



LLSC PHOENIX

REALIZING EQUITY, REALIZING MOBILITY

A Case Study of Maricopa County, AZ

Opportunities for the Advancement of Equitable Smart Mobility



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GENERAL MOTORS

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PRELUDE: BUILDING A HEALTHY COMMUNITY SHAPED AND SHARED BY ALL

SMART MOBILITY IS ONE SOLUTION FOR REDUCING GREENHOUSE GAS EMISSIONS

Transportation is the single biggest contributor of greenhouse gas emissions in the United States.¹ In order to curb the worst impacts of climate change, eliminating transportation emissions must be a high priority, but up until recently, factors like “America’s love affair with the automobile” – a manifestation of the deeply-held national value of personal liberty – have hampered progress in this critical sector.

Transportation is the single biggest contributor of greenhouse gas emissions in the U.S.

However, a combination of technology and changing public sentiment – particularly among millennials – has been transforming the sector via a market-driven “smart mobility” disruption which holds the potential to achieve what author Lukas Nekermann describes as “zero emissions, zero accidents, and zero ownership.”

While a major step in the right direction, these systemic shifts could perpetuate existing systemic racial inequities in our transportation system, or worse, exacerbate them. As these solutions continue to be developed, it is important that this is done in a way that benefits all people in a community regardless of race, income, or location. To that end, the Institute for Sustainable Communities (ISC) partnered with the Center for Neighborhood Technology (CNT) to determine the current state of equity within smart mobility nationally. CNT analyzed smart mobility data from ten metro-region areas across the country, including Maricopa County, AZ. In our report, *Equity and Smart Mobility*, we unveiled powerful quantitative data with interesting consistencies across these regions.

Fully recognizing that while powerful, quantitative data would not speak to the lived experience of residents within the ten focus cities, ISC also partnered with Collective Equity Partners and LISC Phoenix to begin a dialogue with residents of Maricopa County, AZ. These conversations were intended to identify local barriers to equitable smart mobility, and begin the process of co-creating solutions that pull from international best practices, but that are customized for local challenges. This report reflects what we heard over the course of that process to provide a comprehensive look at the state of smart mobility in Maricopa County.

¹ <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

EXECUTIVE SUMMARY

According to the U.S. Environmental Protection Agency (EPA), transportation is a leading contributor to greenhouse gas emissions. The emergence of smart mobility offers potential solutions for reducing greenhouse gas emissions, but serious consideration should be made to develop equitable smart mobility solutions. In this case study, equitable smart mobility is defined as transportation systems that incorporate technology while increasing access to mobility options, enhancing economic opportunity in low-income communities of color, and supporting a clean environment.

In 2019, ISC partnered with the Center for Neighborhood Technology (CNT) to learn more about smart mobility. They conducted an equity analysis on ten metro regions including Maricopa County, Arizona, to understand how smart mobility investments benefit low-income families and to what extent they are accessible. The effort resulted in a report, *Equity and Smart Mobility*, published in September 2019.

This report dives deep into Maricopa County to uncover the experiences that people of color and low-income communities have in utilizing smart mobility. ISC partnered with Collective Equity Partners to conduct a series of focus groups, surveys and interviews between May and July 2019 that gathered feedback and stories of 54 individuals in Maricopa County. This qualitative data paired with the quantitative data from the report *Equity and Smart Mobility* to create a comprehensive look at smart mobility in one community.

In addition to pairing the qualitative data with the quantitative data, Collective Equity Partners and ISC noted larger themes that emerged from the interviews and focus groups:

1. The term “smart mobility” does not resonate among residents

The term is broad, does not translate well into other languages such as Spanish, and requires specific examples of smart mobility in action to truly understand what is being described. Those residents who claimed to understand the term were typically younger (less than 42 years).

2. Discussions of equitable smart mobility cannot be divorced from equitable mobility

It took effort and direction to keep the focus group conversations or interview discussions centered on smart mobility options and not on transportation as a whole. It is known that most smart mobility options are to be utilized in addition to traditional transportation options, and so research and assessments of smart mobility must honor that connection as well.

3. Lack of individual's trust in the smart mobility industry and organizations that make-it

Trust is an important pillar to any community and individuals' experience, especially the most marginalized communities. Residents expressed a lack of trust in corporate and government entities that underpin smart mobility solutions. Smart mobility purveyors should consider how earning community's trust within the smart mobility industry might impact its advancement.

QUALITATIVE FINDINGS FROM INDIVIDUALS' EXPERIENCES

Overall, the common accessibility barriers included: a lack of or limited funds, language barriers, weather, physical challenges/disabilities, limited to lack of seating capacity, lack of understanding when navigating transportation routes, long wait times, and too many stops.

Additional insights regarding smart mobility access in Maricopa County include:

- CNT found that 67% of individuals living at 100% or below the federal poverty level owned a smartphone.
- In the Phoenix metro area, nearly 30% of the population lacks access to a credit card and an additional 7% are unbanked, limiting their ability to use the smart mobility options that rely on credit cards for access.
- Twenty of twenty-nine individuals who participated in the Maricopa County smart mobility survey (a separate effort from the focus groups) reported feeling that cost is a transportation barrier.
- CNT found no significant difference in wait times for transportation network companies (TNCs) across all races and income levels. Yet, perceptions and experiences of Maricopa County residents differed. One focus group member noted: "Uber and Lyft doesn't go to certain neighborhoods because they are considered high crime/drugs."

Insights regarding employability and smart mobility include:

- Transportation is vital in an individual's economic success, and participants in the focus groups confirmed this, focusing on the importance of timeliness and reliability for all modes of transit and/or smart mobility options.
- CNT found that low-income communities of color inside the central city, particularly African Americans, Hispanics, and Native Americans, have greater reliance on mobility options other than driving alone in their journey to work.

Insights regarding smart mobility's impact on livability include:

- Transportation costs are a burden on many families and especially people of color. Hispanic/Latinx community members who live at 100% or below of the federal

poverty level spend 36.7% of their household income on transportation, whereas white communities members of the same income level spend 27.3% of their household income on transportation.

- Residents in focus groups described the inability to afford the cost of a bus pass more than twice per month and their inability to pay for TNCs especially during surge prices.

Insights regarding smart mobility's impact on mobility include:

- The majority of the 54 participants agreed that physical access to a car, bus, or other transit options was not a challenge, rather the conditions (safety and cleanliness) as well as the costs proved most challenging.
- Participants regularly cited lack of “ease of mobility” as the reason they do not rely on transit options, both public and smart mobility options. In fact, residents expressed an overwhelming preference for personal vehicles rather than smart mobility options or public transit options.

Overall, the quantitative data points toward no clear trend that would lead one to conclude Maricopa County as providing equitable smart mobility or not. The voices and experiences of residents in Maricopa County, however, are powerful in providing insight into equitable considerations not discovered through the quantitative data analysis. Through the voices and stories of residents it is clear that deep inequities exist within smart mobility for people of color in Maricopa County.

INTRODUCTION

In urban and metro-regions, transportation can provide access to vital services that are essential to an individual's quality of life, such as healthcare locations, after school programs for children, grocery stores, entertainment options, and even employment. Local government leaders recognize the need to ensure mobility for all residents and are investing in new technologies and systems such as light rail, bus rapid transit, bike lanes, and subsidized fares for low-income residents to improve the quality of life for residents through transportation. The private sector is also complementing these investments and helping to usher-in unique solutions that are changing the system of transportation as we know it. Technological advancements like fifth generation networks and autonomous vehicles are changing the way communities develop and improve transportation infrastructure, with most of the transformation occurring at the local level.

Smart mobility complements existing transportation networks and aims to provide alternatives to single occupancy vehicle use and ownership through the use of technology.

This age of technology-infused transportation is building a new sector of research and advancement, often referred to as “smart mobility”. Smart mobility complements existing transportation networks and aims to provide alternatives to single occupancy vehicle use and ownership through the use of technology. This report defines equitable smart mobility as transportation systems that incorporate technology

while increasing access to mobility options, enhancing economic opportunity in low-income communities of color, and supporting a clean environment.

According to the U.S. Environmental Protection Agency (EPA), transportation is a leading contributor to greenhouse gas emissions. The emergence of smart mobility offers potential solutions for reducing greenhouse gas emissions, if the solutions can be accessed and used by all people in a community regardless of race or income.

In 2019, ISC partnered with the Center for Neighborhood Technology (CNT) to learn more about smart mobility. They conducted an equity analysis on smart mobility to understand how smart mobility investments benefit low-income families and to what extent they are accessible. CNT looked at four major metrics or indicators of equity within smart mobility: employability, mobility, accessibility, and livability across ten metro regions, including Maricopa County, AZ. The final report, *Equity and Smart Mobility*, was powerful in contributing to the national understanding of equity in smart mobility.

ISC partnered with Collective Equity Partners in Maricopa County, AZ to capture and understand the lived experience of residents using smart mobility, information not initially captured in the report *Equity and Smart Mobility*. Over the course of three months, Collective Equity Partners held interviews and focus groups with 54 Maricopa County residents, majority people of color, to learn about their experiences using smart mobility

options. This report examines the state of equity in Maricopa County's smart mobility options by connecting the qualitative and quantitative data into one comprehensive view of smart mobility in Maricopa County, and identifying potential solutions for increasing equity in smart mobility options county-wide.

Defining Equitable Smart Mobility

For the purpose of this report, ISC defines “equitable smart mobility” as transportation systems that incorporate technology while increasing access to mobility options, enhancing economic opportunity in low-income communities of color, and supporting a clean environment.

Equitable smart mobility observes the following key principles:

- **Accessibility:** Technology and transportation systems are available, in close proximity, and readily attainable.
- **Affordability:** Transportation is cost effective for everyone.
- **Flexibility:** Multiple modes of transportation allow travelers to choose which ones work best for a given situation.
- **Efficiency:** The trip gets the traveler to their destination with minimal disruption and in as little time as possible.
- **Integration:** The full route is planned door-to-door, regardless of which modes of transportation are used.
- **Clean Technology:** Transportation moves away from pollution-causing vehicles to zero-emission ones without causing equity harms.
- **Safety:** Fatalities and injuries are drastically reduced.²

2 <https://www.geotab.com/blog/what-is-smart-mobility/>

UNCOVERING THE STATE OF EQUITABLE SMART MOBILITY IN MARICOPA COUNTY, AZ

LOOKING INTO MARICOPA COUNTY, ARIZONA

Maricopa County's transit infrastructure has been designed as a grid-system, where cars can easily travel between the 24 cities and towns that make up the metro-region. With 4.2 million people calling Maricopa County home, the grid-system and transportation system as a whole has been required to grow. Phoenix, the capital of Arizona, for instance, is the sixth largest city by population in the nation, at 1.6 million people in 2018.

Interstate-10 and Interstate-17 are the two vital freeways of Arizona, built in the 1970s these main thoroughfares provide easy passage through the state. In the 1980s and 1990s the suburbs began to grow rapidly, pushing construction and people out to the east-side and west-side of the Phoenix Valley. This suburban crawl required greater connectivity. Highway loops 101, and 202 were constructed in the early 2000s and loop 303 began construction in 2005. Over time each individual jurisdiction developed their own bus routes and in some cases, trolley systems, yet it wasn't until 2008 that the first 20 miles of the light rail transit system, managed by the regional public transportation agency Valley Metro, was built and open to the public. Currently at 28.2 miles long, the light rail runs from North Phoenix to Downtown Phoenix then turns east running through the City of Tempe and ends in the City of Mesa.

The creation of a well-connected highway infrastructure system showcases the reliance and preference that Maricopa County residents have for car-ownership or car-ridership, yet this is not always possible for everyone. The poverty rate in Maricopa County hovers around 14% each year, where the 2017 overall median household income was \$58,580.³

Maricopa County's transportation system continues to be improved and organizations throughout the Metro-area have called on specific solutions. In 2015 the Maricopa County Department of Public Health along with several other community groups, healthcare advocates, and transit leaders conducted a Transit Health Impact Assessment along South Phoenix neighborhoods. The findings from this report pointed to specific recommendations, including:

3 <https://www.census.gov/quickfacts/maricopacountyarizona>

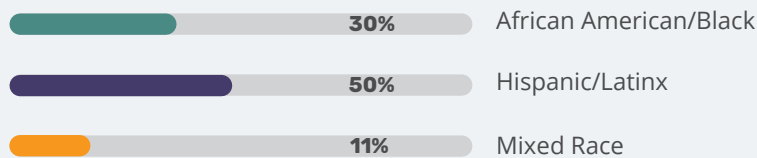
- Improved lighting features (such as LED and solar lighting) at, and around, all bus stops and proposed light rail stations.
- Solar powered LED lighting features along pedestrian and bicycle routes.
- Traffic calming; speed limit reduction; road diets; safe street crossings; bicycle lanes and protected bicycle lanes; wide sidewalks; shade; and wayfinding signage.
- Alternative building materials and structures for light rail stations and bus stops that help to mitigate heat retention.
- Enforcing rules for unleashed and stray dogs and enhanced education efforts for responsible dog ownership.
- 911 emergency panic call buttons, sirens, and lights at proposed station platforms and on trains.⁴

GATHERING RESIDENT VOICES

ISC dove deep into Maricopa County, AZ by partnering with Collective Equity Partners, and LISC Phoenix to investigate the lived experience of residents and ultimately accompany the report, *Equity and Smart Mobility*, creating a comprehensive understanding of equitable smart mobility.

Collective Equity Partners conducted a series of focus groups, surveys and interviews between May and July 2019 that gathered feedback and stories of individual's experiences with smart mobility. In total 54 individuals participated where 30% identified as African American/Black, 50% as Hispanic/Latinx, and 11% as mixed race.

Series of Focus Groups: 54 Individual Participants



The voices of 54 participants does not provide a statistically significant representation of all low-income communities of color across Maricopa County. The insights and experiences gleaned from these individuals present a starting-point for continued conversation and additional research on equitable practices within smart mobility. These insights are presented within this report alongside the quantitative data gathered by CNT to compliment the full report, *Equity and Smart Mobility*.

⁴ <http://www.liscphoenix.org/wp-content/uploads/2016/09/Maricopa-Cnty-PH-2015-SCNTHIA-report.pdf>

The quantitative data was broken down by income level and by location, where “inside the central city” refers to the highest point of density inside City of Phoenix, and “outside the central city” refers to the highest point of density outside City of Phoenix where the data was pulled from multiple locations outside the central city and aggregated to one unit.

In addition to pairing the qualitative data with the quantitative data, Collective Equity Partners and ISC noted larger themes that emerged from the interviews and focus groups. These concepts affect the advancement of smart mobility and should be investigated further by smart mobility industry leaders:

1. The term “smart mobility” does not resonate among residents

Smart mobility is complicated as a whole. It does not translate well into other languages, including Spanish, and it requires much description before it is understood. For those Maricopa County residents who participated in the focus groups and only spoke Spanish (37% of participants in total), explanations of smart mobility centered on examples such as Uber, Lyft, and scooters. Furthermore, the term itself is so broad that much time was spent defining “smart mobility” regardless of their primary language, English or Spanish. The field includes many complicated technologies and solutions that have yet to be recognized widely by the modern consumer. Finally, those who claimed to understand the term were typically younger (less than 42 years).

2. Discussions of equitable smart mobility cannot be divorced from equitable mobility

It took effort and direction to keep the focus group conversations or interview discussions centered on smart mobility options and not on transportation as a whole. The deep inequities that permeate our traditional transportation systems (bus, taxis, light rails) must be acknowledged and dealt with before residents are ready to discuss advancing smart mobility. It is widely understood that smart mobility is an enhancement to existing mobility options. That connection and pairing should be clearly acknowledged in future research or assessments.

3. Lack of trust in the smart mobility industry

Trust is an important pillar to any community and individuals’ experience, especially the most marginalized communities. Residents expressed a lack of trust in corporate and government entities that underpin smart mobility solutions: banking systems, smartphone applications (for example, not trusting how companies will use their data in an app), transit organization (for example, their commitment to frequency and reliability), government (for example, their altruistic intent behind transportation systems) to describe a few. Smart mobility purveyors should consider how earning community’s trust within the smart mobility industry might impact its advancement.

ACCESSIBILITY IN MARICOPA COUNTY

Accessibility is a top indicator of a community's ability to use or consider smart mobility options. Maricopa County, at 132 miles from east to west, has long been a community reliant on car ownership, and driving, as the primary mode of transportation for most residents. Approximately 7% of households in the community lack access to a car, contrasting the national average of 9.1% of households. Smart mobility options should fulfill this gap rather than exacerbate it.

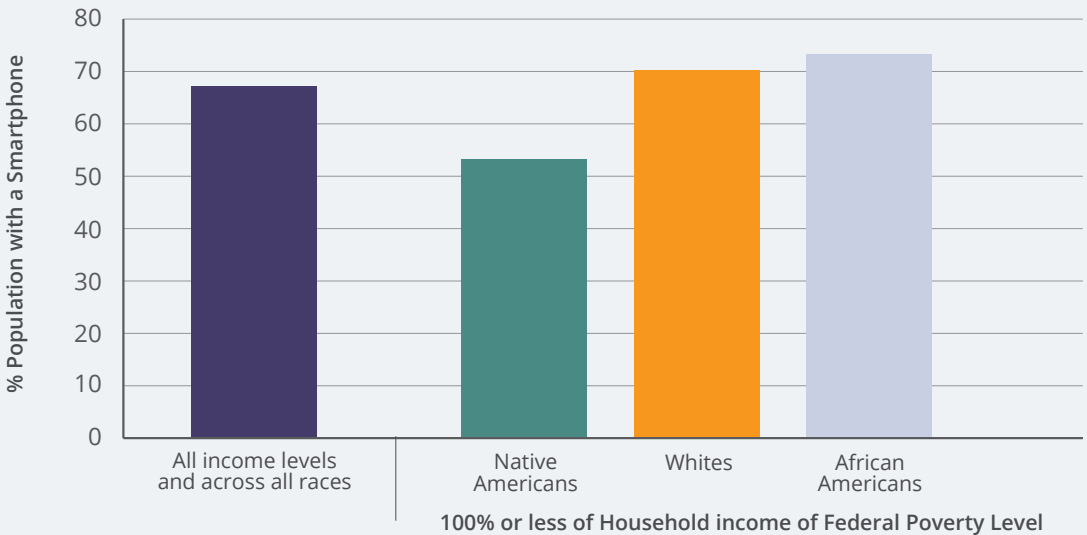
Yet, residents involved in the Maricopa County focus groups and interviews expressed a lack of equal access to smart mobility transportation options, noting that many of the smart mobility barriers are the same as barriers to traditional public transportation options. Common accessibility barriers that participants noted included: a lack of or limited funds, language barriers, weather, physical challenges/disabilities, limited to lack of seating capacity, lack of understanding when navigating transportation routes, long wait times, and too many stops.

Accessibility is a top indicator of a community's ability to use or consider smart mobility options.

Smartphones Access in Maricopa County

Most participants defined smart mobility as technology controlled or connected to an application on a smartphone. In this way, ownership-of or the ability to use a smartphone impacts one's access to smart mobility. The quantitative data collected by CNT showcases a high prevalence of smartphone ownership across all income levels and race, in which 67% of individuals living at 100% or below the federal poverty level owned a smartphone. When separated by race, Native Americans of the same income level living outside the central city (suburban/rural areas) had the lowest at 53% ownership. Whites of the same income had the highest at 70% smartphone ownership. African Americans at this income level had the highest smartphone ownership rates at 73%.

Table 1: Smartphone Ownership



While the quantitative data is important, residents who participated in focus groups did not cite lack of smartphone ownership as a barrier to access. Instead they spoke of the distrust they have in using smartphone applications due to data collected by large companies, including concerns of linking applications to payment methods. One participant said:

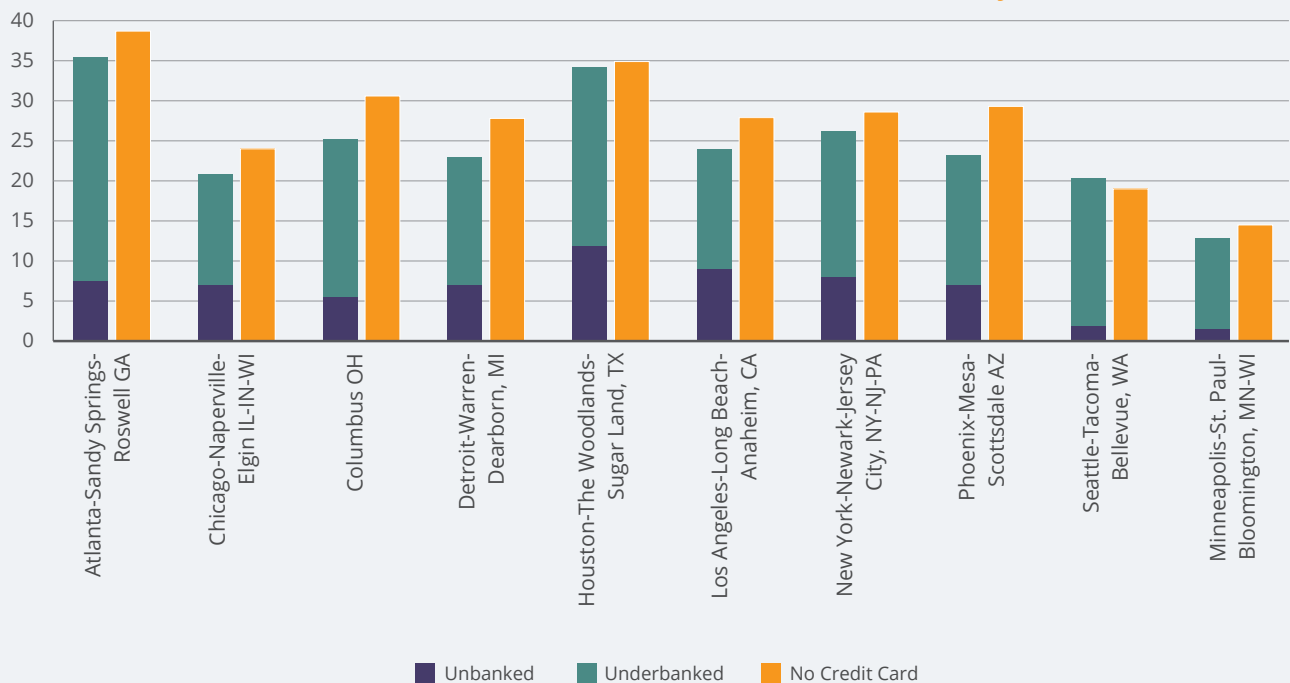
"I had someone hack my cell, and now do not feel comfortable."

Credit Card Access in Maricopa County

Focus group participants also expressed financial access barriers. Smart mobility options such as Uber, Lyft, grid bikes and scooters, often rely on credit cards or other bank cards for access. In the Phoenix metro area, nearly 30% of the population lacks access to a credit card and an additional 7% are unbanked, limiting their ability to use the smart mobility options that rely on credit cards for access.

In addition to credit cards, the cost of the transit ride itself poses an access issue. Twenty of twenty-nine individuals who participated in the Maricopa County smart mobility survey (a separate effort from the focus groups) reported feeling that cost is a transportation barrier. In fact, one person shared that due to limited financial resources, they are asking for rides from others at least twice per month.

Table 2: Unbanked, Underbanked and no credit card households by MSA



Source: Federal Deposit Insurance Corporation

Carshare Locations Access in Maricopa County

When discussing specific smart mobility options, many participants noted that the locations of individual neighborhoods influenced the person's level of access to transportation, where certain smart mobility locations, such as carsharing services and bike or scooter services, did not exist.

Carsharing locations (such as Car2Go or ZipCar) in Maricopa County are most accessible to low-income Hispanic/Latinx communities residing inside the central city than any other race or income level. That said, they are most prevalent outside the central city and especially among those living at 100% or less than the federal poverty level. Full data tables are provided in the appendix.

Bikeshare Locations Access in Maricopa County

Residents also indicated a lack of physical access to bikeshare programs and scooter programs in their community. The quantitative data aligned with residents' experience, finding that bikesharing locations are more widely available inside the central city than outside the central city.

The difference in access to bikeshare locations by race and income was minimal. Low-income white communities and Native American communities have access to one (1.16) bike share location per 10,000 people inside the central city, whereas low-income Latinx and African American communities have access to less than one (.97) bike share location per 10,000 people inside the central city. Full data tables are provided in the appendix.

Transportation Network Company (TNC) Wait Times in Maricopa County

The quantitative data from the *Equity and Smart Mobility* report found no difference in wait times inside the central city (Phoenix core) versus outside the central city (surrounding suburbs) for rideshare platforms such as Uber and Lyft (full data set provided in appendix). Yet, the perceptions and experiences of Maricopa County residents differed. One focus group member noted:

"Uber and Lyft doesn't go to certain neighborhoods because they are considered high crime/drugs. There isn't any public transportation in some neighborhoods."

EMPLOYABILITY IN MARICOPA COUNTY

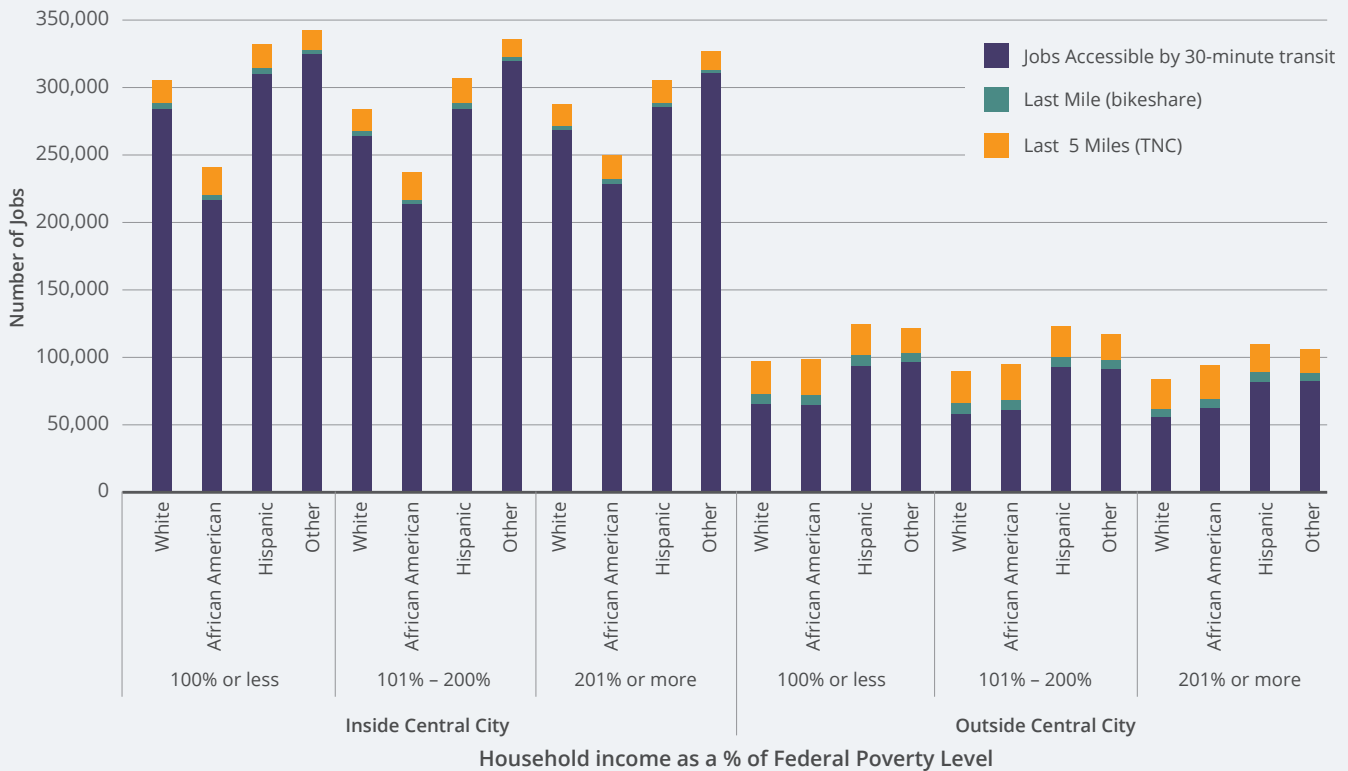
Transportation is vital to the economic success of Maricopa County residents, offering individuals connections to job opportunities and other economic resources. To that end, participants in focus groups noted the importance of reliability and timeliness among mobility options.

Transportation Mode for an Individual’s Journey to Work in Maricopa County

The quantitative data captured by CNT found that low-income communities of color inside the central city, particularly African Americans, Hispanics, and Native Americans, have greater reliance on mobility options other than driving alone in their journey to work (full data set can be found in the appendix). The experiences of residents confirm the data. One participant said:

“When I had to take the bus to get to work, I did not know there were three routes for the bus. I didn’t know English and I didn’t know how to ask someone how to navigate the bus routes.”

Table 3: Access to jobs requiring associate degree or less



Source: U.S. Census Bureau Longitudinal Employer Household Dynamics and AllTransit

Access to Jobs Requiring an Associate Degree or Less in Maricopa County

Data pulled by CNT showcases jobs requiring an associate's degree or less and the access to that job by a 30-minute transit commute (see [Table 3](#) on previous page).

LIVABILITY IN MARICOPA COUNTY

A “livable community” is one where individuals and families thrive. Transportation options can play a role in connecting community members to the amenities and essentials they need and want to live happy and healthy lives. Smart mobility could enhance or improve current living conditions by connecting communities to the places they need and want to access while minimizing other consequences

Transportation Spending as a Percentage of Income in Maricopa County

Smart mobility can support reducing the cost of travel as one way to develop a livable community. CNT looked at transportation costs as a percentage of income for households in Maricopa County ultimately finding that people of color experience greater transportation costs as a percent of income as compared to their white peers, with the Hispanic/Latinx population paying the most.

Hispanic/Latinx community members who live at 100% or below of the federal poverty level spend 36.7% of their household income on transportation, whereas white community members of the same income level spend 27.3% of their household income on transportation. [Table 4](#) (next page) provides the full breakdown.

Residents also expressed the insurmountable costs of transit as compared to income. One resident described her experience:

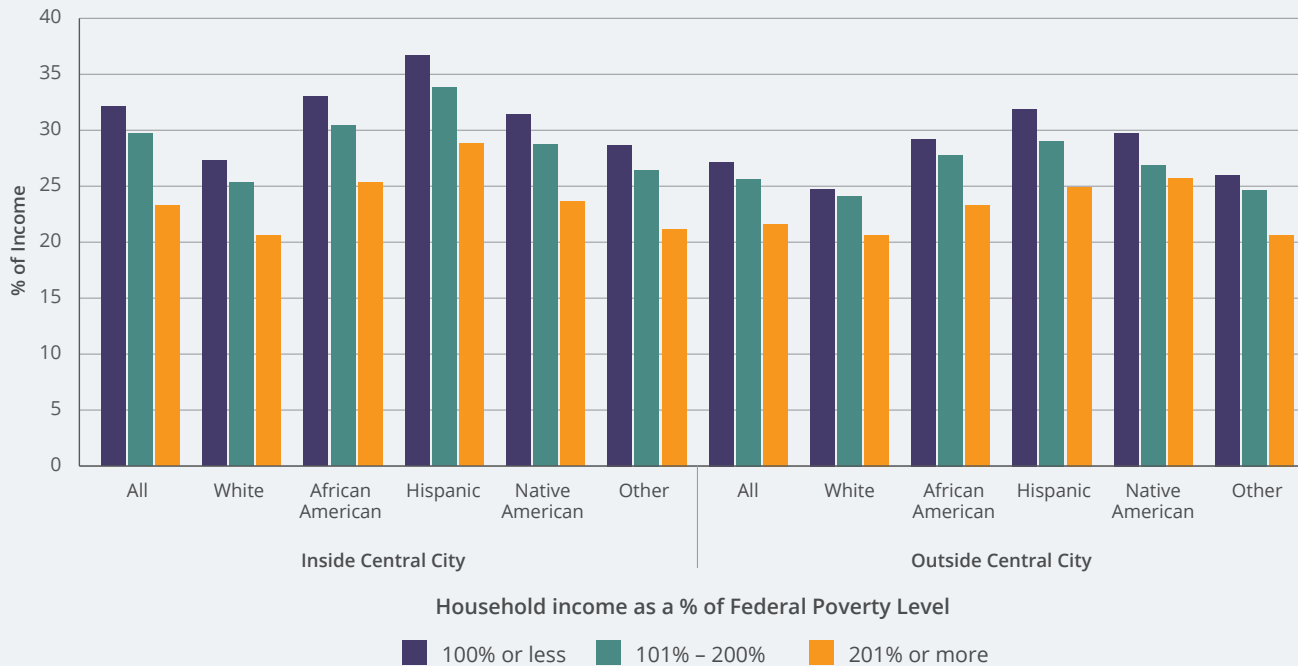
“Yes money has been an issue. We are on a restricted budget. I get paid every two weeks and always pay my bills first. We try to use dial a ride, bus and light rail so that I don't use the car, but they are not reliable and can't use them with kids.”

Adverse Weather Conditions Impacting Maricopa County Transportation Choices

According to the Maricopa County Department of Public Health there are, on average, 26 days where maximum temperatures are greater than 110°F, and 10 days where minimum temperatures are greater than 90°F. This affects transportation conditions and choices. Participants cited the extreme temperatures as one reason behind their preference for a car over public transportation.

Residents agreed that physical access to bikeshare and/or light rail locations were reachable by walking but they described an unpleasant experience. They described

Table 4: Transportation costs as a percent of income in Maricopa County, AZ



available bicycles as being in poor condition; unsafe or dirty conditions at light rail stops; and difficult weather conditions during the walk to access these modes of transportation.

“Depending on the weather I would use scooters & bicycles but only if I am alone, not with children or if I am carrying groceries. These modes do not work for families. They might not be safe.”

MOBILITY IN MARICOPA COUNTY

Mobility is the opportunity for individuals to easily move from place-to-place in a community due to the well-connected transportation network. Participants regularly cited that transit options, both public and smart mobility options, are not relied-on because they are not easy to use. In fact, residents expressed an overwhelming preference for personal vehicles rather than smart mobility options or public transit options.

Quality of Transit in Maricopa County

In evaluating public transit routes and number of transit trips, the quantitative data reveals, encouragingly, that African Americans, Hispanics, and Native Americans have equitable physical access in Maricopa County transit routes. Across all incomes, people of color have more transit routes available within a half mile compared to their white peers (see full data set in appendix). However, the quantitative data does not describe the quality and condition of the transit experience.

The majority of the 54 participants in Maricopa County surveys and focus groups agreed that physical access to a car, bus, or other transit options was not a challenge. Rather the conditions (safety and cleanliness) as well as costs proved challenging. One resident described her experience:

“For women there is little security when riding public transportation. Many times there are homeless living near or sleeping at the bus stops. I don’t feel safe.”

When referencing quality of transit participants regularly described the bus as an unpleasant experience, which discouraged their use of transit in favor of their personal vehicles. “I definitely feel more comfortable driving a car, because it is personal and it’s your own space; it is private.” Some respondents noted difficulty using the bus because they were unsure of where to get off, if they were traveling alone, or did not know English well enough to use the system confidently. Others were discouraged from using the bus because the poor experience of getting to and waiting for the bus.

Overall the data collected by CNT through the *Equity and Smart Mobility* report showed that people of color in Maricopa County do have, in certain cases, less access to smart mobility options than their white peers. For some indicators, the difference is minimal, yet in other areas the inequities are deep. That said, the quantitative data points toward no clear trend that would lead one to conclude that Maricopa County possesses equitable smart mobility or not. The voices and experiences of residents in Maricopa County, however, are powerful in shedding real insight into equitable considerations not discovered through the quantitative data analysis. Through the voices and stories of residents it is clear that deep inequities exist within smart mobility for people of color in Maricopa County.

RESIDENTS' VISION FOR ENHANCING SMART MOBILITY ACCESS AND ADOPTION IN MARICOPA COUNTY

Despite physical access to a range of transit and smart mobility options, low-income communities and communities of color in Maricopa County prefer their personal vehicle as their mode of transportation—particularly for getting to work. Participants shared that their personal cars are more reliable, convenient, and comfortable, compared to other mobility options. When they could not access a car, they would call someone with a car or identify a carpool opportunity. Despite their preference for a car, residents still described barriers that if solved-for would increase their interest and use of smart mobility and transit options.

According to the focus groups and interviews among residents, the most pressing barriers that discourage low-income people and communities of color from integrating smart mobility options into their transit routes include: length of transit time, feeling unsafe, unpleasant conditions, incommensurable payment methods, cost, and distance.

In addition to identifying barriers, residents and participants began to envision a new future where some of these issues are solved. The following depicts the barriers identified and provide initial suggestions for transportation solutions as described by the 54 participants.

Barrier: Length of transit time

"I prefer cars, more convenient. Even though it might be expensive, you don't waste time waiting for public transportation." — Resident quote

Residents frequently noted that the bus does not run on time and has long wait times. Given time spent waiting for transit, residents expressed being far more likely to use a car. To enhance adoption of smart mobility, the community should consider investing in Equitable Transit Oriented Development, Bus Rapid Transit, and real time bus arrival technology. Other solutions described by residents include:

- Developing digital signs at bus stops that provide real-time updates if a bus breaks down or a route get changed.
- Valley Metro operates the electronic service NextRide, which is a texting and calling service that provides access to the next bus and train schedule information. However, this service was not mentioned in any of the interviews or focus groups, which could suggest that residents are not aware of the service, find it inadequate, or are unable to access it.

Barrier: Feeling Unsafe

“I have told my grandchildren to take pictures of the UBER/LYFT driver and get their information in case something happens. I ask my grandchildren that take rideshares to ASU to stay on the phone with me until they arrive.” — Resident Quote

Participants, particularly older members and women, described feeling unsafe while using TNCs. Many noted that they did not trust the drivers. These concerns were heightened for Spanish speakers who have difficulty communicating with their drivers. As a practice, many residents ensure their doors remain unlocked during the ride, in the event of an emergency with the driver. Others make sure to communicate with their friends and family of their estimated arrival time and destination to ensure that they make it to their destination safely. To improve feelings of safety, the community can explore options to enhance the vetting of TNC drivers and to share the safety features and policies recently introduced by TNCs.

Barrier: Unpleasant Conditions

“For myself, the one I do not like is taking the city bus, I don’t like being around other people like that and the city bus has a negative connotation behind it associated with usually being dirty and stuff like that.” — Resident Quote

Respondents shared that the lack of shade at bus stops and encampments of people experiencing homelessness adjacent to bus stops also made them feel uncomfortable. To encourage smart mobility options and enhance the attractiveness of public transportation for all residents, TNCs could partner with community groups and Valley Metro to design smart mobility transfer stations and tools that support community needs and aims. Other solutions described by residents include:

- Delivering a survey after every rideshare or bus trip to help provide constant and reliable feedback that can be used to improve conditions.
- Providing the bus with its own lane at every bus stop, to make it a safer place and to reduce traffic congestion when the bus makes a stop.

Barrier: Incommensurate Payment Methods

“I only used the bus once for an emergency. I didn’t like it. The bus stop is too far to walk to. The bus ride was \$1.25 and I didn’t have a quarter. Luckily someone noticed and gave me a quarter to pay for my ride.” — Resident Quote

Residents shared difficulty making exact change for the bus, which costs \$1.25. They also expressed discomfort sharing bank information with rideshare companies. In fact, nearly half who participated in the brief surveys did not feel comfortable linking their banking information. To improve the payment structures and method availabilities, smart mobility companies can expand pricing and payment options and bring greater awareness to existing improvements such as the family plan released by Uber in 2016.

Other solutions described by residents include:

- Opportunity to pay for public transit or smart mobility options by phone or by kiosk, where these options are made available at local community areas such as a gas-station or library.
- Smartphone payment applications could be used to pay for the light rail and bus, thus connecting all costs into one payment and allowing passengers to pay-as-you-go.

Barrier: High Costs

“Yes money has been an issue. We are on a restricted budget. I get paid every two weeks and always pay my bills first. We try to use dial a ride, bus and light rail so that I don’t use the car, but they are not reliable and can’t use them with kids.” —

Resident Quote

Two-thirds of participants identified cost as a barrier to using public transit and rideshare. Cost was such a deterrent for some that they would just stay at home. While bus passes offer an economical option, many residents will not purchase one, as they do not ride the bus frequently enough to justify the purchase. Others, particularly students who can purchase discounted bus passes, would share one bus pass amongst friends and family. Solutions that residents described, include:

- Bus passes are not always affordable and options should be provided to share the bus pass with a family member or friend so that the cost can be split but the benefits still be received.
- Making public transportation free or enabling deep discounts through TNCs for those who qualify.

Barrier: Distance as a Barrier to Physical Access

“I used a taxi [Arizona Health Care Cost Containment provides free taxis services] - but didn’t like it. My son was very young and I have four children. There is a limit of how many passengers and my drivers were not nice.” — Resident Quote

Despite quantitative data which shows equitable physical access to smart mobility options, participants consistently described the bus and light rail as being too far to access. They also noted limited access to handicapped equipped vehicles and shared that scooters and bicycles are unsuitable for families and grocery trips. City planning efforts should be considered to assess whether the standard half-mile radius of access to a transit stop is appropriate for the conditions in Maricopa County, including heat and unsafe non-walkable streets.

CONCLUSION

The *Equity and Smart Mobility* report offered great insight into the current state of smart mobility among ten-metro regions, including Maricopa County, AZ. Yet to fully grasp a comprehensive look at the state of equity in smart mobility, communities need to look within and listen to the experiences and concerns of low-income residents and people of color.

The stories of Maricopa County residents' using smart mobility, as described by them, paints a very different picture of smart mobility in Maricopa County than the data collected by CNT provided. The quantitative data did showcase disparities and differences among race and income when looking at smart mobility access, employability, livability, and mobility, however in some cases the data was not significantly different. This made it difficult to confidently conclude one way or another that Maricopa County does or does not provide equitable smart mobility options. The qualitative information provided by the voices of 54 residents, the majority of whom were people of color who live at or below 200% of the federal poverty level, revealed a clearer understanding of the types of inequities that exist within smart mobility. Future smart mobility efforts should strive to capture the experience of more individuals from other communities as a means to guide the advancement of the field of smart mobility.

APPENDIX

METHODOLOGY OF QUALITATIVE ASSESSMENT

ISC partnered with Collective Equity Partners to collect voices and experience from Maricopa County residents of color. Collective Equity Partners spoke with 54 residents in Maricopa County through a series of focus groups, surveys and interviews that were conducted between May and July 2019.

Forty of the 54 participating residents live in zip codes with median incomes at or below 200% of the federal poverty line based on a family of four. One participant lives in a zip code with a median income below the federal poverty line. The federal poverty line for a family of four is \$25,750, while 200% of the federal poverty line for a family of four is \$51,500.⁵ Additionally, the average participant was female, between 24 and 42 years old, Latinx, spoke English as primary language, and identified as heterosexual. The table below provides full racial/ethnicity by participant-type.

Table 5: Demographics of Participating Maricopa County Residents

Race/ Ethnicity	Promoters Focus Group	Kinship Focus Group	South Phoenix Focus Group	Juneteenth Interviews	ICM Interviews	Totals
African American/Black	0	0	3	12	1	30%
Hispanic/Latinx	9	9	0	3	6	50%
Caucasian/ White	0	1	0	2	1	7%
Asian	0	0	0	1	0	2%
Mixed Race	1	0	2	1	2	11%
Other	0	0	0	0	0	0

The quantitative data from the report, Equity and Smart Mobility collected data from Maricopa County’s “central city,” defined as the largest city within the county, and collected data from “outside the central city,” defined as the county boundaries minus the central city geographic boundary and population. To align with the quantitative data, Collective Equity Partners conducted focus groups and interviews with residents from both inside and outside the central city. According to demographic data collected in 2017 by Census Block, the majority of the population inside the central city are Hispanic, whereas the majority of the population outside the central city are white.⁶

⁵ <https://aspe.hhs.gov/2019-poverty-guidelines>

⁶ <https://www.policymap.com/maps>

INDIVIDUAL CHARTS

Table 6: Carshare Locations per 10,000 people in Maricopa County, AZ

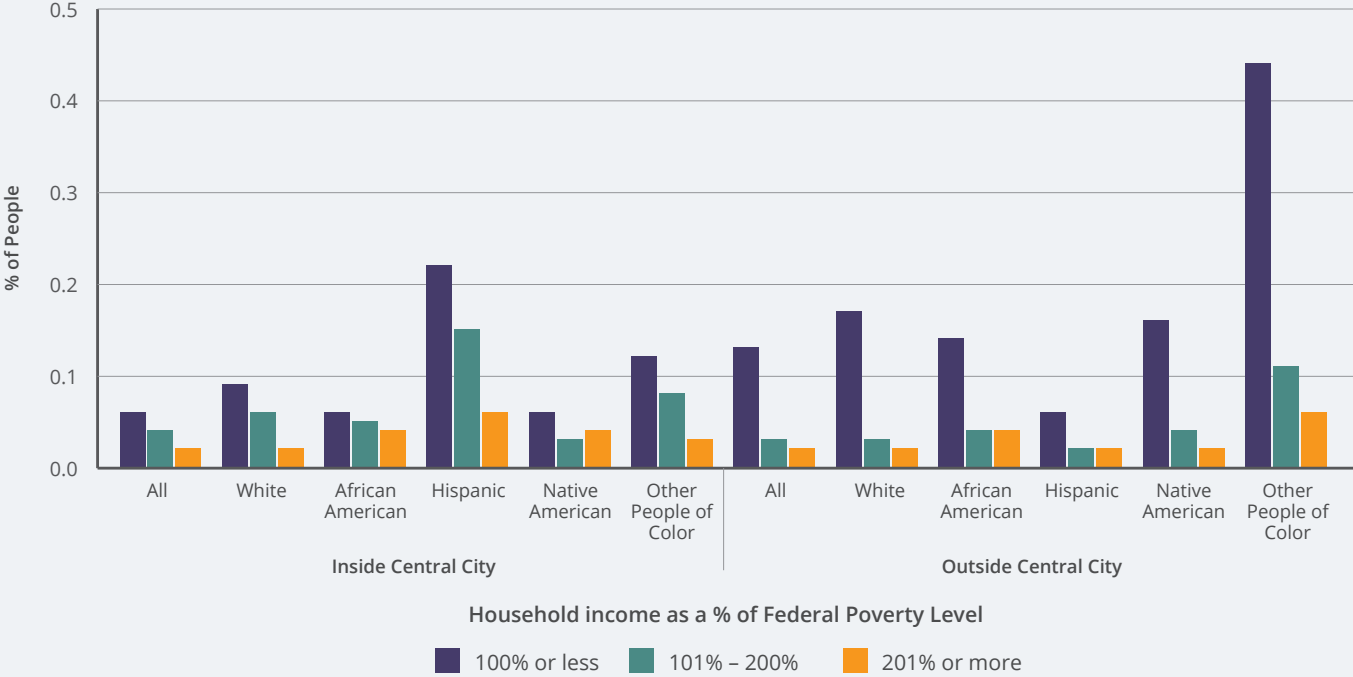


Table 7: Average available TNC (Uber/Lyft) rides per weekday hour in Maricopa County

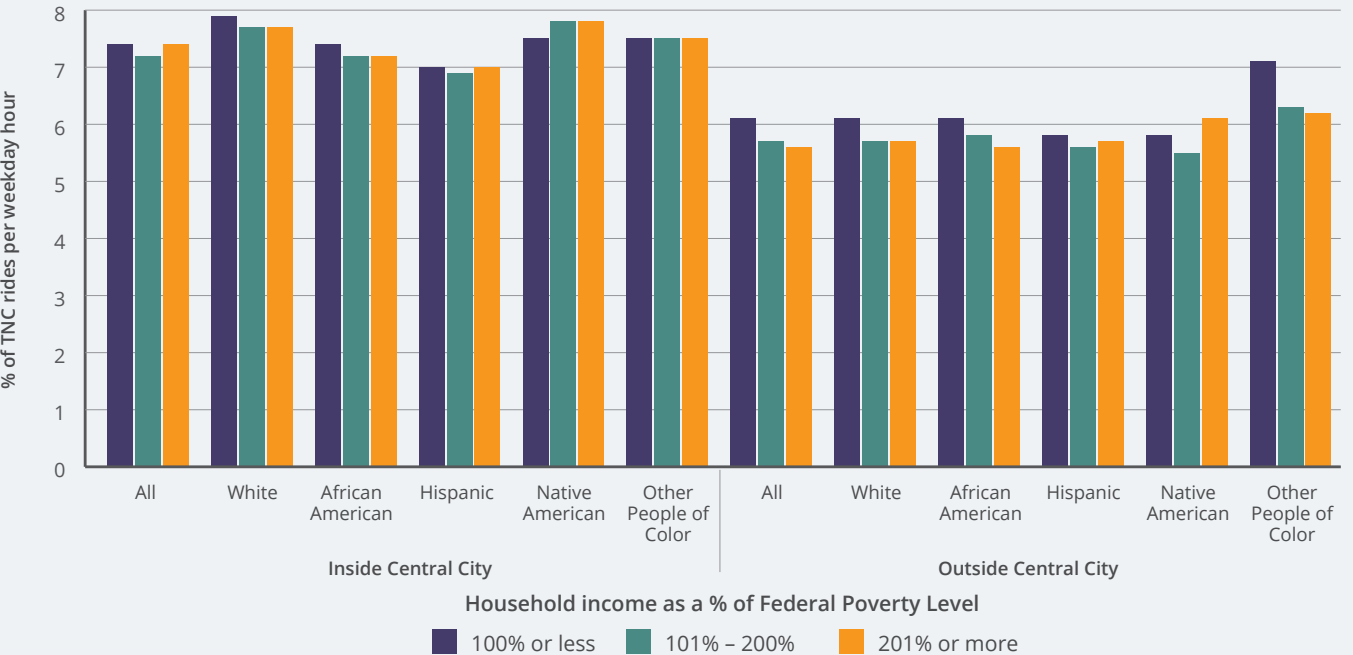


Table 8: Individuals who journey to work using carpool, transit, bike, walk, or taxi (rather than travel alone in a car) in Maricopa County, AZ.

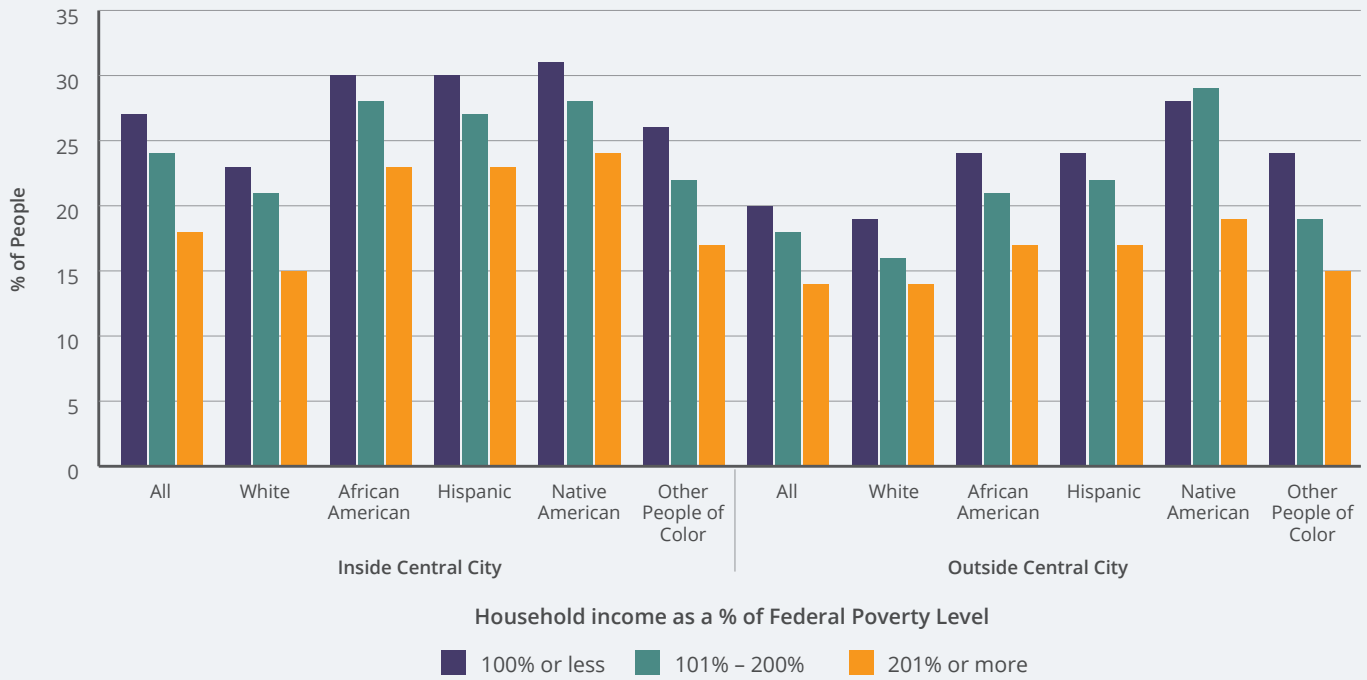


Table 9: Transit Routes available within a half mile, in Maricopa County, AZ

