Understanding the "New Normal:" Activity and Mobility Patterns of Low-Income and Disadvantaged Communities in the Era of Hybrid Work and High Gas Prices

Maria Carolina Lecompte, Basar Ozbilen Ph.D., Vanessa Alvarez-Reyes, Yongsung Lee Ph.D., Giovanni Circella Ph.D.

July 9th, 2024

ITS UC**DAVIS**
Institute of Transportation Studies

UC**DAVIS**
3 Revolutions Future Mobility
Institute of Transportation Studies

CONTENT

Introduction and literature review

Mobility Panel project

Challenges of households in disadvantaged communities

Methodology

Data description

Findings

ITS **UCDAVIS**
Institute of Transportation Studies

UCDAVIS
3 Revolutions Future Mobility
Institute of Transportation Studies

1. INTRODUCTION AND LITERATURE REVIEW

ITS UCDAVIS
Institute of Transportation Studies

UCDAVIS
3 Revolutions Future Mobility
Institute of Transportation Studies

1. INTRODUCTION AND LITERATURE REVIEW

Project objectives:
Expand on and complement existing large behavioral study on evolving activity patterns and travel choices during these times of disruption by focusing on in-depth **interviews** with members of **low-income and disadvantaged communities (DACs)**.

Understand the changes low income and DACs have had in the following aspects:
- Private and work activities,
- Availability of travel modes,
- Changes in living costs and gas prices,
- Perspectives on new mobility options and solutions.
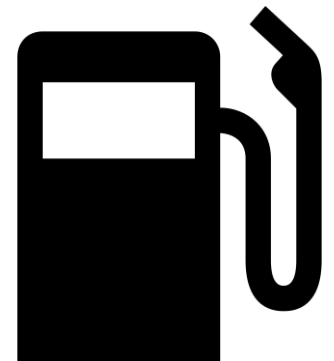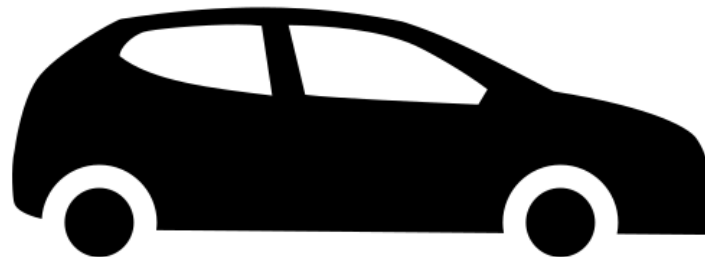
1. INTRODUCTION AND LITERATURE REVIEW

Post-COVID California

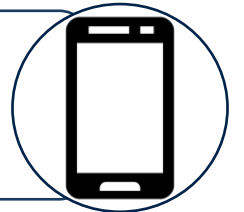|	
Decrease in transit services and slow recovery	• Decreased demand • Service cuts • Financial cliff
Greater options for hybrid and flexible work	• Various office jobs became fully remote • Studying was fully remote at all levels • Post-COVID hybrid and flexible options
Greater use of ICTs for shopping and telehealth	• E-shopping increased and maintained • Telehealth options available
Increased gas prices	• Increased and fluctuating gas prices • Inflation and costs of many products

1. INTRODUCTION AND LITERATURE REVIEW

EQUITY AND INCLUSION

Transportation can affect people's **accessibility** to different places (Lucas, 2012)

There is a **disproportionate** distribution of benefits and burdens (Di Ciommo & Shiftan, 2017; Van Wee & Geurs, 2011).

People of color to bear **greater** transportation **burdens** (exposure to road accidents and emissions, lower accessibility) (Krapp, Barajas, & Wennink, 2021)

Hispanic/Latinos face **particular accessibility challenges** associated to language barriers and immigration status (Allen & Wang, 2020; Barajas, 2021)

1. INTRODUCTION AND LITERATURE REVIEW

Disadvantaged communities (DACs) - *California*

- **CalEPA** must consider "*geographic, socioeconomic, public health, and environmental hazard criteria*" to identify these communities.

- The state collects and examines information from communities all over the state and created the **CalEnviroScreen**

- Combines different types of information by *census track* into a **score** to determine which communities are the most burdened or "disadvantaged".

- Criteria "may include, but are not limited to":

  - "Areas *disproportionately affected* by **environmental pollution** and other **hazards** that can lead to negative public health effects, exposure or environmental degradation."

  - "Areas with concentrations of people that are of **low income**, high unemployment, low levels of home ownership, high rent burden, or low levels of educational attainment."
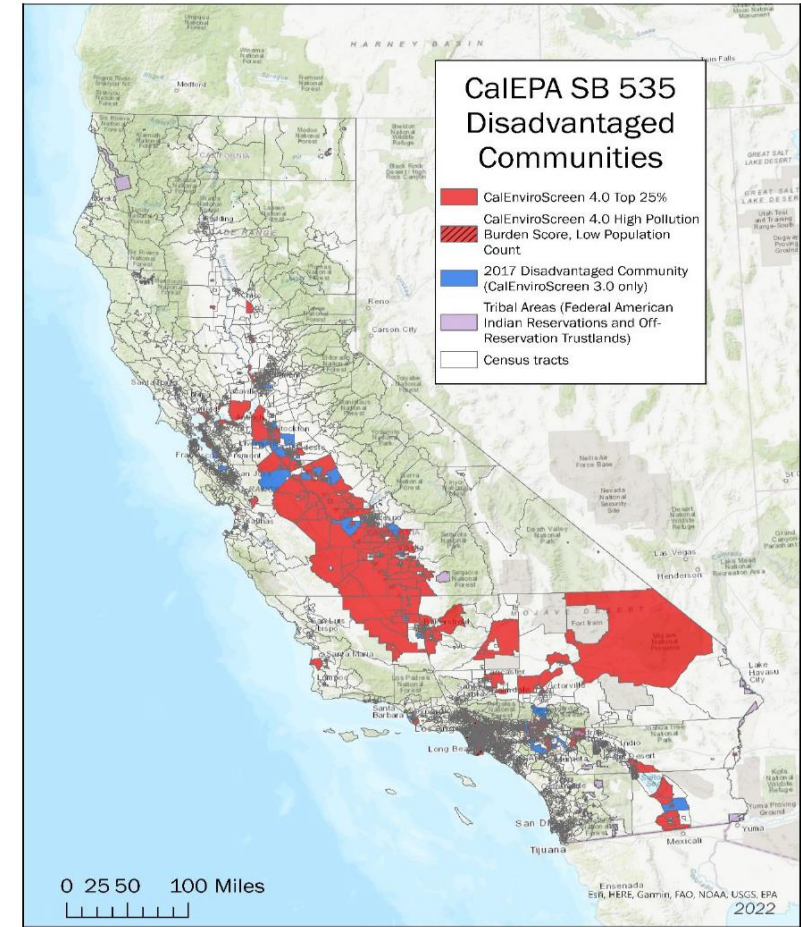

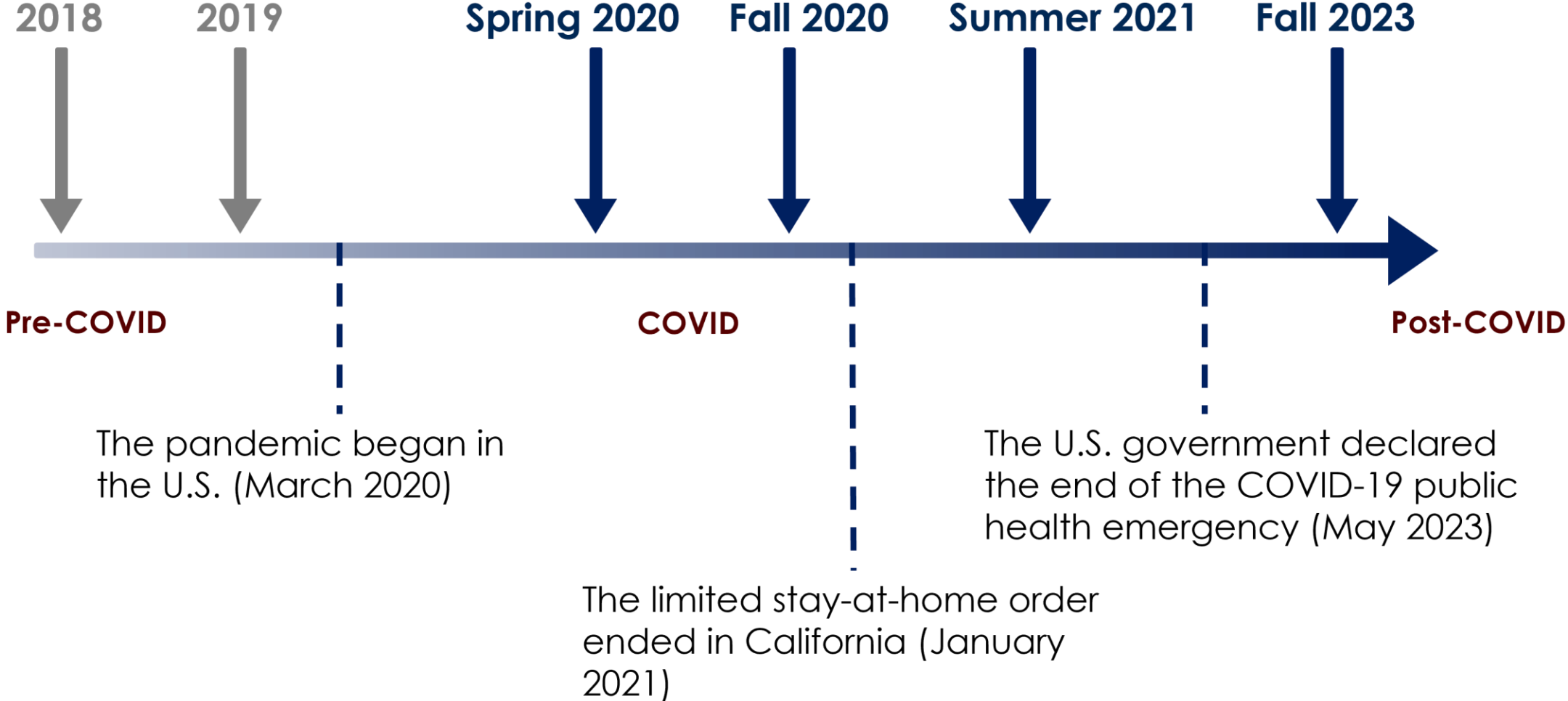*Figure 1: Statewide map of the disadvantaged communities*

CalEPA, 2022, FINAL DESIGNATION OF DISADVANTAGED COMMUNITIES PURSUANT TO SB535

1. INTRODUCTION AND LITERATURE REVIEW

- Post-COVID and DACs travel
  - Those who depend on transit (i.e., captive transit riders) were affected by reduced services (Parker, M. et al., 2021)

  - Financial aid for transit agencies and subsequently, discounted fares that were introduced are back to pre-pandemic prices (Siddiq F, Wasserman JL, Taylor BD, Speroni S., 2023)

  - Many have jobs that could not be done remotely: health, retail, restaurants, driving/logistics (Nwosu, C. O., Kollamparambil, U., & Oyenubi, A., 2022).

  - Car dependent households and individuals have been experiencing higher gas prices and do not have other options (Yonah Freemark, 2022)

2. MOBILITY PANEL PROJECT

ITS UCDAVIS
Institute of Transportation Studies

UCDAVIS
3 Revolutions Future Mobility
Institute of Transportation Studies

2. MOBILITY PANEL PROJECT - TIMELINE

2018   2019   Spring 2020   Fall 2020   Summer 2021   Fall 2023

Pre-COVID   COVID   Post-COVID

The pandemic began in the U.S. (March 2020)

The limited stay-at-home order ended in California (January 2021)

The U.S. government declared the end of the COVID-19 public health emergency (May 2023)
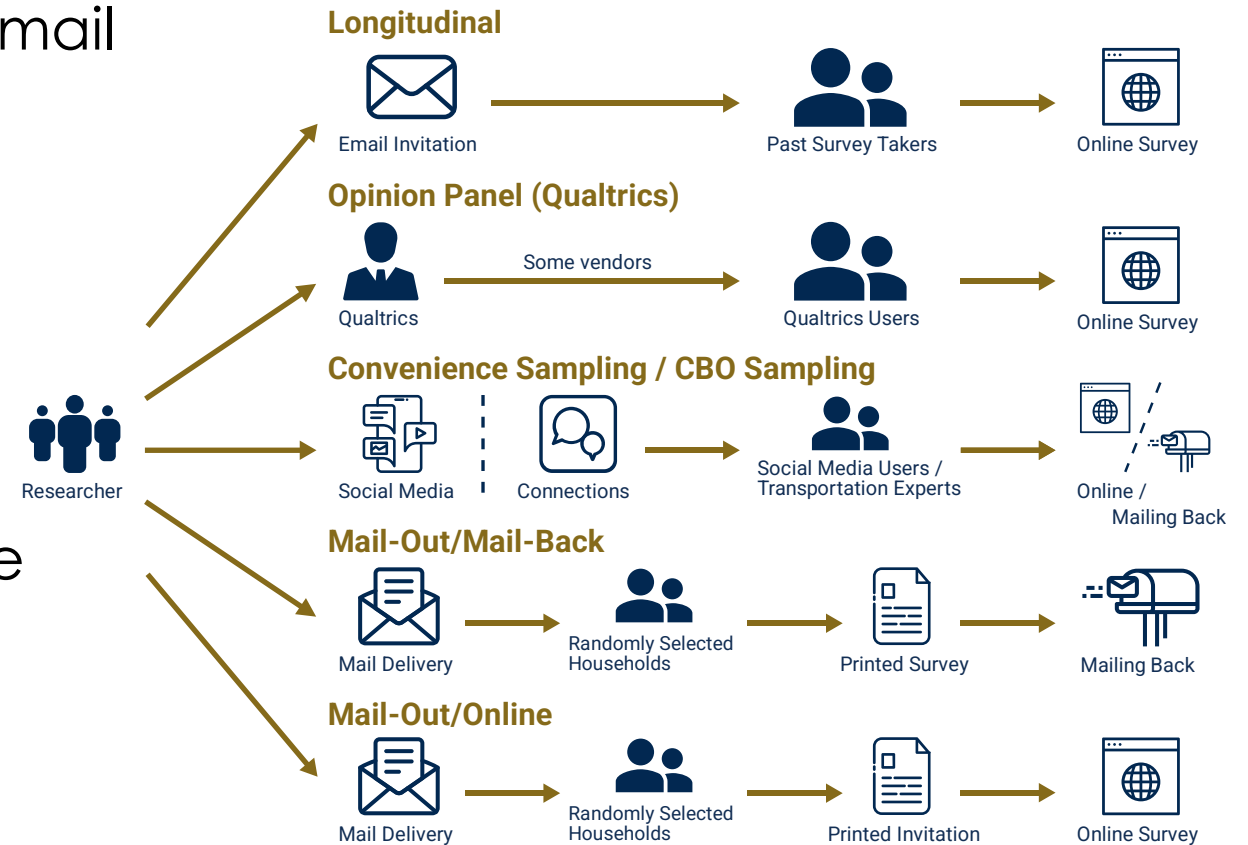
2. MOBILITY PANEL PROJECT - WAVES (2018-2023)

Longitudinal panel with six survey waves
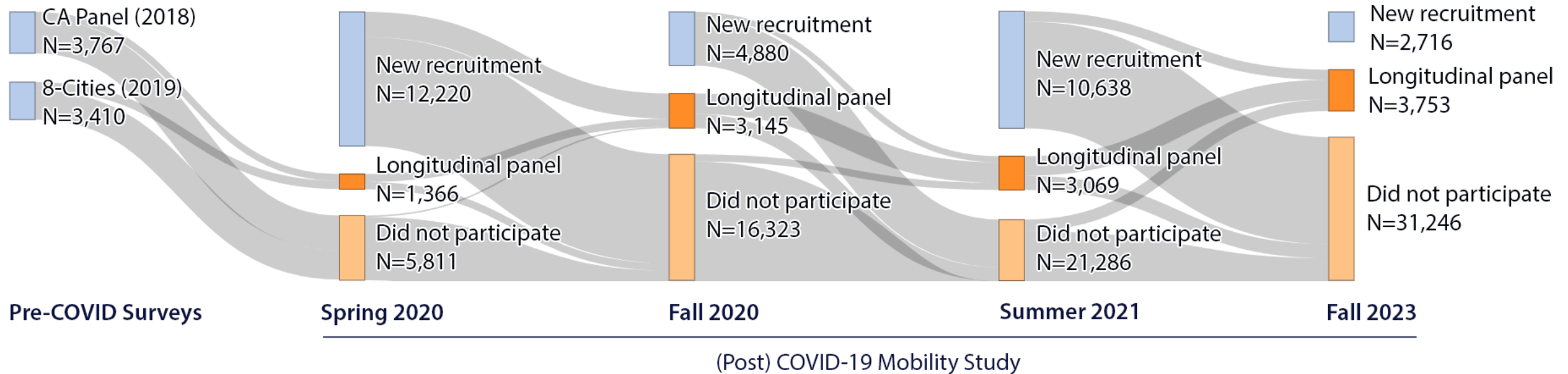
2. MOBILITY PANEL PROJECT – DISTRIBUTION CHANNELS

The survey waves were distributed over five different channels:

- **Longitudinal panel**
  - Recontacting prior survey takers by email
- **Opinion panel**
  - Via Qualtrics online opinion panel
- **Convenience sampling / CBOs**
  - Social and community connections
- **Mail-in-mail-back**
  - Invitations to randomly selected CA residents with mail-back questionnaire
- **Mail-in-online**
  - Invitations to randomly selected CA residents with link to online survey

2. MOBILITY PANEL PROJECT – 2023 SAMPLES

The dataset includes 6,462 cases across all channels

Dataset	Sample size	Progress
Longitudinal panel	3,752	
Opinion panel	2,074	
Mail-in-online	636	Data Cleaning and/or Data Entry Completed for All Surveys
Convenience/CBO sampling	117	
Mail-in-mail-back	256	

3. CHALLENGES OF HOUSEHOLDS IN DACS

UCDAVIS
Institute of Transportation Studies

UCDAVIS
3 Revolutions Future Mobility
Institute of Transportation Studies

3. CHALLENGES OF HOUSEHOLDS IN DACS

Research questions:

- How much could low-income workers work remotely and benefit from such arrangements?

- How much access to private vehicles do low-income households have and what are their opinions about various travel modes?

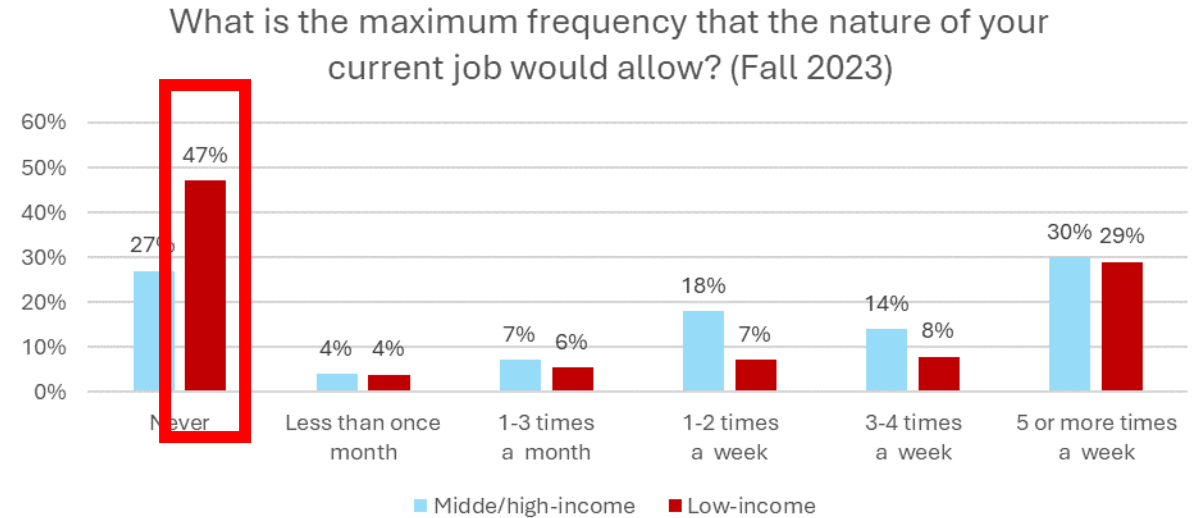- Which challenges did low-income households encounter in meeting basic (mobility) needs?

Time periods analyzed:

- Fall 2020

- Summer 2021

- Fall 2023

ITS UCDAVIS
Institute of Transportation Studies

UCDAVIS
3 Revolutions Future Mobility
Institute of Transportation Studies

3. CHALLENGES OF HOUSEHOLDS IN DACS

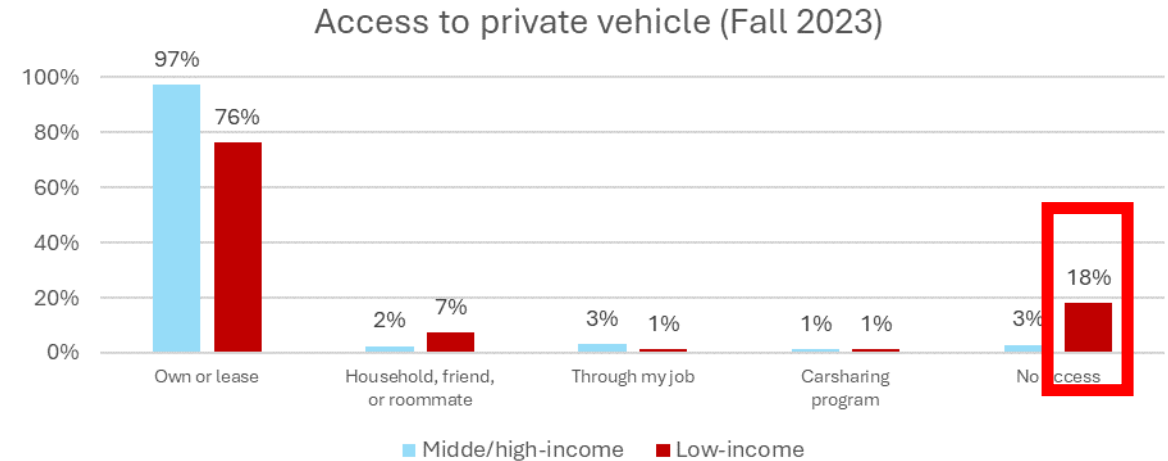**Nature of job and perception on technology**

- As of Fall 2023, about a half of jobs do not allow remote work for low-income workers (compared to a quarter for the other workers)

- Less positive perceptions on working remotely and technology in general
  - *"Working from home is not practical."* (**higher**)
  - *"I like to be among the first people to have the latest technology."* (**lower**)
  - Likely because of limited space at home and economic resources

What is the maximum frequency that the nature of your current job would allow? (Fall 2023)

	Never	Less than once month	1-3 times a month	1-2 times a week	3-4 times a week	5 or more times a week
Midde/high-income	27%	4%	7%	18%	14%	30%
Low-income	47%	4%	6%	7%	8%	29%

UCDAVIS
Institute of Transportation Studies

UCDAVIS
3 Revolutions Future Mobility
Institute of Transportation Studies

3. CHALLENGES OF HOUSEHOLDS IN DACS

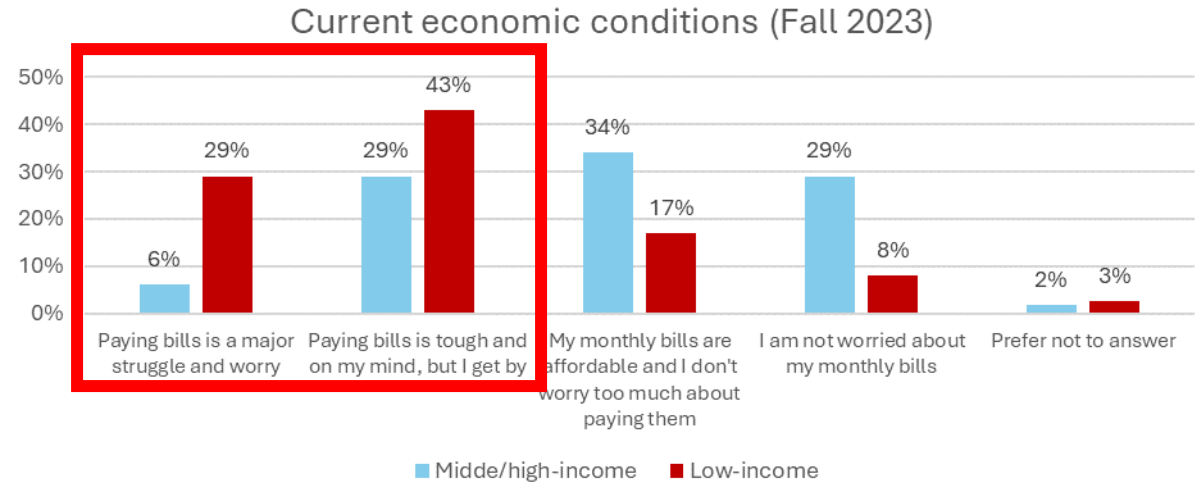## Access to cars and attitudes towards travel modes

- One every five low-income respondent has no access to private vehicles (in any form)

- More practical views on cars
  - *"To me, a car is just a way to get from place to place."* (**higher**)

- **NOT** more positive views about public transit than middle/high income
  - *"I like the idea of public transit as a means of transportation for me."* (**n/s**)
  - *"We should raise the price (or cost) of gasoline (or driving) to provide funding for better public transportation."* (**lower**)

Access to private vehicle (Fall 2023)

Own or lease: Middle/high-income 97%, Low-income 76%
Household, friend, or roommate: Middle/high-income 2%, Low-income 7%
Through my job: Middle/high-income 3%, Low-income 1%
Carsharing program: Middle/high-income 1%, Low-income 1%
No access: Middle/high-income 3%, Low-income 18%

■ Middle/high-income ■ Low-income

UCDAVIS
Institute of Transportation Studies

UCDAVIS
3 Revolutions Future Mobility
Institute of Transportation Studies

3. CHALLENGES OF HOUSEHOLDS IN DACS

Economic hardship and life satisfaction

- About 70% of low-income households are concerned about meeting basic needs, twice as high as those of the other households.

- Life satisfaction is **low** among low-income households:
  - In Fall 2020, Summer 2021, and Fall 2023, those who agreed on "*Overall, I am satisfied with my life.*" were 44%, 62%, and 64% among the low-income respondents (vs. 78%, 83%, and 84% among the other groups).

Current economic conditions (Fall 2023)

- Midde/high-income
- Low-income

UCDAVIS
Institute of Transportation Studies

UCDAVIS
3 Revolutions Future Mobility
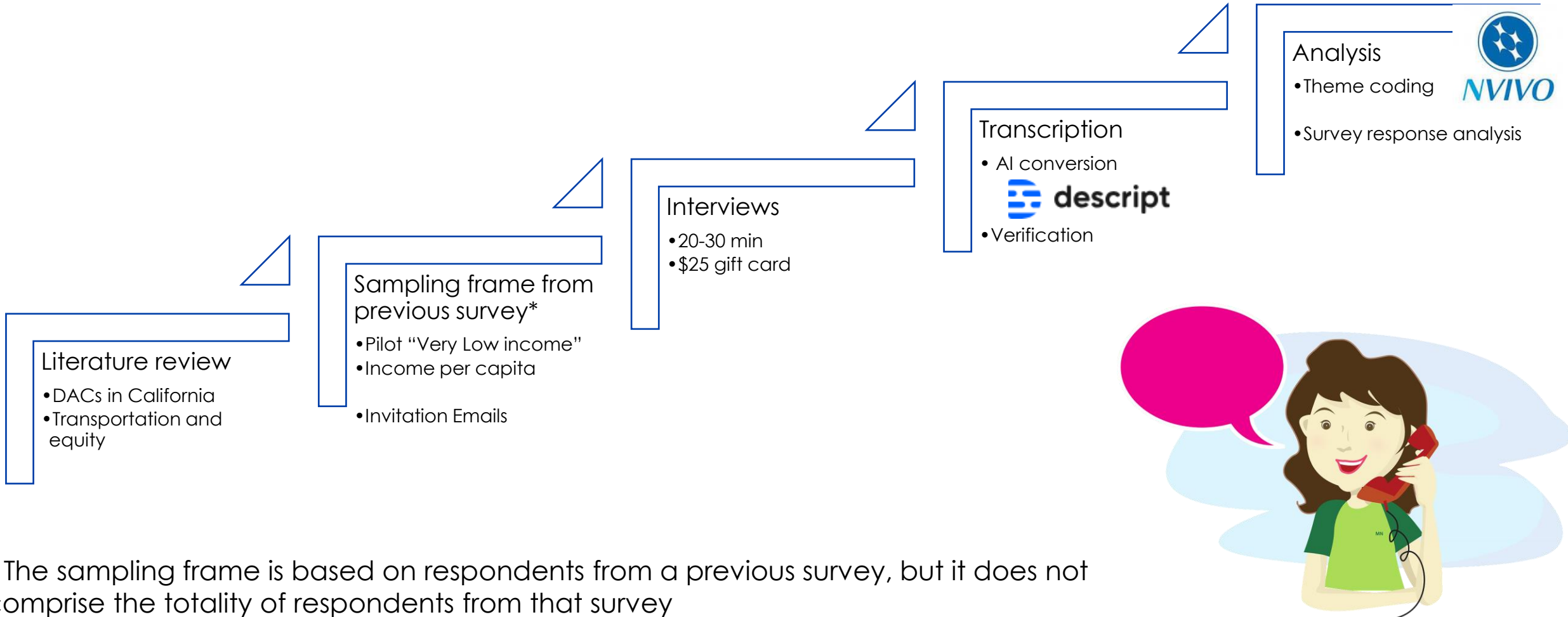Institute of Transportation Studies

3. CHALLENGES OF HOUSEHOLDS IN DACS

Key findings from the survey data

- Low-income workers are **less likely** to have jobs that could be done remotely, which put them at greater risk to virus contraction during the pandemic and still today reduces their flexibility in organizing various duties at work and in the household:
  - ➢ Work with employers to promote flexible work arrangements, when/where possible.

- While low-income respondents hold a **practical view of cars**, they are not necessarily supportive of funding public transit:
  - ➢ Improve the service quality of public transit in areas with a high share of low-income workers and households.

- Most low-income households face **challenges in meeting basic needs**, and on average, they report less overall life satisfaction during and after the pandemic:
  - ➢ Provide transportation to jobs, training, and other essential services so that low-income households can maintain good economic conditions.

4. METHODOLOGY

4. METHODOLOGY

Literature review
- DACs in California
- Transportation and equity

Sampling frame from previous survey*
- Pilot "Very Low income"
- Income per capita

- Invitation Emails

Interviews
- 20-30 min
- $25 gift card

Transcription
- AI conversion

descript

- Verification

Analysis
- Theme coding

NVIVO

- Survey response analysis

* The sampling frame is based on respondents from a previous survey, but it does not comprise the totality of respondents from that survey

4. METHODOLOGY

Initial database

- Full survey data:
  - 6,462 people from and out of California

California descriptive Stats	Freq.	Percent (%)
Woman	2,440	55.00
Man	1,976	44.50
Prefer to self-describe:	23	0.50
Not Hispanic/Latino	3,195	71.98
Hispanic/Latino	1,244	28.02
Asian or Pacific Islander	627	14.12
Black/African American	286	6.44
Native American	203	4.57
White/Caucasian	3,396	76.50
Other (please specify):	431	9.70
Some grade/high school	63	1.42
Completed high school or GED	542	12.21
Some college/technical school	1,378	31.04
Bachelor's degree(s)	1,496	33.70
Graduate degree(s) (e.g., MS, PhD, MBA)	768	17.30
Professional degree(s) (e.g., JD, MD, DDS)	192	4.33
Total responses California	**4,439**	**100**

4. METHODOLOGY

Initial database

- California: 4,439 respondents

- Low income -> Household income
  - Av. HH size-> 2.94 *
  - HH income ->
    - CA median income (MFI): $101,600**
    - Low 80% (MFI)=$81,280
    - Very low 50% (MFI)= $50,800
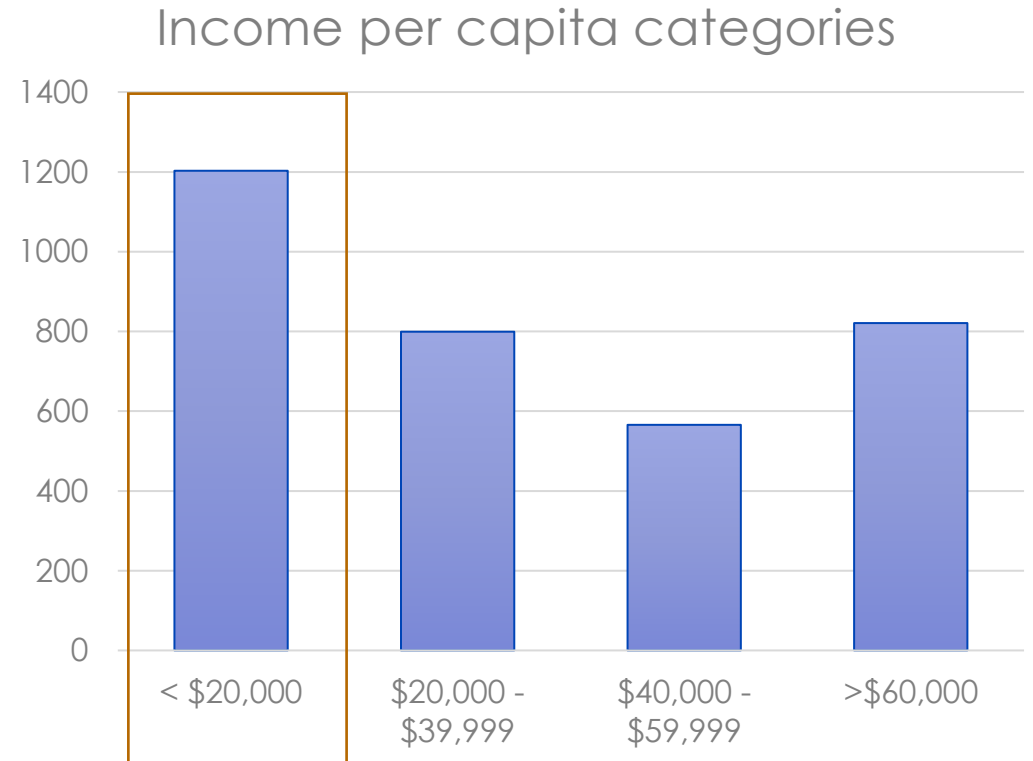
Pilot sampling frame **30 emails**

HH income categories

CA very low income

*https://worldpopulationreview.com/state-rankings/average-household-size-by-state
**DHCD 2022 report

4. METHODOLOGY

Second sampling frame (SSF)

- HH income -> HH Income/per capita

- HH income/HH size
  - 183 respondents selected prefer not to answer-> 4,256
  - From the 4,439, 1,050 had missing values to estimate HH income per capita -> 3,389 respondents
  - Lower income groups (1 and 2) = 2,002 respondents
    - 879 agreed to be recontacted
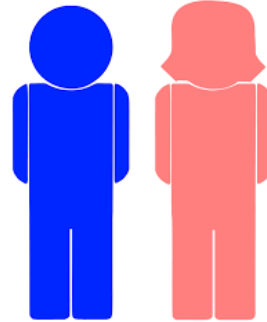   - 471 in the less than 20K per capita group

Income per capita categories

5. DATA DESCRIPTION

UC DAVIS
Institute of Transportation Studies

UC DAVIS
3 Revolutions Future Mobility
Institute of Transportation Studies

5. DATA DESCRIPTION

Respondents

- Total number of respondents: 38

- Response rate: 14% (38/269)

- Men: 19 ; Women: 19

- Age groups:
  - 18-34: 10
  - 35-64: 21
  - 65+: 7

Race/ethnic identification	Count
Asian, Pacific islander	2
Black/African American	3
Native American	1
White/Caucasian	30
Other	5
Mixed	3
Hispanic/Latino	15

HH income category	Count
Less than $25,000	11
$25,000 to $49,999	18
$50,000 to $74,999	7
$75,000 to $99,999	2

Limitations	Driving	Public transit	Walking	Riding bike
No limitation	31	31	26	25
Limits how often or how long	6	6	10	7
Absolutely prevents	1	1	2	6
Total	38	38	38	38

5. DATA DESCRIPTION

- Work status and Occupation

  -Work situation

      -Full time: 9

      -Part-time: 7

      -Self-employed: 3

      -Not working: 6

      -Homemaker/caregiver: 6

  -Student situation:

      -Full time: 3

      -Part-time: 1

      -Some courses: 1

Occupation	Count
No response	21
Farming and Extraction	1
Construction, Maintenance and Repair	2
Transportation and Material Moving	1
Business and Finance	1
Computer, Mathematical, Architecture and Engineering	2
Office and Administrative Support	1
Protective Service, Building and Grounds Cleaning	2
Educational Instruction and Library	5
Personal Care and Service	2

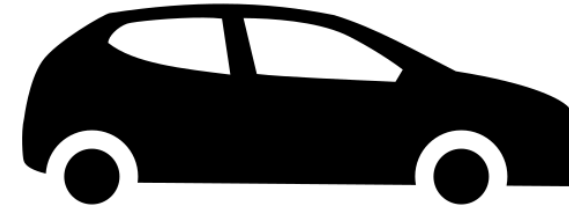| Nature of Job - Remote	Count
No response	21
Never	9
1-3 days per month	1
1-2 days per week	2
5 or more days per week	5
Total	**38**

5. DATA DESCRIPTION

Household descriptive information

- Home ownership:
  - Rent: 25,
  - Own: 12,
  - Provided: 1

Type of neighborhood:

- Urban: 16,
- Suburban: 19,
- Small town/ Rural: 3

- Car ownership: Yes: 29, No: 9; Lease: 1

Fuel type	Vehicle 1	Vehicle 2	Vehicle 3
Skipped	5	18	30
Gasoline	30	19	7
Gasoline Hybrid	3	1	1
Total	**38**	**38**	**38**

Year bought > Year model	Vehicle 1	Vehicle 2	Vehicle 3
No	13	11	2
Yes	20	9	6
NA	5	18	30
Total	**38**	**38**	**38**

UCDAVIS
Institute of Transportation Studies

UCDAVIS
3 Revolutions Future Mobility
Institute of Transportation Studies

6. FINDINGS

6. FINDINGS: Activities and travel patterns

- Post-pandemic occupation changes
  - Lost or changed employment
  - Children back to school
  - No-changes: retirees and homemakers
- More **online shopping** and use of services
  - Groceries (more during COVID times, returning in-person)
  - Food delivery
  - Telehealth
  - General products
- Post-COVID travel
  - Mostly for work/school
  - Basic needs: groceries and health
  - Social commitments: family, church

6. FINDINGS: Activities and travel patterns

- Quotes:
  - "Virtual. Virtual, yes, virtual learning; they, with their school was, everything was shut down. So I wasn't, I was working from home and the kids were learning from home."

  - "I decided to join DoorDash, yeah, because it has gotten me through the last couple years actually, because, um, since the pandemic, everything has changed since then. So now, um, you know, everybody's ordering either, you everything, if you weren't able to go and order stuff, you know, everybody was going out there."

  - "I used to go to a movie at least once a week and because of the pandemic, I stopped"

  - "so, very different. My, my employment has also changed, uh, recently, so that's, that's certainly part of the impact. Um, before the pandemic, I was traveling, um, commuting to and from, uh, an office in the financial district of San Francisco every day. Um, I commuted, um, by public transportation…then the gig job that I have, um, also kind of stopped or went online, um, during the beginning of the pandemic, so either did that also at home or didn't do it at all, I lost some clients, um, and then, uh, as the pandemic eased, I started to do that a little bit more in person. Um, and at that time, um, was just commuting locally. "

6. FINDINGS: Burdens and challenges

Burdens and challenges

Urban

- **Transit users**
  - Lower frequencies after the pandemic
  - Partial low coverage
  - Cleanliness
  - Personal safety (LA and SF)
- **Walking, biking and micromobility**
  - Road safety (insufficient infrastructure)
  - Micromobility is expensive
- **Car users**
  - Gas prices
  - Congestion
  - Parking "hassle"
- **Ride hailing**
  - Expensive

Less car dependent

Suburban-Rural

- **Transit users**
  - Consistent low frequencies
  - Very low coverage
  - Inconvenient routes
- **Walking, biking and micromobility**
  - Road safety (lack of infrastructure)
  - No micromobility
- **Car users**
  - Gas prices
- **Ride hailing**
  - Expensive
  - Inexistent (low provision)

Car dependent

6. FINDINGS: Burdens and challenges

Burdens and challenges

Public Transit
- Urban examples:
  - "There's plenty of options around here. I guess my main concern would be safety. Um, other than that, I really wouldn't have too many concerns about it."
  - "they were gonna make some changes to the bus riding atmosphere. It's really dangerous. "
- Suburban –Rural examples
  - "..sometimes it takes me like three or four buses, you know, to get where I need to be, and that's just too much, just too much."
  - "There's the public transportation system here doesn't reach every place that it, it probably should, uh, there's a lot of industrial areas out here that the public transportation doesn't go to."

Walking and biking:
- Urban examples
  - "Well, I'm concerned about them [scooters] yeah, cuz they would be riding on the sidewalks and stuff, you know, where are people gonna walk?"
  - "within my neighborhood, I do walk, I have um, most things that I need within walking distance, um, like grocery, uh, post office, hardware store, uh, park area. So, it's easy to access most of those things, um, regularly without needing another form of transportation."
- Suburban –Rural examples
  - "… little is within walking or biking"
  - "I would like to see speed bumps. I would like to see speed bumps around every elementary school. There are some already, but that took like an act of Congress. It usually takes a young child to get killed in the crosswalk."
  - "I would use the other forms of scooters or, or electric bikes. Um, if they had designated lanes or roads where you could ride an e-bike or a scooter, that's fine. That wouldn't, which is so close to traffic, to the, to motor vehicles."

6. FINDINGS: Burdens and challenges

Burdens and challenges

Micromobility
Urban examples:
- "I didn't use them. It sounded like it was ridiculously expensive for not very much. "
- "I'm sort of scared of like the electric scooters with all the accidents that I've seen on the news"

Non-urban
- "People own them, like people own their own. But not like in L.A. where you can rent them. "

Ride hailing:
Urban examples:
- "you can use Uber and all that. If you have a smartphone"
- "So basically, I have a mobility card and I call us lifts."
- " I guess I would rather it be less expensive than it is. It seems to have gone up quite a bit since the pandemic, "
- "if it was an urgent situation, then it would be like Lyft, Uber, taxi."
- Suburban – Rural examples
  - "Uber and Lyft, you know, I have never, I have never gotten into that. I don't even know if it exists here."
  - "I think that's one of those things that you have to be in a major city"

6. FINDINGS: Burdens and challenges
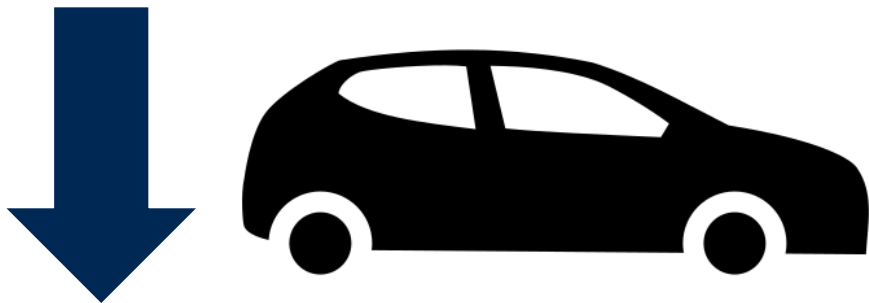
Gas prices

- "the cost of everything has gone up, you know, with, um, gas, food, you know, electricity and all, you know, everything is"

- "but we're not doing pleasure driving"

- " Having the, um, the money to charge the cars, like I said, uh, I mean, nowadays we all have credit cards."

- "the main concern is probably the gas prices and that, you know, hopefully none of the cars break down."

- "I'm cognizant of the van because it's, it's eight cylinder, so it uses more gas"

Road safety
- "people in in this town don't reliably stop at stop signs"
- "by the school, there's a lot of accidents, people fly right on by, it's dangerous"
- "and the actual driving out here in Oakland, they drive so crazy. They have no respect for the law."
- "These young, um, they're, they're usually young adults and you know, they, they, they get these cars and they just drive any which way they want to"

6. FINDINGS: Adaptations to the challenges

- Travel less: reduce frequency of social/recreational trips
- Reduce travel distance
- Fueling "strategies"
- Carpool with family and friends more often
- Consider changing to more fuel-efficient vehicle (e.g., smaller, hybrid)

6. FINDINGS: Adaptations to the challenges

Adaptations to gas prices:

- "I saved a lot of money when I didn't have a car"

- "I try to keep it minimum, you know, so that I don't waste, but I don't go for like a Sunday drive out to the beach and drive along the coast as much as that's, pleasant to do, Uh, I just don't do it anymore because of, you know, it, I don't want to spend 40 on a tank of gas and really, you know, not have anything, uh, any reason, you know, other than just, you know, uh, tour."

- "enroll ourselves in the, like in the fuel discounts and those type of programs to get a little bit of break"

- "I've had to cut corners with, um, different things just cut corners and not I've had to withhold buying something that I normally would or put it off you know, I've used my credit card a lot"

Other adaptations

- "carpooled for a while with a coworker with one town down"

- "You pay 59 dollars a year and you get all of your groceries delivered if they're over 35 dollars for free. And so, I joined that program and I started having everything delivered to me"

6. FINDINGS: New technologies and services

- Considerations for new technologies and services

Vehicle technologies

- **Affordability:**
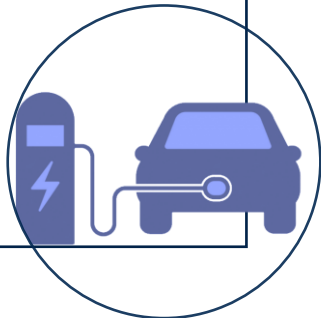 - New vehicles and especially EVs
- **Charging:**
  - Household charging while renting,
  - Access to public chargers,
  - Range for longer commutes
  - Electricity bill
- **Options for second hand**
  - Economic support for:
    - Preowned certified
    - Hybrid vehicles

Shared services

- **Connectivity:**
  - Data and internet access especially rural/remote areas
- **Coverage:**
  - No or very low service in small towns and rural areas
- **Affordability:**
  - Expensive per ride, only for urgencies or occasional trips
- **Road safety:**
  - Especially scooters and e-bikes
- **Driverless/AVs:**
  - Distrust technology, it is not ready

6. FINDINGS: New technologies and services

Hybrids and Evs

Affordability issues:

- "I would love to have, you know, an electric car, but we're retired. We can't do that."
- I would like to get probably a hybrid vehicle so I can just get the better gas mileage"
- I wish I could afford something where I can save on gas, but right now I'm just not in the position."

Charging issues:

- yes, that would be preferable, but it's not in our economic, uh, like it's not in our reach right now"
- I just don't see any more charging stations"
- I heard about the rebate by having got into, uh, uh, into it and see, well, how does it work? And also, and also, uh, since we rent the house, uh, my, my, my, my problem is that wherever I charge my car."

Driverless/Autonomous

- "I see that probably another 10 years down the road before that's a truly <u>safe</u> option."
- "But I mean, you know, that's buses, [they] work that way"
- "Everything can, can malfunction, you know, everything, it's kind of scary, you know, everything could go wrong."
- "I think autonomous vehicles are going to dumb every body down to a point when if they need to drive again, they wouldn't be able to"

6. FINDINGS: What people want to see?

High quality local public transportation

- ☐ Greater frequencies
- ☐ Coverage: space and time (hours)
- ☐ Cleanliness and safety
- ☐ Affordable fares for all

Well maintained and safer roads

- ☐ Pavement quality
- ☐ Traffic calming and safer pedestrian crossings
- ☐ Protected bike-lanes

Less Travel time and cost

- ☐ Reduce congestion for buses and cars
- ☐ Reduce fueling costs

6. FINDINGS: What people want to see?

More public transit

- "I like the idea of public transportation. I support it 100%. I don't mind paying more taxes so that it so that the infrastructure gets built and modernized."

- "help those that are disabled and those that are senior citizens. To actually get around and actually work with over work with AC transit work with Bart, even if they couldn't do it for free, maybe give them 50 percent off 75 percent off, give them a reason to actually utilize your services more"

- "I don't know like how um, there's not necessarily a solution for this, but I think that like, um, cleanliness and safety on all of the transportation, um, platforms is a concern, um, for everyone who rides them."

6. FINDINGS: What people want to see?

Improve infrastructure:
- "Aside from repaving some of the streets around here, which look like they've been, they're in worse shape than half of Gaza."

- "changing some of the routes in terms of widening, widening something in roads and also what would, the fixing potholes" be more important"

- "any place that I have cycled, I know there are a lot of dedicated cycle paths, um, in San Francisco in terms of like the practical purposes that I've had, um, with a cycle, none of those have, um, been on dedicated bicycle paths, so I'm always needed to be cycling with, uh, traffic, um, which, uh, has, yeah, it's not ideal and does not, um, yeah, it does not make me feel safe."

Less travel time and cost
- "the gas prices mainly, try to control the gas prices because 1 day, it's sort of affordable. And then the next day, it bumps up a lot."

- "…but also just congestion and getting somewhere like my kids' school is only about five miles away, but it can take a lot of time to go five miles. And, um, so that would be a problem. I mean, we're taking freeways for the most part, most of the time, but not always. Um, but yeah, it takes a lot of time to go a short distance."

7. CONCLUSIONS: Key findings

- Activities:
  - Doing essential activities: work, study, groceries, medical appointments
  - Few respondents have flexible, hybrid or remote jobs
- Travel challenges and burdens:
  - Urban areas: road safety issues for walking and biking, more accessibility but ride hailing and micromobility are expensive, more transit coverage but low safety and cleanliness perception
  - Suburban and rural: car dependent, low access to all other options
- What they want to see
  - More transit! Higher frequencies, greater coverage, cleaner and safer
  - Lower and more stable gas prices
  - Road safety: better infrastructure for walking and biking, better drivers
  - Road infrastructure: maintenance and pavement quality is a priority
- Perceptions on new technologies
  - In general, not affordable, this includes ride hailing, micromobility and electric vehicles
  - Difficulty to charge EVs in rented homes
  - Distrust AVs, maybe in 10 years

7. CONCLUSIONS: CTP 2050

California Transportation Plan 2050 (Caltrans, 2021)

Vision: *"California's safe, resilient, and universally accessible transportation system supports vibrant communities, advances racial and economic justice, and improves public and environmental health."*

FIGURE 1   CTP 2050 GOALS

Safety
Provide a safe and secure transportation system

Climate
Achieve statewide GHG emissions reduction targets and increase resilience to climate change

Equity
Eliminate transportation burdens for low-income communities, communities of color, people with disabilities, and other disadvantaged groups

Accessibility
Improve multimodal mobility and access to destinations for all users

Quality of Life & Public Health
Enable vibrant, healthy communities

Economy
Support a vibrant, resilient economy

Environment
Enhance environmental health and reduce negative transportation impacts

Infrastructure
Maintain a high-quality, resilient transportation system

7. CONCLUSIONS: CTP 2050

FIGURE 2 **CTP 2050 RECOMMENDATIONS**

RECOMMENDATIONS:

1. Expand access to safe and convenient active transportation options
2. Improve transit, rail, and shared mobility options
3. Expand access to jobs, goods, services, and education
4. Advance transportation equity
5. Enhance transportation system resiliency
6. Enhance transportation safety and security
7. Improve goods movement systems and infrastructure
8. Advance Zero-Emissions Vehicle (ZEV) technology and supportive infrastructure
9. Manage the adoption of connected and autonomous vehicles
10. Price roadways to improve the efficiency of auto travel
11. Encourage efficient land use
12. Expand protection of natural resources and ecosystems
13. Strategically invest in state of good repair improvements
14. Seek sustainable, long-term transportation funding mechanisms

7. CONCLUSIONS: Policy recommendations

This research can inform the CTP in terms of where the priorities of low-income and DAC communities are and their perceptions on some of the proposed polities

- The good aspects
  - There is alignment with policies and plans supporting transit
  - Active transportation program
  - Towards Zero Deaths (TZD) vision and safer streets
  - Sustainable Communities Strategies (SCSs)
  - Reduce long-run repair and maintenance costs

- Suggested improvements
  - Greater financial support for MPOs, local governments and transit agencies to improve **local and regional public transit**
  - Expand **active transportation** program and alignment with TZD vision
  - Support land use adaptations towards **mixed use** and TOD, "15 min" cities increasing walkability and bike-ability
  - Create a program for cleaner **secondhand vehicles** and EV charging options for renters
  - Analyze and create programs for **shared** services to be more **available** and **affordable**

7. CONCLUSIONS: Limitations and future research

Limitations

- Adjusting per household size was an important to identify participants, the geographical data could be used further
- Difficulty reaching members of disadvantaged communities in general for the survey
- Though offered in English and Spanish, most participants opted for the English interview

Future research

- Use GeoCoding for identifying CalEnviroScreen DACs
- Going directly to communities to carryout interviews and focus groups
  - The experience is different between urban, suburban and rural
- Gender and racial/ethnic equity analysis

Thank you to our project sponsor

ITS **UCDAVIS**
Institute of Transportation Studies

UCDAVIS
3 Revolutions Future Mobility
Institute of Transportation Studies

Any Questions?

Maria Carolina Lecompte, PhD. Candidate

(mlecompte@ucdavis.edu)

Basar Ozbilen, Ph.D.

(bozbilen@ucdavis.edu)

Giovanni Circella, Ph.D.

3RFM Director

(gcircella@ucdavis.edu)

Yongsung Lee, Ph.D.

3RFM Co-director

(yshlee@ucdavis.edu)

3 Revolutions Future Mobility

Institute of Transportation Studies

University of California, Davis

References

- Di Ciommo, F., & Shiftan, Y. (2017). Transport equity analysis. Transport Reviews, 37:2, 139-151.
- Gupta, A.S. and Mukherjee, J. (2022), "Long-term changes in consumers' shopping behavior post-pandemic: an exploratory study", International Journal of Retail & Distribution Management, Vol. 50 No. 12, pp. 1518-1534. https://doi.org/10.1108/IJRDM-04-2022-0111
- Krapp, A., Barajas, J., & Wennink, A. (2021). Equity-oriented Criteria for Project Prioritization in Regional Transportation Planning. Transportation Research Record., Volume 2675, Issue 9.
- Braunn, L., Rodriguez , D., & Gordon-Larsen, P. (2018). Journal of Transport & Health 9. Social (in)Equity in Access to Cycling Infrastructure: Examining the Distribution of Bike Lanes with Respect to Area-Level Sociodemographic Characteristics in 23 Large U.S. Cities, S1–S37.
- Circella, G., Iogansen, X., Makino, K., Compostella, J., Young, M., & Malik, J. (2023). Investigating the Temporary and Longer-term Impacts of the COVID-19 Pandemic on Mobility in California. National Center for Sustainable Transportation.
- Di Ciommo, F., & Shiftan, Y. (2017). Transport equity analysis. Transport Reviews, 37:2, 139-151.
- Gupta, A.S. and Mukherjee, J. (2022), "Long-term changes in consumers' shopping behavior post-pandemic: an exploratory study", International Journal of Retail & Distribution Management, Vol. 50 No. 12, pp. 1518-1534. https://doi.org/10.1108/IJRDM-04-2022-0111
- Krapp, A., Barajas, J., & Wennink, A. (2021). Equity-oriented Criteria for Project Prioritization in Regional Transportation Planning. Transportation Research Record., Volume 2675, Issue 9.
- Lucas, K. (2012). Transport and social exclusion: Where are we now? . Transport Policy, 20,, 105–113.
- Nwosu, C. O., Kollamparambil, U., & Oyenubi, A. (2022). Socio-economic inequalities in ability to work from home during the coronavirus pandemic. The Economic and Labour Relations Review, 33(2), 290-307. https://doi.org/10.1177/10353046221085598
- Parker, M., et al.; 2021; Public transit use in the United States in the era of COVID-19: Transit riders' travel behavior in the COVID-19 impact and recovery period; Transport Policy; Volume 111; Pages 53-62; ISSN 0967-070X; https://doi.org/10.1016/j.tranpol.2021.07.005.
- Sánchez, T. W. (2003). Moving to Equity: Addressing Inequitable Effects of Transportation Policies on Minorities. Cambridge, MA: The Civil Rights Project at Harvard University.
- Shaheen, S., Bell, C., Cohen, A., & Yelchuru, B. (2017). Travel Behavior: Shared Mobility and Transportation Equity. Federal Highway Administration. Office of Policy & Governmental Affairs.
- Siddiq F, Wasserman JL, Taylor BD, Speroni S. Transit's Financial Prognosis: Findings from a Survey of U.S. Transit Systems during the COVID-19 Pandemic. Public Works Management & Policy. 2023 Mar 27:1087724X231160097. doi: 10.1177/1087724X231160097. PMCID: PMC10043350.
- Vaidyanathan, S., Huether, P., & Jennings, B. (2021). . Understanding Transportation Energy Burdens. . Washington, DC.: American Council for an Energy-Efficient Economy.
- Van Wee, B., & Geurs, K. (2011). Discussing Equity and Social Exclusion in Accessibility Evaluations. European Journal of Transport and Infrastructure Research, 11(4).
- Venter, C. (2011). Transport expenditure and affordability: The cost of being mobile. Development Southern Africa, 28(1), 121–140, https://doi.org/10.1080/0376835X.2011.545174.
- Wang, W., Espeland, S., Barajas, J., & Rowangould , D. (2023). Rural–nonrural divide in car access and unmet travel need in the United States. Transportation, https://doi.org/10.1007/s11116-023-10429-6.
- Yonah Freemark; 2022; What Rising Gas and Rent Prices Mean for Families with Low Incomes; Urban Institute; https://www.urban.org/urban-wire/what-rising-gas-and-rent-prices-mean-families-low-incomes

ITS UCDAVIS
Institute of Transportation Studies

UCDAVIS
3 Revolutions Future Mobility
Institute of Transportation Studies