The COVID-19 Pandemic: What Does It Mean for Mobility? What the Temporary vs. Longer-term Impacts?

SCAG Modeling Task Force Meeting

September 23, 2020

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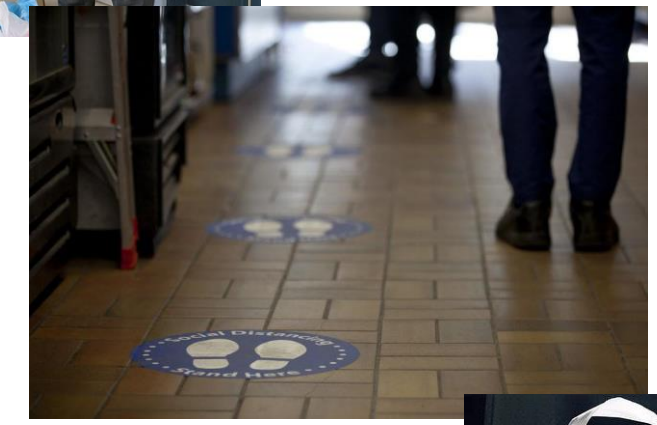
Big disruption caused by the COVID-19 pandemic with…

…need for social distancing



…impacts on employment and travel

…adoption of ICT-based remote working and e-shopping

STREETSBLOG USA

Podcast / Transit / Bike/Ped / Smart Growth

Lime Just Became the Biggest Micromobility Company in the World

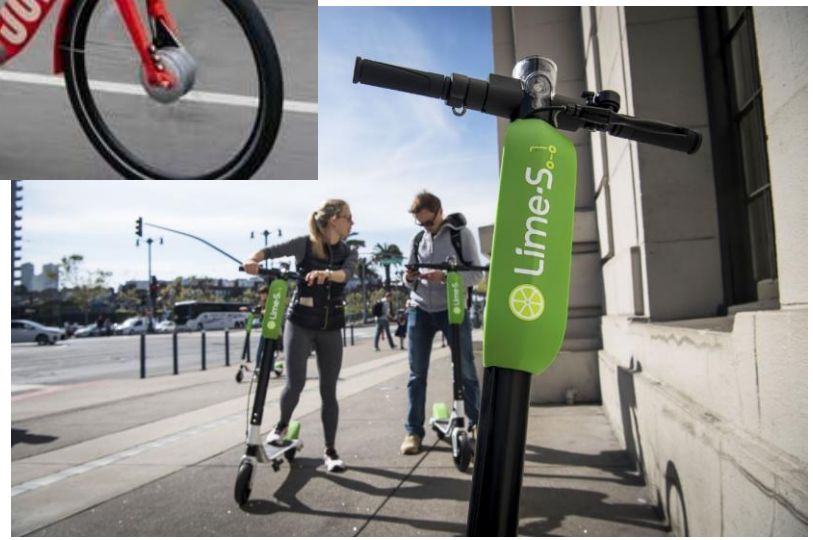
Uber is ceding operational control of its micromobility arm, Jump, to Lime — and giving it a commanding control of the entire market.

By Kea Wilson | May 11, 2020 | 13 COMMENTS

Source: *StreetsBlog USA, https://usa.streetsblog.org/2020/05/11/lime-just-became-the-biggest-micromobility-company-in-the-world/*

The COVID-19 Pandemic is already causing changes in transportation supply and business models…

Source: *Uber*



Source: *Lime*

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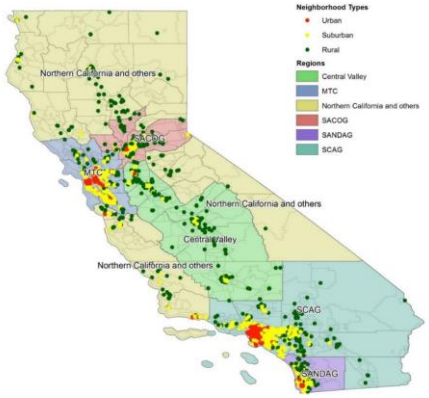
COVID-19 MOBILITY STUDY

2018 California mobility panel survey:

~3,400 respondents from California



2019 "8 US cities" 3R survey:

~3,300 respondents from Boston, Kansas City, Los Angeles, Sacramento, Salt Lake City, San Francisco, Seattle, Washington DC

- Combination of *quantitative* (online surveys) + *qualitative* (in-depth phone interviews) research
- Initial plan to *resample* respondents from 2018-2019 surveys
- *Longitudinal study* to investigate the impacts of the pandemic
- Focus on *temporary* vs. the *longer-term* impacts of the pandemic
- Recruitment of *additional participants* in same regions and in new regions in this data collection:
  - *USA: Atlanta, Chicago, Denver, Detroit, Tampa, New York and San Diego*
  - *Canada: Toronto and Vancouver*
- Combination with analysis of passively-collected (e.g. cell phone) travel data

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Data Sources

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COVID-19
MOBILITY STUDY

Previous 2018-2019 data*

Information on many topics, e.g.

- Household organization
- Telecommuting patterns
- E-shopping behaviors
- Travel patterns
- Vehicle ownership
- Emerging delivery services
- Personal attitudes and preferences
- Shared mobility adoption
- Propensity towards AVs

2020 COVID-19 Data

Data collection on:

- Impacts of the COVID-19 on lifestyles
- Employment and activities
- Household organization and child care
- E-shopping behaviors
- Emerging delivery services
- Current travel patterns
- Vehicle ownership
- Shared mobility adoption
- Personal attitudes and preferences

2020 Qualitative Phone Interviews

- In-depth stories about how COVID-19 has reshaped travel behavior, offering unique insights for future hypotheses about COVID-19 effects on mobility, which can be tested in future studies.

Post-COVID-19 Data

To be collected in Fall 2020 and/or Spring 2021

Interest in evolution of changes over time

Integration with passively-collected (i.e. cell phone) data

Cooperation with other researchers in the US and Europe for comparative analyses

**Previous data available only for longitudinal component of the sample*

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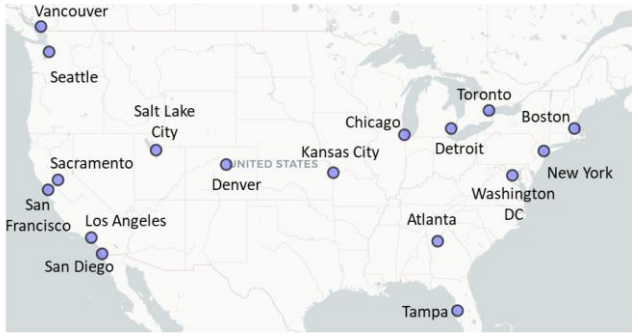
Data Sources—COVID 19 Mobility Study

Dataset L (Longitudinal, N=1,339)

- **Sampling Method**: Recall of participants from:
  - 2018 California Mobility Study
  - 2019 "8 Cities" (Boston, Kansas City, Los Angeles, Sacramento, Salt Lake City, San Francisco, Seattle and Washington DC) Study
- **Recruitment Method**: Direct e-mail
- **Valid Emails for Recontact**: 3,466
- **Response Rate**: 38.6%
- **Incentives**: $10 Amazon gift card to each survey respondent
- **Survey administration**: May to July 2020

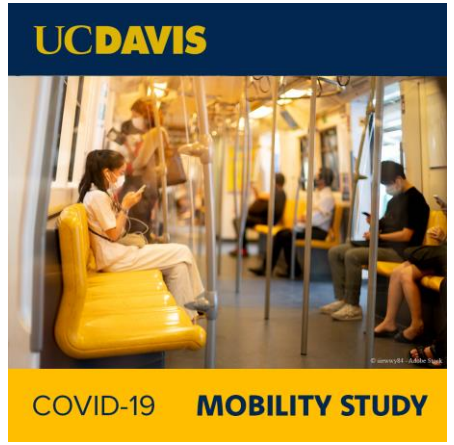
Dataset O (Op. Panel, N=8,834)

- **Sampling Method**: Convenience sample through online opinion panel
- **Study Regions: 17 in the US and 2 in Canada:**
  - *United States:* Los Angeles, Sacramento, San Diego, San Francisco, Seattle, Chicago, Denver, Detroit, Kansas City, Salt Lake City, Atlanta, Boston, New York, Tampa and Washington D.C.
  - *Canada:* Toronto and Vancouver
- **Recruitment Method:** E-mail from online opinion panel
- **Sociodemographic Targets:** Age, gender, race and ethnicity, employment and HH income
- **Incentives:** Airline miles/points from opinion panel
- **Survey administration:** May to July 2020



Dataset C (Convenience, N=1,266)

- **Sampling Method**: Convenience sample
- **Study Regions**: Open to all respondents with survey link
- **Recruitment Method:** Various channels, including
  - Professional listservs, online social media
  - Facebook and Instagram ads in the US and Canada
- **Incentives**: Participation in random drawing to win one of 200 $10 gift cards or one of 10 $100 gift cards from Amazon
- **Survey Administration**: May to July 2020



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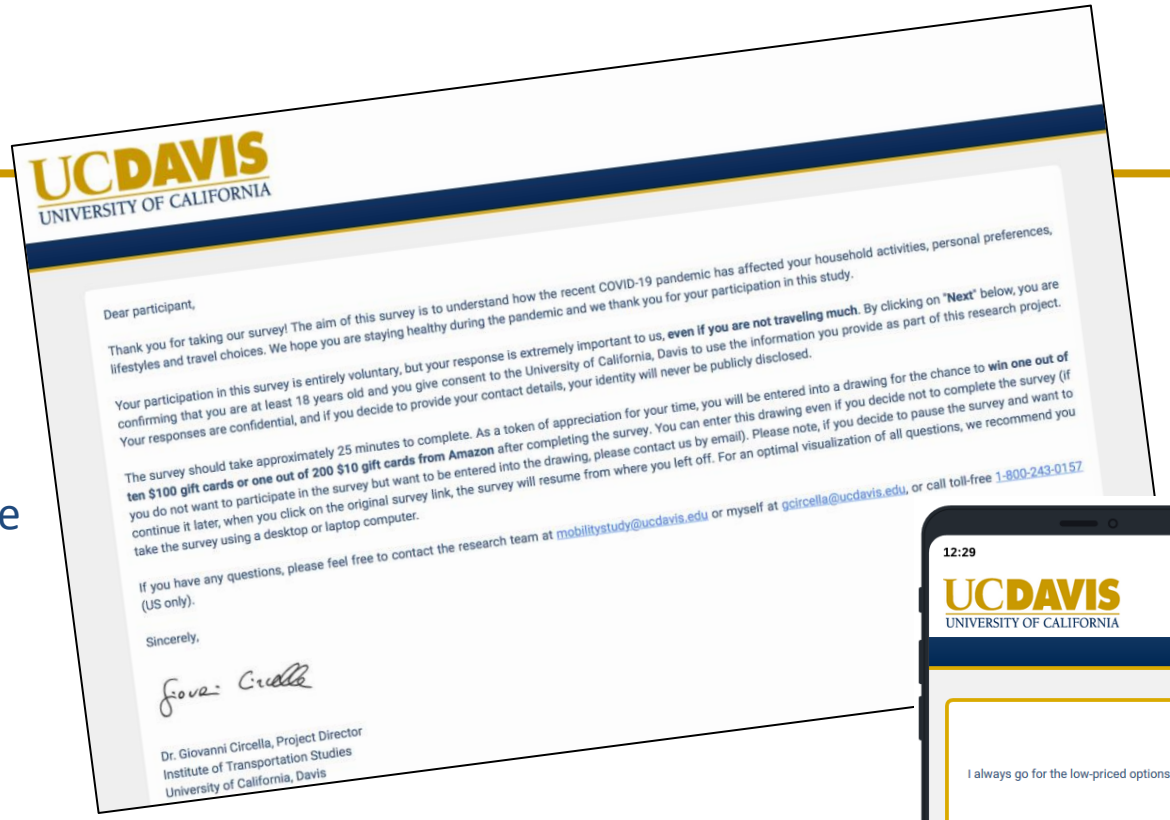
Survey Content

All survey versions include nine main sections:

1. Attitudes and preferences on transportation, residential location, environmental topics, etc.
2. Impacts of COVID-19 pandemic on lifestyle, including use of technology
3. Employment status, work and study activities
4. Household organization and child care
5. Online and in-person shopping patterns (for groceries, food delivery services, visits to restaurants, etc.)
6. Current travel choices (by trip purposes and modes)
7. Use of emerging transportation services
8. Household vehicle ownership and eventual plans for vehicle purchase
9. Household and individual sociodemographics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Dear participant,

Thank you for taking our survey! The aim of this survey is to understand how the recent COVID-19 pandemic has affected your household activities, personal preferences, lifestyles and travel choices. We hope you are staying healthy during the pandemic and we thank you for your participation in this study.

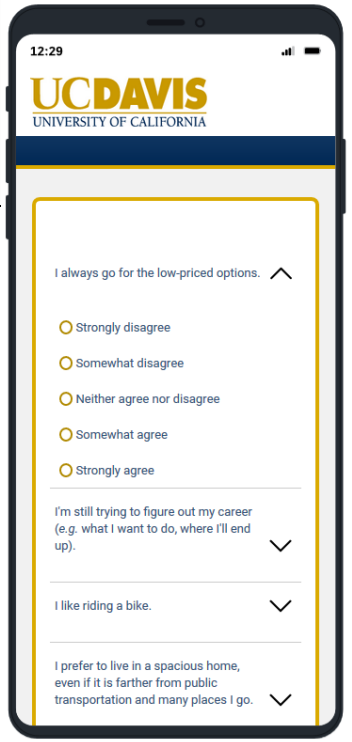
Your participation in this survey is entirely voluntary, but your response is extremely important to us, **even if you are not traveling much**. By clicking on "**Next**" below, you are confirming that you are at least 18 years old and you give consent to the University of California, Davis to use the information you provide as part of this research project. Your responses are confidential, and if you decide to provide your contact details, your identity will never be publicly disclosed.

The survey should take approximately 25 minutes to complete. As a token of appreciation for your time, you will be entered into a drawing for the chance to **win one out of ten $100 gift cards or one out of 200 $10 gift cards from Amazon** after completing the survey. You can enter this drawing even if you decide not to complete the survey (if you do not want to participate in the survey but want to be entered into the drawing, please contact us by email). Please note, if you decide to pause the survey and want to continue it later, when you click on the original survey link, the survey will resume from where you left off. For an optimal visualization of all questions, we recommend you take the survey using a desktop or laptop computer.

If you have any questions, please feel free to contact the research team at mobilitystudy@ucdavis.edu or myself at gcircella@ucdavis.edu, or call toll-free 1-800-243-0157 (US only).

Sincerely,

Dr. Giovanni Circella, Project Director
Institute of Transportation Studies
University of California, Davis



The online survey was available in both desktop and mobile version, even if the use of a computer or tablet was encouraged

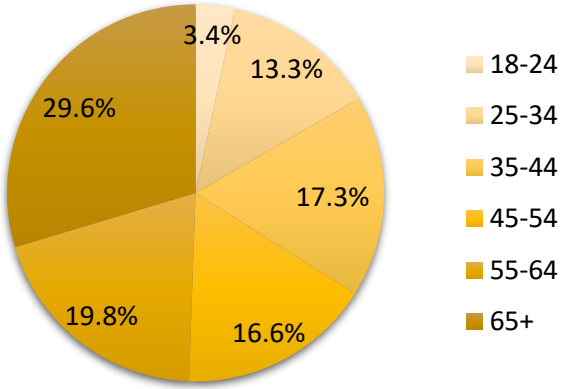
Sociodemographics of the respondents

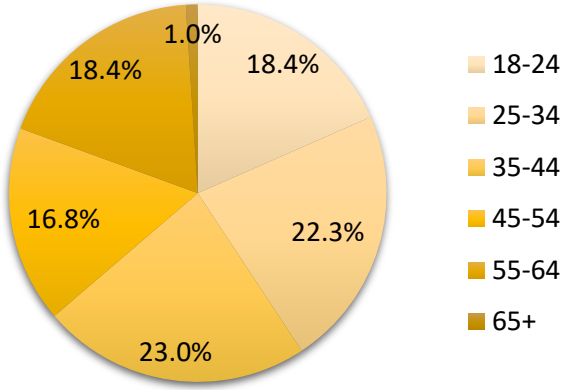
Dataset L (Longitudinal, N=1,339)

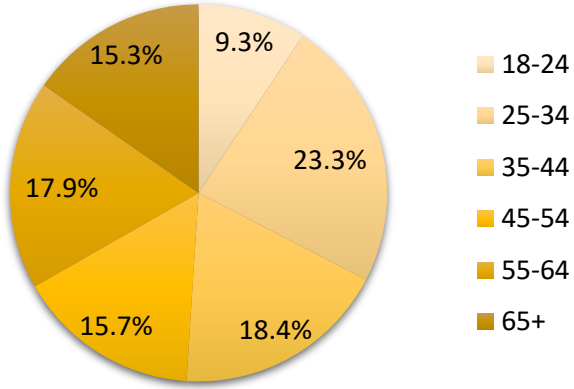
Dataset O (Op. Panel, N=8,834)

Dataset C (Convenience, N=1,266)

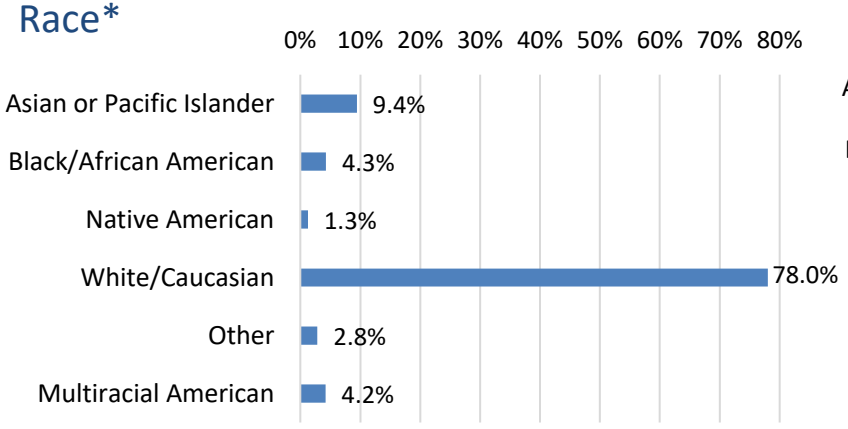
Age

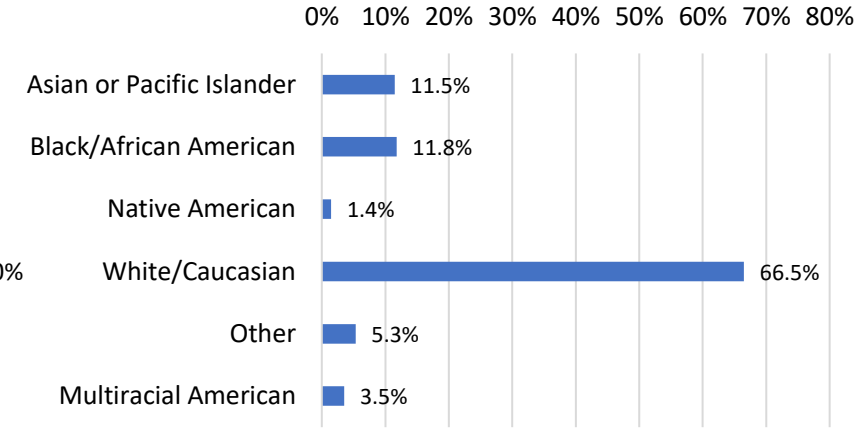


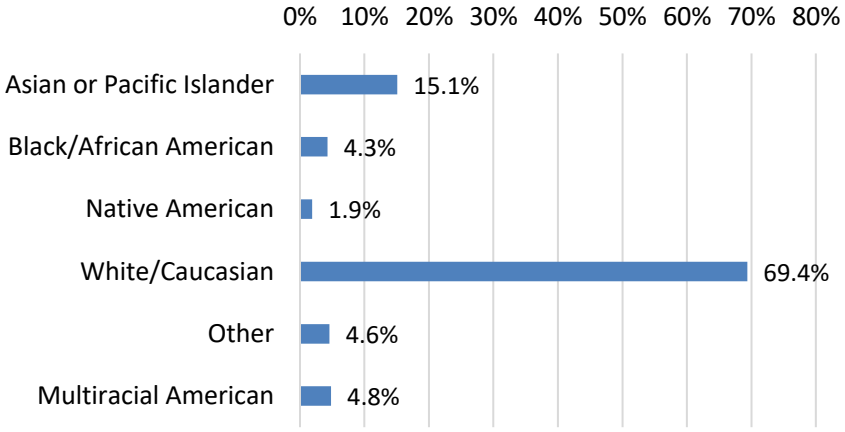




Race*







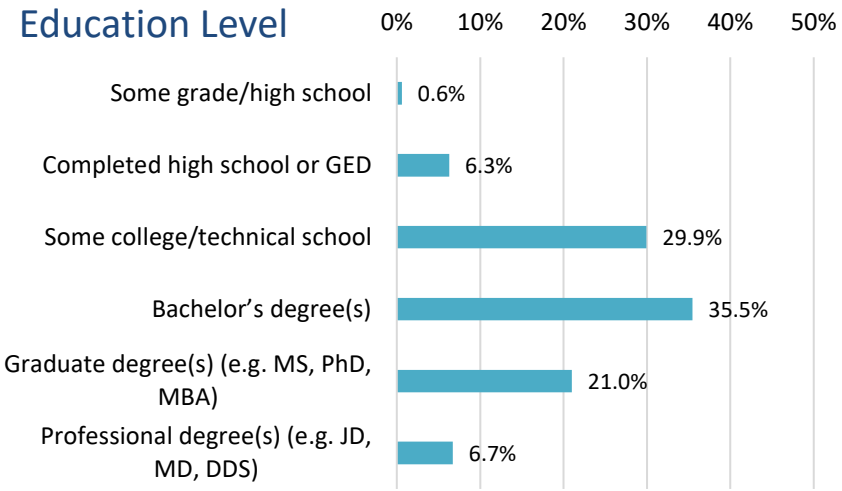
*Note: *A separate question asked for the Hispanic ethnicity (not shown here)*

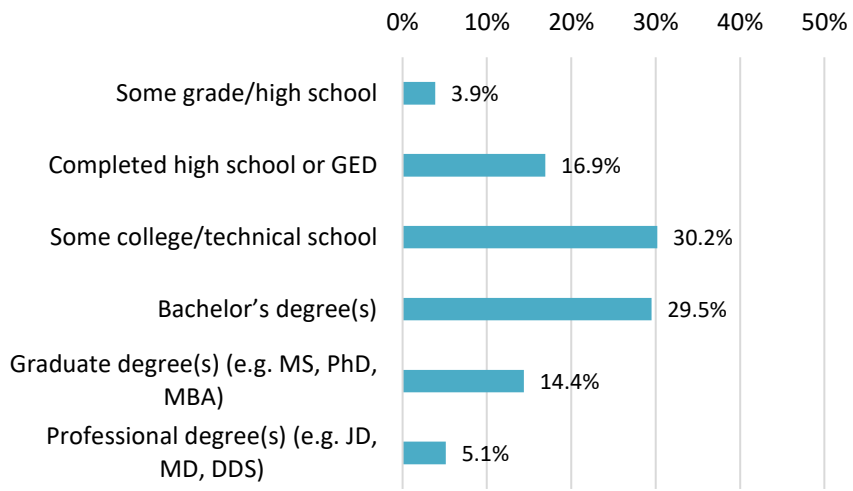
Dataset L (Longitudinal, N=1,339)

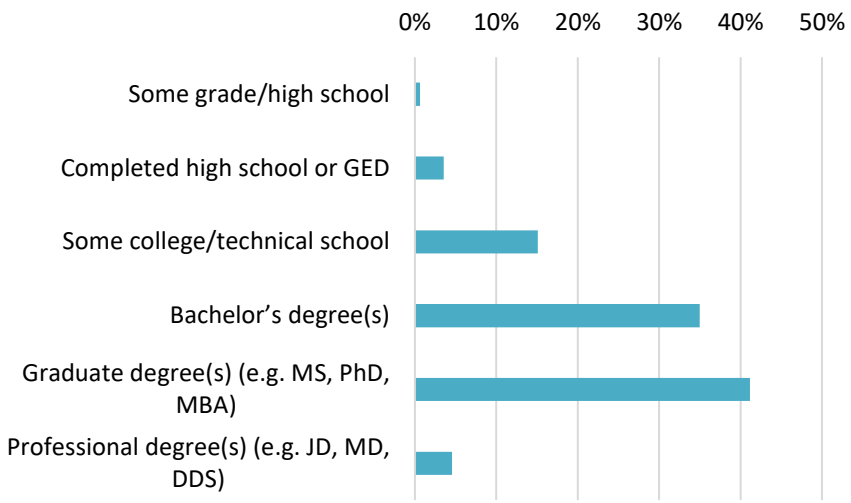
Dataset O (Op. Panel, N=8,834[1])

Dataset C (Convenience, N=1,266[2])

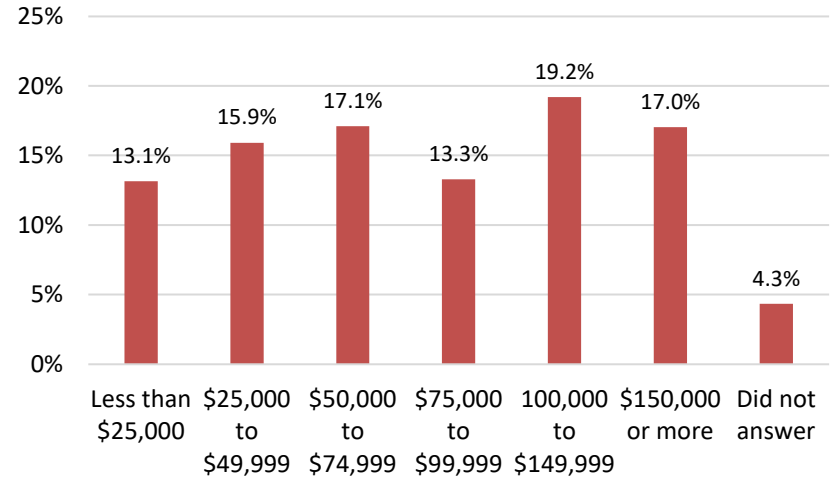
Education Level

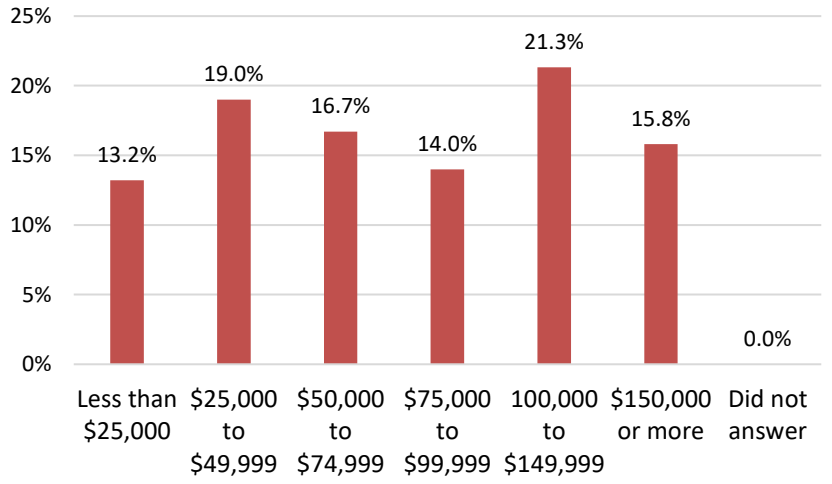


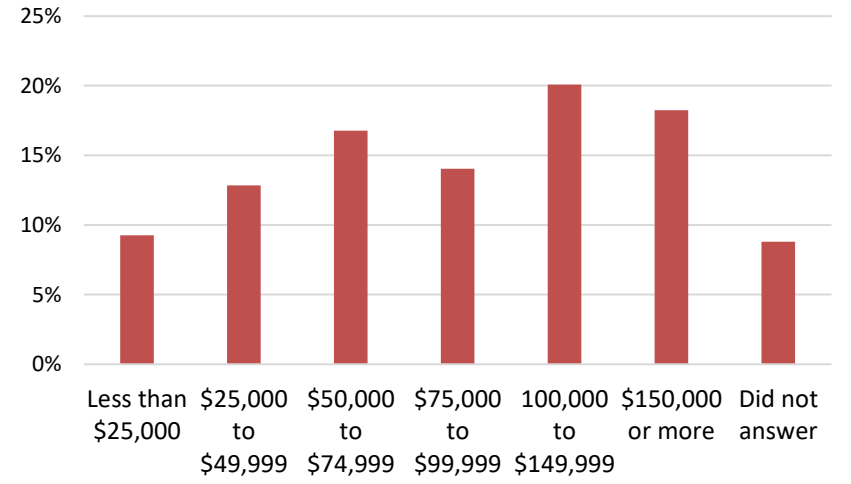




Household Income







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Notes:
[1]For household income, US sub-sample only, N=7,863
[2]For household income, US sub-sample only, N=1,091

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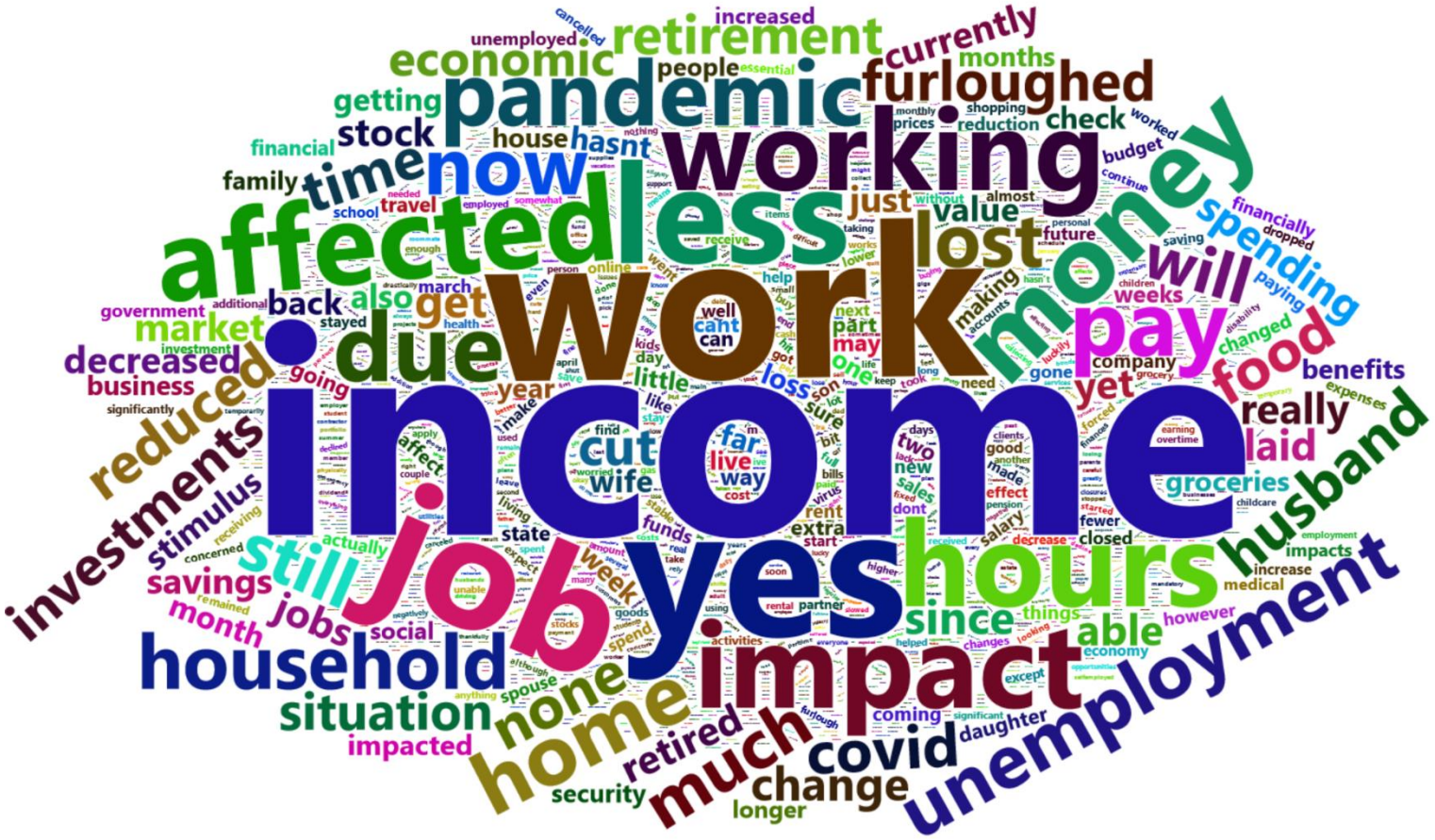
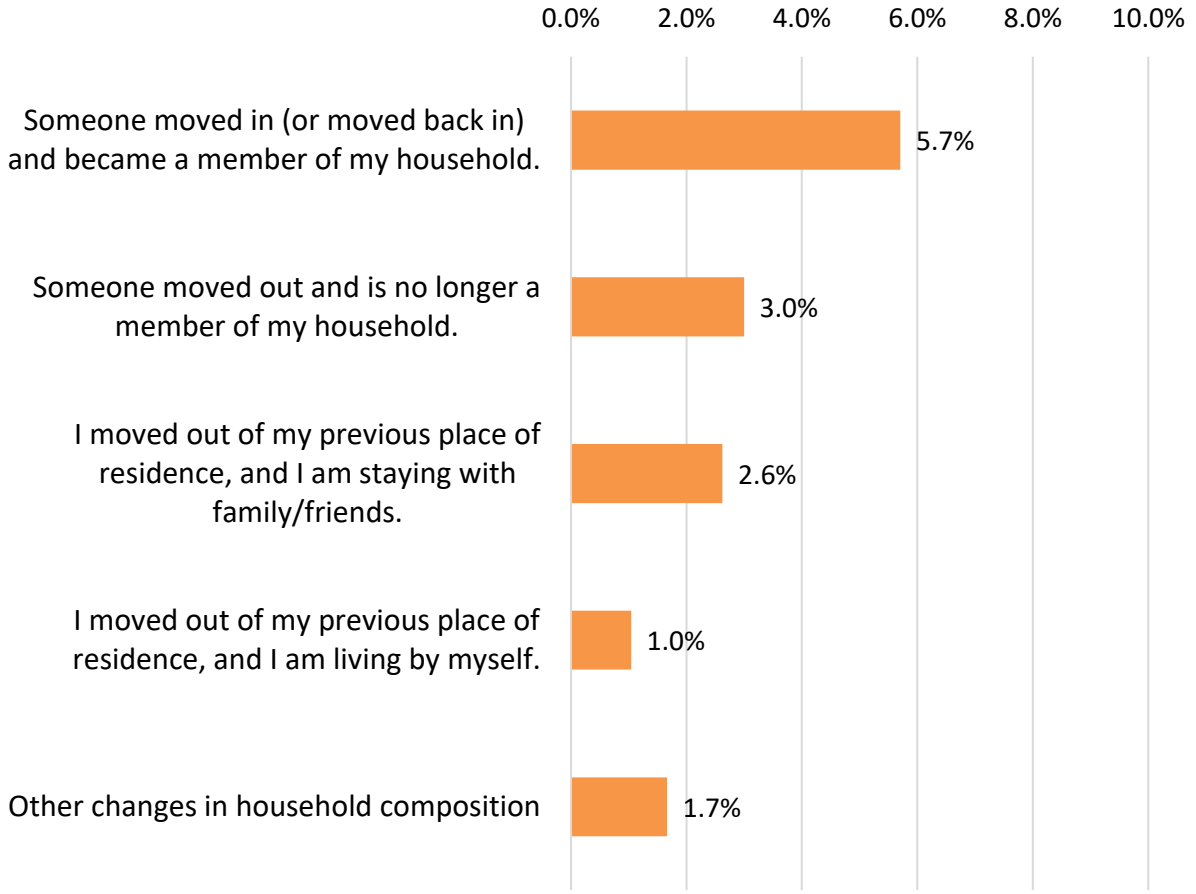
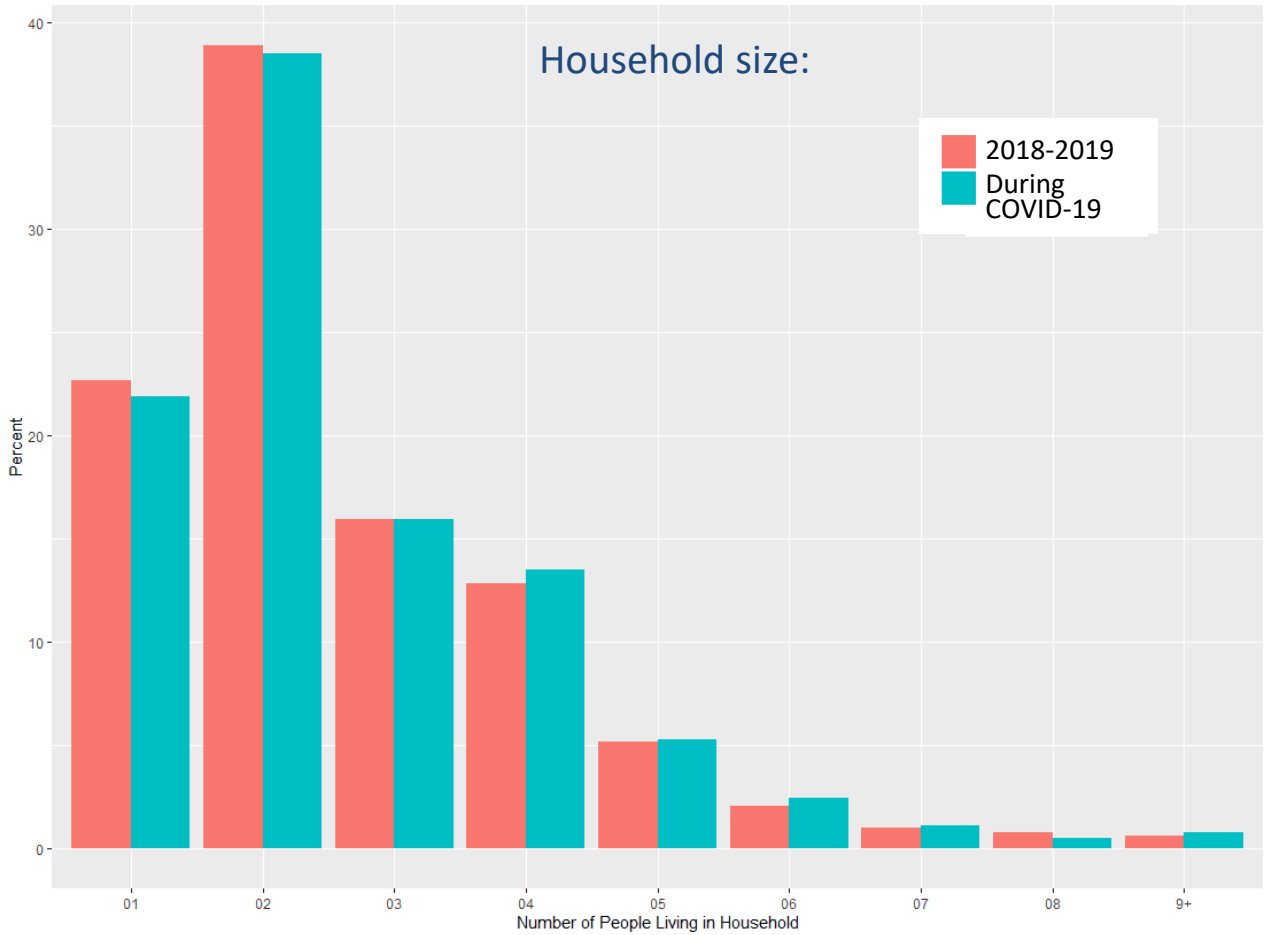
Impacts of the COVID-19 Pandemic on Lifestyles and Individual Choices



Households have been changing as a result of the pandemic…

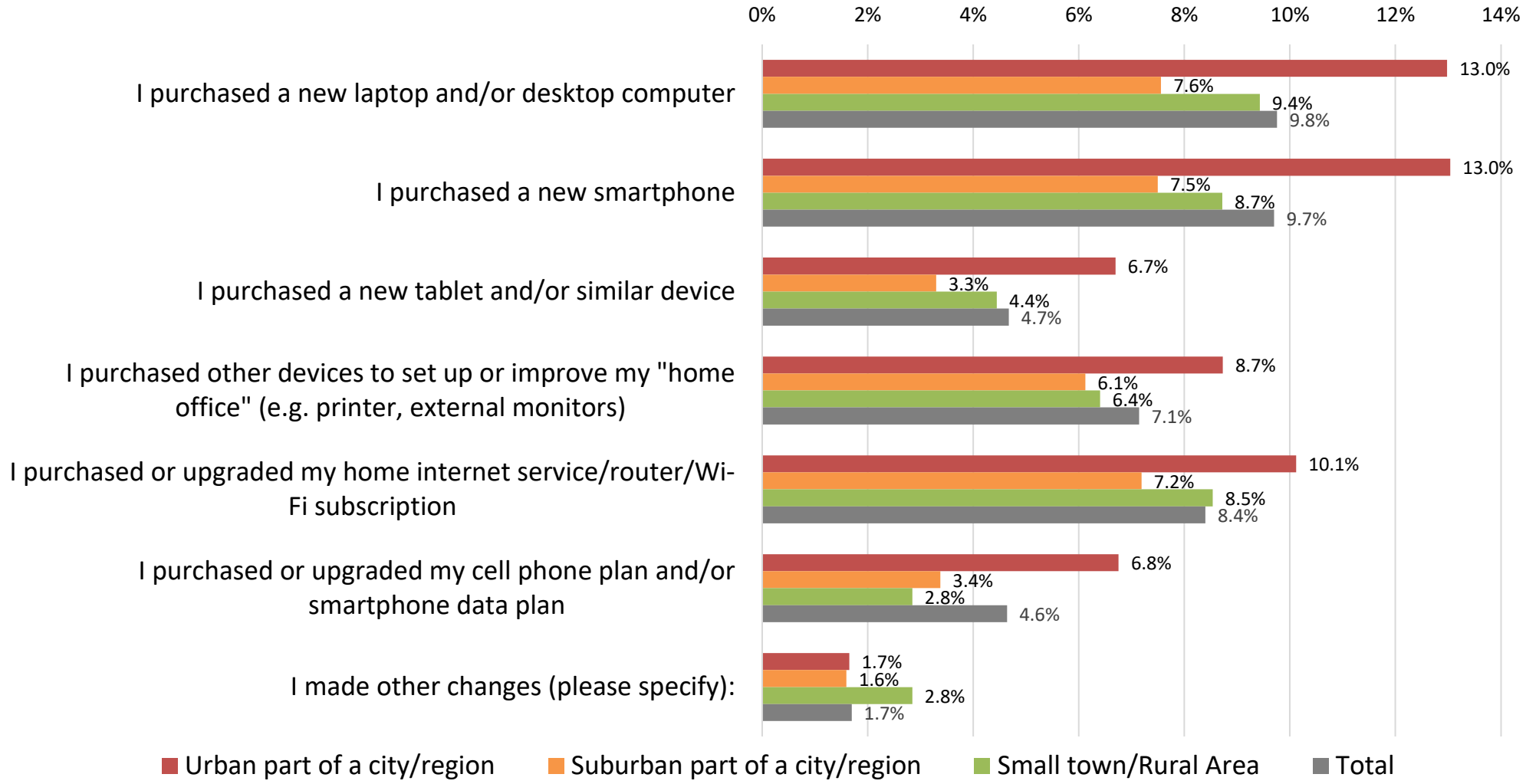


Dataset O *(N = 8,834)*



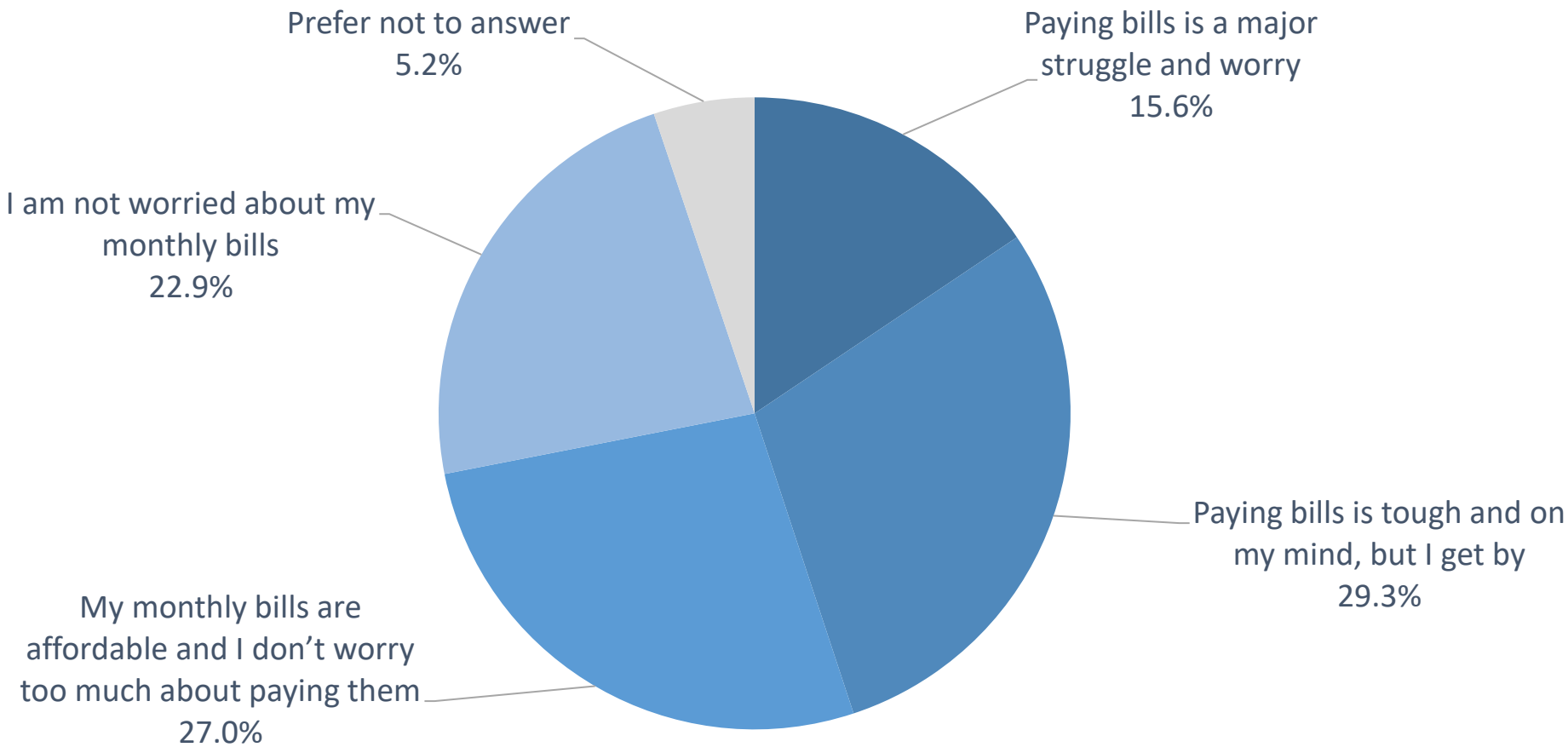
Dataset L *(N = 1,177)*

Changes in Technological Devices and Services in Response to the COVID-19 Pandemic



Dataset O *(N = 8,834)*

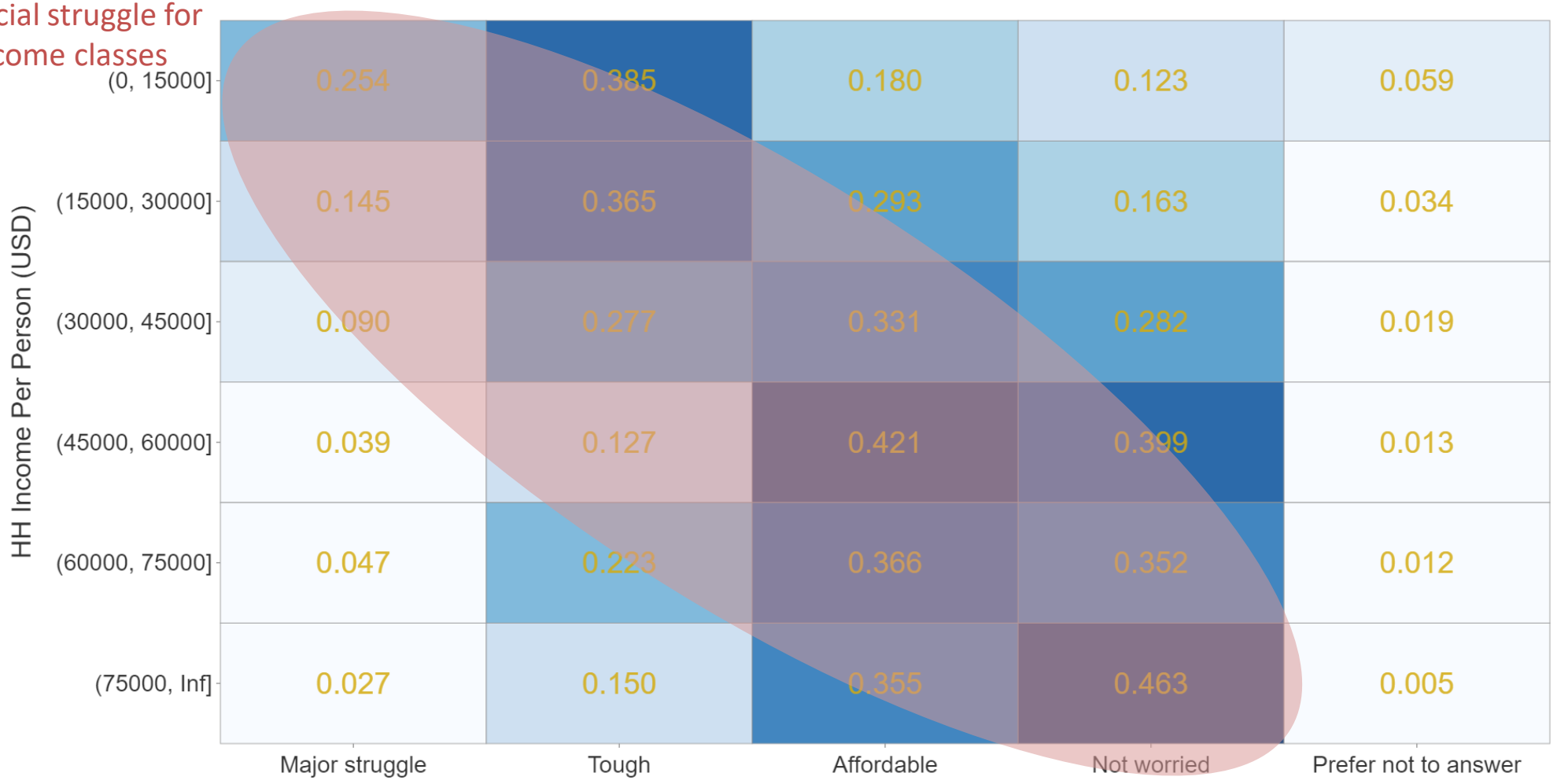
Impact of COVID-19 Pandemic on Household Financial Situation



Dataset O *(N = 8,834)*

Financial Impact of COVID-19 Pandemic, by Household Income Category

More financial struggle for lower-income classes



Less financial burden for higher-income classes

Dataset O *(N = 8,834)*

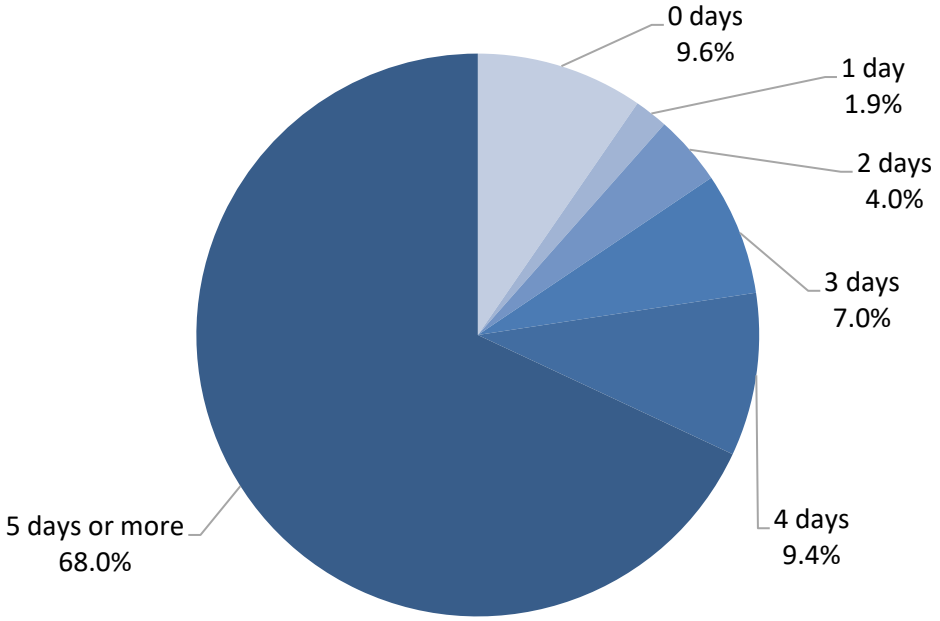
Impacts of the pandemic on employment

	Household Income		
	Less than $50,000	$50,000 to $99,999	$100,000 or more
Total sample (n=8,834)	31.82%	31.12%	37.06%
I'm furloughed with pay from my previous job (n=136)	*33.10%*	*41.90%*	*25.00%*
I'm furloughed without pay from my previous job (n=425)	*37.20%*	*30.60%*	*32.20%*
I was let go from my job during the COVID-19 pandemic (n=340)	*49.70%*	*28.20%*	*22.10%*
My place of employment went out of business during the COVID-19 pandemic (n=115)	*55.70%*	*28.70%*	*15.70%*

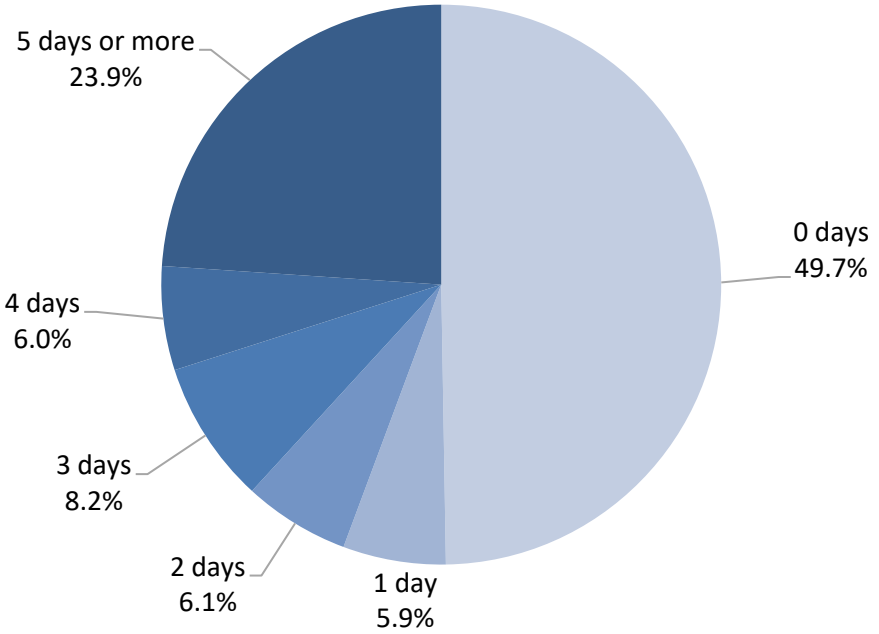
Dataset O *(N = 8,834)*

Days travelled to work before vs. during the pandemic

In an average week <u>before</u> the COVID-19 pandemic (before March 2020), on how many days did you physically travel to work?



In an average week <u>during</u> the COVID-19 pandemic, on how many days have you been physically traveling to work?

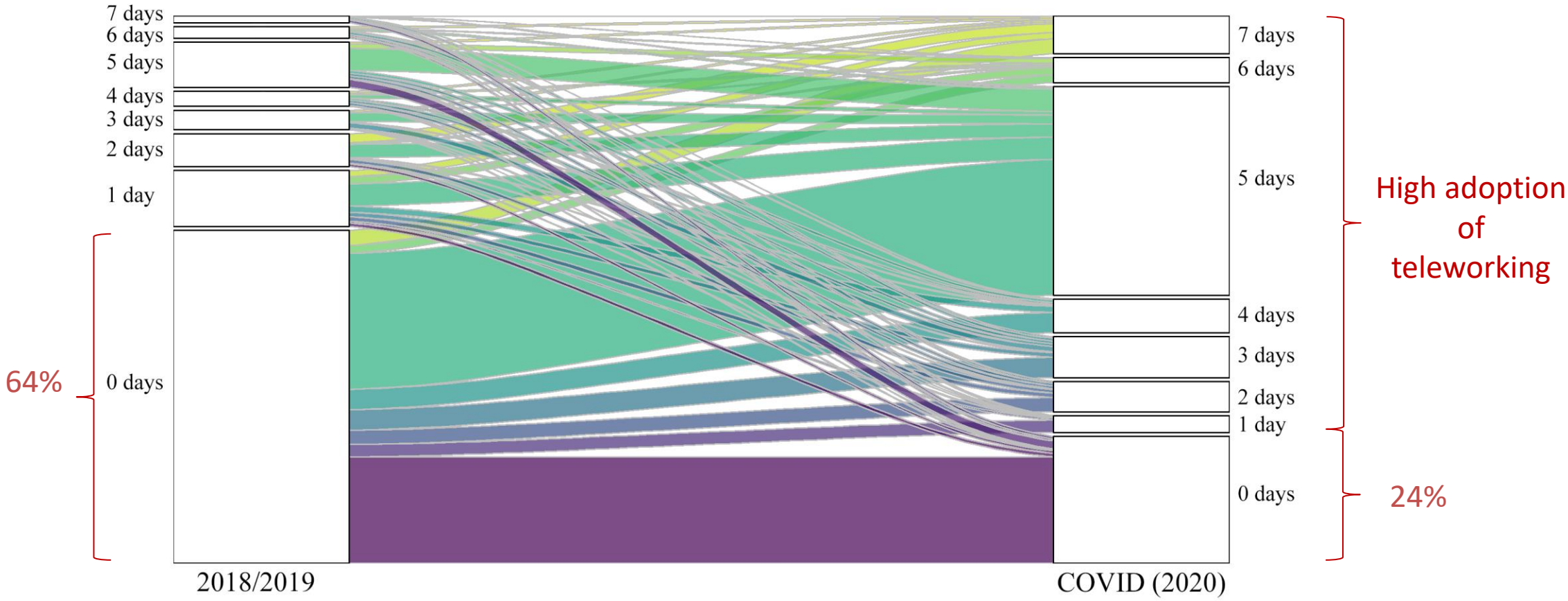


Dataset O *(N = 5,872 before and N = 5,117 during the pandemic, as 755 respondents who stopped working)*

- Individuals in certain occupations and lower-income segments of the population often do not have access to telecommuting.

Commuting and Telecommuting

Number of Days Telecommuting in a Week

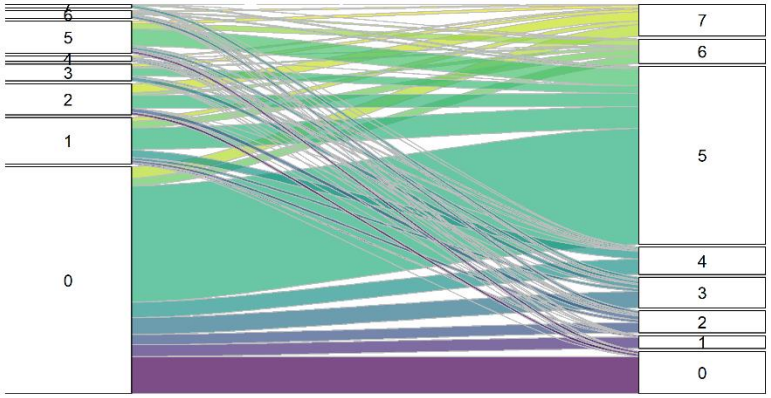


Dataset L *(N = 586)*

Commuting and Telecommuting

Number of Days Telecommuting in a Week

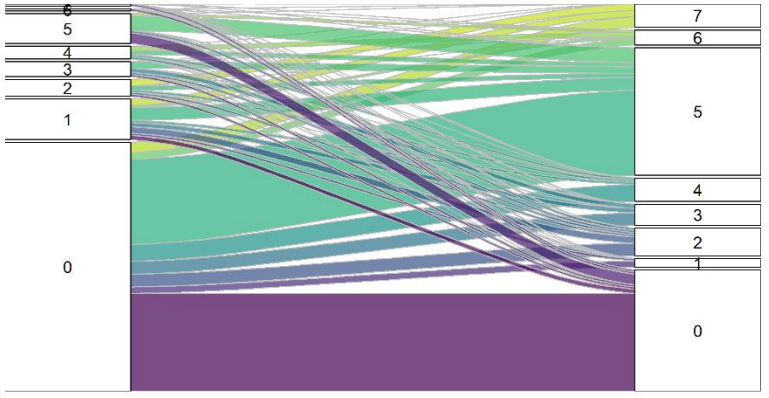
High Income



(N=287)

- During the peak COVID-19 pandemic 11.5% not telecommuting

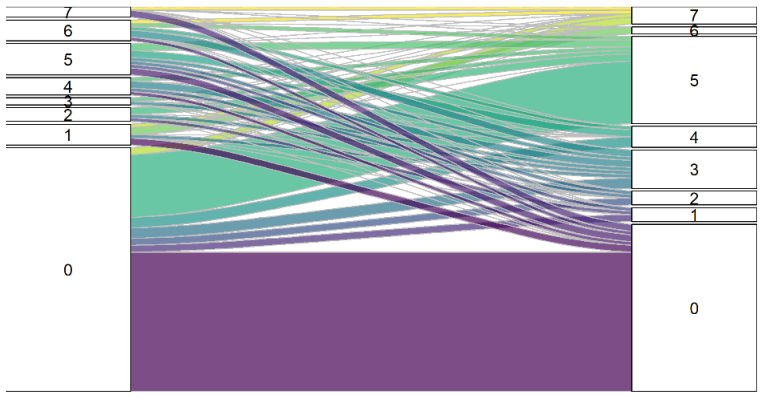
Middle Income



(N=173)

- During the peak COVID-19 pandemic 32.9% not telecommuting

Low Income



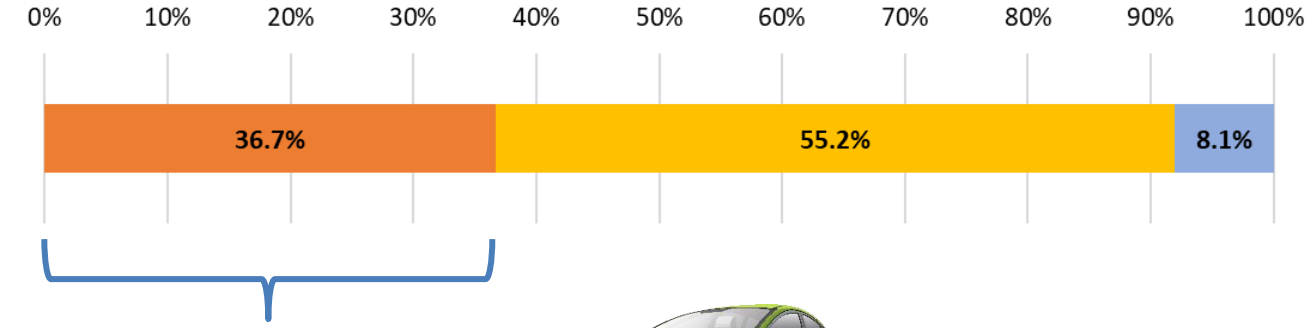
(N=105)

- During the peak COVID-19 pandemic 45.7% not telecommuting

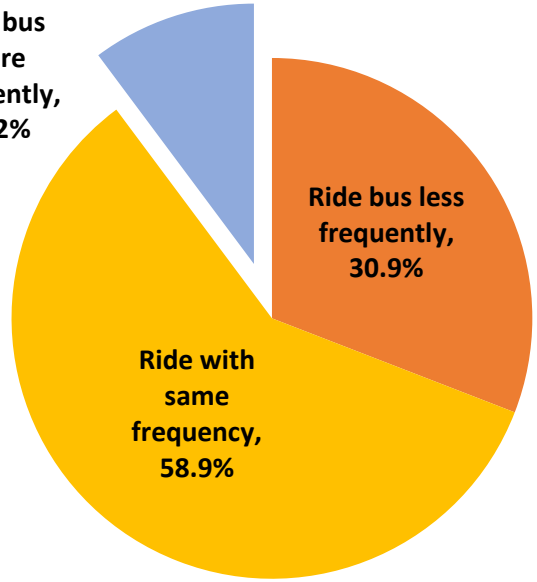
Dataset L *(N = 586)*

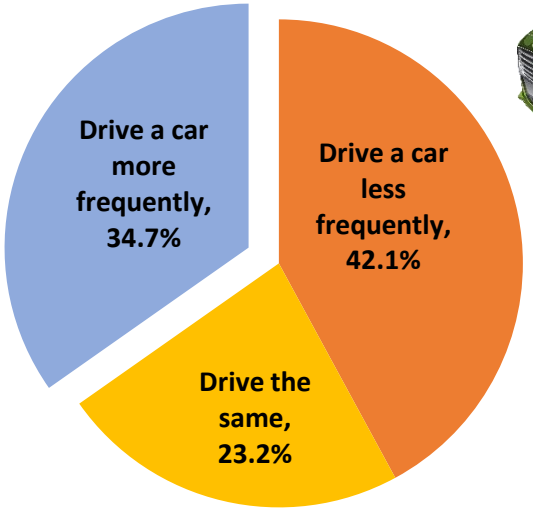
Lower transit ridership, more driving?

Changes during the COVID-19 pandemic in the use of buses

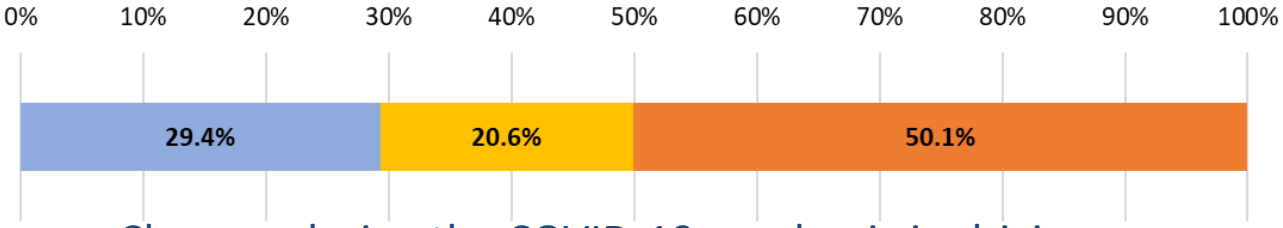


Ride bus less often
Ride bus with same frequency
Ride bus more often





Drives a car more often
Drives a car with same frequency
Drives a car less often



Changes during the COVID-19 pandemic in driving

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Dataset L *(N = 705)*

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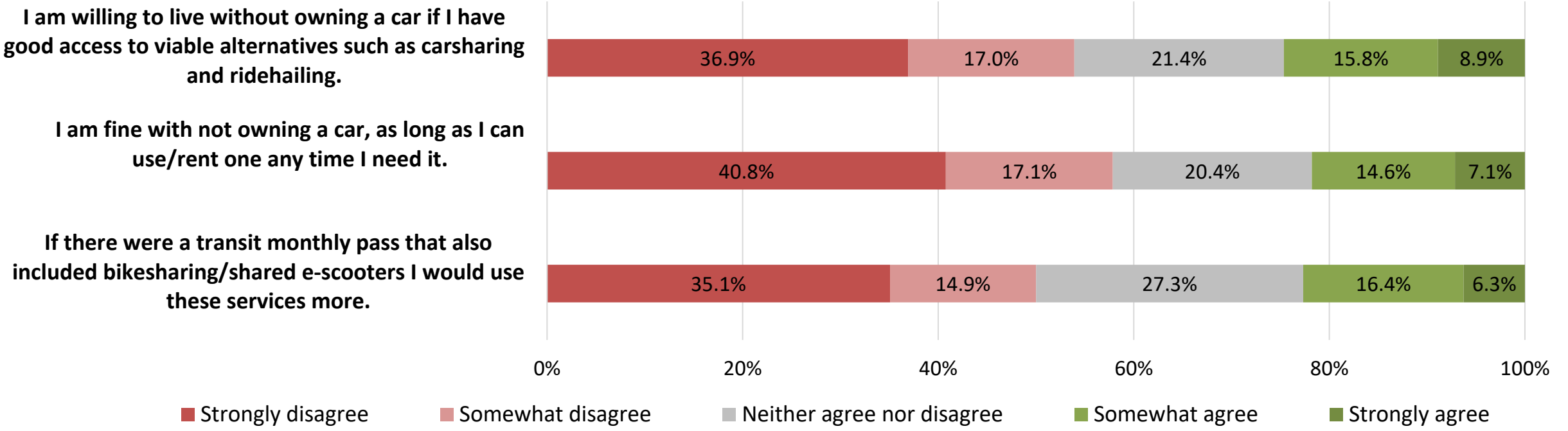
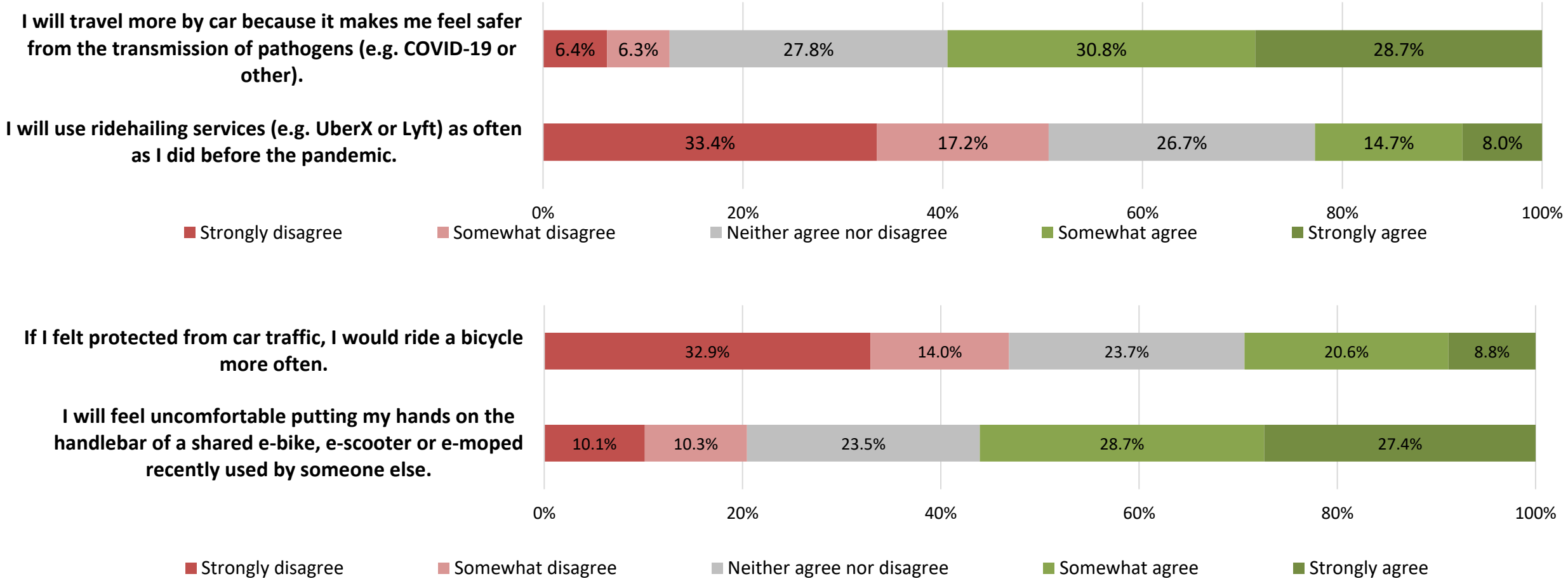
Changes in Attitudes towards Travel and Multimodality



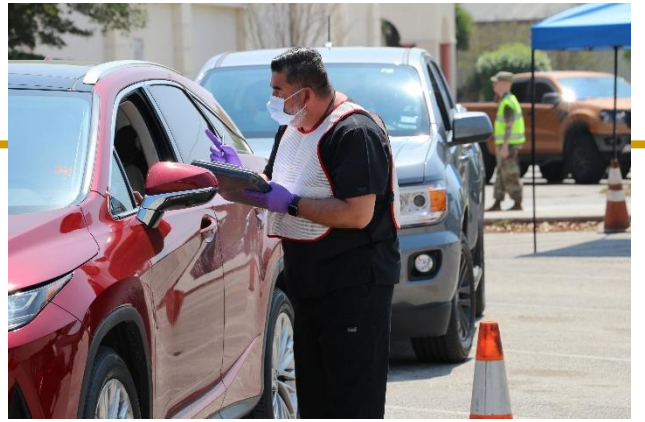
The interest in adopting a *car-light* and multimodal lifestyle is found to be lower than what observed in the 2018 and 2019 data collections.

Dataset O *(N = 8,834)*

How respondents expect to travel by October 2020?



Is the pandemic is further increasing equity gaps?



- Lower-income individuals are more likely to have lost their job during the pandemic
- Lower-income households are much more likely to be financially struggling
- A larger proportion of lower-income workers are considered essential workers and need to continue to physically commute to work
- During the pandemic, lower-income workers are significantly more likely to commute to work and not telecommute than higher-income workers (difference was not significant in 2018-2019)

- The transition to e-shopping favors the younger and tech-savvy segments of the populations: senior citizens, less-educated individuals and minorities more likely to suffer the changes in retail organization
- Among those that travel long-distance for work/business purposes, those in higher-paying jobs are more likely to have reduced their travel, while lower-income workers are more likely to continue to travel

Will we go back to our previous life…?

- There are reasons to believe that after the large disruption, individuals will to a certain extent go back to their behaviors (and habits) from before the pandemic

- However, the longer the disruption, the more likely longer-term impacts might derive (and modifications in lifestyles might persist). Besides, among other effects…
  - Increase in e-shopping will likely persist
  - Retail space will likely be modified forever (some stores are shutting down and will not reopen)
  - Economic activities will need time to recover

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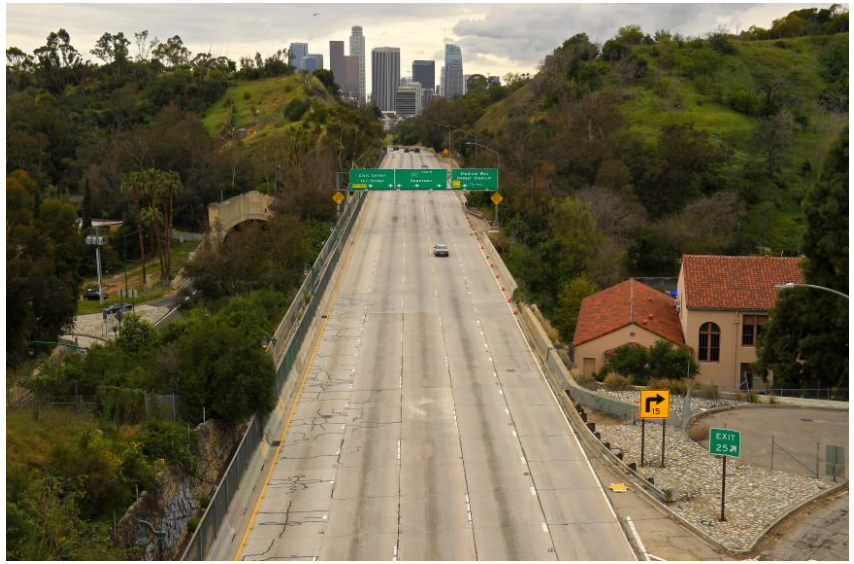
Research and Policy Questions

- At least for some time, travelers will remain hesitant to use shared modes
- Transportation supply might change in the meantime, due to funding issues, changes in investments, mergers and acquisitions
- Space for policy making, in particular, to promote active modes and avoid resurgence of car travel



- Equity impacts need consideration, due to the burden of disruption differently affecting the various segments of the population
- It's probably too early to evaluate whether there will be long-term increased demand for low-density housing (*questions about "future" plans not very reliable, due to strong emotional reactions*)

On-going Data Analyses

- Three papers submitted for presentation at 2021 TRB Conference:
  - *"Longitudinal Analysis of COVID-19 Impacts on Mobility: An Early Snapshot of the Emerging Changes in Travel Behavior" (lead author: Grant Matson)*
  - *"Effect of the COVID-19 pandemic on visiting grocery stores: A before-and-during exploration" (lead author: Junia Compostella)*
  - *"The Impact of the COVID-19 Pandemic on Long-distance Travel in 15 U.S. Regions" (lead author: Keita Makino)*

(Papers currently under review, available upon request from the authors)

Questions for the SCAG MTF Meeting Attendees

- What research questions would you like to see addressed as part of this project? How can this project best support your work in the agency?
- How would you like us to engage you (and other colleagues) in the next steps of this project?
- Do you have recommendations for our next round of data collection (both in terms of time of the data collection and content of the survey)?

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With the contribution of many other colleagues at UC Davis and other partner institutions…

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For more info on the UC Davis COVID-19 Mobility Study, please visit:

postcovid19mobility.ucdavis.edu

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THE STUDY THE TEAM 3RFM PROGRAM ITS DAVIS IN THE NEWS

About the Study

Our research team at UC Davis is leading a large data collection effort that includes a combination of *quantitative* (online surveys checking how behaviors and attitudes have changed and how people are adjusting to the COVID-19 outbreak) and *qualitative* (in-depth phone interviews to discuss more details on household organization, work activities, use of e-shopping and delivery services, changes in habits, preferences about land use, future plans to adjust travel choices and vehicle ownership, etc.) approaches.

As part of the project, we are resampling thousands of respondents from our previous-2018 California mobility survey (**~3,400 respondents from California**) and 2019 "8 cities" travel survey (**~3,300 respondents from Los Angeles, San Francisco, Sacramento, Boston, Seattle, Salt Lake City, Kansas City and Washington DC**). This is giving us a unique opportunity to build a longitudinal study to investigate the impacts of the pandemic. Our research team is also coordinating with other colleagues in the US and Europe, and plans to develop comparative