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Client: Nancy Pfeffer, Gateway Cities Council of Governments

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DISCLAIMER

This report was prepared in partial fulfillment of the requirements for the Master of Urban and Regional Planning degree in the Department of Urban Planning at the University of California, Los Angeles. It was prepared at the direction of the Department and of Nancy Pfeffer (Gateway Cities Council of Governments) as a planning client. The views expressed herein are those of the authors and not necessarily those of the Department, the UCLA Luskin School of Public Affairs, UCLA as a whole, or the client.

Meeting Travel Needs: Becoming Reacquainted with a Community's Unmet Travel Needs

UCLA Institute of Transportation Studies

A comprehensive project submitted in partial
satisfaction of the requirements for the degree
Master of Urban and Regional Planning.

by

Annaleigh Yahata Ekman

Faculty Advisor: Mohja Rhoads
Client: Nancy Pfeffer, Gateway Cities Council of Governments

2020

EXECUTIVE SUMMARY

Transportation in Los Angeles is deeply unequal. There are populations that face additional burdens that are not currently addressed by our transportation network, including elderly people, people with disabilities, low-income people, people of color, non-English speakers, women, and transgender and non-gender conforming people. For agencies, like the Gateway Cities Council of Governments (GCCOG), to address these inequities and create a better transportation system, these needs must be identified and acknowledged.

The purpose of this report is to provide GCCOG with guidance on current travel data collection methodologies and recommendations for methods to be employed in their region. The Gateway Cities is designated as "disadvantaged" by several regional and state agencies, including California Air Resources Board, California Department of Finance, CA Department of Water Resources, California Environmental Protection Agency, California Office of Environmental Health Hazard Assessment, Public Health Alliance of Southern California, Strategic Growth Council, and Southern California Association of Governments. This research is purposefully not focused on transportation solutions, but instead on the methods of gathering information on the basic issues that individuals face when it comes to their unmet travel needs. This is to ensure that decision-makers can be intimately familiar with the problem attempting to solve it.

What are the best practices for characterizing unmet travel needs of neighborhoods in the Gateway Cities subregion?

Methodology

The goal of this research is to identify the best practices to collect data on the unmet travel needs of a neighborhood, particularly for disadvantaged populations. This project is a mixed methods approach involving a literature review, open ended interviews, and focus groups.

The literature review dives into the existing knowledge of the needs of disadvantaged populations, current travel behavior analysis data collection strategies, and community needs assessments popularized in the field of public health.

Open ended interviews provide insight into the methodologies of current survey efforts occurring in California. Interviews included Los Angeles County Metropolitan Transportation Agency staff and consultants who worked on the *NextGen Bus Survey*; consultants of Southern California Association of Governments who recently completed the *2019 Southern California Transportation Study*; researchers from Texas A&M Transportation Institute who are starting a study on the *Impact of Transformational Technologies on Underserved Populations*; the directors of Southeast Los Angeles Collaborative who are working with academic researchers on transportation studies in the region; academic researchers from University of Southern California who recently published the *LABarometer Mobility Study*, and a Senior Public Policy

Manager at Lyft who has experience in government partnerships and public engagement strategies for the private sector.

Lastly, the focus groups gather community opinions from people who live or work in Downtown Huntington Park (a neighborhood in the Gateway Cities) on survey preference and opinions on alternative data collection strategies. During the focus group meeting, participants completed an initial survey with trial questions on unmet travel needs. They also participated in a "concept mapping" exercise, which is aimed to gather opinions on what they thought their own travel needs are and to see if this sort of exercise and focus group made participants feel as though the researcher adequately understood what their unmet needs are.

Findings

Through the methods discussed above and the experience of arranging community outreach, this research produced several findings summarized in the tables below. To answer the main research question, the ideal approach for collecting information on the travel needs of a neighborhood combines the benefits of active and passive data collection using smartphone-based surveys and thorough outreach to ensure that the survey instrument works for underrepresented populations.

Literature Review Findings	
L-1	People have a diverse set of travel needs, including practical, social, and aesthetic needs.
L-2	Demonstrated strategies used to gather information about travel needs for underrepresented populations include travel diaries, surveys with visual elements in the instruments, opinion surveys, and partnerships with people who provide services to target communities.
L-3	Travel behavior analysis studies are dependent on data derived from travel surveys, census data, GPS, and/or Big Data.
L-4	Community needs assessments are well-developed in the public health field and are adapting to transportation needs through new funding sources and advocacy groups. One example of a transportation needs assessment framework is the Mobility Equity Framework (Creger et al. 2018).

Interview Findings	
I-1	Smartphone-based surveys are not perfectly accessible to all communities but generate high participation rates and more accurate data compared to other travel diary strategies.
I-2	By their very nature, cell phone-based data and Transit Access Card data do not capture trips not taken.
I-3	Surveys can be supplemented to capture underrepresented communities through greater efforts of public engagement with focus groups, presentations at community meetings, and providing assistance or equipment to individuals without access to the survey instrument.
I-4	Identification of community leaders and groups is key in public engagement
I-5	Data privacy is a concern that agencies, like LACMTA, are concerned about, but address internally by never associating identifying information with locational data.
I-6	Public engagement and inclusive recruitment efforts can increase the cost of travel data collection, even as they improve the quality of data.
I-7	Planners need to avoid to using jargon, such as "micromobility" and "transportation network companies," in survey instruments.

Interview Findings (cont'd)	
I-8	It is important to distinguish between 65-75, 75-84, and 85+ age ranges as they have very different levels of mobility and cell phone adoption.
I-9	To ensure the best possible participation rates and labor efficiency, conduct surveys in years without major elections or in tandem with other regional surveys.

Questionnaire Findings	
Q-1	Focus group participants are willing to participate in a smartphone travel survey.
Q-2	The wording of the questionnaire did not reveal specific unmet travel needs for participants.

Concept Map Findings	
C-1	Focus group participants are generally open to new modes of transportation but are uncertain about how the community will receive them.
C-2	Safety, affordability, time efficiency, and reliability were emphasized travel needs in both focus groups.

Focus Group Findings	
F-1	Personalizing outreach, connecting with people face-to-face, and plugging into the networks of others encourages participation.
F-2	Focus groups provide supplemental information to surveys but cannot replace them.
F-3	Raising an incentive for focus group participation does not guarantee a higher rate of participation.

Recommendations

These findings work to inform a set of recommendations summarized into short-, medium-, and long-term actions. The short-term recommendations involve following through with the efforts of this study in the City of Huntington Park and continuing to lay the groundwork for the medium-term survey work. The medium-term recommendations include three different options for strategies to identify travel needs with varied levels of cost and coverage (e.g., geographical reach and expected sample size). Although all three approaches are legitimate methods to collect travel behavior data, Tier 2 is suggested as the most feasible and efficient use of resources for GCCOG. The long-term recommendation is to follow through with the Mobility Equity Framework (Creger et al 2018) that goes into the next steps of creating a transportation system that serves all people.

Short-Term Recommendations
Revise the Initial Survey instrument (see Appendix E) and focus group participation survey
Plan two more focus groups with Project Return Peer Support Network, a nonprofit located in Downtown Huntington Park that provides mental health services to residents and who has expressed willingness to host focus groups for GCCOG.
Reduce the focus group incentives back to $25 from $50 to allow limited resources to stretch for a greater number of participants.
Maintain engagement with the City of Huntington Park and community-based organizations

Medium-Term Recommendations	
Tier 1 Low Cost and Coverage *Estimated $5,000 to $10,000[1]*	Host focus groups and pop-up events in one to three neighborhoods where the municipality and residents are open to participation. These activities could work as brainstorming sessions to develop ideas of project or services that some residents could see working in their community. This approach compromises a representative sample for cost and may provide a narrow view of the needs of a community.
Tier 2 Medium Cost and Coverage *Estimated $50,000 to $150,000[2]*	1-week smartphone travel survey for one to three cities of the Gateway Cities region with mail recruitment. Outreach includes working with community-based organizations in every city to ensure participation on part of underrepresented communities in multiple neighborhoods in each city. Pop-up events and public forums are used to distribute information about the survey and encourage underrepresented populations who do not normally participate to sign up for the survey. An alternative survey instrument for people without smartphones should be made available. Hiring a competent and experienced survey consultant adds to the cost but is suggested for the best results. Partnering with another organization to host a survey can reduce costs of survey in exchange for reduced control over the survey instrument.
Tier 3 High Cost and Coverage *Estimated $200,000 to $300,000+[3]*	In addition to all recommendations for a Tier 2 approach, a Tier 3 approach expands the scope of the survey to include multiple (five or more) cities in the region and implements rigorous participant retention strategies (following the LABarometer methodology) for increased participation. Internet-enabled tablets or smartphones should be offered to any potential participant that does not have access to a smartphone for the duration of the survey. To ensure that all survey instruments can be tailored to the needs of this survey, interagency partnerships are not recommended in this tier.

Long-Term Recommendations

Follow through with the next steps of the Mobility Equity Framework, which include identifying specific modes and projects that will maximize benefits and minimize burdens on the community, then empowering community members to choose the projects that they would like to see happen.

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[1] Tier 1 cost estimate is based on the direct costs associated with this research with a rough estimate of administrative costs.

[2] Tier 2 cost estimate is based on the costs of data collection for the SCAG Southern California Transportation Study.

[3] Tier 3 cost estimate based on an estimate from the Director of the LABarometer studies.

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INTRODUCTION

Transportation in Los Angeles is deeply unequal. There are populations that face additional burdens that are not currently addressed by our transportation network; these populations include the elderly, people with disabilities, low-income people, people of color, non-English speakers, women, and transgender and non-gender conforming people. For agencies, like the Gateway Cities Council of Governments (GCCOG), to address these inequities and create a better transportation system, these needs must be identified and acknowledged. This research is focused not on transportation solutions, but on the methods of gathering information on the basic issues that individuals face when it comes to their unmet travel needs so that decision-makers are intimately familiar with the problem before they try to solve it. The goal of this research is to identify the best practices to collect data on the unmet travel needs of a neighborhood, particularly for disadvantaged populations.

One actor in southeast Los Angeles County trying to identify the problems their residents face is the GCCOG, a regional planning and policy organization dedicated to improving transportation, air quality and climate, housing and homelessness, and economic development for its member agencies. Several municipalities in the Gateway Cities, as illustrated in **Figure 1**, are designated as "disadvantaged" by multiple regional and state agencies, including California Air Resources Board, California Department of Finance, CA Department of Water Resources, California Environmental Protection Agency, California Office of Environmental Health Hazard Assessment, Public Health Alliance of Southern California, Strategic Growth Council, and Southern California Association of Governments.

According to CalEnviroScreen, over a quarter of the census tracts in the Gateway Cities subregion are in the top 5% most disadvantaged communities in California. (California Office of Environmental Health Hazard Assessment [OEHHA] 2018).

The Gateway Cities region spans 27 cities and consists of a large and diverse population. Senate Bill 535 (de Leon 2017, Disadvantaged Communities) identifies target areas for investment in improving public health, quality of life, and economic opportunity in California's most burdened communities while reducing pollution that causes climate change (OEHHA n.d.). The State's definition of disadvantaged in this context refers to pollution burden and population characteristics, including socioeconomic factors. According to CalEnviroScreen, over a quarter of the census tracts in the Gateway Cities subregion are in the top 5% most disadvantaged communities in California (OEHHA 2018). Most of these tracts are concentrated in the north and northwestern parts of the region, in cities including Commerce, Bell, Bell Gardens, Cudahy, Huntington Park, South Gate, Lynwood, Paramount, Compton, Long Beach, Santa Fe Springs, and unincorporated LA County.
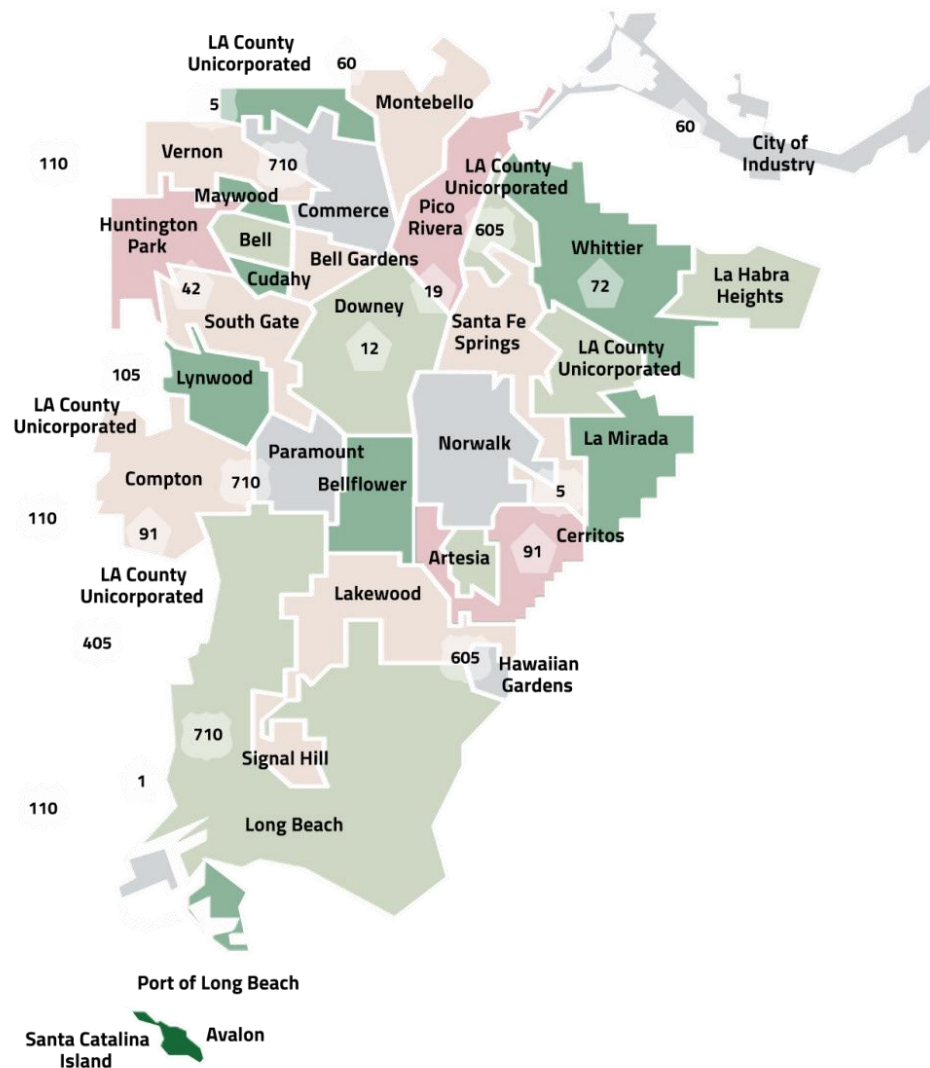
Figure 1: Gateway Cities Council of Governments Context Map

One of the main functions of GCCOG is to pursue funding opportunities that will help them fulfill their mission. Therein lies the issue: how can GCCOG apply for funding without a solution perfectly tailored to the requirements of the funding source? How is GCCOG supposed to provide for the diverse needs of their two million residents without knowing what they need? One possible answer is to conduct a Community Needs Assessment, of which those in the field of public health are more intimately familiar with and Creger et al. (2018) begins to translate these concepts into transportation planning.

Traffic is one of the defining features of the Los Angeles experience leading every Angeleno to wonder why engineers and urban planners have not "figured it out" yet. LA's notorious traffic congestion creates well-intentioned efforts to support *solutions* to transportation issues at

various geographic scales. The Director of Community Development at the City of Huntington Park lamented at the number of research studies that don't produce "results," a sentiment that many other Angelenos, both politically and personally, resonate with (Infazon 2019). In theory, every solution is backed by technical knowledge and statistically significant proof that leads decision-makers to weigh the pros and cons of each option and make a rational, evidence-based choice. In practice, this "proof" is imperfect and travel analysis models can show us trends of what we already know, but not of the unknown. Although there is no perfect way to predict the future, and travel analysis models may be the closest thing to evidence that we have, there are several sources of data that feed into these models that have the potential to be improved.

There is a vast amount of data collected that tells us details of the transportation system. On a national scale, the US Census Bureau collects commute data through the American Community Survey and the Federal Highway Administration gathers information on all household travel behavior through the National Household Travel Survey. Currently, the Southern California Association of Governments (SCAG) is conducting a Regional Transportation Survey using a mobile app to collect travel diaries from residents through both passive and active data collection strategies. These data sources are valuable and help to identify the current travel patterns of a community. What these national and regional data sets do not include, however, is an evaluation of unmet travel needs of their residents.

Unmet travel needs are defined by Luiu et al. (2017) as "trips and activities that people need or would like to do more, but for a variety of reasons they are prevented from doing so." In this research, this definition has been expanded to include the discomforts and dangers faced by vulnerable populations during their travel. For example, Los Angeles County Metropolitan Transportation Authority released a study called *Understanding How Women Travel* (2019), which identified unmet travel needs specifically for women under the categories of safety, access, reliability, convenience, and comfort. These two studies, the former on elder populations and the latter on women, and others discussed in the following section help to define unmet travel needs as the missing elements of environment (e.g., safety, finance, physical access, comfort, etc.) that prevent people from taking the trips or doing the activities that they need or would like to do more.

This research is based on finding the answer to the following question: what are the best practices for characterizing unmet travel needs of neighborhoods in the Gateway Cities subregion? To answer this question, this project is a mixed methods approach involving a literature review, open ended interviews, and focus groups. The literature review dives into the existing knowledge of the needs of disadvantaged populations, current travel behavior analysis data collection strategies, and community needs assessments popularized in the field of public health. Open ended interviews provide insight into the methodologies of current survey efforts occurring in California. Lastly, the focus groups gather community opinions from Downtown Huntington Park located in the Gateway Cities on survey preference and opinions on alternative data collection strategies.

This report finds that the ideal approach for collecting information on the travel needs of a neighborhood combines the benefits of active and passive data collection using smartphone-

based surveys and thorough outreach to ensure that the survey instrument works for underrepresented populations. Each of the aspect of this study produced valuable findings. The literature review reveals that there have been efforts to study the travel needs of disadvantaged populations in studies at a smaller scale due to the efforts put into relationship building and community context. Practical knowledge about the various strategies of travel behavior analysis and passive versus active data collection help to explore the options available to GCCOG. There are quality resources, examples, and guides for community needs assessments that can serve as a template for next steps. The interviews with researchers and professionals who work with travel needs of people every day provided their advice and experience for the logistics of surveys and focus groups, as well as some perspective on the pros and cons of smartphone-based travel diaries. The focus groups, although not fully representative of all living or working in Downtown Huntington Park, produced valuable insights into the willingness of people to participate in a smartphone survey, the car-dependent nature of the neighborhood, and practical lessons-learned about holding focus groups.

Based on the findings, the immediate next steps at the conclusion of this project would be to continue the outreach in the Downtown Huntington Park area and maintain the relationships established through this project. Then, based on the cost and coverage desired by GCCOG in their survey efforts, conducting a 1-week smartphone travel survey in one to three new neighborhoods paired with robust community outreach efforts. In the long-term, it is recommended that the steps of Creger et al.'s Mobility Equity Framework are followed as an example of how to make an equitable transportation system available to all people.

This paper will first dive into the existing literature of unmet travel needs for disadvantaged populations, travel behavior and survey methods, and community needs assessments. Then it will explain the research methodology for the open-ended interviews and focus groups before providing an assessment of the results of the study. Finally, conclusions and findings will be summarized, and policy recommendations are identified.

LITERATURE REVIEW

There are a few sources of information that describe the current state of travel behavior in the United States. The US Census Bureau collects data on commute behavior in the American Communities Survey and the Decennial Census; the Federal Highway Administration collects more robust data on household travel through the National Household Travel Survey (NHTS). The California Department of Transportation (Caltrans) and SCAG supplement the NHTS with greater detail (i.e., more surveys) from California and Southern California with the California Household Travel Survey. All this information is used in regional travel models, Statewide Travel Demand Model, and the Statewide Integrated Interregional Transportation Model (California Department of Transportation [Caltrans] n.d.), which predict future travel behavior and allow agencies to justify their decisions on the future transportation network. These data sources are valuable and help to identify the current travel patterns of a community. What these national and regional data sets do not include, however, is an evaluation of unmet travel needs of vulnerable communities.

This section provides a brief review of the relevant literature on how information on travel needs and travel behavior are currently collected. It begins with a review of the existing literature on travel-related needs for disadvantaged populations. Then current methodologies on community needs assessments related to transportation with an emphasis on community engagement are collectively discussed. Lastly, modern methods of travel behavior analysis involving "big data" are explored for opportunities to engage at a neighborhood level.

Travel Needs of Disadvantaged Populations

There are several studies that focus on populations for which travel is especially burdensome and dangerous. These "disadvantaged populations," generally including elderly people, people with disabilities, low-income people, people of color, non-English speakers, women, and transgender and non-gender conforming people, are underserved and underrepresented when it comes to services provided by the current transportation system. The demands on the transportation system are diverse which is why it is crucial to have a data collection strategy flexible enough to capture the needs of the most vulnerable communities.

In order to promote a transportation system that meets the needs of the region, attention must be paid to those who are most disadvantaged. Because of the breadth of this subject, the following subsections review just a small piece of the literature available on each disadvantaged population to provide a glance at the ways in which qualitative and/or quantitative data is collected. The purpose of this section is to identify unmet needs of disadvantaged populations, the ways in which studies have collected information, and the suggested improvements to those data collection strategies.

Older Age Groups

As mentioned previously, Luiu et al. (2017) compiled a literature review and describes the unmet travel needs of elderly people. Unmet travel needs are reported by a third of older people as something that worsens with age and burdens women more than men (Luiu et al.

2017). Their paper also highlights the fact that travel survey methods are typically not designed to understand "unmet" travel needs; Luiu et al. suggests developing a travel diary technique that "combine[s] the two dimensions of the travel activity, fulfilled and unfulfilled, in order to gather not only detailed information about realized mobility, but also all trips that for some reason are not achievable" (ibid, p. 502). This technique could be useful beyond elderly populations and applied to the unmet and trips foregone by any person.

Another study focused on the travel needs of elderly people by Musselwhite and Haddad (2010) evaluates the outcomes between drivers and non-drivers. They divide their study population into two groups: (1) current drivers, for which the researchers conducted telephone interviews, issued physical driver diaries with no time limit (diaries averaged 19 days), and held two focus groups; and (2) ex-drivers, for which in-depth telephone interviews were conducted. Their study found that driving a car helped elders meet their practical, social, and aesthetic needs[4], while ex-drivers expressed difficulty meeting all three needs, particularly their aesthetic needs. Most studies in the Luiu et al. literature review concur with Musselwhite and Haddad's finding that access to a car is necessary to fulfill the mobility needs of older people. It should be noted, however, that there are studies that challenge this finding and argue that by comparing current and former drivers, the experiences of elderly people who have never driven and those who are generally satisfied without access to a car are neglected (Luiu et al. 2017).

In Brief…	People tend to face more unmet travel needs as they age; aesthetic needs for travel are often the most neglected need.
	Current travel survey methods of not typically design to understand "unmet" travel needs; travel diary techniques should gather data on both fulfilled and unfulfilled travel activity.
	There are differences between the needs of ex-drivers and those who have never driven, which is something that should be considered when designing a survey.

People with Disabilities

The current and historic discrimination against people with disabilities generates a robust body of literature surrounding their unmet travel needs. In 2007, researchers from the University of Minnesota released a report on the *Transportation Needs of People with Developmental Disabilities* (Wasfi et al. 2006). This report summarizes the results of a survey and one-day travel diary of 114 adults with developmental disabilities in Hennepin County, Minnesota with help primarily from people and organizations who provided services to people with developmental disabilities. They gathered participants through targeted recruitment through senior centers, residential communities that are dedicated to serving people with developmental disabilities, and transportation providers. Although almost all developmentally disabled adults surveyed do not live independently, 40 percent agreed that they are independent travelers (ibid). Of the 46

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[4] Aesthetic needs involve travel for pleasure or for enjoyment.

percent of participants that reported that they had "unmet travel needs," the main reason cited for not being able to make the trip was that they had no one available to drive them.

There are several difficulties for using public transit, including difficulty standing, reading and understanding transit schedules, understanding announcements, destinations outside of transit service areas, and safety (ibid). In their survey, Wasfi et al. received complaints about the long wait times and unreliability of publicly provided paratransit services. The qualitative element of this data is crucial as the evaluation of travel behavior alone may not recognize that paratransit services need to change to improve user experience. Elements of Wasfi et al.'s research design of this report, notably the involvement of community partners that helped to identify and encourage participation, and the visual elements of the survey instrument and travel diary, are useful for reference in creating a research plan inclusive of people with developmental disabilities.

In Brief…	In one survey of people with developmental disabilities, almost 50 percent of participants reported unmet travel needs.
	Qualitative aspects of travel for people with disabilities are important to capture due to the variability in people's difficulties and the quality of paratransit services.
	In order to engage people with disabilities in a survey, it is important to involve community partners that help to identify and encourage participation.
	Research design considerations include making a survey instrument accessible to people with physical or developmental disabilities.

Low-Income Workers

Research on low-income travelers continues to expand due to increasing disparities cemented by urban form and an influx of research funding. One of the major concepts to emerge from these efforts is John Kain's spatial mismatch hypothesis (SMH), which states that there is a "mismatch" between the residential locations of low-income households and suitable job opportunities (Kain 1992). Ong and Miller (2005) discuss SMH in Los Angeles and how prior studies of spatial mismatch failed to accommodate for different levels of transportation access. It is also noted that public transit is often more available in poorer neighborhoods, signaling that simply adding another transit line will not itself provide better access, but that "the problem is that transit is cumbersome compared to ease of travel by car" (ibid, p. 53). Furthermore, Ong and Miller indicate that access to a car independently improves labor market outcomes indicated by a more even jobs-population balance, and lower unemployment. SMH signals that there are needs both in and beyond the physical transportation system that affect access, particularly for the low-income travelers in the region.

Aside from spatial mismatch, there are other burdens that people with low-incomes face. First, low-income families who do not have access to consistent resources often do not operate on a typical routine yet are tied to the 9-to-5 public timetable to fulfill certain needs (Roy et al. 2004). There are also high costs associated with car ownership, not only for the purchase and maintenance, but for welfare recipients, purchasing a car may mean losing assistance

(Blumenberg and Haas 2002). Zero-vehicle households, of which a disproportionate amount are low-income households (Brown and Taylor 2018), are missing a link to positive economic outcomes such as employment, working more hours, and earning higher wages (Brown 2017). People with low incomes must be creative when it comes to managing their transportation costs (Blumenberg and Agrawal 2014). Blumenberg and Agrawal recruited 74 people in and near San Jose, California through organizations that serve low-income San Jose residents[5], Blumenberg and Agrawal found that this sometimes means eliminating trips or minimizing miles traveled. The policy recommendations set forward by their study included ensuring that the very lowest income families could afford public transit and increasing access to automobiles through reducing vehicle ownership costs, short-term rentals, carpool matching services, or legalizing and supporting informal transportation networks that might already exist.

In 2003, Blumenberg et al. prepared the *California Transportation Needs Assessment: The Transportation Barriers and Needs of Welfare Recipients and Low-Wage Workers*. This report aimed to assess the transportation obstacles faced by low-income people. As this was a statewide analysis, there are no concrete "needs" identified that fit all poor people in California. Instead, the recommendations are helpful considerations for a diverse region, like the Gateway Cities, to consider access to automobiles (with attention to welfare participants), employment status, and the existing transportation programs and interagency collaboration.

In Brief...	The mismatch between residential locations of low-income households and suitable job opportunities (Spatial Mismatch Hypothesis) reveals that access needs extend beyond the physical transportation system particularly for low-income residents.
	In one study of low-income households, eliminating trips or minimizing miles traveled was cited as a way people reduce transportation costs.

Racial and Ethnic Minorities

Environmental justice is one of the primary concepts at the intersection of transportation, race, and income. Because of current and historic racial discrimination, place, race, and socioeconomic status are closely related and reflected in the discussions of the role of race in spatial mismatch (Blumenberg and Manville 2004). There are also safety concerns regarding transportation and race as evidenced by the fact that people of color are disproportionately affected by pedestrian crashes (Coughenour 2016). Another study shows racial discrimination in ride hail, also referred to as Transportation Networking Companies (TNCs), and taxi services (Brown 2018). The racial discrimination experienced in daily travel is real and needs to be addressed in the field of transportation and beyond.

A study conducted in 2010 assessed travel-related opinions and concerns based on race/ethnicity using data from the 2010 HealthyStyles survey (Bhat and Naumann 2013). One finding of interest is the fact that non-white participants were more likely than white participants to think that there were adequate alternatives to driving for people in their

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[5] Sacred Heart Community Services, the Olinder Food Center, and a low-income rental housing unit called Paseo Senter

community (ibid). To further complicate this finding, non-white participants were more likely than white participants to be very or extremely concerned about having safe and alternative transportation options when they were no longer able to drive (ibid). Though the researchers note that the application of their study is limited since the HealthyStyles survey sampling approaches were not random, opinion surveys provide another possible method of collecting data on the travel needs of disadvantaged communities.

In Brief…	Racial discrimination in transportation is illustrated by the disproportionate hardship experienced through spatial mismatch, traffic incidents and deaths, ride hails, etc.
	Opinion surveys are introduced to translate qualitative characteristics of transportation, which pertain to unmet travel needs, into quantitative data.

Gender

Lastly, needs vary based on gender and between non-gender conforming people. In 2019, Los Angeles County Metropolitan Transportation Authority (LACMTA) released the *Understanding How Women Travel* study which provides a straightforward example of a study to understand women's mobility needs. This study organized methodologies into "conventional" methods (including existing National Household Travel Survey and LACMTA data sources, an online survey, and focus groups), and "innovative" methods (including participant observations, participatory workshops, and pop-up engagements) (Los Angeles County Metropolitan Transportation Authority [LACMTA] 2019). The survey instrument and guide for the focus groups are provided as appendices in LACMTA's report that will be useful as templates for the research plan (ibid, Appendices C and D).

The *Understanding How Women Travel* study is robust and contains valuable findings organized into Travel Behavior Trends, Safety, Access (financial and physical), Reliability, and Convenience & Comfort (LACMTA 2019). Notably, most women feel that there is not enough police presence on transit (ibid). In addition, women with children, packages, and strollers face a difficult time using transit, both in terms of environmental design and fare payment (ibid). The Next Steps portion of the report notes the need for additional research, including the following:

- Travel diaries to obtain more detailed information regarding How Women Travel, in particular the trip chaining and mobility of care topics.
- Surveying of groups that are under-represented in the data compared to their representation on transit services (Hispanic, Latinx, or Spanish origin bus riders; African American transit riders; low-income transit riders)
- Surveying in languages other than English, Chinese, and Spanish, and sampling intentionally to get non-English monolingual responses
- Surveying or workshops with older adults
- Focus groups or participatory design workshops to generate or validate new design ideas for vehicles and stations that meet the needs of women

(LACMTA 2019, p. 160)

Beyond cisgender people, transgender and gender nonconforming people have their own challenges to travel, especially in public and shared spaces. According to a report on the National Transgender Discrimination Survey, a survey of 7,500 transgender and gender nonconforming individuals in the US, 53% of respondents experience discrimination and violence in a place of public accommodation (Grant et al. 2011). Considering only buses, trains, or taxis, 22% of respondents experienced harassment or disrespect, 4% experienced physical assault, and 9% experienced denial equal treatment (ibid). The National Transgender Discrimination Survey instrument and analysis included in their report asks questions about where individuals have experienced discrimination, which may be a question to include in future survey (ibid, Appendix B).

Another study conducted in 2015 interviewed 25 transgender and gender nonconforming public transit riders in Portland, Oregon which recorded personal experiences concerning mobility, harassment, and violence (Lubitow et al. 2017). The report included opinions on policy changes, including transit employee education, signage, and including gender identity as part of a protected class of riders (ibid). Interview participants did not believe that increased transit police presence would improve their feelings of safety and security, but instead increase feelings of anxiety and fear (ibid). The literature on transgender and gender nonconforming individuals and travel is not robust by any means, but these studies indicate that personal safety in public spaces, including travel spaces, is an area of concern for this population. Another important takeaway from this literature is that policy recommendations for one disadvantaged population may not have the same positive effects on another group.

In Brief…	Some traditional data collection methods include assessing existing travel data sources, online survey, focus groups.
	Some innovative data collection methods include participant observations, participatory workshops, and pop-up engagements.
	In one survey of transgender and gender nonconforming people, over half experience discrimination and violence in public spaces, which include transportation hubs.
	Policy recommendations for one population may conflict with the needs of other groups; for example, some women would like increased police presence on transit, while some transgender people feel increased fear and anxiety with police presence.

Current Methods of Travel Behavior Analysis

Transportation-related decisions made at the local, sub regional, county, and regional level are made based on the travel needs defined by technical studies, community input, and framing from agency staff. Travel behavior analysis studies are dependent on data that could be derived from travel surveys, census data, GPS, and/or Big Data (Rhoads 2019a).

The development of travel behavior analysis from the mid-1900s (Weiner 1999) to now transitions through active and passive solicitation and from small to big data. Chen et al. (2016) argue that the work of transportation researchers on travel behavior analysis overlaps with

research from other disciplines, mainly computer scientists and physicists. Chen et al. explains that transportation researchers have been focused on active solicitation through travel surveys (from paper, web, and phone interviews), with and without GPS loggers. Because the participants of these surveys must be actively recruited, these surveys are limited by a small sample size, hence the terminology "small data" in reference to data acquired through active solicitation (Chen et al. 2016). The explosion of the five basic components of computing devices (integrated circuits, storage, networking, software applications, and sensors) within the last 50 years has allowed for the geographical dispersion of sensors and emergence of big data (Rhoads 2019b).

One survey that is using active solicitation to collect "small data" at a large scale is SCAG's 2019 Southern California Transportation Study. SCAG, in partnership with Metropolitan Transportation Commission (MTC) and San Diego Association of Governments (SANDAG), is in the process of conducting this study to "better understand the transportation needs of Southern California region residents" (Southern California Association of Governments [SCAG] 2019). In order to learn more about this study, the researcher conducted an open-ended interview with the prime consultant of this project, which is described in the Interview section of this report.

The rise and prevalence of mobile technologies creates more opportunities for passive data collection (Chen et al. 2016). Currently, not all data are collected through active solicitation nor are they gathered for the intention of research (ibid). There are a number of scholarly articles on the use of call data records (CDRs), which are collected by mobile phone operators for billing purposes and contain information about the "caller, callee, the starting time of the call, the duration of the call, and the XY coordinates of the tower that first channeled the call when the call was first initiated" (ibid). Two primary limitations of CDRs are that the data are dependent on people making phone calls and privacy. More recently, the definition of data extracted from a mobile device expanded to become location-based services (LBS). LBS data does not have a single technology source, like a cellphone tower or GPS, but collectively represents the best location available to mobile apps at a particular point in time, whether that comes from GPS, Wi-Fi, Bluetooth beacons, or occasionally cellphone towers (National Academy of Sciences n.d.). Other examples of passive data collection include social media data, transit smart card data, taxi, and TNC data, all of which are unable to provide a full picture of an individual's mobility pattern over multiple days (Chen et al. 2016).

One recent study using LBS data is LACMTA's NextGen Bus Study, which is their systematic and community-based process for redesigning the countywide bus network (LACMTA 2019b). The study is a mixed-methods data collection with multiple levels of surveying (online and paper surveys and focus groups); travel demand analysis using Transit Access Pass (TAP), Automatic Passenger Counters, and LBS data; existing census and survey data; and community engagement through town hall meetings, community pop-up events, community based organization briefings and presentations, working group meetings, public workshops, local collaboration, and public hearings (ibid). As with the Southern California Transportation Study, the researcher conducted open-ended interviews with LACMTA and the prime consultant on this study, which are described in the Interview section of this report.

To summarize, there are several different methods to capture travel behavior data. As shown in **Figure 2**, strategies include active methods, such as interviews, surveys, focus groups, public forums, community pop-up events, and travel diaries using smartphones, GPS devices, and mail-back surveys; and passive methods using social media, mobile phone sightings (LBS), automatic passenger counters, and transit smart cards. The general levels of cost, difficult, and coverage are included for each of the methods based on personal experience and interviews held with survey professionals later in this study.

Method	Cost	Difficulty	Coverage
Active Methods			
Interview	Low	Low	Low
Survey	High	High	High
Focus Group	Low	High	Low
Public Forum	Low	High	Low
Pop-up Event	Low	High	Low
Travel Diary	High	High	High
Passive Methods			
Social Media	High	High	Medium
Mobile Phone Sightings	High	Low	Medium
Transit Smartcard	Low	Low	Medium

Note: passive methods have medium coverage since representative samples cannot be guaranteed or confirmed.

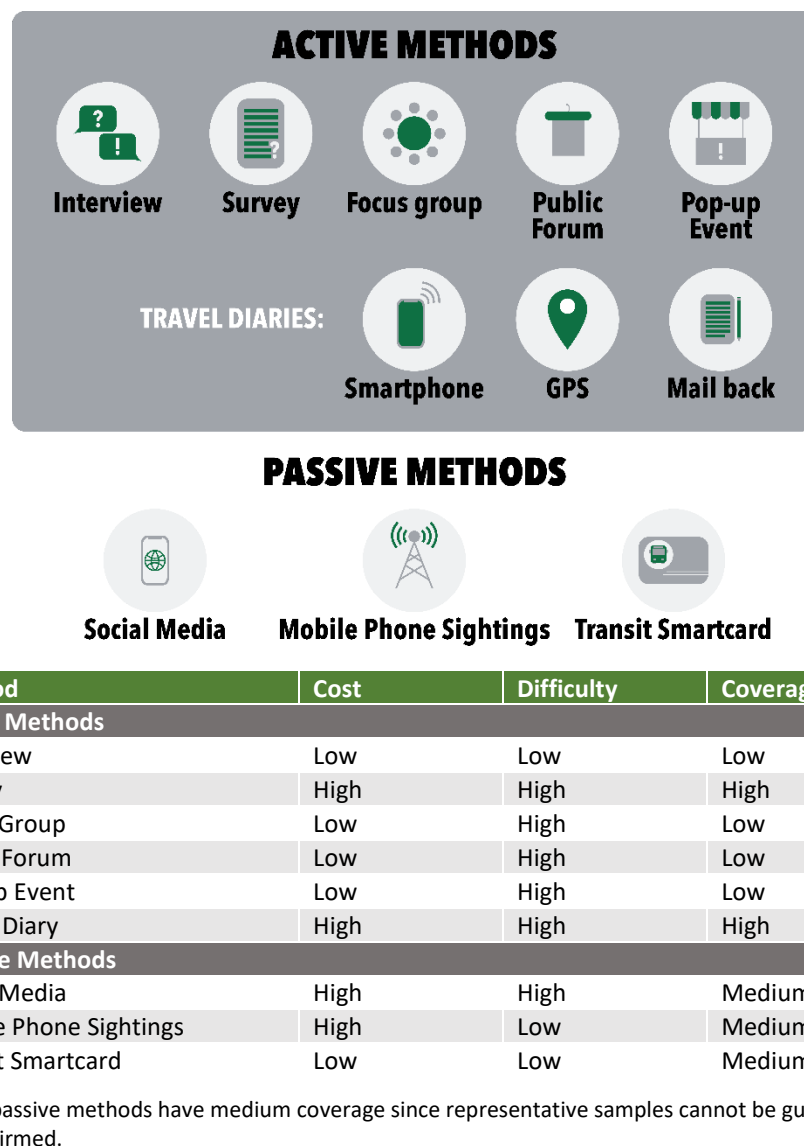*Figure 2: Data Collection Methods*

As the data surrounding travel behavior continues to improve and become more accurate, there are still gaps in determining a community's needs. LBS data shows where people are going and how people currently get there without insight into why a person chose (or was forced) to make *that* trip at *that* time with *that* mode. The recent SCAG and LACMTA studies begin to combine

the technologically based methods of data collection with more traditional survey methods and community outreach strategies.

In Brief…	Current travel behavior data collection strategies include "active" and "passive" methods; active methods require action on part of the participant, whereas passive methods do not necessarily require permission or action from the participant and can be collected more consistently and accurately for a larger population. Active methods of travel data collection include interviews, surveys, focus groups, public forums, pop-up events, and travel diaries (smartphone, GPS, and mail back). Passive methods of travel data collection include social media monitoring, mobile phone sightings, and transit smartcards.

Community Needs Assessments

Needs assessments are conducted to provide justification for funding, comply with laws, inform decision making and resource allocation, assess the needs of specific, underserved populations, or to evaluate existing programs (Soriano 2013). Recently, the field of public health became well-acquainted with Community Health Needs Assessments from the requirement by the Patient Protection and Affordable Care Act (2010) for tax-exempt hospitals to ensure that they have the information they need to meet the needs of their communities (ASTHO n.d.). Because of this recent development, there are several resources to help agencies and individuals develop needs assessments. Community Action Partnership published a Community Needs Assessment Resource guide to identify resources "to address unmet needs to the community's most vulnerable residents" (Community Action Partnership 2018). One of the resources in the guide is a service developed by the Center for Community Health and Development at the University of Kansas called *Community Tool Box* (Center for Community Health and Development n.d.). Three of the chapters in the *Community Tool Box* focus on community assessment, covering everything from developing a plan for assessing local needs and resources to conducting focus groups and surveys. These resources will be used in the development of the data collection methodology for this report.

There are a few examples of needs assessments in California transportation planning, including the California Transportation Needs Assessment (2003), discussed above, of which the stated purpose is to inform decision making and resource allocation with a focus on welfare recipients and other low-income adults. Other recent examples include LACMTA's Understanding How Women Travel (2019), Santa Barbara County Association of Governments' Transit Needs Assessment 2019, Fresno Council of Governments' Transportation Needs Assessment (2016), SafeTREC's Active Transportation Needs Assessments with the California Native American Tribes Project, and the League of California Cities' 2018 California Statewide Local Streets and Roads Needs Assessment. Each of these examples are developed with specific populations in mind (e.g., women, transit users, and Native American Tribes), but some studies neglect community input as part of their needs assessment methodology. Furthermore, some studies primarily focus on the infrastructure needs of a community but based on the discussion of needs in the literature review, it is known that unmet travel needs go beyond just the physical environment.

In 2018, the Creger et al. published a *Mobility Equity Framework* to provide a "how to" guide to a transportation system that benefits all people. At the starting point of this framework is a Marcantonia and Karner's (2016) reframing of the question of equity analysis from one of quantitative metrics to "What are the most pressing unmet needs of particular underserved communities?" According to Creger et al.'s report, there are three main steps of the Mobility Equity Framework below and in **Figure 3**.

Step 1: Identify the mobility needs of a specific low-income community of color

Step 2: Conduct the mobility equity analysis to prioritize transportation modes that best meet those needs while maximizing benefits and minimizing burdens

Step 3: Place decision-making power in the hands of the local community
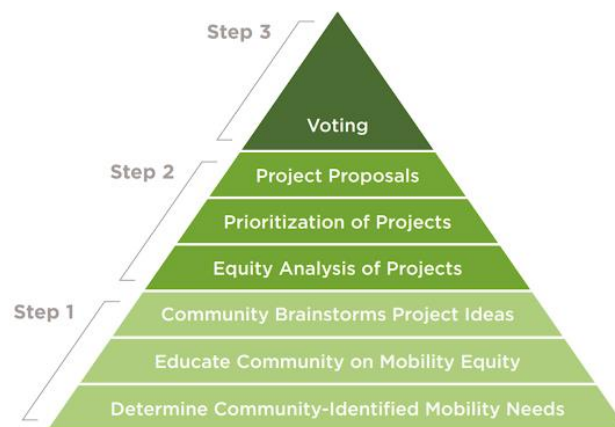
Figure 3: Mobility Equity Framework

With a Community Needs assessment being the first step of the Mobility Needs Framework, Creger et al. suggest that a participatory budgeting process is a comprehensive and equitable approach to identifying community needs and potential solutions since community members take part in brainstorming projects to address their needs. Participatory budgeting is a democratic process through which the distribution of public resources is deliberated and decided by citizens that empowers the community to be a part of the decision-making process (Creger et al. 2018). The various components of participatory budgeting, including identifying community needs, education, and brainstorming, are all built into the Mobility Needs Framework (ibid). On a larger scale, participatory budgeting can be difficult to implement, as illustrated by the critiques of the City of Los Angeles' Budget Day with broad information,

surveys of varying quality, and information from the brainstorming process seldom being used by decision makers (Musso et al. 2011). The Mobility Needs Framework, which targets all levels of government and communities for reference, provides alternatives for participatory budgeting where a complete process is not feasible, including traditional approaches (surveys and asking CBOs) and technological approaches. One example of a technological approach is Streetwyze's mobile mapping application where residents can share their experiences, opinions, and recommendations with their communities and government via an app on their phone (Creger et al. 2018).

Considering the ways in which the community could be engaged for a community needs assessment, one of the barriers that working people face is the time or means to attend these meetings (ibid). Surveys and online forums as also suggested as alternatives to in-person meetings, though fostering relationships with community members is an important component of community engagement (ibid). One method of meeting the community in-person without the logistical burdens of a community meeting is to meet people where they already are. Marlo Sandler, Senior Public Policy Manager with Lyft, mentioned that their community engagement strategy is to reserve a booth at a local farmer's market to engage with the people there (Sandler 2019).

Community needs assessments, although not yet fully embraced by the field of transportation as it is in public health, help to establish the immediate needs of a community. It should be noted that community needs assessments may become more integrated into the field as more opportunities for funding become available.[6] Examples of transportation needs assessments from a variety of entities around California show us current methodologies, while the Mobility Needs Framework suggests methods, like participatory budgeting, as a more thorough way of engaging the community in planning for their travel needs. There are resources, primarily grounded in the field of public health, to guide the development of a community outreach methodology to seek the needs of underrepresented populations.

In Brief…	Community Needs Assessments and planning resources are common in the field of public health mainly due to the requirement from the Patient Protection and Affordable Care Act of 2010.
	CMAs have been adapted into a Mobility Equity Framework that includes a process to create an equitable transportation system that involve participatory budgeting, community brainstorming, and establishing a baseline of community-identified mobility needs.
	Best resources for community needs assessments:
	• Mobility Needs Framework (Creger 2018)
	• Community Tool Box Chapter 3. Assessing Community Needs and Resources (Center for Community Health and Development n.d.)

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[6] The Sustainable Transportation Equity Project pilot grant and Clean Mobility Options Voucher Pilot Program are two examples of grants that provide funding specifically for community transportation needs assessments.

METHODOLOGY

This section describes the methods used to find the best practices for characterizing travel needs of neighborhoods in the Gateway Cities subregion. As described in the literature review, several existing sources of current travel behavior data lack information that can describe foregone trips and trips that individuals took at an undesirable time or by an undesirable mode. This research utilizes open-ended interviews with professionals with experience conducting regional surveys in California and focus groups with community members to explore various methods of communicating the unmet travel needs of a community.

Open-Ended Interviews

Six open-ended interviews with professionals in various roles gathered information about the current methods of collecting travel behavior data. During the development of this study, more studies became known and available to the researcher, therefore interviewees were selected as these studies became available. Connections for interviews were offered through GCCOG's extensive network of transportation professionals and researchers, the researcher's colleagues at LACMTA, and connections of the UCLA Lewis Center for Regional Policy Studies.

Due to the method in which interviewees were selected, the results of these interviews are biased towards large-scale travel behavior data collection in the United States, particularly Los Angeles County, California. This bias, however, does not make the information irrelevant to GCCOG, a relatively large regional agency in California. It should be noted that smaller-scale travel behavior data collection efforts, possibly using more innovative methods of data collection, may have been overlooked since the researcher was unaware of such efforts.

Interview Protocol

The purpose of selecting open-ended interviews rather than semi-structured or structured interviews was to allow the interviewees the freedom to share and elaborate on information that might not have been captured if the interviews had more structure. Additionally, every interviewee held different, but valuable information about different travel behavior methodologies meant to inform rather than compare. Although the exact questions asked to interviewees varied according to the knowledge base and flow of the interview, the following set of questions outline the overall intent of the interviews:

- What is your data collection methodology for your analysis? Why did you choose this method?
- [for completed studies] Is there anything that you would change about the methodology now that you have the experience and the results?
- What are the biases in your methodology? Are there particular populations left out of the data collection? If so, who are these people and how did your study make up for this bias?
- Do you have any questions that you would have liked to ask your study participants that you did not get to ask?
- Is it possible to have access to the data collected for your study?

Interviews were not recorded nor fully transcribed, however, the researcher took notes during each of the phone interviews. Interviews are analyzed through summarizing the most salient points and are sometimes put into conversation with one another, particularly when topics overlap. The findings of the interviews are discussed and analyzed in the findings section of this report.

Regional Surveys

Two regional surveys of travel behavior recently completed/currently in progress employ some of the methods discussed in the literature review: the LACMTA NextGen Bus Study and the SCAG 2019 Southern California Transportation Study.

Interview #1: LACMTA NextGen Bus Study

November 26, 2019 1:00 pm to 2:00 pm Phone Interview	**Conan Cheung**, Senior Executive Offices of Service Development, LACMTA **Stephen Tu**, Senior Manager of Operations Planning, LACMTA **Anaurag Komanduri**, Principal, Cambridge Systematics

Note: Cambridge Systematics is the prime consultant LACMTA hired to manage the NextGen Bus Survey; Komanduri is the consultant project manager.

LACMTA's NextGen Bus Study is their systematic and community-based process for redesigning the countywide bus network (LACMTA, 2019b). The data collection and analysis began in 2018 and transitioned into the NextGen Plan phase (communicating the findings and recommendations to the public) in late 2019 (ibid). The scope of the NextGen Bus Study covers all of Los Angeles County. The study involved mixed-method data collection with multiple levels of surveying (online and paper surveys, and focus groups); travel demand analysis using Transit Access Pass (TAP), Automatic Passenger Counters, and LBS data; existing census and survey data; and community engagement through town hall meetings, community pop-up events, community based organization briefings and presentations, working group meetings, public workshops, local collaboration, and public hearings (ibid). LACMTA provided the online and paper survey instrument for review and use in the development of the focus group survey questions.

Interview #2: SCAG 2019 Southern California Transportation Study

November 13, 2019 12:00 pm to 1:00 pm Phone Interview	**Christopher Coy**, Senior Consultant, RSG

Note: RSG is the prime consultant for the Southern California Transportation Study; Coy[7] is the consultant project manager.

SCAG, in partnership with Metropolitan Transportation Commission (MTC) and San Diego Association of Governments (SANDAG), is in the process of conducting this study to "better

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[7] Coy is no longer with RSG; follow up questions were sent to Elizabeth Greene, Director, RSG.

understand the transportation needs of Southern California region residents" (2019). According to a presentation by the independent research firm (Resource Systems Group, Inc. [RSG] 2019a), who is administering the survey, each participant will complete three types of surveys through a smartphone app called "rMove." The three surveys include the Signup Survey (basic household composition), Trip Surveys after each trip, and daily 'end-of-day' surveys covering other topics relevant to travel (e.g., employment, school, typical travel, land use, personal vehicles, etc.). Participants were selected through address-based sampling with heavy TNC-user oversampling recruited through a mailed letter inviting the entire household to participate. RSG provided screenshots of the rMove app used in the focus groups.

Academic Travel Behavior Research

Robust travel behavior research exists outside of government-led regional surveys. I interviewed experienced researchers involved the field for insights on best practices and academic approaches to travel behavior data collection.

Interview #3: TTI Impact of Transformational Technologies on Underserved Populations

January 24, 2020	**Johanna Zmud**, Planning Division Head and Senior Research Scientist, TTI
1:00 pm to 2:00 pm	
Phone Interview	**Yanzhi Ann Xu**, Research Scientist, TTI

There is a current Transit Cooperative Research Program project led by researchers at Texas A&M Transportation Institute (TTI) titled *Impact of Transformational Technologies on Underserved Populations* (Zmud 2019). The purpose of this research is to identify negative impacts of new and emerging technologies on equality and mobility for underserved populations and propose actions to mitigate those impacts. Zmud is also the co-founder of a survey research firm, NuStats, that specialized in travel behavior surveys.

Interview #4A and 4B: SELA Climate Smart Transportation and Communities Consortium

November 13, 2019	**Dr. Wilma Franco**, Executive Director, SELA
10:00 am to 10:30 am	
Phone Interview	
January 22, 2020	**Cynthia Cortez**, Associate Director, SELA
3:00 pm to 3:30 pm	
Phone Interview	

Southeast Los Angeles (SELA) Collaborative, a network of community-based organizations has partnered with USC, UC Davis, and UCLA on three unnamed research projects. Formed through the Climate Smart Transportation and Communities Consortium, these efforts are funded by the Strategic Growth Council (UC Davis 2019). These ongoing projects involving focus groups and discussion of transportation in the form of public transit service analysis, first/last mile options, and promoting zero-emission vehicles (ZEVs) (ibid). Cortez is primarily responsible for

conducting the focus groups for the research effort and contributed her knowledge and experience to the development of this study.

Interview #5: USC Dornsife LABarometer Mobility Study

March 13, 2020	**Kyla Thomas**, Associate Sociologist, USC CESR
2:00 pm to 3:00 pm	
Phone Interview	

The USC Dornsife Center for Economic and Social Research (CESR) released their second LABarometer study on Mobility in February 2020. The online survey covers several topics related to mobility, including a section with livability questions on foregone trips. Thomas is the Director for the LABarometer studies and knowledgeable about the methodology and survey instrument development.

Private Market Research

This last category of interview aims to speak from the private sector and focus on how they seek their markets or the unmet needs of a community. Lyft is a ride-hailing/sharing company that advertises "Transportation for all." through their LyftUpInitiative (Lyft 2020). This initiative aims at increased access to jobs grocery, bikeshare, voting, and disaster response through various methods, including offering free or subsidized rides and memberships (ibid). On Tuesday, November 5, 2019 from 3:00 pm to 3:30 pm, the researcher conducted a phone interview with Marlo Sandler, Senior Public Policy Manager for Bikes and Scooters at Lyft. Sandler also comes with experience as Senior Manager, Government Partnerships at Bird (scooter share company) and City Planning Project Manager at the City and County of San Francisco.

Focus Groups

The second method of data collection used in this study are focus groups with community members in the Gateway Cities region. Currently, there are several ways to collect data through cell phone usage and survey data, but this misses the foregone trips that community members are most knowledgeable about. Understanding the methods and types of questions to encourage all members of the community to share their experiences will improve planning and decision-making processes.

Geographic Scope

As mentioned previously, the Gateway Cities spans 27 cities in the southeast region of Los Angeles County. At the outset of the research, GCCOG expressed interest in focusing efforts at the neighborhood-level for the purpose of being able to replicate the survey for neighborhoods all over the Gateway Cities region. GCCOG identified Downtown Huntington Park as a place to start this research since the City of Huntington Park expressed interest in new mobility projects to address their residents' travel needs. In comparison to the rest of the County, the community has lower average income, is more densely populated, and will be served by the future West Santa Ana Branch light rail transit line.

Downtown Huntington Park is the historic commercial district surrounding Pacific Boulevard with high density residential land uses around the retail. The neighborhood is generally defined between Randolph Street to the north and Florence Avenue to the south and extending a few blocks east and west of Pacific Boulevard. **Figure 4** is a photo taken from the City of Huntington Park's *Draft 2030 General Plan Update* (2019) of some of the retail shops along Pacific Boulevard. **Figure 5** presents the context of the neighborhood highlighting the census tracts that help to define the demographic data.

Figure 4: Retail shops along Pacific Boulevard

As will be discussed in the next section and findings, the lack of response to recruitment prohibited the elimination of participants according a strict definition of this neighborhoods by census boundaries. This introduced a bias to the study where not everyone participating in the study lives, works, or frequently travels within Downtown Huntington Park but *does* live/work/frequently travel through the larger context of the Gateway Cities. Because the purpose of this research is to study the methods of data collection, and not to develop statistically significant data itself, this bias should not affect the findings of the research, other than the fact that it cannot be prescribed directly to these geographically specific neighborhoods.
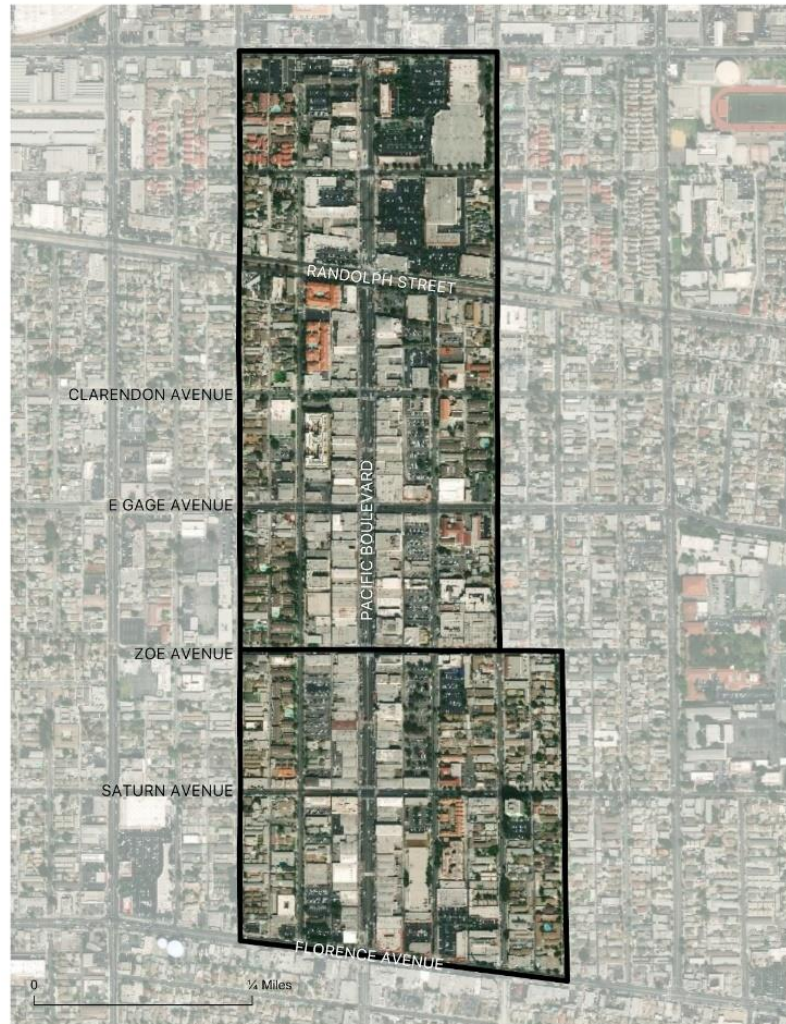
Figure 5: Downtown Huntington Park Census Tracts

Recruitment and Sampling

In accordance with current focus group research (Guest et al. 2017) and "rule of thumb" recommendations (Center for Community Health and Development n.d.), the researcher aimed to recruit 8 to 12 people for each focus group to ensure that 5 to 8 people would actually show up.

Recruitment for the focus groups occurred through three methods: flyers, recruitment emails, and referrals. Flyers were distributed via recruitment emails to community-based organizations, local jurisdictions, local school parent-teacher associations (PTAs), and local elected officials who were encouraged to print and post them in their spaces and share them on social media. Potential participants were also encouraged by language in the application to share the opportunity with neighbors, friends, family, and coworkers to increase the size of the pool available. The Focus Group Flyer and Recruitment Email Template are provided in **Appendix A**. Recruitment emails were sent to the following organizations:

- Community for a Better Environment
- Consejo De Federacions Mexicanas
- Dominguez High School
- East Yard for Environmental Justice
- Karina Macias, Mayor of Huntington Park
- Keppel Elementary School PTA

- Los Cerritos Elementary School
- Mujeres Unidas Sirviendo Activamente
- SELA Collaborative
- TreePeople
- William Jefferson Clinton Elementary School

Additionally, copies of the flyer were physically placed or posted at the following locations:

- City of Huntington Park Community Center
- HUB Cities Consortium
- Various eateries and grocery stores on Pacific Boulevard between Belgrave and Florence Avenue
    - Starbucks
    - Yogurtland
    - La Monarcha Bakery
    - El Gallo Giro
    - La Michoacana Plus
    - Dipietro Pizzeria
    - Casa de Café
    - Paleteria Y Neveria La Michoacan
    - Tierra Mia
    - Corner Kitchen
    - 7-11
    - Walgreens
    - Superior Groceries

Lastly, participants were recruited the day of the focus groups. The researchers walked through public areas prior to the event to advertise the opportunity. Research information sheets were passed out to approximately 10 people, which resulted in one additional person for one of the focus groups.

In order to increase interest in participation among the target population, each participant received compensation for their time and contribution in the form of a gift card to Amazon or Target. Initially, the focus groups offered $25 gift card incentives. Since focus groups required travel to a common location and 1.5 hours of discussion, compensation of $25 per participant was considered adequate. After two weeks of advertisement and few responses, the incentive increased to $50.

According to 2017 ACS data, there are very low numbers of people (less than 25) who are uncomfortable speaking either Spanish or English in the study areas. Furthermore, the 2017 ACS data shows a high percentage of Spanish-speaking people in the study area who speak English less than "Very Well." Therefore, all focus group materials are translated to Spanish to encourage Spanish-speaking individuals to participate.

Participant screening took place in the form of an online sign-up sheet provided through Google Forms (available in both English and Spanish), which are also provided in **Appendix A**. The application asked for a name, preferred contact information, availability for focus group, and study area that they associate with. The recruitment email requested that if organizations identified a participant without access to the internet, the researcher would be contacted via a

phone number. Therefore, this application process could be more "informal" for people who do not have access to the internet to fill out this form. Applicants were emailed the Research Information Sheet, provided in **Appendix A**, a week before the focus group to confirm that they were still willing to participate and to confirm logistics of the focus group.

Focus Group Protocol

Two focus groups took place on and at the following dates and locations:

- Wednesday, February 19, 9:30 AM - 11 AM at Huntington Park City Hall
- Wednesday, February 19, 6:00 PM - 7:30 PM at the TreePeople office in Huntington Park

For each participant, the IRB approved Oral Consent Script, provided in **Appendix B**, was read by researchers who completed the online Collaborative Institutional Training Initiative (CITI) training for Social & Behavioral Researchers & Staff (Basic Course). Participants were also given a hard copy of the Research Information Sheet emailed to them prior to the day of the Focus Group.

Audio recordings were used to keep record of the responses to questions in focus groups. The purpose of the recordings was to produce concept summaries that reflect the ideas and opinions of participants and were not shared outside of the research team. The identities (or characteristics that make it obvious to be identified) of individuals in the focus groups are not published in any documents that result from this research.

Initial Survey

The focus group started with a 15-question survey, provided in **Appendix B**. Part A of the initial survey contains five questions concerning Survey Participation to gather information on the perceptions of various types of surveys (e.g., paper, telephone, in-person, online, etc.) and four questions concerning smartphone ownership for the purpose of evaluating openness to surveying using smartphones. Part B of the initial survey contains five questions and a table broken down by trip type (i.e., Work, School, Shopping, Medical/Health, Social/Recreational, and Escorting others) concerning vehicle ownership and typical travel behavior.

These questions trialed a question about missed or unmet trips and acted as a prompt for further discussion within the focus group. These questions were developed using survey questions developed in studies discussed in the literature review (LACMTA 2019, Wasfi et al. 2006) and revised by Johanna Zmud, who has 20+ years of experience in travel behavior surveys and focus groups. The researcher collected the survey at the end of the focus group and summarized the answers to the questions for further analysis discussed in the findings section of this report.

Discussion of Survey Procedures

The second part of the focus group involved looking back at some of the answers to the survey to ask more about the details of poor survey experiences and smartphone ownership.

Turning to discussing the openness to smartphone surveys, the researcher explained the methodology of the SCAG 2019 Southern California Transportation Survey and showed

screenshots of the rMove app on a printed handout. This visual aid, as seen in **Figure 6**, brought context of a smartphone app and allowed participants to better understand their feelings towards the possibility of the survey.
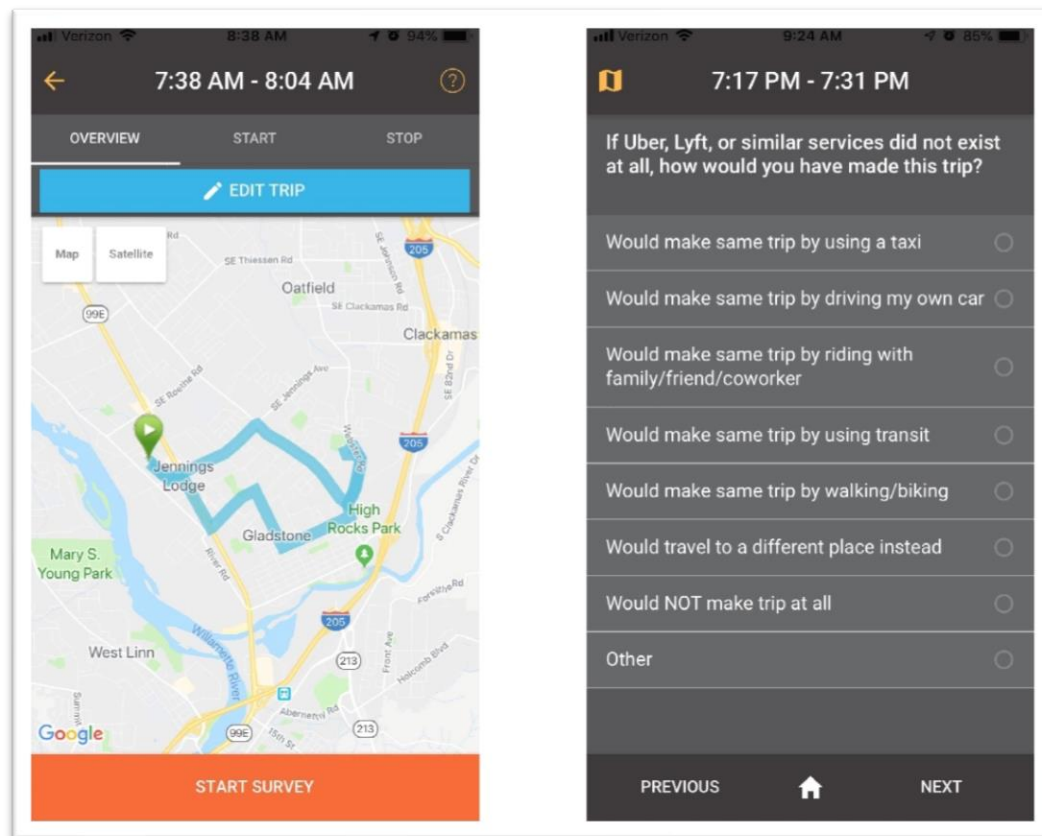
Figure 6: rMove Application Sample Screens

Based on a curiosity of the community's concerns about data privacy, the researcher wanted to ask how people felt about the trade and use of their digital data. In order for every participant to be on the same level of understanding about the potential of cellphone location data, a series of maps sourced from a New York Times opinion article entitled "Twelve Million Phones, One Dataset, Zero Privacy" (Thompson and Warzel 2019) shows a cell phone tracked over a period through Manhattan, New York. **Figure 7** shows the printed handout participants received. This question aims to answer how future surveys should be structured such that anonymized locational data is not misused.

(A)
A variety of cellphones in Central Park, New York on a single day.

(B)
A single cellphone in Central Park, New York that same day.

(C)
The single cellphone identified in picture (B) around Manhattan, New York over a number of days.

Source: Thompson, S.A. and Warzel, C. (2019). "Twelve Million Phones, One Dataset, Zero Privacy." New York Times. December 19.
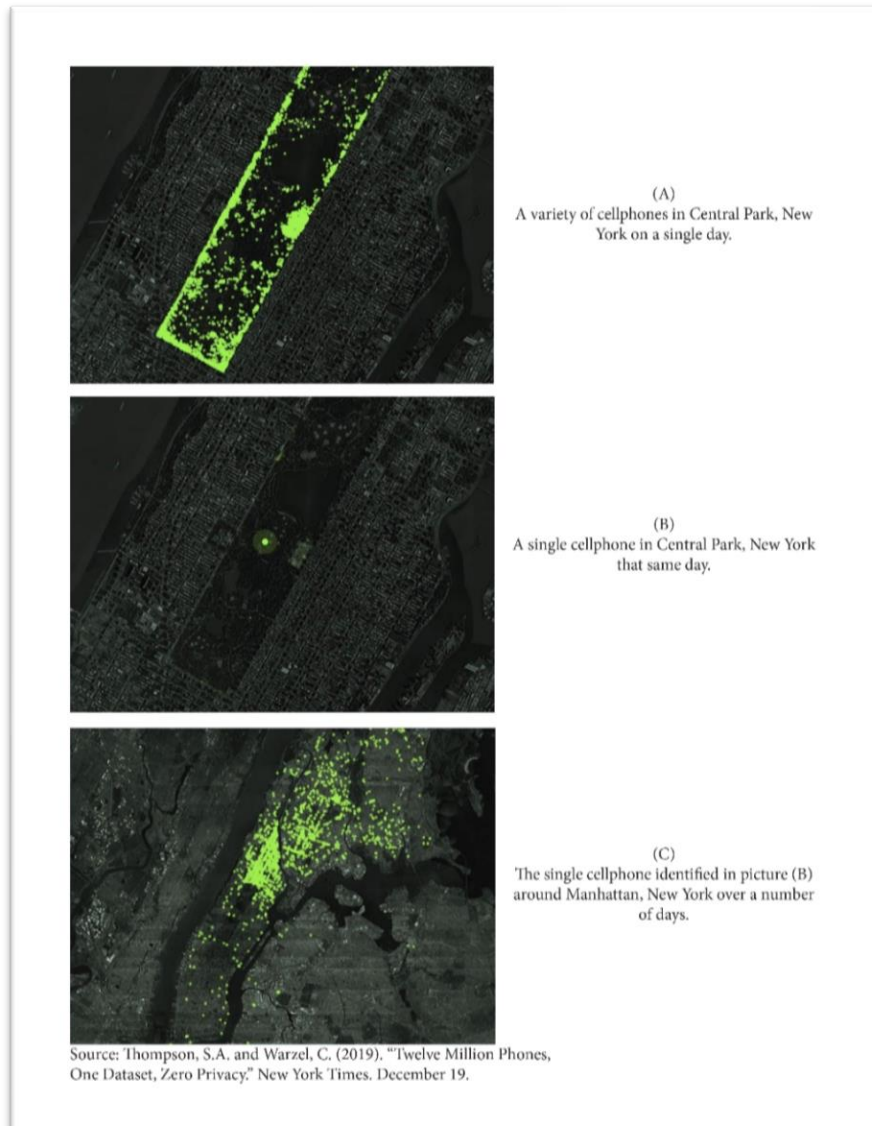
Figure 7: Data Privacy Handout

The last part of this section is structured to discuss the travel behavior table and delve deeper into the responses to the question regarding unmet trips. Ideally, this discussion would confirm that the answers to this question in the survey would align with their concept of unmet trips in a way that revealed the source of the unmet trip.

Discussion of Outreach Procedures
The third section of the focus group involved a concept map exercise and reflection on the various part of the focus group. The concept map demonstration was executed using a large poster board or a white board where the researcher wrote "Travel Needs" at the center and asked the focus group to give them what they thought their travel needs were. This exercise and the reflection questions aimed, not only to gather opinions on what they thought their own

travel needs are, but to see if this sort of exercise and focus group made participants feel as though the researcher (or leader of the focus group) had a good understanding of what their unmet needs are. The follow-up questions are geared to answer how to best connect with people who haven't been involved in surveys or focus groups.

FINDINGS

This section of the report covers the findings from the literature review, open-ended interviews, and focus groups. These findings are meant to inform the answer to how to best collect data on travel needs for a region. The first section summarizes the findings from the literature review of current travel behavior data methodologies, community needs assessments, and known needs of disadvantaged populations. The second section reviews the key findings from the interviews conducted on current data collection efforts in Southern California at a regional level. The third section describes the findings from the various elements of the focus groups, including the written questionnaire and the concept map, along with findings from hosting the focus groups themselves.

Literature Review

Studying the way different populations move can teach us a lot about the needs that are being met, but not much about unmet trips or the inconveniences, or unreported acts of violence while making a trip. Resources for conducting community needs assessments are available, although there is a lack of tailored resources for the Los Angeles area. As recommended by Lubitow et al. and Creger et al., it is important to discuss and include vulnerable populations as protected to ensure that their needs are met in the development of an equal transportation system.

The current methods of travel behavior have been evolving with the emergence of big data, which has opened a host of analysis opportunities. The existing literature and reports lack explicit statements of cost to acquire this data. Moreover, there are still privacy and access issues that prohibits the full use of these data. As more studies, like the 2019 Southern California Transportation Study and the NextGen Bus Study, continue to produce results, it will be important to evaluate and validate the outcomes. Overall, the methodologies in the studies discussed, combined with the strategies to reach out to underrepresented communities can be combined into a mixed-methods approach to evaluating the travel needs of people in neighborhoods of the Gateway Cities subregion.

Literature Review Findings
L-1   People have a diverse set of travel needs, including practical, social, and aesthetic needs.
L-2   Demonstrated strategies used to gather information about travel needs for underrepresented populations include travel diaries, surveys with visual elements in the instruments, opinion surveys, and partnerships with people who provide services to target communities.
L-3   Travel behavior analysis studies are dependent on data derived from travel surveys, census data, GPS, and/or Big Data.
L-4   Community needs assessments are well-developed in the public health field and are adapting to transportation needs through new funding sources and advocacy groups. One example of a transportation needs assessment framework is the Mobility Equity Framework (Creger et al. 2018).

Finding L-1: People have a diverse set of travel needs, including practical, social, and aesthetic needs. Every piece of literature reviewed on the travel needs of disadvantaged populations, from the elderly to low income individuals expressed a uniqueness in their needs. Generally, elderly people are less likely to meet their aesthetic needs as those needs are not seen as crucial. People with disabilities face difficulty taking trips around when no one is available to drive them. Low income workers struggle on multiple fronts to meet their needs with lower access to vehicles and less flexibility in housing choices around job-rich areas. Racial and ethnic minorities are disproportionately unsafe as pedestrians and face discrimination in ride hail and taxi services. Women and gender non-conforming people both face issues with personal safety, but the solutions desired by the two parties can look very different.

Finding L-2: Demonstrated strategies used to gather information about travel needs for underrepresented populations include travel diaries, surveys with visual elements in the instruments, opinion surveys, and partnerships with people who provide services to target communities. Musselwhite and Haddad (2010) conducted telephone interviews, issued mail back travel diaries, and held two focus groups to capture the needs of the elderly. Wasfi et al. (2006) issued a paper survey and one-day travel diary with visual elements in the instruments to cater to those with developmental disabilities. They gathered participants through targeted recruitment through senior centers, residential communities that are dedicated to serving people with developmental disabilities, and transportation providers. Blumenberg and Agrawal (2014) recruited low income individuals for interviews through three organizations that serve low-income residents in San Jose. Bhat and Naumann used a study that evaluated travel-related opinions to evaluate the role of race in travel needs. LACMTA (2019) used a mixed methods approach with travel diaries, surveys, workshops, focus groups, and participatory design workshops for understanding how women travel. Lubitow et al. (2017) used interviews with transgender and gender nonconforming public transit riders to create an account of their personal experiences and concerns.

Finding L-3: Travel behavior analysis studies are dependent on data derived from travel surveys, census data, GPS, and/or Big Data. This data, including LBS, shows where people are going and how people currently get there without insight into why a person chose (or was forced) to make *that* trip at *that* time with *that* mode. More involved methods of data collection are needed to decipher why people make the trips that they do or do not.

Finding L-4: Community needs assessments are well-developed in the public health field and are adapting to transportation needs through new funding sources and advocacy groups. Creger et al. (2018) elaborates on the application of community needs assessments for transportation planning. Suggested paths of community needs assessments include focus groups, participatory budgeting, mobile surveys, and meeting people where they are at (e.g., farmer's markets).

Interviews

The diverse nature of each of the travel studies and experience led the interviews to have unique questions and varied findings. Since some studies are not yet complete, there is no way to directly compare the results of the travel surveys. Despite this, there are a few points that

were reiterated on methodological approaches that will be discussed in this section. Summaries of all interviews are provided in **Appendix C**.

Interview Findings	
I-1	Smartphone-based surveys are not perfectly accessible to all communities but generate high participation rates and more accurate data compared to other travel diary strategies.
I-2	By their very nature, cell phone-based data and Transit Access Card data do not capture trips not taken.
I-3	Surveys can be supplemented to capture underrepresented communities through greater efforts of public engagement with focus groups, presentations at community meetings, and providing assistance or equipment to individuals without access to the survey instrument.
I-4	Identification of community leaders and groups is key in public engagement
I-5	Data privacy is a concern that agencies, like LACMTA, are concerned about, but address internally by never associating identifying information with locational data.
I-6	Public engagement and inclusive recruitment efforts can increase the cost of travel data collection, even as they improve the quality of data.
I-7	Planners need to avoid to using jargon, such as "micromobility" and "transportation network companies," in survey instruments.
I-8	It is important to distinguish between older age groups when discussing mobility and cell phone adoption.
I-9	To ensure the best possible participation rates and labor efficiency, conduct surveys in years without major elections or in tandem with other regional surveys.

Finding I-1: Smartphone-based surveys are not perfectly accessible to all communities but generate high participation rates and more accurate data compared to other travel diary strategies. Christopher Coy from RSG discussed the pros and cons of smartphone use in surveys, noting that despite the lack of ownership in elderly and very low income populations, smartphones are still seen as one of the most comprehensive ways of obtaining information from survey participants; it can collect both passive and active data from participants with minimal effort. Citing the Pew Center, Coy mentions that 85% of adults own smartphones and suggested that low income/minority households may be "smartphone-dependent" in that they use it as their main device connected to the internet. The goal of the Southern California Transportation Survey differs greatly from a travel needs assessment, so their exclusion of populations without cell phones do not greatly affect the outcomes of their survey. Coy suggested that one possible option to include people without a smartphone is to have a call-in center or online survey.

One point of disagreement between the interviews was about the statistic used in determining the percentage of people with smartphones. Critically, both Coy and Zmud cite the Pew Research Center study on mobile phone ownership; in their interview, Coy mentioned that 81% of the US adult population owns a smartphone (Pew Research Center 2019) and indicated that this is a large portion of the population and there was no other way to improve participation rate outside of the use of smartphones. On the other hand, Zmud's research description on the TCRP website cites the Pew Research Center data from 2017 showing that 23% of us adults in urban areas do not own smartphones and critically states that the "lack of smartphone

ownership is mainly concentrated on traditionally disadvantaged groups such as minority, seniors, and low income" (Zmud 2019). This statistic has since dropped to 17%, but the sentiment remains that a significant number of people are not included in these types of surveys.

Finding I-2: By their very nature, cell phone-based data and Transit Access Card data do not capture trips not taken*.* For the NextGen Bus Study, LACMTA used cell phone data to identify activity centers and the nodes that could be best served by transit; this limited their ability to uncover the unmet trips. The activity center data is also confounded by visitor traffic, or irregular trips that transit cannot be sustained upon. Additionally, TAP (LACMTA's Transit Access Pass) data is limited in that only the boardings are noted (there is no "tap-off" when travelers exit the transit system).

Finding I-3: Surveys can be supplemented to capture underrepresented communities through greater efforts of public engagement with focus groups, presentations at community meetings, and providing assistance or equipment to individuals without access to the survey instrument. After the development of LACMTA's Equity Framework, LACMTA's NextGen Bus Study supplemented their online survey, TAP data, and cellphone-based data collection with a greater extent of public engagement and outreach with an online/paper survey, focus groups, public workshops, CBO presentations and briefings, public hearings, and pop-up events.

According to Sandler, Lyft's approach also focuses on relationships through public private partnerships. Sandler mentioned that cities who address equity in micromobility may have "superficial" guidelines for service, such as designating areas that must be serviced by a company. Sandler's critique on this approach is that the placement of service itself is not going to allow the community to use it. Another approach some cities take is to run a low-income membership/subscription pilot program, but Sandler mentioned that those often end after just 6 months. Sandler's approach to improving equity in micromobility is to build relationships with cities, elected officials, and CBOs to know how to best serve the community. Sandler's biggest piece of advice for connecting with the community is to meet them where they are; attend a farmer's market and ask the community what they need and how they need it. Based on the surveys assessed in this report, alternative methods of engaging people not captured by the survey include the following:

- engagement with multiple community-based organizations through the development and duration of the survey for greater participation
- pop-up events to "meet people where they are" to include people who would typically not engage in surveys
- provision of assistance or equipment to willing participants (e.g., provide an internet-equipped tablet/smartphone to individuals without access to the internet).

Thomas from USC mentioned that very few people (5 out of 1,800 participants) in their latest LABarometer survey requested tablets. They lend the tablets for the duration that participants serve on the panel; in the case of LABarometer study, their panel will last for 10 years. It is

expected that the cost of providing an internet enabled tablet or smartphone to those who need it will be a relatively small cost compared to the cost of public outreach and data collection.

In multiple interviews and conversations with city staff, people repeatedly suggested connecting with churches and places of worship to build recruitment. Through their experience, those experienced in community engagement have come to recognize that churches tend to have higher engagement from people than other community groups.

Additionally, Cortez from SELA stated that she successfully recruited and followed up with focus group participants via text messaging. Cortez also advised making flyers to make it easy for community-based organizations to share opportunities with their participants, social media sites, and post in their spaces

Finding I-4: Identification of community leaders and groups is key in public engagement. Though like Finding I-2, it needs to be reiterated that influential people within a community can be powerful in mobilizing participation. More than one interviewee emphasized that reaching out to local religious organization, elected officials, and larger community-based organizations will help with recruitment and increased participation. The key is identifying the people in positions of power and influence in the community.

Finding I-5: Data privacy is a concern that agencies, like LACMTA, are concerned about, but address internally by never associating identifying information with locational data. In LACMTA's NextGen Bus Study, the consultant, who develops a data agreement with the larger data distributor (not the cellphone companies themselves), collected cell phone data. LACMTA noted that anonymity is of highest importance and identifiers are never associated with any data points for security purposes.

Finding I-6: Public engagement and inclusive recruitment efforts can increase the cost of travel data collection, even as they improve the quality of data. The LACMTA NextGen Bus Study public engagement effort cost $2.1 million, which is more than the cost of technical data collection itself at $1.7 million. Compared to the SCAG Southern California Transportation Study, which involved study a larger study area, the multiple forms of data collection added up. SCAG's study costed around $170,000 with data collection (not including incentives) comprising just under 10 percent of that amount. Coy mentioned that mail sampling is quite an expensive (approximately 9 cents per address) way to recruit and that is important to strike a balance between the number of mailings and incentives to keep costs efficient and effective. This is seen in the thorough recruitment methods of the USC LABarometer Mobility Survey. Thomas mentioned that they are working with a budget of about $300,000 a year on four surveys, but there was a $3 million grant upfront to build the LA County panel of survey participants which increases the participation rates.

Finding I-7: Planners need to avoid to using jargon in survey instruments. Zmud advised the researcher to be aware of terminology being used, particularly concerning new forms of transportation, such as "micromobility," "transportation network companies," and even company names like "Uber" or "Turo." People might not be familiar with these terms and may need further explanation.

Finding I-8: It is important to distinguish between older age groups when discussing mobility and cell phone adoption. Zmud stated that there are differences between the 65-75, 75-84, and 85+ age ranges; the latter two often have many more challenges than the first. People 65-75 are often still working and mobile. Coy also mentioned that people above 75 especially are typically ones who do not own smartphones. As time passes, it is likely that the group of adults without smartphones will continue to shrink.

Finding I-9: To ensure the best possible participation rates and labor efficiency, conduct surveys in years without major elections or in tandem with other regional surveys. Coy advised that 2020 would be an especially low year for participation because of the drain of the election year.[8] Coy suggested partnering with another survey effort to streamline some of the base costs of doing a survey.

Focus Groups

Written Questionnaire

The 15-question written survey distributed at the beginning of the focus group became a topic of discussion later in the focus group. The researcher selected a few specific questions to expand upon in the focus group discussion that needed clarification or addressed difficulties in understanding the question. The full summary results of the questionnaire are provided in **Appendix D**; this section provides a description of the results based on the category.

The first five questions (1 through 5) covered survey experience and perception. Of the 8 focus group participants, the 7 people have previously participated in a survey. Most participants (7 of 8) agreed that the last survey they participated in was conducted through their preferred method (e.g., online, mobile, paper, in-person). Participants spent a varied amount of time on the last survey they participated in, ranging from 5 to 90 minutes. The reasons cited for not participating in surveys are the lack of time, the lack of interest in the topic, or never being asked.

The next four questions (6 through 9) covered smartphone ownership in the community. All focus group participants owned a smartphone. Of their households, only one of the focus group participants reported that there was someone in their house that did not own a smartphone. When this topic was further discussed during the focus group, participants mentioned that their parents or grandparents were the only people they could think of who did not own smartphones. They cited a variety of reasons for why they think that they didn't own smartphones, including affordability, seeing no other need for a phone outside of calls, and culturally, smartphones do not fit with their traditional way of life.

The next five questions (10 through 14) focused on vehicle ownership, substitution, and concerns while traveling. All but 2 participants owned enough vehicles for the number of drivers in the household. One participant does not own a car and primarily takes the bus. The other is in a two-car household with 3 drivers, where the car is primarily used by their parents. Alternative modes of transportation for this participant include walking, bus, bike, and Uber (or TNCs in

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[8] Note that Coy made this comment in advance of the COVID-19 outbreak.

general). The response to the biggest challenge of travel was varied; the responses included (listed in order of most to least cited) traffic congestion, time, personal and physical safety, parking, and waiting for the bus.

The last set of questions (15a through 15e) cover travel behavior for various trip purposes. Unsurprisingly, the personal vehicle dominates the typical mode of transportation for each trip type. Traffic, safety, and time are at one point the biggest concerns of travel depending on trip type. TNCs and public transit are commonly cited alternatives to the car.

Questionnaire Findings	
Q-1	Focus group participants are willing to participate in a smartphone travel survey.
Q-2	The wording of the questionnaire did not reveal specific unmet travel needs for participants.

Finding Q-1: Participants of the focus groups indicated that they would participate in a smartphone travel survey. Many focus group participants indicated that the last survey they participated in was their preferred method of participating in a survey, but those ranged between phone application, online (mobile or computer), paper, and in-person. When shown a screenshot of the rMove app and describing the format of the Southern California Transportation Survey, participants agreed that they would participate in this type of survey. Focus group participants commented that they found this method convenient and would not be opposed considering their frequent daily phone use.

This calls back to the questions in the LABarometer Mobility Study that asked about missed trips. The only reasons that the participants of that study could cite as reasons why they missed trips were "a lack of access to affordable transportation" and "travel time."

Additionally, all participants owned smartphones; the people that they knew who did not own smartphones were generally described as part of an older age group.

Finding Q-2: The wording of the questionnaire did not reveal specific unmet travel needs for participants. The trial Question 15e meant to prompt answers regarding foregone trips was unsuccessful. There was only one participant that answered that they would forego an escort trip (or a trip made for the purpose of taking someone else to their destination) if their typical mode of transportation (personal auto) was not available. The participant stated that this situation occurs "not often," but is notable since it is the only occurrence in which this question was answered as intended. It can be assumed that some participants interpreted it as "How often do you have to take an alternative mode of transportation?" The answer to this question is still interesting, however, since it is unknown how each participant interpreted it. Thus, Question 15(e) is not included in the summary in Appendix D.

The LABarometer Mobility Study, which came out after the focus groups were conducted, phrased the question like this: "In the last year, for each of the following types of activities in Los Angeles County, please indicate how often, if ever, you missed attending or doing the activity specifically because you did not have access to affordable transportation." (Thomas et al. 2020). During one of the focus groups, another two participants mentioned that they sometimes forego social/recreational trips because they are "lazy", or the location is "too far" from them to

make the trip "worth it." If the question was phrased exactly like the LABarometer Mobility Study's, then it is possible that participants would not answer positively; they may have had access, but the reason they refused to make the trip was different.

Concept Maps

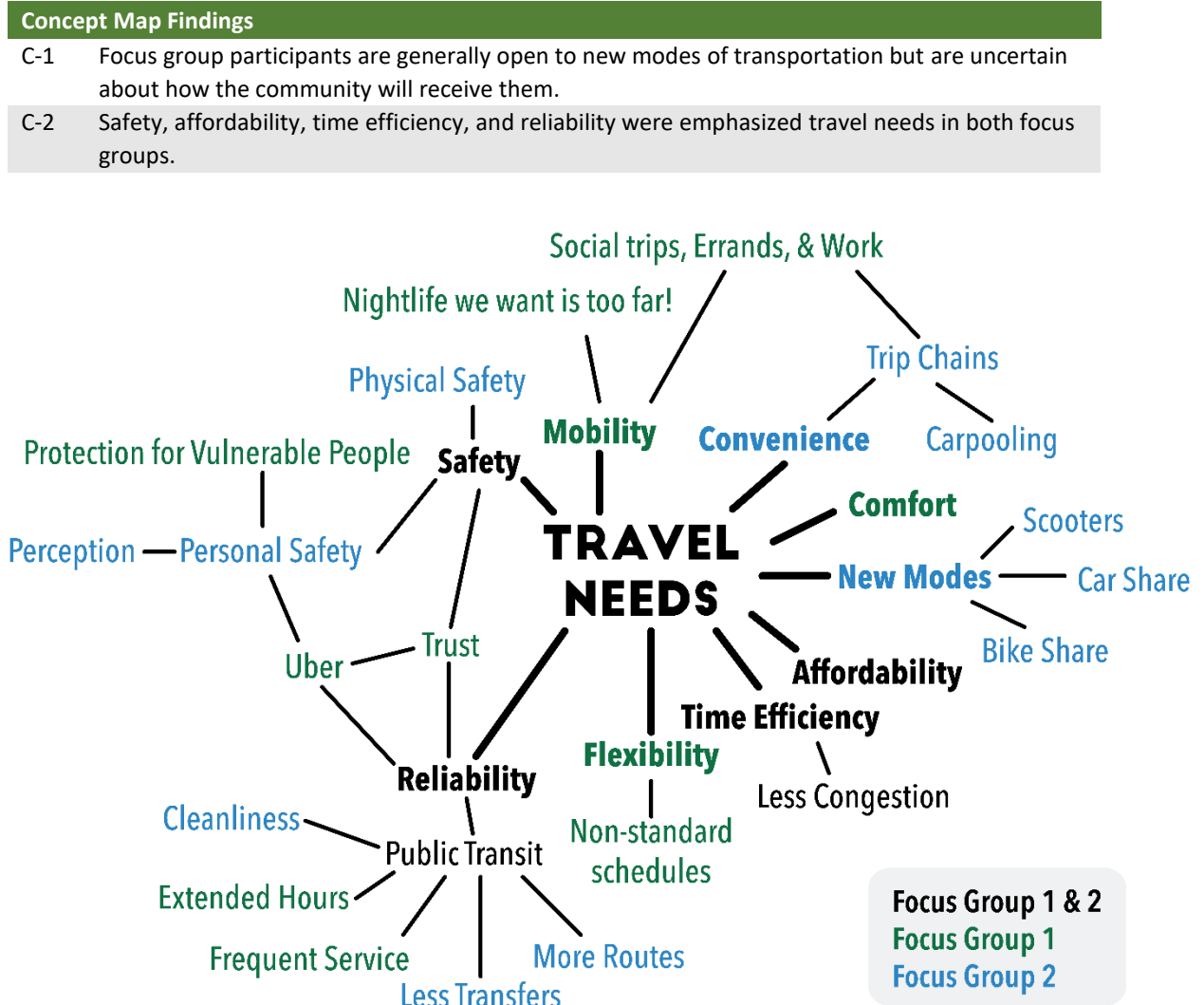Focus group participants developed concept maps, which are combined and presented in **Figure 8**.

Concept Map Findings	
C-1	Focus group participants are generally open to new modes of transportation but are uncertain about how the community will receive them.
C-2	Safety, affordability, time efficiency, and reliability were emphasized travel needs in both focus groups.

Figure 8: Combined Travel Needs Concept Map

Finding CM-1: Participants are generally open to new modes of transportation, but with some skepticism about their success. The first focus group included "new modes" on the concept map, including bikes, car shares, and scooters. Another focus group mentioned that they would be open to using scooters, but fear that they might be stolen or unused in the Downtown Huntington Park community. Their thoughts on a carsharing service, like Zipcar, included

skepticism around the fees that might be charged if they were in an accident that was not their fault.

Finding CM-2: Safety, affordability, and reliability were emphasized travel needs in both focus groups. One of the focus groups decided that there was a difference between travel "wants" and travel "needs" and highlighted these three points (along with "mobility") as their biggest needs.

Based on the follow up questions to the concept map exercise, participants generally found this exercise helpful in understanding their own travel needs and thought that the researcher gathered an adequate understanding of their travel needs. This exercise, however, did not help to reveal any additional information about foregone trips; participants were more willing to discuss their desires when it comes to the way they currently travel.

Focus Groups as a Methodology

Because of the complexity of human interaction and the qualitative nature of this research, the interviews and focus group answers themselves do not convey a complete picture of what are learned from this research. In fact, many of the findings in this research are related to the conversations leading up to and logistics of the focus groups themselves.

Focus Group Findings	
F-1	Personalizing outreach, connecting with people face-to-face, and plugging into the networks of others encourages participation.
F-2	Focus groups provide supplemental information to surveys but cannot replace them.
F-3	Raising an incentive for focus group participation does not guarantee a higher rate of participation.

Finding FG-1: Personalizing outreach, connecting with people face-to-face, and plugging into the networks of others encourages participation. People that the researcher spoke with on the phone, exchanged e-mails, recruited from the park, and met through the Gateway Cities COG were the people who attended the focus groups.

Finding FG-2: Focus groups provide supplemental information to surveys but cannot replace them. Surveys, particularly ones that do not require participants to meet at a given location at a specific time, allow a different set of people to participate. It may be more productive to find people that could or would not participate in a traditional survey to learn more about their travel needs, than more about those who are already captured by a survey.

Finding FG-3: Raising an incentive for focus group participation does not guarantee a higher rate of participation. In fact, focus group participants mentioned that $50 was a bit high, and that they would have still participated at $25.

Data Qualification

There are a few areas of this study in which bias could be introduced to the data. The area that most influences the data are the focus group participants. The combination of non-structured outreach procedures and inexperience in public outreach on the researcher's behalf led to a lack

of commitment to participate in the focus groups. Even when the incentive was raised from $25.00 to $50.00, there was no change in the number of people that signed up for the focus group. The online application could have dissuaded people from participating, people may have been skeptical of the flyer without a human face attached to it, or It could simply be that people don't want to take the time to fill out yet another survey. Survey fatigue is an issue as people are asked to fill them out more and more frequently. According to the focus group application, 50% of people that signed up for the focus group heard about this study through word-of-mouth.

Furthermore, there could be improvements in the clarity of questions in the sign-up sheet and initial questionnaire. There were a few questions where participants' responses would not align with other answers. For instance, Question 8 asked for the number of people in the household who own a smartphone and Question 9 asked if the participant knew anyone who did not own a smartphone, and there were participants who had someone in their household who did not own a smartphone, but answered "no" to Question 9. Ideally, these trial questions will work to improve further iterations of this exercise.

Lastly, the planning of the focus groups themselves could have been more robust with better upfront vision. Logistics should be set well in advance of the event date so that marketing materials (e.g., flyers) and social media campaigns can be set up and remain unchanged. Last minute (emergency) schedule changes to the focus groups set up for this project caused some attrition in participation.

RECOMMENDATIONS

Based on the findings of this report, there are a few policy recommendations that can be extracted for the Gateway Cities Council of Governments to progress their efforts towards a regional Innovative Mobility Strategy to improve the lives of Gateway Cities residents. These recommendations are best grouped into short-, medium-, and long-term actions. All recommendations are tied back to the concrete findings of this study to demonstrate motivation.

Short-Term

The short-term recommendations involve following through with the efforts of this study in Downtown Huntington Park and continuing to lay the groundwork for the medium-term survey work. Immediate next steps at the conclusion of this project are to continue the outreach in Downtown Huntington Park and maintain the relationships established through this project. The experience gained from hosting two focus groups led to the following recommendations regarding additional focus groups in the near term.

Revisions to the Initial Surveys Findings I-7, Q-2, and F-2	As mentioned in the findings (Q-2), the questions about unmet travel needs were unsuccessful. Appendix E includes a revised Initial Survey that can be used in future focus groups. In this revision, new questions have been developed with inspiration from the LABarometer Mobility Study. There are also questions that required clarification in the wording and/or options. During the focus groups, there were questions that revealed themselves to be superfluous (e.g., what was the topic of the last survey you participated in?). It is recommended that extra questions are removed to leave more time for discussion in the focus groups. This research project is limited by the inability to include descriptive demographic statistics for the focus group participants. Demographic questions should be included in all future surveys. In order to streamline the focus group session, it is recommended that this survey be put into an online form for participants to fill out in advance of the focus group or for wider distribution.
Plan two more focus groups with Project Return Peer Support Network Findings F-1 and F-2	Before the COVID-19 outbreak, the researcher intended on holding at least two more focus groups in Huntington Park. Project Return Peer Support Group Network, a nonprofit organization supporting and empowering people with mental illness, is open to hosting focus groups; the researcher will connect GCCOG with contact information for maintaining this important relationship and opportunity. (Continued on next page)

	The focus groups could continue to go on forever until all residents of Downtown Huntington Park have participated in one. In order to avoid that endless process, it is recommended that two more groups are held for the purpose of (1) hosting focus groups for Spanish-speaking individuals to seek crucial input from a population largely missing from the results of the existing focus groups and (2) growing GCCOG's relationship with Project Return. Furthermore, it is important to continue testing and refining survey questions that will capture unmet travel needs.
Focus Group Incentives Finding F-3	This research overestimated the amount required to incentivize participation and did not put enough emphasis on engaging directly with people. For the purpose of a focus group, a $25 incentive should be enough to ask people to show up at a meeting; no incentive is required for pop-up events or other forms of "meeting people where they are."
Maintain Engagement with Cities and Community-Based Organizations Finding I-4	Through this research, GCCOG began to collaborate with organizations like SELA Collaborative, TreePeople, and Project Return. Ideally, these relationships will continue to grow, and research will continue to be shared between the organizations. Relationships with the City of Huntington Park and City of Paramount also grew; GCCOG should continue to seek further opportunities for community engagement through city staff. Additionally, GCCOG should follow up with the City of Paramount on the results of their online transportation survey.

Medium-Term

In the medium term, the data collection itself should begin to reveal the travel needs of neighborhoods in the Gateway Cities. This report asks what the best practices are for characterizing unmet travel needs in the Gateway Cities subregion. Based on interviews, various activities in focus groups, and a literature review, the ideal approach combines the benefits of active and passive data collection using smartphone-based surveys and thorough outreach to ensure that the survey instrument works for underrepresented populations. To place this in concrete terms, below is a matrix of recommended approaches to be applied at various scales and based on different cost and coverage (e.g., geographical reach and expected sample size) levels.

Tier 1 Low Cost and Coverage *Estimated $5,000 to $10,000*[9]	Host focus groups and pop-up events in one to three neighborhoods where the municipality and residents are open to participation. These activities could work as brainstorming sessions to develop ideas of project or services that some residents could see working in their community. This approach compromises a representative sample for cost and may provide a narrow view of the needs of a community.

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[9] Tier 1 cost estimate is based on the direct costs associated with this research with a rough estimate of administrative costs.

Tier 2 Medium Cost and Coverage *Estimated $50,000 to $150,000[10]*	1-week smartphone travel survey for one to three cities of the Gateway Cities region with mail recruitment. Outreach includes working with community-based organizations in every city to ensure participation on part of underrepresented communities in multiple neighborhoods in each city. Pop-up events and public forums are used to distribute information about the survey and encourage underrepresented populations who do not normally participate to sign up for the survey. An alternative survey instrument for people without smartphones should be made available. Hiring a competent and experienced survey consultant adds to the cost but is suggested for the best results. Partnering with another organization to host a survey can reduce costs of survey in exchange for reduced control over the survey instrument.
Tier 3 High Cost and Coverage *Estimated $200,000 to $300,000+[11]*	In addition to all recommendations for a Tier 2 approach, a Tier 3 approach expands the scope of the survey to include multiple (five or more) cities in the region and implements rigorous participant retention strategies (following the LABarometer methodology) for increased participation. Internet-enabled tablets or smartphones should be offered to any potential participant that does not have access to a smartphone for the duration of the survey. To ensure that all survey instruments can be tailored to the needs of this survey, interagency partnerships are not recommended in this tier.

Although all three approaches are legitimate methods to collect travel behavior data, Tier 2 seems to be the most feasible and efficient use of resources for GCCOG. Though some coverage is sacrificed, GCCOG's efforts are most useful when focused on a smaller geographic area and embedded in community rather than attempting to find the needs of every community in this vast and diverse region. At this point in time, the smartphone survey offers the most convenient and accurate coverage with the ability to both passively and actively collect data. This is the most advanced form of travel diary; questions such as those developed in the revised initial survey could be used to collect valuable data about unmet travel needs.

Long-Term

Finally, the primary long-term recommendation from this report is to follow through with the steps of the Mobility Equity Framework (Creger et al 2018). Identifying the needs of the community is just the first step towards a transportation system that serves all people. The next steps in the framework include identifying specific modes and projects that will maximize benefits and minimize burdens on the community, then empowering community members to

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[10] Tier 2 cost estimate is based on the costs of data collection for the SCAG Southern California Transportation Study.
[11] Tier 3 cost estimate based on an estimate from the Director of the LABarometer studies.

choose the projects that they would like to see happen. This process can be incorporated into the formation of an Innovative Mobility Strategy that can show community member's demands for services and/or infrastructure in their areas. This recommendation is based on Findings L-1, L-4, C-1, and C-2.

CONCLUSIONS

Assessing the needs of a community is not straightforward or simple. It is not just about asking those who are most willing to participate but involves finding the voices of people who are overburdened but may not recognize it. It involves time and effort to create relationships and ensure them that their opinions and experiences matter. It is the lack of amplification on these voices that creates an unequal transportation system based on the existing patterns of travel and disregarding the travel that doesn't occur.

This report produces several findings, many of which address the logistics of surveys and emphasize relationship building. This report asks what the best practices are for characterizing unmet travel needs in the Gateway Cities subregion. Based on interviews, various activities in focus groups, and a literature review, the ideal approach combines the benefits of active and passive data collection using smartphone-based surveys and thorough outreach to ensure that the survey instrument works for underrepresented populations.

The findings from interviews and focus groups in Downtown Huntington Park helped to improve the understanding and approach for finding unmet travel needs in a community. These findings work to inform a set of recommendations summarized into short-, medium-, and long-term actions. The short-term recommendations involve continuing to work in Downtown Huntington Park and laying the groundwork for the medium-term survey work. The medium-term recommendations include three different options for strategies to identify travel needs with varied levels of cost and coverage. Although all three approaches are legitimate methods to collect travel behavior data, Tier 2 seems most feasible and efficient use of resources for GCCOG. The long-term recommendation is to follow through with the Mobility Equity Framework (Creger et al 2018) that goes into the next steps of creating a transportation system that serves all people.

Becoming reacquainted with the travel needs of a neighborhood is an ongoing process that is constantly evolving. Attention to the trends of travel is valuable and important aspect of decision-making, but community-engagement and mutual understanding is crucial to a successful transportation system made for all people.

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APPENDIX A

Focus Group Recruitment Materials

- Recruitment Flyer
- Recruitment Email
- Google Forms Application
- Research Information Sheet

Focus Group Recruitment Flyer

Recruitment Email Template

Hello [NAME],

My name is Annaleigh Yahata Ekman and I am a UCLA graduate student researcher studying the best practices of collecting information about travel behavior, specifically for people with unmet needs. I am working with the Gateway Cities Council of Governments on this research project. As a part of my study, I am organizing focus groups to ask people who live/work/play in Downtown Huntington Park and/or The Sans neighborhood east of Dills Park in Paramount about their travel experiences and opinions on the ways data is collected.

I am reaching out to community-based organizations in the area to ask if you could distribute an application for participation in the focus groups to members of your community, particularly people who might live or frequently travel to one of the neighborhoods described above. Those who participate in the focus groups will receive a $25 gift card to a local store.

If you have any questions, comments or concerns about the research, please let me know.

Thank you,

Annaleigh

Google Forms Application

UCLA Research Focus Group Application

Annaleigh Yahata Ekman and Evelyn Blumenberg, Ph.D. from the Department of Urban Planning at the University of California, Los Angeles are conducting a research study. This study is being funded by the Lewis Center for Regional Policy Studies and the Institute of Transportation Studies.

The purpose of this study is to establish best practices for gathering information on travel needs within neighborhoods in the Gateway Cities. Currently, there are a number of ways to collect data through cell phone usage and survey data, but community members are knowledgeable about their own needs. Understanding the methods and types of questions to encourage all members of the community to share their experiences will improve planning and decision-making processes.

This is an application to determine eligibility to participate in a focus group for this research study. All focus group participants will receive a $25 gift card to Amazon or Target. All personal information (name, email, phone number) collected in this application will be for coordination purposes only and will be deleted after the focus groups are finished. Please feel free to share this application with family, friends, neighbors, and coworkers.

If you have any questions, comments or concerns about the research, please contact: Annaleigh Yahata Ekman at (714) 858-9078 or ayahata@ucla.edu.

Si prefiere hablar español, utilice esta aplicación: https://forms.gle/LvjqTizybTitAvp46
* Required

1. Participant's Name *

   _____

2. Participant's E-mail (or phone number if e-mail is not an option) *

   _____

3. Is the Participant over 18 years old? *

Mark only one oval.

⬭ Yes

⬭ No

2/4/2020   UCLA Research Focus Group Application

4. Does the Participant live, work, or play in this highlighted area of Downtown Huntington Park, CA? (south of Slauson Avenue, north of Florence Avenue, east of Malabar Street, and west of Seville Avenue/Stafford Avenue) *

Mark only one oval.

◯ Yes

◯ No

5. Does the Participant live, work, or play in this highlighted area of Paramount, CA?
   (Near the I-105/I-710 interchange, next to Dills Park, Spane Park, and Salud Park) *

Mark only one oval.

◯ Yes

◯ No

6. Is the Participant available to attend a focus group meeting at any of the following dates and times? *

    Check all that apply.

    ☐ Tuesday, February 11 6:00 PM - 7:30 PM (Gateway Cities Council of Governments, 16401 Paramount Blvd, Paramount, CA 90723)

    ☐ Tuesday, February 18 6:00 PM - 7:30 PM (Gateway Cities Council of Governments, 16401 Paramount Blvd, Paramount, CA 90723)

    ☐ Wednesday, February 19 9:00 AM - 10:30 AM (Huntington Park City Hall, 6550 Miles Ave, Huntington Park, CA 90255)

    ☐ Wednesday, February 19 6:00 PM - 7:30 PM (Huntington Park Library, 6518 Miles Ave, Huntington Park, CA 90255)

    ☐ Saturday, February 29 10:00 AM - 11:30 PM (Gateway Cities Council of Governments, 16401 Paramount Blvd, Paramount, CA 90723)

    ☐ I am not available at any of these times.

7. If you participate in a focus group, you will receive a $25 gift card. Which of the following stores would you prefer to receive a gift card from? *

    Check all that apply.

    ☐ Amazon
    ☐ Target
    ☐ No Preference

8. How did you hear about this study?

    Mark only one oval.

    ◯ Social Media Post

    ◯ Word-of-Mouth

    ◯ E-mail Forward

    ◯ Other: _____

Research Information Sheet

University of California, Los Angeles

RESEARCH INFORMATION SHEET

Characterizing Travel Needs

INTRODUCTION

Annaleigh Yahata Ekman and Evelyn Blumenberg, Ph.D. from the Department of Urban Planning at the University of California, Los Angeles are conducting a research study. This study is being funded by the Lewis Center for Regional Policy Studies and the Institute of Transportation Studies. You were selected as a possible participant in this study because you live and/or work in the Gateway Cities. Your participation in this research study is voluntary.

WHAT SHOULD I KNOW ABOUT A RESEARCH STUDY?

- Someone will explain this research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.

WHY IS THIS RESEARCH BEING DONE?

The purpose of this study is to establish best practices for gathering information on travel needs within neighborhoods in the Gateway Cities. Currently, there are a number of ways to collect data through cell phone usage and survey data, but community members are knowledgeable about their own needs. Understanding the methods and types of questions to encourage all members of the community to share their experiences will improve planning and decision-making processes.

HOW LONG WILL THE RESEARCH LAST AND WHAT WILL I NEED TO DO?

Participation will take a total of about one and a half hours. If you volunteer to participate in this study, the researcher will ask you to do the following:

- Participate in a focus group at the Gateway Cities Council of Governments office at 16401 Paramount Blvd, Paramount, CA 90723 through sharing your thoughts on survey preferences, smartphone ownership/usage, privacy concerns, and outreach activities
- Complete a survey regarding current travel behavior (e.g., vehicle ownership, transit usage, travel limitations, etc.)

ARE THERE ANY RISKS IF I PARTICIPATE?

There are no anticipated risks or discomforts.

ARE THERE ANY BENEFITS IF I PARTICIPATE?

There are no direct benefits of participating.

The results of the research may be applied to future research completed by the Gateway Cities Council of Governments to continue these community-based efforts to learn about the transportation needs of neighborhoods in the region and promote solutions to meet those needs.

HOW WILL INFORMATION ABOUT ME AND MY PARTICIPATION BE KEPT CONFIDENTIAL?

The researchers will do their best to make sure that your private information is kept confidential. Information about you will be handled as confidentially as possible, but participating in research may involve a loss of privacy and the potential for a breach in confidentiality. Study data will be physically and electronically secured. As with any use of electronic means to store data, there is a risk of breach of data security.

Use of personal information that can identify you:

Data collected from the focus groups will be analyzed and reported in an aggregate form, meaning that it will never be associated with personal information that can identify you.

How information about you will be stored:

All personal information (i.e., name, phone number, and email) will be stored in a document protected by a password until it is deleted from the research record after the focus group is complete. All other information collected will be "de-identified," or disassociated with personal information that can identify you.

People and agencies that will have access to your information:

The research team, authorized UCLA personnel, and the study sponsor may have access to study data and records to monitor the study. Research records provided to authorized, non-UCLA personnel will not contain identifiable information about you. Publications and/or presentations that result from this study will not identify you by name.

Employees of the University may have access to identifiable information as part of routine processing of your information, such as lab work or processing payment. However, University employees are bound by strict rules of confidentiality.

How long information from the study will be kept:

All personal data will be deleted from the research record after the focus groups are completed. All de-identified data will be reported in a final report to be presented and submitted to the Department of Urban Planning records by June 2020.

USE OF DATA FOR FUTURE RESEARCH

Your de-identified data may be kept for use in future research.

WILL I BE PAID FOR MY PARTICIPATION?

You will receive a $50.00 gift card for Target or Amazon at the end of the focus group session.

WHO CAN I CONTACT IF I HAVE QUESTIONS ABOUT THIS STUDY?

The research team:

If you have any questions, comments or concerns about the research, you can talk to one of the researchers. Please contact: Annaleigh Yahata Ekman at (714) 858-9078 or ayahata@ucla.edu.

UCLA Office of the Human Research Protection Program (OHRPP):

If you have questions about your rights as a research subject, or you have concerns or suggestions and you want to talk to someone other than the researchers, you may contact the UCLA OHRPP by phone: (310) 206-2040; by email: participants@research.ucla.edu or by mail: Box 951406, Los Angeles, CA 90095-1406.

WHAT ARE MY RIGHTS IF I TAKE PART IN THIS STUDY?

- You can choose whether or not you want to be in this study, and you may withdraw your consent and discontinue participation at any time.
- Whatever decision you make, there will be no penalty to you, and no loss of benefits to which you were otherwise entitled.
- You may refuse to answer any questions that you do not want to answer and still remain in the study.

You will be given a copy of this information to keep for your records.

APPENDIX B

Focus Group Initial Survey

University of California, Los Angeles

INITIAL SURVEY

Characterizing Travel Needs

Please answer the following questions to the best of your ability.

Part A: Survey Participation

1. Last time you participated in a survey or poll, how was it conducted?
   a. Paper
   b. Telephone
   c. In-person
   d. Computer/online
   e. Smartphone
   f. Other:_____
   g. I've never participated in a survey or poll

2. What was the topic of the last survey you participated in?

3. How much time did it take to participate in your last survey?

4. Is the method you circled in Question 1 your preferred way to participate in surveys and polls?
   a. Yes
   b. No

5. What are the reasons you don't participate in surveys?
   a. Too much effort
   b. No time
   c. Questions are too complicated
   d. Questions are too sensitive
   e. Topic doesn't interest me
   f. Purpose doesn't seem legitimate
   g. Other:_____

Characterizing Travel Needs - Initial Survey

6. Do you own a smartphone?
   a. Yes
   b. No

7. How many people are in your household?

8. How many people in your household own a smartphone?

9. Do you know someone (in your household or outside of your household) who does not own a smartphone?
   a. Yes
   b. No

Part B: Travel Needs

10. How many vehicles does your household own?

11. How many drivers are in your household?

12. If there are more drivers than vehicles in your household, who typically gets to use the vehicle and why?

13. If there are more drivers than vehicles in your household, how do others get around when the vehicle is unavailable?

14. What are your biggest challenges and concerns while traveling?

Characterizing Travel Needs - Initial Survey

15. Please fill out the following table according to your travel within the past week.

Travel Purpose	(a) Which of the following types of travel did you do? Check all that apply.	(b) If yes: What is your typical mode of transportation for that type of trip?	(c) What are your biggest concerns about travel by that mode on that type of trip?	(d) If your typical mode of transportation were not available, how would you travel for that type of trip?	(e) If you would not make trip, how often does this happen?
Work (for pay or volunteer)					
School (for myself)					
Shopping					
Medical/Health					
Social/recreational					
Escort someone on their travel					
		Suggested Responses: Personal auto/truck driver Personal auto/truck passenger Borrowed auto/truck from someone Bus Train Taxi Uber/Lyft Walk Bike Scooter	Suggested Responses: Total travel time Wait time Trip price Number of connections Safety Something else:	Suggested Responses: Personal auto/truck driver Personal auto/truck passenger Borrowed auto/truck from someone Bus Train Taxi Uber/Lyft Walk Bike Scooter Would not make trip	

APPENDIX C

Interview Summaries

Table C-1: Interview Summaries

Organization (Study Title)	Interviewees	Study Significance	Main Question(s) for Interviewees	Key Findings	Data Collection Costs
Metro (NextGen Bus Study)	Conan Cheung, Senior Executive Officer at Metro Stephen Tu, Senior Manager at Metro Anaurag Komanduri, Principal at Cambridge Systematics	The NextGen Bus Study is a regional survey seeking to fulfill the needs of current transit users while addressing some of the concerns that may be preventing non-transit users from using their services. The scale of this survey as well as the topic of unmet needs correlates well with the focus of this research report.	1. How was the cell phone data acquired? 2. What were the limitations of the data collected?	Due to the development of Metro's Equity Framework, Metro shifted their methodological approach mid-survey. As a result, the NextGen Bus Study is a mixed-methods approach with an online/paper survey, focus groups, public workshops, CBO presentations and briefings, public hearings, and pop-up events. Cell phone data is collected through the consultant, who has a data agreement with the larger data distributor (not the cellphone companies themselves). The anonymity is of highest importance and identifier are not associated with any data points for security purposes. The main goal of analyzing cell phone data is to identify activity centers and the nodes that could be best served by transit. This is limited in that it doesn't cover the unmet trips and is confounded by visitor traffic, or irregular trips that transit cannot be sustained upon. Additionally, TAP data is limited in that only the boardings are noted (there is no "tap-off" when travelers exit the transit system).	Public engagement contracting work: $2.1 million Technical contracting work: $1.7 million
SCAG (Southern California Transportation Study)	Christopher Coy, Senior Consultant at RSG [Budget input from Marco Anderson, SCAG]	The Southern California Transportation Study is a multi-regional survey seeking to know more about the travel needs of the region and the role of TNCs in California. The use of smartphones, similar scale and geography, and focus on travel needs allows this study to inform this research report.	How does this study account for the non-owners of smartphones?	Despite the lack of ownership in elderly and very low-income populations, smartphones are still seen as one of the most comprehensive ways of obtaining information from survey participants; it can collect both passive and active data from participants with minimal effort. Citing the Pew Center, Coy mentions that 85% of adults own smartphones and low income/minority households may be "smartphone-dependent" in that they use it as their main device connected to the internet.	SCAG's portion of survey specific costs: $170,248.43 Data collection: $14,347.45 (the rest is preparing, testing, cleaning data, and analyzing the

Organization (Study Title)	Interviewees	Study Significance	Main Question(s) for Interviewees	Key Findings	Data Collection Costs
				The Southern California Transportation Survey was meant to be a smartphone only survey because they were looking mainly at TNC behavior, so essentially only people with smartphones. One possible option to include people without a smartphone is to have a call-in center or online survey. Mail sampling is expensive; there must be a balance between number of mailing and incentives to keep costs efficient and effective. Suggestion: piggyback on SCAG HHTS because participation is going to be particularly low in 2020 because of the election year	collected data as well as incentives)
TTI (Impact of Transformational Technologies on Underserved Populations)	Johanna Zmud, Planning Division Head at TTI Yanzhi Ann Xu, Research Scientist at TTI	The Impact of Transformational Technologies on Underserved Populations is a study that has not started yet but has been conceptualized and planned by TTI and TCRP. The focus of Zmud's research is to address issues of transportation equity and mobility inclusion in the development of transformative technologies (e.g., services that require smartphone ownership, internet access, and/or a bank account). This research, although not complete, has a very closely related topic to this research report. Additionally, Zmud is a travel behavior analyst with a wealth of experience with focus groups.	General advice on focus groups	*Provided a guide on how to conduct a focus group Recruitment can be helped by going through a local church; the authority and influence of a church/local religious leader can help to raise participation. Be aware of terminology being used, particularly concerning new forms of transportation, such as "micromobility," and even company names, like "Uber" or "Turo." People might not be familiar with these terms and may need further explanation. There are differences between the 65-75, 75-84, and 85+ age ranges; the latter two often have many more challenges than the first. People 65-75 are often still working and mobile.	Funds available from TCRP (Co-funded with NCHRP): $650,000

Organization (Study Title)	Interviewees	Study Significance	Main Question(s) for Interviewees	Key Findings	Data Collection Costs
SELA (Climate Smart Transportation and Communities Consortium)	Cynthia Cortez, Associate Director at SELA	SELA is partnering with researchers at USC, UC Davis, and UCLA to evaluate public transit service, first/last mile options, and promoting zero-emission vehicles (ZEVs) in southeast Los Angeles. The choice of using focus groups and location of the study make the study relevant to this research report.	General advice on focus groups	Texting is an effective and efficient way of communicating with focus group participants. Flyers make it easy for community-based organizations to share opportunities with their participants, social media sites, and post in their spaces.	
USC (LABarometer Mobility Survey)	Kyla Thomas, Associate Sociologist, USC CESR	The LABarometer Mobility Survey is a regional survey on the behaviors, experience, and attitudes of residents on transportation, particularly alternatives to automobiles. The research includes questions on missed trips and unmet needs that no other survey has, which is very relevant to the topic of this research report.	1. What are the costs/frequency to provide individuals without access to internet with internet-enabled tablets? 2. How was the wording of the questions concerning missed trips decided? Were these questions tested prior to the survey?	Very small percentage of people requested internet-enabled tablets; in the Mobility Study, 5 people requested. They keep the tablets for the duration of the time that they are on the panel. There was no rigorous testing on the livability questions, but they did do some preliminary testing. Questions will be refined as the study will be repeated every year for 10 years.	$300,000 yearly budget for 4 surveys
Lyft	Marlo Sandler, Senior Public Policy Manager at Lyft	Though there is no study, Lyft (and other transportation networking companies) must do their own market research on the demand (the economic term for "needs") for their services in various neighborhoods. Their approach to equity and working with community members informs the methodological	1. How are markets determined for scooters/bikes? 2. How can innovative mobility strategies serve low income communities? Does Lyft have a strategy to cater	Lyft does their own market research to decide which neighborhoods are most viable to be in. This interview revealed that Lyft tends to focus on population size and density, current bike infrastructure, and jurisdictions with a more "open" political landscape evidenced by climate action plans, Vision 0 plans, etc. Sandler mentioned that smaller jurisdictions, like those in the Gateway Cities region, may be overlooked due to the smaller market size, but it is possible that smaller micromobility companies may be able to "fill" the need there.	N/A

Organization (Study Title)	Interviewees	Study Significance	Main Question(s) for Interviewees	Key Findings	Data Collection Costs
		approach discussed in this research report.	specifically to low income communities?	Lyft's approach also focuses on relationships through public private partnerships. Sandler mentioned that cities who address equity in micromobility may have "superficial" guidelines for service, such as designating areas that must be serviced by a company. Sandler's critique on this approach is that the placement of service itself is not going to allow the community to use it. Another approach some cities take is to run a low-income membership/subscription pilot program, but Sandler mentioned that those often end after just 6 months. Sandler's approach to improving equity in micromobility is to build relationships with cities, elected officials, and CBOs to know how to best serve the community. Sandler's biggest piece of advice for connecting with the community is to meet them where they are; attend a farmer's market and ask the community what they need and how they need it.	

APPENDIX D

Questionnaire Results

Table D-1: Survey Preferences (Questions 1-5)

Survey ID FG(Focus Group #)-(Participant #)	Q1 Last time you participated in a survey or poll, how was it conducted?	Q2 What was the topic of the last survey you participated in?	Q3 How much time did it take to participate in your last survey? (minutes)	Q4 Is the method you circled in Question 1 your preferred way to participate in surveys and polls?	Q5 What are the reasons you don't participate in surveys?
FG1-1	Computer/online	Housing	30	Yes	No Time
FG1-2	Smartphone	Political poll for a party	5	Yes	Topic doesn't interest me
FG1-3	Computer/online	college resources	15	Yes	Topic doesn't interest me
FG1-4	In Person	vehicle purchase	90	Yes	No Time
FG1-5	Paper			Yes	Never Asked to do a survey
FG2-1	Computer/online	Financial status as a college student	30	No	Topic doesn't interest me
FG2-2	Smartphone	Movies	5	Yes	No Time
FG2-3	In Person	I was helping a friend with her survey on what motivates me to care for the trees in my community	60	Yes	Topic doesn't interest me

Table D-2: Smartphone Ownership (Questions 6-9)

Survey ID FG(Focus Group #)-(Participant #)	Q6 Do you own a smartphone?	Q7 How many people are in your household?	Q8 How many people in your household own a smartphone?	Q9 Do you know someone (in your household or outside of your household) who does not own a smartphone?
FG1-1	Yes	1	1	Yes
FG1-2	Yes	3	2	No
FG1-3	Yes	3	3	No
FG1-4	Yes	1	1	No
FG1-5	Yes	1	1	No
FG2-1	Yes	4	4	Yes
FG2-2	Yes	4	4	Yes
FG2-3	Yes	1	0	No

Table D-3: Vehicle Ownership, Substitution, and Concerns (Questions 10-14)

Survey ID FG(Focus Group #)-(Participant #)	Q10 How many vehicles does your household own?	Q11 How many drivers are in your household?	Q12 If there are more drivers than vehicles in your household, who typically gets to use the vehicle and why?	Q13 If there are more drivers than vehicles in your household, how do others get around when the vehicle is unavailable?	Q14 What are your biggest challenges and concerns while traveling?
FG1-1	1	1			Traffic Congestion
FG1-2	2	2			Agenda and Schedule
FG1-3	4	3			Parking and Traffic
FG1-4	1	1			Early morning traffic on Pacific Boulevard
FG1-5	0	0		Bus	Time and waiting for the bus
FG2-1	2	3	Parents	Walking, Bus, Bike, Uber	Safety
FG2-2	4	4			Traffic, Safety; making sure I don't get hit or hit another car or person
FG2-3	1	1			Time, Distracted Drivers

Table D-4: Travel Behavior Survey of Trips Taken in the Past Week by Trip Type (Questions 15A-E)

	Typical Mode of Transport		Biggest Concerns		Alternative Mode	
Work Trips						
8 out of 8 participants reported taking this trip type.	Personal Vehicle	75.0%	Safety	62.5%	Public Transit	50.0%
	TNC	25.0%	Time	37.5%	TNC	37.5%
	Walking	12.5%	Traffic	25.0%	Bicycle	12.5%
	Taxi	12.5%	Price	12.5%	Walk	12.5%
	Bicycle	12.5%				
School Trips						
4 out of 8 participants reported taking this trip type.	Personal Vehicle	75.0%	Traffic	50.0%	TNC	50.0%
	Walking	25.0%	Parking	25.0%	Bicycle	25.0%
	TNC	25.0%	Safety	25.0%	Public Transit	25.0%
	Public Transit	25.0%				
Shopping Trips						
8 out of 8 participants reported taking this trip type.	Personal Auto	62.5%	Time	37.5%	TNC	37.5%
	Walking	25.0%	Traffic	25.0%	Public Transit	25.0%
	TNC	37.5%	Safety	25.0%	Bicycle	12.5%
	Public Transit	12.5%	No Concerns	12.5%	Walking	12.5%
	Bicycle	12.5%	Parking	12.5%		
	Scooter	12.5%	Price	12.5%		
Medical/Health Trips						
5 out of 8 participants reported taking this trip type.	Personal Vehicle	60.0%	Traffic	60.0%	Public Transit	40.0%
	Walk	40.0%	Time	20.0%	Bicycle	20.0%
	Public Transit	20.0%	Price	20.0%	TNC	20.0%
	TNC	20.0%	Safety	20.0%		
Social/Recreational Trips						
6 out of 8 participants reported taking this trip type.	Personal Vehicle	66.7%	Traffic	50.0%	Walking	33.3%
	TNC	33.3%	Safety	50.0%	Public Transit	33.3%
	Bicycle	16.7%	Parking	16.7%	TNC	33.3%
	Walk	16.7%	Price	16.7%	Borrowed Auto	16.7%
	Scooter	16.7%	Travel Time	16.7%		
			No. of Connections	16.7%		
Escort Trips						
4 out of 8 participants reported taking this trip type.	Personal Vehicle	100.0%	Traffic	50.0%	TNC	50.0%
			Safety	50.0%	Public Transit	25.0%
			Time	25.0%	Would not make trip	25.0%

APPENDIX E

Revised Initial Survey

Characterizing Travel Needs - Initial Survey

University of California, Los Angeles

INITIAL SURVEY

Characterizing Travel Needs

Please answer the following questions to the best of your ability.

Part A: Survey Participation

1. If you have participated in a survey or poll, how was it conducted? (Multiple answers OK)
    a. Paper through the mail
    b. Telephone
    c. In-person (on paper)
    d. In-person (with a device, e.g., tablet or phone)
    e. Computer/online
    f. Smartphone
    g. Other: _____
    h. I've never participated in a survey or poll

2. How much time did it take to participate in your last survey?

3. What are the reasons you don't participate in surveys? (Multiple answers OK)
    a. Too much effort
    b. No time
    c. Questions are too complicated
    d. Questions are too sensitive
    e. Topic doesn't interest me
    f. Purpose doesn't seem legitimate
    g. Other: _____

4. Do you own a smartphone?
    a. Yes
    b. No

5. Do you know someone who does **not** own a smartphone?
    a. Yes
    b. No

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Characterizing Travel Needs - Initial Survey

Part B: Travel Needs

6. How many vehicles does your household own?

7. How many drivers are in your household?

8. If there are more drivers than vehicles in your household, who typically gets to use the vehicle and why?

9. If there are more drivers than vehicles in your household, how do others get around when the vehicle is unavailable?

10. What are your biggest challenges and concerns while traveling?

Characterizing Travel Needs - Initial Survey

Part C: Travel Behavior

11. Circle all of the following types of activities you traveled to **in the past week**.
    a. Work (for pay or volunteer)
    b. School (for myself)
    c. Shopping
    d. Medical/Health
    e. Recreational
    f. Taking someone else somewhere

12. What is your typical mode of transportation for each type of activity? (Only answer for trip types you circled in Question 13)

    a. Work (for pay or volunteer): _____

    b. School (for myself): _____

    c. Shopping: _____

    d. Medical/Health: _____

    e. Recreational: _____

    f. Taking someone else somewhere: _____

    > **Suggested Responses for Questions 12 and 13:**
    > Personal auto/truck driver
    > Personal auto/truck passenger
    > Borrowed auto/truck from someone
    > Bus
    > Train
    > Taxi
    > Uber/Lyft
    > Walk
    > Bike
    > Scooter
    > Would not make trip

13. If your typical mode of transportation were not available, how would you travel for each type of activity? (Only answer for trip types you circled in Question 13)

    a. Work (for pay or volunteer): _____

    b. School (for myself): _____

    c. Shopping: _____

    d. Medical/Health: _____

    e. Recreational: _____

    f. Taking someone else somewhere: _____

Characterizing Travel Needs - Initial Survey

14. What are your biggest concerns about travel for each type of activity? (Answer for all types of activities you attend regularly)

    a. Work (for pay or volunteer): _____

    b. School (for myself): _____

    c. Shopping: _____

    d. Medical/Health: _____

    e. Recreational: _____

    f. Taking someone else somewhere: _____

> **Suggested Responses for Question 14:**
> Total travel time
> Wait time
> Trip price
> Number of connections
> Safety
> Something else…

15. For each of the following types of activities, circle how often, if ever, you missed attending or doing the activity. If applicable, please indicate the primary reason for missing the activity. (Answer for all types of activities you attend regularly)

> **Suggested Responses for Question 15:**
> Too much traffic
> Bus was late or too slow
> Travel was too expensive
> Travel was physically too difficult
> Travel was at an inconvenient time
> Ideal travel mode (e.g., car, bus, bike) was not available

    a. Work (for pay or volunteer)

        i. I've never missed this activity due to transportation-related reasons.
        ii. Once or twice in the last year
        iii. Once or twice a month
        iv. Once or twice a week
        v. I can never travel to this type of activity.

        Primary reason for missing work trips: _____

    b. School (for myself)

        i. I've never missed this activity due to transportation-related reasons.
        ii. Once or twice in the last year
        iii. Once or twice a month
        iv. Once or twice a week
        v. I can never travel to this type of activity.

        Primary reason for missing school trips: _____

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  c. Shopping

      i.   I've never missed this activity due to transportation-related reasons.

      ii. Once or twice in the last year

      iii. Once or twice a month

      iv. Once or twice a week

      v.   I can never travel to this type of activity.

Primary reason for missing shopping trips: _____

  d. Medical/Health

      i.   I've never missed this activity due to transportation-related reasons.

      ii. Once or twice in the last year

      iii. Once or twice a month

      iv. Once or twice a week

      v.   I can never travel to this type of activity.

Primary reason for missing medical/health trips: _____

  e. Recreational

      i.   I've never missed this activity due to transportation-related reasons.

      ii. Once or twice in the last year

      iii. Once or twice a month

      iv. Once or twice a week

      v.   I can never travel to this type of activity.

Primary reason for missing recreational trips: _____

  f. Taking someone else somewhere

      i.   I've never missed this activity due to transportation-related reasons.

      ii. Once or twice in the last year

      iii. Once or twice a month

      iv. Once or twice a week

      v.   I can never travel to this type of activity.

Primary reason for missing taking someone else on a trip: _____