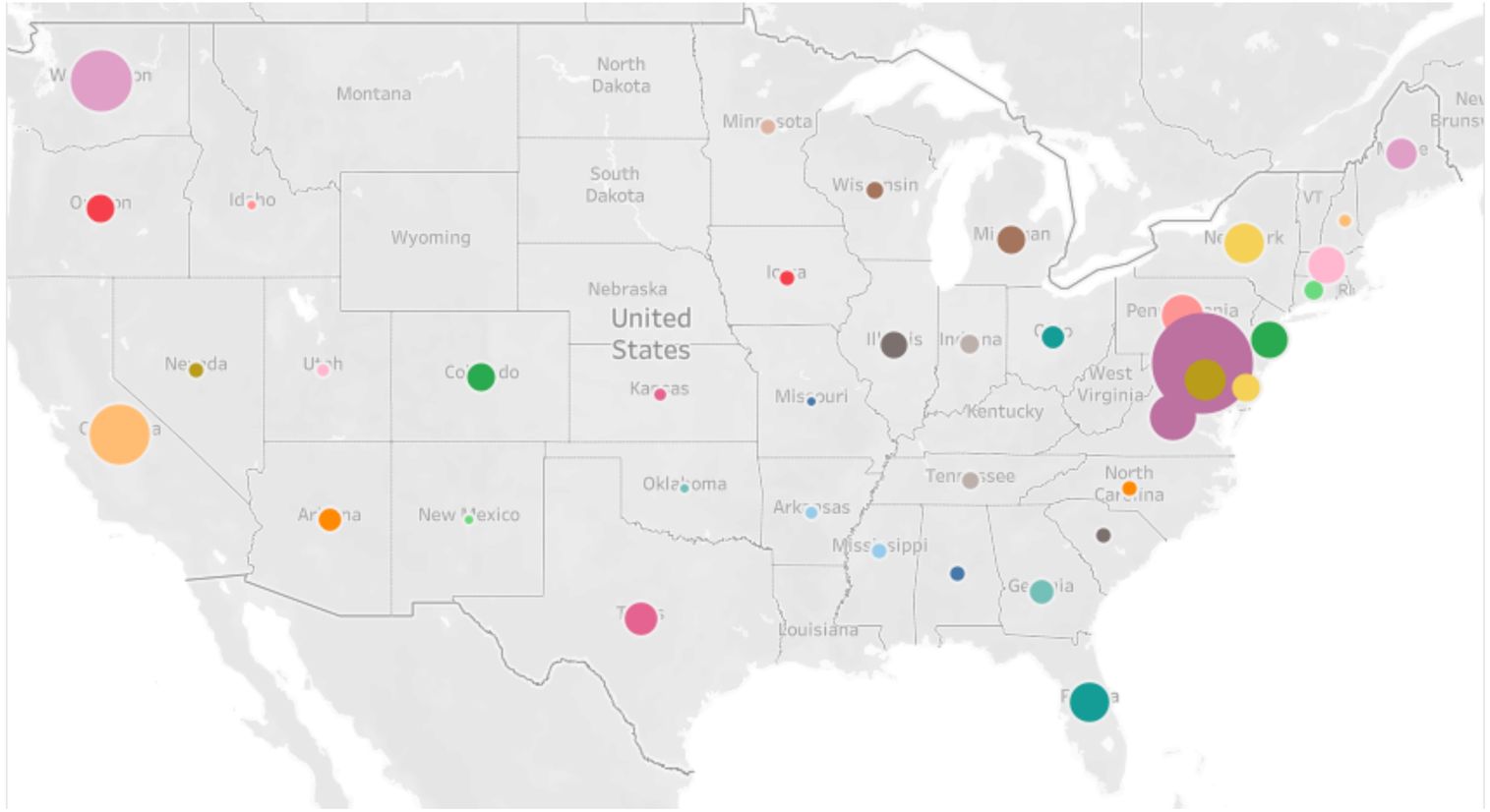
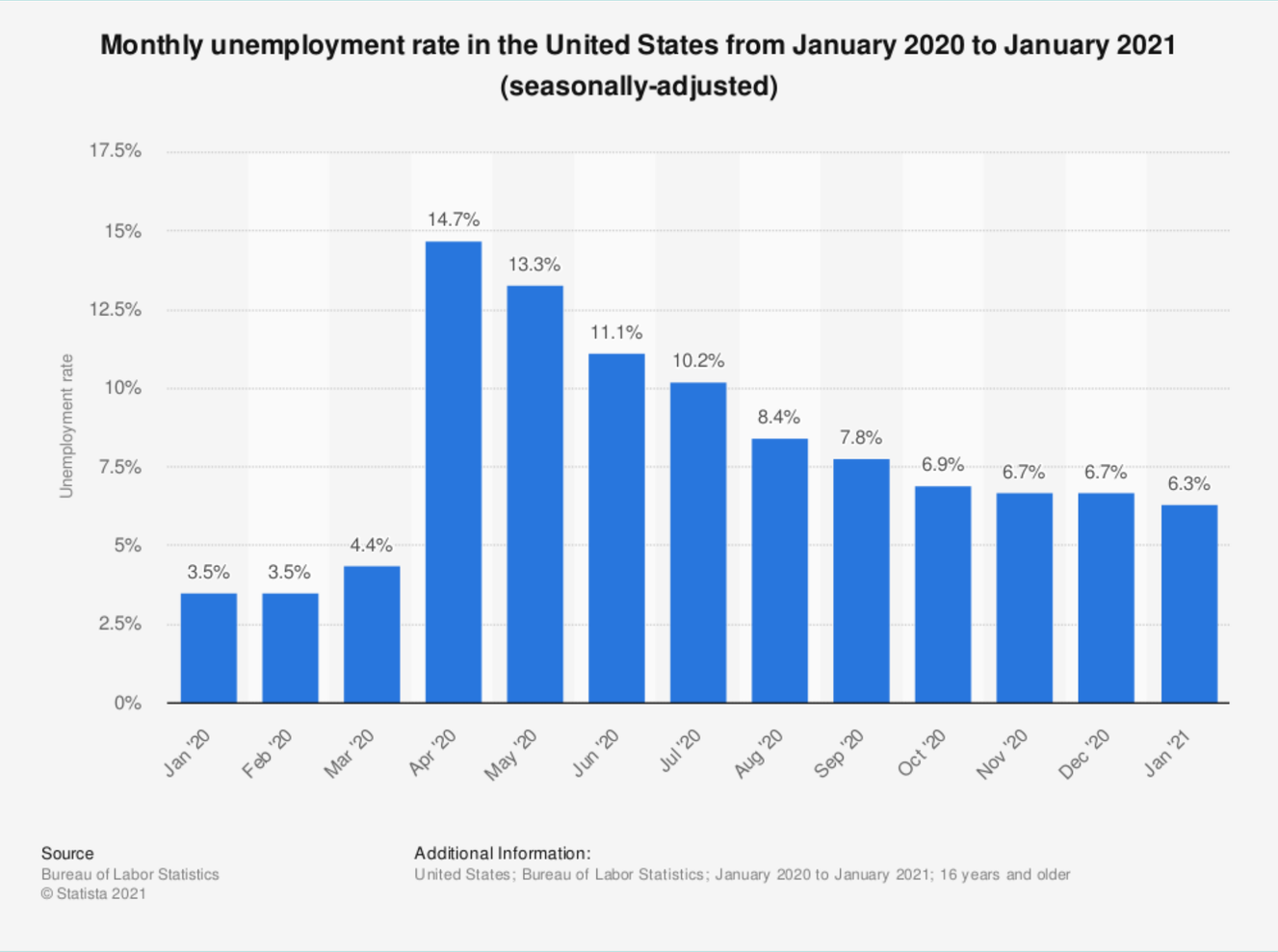


Figure 2 shows a map of the 564 survey respondents, where the size of the dot indicates the number of respondents from a given state. Maryland was the most represented state by far, with 144 respondents.

Figure 3: Graph of US Unemployment



Essential Needs: Employment

RECORD LOSS OF INCOME DURING THE COVID-19 PANDEMIC

Figure 3 shows a graph from Pew Research with the unemployment rate in the United States from January 2020 to January 2021. Our data covers April, when unemployment peaked at 14.7%, to July, when it fell to 10.2%, still more than twice the rate of pre-pandemic levels.

Our survey sample was significantly more employed than the U.S. on average, likely due to participants levels of education. **Of those still employed, how did they get to work during lockdown?**

Commute Patterns

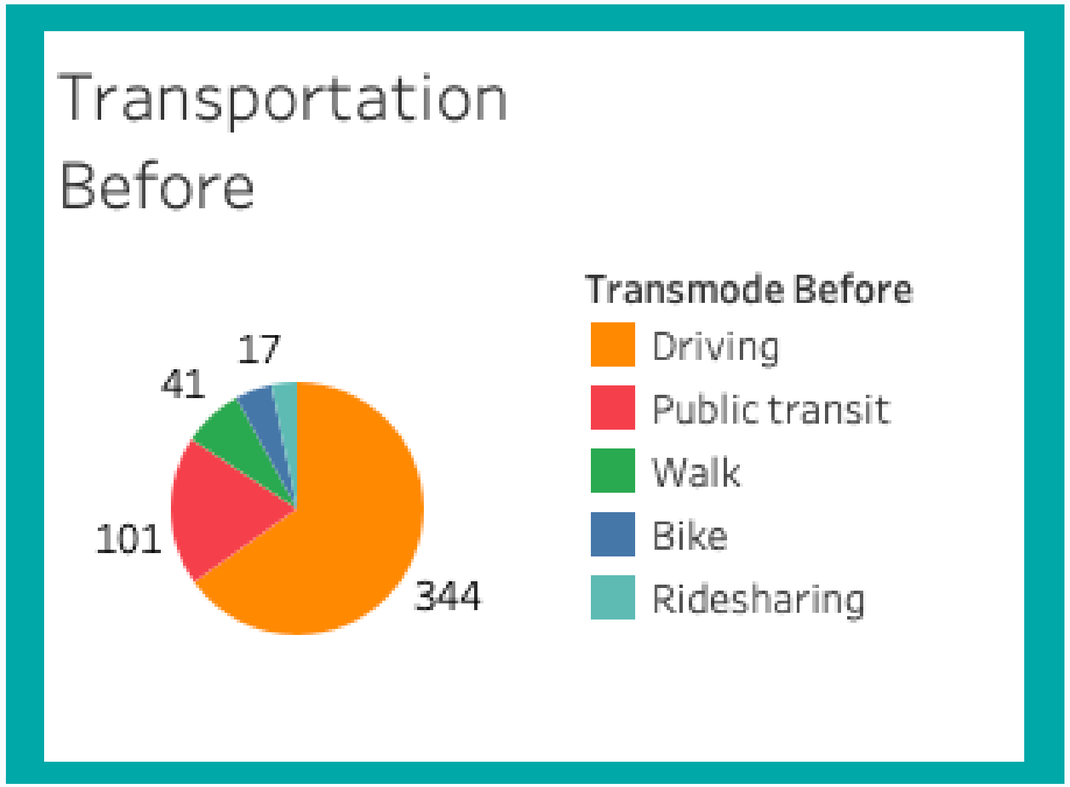


Figure 4 shows the main mode of transportation for commuting among survey respondents before lockdown..

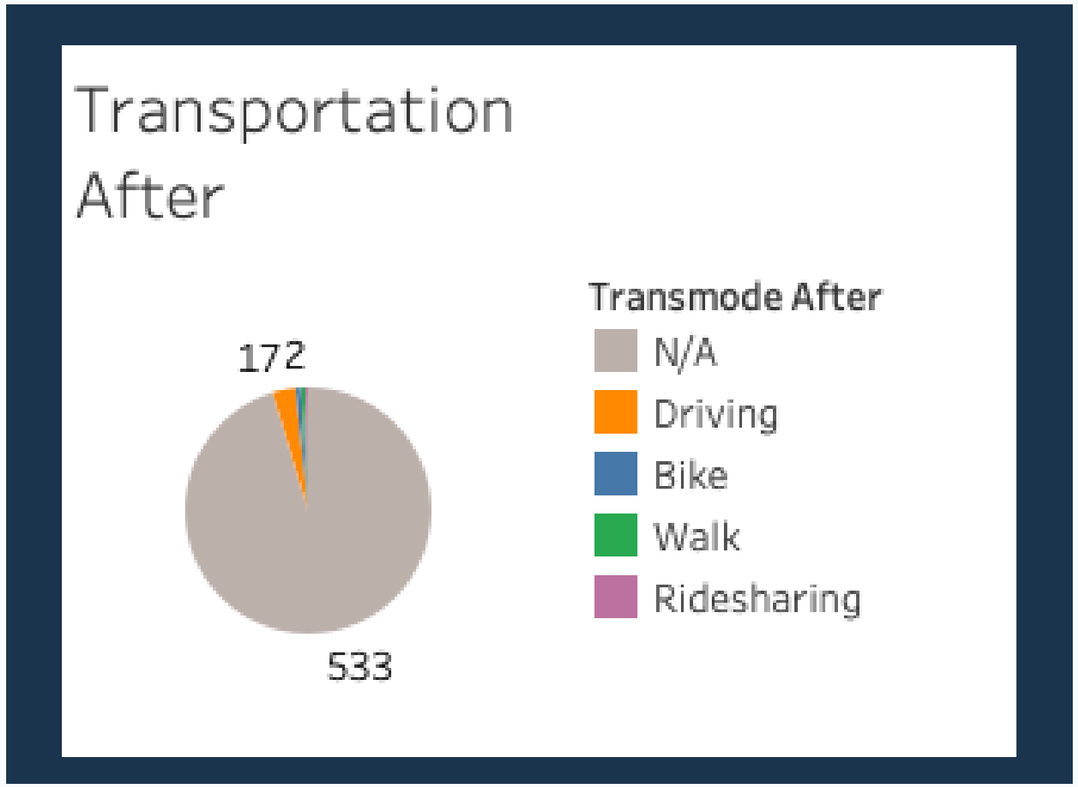


Figure 5 shows the main mode of transportation for commuting among respondents after lockdown. N/A indicates teleworking. There were zero respondents still taking public transit.

Commute Patterns

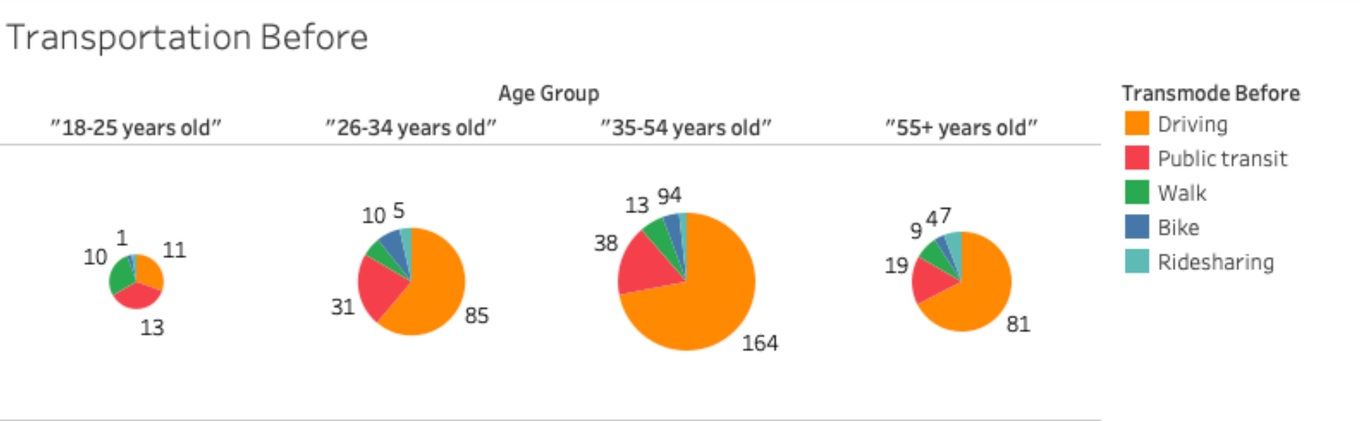


Figure 7 shows the mode of transportation by age group pre-pandemic.

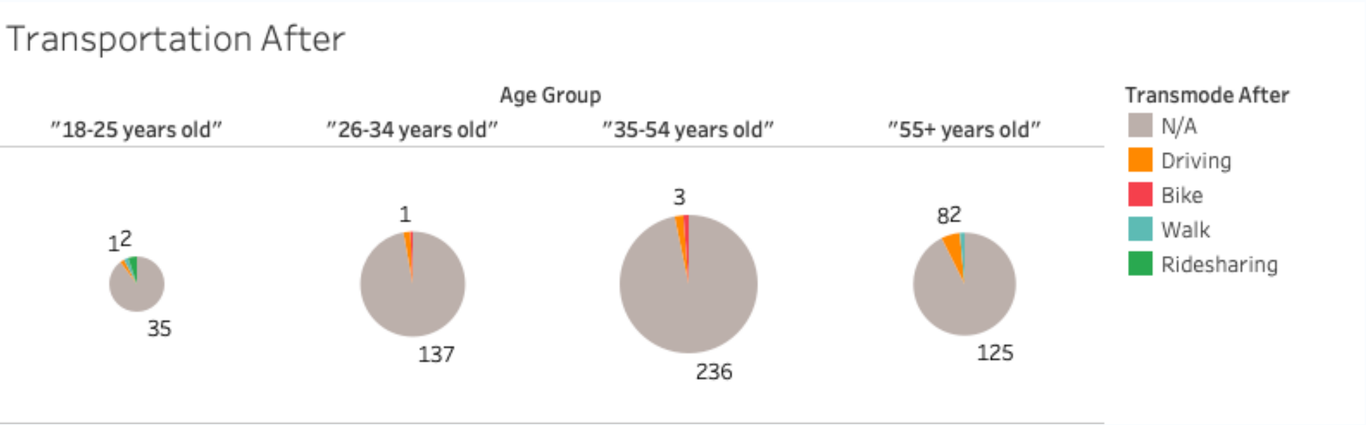


Figure 8 shows the mode of transportation by age group after lockdown restrictions began.

344 people drove before lockdown, while only 18 drove during.

101 people used public transit for commuting before lockdown, while none used it at the time of survey.

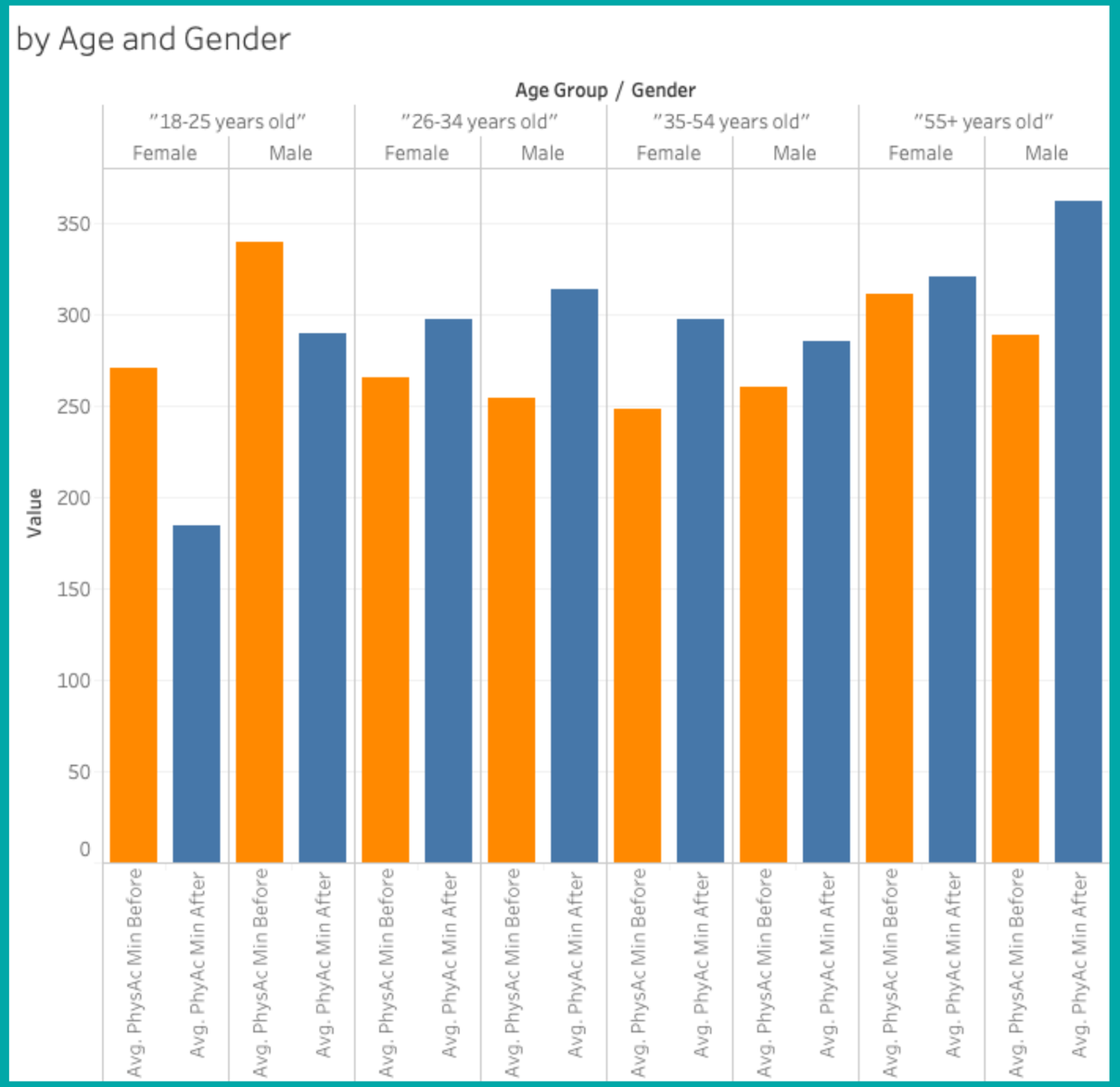
There was a nearly uniform change in transportation to telework across all age ranges.

Essential Needs: Physical Activity

LIMITATIONS ON MOVEMENT OFFER CHALLENGES BUT RENEWED ENTHUSIASM

Figure 9 shows levels of physical activity before and after lockdown by age and gender.

Physical activity dropped among college age respondents, especially among women. Possible reasons could include closed gyms and otherwise restricted commuting patterns. For all other groups, there was a rise in physical activity, likely from respondents trying to keep busy and active in troubling times.



Essential Needs: Grocery Shopping

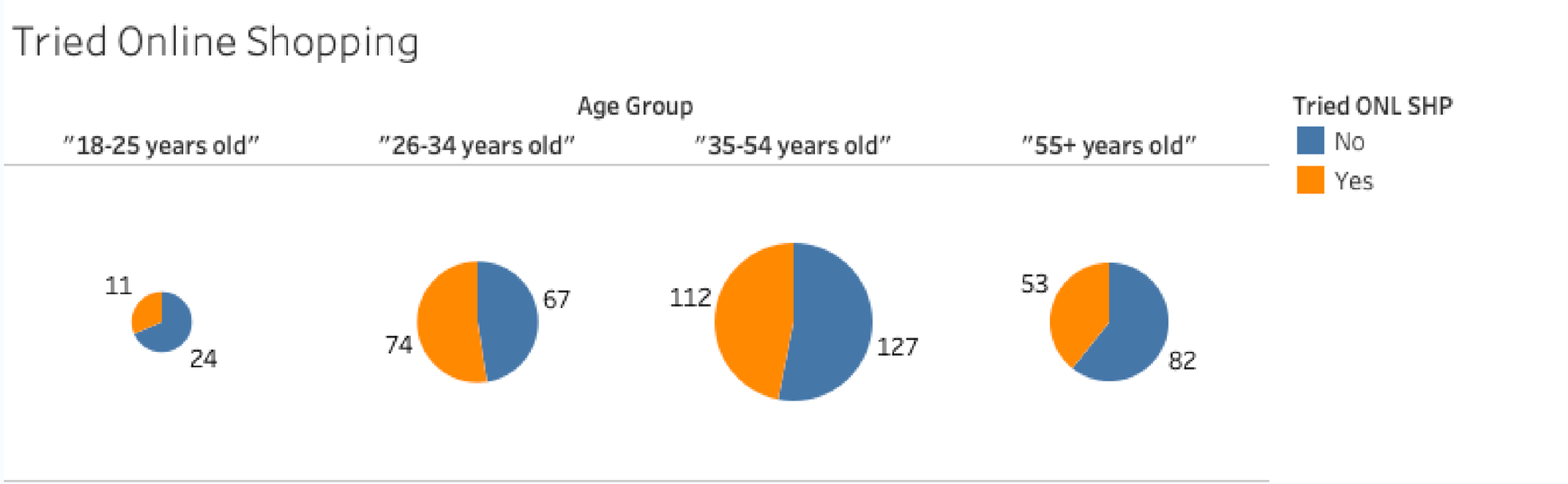


Figure 10 shows the percentage of respondents who have tried online grocery shopping, broke down by age.

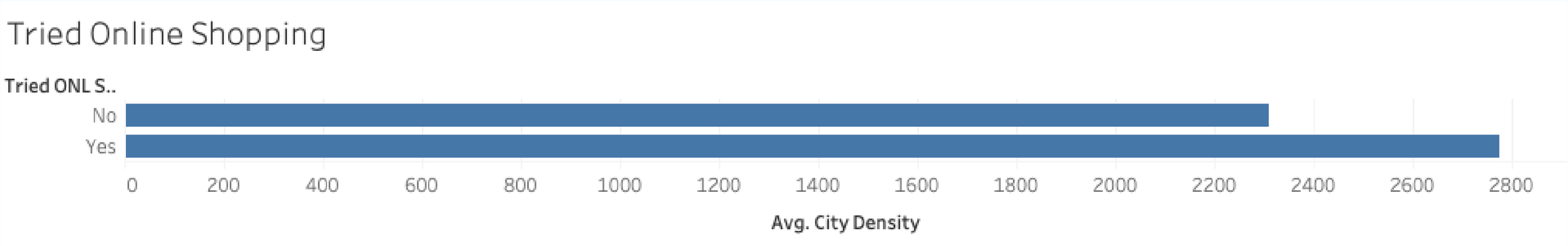
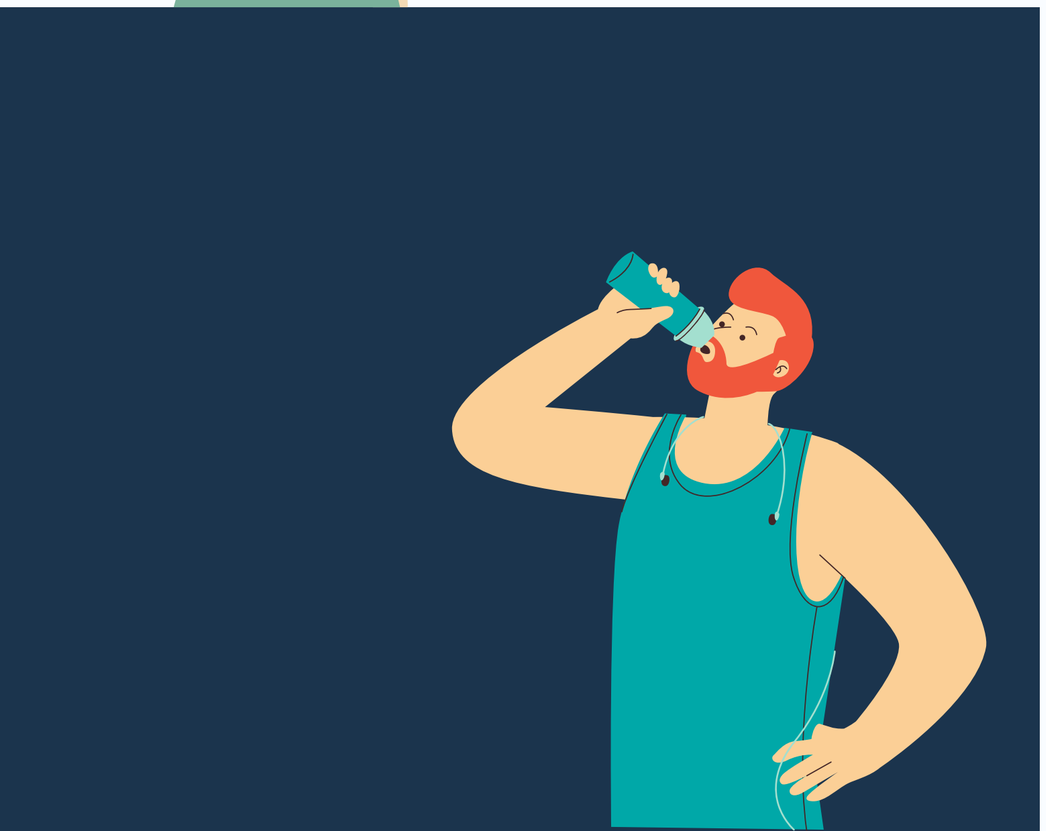


Figure 11 shows the average city density of respondents who have and have not tried online grocery shopping.



Getting Out of the House

HOW OFTEN AND FOR WHAT REASONS DID RESPONDENTS LEAVE THEIR HOMES?

We review the qualitative data collected by our respondents to see what the specific reasons people left their homes were, in their own words, and at times defying lockdown protocols.

Getting Out of the House

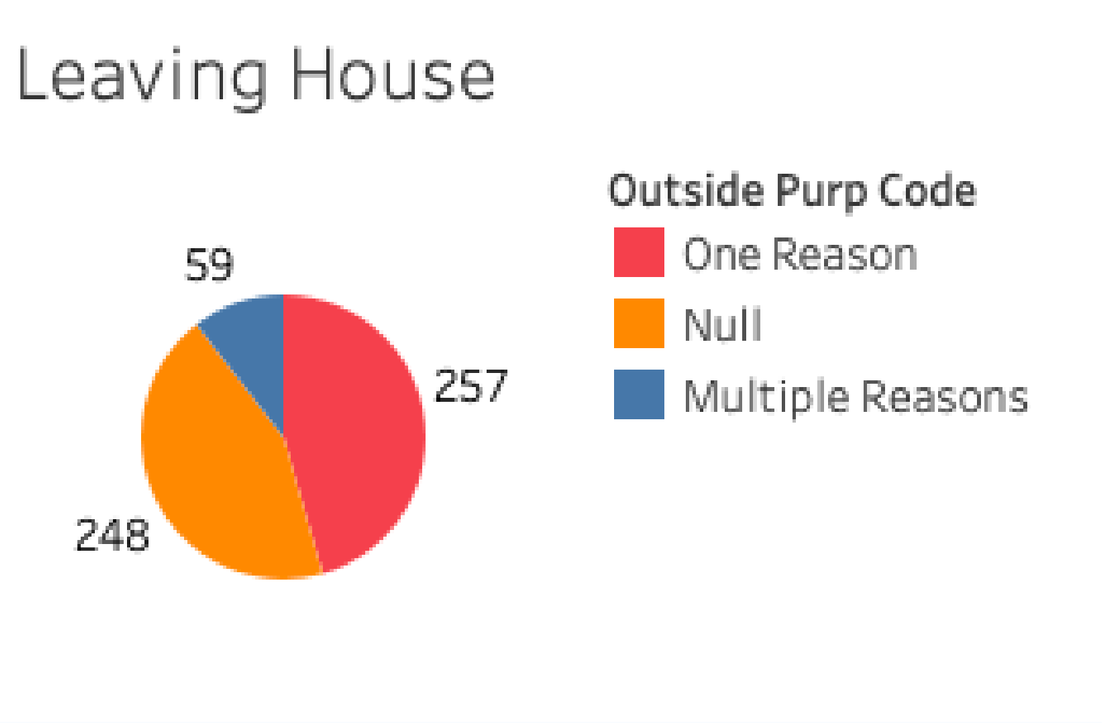


Figure 12 shows that whether or not a respondent offered one or more reasons they had left their house during lockdown, other than essential grocery shopping or work.

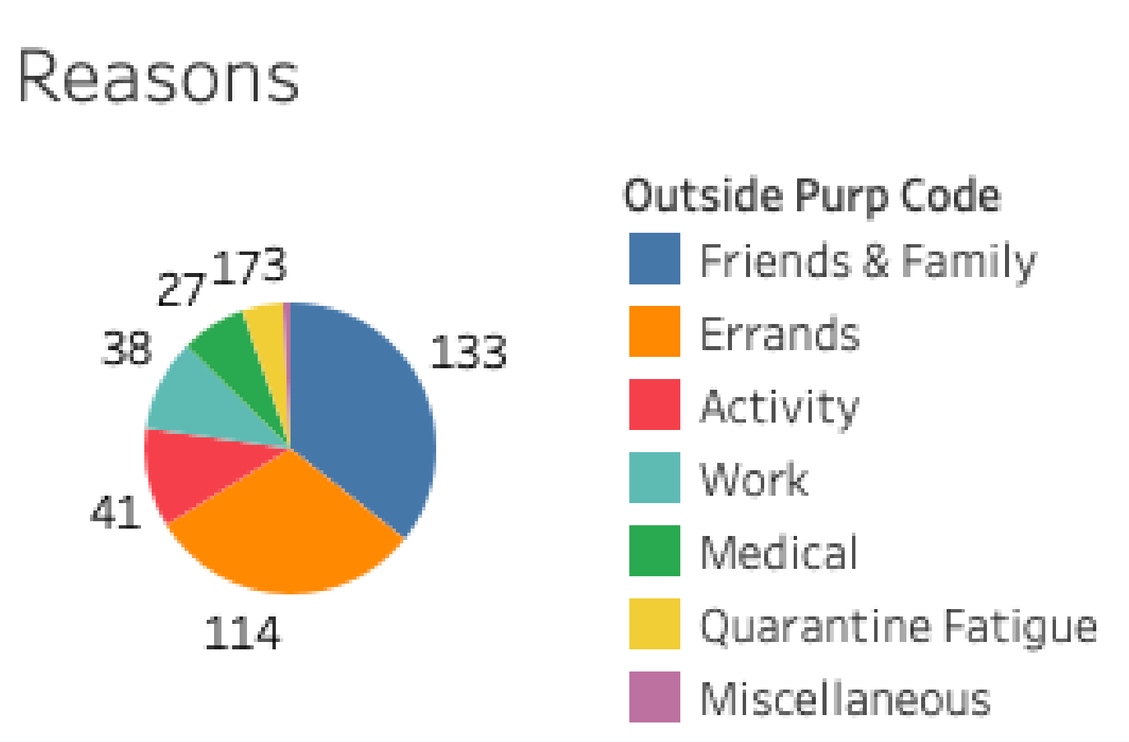


Figure 13 shows coded responses to the qualitative answers respondents gave for reasons they left their homes during lockdown.

Getting Out of the House

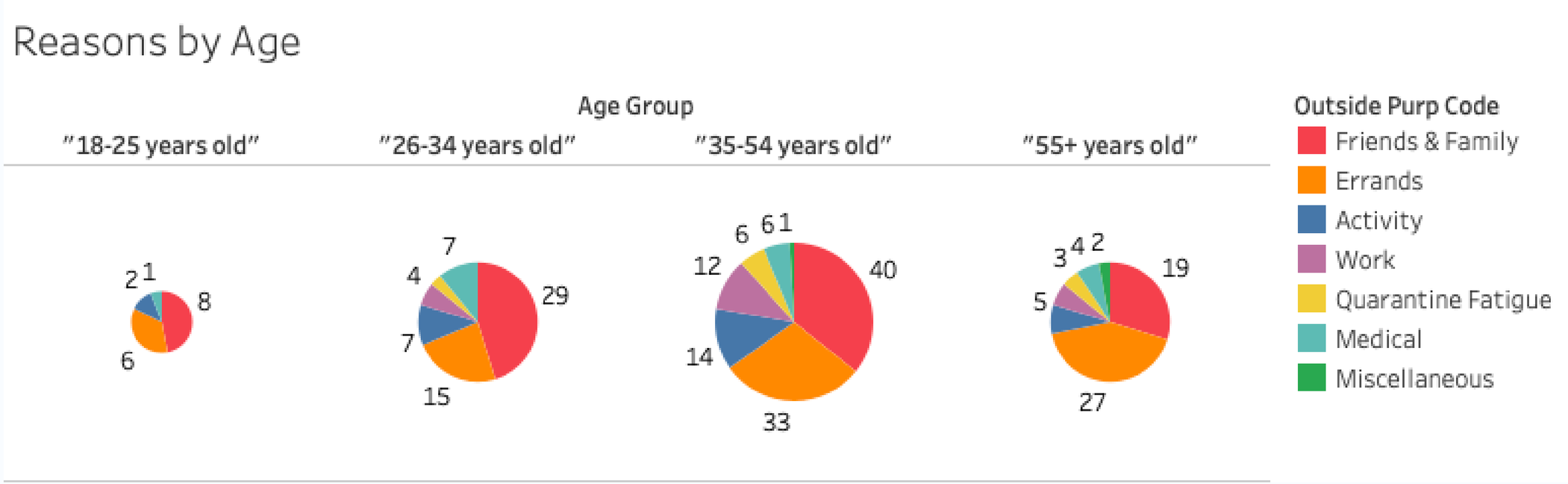


Figure 14 shows coded responses to the qualitative answers respondents gave for reasons they left their homes during lockdown, by age range. Respondents in the 55+ age group were less likely to visit or provide care for their friends and family than other age groups, likely because they were more at risk and being cared for themselves..


"Get automobile inspected, visit friends on front lawns"


"Go to lake house up north"


"Curbside restaurant pick up"


"See family outside in their yard for Mother’s Day"

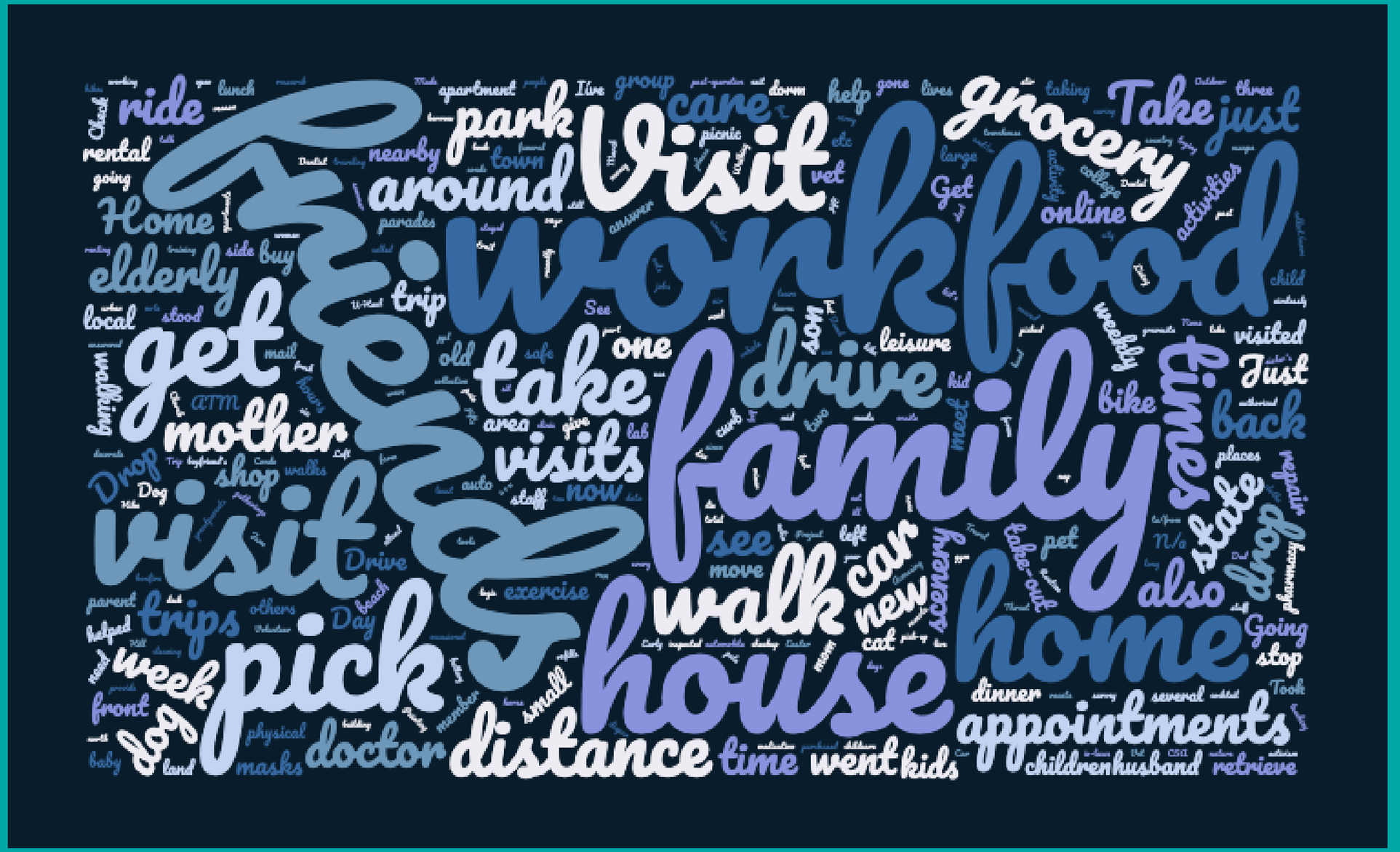


Figure 15 shows a word cloud of qualitative responses participants gave for their reasons for leaving the house, other than grocery shopping and work.

Other Data Sets

ADDRESSING THE OTHER QOL DOMAINS THROUGH ALTERNATE DATA SETS

EMOTIONS

SLEEP

AIR QUALITY

Emotions and Psychological Health

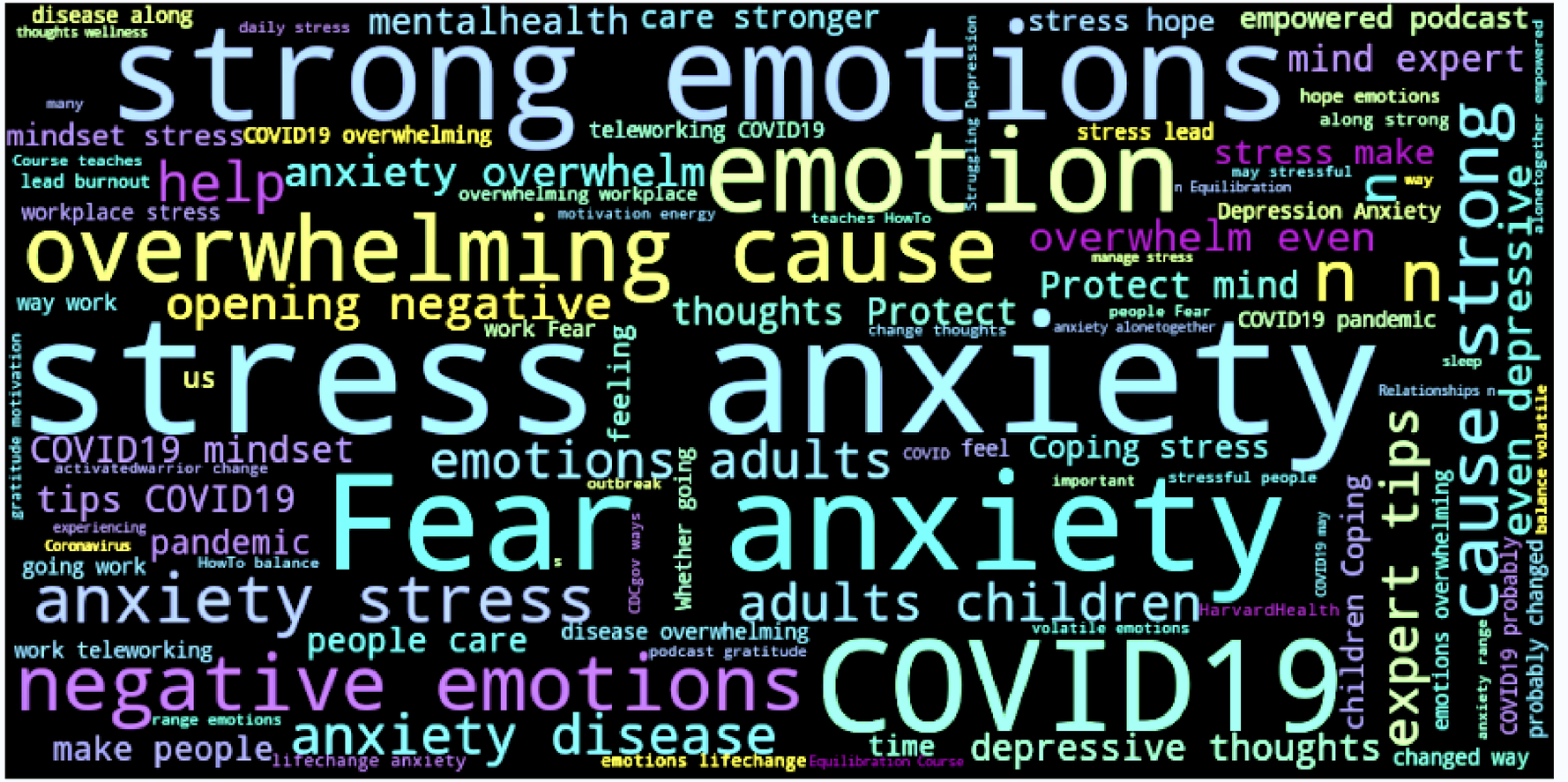


Figure 16 shows a word cloud of 10,000 tweets related to emotions and anxiety during the COVID-19 pandemic.

Sleep Patterns

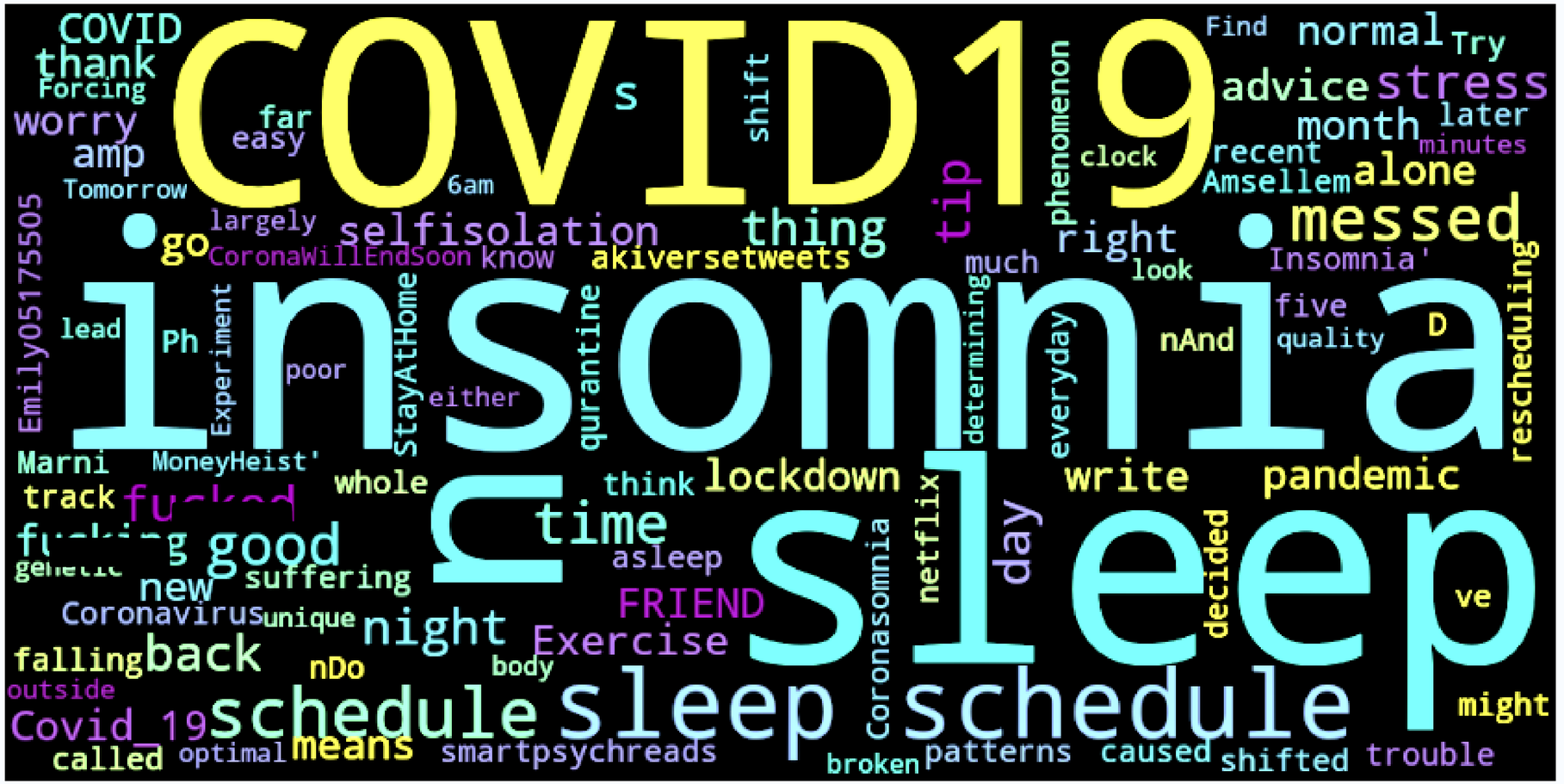


Figure 17 shows a word cloud of 10,000 tweets related to sleep during the COVID-19 pandemic.

Pandemic Impacts on Sleep

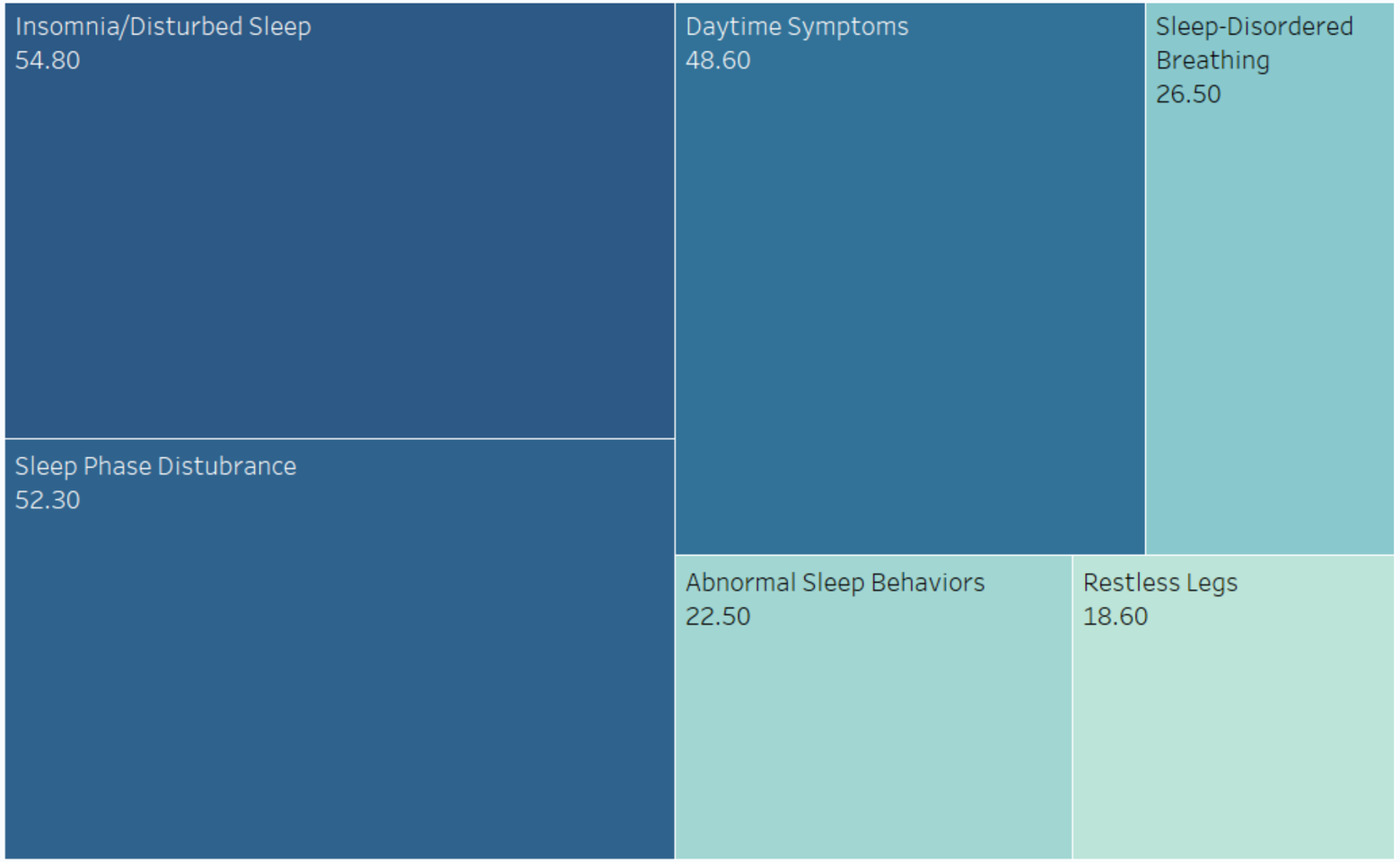


Figure 18 shows a graph, from Pérez-Carbonell et. al, of reported impacts on sleep, based on a series of collected tweets during the COVID-19 pandemic.

Air Quality and Environment

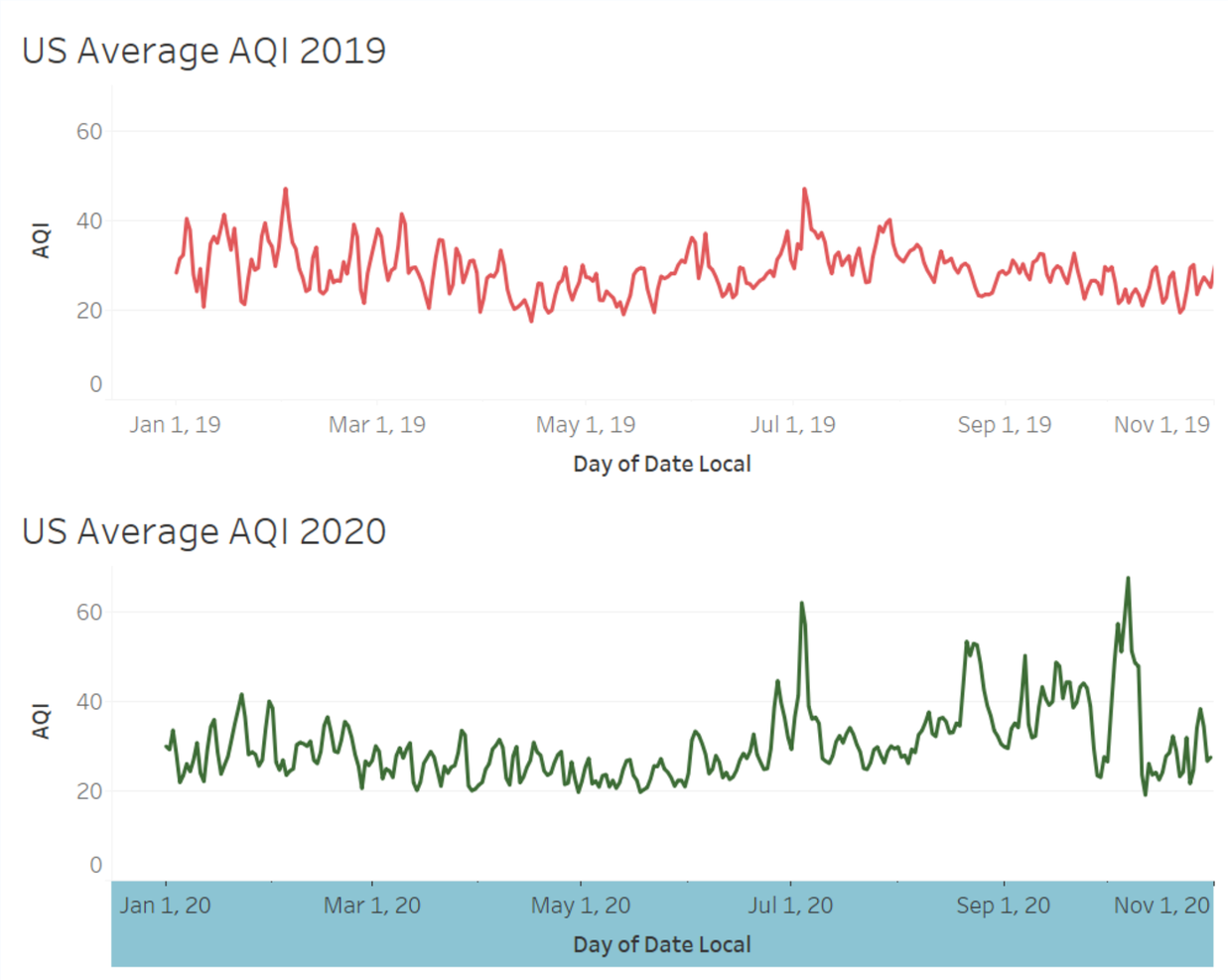


Figure 19 shows a graph of US air quality data from January 2019 to November 2020, with 2019 represented in red and 2020 in green.

Air Quality and Environment

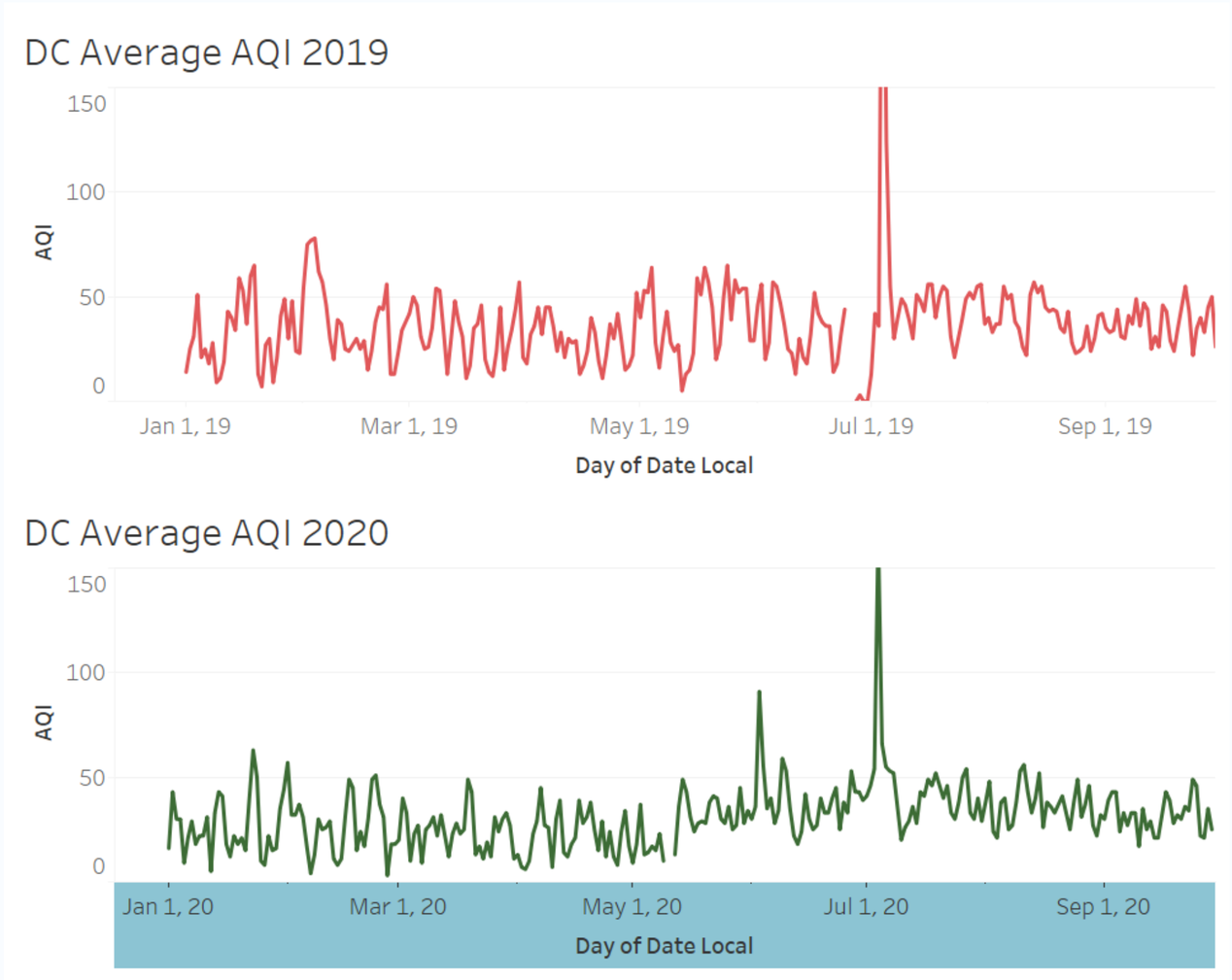


Figure 20 shows a graph of DC air quality data from January 2019 to October 2020, with 2019 represented in red and 2020 represented in green.

Key take-away: All quality of life domains have been impacted.

Survey Improvements Recommendations

- Rework the questions about physical activity, so that the multiple choice answers match before and after.
- Add a question about employment status before lockdown began.
- Collect race and ethnicity demographic data.
- Consider focusing on just one geographic area.

Questions?

THANK YOU FOR LISTENING TO THE TEAM 30 PRESENTATION!

Sources Cited

Abbott, Alison. “COVID’s Mental-Health Toll: How Scientists Are Tracking a Surge in Depression.” Nature, 3 Feb. 2021, www.nature.com/articles/d41586-021-00175-z?error=cookies_not_supported&code=74ad63ed-06a4-4b68-8f56-ab0a336e2fc7.

“AirData Website File Download Page.” EPA, Environmental Protection Agency, aqs.epa.gov/aqsweb/airdata/download_files.html#Daily.

Bureau, US Census. Urban and Rural. 7 Dec. 2020, www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html.

Calvert, Scott. “Covid-19 Pandemic Likely Improved Your Commute to Work.” Wall Street Journal, 3 Jan. 2021, www.wsj.com/articles/covid-19-pandemic-likely-improved-your-commute-to-work-11609669801.

Kochhar, Rakesh. Unemployment Rose Higher in Three Months of COVID-19 than It Did in Two Years of the Great Recession. 26 Aug. 2020, www.pewresearch.org/fact-tank/2020/06/11/unemployment-rose-higher-in-three-months-of-covid-19-than-it-did-in-two-years-of-the-great-recession/.

Pérez-Carbonell, Laura et al. “Impact of the novel coronavirus (COVID-19) pandemic on sleep.” Journal of thoracic disease vol. 12,Suppl 2 (2020): S163-S175. doi:10.21037/jtd-cus-2020-015

Statista. “U.S. Unemployment Rate: Seasonally Adjusted January 2021.” Statista, 26 Feb. 2021, www.statista.com/statistics/273909/seasonally-adjusted-monthly-unemployment-rate-in-the-us.

Parker, Kim, et al. “1. Demographic and Economic Trends in Urban, Suburban and Rural Communities.” Pew Research Center’s Social & Demographic Trends Project, 22 May 2018, www.pewresearch.org/social-trends/2018/05/22/demographic-and-economic-trends-in-urban-suburban-and-rural-communities.

National Center for Education Statistics. “What Are the Trends in the Educational Attainment of the United States Population?” NCES, U.S. Department of Education, nces.ed.gov/fastfacts/display.asp?id=27. Accessed 27 Feb. 2021.

Statista. “Total Population of the United States by Gender 2010-2025.” Statista, Statista Research Department, 20 Jan. 2021, www.statista.com/statistics/737923/us-population-by-gender.