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Negotiating Transportation Insecurity: Local Responses and Coping Strategies in San José, CA

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Mineta Transportation Institute

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16. Abstract

People rely on transportation every day to access food, work, and social activities. Transportation insecurity—the lack of regular access to adequate transportation—can therefore cause significant disruptions to livelihoods. Understanding how people experience transportation insecurity in metropolitan areas may contribute to building better transportation systems and help formulate ways to alleviate persistent and underlying transportation issues. In this study, the researchers interviewed San José residents who experience transportation insecurity to better understand their experiences and identify the major ways that they cope with lack of adequate transportation. The researchers then used inductive techniques for thematic text analysis to identify patterns major themes in people's experiences and coping strategies. Findings suggest that people experience transportation insecurity as excess time consumption through congested traffic, convoluted travel schedules, and service complications, which causes worry, anxiety, and missed opportunities due to wasting or losing personal time. Overall, people's experiences and reactions allude to what could be improved in San José's transportation infrastructure.

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Executive Summary

This study examines downtown San José residents' experiences of transportation insecurity and the strategies they use to cope with a lack of adequate transportation. The goal of the investigation is to gain insight into how people experience and respond to transportation insecurity, and to contribute anthropological knowledge on transportation insecurity with the aim of supporting improvements to transportation systems.

The research shows that many residents experience transportation insecurity as excess time consumption, a trend which has persisted for some during the COVID-19 pandemic. Instances of transportation insecurity tend to occur in one of three forms: congested traffic, convoluted travel schedules, and service complications. In addition, each instance tends to cause worry and distress, and limits what people can do. Residents respond to the issue by changing transit modes or altering their trip. During the COVID-19 pandemic, experiences of transportation insecurity related to automobiles decreased while experiences of transportation insecurity related to public transit increased.

Transportation insecurity limits people's transportation options. Among the study participants, transportation insecurity occurs repeatedly. Participants were able to cope with lacking adequate transportation, but their strategies exact a social and/or monetary cost, such as missing out on an event or spending more money transportation than preferred, that accumulates over time. Solutions to these issues may need to focus on the social realm of transportation and promote usage of infrastructure that already exists. For future research, the researchers recommend a larger sample size and a focus on a single mode of transportation to streamline the research and facilitate a better comparison between experiences.

1. Introduction

Transportation connects people and grants access to other resources and opportunities such as food, work, and leisure. This understanding situates transportation as a key resource in many people's livelihoods, whether or not they are conscious of its role. Because of the implicit importance of transportation, anthropological discussion of people's interactions with transportation can yield benefits for the future development and improvement of urban quality of life. For example, when transportation options are inadequate, mobility options can be insufficient or too costly, resulting in a phenomenon known as transportation insecurity: the lack of adequate transportation necessary for a healthy and productive life. Because chronic transportation insecurity may cause significant adverse effects to people's lives, understanding when and how people experience transportation insecurity, and how they deal with it can, can provide important insights that can aid in improving transit systems and urban infrastructure. This paper will examine San José residents' experiences with transportation insecurity and document the options they use to deal with inadequate transportation issues.

1.1 Problem Statement

In many cases around the world, there is inequity in the accessibility and availability of transportation infrastructure due to urban planning that favors certain groups and places over others (Sadana 2018). This imbalance can result in transportation insecurity or transportation deserts—areas lacking transportation supply (Jiao and Dillivan 2013)—making it difficult to conduct essential daily activities for many people. These limitations have serious effects on people's social, material, and cultural connections, as inadequate transportation limits access to jobs, schools, socialization, and other opportunities (Firat 2016; Gaither 2016; Jobson 2018; Sheller 2015; Yarrington 2015). To understand the breadth of this effect, this study focuses on three questions: (1) How do people experience transit insecurity?; (2) How do people cope with transportation insecurity?; and (3) What are the felt individual-level impacts of transportation insecurity?

1.2 Significance

By contributing to knowledge about San José residents' transportation experiences and coping strategies in the face of transportation insecurity, this research contributes to institutional and anthropological knowledge on transportation insecurity as a resource insecurity. Additionally, understanding how transportation insecurity affects people's daily lives may help inform ways to create a more reliable and resilient transportation system. People's stories about their transportation use may also reveal long-standing issues beyond transportation itself.

2. Methodology

The concept of transportation insecurity is fairly new in the academic literature. This study's analysis of transportation insecurity, therefore, is situated on insights from established fields of inquiry that contribute to transit insecurity studies: mobility, the politics of transportation infrastructure, and resource insecurity.

2.1 Relevant Literature

Mobility

Mobility refers to people's ability to move between and within different places, which has profound impacts on people's social, physical, cultural, and economic wellbeing. Multiple studies show that people who lack mobility are more likely to experience weakened social bonds, lack of access to healthcare and job opportunities, or less freedom for other activities (Gaither 2016; Roberts 2008; Sheller 2015; Yarrington 2015). Comprehensive transportation systems—such as buses, lightrails, and trains—facilitate mobility and enables people to connect to resources and social engagement (Cornelius et al. 2017). For example, public buses are a major social network for elderly people because the bus takes them to places while being a meeting point and a symbol of independence (Roberts 2008). Adequate transportation, however, may be difficult to provide to everyone because people have different demands for transportation. When comprehensive transportation options are limited, people may be forced to rely on individualistic modes of transportation (such as cars) that contribute to problems like traffic congestion (Jiao and Bischak 2019; Gould-Werth et al. 2018). Transportation insecurity often limits the mobility of vulnerable populations such as disabled and elderly people, regular medical patients, people with low incomes, and residents of peripheral neighborhoods (Cornelius et al. 2017; Firat 2016; Jobson 2018; Roberts 2008). At that point, where people cannot access adequate transportation, they are often forced to turn to alternative sources of mobility such as relying on friends or family (Gaither et al. 2016) or rideshare options, which can be less reliable and more expensive to use.

The Politics of Transportation Infrastructure

Infrastructure refers to fundamental systems or networks that support the distribution or accessibility of resources in an area. Such systems or networks are heavily connected to politics (Larkin 2013, 328). In many cases, transportation infrastructure is at the center of transportation insecurity, especially for those who rely on public transportation. Politics has a major role in the development and construction of transportation infrastructure. Junfeng Jiao and Maxwell Dillivan (2013) found, for example, that transportation deserts tend to be concentrated close to downtown areas, which they argue is caused by suburban political power influencing policies that increase transit access for suburbs at the expense of downtown neighborhoods. Political processes also determine the amount of support and funds allocated to transportation infrastructure, including

diverting resources away from well-patronized public transit systems (Garrett and Taylor 1999). In Atlanta, Gaither (2016) found that political perspectives, affiliations, and institutions largely drive transportation policies that reduce bus connectivity and increase independent car use. Additionally, transportation infrastructure decisions are often made to recapture lost markets or support affluent communities (Garrett and Taylor 1999, 23; Sadana 2018). At the same time, transportation service decisions may be made according to preconceived notions of traffic that create strict time schedules or spatial processes that reproduce racialized patterns of uneven transportation access (Fleming 2016; Sheller 2015). As a result, low-income communities and communities of color are more often sidelined in public transportation planning and face disproportionate barriers to accessing adequate transportation (Sheller 2015; Yarrington 2015).

Transportation Insecurity as Resource Insecurity

Within anthropology, there is limited scholarship on transportation insecurity. But Amber Wutich and Alexandra Brewis (2014) outline a framework for studying resource insecurity that can be used to understand how people may experience and respond to inadequate transportation. Their framework advocates for a tripartite reckoning with resource insecurity as: (1) structural factors that cause certain populations to be more vulnerable than others to resource insecurities; (2) coping mechanisms at the household level that people enact to acquire the resources they need when available resources are not adequate; and (3) individual level impacts or effects of resource insecurity on biological and mental health and wellbeing. This framework – which explains the structural causes of individually experienced effects – demonstrates why resource insecurity is difficult for individuals to navigate. In addition, people may experience social isolation, worry, and stress when attempting to cope with resource insecurity (Gould-Werth et al. 2018). Thus, the broader systems of resource provision requires attention from researchers addressing the causes and effects of transportation insecurity. Ethnographic literature reveals ways that disadvantaged and marginalized communities may construct informal infrastructure to cope with a lack of public transportation and take on the role of providing mobility to their community, such as becoming parking attendants, microbus drivers, or taxi drivers (Bedi 2016; Chelcea 2015; Uzzell 1987; Yarrington 2015; Zhang 2016). The fact that people adopt ways to receive and maintain mobility demonstrates their resistance to the political processes that marginalize them, as well as their agency to respond to resource insecurity. Nonetheless, individualized responses and coping mechanisms have limited capacity to change or correct structural inequities in larger resource provisioning systems.

2.2 Methods

Downtown San José was chosen as the research site for a few reasons. The city is one of the most populated cities in the US, according to the United States Census Bureau (2021). San José offers a plethora of ground transportation options, such as Caltrain, BART, and a bus and light rail system. However, many people rely primarily on car transportation to move around San José as shown by the Commute Duration Mapping website for Santa Clara County (Litman et al. 2021).

To recruit participants, the researchers used a short, seven-question online screening survey that asked San José residents about their transportation experiences. The survey was distributed widely via online listservs maintained by CommUniverCity, a community engagement organization at San José State University. The seven questions asked people about transportation affordability, recent transportation limitations, satisfaction with current transportation, the occurrence of change due to the COVID-19 pandemic, and their reasoning for using transportation. Eighty-five people responded to the screening survey, but thirteen people were chosen for in-depth ethnographic interviews because they responded that they "can always afford transportation, but not their preferred mode," "sometimes cannot afford transportation," or "often cannot afford transportation." These responses indicated that they potentially experienced transportation insecurity in some form. In return for the participants' time and information, each participant was compensated with a $50 VISA gift card, funded by the Mineta Transportation Institute.

Due to the COVID-19 pandemic, the researchers conducted interviews remotely via Zoom and followed some best practices for Zoom interviewing, such as providing a direct link and going over the informed consent letter (Gray et al. 2020). Before asking any interview questions, the researchers asked for and received each participant's permission to record the interview. The interview protocol focused on the general location of these residents, their daily transportation experiences, their feelings about transportation, and their responses to their current transportation system. After all of the interviews were complete, each interview was transcribed using Otter.ai services, and the researchers manually corrected any transcription errors.

To facilitate analysis, the researchers imported the data to Verbi Software MAXQDA and structurally coded each interview by speaker turn to distinguish each speaker's statements and by interview questions and to categorize data and analyze related information sets. For the analysis, the researchers used Ryan and Bernard's (2003) techniques for theme identification to inductively identify and code themes about residents' experiences and attitudes toward their current transportation situation, the effects of the COVID-19 pandemic on their transportation use, and coping strategies used to respond to transportation issues. This analytical strategy allowed us to identify the factors that contribute to transportation insecurity—including economic, social, mechanical, or political—and how residents respond to those factors.

3. Discussion

Based on the findings, the research suggests that transportation insecurity for downtown San José residents manifest as excess time consumption in the forms of congested traffic, convoluted travel schedules, and service complications. In addition, people react to these issues by not taking their trip or changing the trip route, or temporarily changing transportation modes for that particular trip.

The results are broken down into three sections, each one correlating to a research question. The first section discusses the situations in which people experience transportation insecurity. The second section reports on the coping methods people use to deal with transportation insecurity. Finally, the third section talks about the social and emotional effects of transportation insecurity on a person.

3.1 Results

How Do People Experience Transportation Insecurity?

The participants explained that there was always at least one mode of transportation that they could use to reach their desired destination(s). However, the availability of transportation infrastructure did not mean that the transportation was adequate for their needs and daily lives. Participants overwhelmingly described transportation inadequacy in terms of excess time consumption. Due to conditions related to the transportation mode or infrastructure, their trips often consumed more of a day's time than necessary when they were already facing time constraints. Consequently, many residents felt that their transit situation was simply the "status quo"—that the transportation insecurity that they were met with could not be helped, and that their mode of transportation was their only option or that the other transportation options were veritably worse. This theme of transportation insecurity as excess time consumption manifested in three main ways across the participants: (1) convoluted scheduling/planning, (2) congested traffic, and (3) service complications. Downtown San José residents' experiences of transportation insecurity were generally less about their access to transportation and more about their transportation requiring additional amounts of time in their already time-limited day.

This could be seen in how residents had to schedule and plan their day around their transportation. Sara, a 51-year-old Latina pre-school teacher living close to San José State University, exemplified how, despite planning the route and scheduling the trip, her trip still took up a large amount of time to follow through. According to Sara, starting at 7:00 AM, her morning commute schedule had her drive for about 75 minutes to travel 26 miles to drop off her child at school and get to work by 8:30 AM. Despite the trip duration, this driving schedule was her best option, because if she wanted to avoid the morning car commute, she would have to take multiple buses and leave her home by 5:30 AM. Overall, driving was seemingly Sara's best option since she found the

driving schedule to be much better than trying to find a way to save extra commute time or avoid the car commute by taking the bus.

While planning and scheduling issues were fairly specific to each person, congested traffic was a widespread condition as over half of the participants were primarily car drivers and mentioned traffic congestion as a major time-consuming issue at some point in their responses. The impacts of traffic congestion can be seen in Eileen's recollection of her commute in and out of Palo Alto. Eileen, a 41-year-old Brazilian woman living south of San José State University, explains, "it was a nightmare early in the morning [and] coming back." This was due to regular traffic jams that would leave her stuck on the road and, essentially, parked for hours. Eileen stated that she would "rather be in a coffee shop and doing some work" than dealing with congested traffic to get home. This sentiment was shared by several other drivers; they did not want to waste their time in traffic. While this was not explicitly stated by Eileen, others said traffic congestion caused worry as the situation made commuting longer and took time away from other important activities and tasks. However, the pandemic reduced traffic since fewer people needed to leave their homes, so many people felt that driving around San José had gotten better.

While congested traffic is the major time drain for residents who drive cars, residents who rely on public transportation deal with service complications. Public transit service complications—such as late buses, accidents, or full-capacity arrivals due to street congestion, peak service hours, or a lack of drivers—hinder passengers since public transportation riders have to adhere to the service schedule. According to Don, a 29-year-old Hispanic man living down the street from San José State University, bus service complications were relatively common occurrences. For example, there were some days when the bus came late and other days when the bus came too early, so Don was late for whatever he had planned and was "stuck at a bus stop [for] an extra 15 minutes, 20 minutes." On rarer occasions, the bus arrived on time but was at full capacity, so Don had to wait for the next bus. These service complications often made Don late for work, which caused him to worry about his employment status several times. Following COVID-19, service complications were exacerbated for Don since public transit service times and carrying capacities were reduced for health reasons. Overall, Don had experienced many service complications with the bus, which wasted his time and had made him late to work on several occasions.

How Do People Cope with Transportation Insecurity?

As alluded to by the ways people experience time-consuming transportation insecurity, the way people cope with transportation insecurity in downtown San José is instanced and impactful. However, each potential coping method had detrimental side effects based on a person's situation. While not everyone who used a coping method was affected by side effects, the negative effects were still there for many others. Additionally, the effects of the COVID-19 pandemic have changed respondents' coping methods in ways that may cause even greater impacts. Coping strategies used to respond to time-consuming transportation can be generalized into two main categories: changing the trip or using a different transportation mode. Respondents' use of each

main coping method is infrequent or instanced because the situation to use a coping method was not often or has only occur once or twice.

Mike, a 26-year-old Asian man living in East San José, highlighted how one could cope with service complications through using a different mode of transportation. For example, in Mike's trips to San Francisco from San José, he used three public transit modes. One time, the bus broke down and made him late for the train. To cope with this issue, Mike temporarily changed his transportation methods and used Uber to take him to San Francisco. Mike explained that he used Uber because he felt that all his available transportation options were used up when the bus accident happened. If Mike continued using his regular transportation, he would have been late because he would have to wait for an extra bus and train. In the end, Mike was able to reach his destination on time but had to spend more money than he would have liked. This coping method could be detrimental over time because Mike had a certain financial goal he wanted to achieve, so if he had to keep using costly transportation, then the goal would be harder to achieve. Overall, Mike's coping methods required more money to pull off the planned trip without affecting his activities for that day.

Sometimes the coping methods were simple but had a major impact. Steve, a 24-year-old Caucasian man living in downtown San José, exemplified how changing a trip to cope with convoluted scheduling had an impact on his life. In Steve's case, he had to go somewhere relatively far away from San José for a job interview. But Steve was at an impasse because he did not own a car; ridesharing was too expensive to use for the full trip (i.e., to go to the destination directly), and he was not comfortable using public transportation due to safety concerns and a lack of experience. To make the trip, Steve would have to deal with a convoluted travel schedule involving different modes of transportation. Instead, Steve decided not to go on that trip because the trip would take too long, and he chose to try again another day. While Steve did save some personal time, he traded an economic opportunity that could have been worth the trouble. The coping method he chose caused him to miss out on an important event and forced him to plan better for future opportunities.

Sometimes, certain conditions must be considered before executing a coping method such as changing one's mode of transportation. While changing or canceling the trip would be a form of coping with congested traffic, these methods would be difficult to use for work-related trips. Aaron, a 58-year-old Asian-American man living in downtown San José, best exemplified how dealing with congested traffic by changing one's mode of transportation can be impactful to one's life. Among the various times Aaron had to drive home from work, he found that San José traffic after 2:30 PM was horrible. After dealing with traffic for a while, Aaron switched to primarily using Caltrain since he had the resources to do so. As a result, Aaron did not need to worry about his time being wasted in traffic and was allowed to do other things on Caltrain like getting some work done or relaxing with friends. However, there were several drawbacks with this mode, which ranged from trespasser incidents to crowding in maximum-capacity train cars. In Aaron's case, the positives of this coping method outweighed the negatives. He exemplified someone who was able

to avoid transportation insecurity because he had the means to afford a permanent change in his transportation habits.

However, many people cannot afford to constantly use Caltrain, so they would have to drive and sit in traffic. But coping with congested traffic has changed dramatically since the COVID-19 pandemic. There was less of a need or expectation for people to leave their houses since many people could work from home. Despite this situation, many people still needed to leave the house occasionally, such as Alice, a Vietnamese woman in her 30s living in San José's Japantown, and Ernest, a 27-year-old Asian-American man living in East San José. Both Alice and Ernest found that driving was much easier because there was less traffic and congestion. As a result, the pandemic had the effect of reducing the need to cope with congested traffic while also exacerbating service complications on public transit, similar to what Don experienced.

What Are the Individual Effects of Transportation Insecurity?

Transportation insecurity negatively affected the trips people take, important parts of their lives, and their emotions and perceptions of transportation. In addition to causing people to miss an economic or social opportunity, transportation insecurity caused feelings of worry about transportation or employment security, as well as feelings of distress over not being able to see people. Additionally, transportation insecurity might have made people feel ashamed about their transportation habits, and they may avoid using certain modes of transportation because of social perception. Don mentioned, for example, that he felt self-afflicted embarrassed as a child when he saw that his friends got picked up by their parents in cars while he had to take the bus home by comparison. The COVID-19 pandemic also increased these feelings of worry and distress, especially for public transportation users since they had to be more cautious of their environment. For researchers and policymakers, understanding the individual-level effects of transportation insecurity could help improve the transportation system and create options for people.

Public transportation users seemed to be heavily impacted by the COVID-19 pandemic. For example, Mira, a 40-year-old housewife in East San José, suffered emotionally and socially due to fears about COVID-19 and service complications that reduced her social activities. For context, Mira has muscular dystrophy and used a power chair and the bus to get around regularly before the pandemic. While Mira has family help her, the bus was Mira's symbol of normality and independence; she often enjoyed using the bus to get around San José and interact with people around her. Following the COVID-19 pandemic, Mira's transportation insecurity worsened since she could no longer use the bus and spend time in a social environment. This situation made Mira feel depressed, sick, and anxious from being inside all of the time. Mira worried about the state of the pandemic and the possibility of getting the disease from other people on the bus. Overall, the COVID-19 pandemic has prompted Mira's transportation insecurity and personal insecurities because she could not go to the places she used to. She reported feeling concerned for her health.

Time-consuming transportation insecurity can contribute to a person's worries beyond their own needs. Millia, a 43-year-old Mexican-American woman living in South San José, described how congested traffic contributed to a different set of worries. Millia felt that using her car to get to work was her only option because using her bike did not feel safe and the bus was too limited in destinations and took too long. But Millia's choice to deal with traffic by car caused her to worry about the environmental impacts, such as her carbon emissions from driving during traffic. Millia wanted to reduce her car use, but the alternatives were not worth taking, as mentioned previously. However, the pandemic seemed to alleviate some worries since Millia could work from home. This event reduced Mira's need to drive by at least 75%, and she also found driving to be more enjoyable because of the reduction in traffic. But at the same time, the pandemic reduced her already low public transportation usage out of fear of the pandemic. In general, the compounded effects of congested traffic and pollution produced from cars had caused Millia to worry about environmental impact, which partially subsided due to the pandemic.

As mentioned previously, excess time consumption was a transportation insecurity issue that caused worry due to the reliability of transportation making people late or miss their trip. George, a 26-year-old White man living south of San José State University, exemplified the worry felt when dealing with a convoluted travel schedule due to the reliability of one's transportation. In George's case, whenever he wanted to take a non-work trip, he asked his friends for a ride since he did not drive or use public transportation. As a result, George had to worry about how he was going to get somewhere, and he would worry that someone would cancel. But, George clarified, that was not to blame his friends since his friends had their own lives and things happened. Because of these conditions, George mentioned that he was disappointed that there were not many alternatives worth using. With that said, the pandemic decreased his worries about transportation since there were fewer expectations to go out. In the end, George's transportation choices had made him worry about his trips since he often relied on other people's schedules, but those worries have diminished as the pandemic persists.

3.2 Analysis

From the results, four main themes emerge across the interviews: (1) Transportation insecurity is experienced as excess time consumption; (2) Coping methods were situational and temporary; (3) Transportation insecurity causes worry to the downtown residents; and (4) The COVID-19 pandemic affected people's transportation to various degrees.

These results suggest that metropolitan transportation insecurity is a condition of precarity that people are accustomed to. However, compounding factors make inadequate transportation tiresome to deal with. For the study participants, transportation insecurity is a minor-to-moderate issue that annoys some people (at best) and temporarily hinders others (at worst). While participants cope with these situations (usually at a cost), changes in transportation plans have ripple effects that can cause anything from canceled plans with friends and family to lost job opportunities. The extent to which participants manage this excess time consumption is largely

determined by the other resources that are available to them. During the COVID-19 pandemic, transportation has been pushed to two extremes: some residents say there is no issue with transportation; others say their main transportation mode is no longer viable. Overall, these results show that downtown San José residents experience a lack of adequate transportation in the form of time-consuming transportation.

These results imply that, at least in a US metropolitan area, people experience transportation insecurity because their available transportation takes up excess time. This is important because people's days are already packed with other responsibilities and activities. Time loss is an infringement on their personal time, which can lower quality of life (Gould-Werth et al. 2018). Being stuck in traffic means more time spent on the road and less time doing the things that people want and need to do. This situation causes exhaustion and frustration over time.

In addition, the findings from the research also revealed that many people's transportation is unimodal, meaning they overwhelmingly rely on only one mode of transportation. Unimodal transportation is not a personal failure; rather, transportation politics limits what modes people can or want to use. For example, a lack of resources for public transportations may cause people to perceive the service as outdated or unsafe (Gaither et al. 2016). The effects of these transportation policy choices can be seen in the ways people choose to use cars or cope with transportation insecurity by not taking the trip, even though many people wish to use other modes of transportation. Multimodal transportation could help alleviate some concerns expressed by participants -- for example, having the option to take a train to avoid highway congestion. This situation raises further questions surrounding the factors that influence what modes people choose to use to transport themselves. In addition, these findings also allude to potential suggestions for changes to transportation, such as the development of more walkable and bikeable areas or actions to promote the use of multi-modal transportation (Jiao and Bischak, 2019; Gaither et al. 2016).

3.3 Impacts

Analyzing people's experiences with transportation and the strategies they use to deal with transportation insecurity highlights weak areas in a city's infrastructure and reveals what people would like from the existing infrastructure. This research demonstrates that the way people interact with spaces and transportation has changed following COVID-19. Changes must be made for these systems to sustain themselves into the future. This involves solving issues on time consumption, safety, affordability, convenience, and accessibility, such as by adding more secure handicap arrangement or emergency safety or security features on public transit. But these issues cannot be completely solved without adjacent changes. Considering the interconnectedness of a city's infrastructure network, any change to one system can change another system. This means that improving transportation can and should coincide with changes to improve the rest of the city's landscape. If the city's spaces and amenities are more accessible, affordable, convenient, spacious, and safe for everyone, more people might be more content with where they live and use the available public transportation options. However, there are several caveats, since factors beyond

the control of a city, transportation institution, or individual can inhibit change. Nevertheless, it is possible to improve how people get around and how they interact with transportation within the city space.

4. Summary & Conclusions

In summary, we interviewed thirteen San José residents about their experiences with transportation in and around the downtown area. Based on their responses, we determined that participants experienced transportation insecurity primarily as excess time consumption. People often deal with this issue by begrudgingly waiting and taking their time in transit. However, there were moments when people's transportation modes took more time than was acceptable to conduct their trip. In those cases, the participants decided to stay home for the day or temporarily used different transportation. In light of the coping strategies reported, the participants' methods did raise questions on why they do not often use alternative modes to deal with regular transportation insecurity. Many people responded that the alternative methods of transportation were either unavailable or problematic. Yet, regardless of mode, people often felt worried and tired due to the time consumed during transit. While the participants' mobility was not often compromised altogether, many of their transportation situations were precarious as their responses suggest that unexpected circumstances would be detrimental and cause them to cancel a trip, even if that trip were important and consequential (e.g., a job interview). Unsurprisingly, the COVID-19 pandemic shifted everybody's transportation and exacerbated transportation insecurity. While several residents were fortunate to work from home or already owned a car, public transportation users experienced more transportation insecurity because of the reduction of service and stricter schedules. The participants also experienced feelings of hesitation or fear due to COVID-19. Some people continued to use public transit and adapted, while others started to use private vehicles more often.

This research also shows how the individually felt physical, social, and economic effects of transportation insecurity can perpetuate the structural causes of transportation insecurity. For example, in some instances people preferred to use their car and perpetuate heavily congested traffic because they believed that public transportation would take up even more time for their trip. In other instances, the social perception of public transportation as unsafe caused them to rely more heavily on car transit. For example, several people explained that they would rather miss an economic or social opportunity than use an alternative (public) transportation mode.

There are several limitations with this research study. First, the study had a small sample size; while the sample size meets the minimum sample requirement to detect themes in qualitative data (Guest, Bunce, and Johnson 2006), these experience are not representative of a larger population. There was a limit with the sampling range as the researchers focused on the San José downtown area. Additionally, there are limitations in the interviews themselves as the researchers only speak one language whereas there are many different languages spoken in San José. Lastly, the COVID-19 pandemic limited the information that could be collected by forcing all data collection to occur via online interviews.

Following these limitations, the researchers have several recommendations for future research to consider. These considerations are to have a greater sample size, gather more background information on the area of study, and focus on a single mode of transportation. In addition, more comparison between interviews will help in understandings people's experience with transportation insecurity. Each recommendation has a purpose in helping the future research be more in-depth and streamlined.

Overall, this study shows that transportation is an important resource for people's physical, economic, and social wellbeing. At the same time, transportation insecurity is a constant presence that people just deal with in their lives. However, the San José residents interviewed do not live in a transportation desert as they can reach their destinations regularly. Following the COVID-19 pandemic, everyone's transportation experiences changed—but this change highlights many important factors that must be considered when planning for the future of transportation, such as safety, cleanliness, and convenience. In the end, the study contributes to anthropological knowledge on people's experiences and feelings about transportation and transportation insecurity within a metropolitan area; it contributes to institutional knowledge of the factors that contribute to transportation insecurity; and it suggests potential pathways—such as updating public transit to be safer and more accessible, promoting multi-modal transportation to reduce traffic congestion, and developing more walkable or bikeable areas—for improved and more inclusive transportation infrastructure.

Bibliography

Bedi, Tarini. 2016. "Taxi Drivers, Infrastructures, and Urban Change in Globalizing Mumbai." *City & Society* 28 (3): 387-410. doi:10.1111/ciso.12098.

Chelcea, Liviu, and Ioana Iancu. 2015. "An Anthropology of Parking: Infrastructures of Automobility, Work, and Circulation." *Anthropology of Work Review* 36 (2): 62-73. doi:10.1111/awr.12068.

Cornelius, Talea, Maranda Jones, Cynthia Merly, Brandi Welles, Moira O. Kalichman, and Seth C. Kalichman. 2016. "Impact of Food, Housing, and Transportation Insecurity on Art Adherence: A Hierarchical Resources Approach." *AIDS Care* 29 (4): 449-57. doi:10.1080/09540121.2016.1258451.

Firat, Bilge. 2016. "'The most Eastern of the West, the most Western of the East': Energy-Transport Infrastructures and Regional Politics of the Periphery in Turkey." *Economic Anthropology* 3 (1): 81-93. doi:10.1002/sea2.12046.

Fleming, Mark D. 2016. "Mass Transit Workers and Neoliberal Time Discipline in San Francisco." *American Anthropologist* 118 (4): 784-795. doi:10.1111/aman.12683.

Gaither, Cassandra Johnson, David Himmelfarb, Sarah Hitchner, John Schelhas, J. Marshall Shepherd, and Binita K.C. 2016. ""Where the Sidewalk Ends": Sustainable Mobility in Atlanta's Cascade Community." *City & Society* 28 (2): 174-197. doi:10.1111/ciso.12077.

Garrett, Mark, and Taylor, Brian. 2012. "Reconsidering Social Equity in Public Transit." *Berkeley Planning Journal* 13 (1): 6-27. doi:10.5070/BP313113028.

Gould-Werth, Alix, Jamie Griffin, and Alexandra K. Murphy. 2018. "Developing a New Measure of Transportation Insecurity: An Exploratory Factor Analysis." *Survey Practice* 11 (2): 1-28. doi:10.29115/SP-2018-0024.

Gray, Lisa. M., Gina Wong-Wylie, Gwen R. Rempel, and Karen Cook. 2020. "Expanding Qualitative Research Interviewing Strategies: Zoom Video Communications." *The Qualitative Report*, 25 (5): 1292-1301.

Guest, Greg, Arwen Bunce, and Laura Johnson. 2006. "How Many Interviews Are Enough?: An Experiment with Data Saturation and Variability." *Field Methods* 18 (1): 59–82.

Jiao, Junfeng, and Chris Bischak. 2019. *Understanding Transportation Related Infrastructure Access in 52 Major US Cities.* Report no. CM2-18. Austin, TX: Cooperative Mobility for Competitive Megaregions, https://rosap.ntl.bts.gov/view/dot/41815.

Jiao, Junfeng, and Maxwell Dillivan. 2013. "Transit Deserts: The Gap between Demand and Supply." *Journal of Public Transportation* 16 (3): 23-39.

Jobson, Ryan Cecil. 2018. "Road Work: Highways and Hegemony in Trinidad and Tobago." *The Journal of Latin American and Caribbean Anthropology* 23 (3): 457-477. doi:10.1111/jlca.12345.

Litman, Todd, Hilary Nixon, and Cameron Simons. 2021. "Commute Duration Mapping Dashboard." Accessed November 6, 2021. https://sjsu-mupers.maps.arcgis.com/apps/dashboards/392edde4f2154ca78226fb81d97e40e3.

Roberts, Simon. 2008. "Putting Mobility on the Map: Researching Journeys and the Research Journey." *Ethnographic Praxis in Industry Conference Proceedings* 2008 (1): 202-217. doi:10.1111/j.1559-8918.2008.tb00106.x.

Ryan, Gery W., and H. Russel Bernard. 2003. "Techniques to Identify Themes." *Field Methods*, 15 (1): 85-109.

Sadana, Rashmi. 2018. "'We are Visioning it': Aspirational Planning and the Material Landscapes of Delhi's Metro." *City & Society* 30 (2): 186-209. doi:10.1111/ciso.12163.

Sheller, Mimi. 2015. "Racialized Mobility Transitions in Philadelphia: Connecting Urban Sustainability and Transport Justice." *City & Society* 27 (1): 70-91. doi:10.1111/ciso.12049.

Uzzell, Douglas. 1987. "A Homegrown Mass Transit System in Lima, Peru: A Case of Generative Planning." *City & Society* 1 (1): 6-34. doi:10.1525/city.1987.1.1.6.

United States Census Bureau. 2021. *2020 Census State Redistricting Data (Public Law 94-171) Summary File: 2020 Census of Population and Housing*. Report no. SFSRD/20-01. https://www.census.gov/programs-surveys/decennial-census/about/rdo/summary-files.html#P1.

Wutich, Amber, and Alexandra Brewis. 2014. "Food, Water, and Scarcity: Toward a Broader Anthropology of Resource Insecurity." *Current Anthropology* 55 (4): 444-468.

Yarrington, Landon. 2015. "The Paved and the Unpaved: Toward a Political Economy of Infrastructure, Mobility, and Urbanization in Haiti." *Economic Anthropology* 2 (1): 185-204. doi:10.1002/sea2.12024.

Zhang, Jun. 2016. "Taxis, Traffic, and Thoroughfares: The Politics of Transportation Infrastructure in China's Rapid Urbanization in the Reform Era." *City & Society* 28 (3): 411-436. doi:10.1111/ciso.12099.

Appendix A

Recruitment Survey

For Questions 1-4, Please check one box per question.

1. **Which of the following best describes your household's transportation affordability in the last 12 months (excluding walking)?**
   ☐ We can always afford to take our preferred mode of transportation.
   ☐ We can always afford transportation, but not our preferred mode of transportation.
   ☐ Sometimes we can't afford transportation.
   ☐ Often we can't afford transportation.

2. **In the last month, has there been any time when anyone in your household could not go to a place due to limitations in transportation affordability, transportation availability, transportation schedules, or distance?**
   ☐ Yes
   ☐ No
   ☐ Don't know
   ☐ Other - Please explain:

3. **In the last month, would you describe your household mode of transportation (The mode most used by your household) to be acceptable?**
   ☐ Yes
   ☐ No
   ☐ Don't know
   ☐ Other – Please explain:

4. **Has the COVID-19 pandemic changed the way you access and use your modes of transportation?**
   ☐ Yes
   ☐ No

For Questions 5-7 Please check one box per question on how you feel about the following statements.

5. **When I need to get somewhere, I usually spend time planning out how I will get there.** *For example, I spend time figuring out the schedule of buses or trains, who can give me a ride, or how to come up with the money I need for gas, fare, or to otherwise pay for the ride.*
   ☐ Strongly agree
   ☐ Agree
   ☐ Neither agree nor disagree
   ☐ Disagree

☐ Strongly disagree

6. **When I need to go someplace, I think about a backup plan in case I end up having a problem with the transportation I plan to use.**
   ☐ Strongly agree
   ☐ Agree
   ☐ Neither agree nor disagree
   ☐ Disagree
   ☐ Strongly disagree

7. **I usually go to places only if it is really important to go.**
   ☐ Strongly agree
   ☐ Agree
   ☐ Neither agree nor disagree
   ☐ Disagree
   ☐ Strongly disagree

Appendix B

Interview Questions

Introduction

1. Can you tell me about your neighborhood in general, and specifically what types of transportation you have access to in your neighborhood?
2. Overall, would you say that your access to transportation in San José is adequate? If yes, why? If no, why not? In what ways it is adequate or inadequate?

Daily Transportation Experiences

3. Before COVID-19, in a typical week, what were the major places that you needed to go in your daily life?
    a. How far away was each location from your home?
    b. How would you regularly get to those places?
4. For each place, was this your preferred mode of transportation for going to this place or doing this activity?
        i. If yes: Why was this your preferred mode of transit?
        ii. If no: Why was this *not* your preferred mode of transit? What mode of transit would you prefer and why?
    b. Did you have any problems, obstacles, or issues with that mode of transit for doing that activity? If yes, what were they?
5. I want you to think about a time that you have been unable to go where you needed to go here in San José BEFORE the COVID-19 pandemic.
    a. Can you tell me about that time? What happened/why were you having a problem?
    b. What did you do about it?
    c. Is this something that happens regularly? Do you have other ways of dealing with the situation and getting to where you need to go?
6. Since the COVID 19 pandemic has started, what are the places you go in a typical week and how do you get to those places?
7. Is this your preferred mode of transportation for going to each place/doing this activity right now during the pandemic?
        i. If yes: Why is this your preferred mode of transit?
        ii. If no: Why is this *not* your preferred mode of transit? What mode of transit would you prefer and why?
    b. Did you have any problems, obstacles, or issues with that mode of transit for doing that activity right now? If yes, what were they?
8. OK now, I want you to think about a time that you have been unable to go where you needed to go here in San José since the COVID-19 pandemic started.
    a. Can you tell me about that time? What happened/why were you having a problem? Was this a problem because of the pandemic?
    b. What did you do about it? Would you have gone about this differently if it were not during the COVID-19 pandemic? How so?

c. Is this something that happens regularly? Do you have other ways of dealing with the situation and getting to where you need to go?

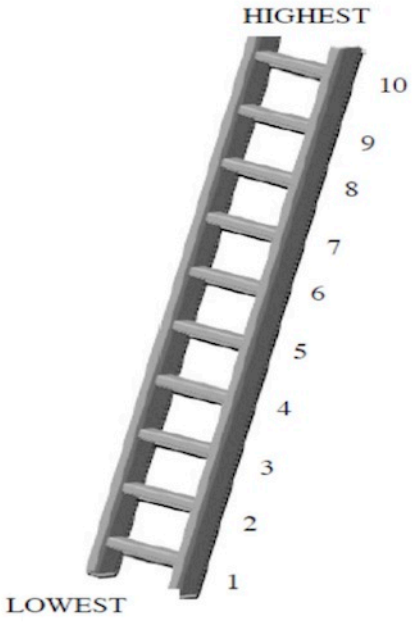
Individual Effects of Transportation Situation

9. In general, does your transportation situation cause you to worry or feel distressed? If yes, how so? Is it the same or different since the start of the COVID-19 pandemic?
10. In general, does your transportation situation cause you to feel ashamed or embarrassed If yes, when and/or how so? Is this the same or different since the start of the COVID-19 pandemic?
11. Overall, in what ways, has the COVID-19 pandemic affected your transportation experience?
    a. Did it make your transportation less acceptable? In what ways?
    b. Have you noticed any issues with your preferred mode of transportation that you did not notice prior to the pandemic
    c. Do you stay at home exclusively now?
    d. Do you have to be more mindful of where you go? How did you get there? What do you do to prepare?
    e. How does your experience now compare to before? Elaborate Pro-Con?

Demographic Questions

12. Here are some statements about life in your community or neighborhood. I would like for you to tell me if you Strongly Agree, Agree, Neither agree nor disagree, Disagree, or Strongly Disagree with each statement.
    1. People in this community tend to cooperate with each other.
    2. If I suffered an accident or illness or lost my job, I could count on the people of this community to take care of me.
    3. If another person in this community suffered an accident or illness or lost their job, they could count on me to help take care of them
    4. In this community, where I live, everybody knows everybody
    5. In this community, where I live, people are united
    6. In this community, where I live, people help one another
13. Before the COVID-19 pandemic, what was the MAIN source of transportation for members of your household to use to get to work and/or school?
14. Since the COVID-19 pandemic started, what is the MAIN source of transportation for members of your household to use to get to work and/or school?
15. Before the COVID-19 pandemic, what was the main source of transportation for members of your household for other purposes (e.g., leisure, visiting friends and family, etc.)?
16. Since the COVID-19 pandemic started, what is the main source of transportation for members of your household for other purposes (e.g., leisure, visiting friends and family, etc.)?
17. How many people live in your current household (including yourself)?
18. Are you the head of your household?
19. How do you describe your ethnicity?
20. What year were you born?
21. With what gender do you identify?

22. What is the highest level of education you have had the chance to complete?
23. Please list your current occupation or how you earn money: If you are an administrative assistant, student, lab technician, or in a similar position, please indicate what industry you work for. For example, if you are a student, specify your field of study. If you are an office assistant, specify what type of office (e.g., dentist, marketing company).
24. Has your job or employment status changed as a result of the COVID-19 pandemic? If yes, how so?
25. Before the COVID-19 pandemic, how often in a typical month did you or someone in your household need to ask other people for transit assistance (e.g., a ride in a car, money to buy a bus fare)?
    - Never (0 times in the last 4 weeks)
    - Rarely (1-2 times in the last 4 weeks)
    - Sometimes (3-10 times in the last 4 weeks)
    - Often (11-20 times in the last 4 weeks)
    - Always (More than 20 times in the last 4 weeks)
    - I do not know
    - Does not apply
26. Since the COVID-19 pandemic started, how often in a typical month do you or someone in your household need to ask other people for transit assistance (e.g., a ride in a car, money to buy a bus fare)?
    - Never (0 times in the last 4 weeks)
    - Rarely (1-2 times in the last 4 weeks)
    - Sometimes (3-10 times in the last 4 weeks)
    - Often (11-20 times in the last 4 weeks)
    - Always (More than 20 times in the last 4 weeks)
    - I do not know
    - Does not apply



27. Where would you place yourself on this ladder at this time in your life, relative to other people in your community?

    (Select the corresponding number from the rung on the ladder)

    0 1 2 3 4 5 6 7 8 9 10

28. Now imagine that the top of the ladder (10) represents the best possible life for you and the bottom of the ladder (zero) represents the worst possible life for you. On which step of the ladder, would you say you personally feel you stand at this time in your life:

    At this time? 0 1 2 3 4 5 6 7 8 9 10

    Five years ago? 0 1 2 3 4 5 6 7 8 9 10

    Five years from now? 0 1 2 3 4 5 6 7 8 9 10

29. Wrap-up Question: Is there anything else you would like to share about your experiences with transportation for your household here in San José?

Is there any information that you told me that you would like to take back or have me omit?

About the Authors

Andrew K. Ng

Andrew K. Ng (he/him) is a master's student in the field of applied anthropology. Being interested in how people interact with transportation, Andrew wanted to study transportation insecurity because they used the bus in San José often before the COVID-19 pandemic and wanted to try to contribute to improving public transit in some form. With this study, they wish to go into government work to focus on public transportation with the aim of helping out more people.

Melissa Beresford

Dr. Melissa Beresford (she/her) is an Assistant Professor in the Department of Anthropology at San José State University. Her research investigates how humans mobilize markets and informal economic institutions to adapt to resource insecurities. Her work has largely focused on (a) how people create locally based alternative economies (e.g., informal, hybridized, pro-poor) to counteract economic and environmental injustice, and (b) the conditions under which such economies can shield people from or counteract resource insecurities. She has conducted fieldwork in South Africa, Latin America, and the United States.

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