

Transit in Greater Arizona



Arizona Department of Transportation Research Center

Transit in Greater Arizona

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Prepared by:

Joseph McClure
McClure Consulting, LLC.
5070 North 40th Street, Suite 205
Phoenix, Arizona 85018

Bruce Hernandez
Behavior Research Center, Inc.
45 East Monterey Way
Phoenix, Arizona 85012

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16. Abstract This study informed the Arizona Department of Transportation's future State Transit Plan. The study addressed transit planning and use with emphasis on Greater Arizona, those portions of the state that consist primarily of rural areas or smaller cities. Findings were compiled through a literature review, a household survey on travel preferences and behaviors, an inventory of transportation service providers in the private sector (including some non-profits) serving Greater Arizona, and other research related to the future State Transit Plan. Survey data and the transportation-provider database were reported by Greater Arizona subregions. Almost half of household-survey respondents stated that lack of public transportation was the biggest transportation problem in their local area. Other survey findings suggested that this might be due in part to a lack of awareness of local transportation options. The online survey poll of transportation providers yielded information from a small but diverse set of respondents, approximately half of whom were located outside the major metropolitan regions of Phoenix and Tucson.					
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LIST OF ABBREVIATIONS, ACRONYMS, AND SYMBOLS

ADOT	Arizona Department of Transportation
APA	American Planning Association
APTA	American Public Transportation Association
BRC	Behavior Research Center
CAG	Central Arizona Governments
COG	Council of Governments
CYMPO	Central Yavapai Metropolitan Planning Organization
DOT	department of transportation
FHWA	Federal Highway Administration
FMPO	Flagstaff Metropolitan Planning Organization
FTA	Federal Transit Administration
LHMPO	Lake Havasu City Metropolitan Planning Organization
MAG	Maricopa Association of Governments
M.E.	margin of error
MPO	Metropolitan Planning Organization
MTI	Mineta Transportation Institute
NACOG	Northern Arizona Council of Governments
NAICS	North American Industry Classification System
NAR	National Association of Realtors
NCTR	National Center for Transportation Research University of South Florida
NHTS	National Household Travel Survey
PAG	Pima Association of Governments
PwC	Price Waterhouse Cooper
SCMPO	Sun Corridor Metropolitan Planning Organization
SEAGO	SouthEastern Arizona Governments Organization
SIC	Standard Industrial Classification System
SSTI	State Smart Transportation Initiative
SVMPO	Sierra Vista Metropolitan Planning Organization
TDM	travel demand management
TNC	transportation network companies
TRB	Transportation Research Board
TTI	Texas Transportation Institute Texas A&M University
UCTC	University of California, Berkeley Transportation Center
ULI	Urban Land Institute
US	United States
USDOT	United States Department of Transportation
VMT	vehicle miles of travel
WACOG	Western Arizona Council of Governments
YMPO	Yuma Metropolitan Planning Organization

EXECUTIVE SUMMARY

The findings of this study were intended to inform the scope and focus of Arizona Department of Transportation's (ADOT) forthcoming project, the *State Transit Plan*. Study findings were generated through the following processes:

1. A review of relevant literature.
2. A household survey administered to residents of Greater Arizona, focused on transportation behaviors in general and transit specifically.
3. An inventory of transportation service providers in the private sector (including some non-profits) serving Greater Arizona, and additional provider information obtained through an online survey.
4. A compilation of the study findings that have the most potential relevance to the future State Transit Plan.

For the purpose of this study, Greater Arizona was defined as the areas of the state outside the metropolitan planning organization (MPO) boundaries of the Maricopa Association of Governments (MAG—metropolitan Phoenix), the Pima Association of Governments (PAG—metropolitan Tucson), the Central Yavapai Metropolitan Planning Organization (CYMPO), the Yuma Metropolitan Planning Organization (YMPO), and the Flagstaff Metropolitan Planning Organization (FMPO). For portions of this study, Greater Arizona was defined or segmented differently in order to achieve different analytical and reporting purposes.

Key observations were made that have potential relevance to the future State Transit Plan. In Greater Arizona, residents have opinions regarding possible deficiencies in public transportation, although some of these opinions may be due to a lack of knowledge about services that are available. Residents are most likely to use transit for medical appointments and intercity travel. Commuting, leisure activities, and school are viewed as less important transit-trip purposes (and about equal to one another in importance).

The extent to which the Millennial Generation (defined in Chapter 2) embraces fundamental values that may alter that group's predisposition to use public transit is an ongoing subject of research, and definitive conclusions are not available at this time. However, this research topic will continue to be important for transit providers.

The increasing availability and popularity of communication devices that increase the accessibility of public transit can benefit all users, including Millennials who may be more attuned to such technology than other generations. Seniors, who tend to use transit less than others and may need alternatives to transportation, may benefit from new communication technology.

Trends in transportation planning have tended to reflect greater integration with land use planning and urban design considerations, which generally leads to greater diversification of travel options, and an enhanced relationship between these options. For example, the walkability of an area increases the viability of transit. Transportation systems have always been understood to be closely related to

economic development capability. In rural areas, the role of transit in supporting economic development is particularly meaningful, in part because, generally, only a limited set of job opportunities are available in any particular community. Rural areas, with a small set of business-support firms, leasable space options, and other infrastructure, face an inherent disadvantage when competing with urban areas for economic development.

Although the online survey of transportation service providers was not intended to provide statistically reliable results, those responding tended to offer call-in limousine-type service most frequently, and to use small vans or larger vans with a capacity of up to 15 passengers. Most did not believe that transportation network companies (such as Uber) were negatively affecting their business, although those who did believe this to be so were concerned that these companies might have potentially unfair regulatory advantages.

DERIVATION OF KEY OBSERVATIONS

The literature review addressed a broad range of topics, including generational differences in transit use, the role of urban living as a factor in transit use involving younger and perhaps older generations, and whether Millennials and seniors have common interests that affect the demand for transit. Some researchers question whether reported differences in Millennial lifestyles, compared with those of other generations, are based on underlying values or economic necessity brought about by the recent recession.

Transportation literature discusses the contradiction between the apparent need of seniors for public transit and their tendency to avoid using it. Results of the Greater Arizona household survey also indicated less interest in using public transit among respondents age 55 or older than among younger age groups.

In the household survey, almost half of respondents stated that lack of public transportation was the biggest transportation problem in their local area. Other survey findings suggested that this might be due in part to a lack of awareness of local transportation options. The result could also be an indication that people were generally satisfied with other transportation elements in their area, such as streets and roads. Nevertheless, the sensitivity to lack of public transportation was confirmed in other survey questions. For example:

- 51 percent indicated that public transit availability in their area should be rated “poor.”
- Nearly one-half of the respondents stated that they would like to have the opportunity to make greater use of both intercity bus service and regularly scheduled local bus service.

The online survey of transportation service providers obtained information about the business characteristics, and a limited set of opinions, from those who responded. Respondents represented a diverse set of transportation-related industries, and approximately half of the respondents were located outside the major metropolitan regions of Phoenix and Tucson (with none from Yuma County).

CHAPTER 1. INTRODUCTION

This study's primary purpose was to identify travel preferences and behaviors among the population of Greater Arizona that may affect the development of transit in those regions in the coming years. A secondary purpose was to compile information about transportation service providers in Greater Arizona, primarily in the private for-profit sector but also some non-profit providers, including providers partially funded by the Federal Transit Administration (FTA). The findings of this study were intended to inform the scope and focus of ADOT's forthcoming project, the *State Transit Plan*.

DEFINITION OF GREATER ARIZONA

For the purpose of this study, Greater Arizona was defined as the areas of the state outside the MPO boundaries of the Maricopa Association of Governments (MAG), the Pima Association of Governments (PAG), the Central Yavapai Metropolitan Planning Organization (CYMPO), the Yuma Metropolitan Planning Organization (YMPO), and the Flagstaff Metropolitan Planning Organization (FMPO). For portions of this study, Greater Arizona was defined or segmented differently in order to achieve different analytical and reporting purposes, as described in subsequent chapters.

STUDY TASKS

This report documents the four tasks embodied in the project:

1. Address the general topic of transit planning and use, with an emphasis on rural areas, through a review of relevant literature, which would both help inform future transit studies and provide guidance for the structure of research processes applied in this study.
2. Document, through a household survey process, travel preferences and behaviors in the Greater Arizona region and defined subregions, with an emphasis on transit. This task also included interpreting the findings into a brochure format for use with the general public (Appendix B).
3. Provide an inventory and other information, by means of an online survey, about transportation service providers in the private, for-profit sector (and to a lesser extent some non-profits) serving Greater Arizona.
4. Compile in a concise format the study findings that have the most relevance to the future *State Transit Plan*.

CHAPTER 2. LITERATURE REVIEW

The literature review was intended to inform all the other tasks within the assignment: documenting travel preferences and behaviors in Greater Arizona, compiling data on transportation service providers, and summarizing the study findings that have the most relevance to the future *State Transit Plan*.

Specific challenges associated with the literature review included the following:

- No studies could be identified that address the topic of rural residents' use of transit in ways that would directly provide guidance on how to structure a household survey. Studies that investigate changing transit-use patterns and preferences tend to focus on urban areas, and even if rural areas are included in the study area, rural-specific findings are generally unreported.
- The challenge of translating primarily urban research findings to rural conditions requires a comprehensive view of the relationship between multiple factors affecting transit use and planning. These factors include the location of residences in relation to goods and services, workplaces, and institutions; traffic congestion, parking fees, and other details affecting the practicality of using automobiles; and lifestyle choices and attitudes pertaining to transportation.
- Many topics addressed in this literature review involve conditions that are still evolving and consequently not necessarily fully described in prior or even current studies.
- To the extent that transit use patterns are changing and expected to continue to change, the relative importance of factors causing the changes, such as underlying lifestyle attitudes, remains largely unknown.
- Some trends and preferences expressed in the research studies reviewed here are almost certainly influenced by the recent recession and other evolving economic conditions, although assessing the extent of these kinds of influences is virtually impossible. Therefore, it is hard to determine whether such economic conditions should be thought of as temporarily or permanently altering behavior.
- In certain studies, the surveyed responses sometimes convey preferences that do not always match surrounding conditions or current lifestyles. Such responses might be partly due to the lag between adopting a behavioral preference in principle and actually making considerable personal commitments that change their living environment or other conditions.

As outlined below, this literature review responds to the study intent and the above challenges:

- The literature review addresses a broad range of topics, organized under a series of explanatory headings that reflect the multiple topics addressed. Generally, the most relevant topics are addressed earliest in the sequence of material presented. For conciseness, some topics are introduced and discussed using only a few examples.
- Study guidance and other conclusions derived from the review of individual reference material are in some cases stated in general rather than specific terms, especially for topics that relate only indirectly to transit use and planning, such as the relationship of transportation planning to economic development and the evolving use of technology in accessing public transit.

DOCUMENT REVIEWS

Regional and Generational Patterns in Use of Transportation Modes

The reviewed literature makes frequent reference to the Millennial Generation, sometimes referred to as Generation Y, which is generally defined as those persons born from 1981 through 2004 (although researchers often drop the non-adult segments from their analyses). Other generations mentioned in this review and source materials are: Generation X, born 1965-1980, and Baby Boomers, born 1946-1964.

The literature search conducted for this review identified more studies of generational lifestyle differences that focused on *preferences* than studies that focused on actual, detailed use *data*. This section of the review focuses on transit-use and auto-use data.

The National Household Travel Survey, or NHTS (FHWA 2009,) provides one source by which transit use and other transportation modes can be examined. One potential drawback of this source is its 2009 publication date, at which point travel behavior may have been affected by the economic recession to a greater degree than at present, depending on when the data were actually collected. The recession is one of several presumed causes for changes in travel behavior that researchers have observed (and which may be continuing along various trend lines), but for which they have not necessarily established firm cause-effect relationships. One advantage in the NHTS data, however, is the availability of an interactive table that allows cross-tabulation of variables, such as travel mode by urban/rural and by life-cycle stage (a substitute for generational differences, although the data can also be analyzed by age of respondents). A review of the data indicates that, for life-cycle groups that tend to approximate Millennials and seniors have slightly higher percentages of miles traveled by transit modes than the intervening age groups. As expected, transit use in rural areas is considerably less (in absolute terms) than in urban areas, and attempting to make distinctions among rural/urban age (life-cycle) groups is especially challenging due to very small sample sizes that result from this cross-tabulation.

The article "Who's on Board: 2014 Mobility Attitudes Survey" (TransitCenter 2014), presents survey-based data comparing transit use patterns between Millennials and Baby Boomers. Results were categorized geographically in five primary regions. The article highlights generational preferences and transit use for Millennials and Baby Boomers in "traditional cities," which included cities with "mature and widely used transit systems" as well as those with minimal systems (referred to in the study by region, such as west/southwest, which has typically younger cities with less-developed transit systems). Under this system, traditional cities' transit use rates were two to four times those of the least-use category (west/southwest). The findings showed that, especially in traditional cities, Millennials were roughly four times more likely to ride transit systems than the over-60 age group. However, race and ethnicity are also major predictors of transit use, with minorities having usage rates two to four times those of (non-minority) whites. Across many demographic types and city types/regions, about twice as many participants used transit occasionally as those who used it as their primary commuting method. The report helps clarify the point that the settings in which transit activity takes place vary widely, not

only with respect to degree of urbanization but also according to the age and other characteristics of cities.

Chu (2012) assesses public transportation markets using NHTS data, and provides an assessment of public transit markets in Florida in comparison with the United States as a whole, from five perspectives: market size, modal share, attitudes, socio-demographics, and trip characteristics. These five are cross-tabulated with seven personal, household, and travel characteristics of persons in transit markets: driver status, immigration status, existence of medical conditions that make it difficult to travel out of the home, household income, vehicle availability, race and ethnicity, and monthly frequency of transit use. The study also compared attitudes of trip makers between transit and four other travel modes. Respondents were asked about their attitudes concerning: highway congestion, access and availability of transit, lack of walkways and sidewalks, price of travel, aggressive and distracted drivers, and other safety concerns.

According to Chu (2012), the nationwide transit market is concentrated according to a few prime socioeconomic indicators. For example, at 6.1 percent of the total US population, zero-vehicle households represent the largest transit market, capturing more than 48.5 percent of the entire transit market in the United States. Over 40 percent of these zero-vehicle households have an annual income of less than \$15,000. The study noted that transit use by market segment in Florida is generally quite different from that in the rest of the country, which serves as a cautionary finding for researchers using national data to estimate state-specific conditions.

The Frontier Group, working with the US Public Interest Research Group Education Fund (Davis, Dutzik, and Baxandall 2012) examined data from the NHTS, laws affecting the use of mobile devices while driving, fuel prices, number of persons holding driver's licenses, bicycle use and walking, surveys by the National Association of Realtors and KRC Research (with Zipcar, Inc.), and other sources, and concluded that 16- to 34-year-olds are traveling less in cars (23 percent drop from 2000 to 2009) and increasingly making use of public transportation, and prefer to live in places that support this choice. The report indicated that the combination of higher costs, regulations, improvements in technology that make transit use more practical, and other factors would tend to make these shifts permanent, and concluded with a call for transportation policy reform to reflect these findings.

Documentation of the decline in auto use was recently augmented by research presented at the Transportation Research Board 2015 Annual Meeting (Garceau, Atkinson-Palombo, and Garrick 2015), which described how state-level data indicate that in many states, vehicle miles of travel (VMT) peaked much earlier than the national trends have shown, and that increasing economic activity in a state was associated with continued reductions in driving. However, an article by the TranSystems Corporation (2014) describes how a drop in home ownership, one segment of the economy, among Millennials may be an important cause of the decrease in driving by this group. The author speculates that if Millennials cannot afford a home purchase, they are more likely to live in an urban setting that requires less driving and has more transit options available. However, if they are not buying homes because they are priced out of the market, rather than as a preference or attitude, the change in Millennials' driving habits should not be ascribed to philosophical inclinations.

The region-specific data in the TransitCenter and Chu studies indicate how transit use varies across the country, so national-level data should be viewed accordingly. The studies also demonstrate that racial/ethnic and age characteristics, lack of an automobile, and income are primary predictors of transit use, especially in cities where transit systems are relatively mature. For *Transit in Greater Arizona*, these variables can be included in the research process with the recognition that statistics for cities do not necessarily have the same meaning in rural Arizona. For example, in mature cities such as New York, in contrast to rural Arizona, the wealthiest residents in downtown areas are likely to have access to many transit options and nearby high-quality goods and services, and therefore have the least need for an automobile. Other implications for the Greater Arizona household survey include the following:

- Respondents (all adults) can be asked whether they have a driver's license.
- Whether respondents own or rent their dwellings can be one way of tying lifestyle to transit use dispositions.
- Employed persons can be asked whether their commute involves leaving their community of residence.

Expressed Generational Preferences for Transit Use and other Lifestyle Choices

Generational differences in preferences for housing, urban environments, recreation, and other lifestyle choices can have direct implications for transit use and demand. Millennial-focused surveys that address these preferences are discussed in this review. The implications for the *Transit in Greater Arizona* study are at least twofold. First, Millennials, according to some studies, prefer urban lifestyles, which tend to include more transit options than rural areas. Second, seniors tend to *need* transit services (whether they prefer them or not) and other attributes of urban environments that support transit. Both sets of preferences and needs would have implications for how much growth can be expected in rural areas and how transit demand could be affected.

A related issue is whether Millennial preferences that appear to be quite different from those of previous generations are long-term or temporary, and if long-term, whether they will eventually alter the configuration of cities in ways that affect the viability of transit.

The four studies cited below, which were based on surveys of Millennials (and a series of public hearings, for one report), provide insight into the relationship between lifestyle preferences of Millennials and tendencies to make use of transit systems. The opportunities and challenges of applying the findings from these studies to the research for *Transit in Greater Arizona* include the following:

- Based on these studies, Millennials are less likely to live in rural areas than urban areas, yet they would, possibly, tend to embrace transit if it were available there. However, nothing in the Millennial-focused studies (or other works in this literature review) defines a transit system that Millennials would find acceptable, and this could be an especially important issue in rural areas.
- Perceptions do not always match reality, and preferences and attitudes vary by location. Part of this variation is likely due to variations in opportunity. In other words, if a service is available and valued in one place, its absence (or reduced presence) in another place may result in it being valued less through lack of knowledge or experience of the service.

- In any survey probing respondents’ preferences, expressed preferences ideally should reflect the trade-offs among alternative choices. However, it is very difficult to reflect such conditions in a research process. Consequently, stated preferences will not necessarily reveal actual “real world” choices that reflect the trade-offs.
- As discussed in the following section of this literature review, researchers disagree about the extent to which the Millennial generation is different from others, specifically along the lines outlined in the following four studies.
- One detail based on review of these documents is the need to include car-sharing systems as a mode of transportation in the household survey research.

In 2014, the Vermont Congress Joint Legislature Transportation Committees Transportation Board (2014) decided to focus its public hearings on obtaining feedback on transportation issues from young adults. The Board was responding to two kinds of data: 1) indicators showing that the state’s population of young adults had been declining for at least 20 years, even while the overall population had grown, and 2) a major study (Frontier Group 2012) stating that the Millennial Generation uses transportation very differently when compared with every generation that came before it. The Vermont Board held eight forums at various college campuses around the state (and also obtained input from regional commissions and other groups). The six topics addressed at the hearings, and a summary of the responses obtained relevant to this study (right-hand column), are shown in Table 1. However, the Board’s report noted the important distinction that the findings did not represent those of a scientifically derived sample. Also, the focus on university students would have left out the views of working Millennials, who might see these issues differently.

Table 1. Topics and Responses from Forums

Topic	Response Summary
What transportation options influence the decisions of young adults?	Participants mentioned transportation options as a key factor in their selection of a place to live.
Car ownership and car sharing	The cost was cited as a negative factor in car ownership.
Bicycle and pedestrian issues	Participants overwhelmingly stated that the ability to walk and bike to destinations is extremely important to them.
Public transportation	According to the participants, the existing systems in Vermont were not sufficiently extensive or convenient to provide a realistic option for them.
Technology advances, such as apps and services like Uber and Lyft	Participants expected technology advancements such as placing Wi-Fi on buses so that they could be tracked with global positioning systems on smart phones.
Roadway safety	Participants suggested that narrowing travel lanes will slow traffic and increase the potential for making the road safer for cyclists and pedestrians.

Source: Vermont Congress Joint Legislature Transportation Committees Transportation Board 2012; McClure Consulting LLC.

The report *Generation Y: Shopping and Entertainment in the Digital Age* (Lachman and Brett 2013), summarizes the results of "a nationally representative online survey of 1,251 Gen-Yers (Millennials) to gauge their retail, dining, and entertainment preferences." The survey design was based on prior research, and is generally focused on shopping habits (Lachman and Brett 2013). Locational self-images (as revealed in responses) did not necessarily (according to the researchers) match respondents' current places of residence (Lachman and Brett 2013). For example, while 39 percent defined themselves as "city" people, nearly 48 percent actually lived in cities as defined by the researchers (a combination of downtown/near downtown [14 percent] and a city neighborhood outside downtown [34 percent]). Downtowners have distinct demographic characteristics: e.g., they are more likely than the population as a whole to be male and minorities. Not quite one-third of respondents were aware of local car-sharing systems, and among those, one-quarter used the programs. The authors state that members of Generation Y "acquire driver's licenses later than prior generations and they drive far fewer miles per year," but provide minimal data supporting this statement, other than a finding that 24 percent of their respondents have no car.

A survey by Global Strategy Group in conjunction with the Rockefeller Foundation (Rockefeller 2014) examined Millennials' perceptions and attitudes towards public transportation in 10 major US cities across three "tiers" of public transit systems: "mature" (Chicago, New York, San Francisco), "growing" (Charlotte, Denver, Los Angeles, Minneapolis-St. Paul), and "aspiring" (Indianapolis, Nashville, Tampa-St. Petersburg). The study provides additional perspective on Millennials' preferences for urban versus other lifestyles. More than half (54 percent) of Millennials surveyed said they would consider moving to another city if it had more and better options for getting around, and 66 percent said that access to high-quality transportation is one of the top three criteria when deciding where to live. Almost half (46 percent) of current vehicle owners agreed they would seriously consider giving up their car if they could count on a range of transportation options. Only 27 percent of Millennials in cities with "mature" public transit systems said it is very important to have regular access to a car or truck in their city, versus 60 percent in cities with "growing" systems and 82 percent in cities with "aspiring" systems (Rockefeller 2014). Millennials said it is important for their city to offer opportunities to live and work without relying on a car (86 percent agree in mature cities, 82 percent in growing cities, and 77 percent in aspiring cities).

The report *Millennials—Breaking the Myths* (Nielsen 2014) appears to be a compilation of other studies. The focus is on Millennials, with some data by younger/older segmentation and some comparisons with other generations. The report identifies Millennial preferences related to: urban living, healthy lifestyles, less driving, walkable communities with transportation options, and green orientation. The findings about urban living and reduced auto usage are similar to those of the other studies cited: Millennials prefer urban living and less dependence on automobiles.

Are Millennials Changing Cities, and If So, Based on What Underlying Factors?

A study by the Demand Institute (Demand Institute 2013), a division of The Conference Board, rebuts other studies' findings about the uniqueness of Millennials, and asserts that their survey shows that home and auto ownership are prime goals for Millennials; many simply have not yet had the resources

to realize these ambitions. While the findings do show strong preferences for traditional lifestyles (e.g. 75 percent believe home ownership is an important long-term goal), the data are not presented in a form that allows clear comparisons with past generations' preferences.

In contrast, city-changing Millennial trends are highlighted in the annual report by Price Waterhouse Cooper and Urban Land Institute (PWC and ULI 2014) on real estate trends and forecasts. The report states that "the growth of generation Y [Millennials] and its impact on all sectors of commercial real estate could be the singular most dominant trend for many years" (PWC and ULI 2014, 7). The report is based on the views of over 1,000 individuals in the real estate industry who completed surveys or were interviewed as a part of the research process. The survey respondents expect Generation Y members to be more urban and less suburban than their predecessors; to drive less but still value mobility.

Studies by others have attempted to explore philosophical and psychological foundations for why Millennials seem to have lifestyle preferences markedly different from previous generations, and whether these are long-term or temporary. The article "Why Generation Y Is Causing the Great Migration of the 21st Century" (Norris 2014) explores the psychological, economic, and other factors that drive Millennial preferences. Underlying reasons for Millennial shifts in behavior may be complex, may or may not be "fundamental" (and therefore long-term), and are not necessarily readily understandable. As an example of the challenges in attempting to understand these issues, Lachman and Brett (2013) cite an article in *Time* magazine, in which author Roya Wolverson observed that the Facebook age is "one that prioritizes impermanence and immediacy, which also breeds a renter mentality." In other words, "if you are into the continuously fresh, rental is the answer."

The three preceding examples provide additional perspective on how to view Millennial preferences and their potential influences on transit demand. One approach would be to monitor changes in the built environment, consumption patterns, and use of transportation modes that can be attributed to Millennials as a way of confirming or refuting predicted trends. Attitudinal surveys conducted in the future could be used to compare findings of those studies with past survey-based reports. While admittedly long-term approaches, one or both of these methods could be very useful in future transit planning in Greater Arizona. For purposes of the *Transit in Greater Arizona* study, the reports add insight, useful for non-quantitative input to the analysis, but no directly quantifiable analytical direction.

Urban Changes and Seniors

The report entitled *Investing in Place for Economic Growth and Competitiveness* (Farmer, Simms, Jordan, and Rewers 2014) summarizes the results of a survey conducted online within the United States in 2014 on behalf of the American Planning Association, which focused on the relationship between planning and economic development and the Millennial and Baby Boomer generations (with other generations included peripherally). The sample screened for those age 21 or over with two or more years of college. The study found that the two generations, based on this sample, have many common interests regarding community. One summary of findings refers to a "sharp decline across demographic groups of interest in traditional, auto-dependent suburban living," in which fewer than 10 percent of Millennials, Gen Xers, or Active Boomers see themselves in this type of community in the future (the choice was

“living in a suburb where you have to drive most places,” compared to “a suburb with walkable amenities”), despite the fact that 40 percent of them lived in the former type of community at the time of the survey. Respondents wanted increased mobility options, regardless of where they live. Their location choices will be driven more by quality-of-life issues, including transportation options, than by such traditional considerations as economic factors.

A ULI article on “livable communities” (Spivak 2014) summarizes a staff interview with a representative of AARP (formerly the American Association of Retired Persons). The report summarizes AARP's advocacy of “livable communities,” which is put forth by various means, including an informational video on the benefits of creating neighborhoods around transit. The post highlights AARP's position that livable-community policies and practices, such as investments in public transportation and the need for continued funding for subsidized affordable housing, are connected with enhanced quality of life for the segment of the population served by AARP: those over age 50, most of whom, AARP claims, want to remain in their communities.

Taken literally in terms of their potential application to *Transit in Greater Arizona*, the preceding two reports suggest that both Millennials and Baby Boomers prefer lifestyles more similar to urban than suburban settings, and therefore by inference would be less inclined to live in rural areas. However, before such conclusions are applied to the Greater Arizona transit study, researchers should consider the issue, described above, of whether the survey respondents/interviewee were able to incorporate full consideration of the trade-offs involved if these preferences were put into practice. Desirable urban features generally are associated with other features that are less desirable.

On the other hand, a report by the American Association of State Highway and Transportation Officials (Gehr 2010) makes the point that increasing numbers of seniors in rural areas (the document implies that this is due to the natural increase of this demographic segment rather than migration) are creating additional demand for rural transit services.

The following two studies discuss various aspects of why seniors should be living in transit-based communities, and how they can be encouraged to do so. The studies suggest that transit use by seniors could expand beyond the levels indicated by data that show seniors are disinclined to use transit systems. For purposes of *Transit in Greater Arizona*, age is an important research variable. Transit planning must consider how to assess the importance of seniors' needs for transit versus their inclination to use it, and examine creative options for meeting these needs.

The report *Attracting Senior Drivers to Public Transportation* (Cevallos, Fabian, Skinner, Ivy, and Joslin 2010) is a guide for helping transit providers attract senior riders, and for understanding why it is important to do so. Some seniors have trouble accessing transit and need services to help them with such things as finding bus stops and understanding fares and schedules. Some seniors also have mobility or other disabilities, which is another reason they may need special attention. With proper support, seniors' use of transit could expand. The Internet, social marketing, electronic payment technology, and other developments can encourage senior ridership. Special transit modes (e.g., on-demand) are

inefficient and expensive, and some demand for these modes now generated by seniors could be met by traditional transit. Tucson is included as one of several case studies used in the report.

The post “The Surprisingly Simple Amenities that Help Urban Residents Age in Place” (McIlwain 2014) discusses issues pertaining to the assertion that “the density of urban areas provides an environment that more naturally supports people as they age,” through better public transit, good health care, a healthier, walkable lifestyle, and access to goods and services. The article makes the point that, as the elderly population expands, accommodating them might require more creative urban forms. In the context of this study, a community-scale urbanized area that is compatible with an aging population and that occurs in Greater Arizona communities might not be greatly different from “urban” models for such purposes, even if the role for transit is not as great. The article also notes innovations such as New York’s use of school buses to transport seniors to shopping districts after the buses have finished their school duties for the day.

City and other Area Definitions

Designations of “cities” that researchers have used in some studies are questioned by other researchers who claim that the designations are not rigorous enough to segment lifestyle preferences between urban and rural areas. This could result in a tendency for Millennial differences from other generations to be overgeneralized or overstated, as some authors claim in some of the reviewed documents. While the literature review can identify this potential problem, it is discussed here in relation to future Greater Arizona transit planning processes.

The three studies discussed below illustrate the desirability of considering alternative geographic classifications when planning transit systems. This concept could be highly relevant in Greater Arizona, given the region’s wide variety of communities, their distribution, and differing proximities to urban centers.

An analysis of “urban” classification systems was prepared by researchers (Gordon and Janzen 2013) using Canadian cities as the modeling subject. The authors recommended a system by which functional definitions of suburban, urban, and other classifications could be made more meaningful for transportation and other analyses. One issue, according to the authors, is that “urban” designations are often applied to conditions that should be designated as “suburban,” and therefore the “urbanization” of populations is overstated in some research. Functional definitions of urban, suburban, and rural, and resulting area classifications ultimately have implications for understanding transportation trends, transportation conditions, and policy.

In the article “Dispersing Millennials” (Cox 2014), researchers used another urban reclassification scheme to better understand changes in patterns of growth in urban and other areas across a 10-year time period, using special designations of urban cores and other areas. By this analysis, Millennials do not show preferences for urban core locations, but for suburban and exurban locations. This study is part of the debate about how to define urban-related terms for analyses of this type, which encourages planners to better refine their understanding of urban and non-urban transit preferences. However, Cox

uses a unique system, the City Sector Model, that relies heavily on differences in the age of housing stock and whether auto use was prevalent when the city began.

Kolko (2014) uses US Census estimates to track changes in Millennials' choice of location in the article "Millennials Are Suburbanizing, While Big Cities Are Having a Baby Boom." This frequently-cited article uses only a single year of Census-estimate data. Findings imply the need to consider new ways of classifying analysis areas—based on density, transit feasibility standards, commute modes, and other criteria, rather than typical Census designations such as named central cities, suburbs, and metropolitan areas—in order to add clarity to the research and design of transit systems. Kolko divided all US counties into four quartiles based on their household density so that each quartile includes around one-fourth of the total population. The densest quartile he designated "big, dense cities" and then named two types of suburbs, with the final quartile being "smaller towns and rural areas." This approach is probably too crude for application in Greater Arizona.

Communication Technology's Influence on Transportation, Transit Use, and Planning

The four studies discussed below address the potential use of communication technology (and software) to influence the use of transit. While review of these studies provides only a sampling of this topic, the discussions suggest that transit use could expand substantially through these kinds of technological and software advances. Because Millennials are growing up in this age of expanded communication capabilities, this potential is particularly relevant to the consideration of Millennials' influence on transit use in Greater Arizona.

The study *A New Way to Go* (Davis, Dutzik, and Baxandall 2013) poses the question of whether the rapid spread of mobile, Internet-connected technologies and the emergence of social networking are related to indications of the recent decline in driving. New services such as car sharing, which are aided by communication technology, shift the cost of driving from fixed to per-mile costs, providing an incentive for users to drive less and thereby reduce their overall spending on transportation, while car ownership has the opposite influence. Technology-enhanced transit services can improve the efficiency of transit systems and also the transit-riding experience for rural and suburban users, potentially expanding the number of areas where transit service can be provided cost-effectively. For example, the benefits of real-time arrival information could be greater for riders of rural transit systems, which tend to deliver less-frequent service, than for users of urban systems.

Technology and software to facilitate transit accessibility continue to evolve rapidly, along with the transition of Internet access by cellphones. Because ease of use is a factor in demand for any service, these advances could affect the demand for transit. A recent article in *Fast Company* (Fast Company 2014) described three new systems that make accessing public transit easier: a downloadable software application helps users find the fastest and most cost-effective way to travel between two points, a special projector digitally beams (from a stationary point such as a light pole) real-time transit data onto sidewalks (this system is being installed in a few large cities), and a map display mounted in public spaces orients itself to the direction the viewer is facing and incorporates transit information (currently in New York only). Google Maps (and other transit-based mobile technology apps) has begun to

integrate public transportation routes and schedules into its product offerings (Dechert 2014). This software acts as an intermediary that makes it possible for the app to interact with local data to retrieve relevant public transit schedule and route data. App integration makes public transit more accessible by providing access to routes, schedules, and other information at the user's fingertips. In addition to Google Maps, numerous other app-based transit services provide similar offerings and aid in simplifying access to public transit information.

A survey addressing Millennials and mobility (APTA 2013) included 1000 participants in six urban areas (Boston, Chicago, San Francisco, Seattle, Portland, and Washington, DC). The research provided detailed data on attitudes toward mobility and mobility behaviors across demographic and lifestyle groups. The report identified opportunities for promoting transit options, including new digital offerings, updated communication approaches, and "experience planning," an undefined term but presumably having to do with making the experience of traveling a rewarding one. The study found that Millennials are multimodal, based on findings about mode use, and that respondents used an average of three modes (including walking) on any given trip. Communities that attract Millennials have a multitude of transportation choices. The study reinforces the need to consider, from a transit planning standpoint, the relationship of walking and bicycling to transit use in Greater Arizona, and the need to consider the role of emerging communication technology when estimating future transit demand.

Transit Planning Processes and Considerations

Changing Habits in Auto Use: Local and Nationwide Perspectives

One transportation trend that has direct transit implication is the decrease in rates of auto use. This phenomenon is similar to others that tend to be associated with Millennials, but for which direct cause-effect relationships can be elusive. Many potential, highly interrelated causes can affect auto use, including living in urban settings where the need to travel by car is diminished; stagnant or dropping incomes for many drivers; increasing use of the Internet for shopping and socializing; and increased transit options. Having some perspective on these trends is useful in setting the stage for transit planning in Greater Arizona. Questions in this study's household survey probed respondents' interests in the expansion of various transportation modes.

The report entitled *Bikes, Trains & Less Driving: Transportation Trends in Arizona* (Unrein and Brown 2014) describes the drop in VMT, from a peak of 10,100 trips in 2005-06 to 9200 in 2012, increases in transit use throughout Arizona, and reasons for agencies to invest in other options in and throughout the state. The report presents arguments for transportation policy shifts that reflect these trends in changing driving and other habits, and calls for more data relevant to this issue.

Monthly and annual data pertaining to national VMT since 1989 are contained in the periodic report "Traffic Volume Trends" produced by the FHWA (2009). The data do not address changing rates of use because the number of drivers and other population-related measures are not part of the report. The report shows a nationwide drop in VMT in 2008-2009, after which VMT remains mostly level. The overall decrease from 2007 to 2014 is just under 2 percent.

Transit Planning Influences Pertaining to Greater Arizona

A report on travel demand management ([TDM], Obermann 2012) investigated and recommended a suite of TDM measures to reduce travel by single-occupant vehicles in the urban areas of Phoenix and Tucson. Five categories of strategies were recommended for TDM implementation in these cities: social and individualized marketing, telework, transit subsidies and promotional campaigns, parking management, and shuttle and circulator links to regional transit. Some of these measures may apply in Greater Arizona, including especially social marketing.

A historic perspective on transit planning in Arizona is provided in the *Arizona Rural Transit Needs Study* (ADOT 2008), which describes projected demographic trends for rural Arizona. The data show growth in the rural population for all counties except the metropolitan counties of Maricopa and Pima, which will reduce their rural population. The projected growth or decline is then applied to a set of scenarios that would meet different levels of current and anticipated transit need. In the lowest-level increase in service, 25 percent of the demand in 2016 would be met. The highest level of service would meet 100 percent of demand. This approach reflected the researchers' estimate that only 18 percent of demand was being met in 2007. To the extent that the unmet demand still exists, planning for transit in Greater Arizona will need to take this into account.

Innovations in Transit Planning

The studies in this section represent examples of concepts that have been applied in rural areas and in general to make transit use more efficient. All of these are potentially applicable in Greater Arizona and their use would tend to make transit more viable.

The report *Innovative Rural Transit Services: A Synthesis of Transit Practice* (Hosen and Powell 2011) summarizes results of a literature search and survey of transit agencies conducted to synthesize innovative approaches that transit agencies are taking in response to changing rural community transportation needs, focusing on the following six categories:

- Innovative agency characteristics
- Service responses to changing demographics
- Involvement in the transportation planning process
- Alternative service modes
- Outreach, education, and training
- Leveraging funding opportunities

The report notes that rural areas experiencing population growth face challenges when they cross categorization thresholds from some form of "rural" to some form of "urban" designation, a condition that is likely to occur in a growing state such as Arizona. Demographic changes can have many dimensions. For example, seniors today are more likely to be employed now than in the past, so systems that cater to traditional senior lifestyles, focusing on shopping and recreational destinations and excluding employment centers, have less relevance today. In response to the challenges of making an on-call system (in which only one passenger might be served on any single trip) more efficient, agencies

are developing sophisticated scheduling systems, such as a new rural hybrid service design called “fixed-schedule” service, providing on-demand service but within scheduled periods. Other system operators are changing the way they communicate with the public, making much greater use of social media, for example. A number of rural transit systems have generated revenue from agreements with big box and grocery stores, through such means as advertising (which could occur on buses or at business-provided bus shelters), providing direct service to a store, and bus shelters (which stores could provide or make provision for) at locations that help draw patrons to these stores.

The Innovative DOT: A handbook of policy and practice (Anderson, Bellis, Dodds, Ebeling, Gad, Grodnik, Holloway, Madrecki, Millar, Munger, Sundquist, and Webber 2012) collects innovative DOT approaches around the country "to make systems more efficient and effective in today's challenging economy." The handbook authors recognize that economic changes sometimes involve an emphasis on livability, including urban form and transportation options. One report recommendation is to partner with regional transit authorities, intercity bus providers, and Amtrak to provide better-integrated transit service between cities and along corridors. The objective of such partnerships would be to encourage local and long-distance transit travel with more frequent and reliable service, which could relieve pressure on highways and expand travel options for residents in rural areas. This concept could be applied, theoretically, to transit planning in Greater Arizona.

The guidebook *Estimating Bicycling and Walking for Planning and Project Development* (Kuzmyak, Walters, Bradley, and Kockelman 2014) presents models for scientifically estimating bicycling and walking, based on case studies of models developed at Seattle, Washington and Washington, DC. The guidebook also notes that the ability to bicycle or walk to a transit station relates directly to the viability of transit, which implies that the extent to which these attributes are present, and used, could affect projections of transit use. One challenge is how to estimate the activity levels associated with these modes, which is a goal of this guidebook. Based on the observations in this study, walking as a mode of transportation should be included in the research process for *Transit in Greater Arizona*, and the walkability of communities should be included as a factor in projecting transit use.

Expansion and Redefinition of Role of Transportation Agencies: Implications for Rural Transit

Diminishing auto use and fuel tax revenue, resulting fiscal constraints on street and highway budgets, increasing popularity of travel modes other than the private auto, and national legislation broadening the guidelines for highway planning and design are some of the factors that encourage DOTs throughout the United States to broaden the role of transportation planning. Economic development and community development are intuitively understood to be linked closely to transportation planning, design, and implementation. However, these relationships are not always explicitly recognized in planning processes. In Greater Arizona, economic development is especially relevant, because rural areas are often less competitive than urban areas as locations for economic activity.

Economic Development and Benefits

The following three studies give examples of how economic development considerations can be incorporated into transit planning.

A report entitled *Aligning Strategies to Maximize Impact: Case Studies on Transportation and Economic Development* (Humphrey 2012), highlights case studies where transportation planning efforts are linked with economic development strategies in a regional context. For example, an economic development organization in a rural area combined two types of program: one that identifies and promotes industry clusters, while also promoting business opportunities and linkages; and a set of mobility programs that encourage ridesharing and vanpooling, coordinating with employers to help them increase their employees' transportation choices. Besides being sound economic development practice, the cluster program helps employers coordinate on the vanpooling. Combined, the two programs make the region more attractive for industry by making workers more efficient and enhancing employee satisfaction. This model could have broad application in Greater Arizona, as workers in any given small city have limited job choices locally, need to commute to other places to expand that choice, and can incur high costs when distances are great.

Emerging economic development trends are addressed by the National Cooperative Highway Research Program (Wieder and Williams 2008) in a report that investigates the relationship between transportation planning, roadway design, and economic development. The report discusses how changes in the way economic development is occurring influence transportation needs, and vice versa. The report includes a literature review, results of phone interviews, and a series of case studies from throughout the United States. The study also identifies emerging trends in economic development in five subject areas: business production; site selection; labor market considerations; international trade and global market influence; and urban and rural development practices. One aspect of rural development practices potentially applicable to Greater Arizona is the concept of communities combining to form economic regions that are more competitive than any single community. From a transportation standpoint, this could mean coordinating intercommunity transit services.

Rural transportation systems can maximize the economic benefits they offer to their riders and their communities if they focus on generating the kinds of trips that lead to the largest economic benefits. Burkhardt, Hedrick, and McGavock (1998) note that employment trips, education and training trips, trips for medical services (particularly dialysis), and trips that promote independent living, especially for seniors and persons with disabilities, were found to produce the largest economic benefits (191). The authors also list economic impact categories in which rural cities are expected to show results (139):

- Employment effects, both from the transit system itself and from those who use it for journey-to-work trips, including services to commuters
- Benefits from increased mobility
 - Participation in education and training programs
 - Increased participation in social service programs
 - Health benefits of increased access to medical care
 - Personal independence
- Transportation cost impacts for the system users
- Impacts on expenditure patterns

- Growth of the local economy (beyond that expected without public transportation services)
 - Local development impacts and reduced congestion
 - Access for tourists and related employees

These impacts have a role in fostering overall economic development in a community, particularly the category “growth of the local economy,” but the report contains minimal documentation of such effects. The authors claim that the benefits to rural communities, in total nationally, exceed federal investments in rural transit by a factor of 3.35 to one, based on their interpretation of costs and the summation of estimated benefits.

Community Design and Development

The following studies provide a few examples of how community design can affect travel behavior and the viability of transit options. The extent to which these kinds of considerations influence transit planning in Greater Arizona depend on the larger issue of how thoroughly transportation and land use planning (and other planning considerations) are integrated in practice.

Land Use and Traffic Congestion (Kuzmyak 2012) adds perspective to the link between land use, travel behavior, and traffic congestion. Researchers analyzed the relationships between higher-density land use and traffic conditions in four Phoenix transportation corridors (three urban and one suburban). The analysis showed that the three urban corridors had considerably less congestion despite densities that were many times higher than the suburban corridor. The reasons for this were identified as: a broader mix of uses, including retail, which led to shorter trips; more transit and non-motorized travel; and fewer VMT. Another factor was the importance of a secondary street grid in the three urban areas, which allows for better channeling of traffic and facilitates walking. A gridded street system is common in many older, small cities, including some parts of Greater Arizona communities.

The question of how the built environment affects reduction in VMT is examined in a report (Moudon and Stewart 2013) that summarizes the relationship between individual, household, land use, and built-environment factors associated with transit, and addresses the tools (such as walk scores) that utilize these built environment characteristics to estimate travel changes. The report points out the complexity of fully assessing the built environment's scope and other aspects of influence on travel behavior; however, planning the built environment for optimal transportation efficiency is key to effective transit system design. For transit planning in Greater Arizona, the sequence by which planning processes occur for communities, transportation systems, and other elements can be coordinated to maximize the effectiveness of each process.

The *City of San Diego General Plan* describes the concept of a “city of villages” in which growth is encouraged to occur in walkable, mixed-use community cores that are linked by transit options (Bragado, Camacho, Cameron, Galloway, Gardiner, Levin, Pangilinan, Williams, and Cathy 2006). This concept could potentially have application in some non-metro areas in Greater Arizona. Groups of cities that potentially could be linked through intercity transit could, individually, encourage development to concentrate in existing cores, thereby making the linkage of those “destination” cores within the intercity transit system a more viable option.

A handbook entitled *Main Street . . . when a highway runs through it: A Handbook for Oregon Communities* (Kambur, Smith, Swirsky, Eddy, Olsen, Rankin, Burden, and Kliewer 1999), created by the Oregon DOT to help guide highway improvements to enhance functionality of town business districts, details Main Street design characteristics related to land use, transportation, urban design, funding options, and scale. The handbook authors argue that making "Main Street" a more complete street creates an interface between transit and other modes, such as walking or biking, thereby making transit more likely to attract riders.

CHAPTER 3. PROFILE OF TRAVEL PREFERENCES AND BEHAVIORS IN GREATER ARIZONA

INTRODUCTION TO CHAPTER 3

The primary purpose of the research described in this chapter was to identify, among the population of Greater Arizona, travel preferences and behaviors that may significantly affect the development of transit over the next 20 years. The research was accomplished by means of telephone interviews of heads of households throughout Greater Arizona. The survey-research firm of Behavior Research Center (BRC) conducted the research described in this chapter.

Within Greater Arizona, five target regions were identified among which the survey sample would be distributed. These were:

- Four Councils of Governments (COGs) and their associated counties: Central Arizona Governments (CAG) with Pinal and Gila counties, Northern Arizona Council of Governments (NACOG) with Apache, Coconino, Navajo, and Yavapai counties, South Eastern Arizona Governments Organization (SEAGO) with Cochise, Graham, Greenlee, and Santa Cruz counties, and Western Area Council of Governments (WACOG) with Mohave and La Paz counties; and
- One metropolitan planning organization, the Sun Corridor Metropolitan Planning Organization (SCMPO), a region consisting primarily of the cities of Casa Grande, Coolidge, and Eloy. (Other MPOs in the COGs listed above, except those excluded from Greater Arizona, were not treated as separate entities in order to maintain reasonable sample sizes among selected study regions.)

METHODOLOGY

The information in this chapter is based on in-depth telephone interviews conducted among a representative cross-section of 1,225 Arizonans who defined themselves as the heads of their households in the study's five target areas. The survey used a sample of this size because it allows for meaningful analysis by key demographic subgroups and geographic areas. In order to achieve sampling errors of not more than +/-6.3 percent at a 95 percent confidence level within each of the study's five target areas, a disproportionate, stratified sample was generated. Table 2 shows how the sample would be configured under Proportional and Disproportional (the method used) samples. The survey questionnaire is shown in Appendix A.

Table 2. Sample Distribution under Alternative Sampling Methods

Study Area	Proportional Sample		Disproportional Sample	
	Number	+/- M.E.	Number	+/- M.E. *
CAG (Gila, Pinal)	101	10.0%	125	8.9%
NACOG (Apache, Coconino, Navajo, Yavapai)	446	4.7%	400	5.0%
SCMPO (part of Pinal)	138	8.5%	200	7.1%
SEAGO/SVMPO (Cochise, Graham, Greenlee, Santa Cruz)	261	6.2%	250	6.3%
WACOG/LHCMPO (Mohave and La Paz)	279	6.0%	250	6.3%
TOTAL	1,225	2.9%	1,225	2.9%

* M.E. = Margin of Error

Survey respondents were selected from a computer-generated random-digit-dial telephone sample that selects household landline and personal cell phone numbers on the basis of telephone prefix. (The technical term for this system is Equal Probability of Selection Method). This method ensures a “pure unweighted” sample—a randomly selected sample of area households that is proportionately allocated throughout the sample universe. This method also ensures that all unlisted and newly listed telephone households are included in the sample. A computerized pre-identification process screened the sample to remove known business and commercial phone prefixes in addition to disconnected numbers and fax numbers.

The questionnaire used in this study was designed by the study team in collaboration with the project’s technical advisory committee. A draft questionnaire was pre-tested on a randomly selected cross-section of respondents. The pre-test focused on the value and understandability of the questions, adequacy of response categories, questions for which probes were necessary, and similar issues. No changes were made following the pre-test.

Telephone interviews were conducted between December 4, 2014, and January 9, 2015 (interviewing was suspended between December 20 and January 3) at the BRC central location telephone facility where each interviewer worked under direct supervision. Interviewers were made aware of the study’s purpose and trained in sampling procedures, survey protocols, and other details.

Interviewing on this study was conducted during a cross-section of late afternoon, evening weekday and weekend hours. During the interviewing segment of this study, up to five separate attempts, on different days and during different times of day, were made to contact each selected household. Only after five unsuccessful attempts was a household deleted from the sample and replaced with another household from the sample base. Using this method, the full sample was completed and partially completed interviews were not accepted or counted toward fulfillment of the total quotas.

Completed and validated interviews were turned over to BRC's in-house Coding Department. The Coding Department edited, validated, and coded the interviews. Upon completion of coding, a series of validity and logic checks were run to ensure the data were accurately compiled. Following this procedure, the study data were weighted by the actual volume of households in each geographic area to make the final study sample representative of the study universe (Table 3).

Table 3. Sample Weighting Factors

Geographic Sampling Area	Unweighted	Weighted by Household Volume
CAG (Gila, Pinal)	10.2%	8.2%
NACOG (Apache, Coconino, Navajo, Yavapai)	32.7%	36.4%
SCMPO (Pinal)	16.3%	11.3%
SEAGO/SVMPO (Cochise, Graham, Greenlee, Santa Cruz)	20.4%	21.3%
WACOG/LHCMPO (La Paz, Mohave)	20.4%	22.8%
TOTAL	100.0%	100.0%

All surveys are subject to sampling error, the difference between the results obtained from a sample and those that would be obtained by surveying the entire population under consideration. The size of sampling error varies, to some extent, with the number of interviews completed and with the division of opinion on a particular question. An estimate of the sampling error range for this study is provided in Table 4. The estimates were calculated at the confidence level most frequently used by social scientists, the 95 percent level, and represent the maximum error for the sample sizes shown (i.e., for the survey findings where the division of opinion is approximately 50 percent/50 percent). Survey findings that show a one-sided distribution of opinion, such as 70 percent/30 percent or 90 percent/10 percent, are usually subject to slightly lower sampling errors than those shown in the table.

As the table indicates, the overall sampling error for this study was +/-2.9 percent overall. However, when subsets of the total sample are studied (for individual geographic areas, age groups, and other categories), the amount of sampling error increases as sample sizes decrease the sample size within the subset.

Table 4. Sampling Errors with Variations in Sample Size

Sampling Size	Approximate Sampling Error at a 95% Confidence Level (+/- Percentage of Sampling Tolerance)
1,225	2.9%
900	3.3%
600	4.1%
300	5.8%
200	7.1%
100	10.0%

SURVEY FINDINGS

Survey findings are reported below by survey question. The source for all charts and tables in this section is the survey conducted by BRC as described in the preceding section.

Biggest Problem with Local Transportation System

“To begin, what do you feel is the number one biggest problem with the transportation system in your area of Arizona? What else?”

When respondents were asked this question, nearly one-half (49 percent) mentioned public transportation. In comparison, less than one out of five (19 percent) mentioned either local roads (17 percent) or freeways (2 percent), while 30 percent felt there were no problems or could not think of any. The percentages are shown in Figure 1 for all respondents. Findings by region, in Table 5, indicate that these observations were relatively consistent across the five study regions.

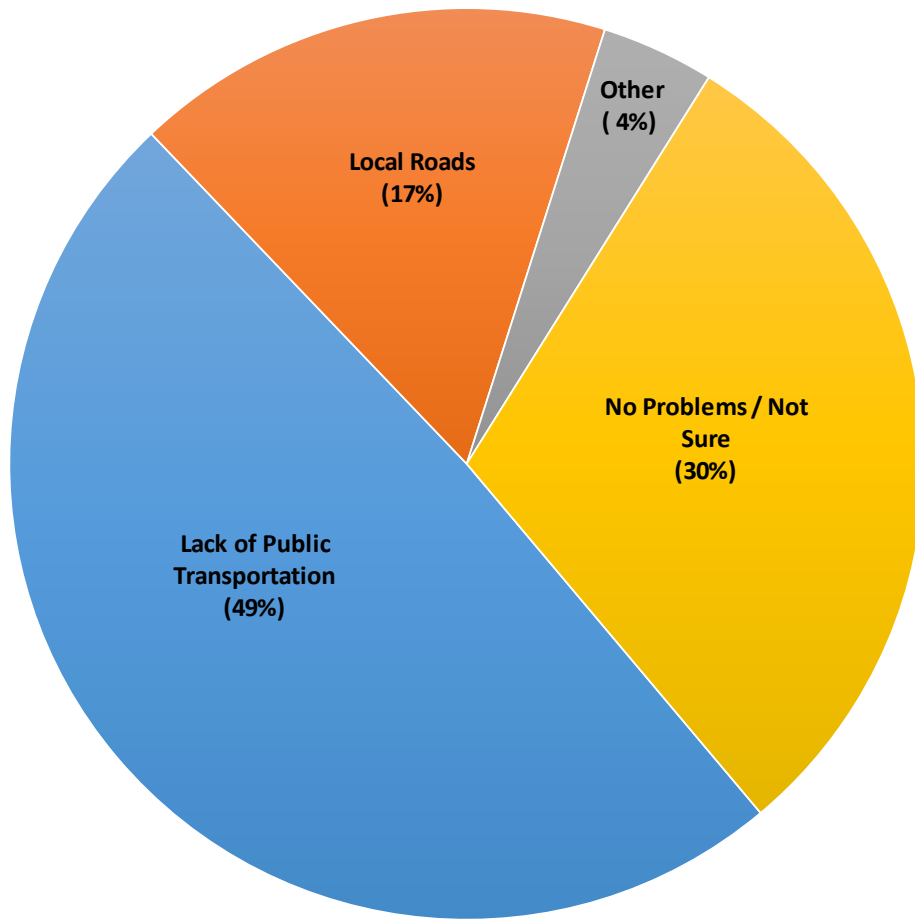


Figure 1. Survey: Biggest Perceived Problem with Local Transportation System

**Table 5. Survey: Biggest Problem with Local Transportation System,
Response by Region**

	Total	CAG	NACOG	SCMPO	SEAGO/ SVMPO	WACOG/ LHCMPO
Public Transportation**	49%	56%	45%	50%	47%	
Lack of public transportation	32%	47%	30%	38%	29%	30%
Poor bus service—limited schedules/coverage, unreliable	14%	8%	12%	9%	16%	21%
No taxi, high taxi fares	3%	2%	2%	3%	4%	3%
No senior/handicap service	2%	0%	1%	1%	1%	3%
No medical transport	*	0%	1%	1%	0%	1%
No trains	*	0%	*	1%	*	1%
No light rail	*	1%	0%	1%	*	1%
Local roads – poor quality, traffic congestion	17%	21%	20%	11%	16%	13%
Freeways – not enough	2%	4%	2%	4%	2%	1%
Existing public transit not used	2%	2%	2%	4%	1%	2%
None/no problems	22%	15%	21%	22%	24%	24%
Not sure	8%	2%	10%	9%	10%	6%

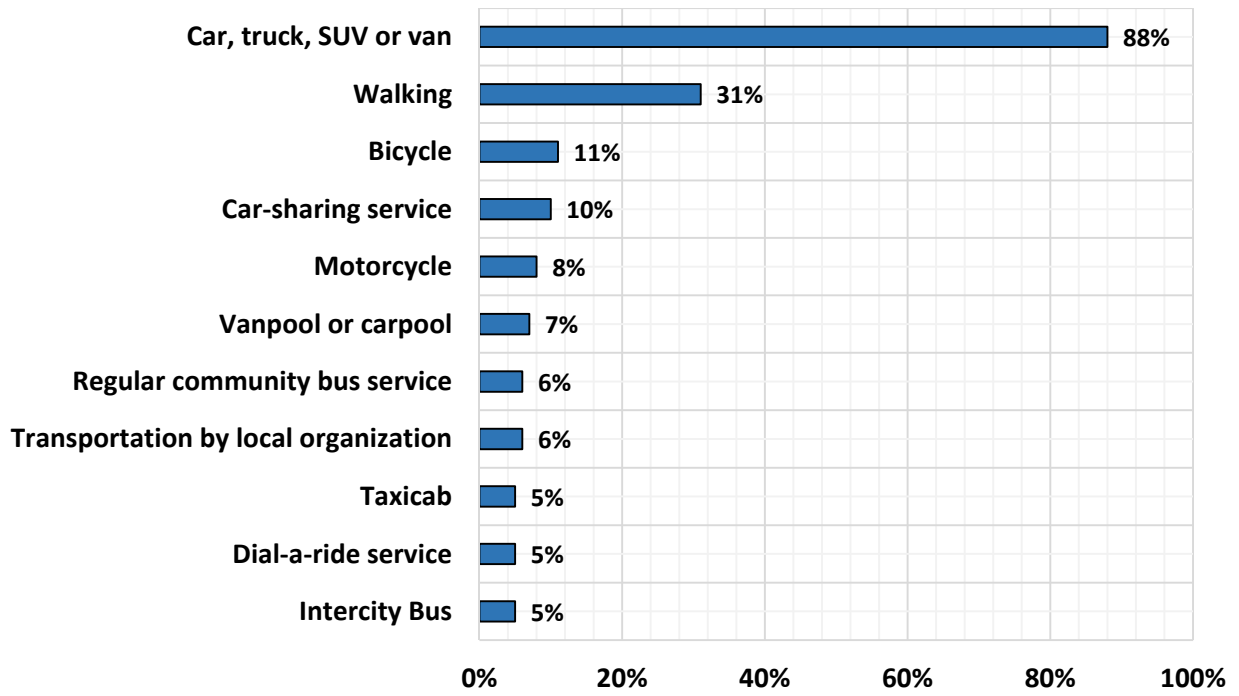
*Indicates % < 0.5

** Sum of mentions of “Public Transportation,” net of overlap within the compilation of open-ended responses

Current Utilization of Selected Transportation Options

“Next, as you are aware, Arizona residents have a variety of transportation options they can rely on to meet their transportation needs. I’d like to mention a few of these options and have you tell me if you or other members of your household always, regularly, rarely or never rely on each to meet your personal transportation needs in your area.”

When respondents were asked to indicate their use of 11 different transportation options, automobiles received the highest response, with 88 percent indicating that they always (79 percent) or regularly (9 percent) relied on a car, truck, sport-utility vehicle or van to meet their personal transportation needs. The highest responses among the public transit options were scheduled local bus service and transport by local organization (6 percent each), followed by taxicab, dial-a-ride service, and intercity bus (5 percent each). (The survey option “Transportation provided by local organizations” was provided in anticipation that some respondents would be familiar with a van or small bus operated by a service organization that they were affiliated with.) These results are summarized in Figure 2 and the findings shown in detail in Table 6. Table 7 indicates that the readings were similar among the study regions. (In the survey, respondents were asked about “bus service between their home area and other communities,” for which the term “intercity bus” has been substituted in the figures and tables that follow.)



**Figure 2. Survey: Current Use of Selected Transportation Options
(Percent Indicating Always or Regularly)**

**Table 6. Survey: Current Use of Selected Transportation Options,
Response Detail**

	Always	Regularly	Rarely	Never	% Always/ Regularly
Car, truck, SUV or van	79%	9%	2%	10%	88%
Walking	13%	18%	23%	46%	31%
Bicycle	3%	8%	17%	72%	11%
Car-sharing services	4%	6%	8%	82%	10%
Motorcycle	2%	6%	7%	85%	8%
Vanpool or carpool	2%	5%	11%	82%	7%
Regular bus service within community	2%	4%	7%	87%	6%
Transportation provided by local organizations	3%	3%	6%	88%	6%
Taxicab	2%	3%	14%	81%	5%
Dial-a-ride service	2%	3%	5%	90%	5%
Intercity bus	2%	3%	9%	86%	5%

**Table 7. Survey: Current Use of Selected Transportation Options,
Response by Region**

	Total	CAG	NACOG	SCMPO	SEAGO/ SVMPO	WACOG/ LHCMPO
Car, truck, SUV or van	88%	91%	87%	93%	90%	84%
Walking	31%	30%	33%	26%	27%	31%
Bicycle	11%	11%	11%	11%	10%	9%
Car-sharing services	10%	7%	13%	5%	9%	8%
Motorcycle	8%	8%	7%	4%	9%	11%
Vanpool or carpool	7%	10%	10%	7%	6%	4%
Regular bus service within community	6%	2%	7%	3%	3%	10%
Transportation provided by local organizations	3%	3%	9%	3%	3%	7%
Taxicab	5%	6%	5%	4%	3%	7%
Dial-a-ride service	5%	4%	5%	5%	2%	7%
Intercity bus	5%	2%	6%	2%	4%	6%

Continuing with this line of questioning, after respondents indicated their use of the 11 transportation options, they were asked if they would like to have the opportunity to make greater use of each in order to meet their household’s transportation needs. Two of the four public transit options received expressions of interest from nearly one-half of all respondents—intercity bus service (49 percent) and regularly scheduled local bus service (47 percent). Receiving lower interest were dial-a-ride services (33 percent) and taxicabs (26 percent). See Figure 3.

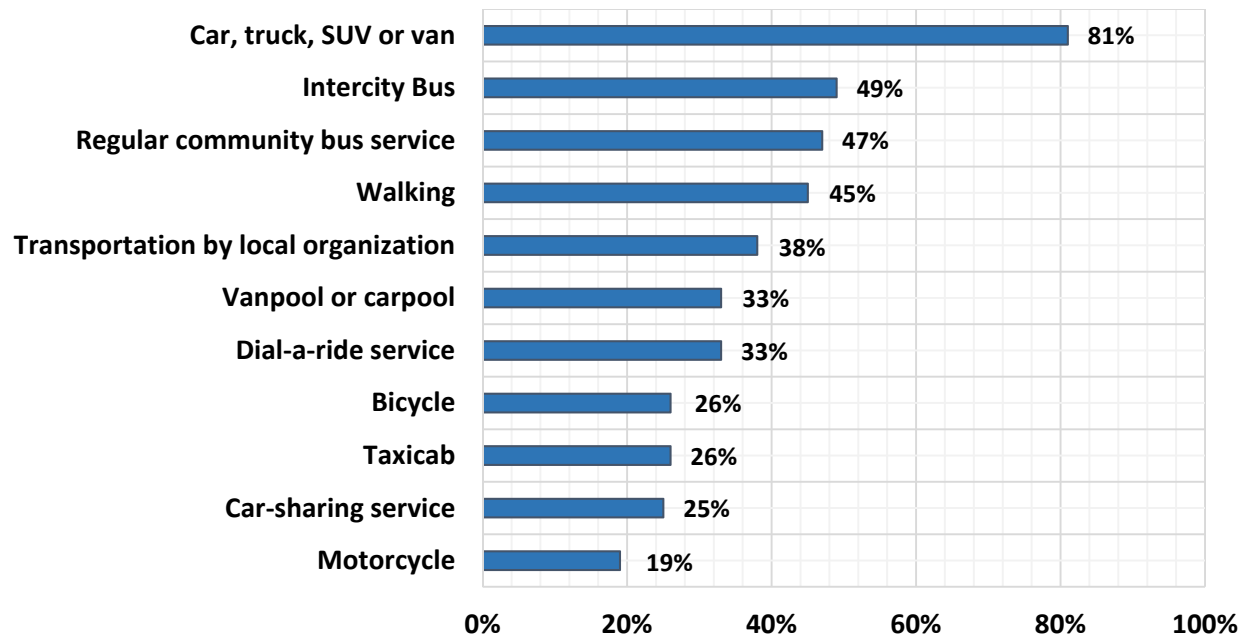


Figure 3. Survey: Transportation Options that Respondents Would Like to Use More

Once again, very little difference is found in the response patterns among the five study regions, as shown in Table 8. Table 9 provides detail by respondent characteristics and reveals that respondents who were under age 55, had low incomes, and had no driver’s license had a higher interest than others in each of the four public transit options.

**Table 8. Survey: Transportation Options Would Like to Use More,
Response by Region**

	Total	CAG	NACOG	SCMPO	SEAGO/ SVMPO	WACOG/ LHCMPO
Car, truck, SUV or van	81%	76%	81%	84%	79%	84%
Intercity bus	49%	51%	51%	48%	44%	49%
Regular bus service within community	47%	47%	47%	47%	44%	51%
Walking	45%	47%	48%	41%	43%	46%
Transportation provided by local organizations	38%	37%	41%	35%	33%	38%
Vanpool or carpool	33%	29%	38%	30%	30%	30%
Dial-a-ride service	33%	25%	36%	31%	31%	34%
Bicycle	26%	26%	29%	29%	22%	24%
Taxicab	26%	26%	25%	24%	28%	28%
Car-sharing services	25%	17%	31%	23%	22%	21%
Motorcycle	19%	16%	20%	9%	20%	22%

Table 9. Survey: Interest in Public Transit Services by Demographic

	Intercity Bus Service	Local Bus Service	Dial-a-Ride	Taxicabs
Total	49%	47%	33%	26%
Gender				
Male	47%	44%	33%	25%
Female	50%	49%	33%	27%
Age				
Under 35	59%	57%	38%	36%
35 to 54	55%	53%	39%	32%
55 and over	43%	41%	29%	19%
Income				
Under \$25,000	61%	61%	44%	34%
\$25,000 to \$49,999	48%	45%	30%	24%
\$50,000 to \$74,999	49%	48%	31%	28%
\$75,000 and over	38%	35%	26%	20%
Driver's License				
Yes	46%	44%	30%	23%
No	62%	63%	48%	39%

Rating of Local Public Transit Availability

“Next, I’d like to ask you some questions about public transit in your area of Arizona. By public transit I mean such things as regularly scheduled bus service, dial-a-ride service, intercity bus service, or vanpools. Overall, would you rate the availability of public transit in your area as excellent, good, only fair or poor?”

Nearly 70 percent of respondents rated their local scheduled bus service negatively (poor or fair), with 51 percent rating it as poor and 18 percent as fair. Only 17 percent rated the service as either excellent (2 percent) or good (15 percent). Geographically, CAG residents (Table 9) offered the most negative rating at 83 percent. See Figure 4 and Table 9 for details.

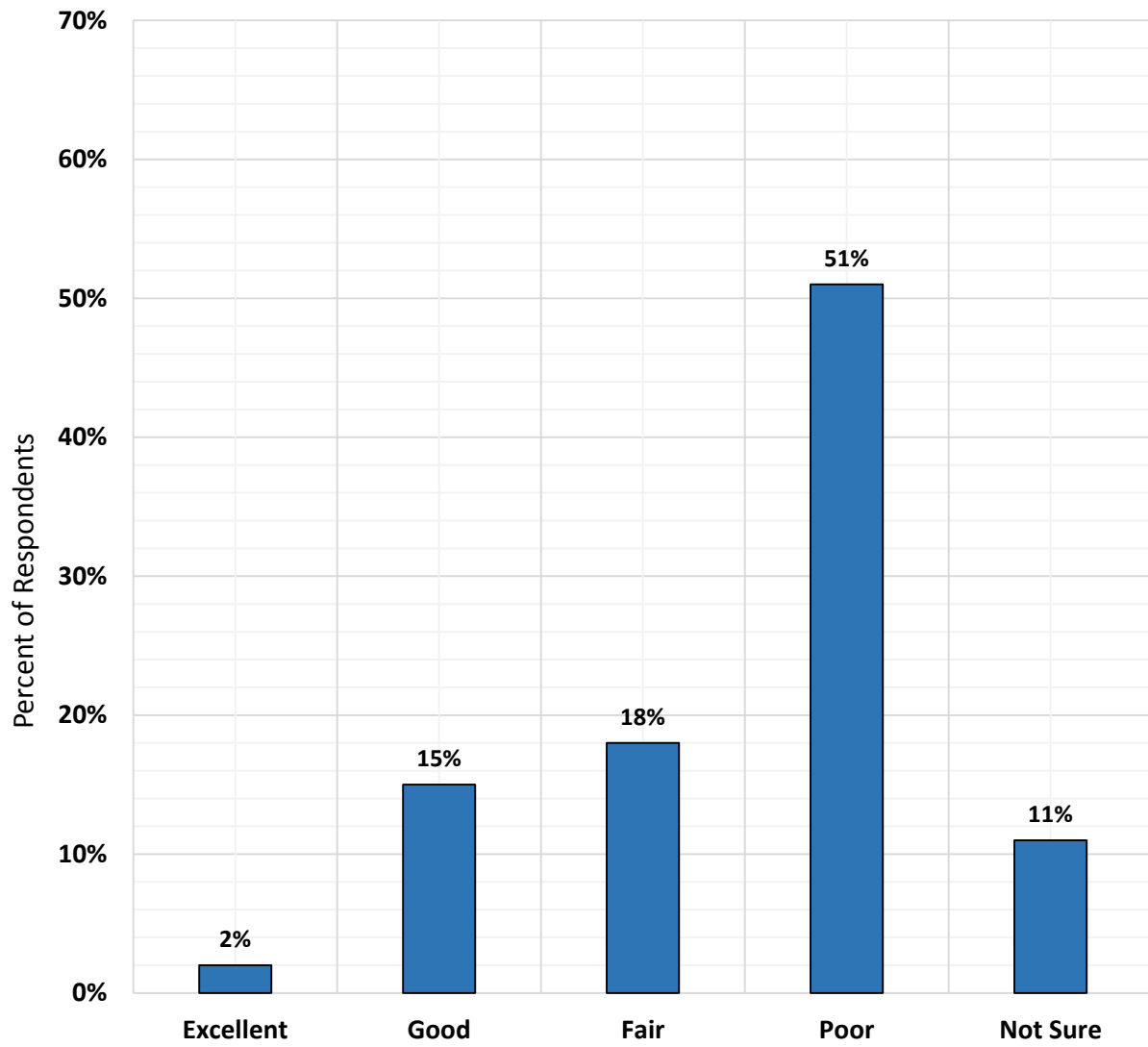


Figure 4. Survey: Rating of Local Public Transit Availability

Table 9. Survey: Rating of Public Transit Availability, by Region and by Respondent Characteristics

	Excellent	Good	Fair	Poor	Not Sure	Total Negative*
Total	2%	15%	18%	51%	11%	69%
Region						
CAG	1%	7%	12%	71%	9%	83%
NACOG	7%	16%	19%	49%	9%	68%
SCMPO	5%	8%	18%	53%	16%	71%
SEAGO/SVMPO	5%	15%	19%	49%	12%	68%
WACOG/LHCMPO	6%	18%	20%	46%	10%	66%
Gender						
Male	4%	15%	20%	49%	12%	69%
Female	6%	14%	18%	52%	10%	70%
Age						
Under 35	6%	19%	28%	42%	5%	70%
35 to 54	6%	13%	20%	55%	6%	75%
55 and over	4%	15%	15%	51%	15%	66%
Income						
Under \$25,000	7%	16%	21%	48%	8%	69%
\$25,000 to \$49,999	8%	14%	17%	52%	9%	69%
\$50,000 to \$74,999	2%	15%	20%	53%	10%	73%
\$75,000 and over	5%	17%	18%	51%	9%	69%
Driver's License						
Yes	5%	14%	17%	51%	13%	68%
No	3%	13%	23%	55%	6%	78%

*"Fair" plus "Poor"

As a follow-up to this question, 20 percent of respondents indicated that they believe public transit in their area has improved in the last few years, while 13 percent believed it had become worse and 53 percent believed it had remained the same, with the remainder not sure (Figure 5). As shown in Table 10, SCMPO residents ("Net Improved" percentage at +19 percent) and those under 35 (+21 percent) reported the most improvement, while WACOG/LHCMPO residents reported the least (-6 percent).

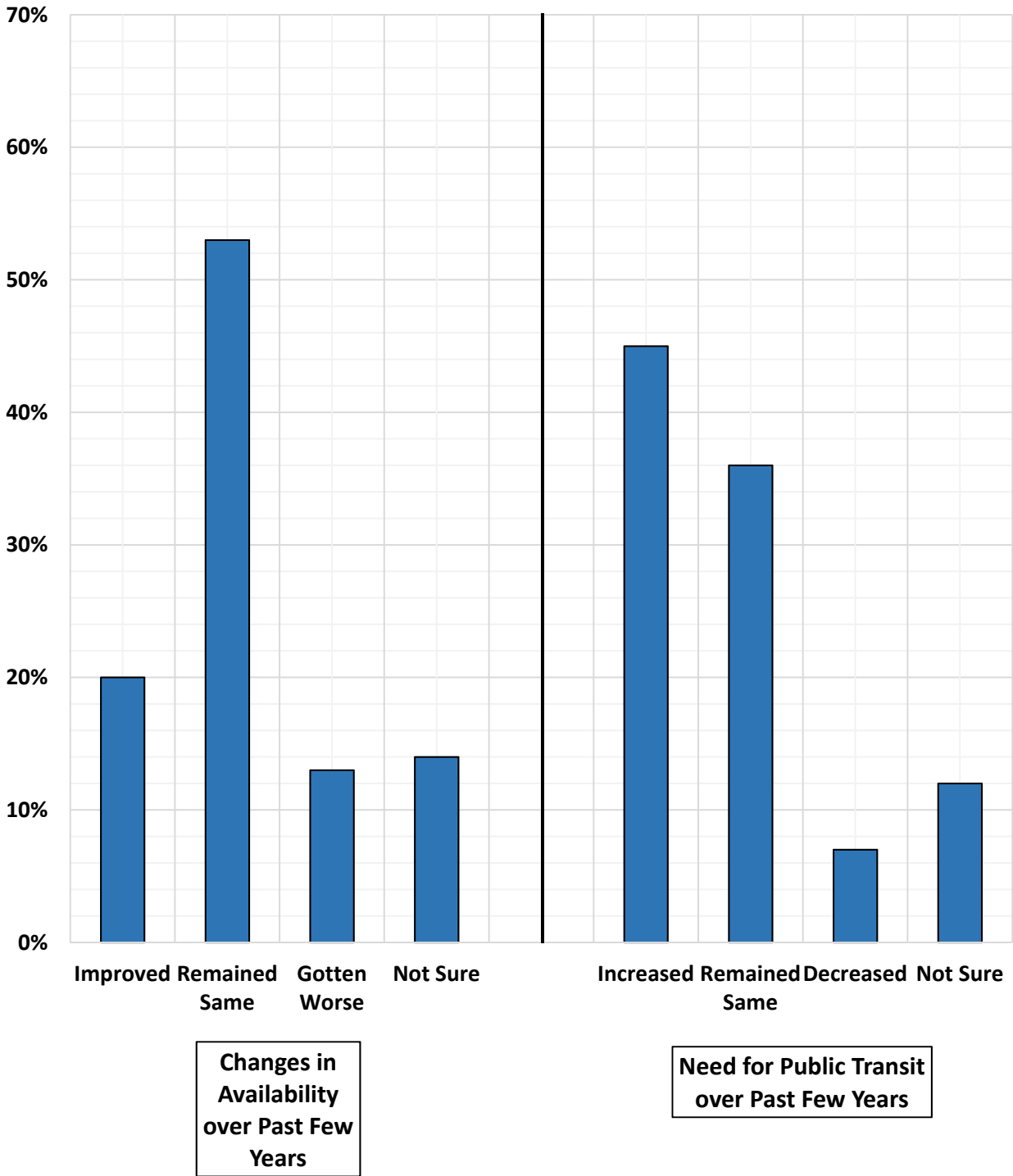


Figure 5. Survey: Public Perception of Availability and of Changing Need for Public Transit

Table 10. Survey: Changes in Availability of Public Transit in Area, by Region and by Respondent Characteristics

	Improved	Remained Same	Gotten Worse	Not Sure	Net Improved*
Total	20%	53%	13%	14%	7%
Region					
CAG	13%	67%	7%	13%	6%
NACOG	21%	55%	11%	13%	10%
SCMPO	24%	55%	5%	16%	19%
SEAGO/SVMPO	22%	52%	11%	15%	11%
WACOG/LHCMPO	17%	47%	23%	13%	-6%
Gender					
Male	22%	53%	13%	12%	9%
Female	18%	54%	13%	15%	5%
Age					
Under 35	26%	55%	5%	4%	21%
35 to 54	21%	56%	12%	11%	9%
55 and ove	19%	52%	12%	17%	7%
Driver's License					
Yes	20%	53%	17%	15%	8%
No	19%	56%	17%	8%	2%

*"Improved" minus "Gotten Worse"

The final question in this section asked respondents if the need for public transit in their area had increased, decreased, or remained the same over the past several years. Responses to this question indicated that nearly one-half (45 percent) believed the need had increased (Figure 5). This attitude was relatively consistent across population subgroups, as shown in Table 11.

**Table 11. Survey: Changing Need for Public Transit in Area,
By Region and Respondent Characteristics**

	Increased	Remained Same	Decreased	Not Sure	Net Increased*
Total	45%	36%	7%	12%	38%
Region					
CAG	46%	39%	4%	11%	42%
SCMPO	52%	29%	6%	13%	46%
SEAGO/SVMPO	40%	42%	6%	12%	34%
NACOG	41%	38%	8%	13%	33%
WACOG/LHCMPO	50%	29%	10%	11%	40%
Gender					
Male	41%	40%	8%	11%	33%
Female	47%	33%	7%	13%	40%
Age					
Under 35	47%	38%	10%	5%	37%
35 to 55	49%	35%	7%	9%	42%
Over 55	43%	36%	7%	14%	36%
Driver's License					
Yes	45%	35%	7%	13%	38%
No	39%	41%	11%	9%	28%

*"Increased" minus "Decreased"

Awareness of Local Public Transit Options

“To the best of your knowledge, is each of the following types of public transit available or not available in your area of Arizona? If you are not sure, just say so.”

Sixty-one percent of respondents believed that taxi service was available in their area and 31 percent believed it was not available. In comparison, a plurality of respondents believed three additional key public transit options were not available in their area: 1) regularly scheduled local bus service (59 percent); 2) intercity bus service (45 percent), and 3) dial-a-ride service (45 percent). See Figure 6 and Table 12 below for details.

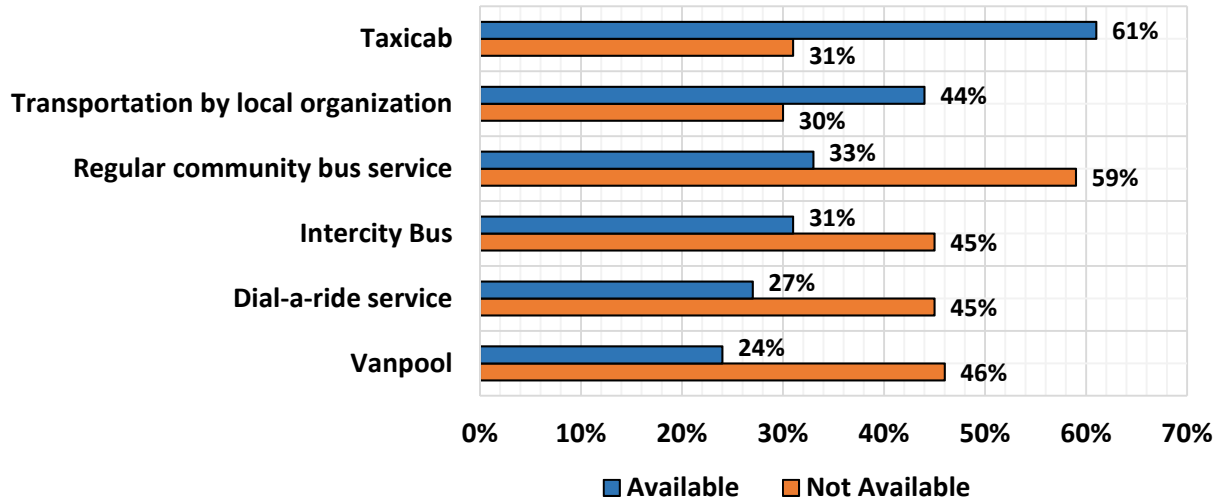


Figure 6. Survey: Knowledge of Public Transit Options in Area

Table 12. Survey: Awareness of Local Public Transit Options

	Available	Not Available	Not Sure
Taxicab	61%	31%	8%
Transportation provided by local community organizations	44%	30%	26%
Regularly scheduled bus service within community	33%	59%	8%
Intercity bus	31%	45%	15%
Dial-a-ride service	27%	45%	28%
Vanpool	24%	46%	30%

Belief that selected public transit options are available varied significantly by region for some options, as shown in Table 13.

Table 13. Survey: Awareness of Local Public Transit Options, by Region

	Total	WACOG/ LHCMPO	NACOG	CAG	SEAGO/ SVMPO	SCMPO
Taxicabs	61%	78%	49%	70%	59%	65%
Transportation provided by local organizations	44%	48%	42%	40%	47%	44%
Regularly scheduled bus service within community	33%	45%	32%	16%	36%	21%
Intercity bus	31%	29%	38%	16%	24%	32%
Dial-a-ride service	27%	39%	23%	29%	22%	26%
Vanpool	24%	22%	23%	30%	25%	24%

Interest in Using Local Public Transit Options

“Let’s assume for a minute that the following types of transit services were available throughout your area of Arizona at a reasonable cost. If each of these services was available, would you or other members of your household definitely, probably, probably not or definitely not consider using it?”

When respondents answered this question, regularly scheduled local bus service generated the most interest with a “definite” response of 30 percent, followed by intercity bus service at 28 percent. Each of the remaining options registered a “definite” reading of 20 percent or less. See Figure 7 and Table 14.

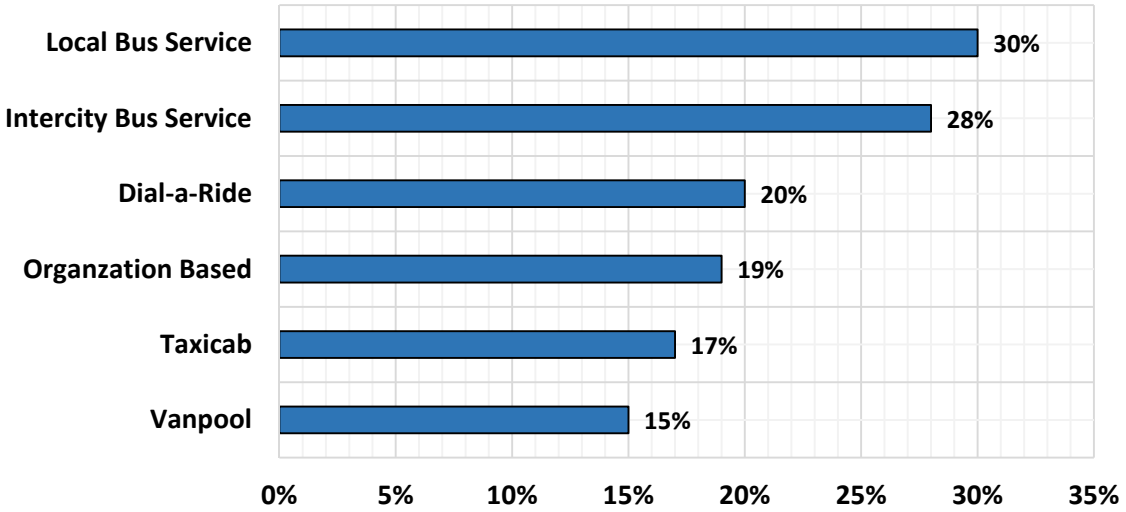


Figure 7. Survey: Interest in Using Selected Types of Public Transit (Percent Definitely Interested)

Table 14. Survey: Interest in Using Local Public Transit Options, Detail

	Definitely	Probably	Probably Not	Definitely Not	Not Sure
Regularly scheduled bus service within community	30%	30%	23%	15%	2%
Intercity bus	28%	33%	21%	15%	3%
Dial-a-ride service	20%	29%	29%	18%	4%
Transportation provided by local community organizations	19%	33%	28%	17%	3%
Taxicab	17%	25%	31%	25%	2%
Vanpool	15%	24%	32%	25%	4%

When “definite use” of each option is analyzed geographically, the results are relatively consistent across the five study regions. Also, note that the highest interest in each option comes from lower-income respondents, non-workers, renters, and respondents without a driver’s license (Table 15).

**Table 15. Survey: Interest in Using Local Public Transit Options,
By Region and Respondent Characteristics**

	Local Bus Service	Intercity Bus Service	Dial-a-Ride	Organization Based	Taxicab	Vanpool
Total	30%	28%	20%	19%	17%	15%
Region						
CAG	27%	27%	19%	16%	13%	15%
NACOG	32%	31%	22%	20%	18%	17%
SCMPO	34%	30%	15%	15%	18%	11%
SEAGO/SVMPO	23%	24%	19%	18%	17%	15%
WACOG/LHCMPO	32%	25%	21%	20%	18%	16%
Gender						
Male	26%	25%	17%	16%	16%	13%
Female	33%	30%	23%	21%	18%	17%
Age						
Under 35	37%	33%	22%	18%	24%	20%
35 to 54	37%	35%	28%	26%	24%	21%
55 and over	24%	22%	15%	15%	10%	10%
Income						
Under \$25,000	43%	41%	31%	32%	25%	26%
\$25,000 to \$49,999	30%	28%	18%	14%	13%	11%
\$50,000 to \$74,999	26%	24%	18%	16%	16%	13%
\$75,000 and over	21%	21%	12%	10%	15%	12%
Driver's License						
Yes	26%	25%	17%	16%	14%	13%
No	52%	44%	41%	37%	35%	24%
Employed						
Yes	28%	26%	17%	17%	17%	15%
No*	48%	41%	32%	26%	27%	23%
Retired	23%	23%	17%	17%	13%	12%
Home						
Own	27%	25%	18%	17%	14%	13%
Rent	37%	36%	24%	25%	26%	20%

*Unemployed, homemaker, student, etc.

A majority of those respondents who revealed an interest in using public transit indicated they were most likely to use it for medical appointments (53 percent “definitely”) and intercity travel (51 percent). Those in the highest income category were marginally more likely than those in the lower income

groups to report an interest in using public transit for work. Each of the remaining purposes received “definitely use” readings between 34 and 38 percent (Figure 8). Table 16 and Table 17 provide additional detail on the responses.

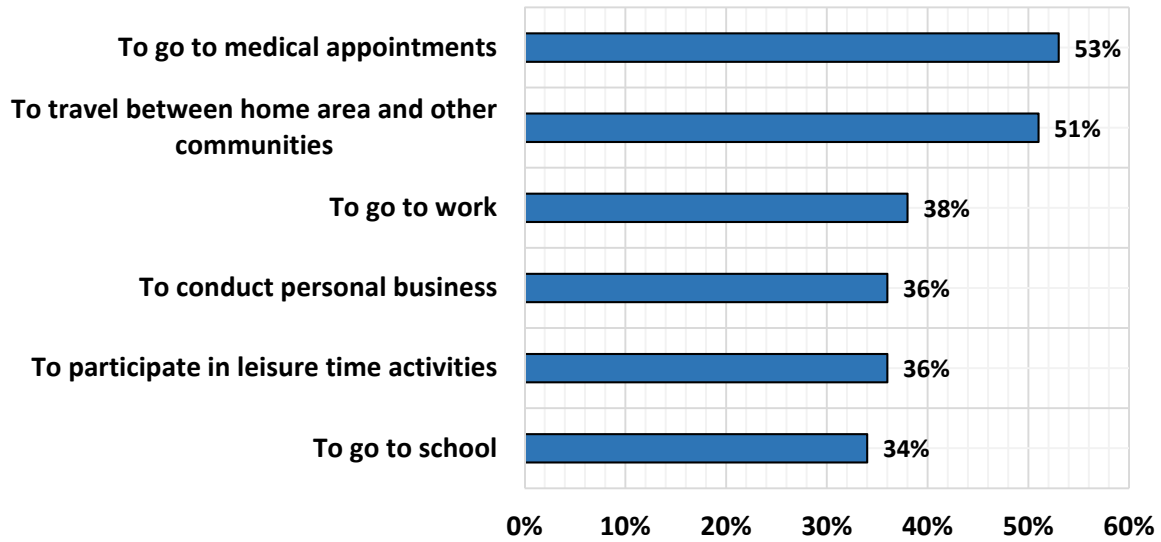


Figure 8. Survey: Expressed Likely Use of Public Transit for Selected Purposes (Percent Definitely Use, Among Those Reporting Definite Interest in Using Public Transit)

Table 16. Survey: Likely Use of Local Public Transit for Selected Purposes (Among Respondents Definitely Interested in Using Public Transit)

	Definitely	Probably	Probably Not	Definitely Not	Not Sure
To go to medical appointments	53%	25%	11%	10%	1%
To travel between home area and other Arizona communities	51%	30%	10%	8%	1%
To go to work	38%	23%	15%	23%	1%
To conduct personal business	36%	31%	18%	13%	2%
To participate in leisure time activities	36%	32%	18%	12%	2%
To go to school	34%	21%	15%	28%	2%

Table 17 presents responses to this line of inquiry by geographic and demographic subgroup.

Table 17. Survey: Likely Use of Local Public Transit for Selected Purposes, by Region and Respondent Characteristics (Among Respondents Definitely Interested in Using Public Transit)

	Medical	Intercity Travel	Work	Personal Business	Leisure Activities	School
Total	53%	51%	38%	36%	36%	34%
Region						
CAG	42%	41%	28%	35%	30%	23%
NACOG	60%	56%	46%	42%	35%	40%
SCMPO	43%	49%	34%	26%	27%	35%
SEAGO/SVMPO	45%	49%	35%	31%	40%	28%
WACOG/LHCMPO	58%	50%	35%	37%	41%	34%
Gender						
Male	47%	46%	40%	36%	34%	27%
Female	57%	55%	37%	37%	37%	39%
Age						
Under 35	55%	61%	61%	39%	43%	54%
35 to 54	57%	56%	44%	39%	39%	43%
55 and over	49%	44%	24%	34%	31%	17%
Income						
Under \$25,000	65%	56%	39%	45%	40%	36%
\$25,000 to \$49,999	50%	55%	34%	31%	29%	37%
\$50,000 to \$74,999	44%	46%	38%	31%	39%	38%
\$75,000 and over	44%	43%	44%	35%	39%	26%
Driver's License						
Yes	48%	48%	33%	32%	33%	28%
No	70%	58%	48%	53%	45%	38%
Employed						
Yes	50%	51%	47%	34%	39%	37%
No*	61%	66%	52%	42%	42%	57%
Retired	50%	42%	18%	33%	28%	14%
Home						
Own	51%	48%	36%	36%	37%	32%
Rent	57%	57%	44%	37%	33%	39%

*Unemployed, homemaker, student, etc.

DISCUSSION OF SURVEY FINDINGS

Context

ADOT commissioned this study to complement and inform the Statewide Transit Plan, which is intended to help coordinate options within, and generally inform, the State Long Range Transportation Plan. ADOT is sensitive to recent changes that other research organizations have noted in the travel patterns and preferences of various segments of the nation's *urban* population. However, little was known about either existing or emerging travel and mode preferences among the demographic subsets of Arizona's *rural* population. To gain insight into this topic, the household survey described in this chapter was conducted as part of the overall research process, which included a literature review and compilation of demographic data for Greater Arizona. The research process was designed in recognition of certain conditions that could affect the potential for obtaining the most meaningful results. For example, trends in travel patterns and preferences identified through existing research mostly pertain to *urban* populations. To the extent that findings for rural areas are either similar or different, additional research would be required to determine definitely whether similarities or differences are due to underlying demographic conditions such as age differences, to transportation options available in cities but limited in rural areas, to different education and job opportunities in the two types of regions, or to different levels of concentration of economic activity in urban and rural areas.

Selected Highlights of Overall Results

The survey began with an open-ended question asking respondents to indicate what they felt was the single biggest problem with the transportation system in their area. Unlike the other questions in the survey, each of which had a specific structure and intent, this question had a *strategic* purpose, that being to allow respondents to clear their minds of the first things that occur to them when the local transportation system is mentioned, so that they could better focus on the specifics of the survey as it progresses. Consequently, the fact that 49 percent of the respondents stated that lack of public transportation was the biggest local transportation problem indicates that people are very aware of this issue. This level of awareness, and identification of the problem, was confirmed in other survey questions. For example:

- Fifty-one percent indicated that public transit availability in their area should be rated “poor.” If we consider a negative rating of availability to include responses of “poor” and “fair,” the *least* negative rating, 66 percent, came from respondents in the WACOG/LHCMPO region. The negative percentage was higher in all the other regions.
- Nearly one-half of the respondents stated they would like to have the opportunity to make greater use of both intercity bus service and regularly scheduled local bus service.
- Forty-five percent of respondents said that the need for public transit in their area had increased over the past few years.
- Thirty percent of respondents said that their household would “definitely” use regularly scheduled local bus service if it were available throughout their area at a reasonable cost, while 28 percent would use intercity bus service.

When asked about transportation options that they would like to have the opportunity to make greater use of, respondents indicated relatively high levels of interest, ranging from a low of 25 percent, for car-sharing services, to 49 percent for intercity buses. Some observations by respondents may be due to a lack of information about transportation options that do exist within these communities. For example, more respondents tended to believe that taxicabs, and transportation provided by local community organizations, were available in their communities than believed that they were not available. Even so, the percentages associated with these responses reflected a fairly high level of doubt about the availability of services that are fairly common throughout the state. For other transit options—regularly scheduled bus service, intercity bus, dial-a-ride services, and vanpools—substantially more respondents believed they were *not* available than those who believed they were available.

Commuters (travelers to and from work) had a relatively low level of interest in using public transit. For respondents with a “definite” interest in using public transit, medical appointments and intercity travel are the most important intended use categories, with each attracting just over 50 percent of respondents. Commuting to work, conducting personal business, participating in leisure activities, and going to school were all approximately equal in transit interest (34 to 38 percent of respondents).

Regional Variations

The survey respondents’ answers to questions generally did not vary greatly across the five regions analyzed. Some patterns in regional differences among responses are summarized below:

- Respondents in CAG were the most likely, and those in NACOG the least likely, to recognize a lack of public transit as the biggest transportation problem in their area.
- The percent of respondents always or regularly using personal motorized transportation (car, truck, etc.) was highest in the SCMPO region and lowest in WACOG/LHCMPO, where regularly scheduled bus service was most likely to be used. The WACOG region was also rated highest in availability.
- Respondents in the SCMPO region were most likely to indicate that availability of transit service in their area had improved and those in WACOG/LHCMPO least likely, although percentages indicating improvements in availability were low in all the regions.
- Respondents in the WACOG/LHCMPO region were most likely to be aware of taxi services (78 percent), and those in NACOG least aware. Awareness of regularly scheduled bus service was relatively low for all regions combined, at 33 percent, and was lowest in the CAG region.

Demographic Variations

Of the three age groups segmented in the survey sample (under 35, 35 to 54, and 55 and over), respondents under 35 were most likely to want increased opportunities to use intercity bus service (59 percent), local bus service (57 percent), and taxicabs (36 percent). However, the percentage spread between this age group and the next (age 35-54) was small, just 4 percentage points for all three transportation options. Those age 55 and over were the least interested in using public transit, and the percentage spread from the under-35 group was 16 to 19 points. Respondents age 35 to 54 gave the lowest rating of any age group to the availability of public transit in their community. Those under 35 were more likely to believe that service had improved in the past few years.

Income has been noted in other studies to be an indicator of the use of public transit, with lower incomes associated with higher public transit use (for example see Chu [2012]). Respondents to the Greater Arizona household survey with household incomes under \$25,000 were most likely to have an interest in using public transportation. Those with the highest incomes, \$75,000 and over, were least likely. Respondents with incomes under \$25,000 were most likely to use public transit for medical services, intercity travel, and personal business. Those in the highest income bracket were somewhat more likely than those in the lower brackets to use public transit for work. Respondents who were unemployed (but not retired) and those without a driver's license were most likely to anticipate using public transit for all possible purposes.

This survey focused on the non-urban population of Arizona. There is no similarly designed, Arizona-specific, urban survey to which to refer. Consequently, the survey results cannot be directly compared to those that a survey of urban populations might produce. Generally speaking, however, the survey findings were consistent with prior studies in urban areas that indicated that persons in lower income brackets and those using transit for other than commuting purposes tend to be heavier users of public transit. For example, see Chu (2012) and FHWA (2009).

Transportation literature discusses the apparent contradiction between the relatively high apparent need of seniors for public transit and their frequent tendency not to use it. Some researchers have suggested that this is largely due to a combination of a lack of orientation/education, and the need for scheduling, fares, and other details to be communicated in ways more accessible to seniors. These concepts are discussed in Cevallos et. al. (2010). Results of this survey also indicated that respondents age 55 and over have a lower level of interest in using public transit, compared with younger age groups.

Aspects of *Transit in Greater Arizona* other than this survey have addressed the issue of potential changes in public transit interest and use by the Millennial generation (born within the upper end of the date range). Some studies of adult Millennials (for example TransitCenter [2014]) have indicated that this group is more interested in using public transit than other segments of the population, although other researchers dispute these kinds of claims. This dispute sometimes takes the form of research that indicates that Millennials do not have a preference for the urban settings that tend to foster transit use. According to Cox (2014), Millennials do not have a preference for urban locations, based on analysis of their locations. Authors of a study by the Demand Institute (2013) assert that their Millennials survey shows that home and auto ownership are prime goals of Millennials; many simply have not yet had the resources to realize these ambitions.

In the Greater Arizona household survey, differences in the percentage of respondents interested in using transit options were generally small between the lowest (Millennial) and middle age group, although a slightly higher percentage of Millennials indicated interest in various transit options. Differences between these two groups and the oldest age group were more pronounced. Consequently, Millennials living in Greater Arizona may not be much more inclined to use transit than older adults aged 35 to 54 years old.

Comparison of Sample to the Universe

The telephone interviews were conducted among a representative cross-section of 1,225 Arizona heads of households. The sample size allowed for meaningful analysis of results by key demographic subgroups, and for each of the study's five geographic regions in Greater Arizona. In allocating the sample among the regions, and because the regions varied greatly in their number of households, it was necessary to use a disproportionate, stratified sample in order to maintain acceptable levels of sampling error. Once the data were obtained and processed, the study data were weighted by the actual volume of households in each geographic area to make the final study sample representative of the study universe.

Although the survey process attempted to capture a demographic cross-section of heads of households throughout Greater Arizona, some variation between the composition of the survey sample and the overall population is inevitable. The comparison of the sample and the head-of-household universe in Greater Arizona is summarized below. Data for the universe are based on the Census Bureau's 2012 American Community Survey 5-Year estimates, unless noted otherwise.

Age of Head of Household

The age ranges reported by respondents were distributed among the category options given in the survey as shown below:

- Under 35 – 19 percent
- 35 to 54 – 32 percent
- 55 and over – 49 percent

This distribution is very similar to the head-of-household age distribution in Greater Arizona according to Census data.

Income

The income ranges reported by respondents were distributed among the category options given in the survey as shown below:

- Under \$25,000 – 29 percent
- \$25,000 to \$49,999 – 32 percent
- \$50,000 to \$74,999 – 20 percent
- \$75,000 and over – 19 percent

This distribution is very similar to the household-income distribution in Greater Arizona reported in the Census estimates.

Employment Status

Employment status reported by respondents was distributed among the category options given in the survey as shown below:

- Yes [employed] – 41 percent
- No – 19 percent
- Retired – 40 percent

This distribution is similar to the employment status (including heads of households as well as other workers) in Greater Arizona reported in the Census estimates. According to the Census, 46 percent of persons aged 16 and older (a group which includes many non-heads-of-household) in Greater Arizona were employed.

Gender

The survey sample contained a higher proportion of females than males, as shown below:

- Male – 45 percent
- Female – 55 percent

Although the available Census data are not directly comparable to the survey sample, women constitute 51 percent of all household heads in Greater Arizona (source is Census 2000 data). In the survey results, female heads of household were somewhat more likely than their male counterparts to be “definitely” interested in using public transit for medical purposes, intercity travel, and school.

Own or Rent Home

According to Census data, 66 percent of households own their homes in Greater Arizona, compared with 73 percent in the survey sample. The survey results indicated that renters are more inclined than homeowners to have a “definite” interest in using public transit options and an intent to use them. Consequently, when looking at survey results from all respondents, expressions of interest in using transit and intent to use transit may be understated somewhat with respect to the overall population.

CHAPTER 4. GREATER ARIZONA TRANSPORTATION PROVIDERS

This chapter documents two subtasks related to transportation service providers in Greater Arizona:

1. Preparing a contact database of providers serving Greater Arizona, and
2. Conducting an informal survey of providers to obtain input on the types of services they provide, vehicles used, general route data, and business operation details.

THE TRANSPORTATION SERVICE PROVIDER DATABASE

Identifying the existing transportation providers that serve Greater Arizona was addressed by:

- Purchasing and organizing a business database from InfoUSA.
- Compiling data on non-profit providers, and in some cases private-sector providers, using sources such as the NACOG Directory of Transit Providers, ADOT databases, and the APTA database for Arizona.
- Supplementing and in many cases cross-checking the purchased listings by visiting individual websites for companies and for organizations such as Manta, Whitepages, Yellowpages, Yelp, Google+, Facebook, Twitter, and other advertising or business listing services.

The intent was to include only those organizations that were not entirely governmentally supported in the database, so some partially supported organizations are included. Because some transportation firms providing services to Greater Arizona are located in the metro areas of Phoenix, Tucson, and Yuma County, most businesses in those areas were included in the database based on the criteria listed below. These criteria were available within the InfoUSA database obtained for this project (which provided data for many but not all listings in the final database): Industry classification codes using the North American Industry Classification System (NAICS) and the older Standard Industrial Classification System (SIC). The criteria were applied as follows:

- Primary NAICS of Limousine Service and Special Needs Transportation were all included.
- If the primary NAICS code description was "Taxi Service" or "All Other Transit & Ground Passenger Transportation" (and miscellaneous other NAICS categories), the firm was deleted, except that listings under the primary NAICS noted above were retained if either of these two conditions was met:
 - Primary or Secondary SIC Descriptions (the database included both NAICS and SIC designations) for the firm included "Limousine Service" or "Airport Transportation Service," or
 - The firm was listed as a transportation provider in listings that applied to Greater Arizona communities.

Any transportation-service firm, regardless of industry classification, was included if located in the counties within Greater Arizona. (Although there was originally an intent to exclude listings with a primary NAICS code description of "Charter Bus Industry," — and thereby exclude sightseeing trip providers — the charter bus listings were subsequently retained because they could be involved in providing custom chartered trips.)

Other NAICS categories included: All Other Related Industries, Other Urban Transit Systems, and Interurban and Rural Bus Transportation. The database was compiled to enable ADOT representatives to easily identify, analyze, and use the list as an information resource. The “transportation network companies” such as Uber and Lyft were examined in a general sense from the standpoint of their service coverage. According to Uber’s online database (<https://www.uber.com/cities>), out of 141 US cities listed, the service is available in Arizona in the Phoenix and Tucson metropolitan areas and in Flagstaff. According to Lyft’s online database (<https://www.lyft.com/cities>), out of 60 US cities listed, the service is available in Arizona in the Phoenix and Tucson metropolitan areas. Transportation network companies were addressed specifically in the survey of transportation providers (described below) by including a question asking providers if they believed that their organization had been affected by ridership captured by such firms.

Data Refinement Process

The sources of the transportation provider data supplied varying levels of detail. In order to enhance quality control and accuracy, several methods for refining the data were used to provide a more concise list for reference and distribution. These methods involved using multiple sources to verify and update information, such as reverse phone and email listings, primary contact and location detail comparisons, and others.

DISTINCTIONS AMONG TRANSPORTATION PROVIDERS

The database revealed several facts about the universe of providers from across the state. The total number of transportation providers in the database is 576, of which 536 represent unique firms, as opposed to multiple locations of the same organization. (For those firms with multiple listings, part of the data-cleaning process involved attempting to distinguish separate establishments from multiple addresses of the same establishment.) The database includes private companies and their operational divisions in different locations (sometimes in different cities), as well as a number of non-profit or quasi-governmental organizations, which may be partially but not wholly publicly funded. See Figure 9 below for the distribution of transportation providers among COGs and MPOs included in this study.

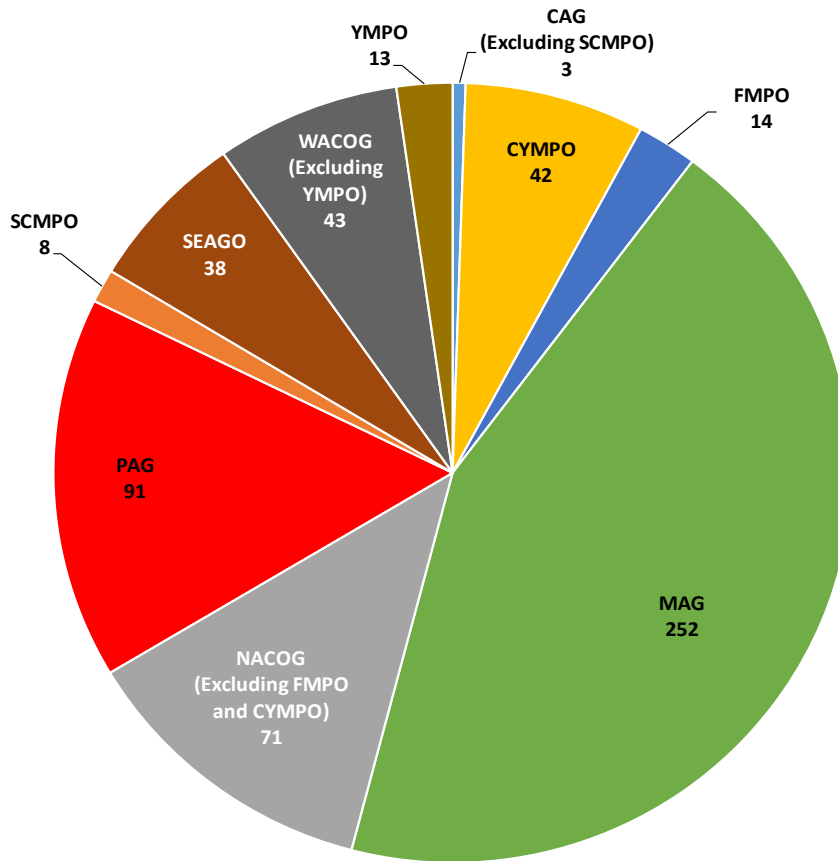


Figure 9. Number of Transportation Provider Establishments by COG/MPO

Thirty-one providers included in the database are located in rural portions of three heavily urbanized counties: Maricopa, Pima, and Yuma.

INDUSTRY EMPLOYMENT

The acquired database from InfoUSA, consisting of 421 listings which are primarily private businesses, made possible a limited assessment of transportation providers' business composition. Of the 421 enterprises, 59 (14 percent) are non-employers, (and therefore generally sole proprietorships), while the remaining 362 (86 percent) are employers. The employers have an average of 11 employees. The providers based outside Maricopa, Pima, and Yuma counties (focusing on the general area of Greater Arizona, and ignoring for this analysis the MPOs technically excluded) generate 946 jobs, which are 22 percent of the total in the database. Note that because this list of firms does not include the entire database, the employment numbers tend to understate the actual total. Also, the employment numbers in an acquired database such as this one should be considered estimates only.

Based on the information provided by InfoUSA, eight industry classifications summarize the composition of the firms in the compiled group of transportation providers:

- All Other Related Industries
- Other Urban Transit Systems
- Interurban and Rural Bus Transportation
- Taxicab Owner/Operators
- Limousine Services
- Charter Bus Services (Except Scenic, Sightseeing)
- Special Needs Transportation
- All Other Transit and Ground Passenger Transportation

Figure 10 displays the number of employees associated with these industry classifications by location in the three-county urban area of Maricopa, Pima, and Yuma counties, and in the rest of Arizona.

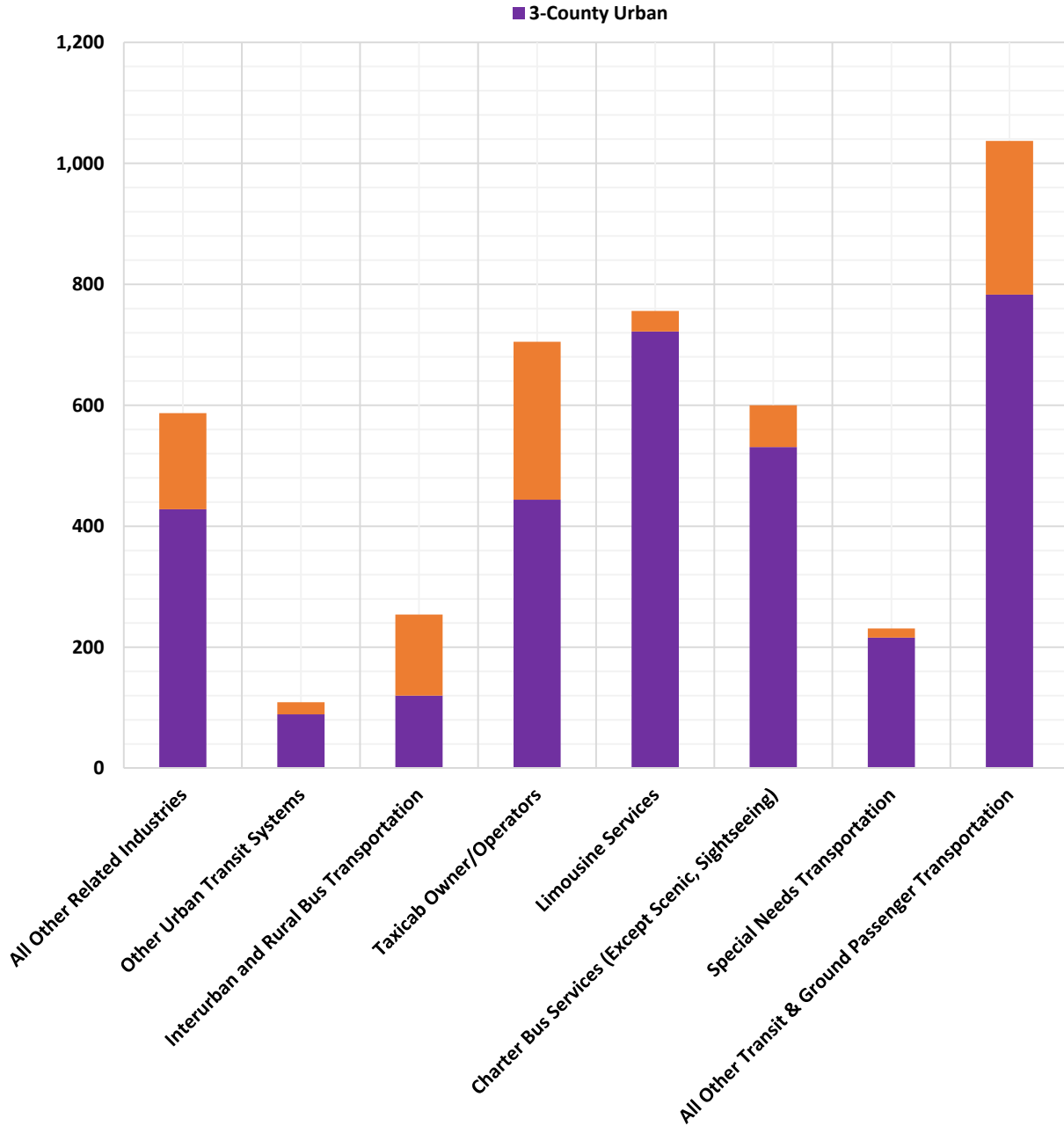


Figure 10. Number of Employees by Industry Classification, by Location (Partial Database)

GREATER ARIZONA TRANSIT SERVICE AVAILABILITY ANALYSIS

The household survey discussed in Chapter 3 included a question on the perceived availability of various transit modes within respondents' communities. Respondents were presented with the following choices:

- Regularly scheduled bus service
- Taxicabs
- Vanpools
- Dial-a-ride bus service
- Intercity bus service

The results of this question were compared to information compiled for this chapter about the availability of various services in Greater Arizona, and this information was supplemented by additional information obtained from ADOT for purposes of this comparison, consisting of a database of transportation services provided by FTA grant recipients. The resulting comparison, shown in Table 18, provides a general overview of the relationship between the actual service provision and the perception by residents of the services available.

At the community level, the type of service mentioned may or may not be available to a respondent residing in any particular COG region. The results of the comparison suggest that respondents to the survey perceived that many services were not available, when in fact they did exist at least somewhere within respondents' COG/MPO-area of residence. (For this analysis, no distinction within the FTA data were applied to the two excluded MPOs within NACOG, because the household survey respondents would not necessarily recognize this distinction when considering availability of services.) Respondents may be more aware of some types of service than of others.

Table 18. Survey Topic: Existing Transit Services – Actual Availability versus Respondent Perception

Percent of Household Survey Respondents that Believe Service is Available

COG/ MPO	Local Organization – Shuttle Service	Demand Responsive Services	Intercity	Local Fixed Route	Taxicab
CAG	40%	29%	16%	16%	70%
NACOG	42%	23%	38%	32%	49%
SCMPO	44%	26%	32%	21%	65%
SEAGO/ SVMPO	47%	22%	24%	36%	59%
WACOG	48%	39%	29%	45%	78%

Source: McClure Consulting LLC.

ONLINE SURVEY OF PRIVATE AND NON-PROFIT-SECTOR TRANSPORTATION SERVICE PROVIDERS

The work task for transportation service providers included the creation and administration of a survey by which providers could give input on the types of services they provide, vehicles used, general route data, and business information.

ADOT and the consultants understood the survey process to involve certain challenges:

- Many potential respondents were small businesses, whose owners would not necessarily perceive the importance of a survey such as this to their business. Small-business owners have many other tasks to perform that they would see as taking priority over providing information to a public agency.
- Despite having the provider database as described above, contacting these businesses would not be a simple task, partly due to the challenge of maintaining a current database of their addresses or other contact information. Some did not have websites or other means of establishing email contact.
- The same survey would not necessarily be optimal for both large and small businesses.

For these and other reasons the survey was designed as an online survey that was accessible through the use of a website link, which was included in an invitation postcard, sent by first-class mail to the provider database. Of these, 98 were returned as undeliverable, in spite of multiple efforts to verify and update contact information. (The postcard is shown in Appendix C.) Returned postcards were subjected to an additional attempt to establish a correct address, so that the firm could be properly inventoried in the provider database. Providers with email contact information were sent an additional invitation by an ADOT representative, which contained a direct link to the survey website. Spikes in the number of responses received coincided with these initial and follow-up email invitations.

The online survey also allows some of the questioning to be more efficient than might be possible through direct contact. For example, certain logic steps were incorporated to automate linkages between some survey responses and successive questions applicable only to those responses. The primary disadvantage of a survey of this type is that it does not lend itself to being a scientific sample of the universe from which information is being sought, as the respondents are generally self-selecting to participate. However, this disadvantage was not critical to this survey, as the intent was to informally poll this group, and a truly scientific sample was never within the scope of this study.

The survey was drafted to present respondents with concise questions, in part reflecting the need to keep online surveys simple, while still providing enough information for respondents to engage with each question. Draft questions underwent numerous revisions in the phrasing of questions and the ways in which respondents could answer when prompted to provide certain information. The questionnaire is shown in Appendix D.

ONLINE SURVEY RESULTS, RESPONSE RATE, AND FINDINGS

Survey responses were compiled during April 2015. A total of 51 respondents elected to take the online survey. Results are summarized in this chapter. The file containing question-by-question responses,

which the online survey company provides as output, was transmitted to ADOT under separate cover. The source for all the charts and tables that follow is the online survey results.

Organizational Information for Responding Transportation Providers

Most of the 51 total respondents (78 percent) provide services to some portion of Greater Arizona on a regular basis, 12 percent occasionally, and 10 percent rarely or never (Figure 11). The broadest definition of Greater Arizona was applied for this survey, disregarding the exclusion of the two NACOG MPOs so that respondents from all over the state would not be required to make this geographic distinction.

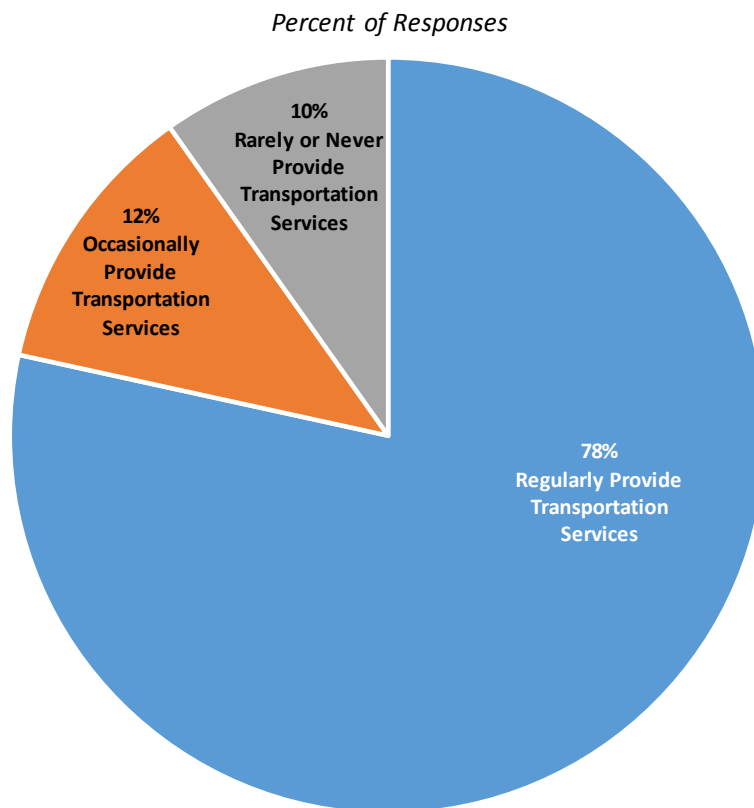


Figure 11. Respondents Providing Passenger Transportation Services within Greater Arizona

Transportation providers were asked to provide information on number of employees, and how they would categorize themselves in terms of economic activity. After analyzing the results drawn from responses given for number of employees, groups of respondents were separated into categories by the number of employees in their organization, as identified in Figure 12 (25 respondents) below. For respondents answering this question, the group with the largest percentage has between one and five employees.

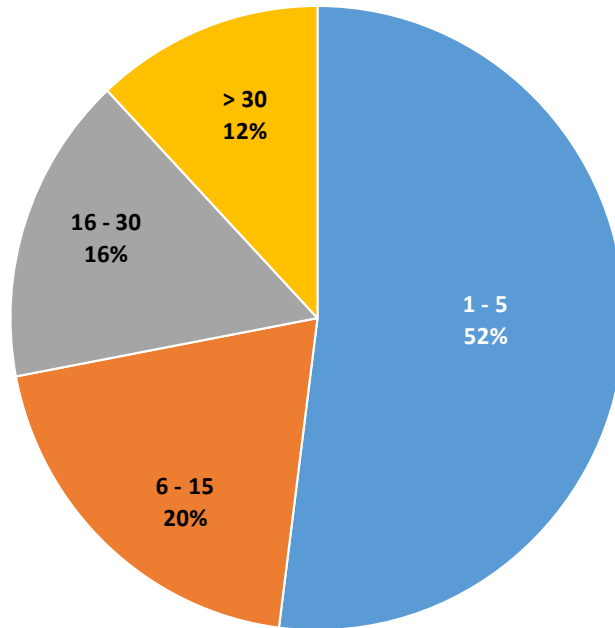
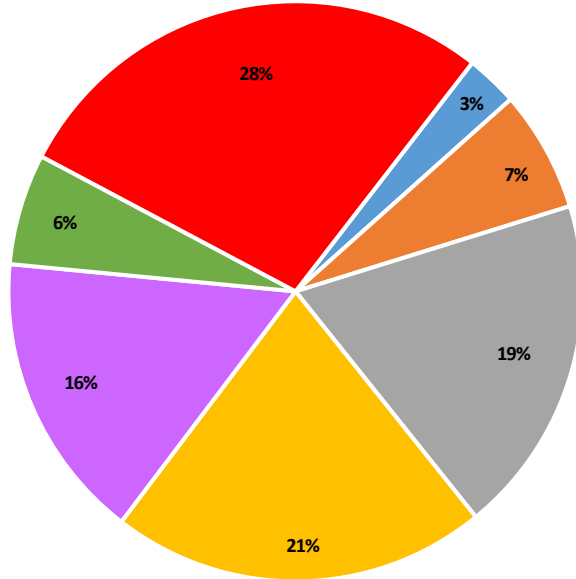


Figure 12. Percent of Respondents by Employee Class

Survey respondents' organizations represent a broad range of industry categories. Thirty-eight percent of respondents indicated that their organization most closely identifies with the transportation industry specializing in limousine services. These results are shown in Figure 13 (24 respondents). The top chart is the industry breakdown for the provider database. The bottom chart is the breakdown by industry for the online survey respondents.

Industry Composition Based on Transportation Provider Database



Industry Composition Based on Survey Respondents

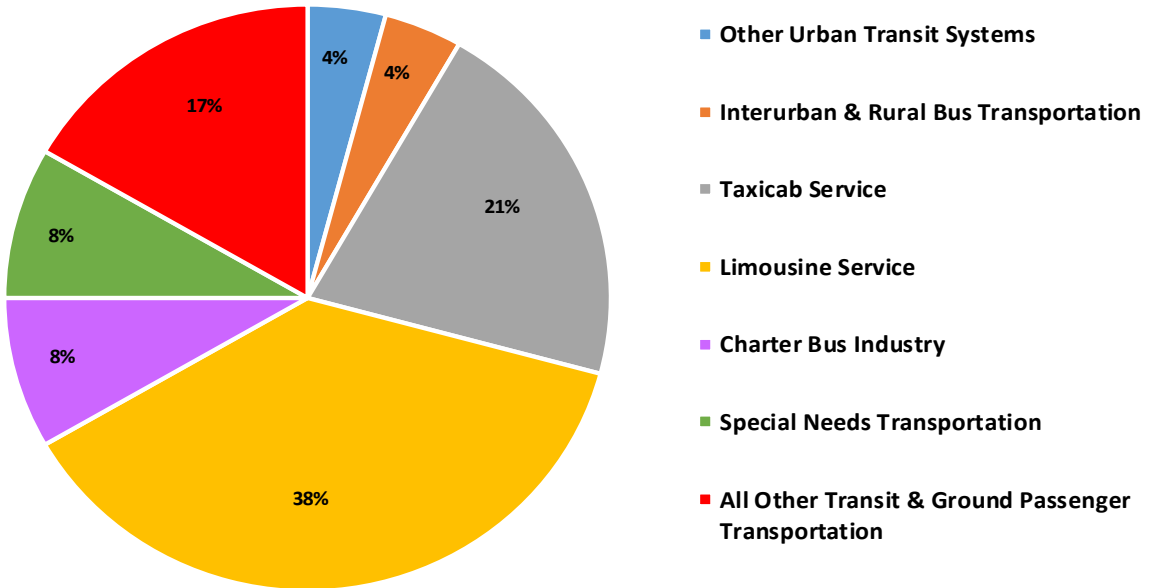


Figure 13. Organizations' Primary Industry Classification

General Operational Characteristics of Responding Transportation Providers

Respondents were asked to provide basic information about the operations of their organization. Out of the 29 respondents who identified the county of their primary place of business, and focusing on providers based in counties associated with Greater Arizona, NACOG has the largest percentage of transportation providers, at 28 percent, followed by SEAGO at 9 percent. See Figure 14 (29 respondents).

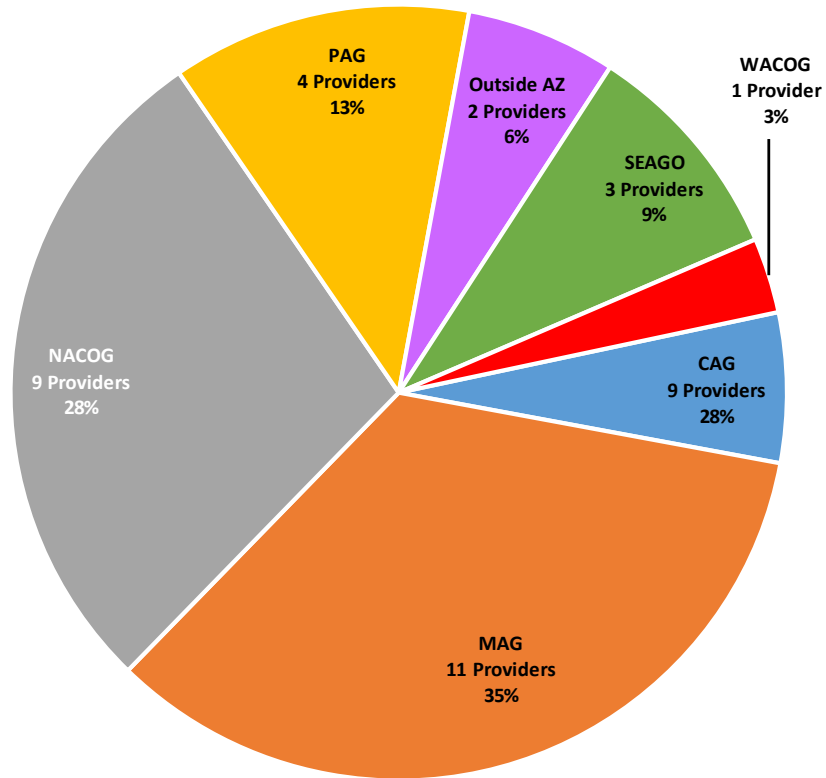


Figure 14. Primary Location of Responding Organizations

Seventy-nine percent of transportation providers consider passenger transportation to be the primary activity of their organization. Seventy-one percent are private businesses. See Figure 15 (48 and 44 respondents respectively) below.

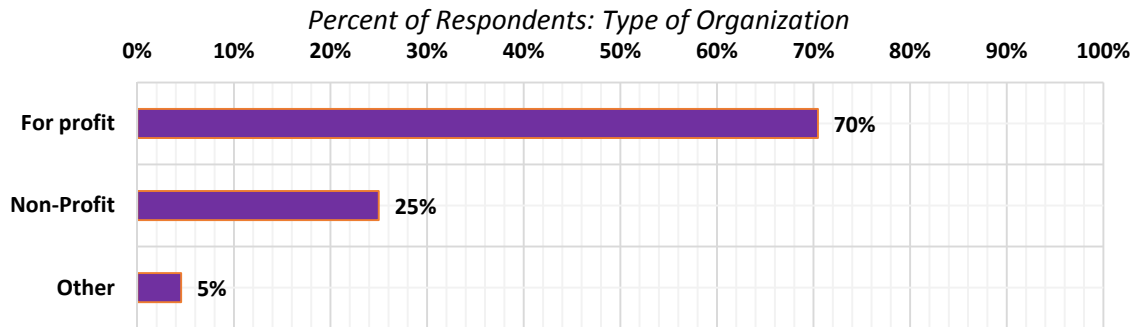
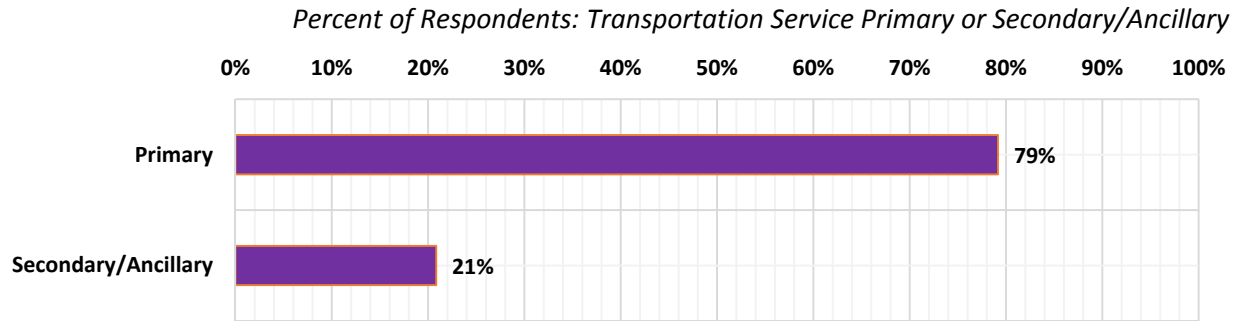


Figure 15. Respondents' Focus on Transportation, and Organization Type

When respondents were asked how long their organizations have been operating, all but one of 45 responding firms represent mature businesses. Only one has been in business less than 3 years.

Respondents were asked if their organization receives Federal Transit Authority (FTA) funding. Based on the response to this question, 86 percent of respondents indicated that their organization does not, as shown in Figure 16 (44 respondents).

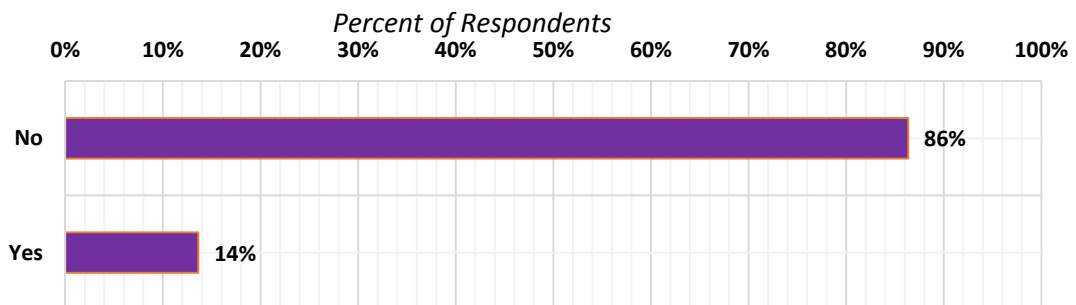


Figure 16. Respondents' Participation in FTA Funding

One question asked respondents if they believed their organization had been affected by ridership captured by various transportation network companies (TNC), such as Uber. Although regulated separately in each state, a TNC has generally been defined as an organization providing prearranged transportation services in exchange for compensation, using an online-enabled application or web platform to connect passengers in need of transportation with drivers that use their own vehicles to take them to a destination (CPUC 2013, 24). Thirty-seven percent of respondents to this question answered that they believed their business had been affected, as shown in Figure 17 (43 respondents).

Among respondents who answered "no," 26 percent provided information on how they determined that answer. Most reported that their clientele, service, or trip purpose is too specialized for TNCs to compete with. Others stated that they did not believe that TNCs could be profitable in their service area. Of those answering "yes," half provided information about how they determined their answer. Most frequently their customers tell them, either directly or indirectly.

Respondents were given the opportunity to comment on this question. Of the 17 respondents making comments (about 40 percent of those addressing this question), all but three said that insurance requirements or other regulations unfairly favor TNCs. One comment expressed concern for the industry's reputation. Only one comment was supportive of TNCs, stating that they are an integral part of the full spectrum of transportation services.

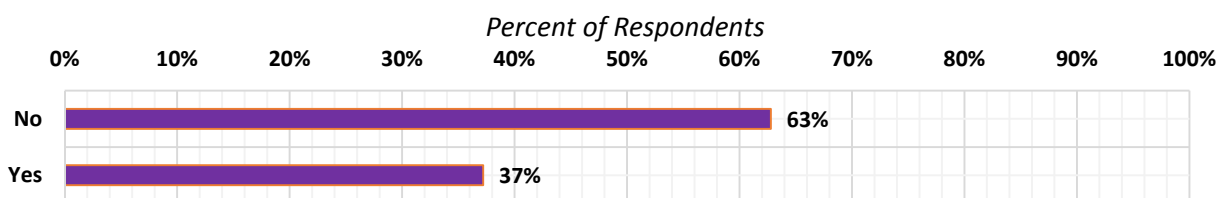


Figure 17. Percentage of Transportation Providers Affected by Transportation Network Companies

Services Offered, Typical Trip Purposes, and Vehicles Used by Transportation Providers

Responding transportation providers were asked to indicate the types of passenger transportation they provide. Call-in or online limousine service was the service most often mentioned by respondents (about 52 percent). See Figure 18 (44 respondents) for a more detailed summary.

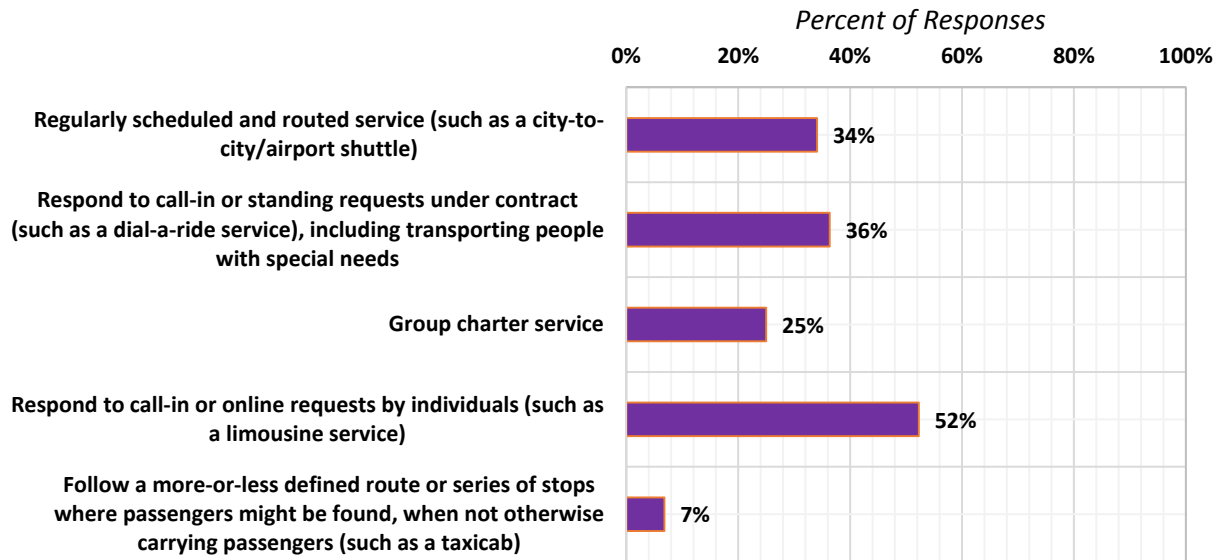


Figure 18. Types of Passenger Transportation Services Provided by Survey Respondents

When respondents were asked about the typical trip purpose requested by their passengers, about 78 percent noted that their passengers request rides for a variety of reasons. The next two most common trip purposes are making connections to other modes of transportation and going shopping. See Figure 19 (32 respondents) for a more detailed summary.

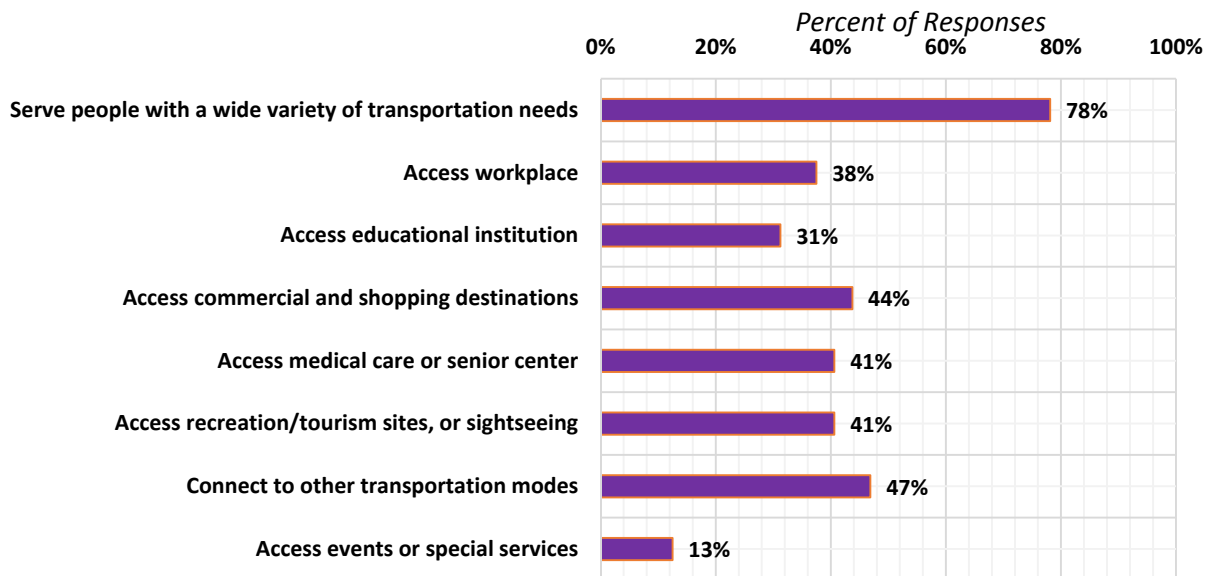


Figure 19. Typical Trip Purpose Requested by Passengers

Transportation providers were asked to indicate what type of vehicle they use for providing passenger transportation. Although the responses varied, the two types of vehicles most often used by providers taking this survey are small and large vans carrying up to 15 passengers, as shown in Figure 20 (34 respondents).

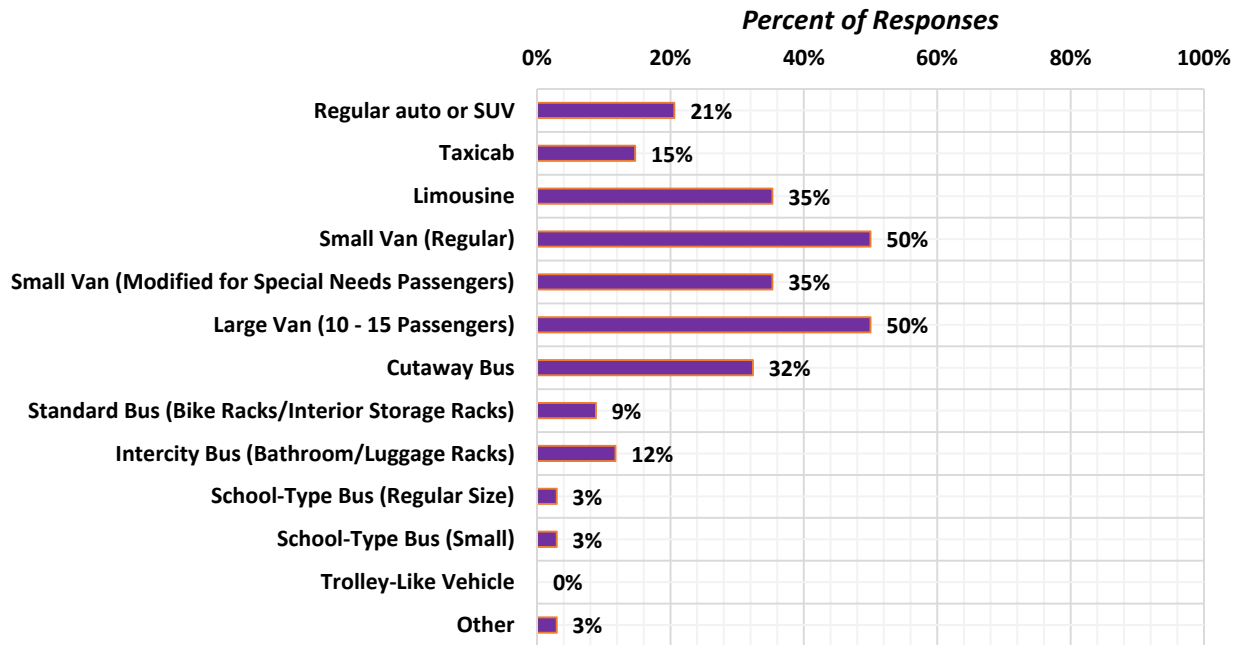


Figure 20. Type of Vehicle Used by Responding Transportation Providers

Trip Location and Duration

Transportation providers were asked to provide information concerning trip routes and trip duration. One question asked about primary service areas in which they provide passenger transportation services. This question provided two formats by which respondents could describe their service areas. First, the question included a comment box in which respondents could provide the name of the service areas in which they travel. Second, those respondents selecting the option "A route from one community to another" or "Combination of [the offered] options" were given the opportunity to provide detail on the origins and destinations of their intercity routes. By structuring this question so that any answer would provide an opportunity for obtaining information about service areas, some overlap between the two methods was inevitable.

In the first, "comment box" set of responses, eight respondents stated that they serve all of Arizona. Some listed northern or southern Arizona as their service area. Only Graham and Greenlee counties were completely omitted by the remaining respondents. See Figure 21 (44 respondents) for a detailed summary of responses to the initial question.

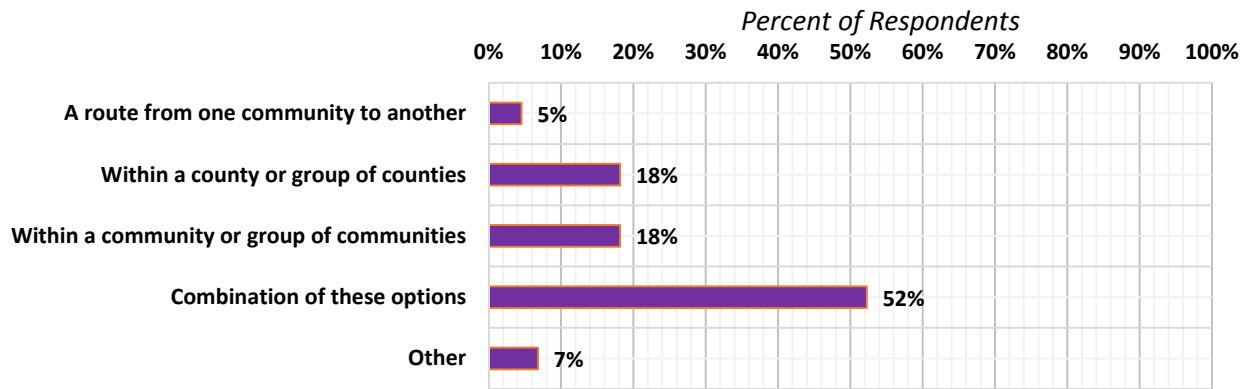


Figure 21. Respondents' Primary Service Areas

The follow-up to the preceding question, which asked for detailed trip origin and destination, yielded the information shown in Table 19 (18 respondents). This information is supplemented by detailed origin/destination data provided by Greyhound. In Table 19, the only counties in Greater Arizona not represented are Apache, Gila, Graham, and Greenlee counties.

Table 19. Respondents' Intercity Transit Origin and Destination Communities

Location of Service Origin	Number of Times Mentioned by Respondents*
Ajo	1
Benson	1
Bullhead City	3
Casa Grande	2
Community Unspecified	4
Flagstaff	3
Fort Huachuca/Sierra Vista	3
Gila Bend	1
Grand Canyon National Park	1
Holbrook	1
Kingman	3
Lake Havasu	1
Maricopa	1
Mesa	1
Nogales	1
Phoenix	2
Prescott/Prescott Valley	3
Quartzsite	1
Tolleson	1
Tucson	2
Verde Valley area and Sedona	2
Willcox	1
Yuma	1

Location of Service Destination	Number of Times Mentioned by Respondents*
Benson	1
Bisbee	1
Bullhead City	1
Camp Verde	4
Casa Grande	1
Chino Valley	1
Clarkdale	1
Cottonwood	2
Flagstaff	2
Gila Bend	1
Glendale	1
Grand Canyon	1
Holbrook	1
Kingman	2
Maricopa County	1
Mesa	1
Phoenix	5
Prescott Valley	1
Quartzsite	1
Scottsdale	1
Sedona	4
Sierra Vista	1
Tolleson	1
Tombstone	1
Tucson	5
Willcox	1
Yavapai County	2
Yuma	1

*Included data provided by Greyhound.

The next series of questions provided information on the distance traveled in providing passenger transportation services. Respondents were asked to report the length of their longest and shortest trip provided in a given week. They were also asked to report the average trip length in miles for any given trip during the week, and to estimate the longest trip in miles that they might provide during any given year. After the results were analyzed, the data were categorized by intervals of miles for the “average length of a typical trip” occurring within a given week.

Table 20 shows the intervals to which respondents were assigned and the resulting aggregate data.

Table 20. Summary of Typical Passenger Trip Lengths by Interval

Interval Categories	Number of Respondents	Average Weekly Trip Length (Miles)	Average Shortest Weekly Trip	Average Longest Weekly Trip
Less Than 20 miles	10	7	3	58
At least 20 but less than 40 miles	11	26	9	99
40 miles or more	10	158	16	253

Most respondents providing information on the origin and destination of transit trips indicated that their transit routes operate more than one trip per day. Figure 22 summarizes the responses to these questions.

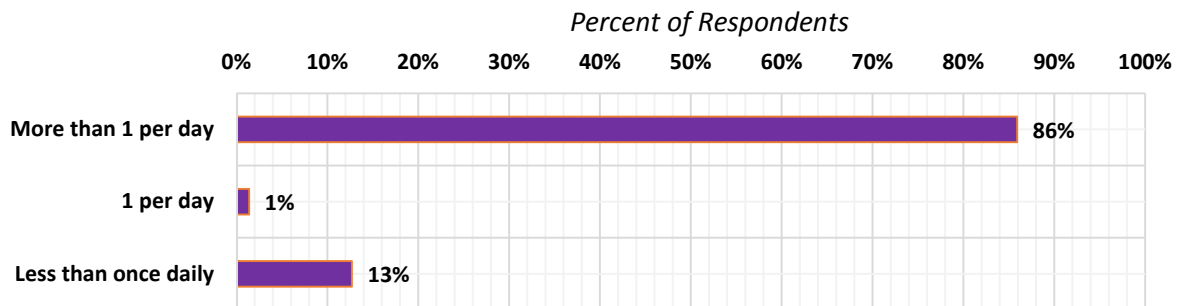


Figure 22. Number of Trips per Day

The last question relating to trip routes asked respondents whether they provided transportation services to people outside Arizona. Responses to this question indicate that several providers (35 respondents) offer services to the five adjacent states of California, Colorado, New Mexico, Nevada, and Utah, and also to Texas.

Discussion of Transportation Provider Profile from Survey Results

Several characteristics profile the transportation providers who responded to the survey. Most respondents noted that they are private businesses that offer passenger transportation services as their primary business activity. Call-in or online limousine services are the service type most often requested by customers. Small regular vans or larger vans with a capacity of up to 15 passengers are the type of conveyance most used. In addition, the highest percentage of transportation providers answering the survey:

- Have one to five employees the transportation industry,

- Specialize in either limousine services, taxi services, or other transit and ground transportation services, and
- Make more than one trip per day

Most responding transportation providers based outside the three urban counties of Maricopa, Pima, and Yuma are located in Coconino, Navajo, and Yavapai counties (NACOG). The responding transportation providers, taken together, operate through much of Arizona and some provide transportation services outside the state.

CHAPTER 5. INTEGRATION OF FINDINGS WITH STATE TRANSIT PLAN

This study has three research components, all of which provide material for this chapter:

- Conduct a literature review of the key topics related to transit in Greater Arizona (Chapter 2).
- Identify travel preferences and behaviors of residents of Greater Arizona that may affect the development of transit services (Chapter 3).
- Provide an inventory, obtained through a survey process, of private transit providers serving Greater Arizona.

Highlights from these components are incorporated in this chapter, which is intended to inform the design and content of the future *State Transit Plan*.

The research processes were undertaken while recognizing conceptual challenges that could affect the potential for obtaining meaningful results. For example, travel behaviors and preferences identified through existing research mostly pertain to *urban* populations. Whether findings related to rural areas are different or not, any research process, even with a broader scope than this one, might never be comprehensive enough to determine definitely whether the differences (or similarities) are due to underlying demographic conditions such as age differences, to transportation options available in cities but limited in rural areas, to different educational/job opportunities in the two types of regions, or to different levels of concentration of economic activity in urban and rural areas.

This chapter is primarily a series of excerpts from other chapters, organized thematically as well as by the different processes (i.e. the literature review and surveys) addressed in those chapters. This chapter consists of the following sections:

- A summary of findings from the transportation provider inventory and survey, including an overview of the composition of the provider industry.
- A summary of findings from the survey of Greater Arizona households, including respondents' perceptions and attitudes regarding transit, and regional similarities and differences across Greater Arizona.
- Generational differences and commonalities regarding transit, based on survey results and the literature review, including common interests in ways that transit can be made more accessible.
- Evolving transportation and transit planning considerations and processes that may influence approaches to rural transit planning in Arizona.

KEY OBSERVATIONS RELEVANT TO FUTURE STATE TRANSIT PLAN

In Greater Arizona, residents perceive that there are deficiencies in public transportation, although some of this may be due to a lack of knowledge about services that are available. Residents are most likely to use transit for medical appointments and intercity travel. Commuting, leisure activities, and school are viewed as less important transit trip purposes.

The extent to which the Millennial generation embraces fundamental values that may alter its predisposition to use public transit is an ongoing subject of research, and definitive conclusions are not available at this time. However, this research topic will continue to be important for transit providers.

The increasing availability and popularity of communication devices that increase the accessibility of public transit can benefit all users, including Millennials who may be more attuned to such technology than other generations. Seniors, who tend to use transit less than other generations but need transportation options, may benefit from such technology if they are instructed in its use.

Over the past decade, transportation planning has trended toward an increased integration with land use planning and consideration of urban design, which generally leads to greater diversification of travel options, and enhanced relationships between these options. For example, the walkability of an area increases the viability of transit. Transportation systems have always been understood to be closely related to economic development capability. In rural areas, the role of transit in supporting economic development is particularly meaningful, in part because, generally, only a limited set of job opportunities is available in any community. Rural areas, with a small set of business-support firms, leasable space options, and other related opportunities, face an inherent disadvantage when competing with urban areas for economic development.

Although the online survey of transportation service providers was not intended to provide statistically reliable results, respondents tend to offer call-in limousine-type service most frequently, and to use small vans or larger vans with a capacity of up to 15 passengers. Most do not believe that TNCs (such as Uber) negatively affect their business, although those who see a negative effect are concerned that these companies may have unfair regulatory advantages.

OVERVIEW OF HOUSEHOLD SURVEY FINDINGS

The primary purpose of the Greater Arizona household survey was to identify travel preferences and trends that may affect the development of transit in Greater Arizona over the next 20 years. The research was accomplished by telephone interviews of heads of households.

The household survey began with an open-ended question asking respondents to indicate what they believed was the single biggest problem with the transportation system in their area. Unlike the other survey questions, each of which had a specific structure and intent, this question had the *strategic* purpose of inviting respondents to express the thoughts that initially occur to them when the local transportation system is mentioned. The results of this question, with 49 percent of respondents stating that lack of public transportation is the biggest local transportation problem, indicate that this opinion is widespread.

The result could also be interpreted as an indication that people are generally satisfied with other transportation in their area, such as streets and roads. Nevertheless, the sensitivity to lack of public transportation was confirmed in other survey questions. For example:

- 51 percent indicated that public transit availability in their area should be rated “poor.”

- Nearly one-half of the respondents stated they would like to have the opportunity to make greater use of both intercity and regularly scheduled local bus service.
- 45 percent of respondents said that the need for public transit in their area had increased over the past few years.
- 30 percent said their household would “definitely” use regularly scheduled local bus service if it were available throughout their area at a reasonable cost, while 28 percent would use intercity bus service.

Some observations by respondents may be due to a lack of awareness about transportation options that actually exist within these communities. For example, the respondents who tended to believe that taxicabs and transportation provided by local community organizations were available outnumbered those who believed that they were not available. Even so, the percentages associated with these responses reflected a fairly high level of doubt about the availability of services that are offered throughout the state. For other types of transit options—regularly scheduled bus service, intercity bus, dial-a-ride services, and vanpools—more respondents, by a substantial margin, believed they were *not* available than were available. However, by comparing these results with a database of transportation services provided by grant recipients, supplied by ADOT, in combination with the Greater Arizona Transportation Provider database described in a previous chapter, it is apparent that all types of services are available somewhere within all COG/MPO areas within Greater Arizona. In any particular community, however, some services may be lacking (and the data do not contain enough geographic specificity to draw definitive conclusions about this).

For respondents with a “definite” interest in using public transit, medical appointments and intercity travel are the most prevalent intended uses, with each mentioned by just over 50 percent of respondents. Commuting to work, conducting personal business, participating in leisure activities, and going to school were all approximately equal in terms of travel intent, with 34 to 38 percent of respondents expressing interest.

This survey focused on the non-urban population of Arizona. Consequently, the results cannot be directly compared to those that a similar survey of urban populations might produce. Generally speaking, however, the survey findings are consistent with studies focused on urban populations. The latter indicate that lower-income populations and those using transit for other than commuting tend to be heavier users of public transit than other groups. Respondents to the Greater Arizona survey with household incomes under \$25,000 are most likely to have an interest in using public transportation, and most likely to use public transit for medical services, intercity travel, and personal business. Those with the highest incomes, \$75,000 and over, are least likely to have an interest. Those in the highest income category are marginally more likely than those in the lower income groups to use public transit for work. Unemployed, but not retired, respondents and those without a driver’s license are most likely to use public transit for any purpose.

Regional Variations

The survey respondents' answers to questions varied little across the five regions analyzed. Some regional differences are summarized below:

- Respondents in CAG were more likely to recognize lack of public transportation as the biggest transportation problem in their area, and those in NACOG the least likely.
- The percent of respondents always or regularly using personal motorized transportation modes was highest in the SCMPO region and lowest in WACOG/LHCMPO.
- Respondents in the SCMPO region were most likely to indicate that availability of transit service in their area had improved, and those in WACOG/LHCMPO least likely, although percentages indicating improvements in availability were low in all the regions.
- Respondents in the WACOG/LHCMPO region were most likely to be aware of taxi services (78 percent of respondents), and those in NACOG the least aware. Awareness of regularly scheduled bus service was relatively low in all regions, at 33 percent, and lowest in the CAG region.

Figure 23 shows a graphic summary of the key findings from the 2014 Greater Arizona household survey. ADOT has made the infographic available for distribution.

Public Transportation in Greater Arizona

COMMUNITIES SPEAK OUT ON WHAT MATTERS MOST

In 2014, the Arizona Department of Transportation studied the travel preferences and behaviors of many communities in Greater Arizona – most of the state's area outside the major metro regions. This survey research will help guide the planning of transit and other transportation improvements.

THE BIGGEST

PROBLEM WITH LOCAL TRANSPORTATION SYSTEMS:

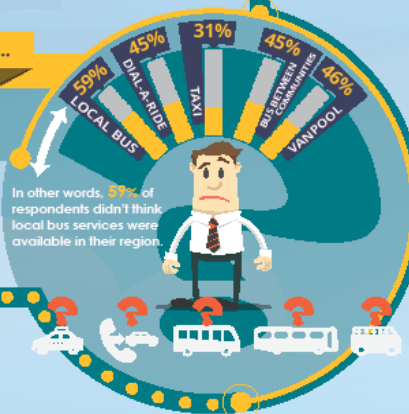
- 2% NOT ENOUGH FREEWAYS
- 8% NOT SURE
- 17% LOCAL ROADS - POOR QUALITY, TRAFFIC CONGESTION
- 22% NO PROBLEM
- 49% LACK OF PUBLIC TRANSPORTATION

Half of the respondents named lack of public transportation as the biggest problem with their local transportation system.

45% OF RESPONDENTS SAID THE NEED FOR LOCAL PUBLIC TRANSIT HAS INCREASED IN RECENT YEARS.

THE PUBLIC IS OFTEN UNAWARE OF EXISTING SERVICES...

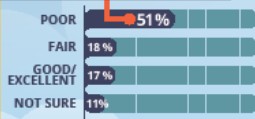
Each of these public transportation services is offered in each region studied, although not necessarily in every community. Respondents were largely unaware of these services.



In other words, 57% of respondents didn't think local bus services were available in their region.

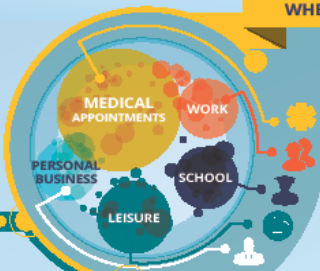
... AND HALF RATE THE AVAILABILITY OF SERVICE AS POOR.

THE availability OF REGIONAL PUBLIC TRANSPORTATION SERVICES



WHERE ARE THEY GOING?

Respondents "definitely" interested in using public transportation identified their likely trip purposes.



WHO'S MOST INTERESTED IN USING PUBLIC TRANSPORTATION?

- PEOPLE WHO:
- Are under age 55
 - Don't have a driver license
 - Rent their homes
 - Are economically challenged: students, unable to work, unemployed, etc.



ADOT

15-207

Figure 23. Graphic Summary of Greater Arizona Transit Household Survey Findings

SPECIFIC THEMES ADDRESSED

Millennials

Potential changes in public transit use by the Millennial generation, those born in 1981 through 2004, is a matter of interest in this study, in part because studies of Millennials in general (examples cited in the following paragraphs) have reported that this generation is very different from previous generations in a number of lifestyle preferences that may affect transit use. Because the Greater Arizona household survey interviewed heads of households, younger Millennials were excluded from the sample. Of the three age groups segmented in the survey sample (under 35, 35 to 54, and 55 and over), respondents under 35 are most likely to want increased opportunities to use intercity bus service (59 percent), local bus service (57 percent), and taxicabs (36 percent). However, the percentage spread between this age group and the next (age 35 to 54) is small, just 4 percentage points for all three transportation options. Those age 55 and over were generally the least interested in using public transit, and the percentage spread from the under-35 group is 16 to 19 percentage points.

Some studies of Millennials (for example TransitCenter 2014) have indicated that they are more interested than other population segments in using public transit, although other researchers dispute these claims. This dispute sometimes focuses on whether Millennials prefer the urban settings that tend to foster transit use. Authors of one study by the Demand Institute (2013) assert that their Millennials survey shows that home and auto ownership are prime goals for Millennials, and the authors speculate that many simply have not had the resources to realize these ambitions.

Seniors

Transportation literature (examples are cited in the following paragraphs) discusses the apparent contradiction in the observation that seniors may need public transit more than other age groups, but they tend not to use it. The Greater Arizona household survey also indicates that the oldest age group has the least interest in using transit. Some researchers have suggested that this phenomenon is largely due to a combination of a lack of education in use of transit and the need for scheduling, fares, and other details to be communicated in ways more accessible to seniors. These concepts are discussed in Cevallos et. al. (2010). With proper support, seniors' use of transit has been shown to expand.

The Internet, social marketing, electronic payment technology, and other developments can encourage senior ridership. Special transit modes (e.g., on-demand) are inherently inefficient and expensive, and some demand for these modes now generated by seniors could be met by traditional transit by applying some of these advanced technologies. For riders of rural transit systems, the benefits of enhancing real-time arrival information, for example, could be greater than for users of urban systems (Dutzik et. al. 2013), because rural providers will tend to deliver less-frequent service than those in urban areas.

In response to the challenges of making an on-call system (in which only one passenger might be served on any single trip) more efficient, agencies are developing sophisticated scheduling systems, such as a new rural hybrid service design called "fixed-schedule" service, providing on-demand service but within scheduled periods. Other system operators are changing the way they communicate with the public,

making much greater use of social media, for example. A number of rural transit systems have generated revenue from agreements with big box and grocery stores through such means as advertising (which could occur on buses or at business-provided bus shelters), provision of direct service, and bus shelters. Stores could provide or make provision for these shelters at locations that help draw patrons to their stores. Seniors are more likely to be employed now than in the past, so systems that cater to traditional senior lifestyles, such as those focusing on shopping and recreational destinations and excluding employment centers, have less relevance today (Hosen and Powell 2011).

Advanced technology that could make transit service more efficient has other potential implications for transportation in general. One study (Dutzik et. al.2013) examines whether the rapid spread of mobile Internet-connected technologies and social networking are related to indications of the recent decline in driving. Car sharing and other new services that are aided by communication technology shift the cost of driving from a fixed rate to a per-mile cost, possibly motivating users to drive less and thereby reduce their overall spending on transportation, while car ownership has the opposite influence.

The post, "The Surprisingly Simple Amenities that Help Urban Residents Age in Place" (McIlwain 2014), discusses issues pertaining to the assertion that "the density of urban areas provides an environment that more naturally supports people as they age," through better public transit, good health care, a healthier, walkable lifestyle, and access to goods and services. In terms of potential application to *Transit in Greater Arizona*, this observation suggests that Baby Boomers prefer lifestyles more similar to urban than suburban settings, and therefore by inference would be less inclined to live in rural areas. At the same time, a report by the American Association of State Highway and Transportation Officials (Gehr 2010) asserts that increasing numbers of seniors in rural areas are creating additional demand for rural transit services. (The document implies that this is due to the natural increase of this demographic segment rather than migration). In the Greater Arizona household survey, respondents age 55 and over were less interested than the other age groups in using public transit (and the percentage spread from the under 35 group was 16 to 19 percentage points).

The report entitled *Investing in Place for Economic Growth and Competitiveness* (Farmer et. al. 2014) summarizes the results of a survey conducted online in the United States in 2014 on behalf of the American Planning Association, which focused on the relationship between planning/economic development and the Millennial and Baby Boomer generations. The sample screened for those 21 or over with two or more years of college. The study found that the two generations, based on this sample, have many common interests regarding "community". For example, fewer than 10 percent of Millennials, Gen Xers, or Active Boomers saw themselves as favoring traditional, auto-dependent suburban living settings, (compared to "a suburb with walkable amenities"), despite 40 percent of them living in that type of community at the time of the survey. In practice, a community-scale urbanized area that is compatible with an aging population and that could be encouraged to occur in Greater Arizona communities might not be that much different from "urban" models for such purposes, even if a role for transit is not as great.

EVOLVING TRANSPORTATION AND TRANSIT PLANNING CONSIDERATIONS AND PROCESSES

Land Use and Traffic Congestion (Kuzmyak 2012) adds perspective to the link between land use, travel behavior, and traffic congestion. Researchers analyzed the relationships between higher-density land use and traffic conditions in four Phoenix transportation corridors. The analysis showed that the urban corridors had considerably less congestion despite densities that were many times higher than the suburban corridor. One reason for this was the importance of a secondary street grid in the three urban areas, which allows for better channeling of traffic and facilitates walking. A gridded street system is common in many older, small cities, including some parts of Greater Arizona communities.

The *City of San Diego General Plan* describes the concept of a "city of villages" in which growth is encouraged to occur in walkable, mixed-use community cores that are linked by transit options (Bragado et al. 2006). This concept could potentially have application in some non-metro areas in Greater Arizona. Groups of cities that potentially could be linked through intercity transit could, individually, encourage development to concentrate in existing cores, thereby making the linkage of those "destination" cores within the intercity transit system more viable.

A handbook entitled, *Main Street . . . when a highway runs through it: A Handbook for Oregon Communities* (Kambur et. al. 1999), created by the Oregon DOT to help guide highway improvements to enhance functionality of town business districts, details Main Street design characteristics related to land use, transportation, urban design, funding options and scale. The Handbook authors argue that making "Main Street" a more complete street creates an interface between transit and other modes, such as walking or biking, thereby making transit more likely to attract riders.

Authors of the guidebook, *Estimating Bicycling and Walking for Planning and Project Development* (Kuzmyak et. al. 2014) note that the ability to bicycle or walk to a transit station relates directly to the viability of transit, which implies that the extent to which pedestrian attributes are present, and used, could affect projections of transit use. Household survey respondents in Greater Arizona were asked about transportation options that they "always, regularly, rarely or never rely on" to meet personal transportation needs. Thirty-one percent indicated that they "always" or "regularly" used "walking."

Relationship of Transportation/Transit Planning to Rural Communities' Economic Development

Rural areas experiencing population growth face challenges when they cross categorization thresholds from some form of "rural" to some form of "urban" designation, a condition that is likely to occur in a growing state such as Arizona (Hosen and Powell 2011).

The question of how the built environment affects reductions in VMT is examined in a report (Moudon and Stewart 2013) that points out the complexity of fully assessing the built environment's scope and other aspects of influence on travel behavior. However, planning the built environment for optimal transportation efficiency is key to effective transit system design. For transit planning in Greater Arizona, the sequence by which planning processes occur, for communities, transportation systems, and other elements can be coordinated to maximize the effectiveness of each process along with the potential for plans to work synergistically.

The Innovative DOT: A handbook of policy and practice (Anderson et. al. 2012) collects innovative DOT approaches around the country "to make systems more efficient and effective in today's challenging economy." The handbook authors recognize that economic changes sometimes involve an emphasis on livability, including urban form and transportation options. One report recommendation is to create partnerships with regional transit authorities, intercity bus providers, and Amtrak to provide better-integrated transit service between cities and along corridors. The objective of such partnerships would be to encourage local and long-distance transit travel with more frequent and reliable service, which could relieve pressure on highways and expand travel options for residents in rural areas. This concept could in theory be applied to transit planning in Greater Arizona.

A 2012 report (Humphrey 2012) highlights case studies where transportation planning efforts are linked with economic development strategies in a regional context. For example, an economic development organization in a rural area combined two programs: a program that identifies and promotes industry clusters, in the process also promoting business opportunities and linkages, and mobility programs that encourage ridesharing and vanpooling, coordinating with employers to help them increase their employees' transportation choices. Besides being sound economic development practice, the cluster program helps employers coordinate on the vanpooling. Combined, the two programs make this region more attractive for industry, generally, by making workers more efficient and enhancing employee satisfaction. This model could have broad application in Greater Arizona, as workers in any given small city have limited job choices locally, need to commute to other places to expand those choices, and can incur high commuting costs when distances are great, which can often be the case in sparsely settled portions of Greater Arizona.

One aspect of rural development practices potentially applicable to Greater Arizona is the concept of communities combining to form economic regions that are more competitive than any single community would be on its own (Wieder and Williams 2008). From a transportation standpoint, this could mean coordinating intercommunity transit services in such regions.

Rural transportation systems can maximize the economic benefits they offer to their riders and their communities if they focus on generating the kinds of trips that lead to the largest economic benefits. Burkhardt et. al. (1998) note that according to their study, employment trips, education and training trips, trips for medical services, particularly dialysis, and trips that promote independent living, especially for seniors and persons with disabilities, were found to produce the largest economic benefits. In the Greater Arizona household survey, commuters had a relatively low level of interest in using public transit. Medical appointments and intercity travel were their most important intended use categories. In terms of overall expected use, 30 percent of respondents said they would "definitely" use regularly scheduled local bus service if it were available throughout their area at a reasonable cost, while 28 percent would use intercity bus service.

OVERVIEW OF TRANSPORTATION PROVIDER FINDINGS

Summary of Findings from the Transportation Provider Inventory

The provider database was compiled as an active resource that would enable ADOT representatives to use the list for multiple purposes. Existing transportation providers that serve Greater Arizona (including some firms based in metropolitan areas outside Greater Arizona) were identified by multiple means, starting with a purchased business database.

The database revealed many facts about providers across the state. There are 576 establishments in the database, of which 536 listings represent unique firms (separate organizations). The distribution of providers by COG and MPO is shown in Figure 24.

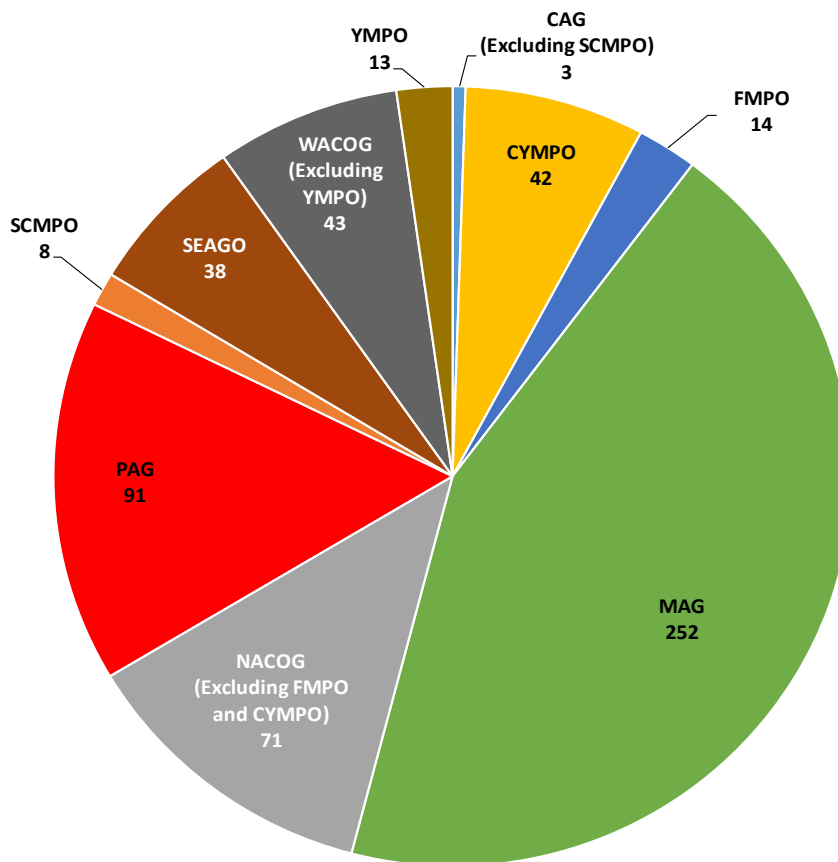


Figure 24. Location of Transportation Providers by COG/MPO

Of the 421 firms with employment data, 59 (14 percent) are non-employers, and therefore generally sole proprietorships, while the remaining 362 (86 percent) are employers. Employers with payrolls have an average of 11 employees. Overall, the providers based outside Maricopa, Pima, and Yuma counties generate 946 jobs, or 22 percent of those accounted for in the database. Because this list of firms does

not include the entire database, the employment numbers tend to understate the actual total and should be considered estimates only.

Summary of Findings from Transportation Provider Online Survey

Fifty-one respondents elected to take the online transportation provider survey. Although a primary disadvantage of a survey of this type is the absence of scientific sampling, the survey was always intended to be a poll of businesses rather than a scientific survey.

Within Greater Arizona, 28 percent of the responding transportation providers were based in the NACOG region (the region represented by the largest percentage of respondents), followed by SEAGO at 9 percent. Types of services delivered by transportation providers are summarized below, ordered by highest to lowest percent:

- Respond to call-in or online requests by individuals (such as a limousine service), 52 percent of respondents
- Respond to call-in or standing requests under contract (such as a dial-a-ride service), including transporting people with special needs, 36 percent
- Regularly scheduled and routed service (such as city-to-city/airport shuttle), 34 percent
- Group charter service, 25 percent
- Follow a more-or-less defined route or series of stops where passengers might be found, when not otherwise carrying passengers (such as a taxi), 7 percent

The numbers in the bullet list add to more than 100 percent because some providers offer more than one type of service.

Transportation providers were asked to provide information concerning trip routes and distance. Several respondents stated that they serve the entire state of Arizona, while some listed northern or southern Arizona as their service area. All of Arizona except Graham and Greenlee counties is at least partly covered by one or more respondents' service areas. Although roughly one-third of the respondents believe that their organization has had ridership captured by TNCs, the majority see no such effect.

Respondents to the provider survey yield a particular profile. Most respondents noted that they offer passenger transportation as their primary business activity. Services offered by call-in or online limousine service are most often requested by transportation provider customers. The greatest number of providers use vans with a capacity of 15 or fewer passengers. In addition, the highest percentage of responding providers:

- Have one to five employees working for them in the transportation industry,
- Specialize in limousine services, taxi services, or other transit and ground transportation services, and
- Make more than one trip per day

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APPENDIX A. GREATER ARIZONA HOUSEHOLD SURVEY PROFILE

BEHAVIOR RESEARCH CENTER
45 East Monterey Way
Phoenix, Arizona 85012
(602) 258-4554

JOB ID 2014068

TRANSIT IN GREATER ARIZONA SURVEY

Fall 2014

RDD VERSION

Hello, my name is _____ and I'm with the Behavior Research Center. We're conducting a study on transportation issues in your area and I'd like to speak with you for a few minutes.

A. Before we get started, are you the (MALE/FEMALE) head of your household?

IF YES: GO TO Q1

IF NO: ASK TO SPEAK WITH MALE/FEMALE HEAD OF
HOUSEHOLD, RE-INTRODUCE YOURSELF AND.
CONTINUE IF NONE AVAILABLE, ARRANGE.
CALLBACK, IF NONE IN HOUSEHOLD, TERMINATE

Male...1
Female...2

CELL PHONE VERSION

Hello, my name is _____ and I'm with the Behavior Research Center. We're conducting a study on transportation issues in your area and I'd like to speak with you for a few minutes.

A. Before we get started, are you the (MALE/FEMALE) head of your household?

IF YES: CONTINUE

IF NO: THANK AND TERMINATE

Male...1
Female...2

B. Is your residence located in (TARGET AREA)?

IF YES: CONTINUE

IF NO: THANK AND TERMINATE

Yes...1
No...2

C. Are you currently driving or doing anything else that would make it unsafe for you to be on the phone?

(ARRANGE CALLBACK) Yes...1
(GO TO Q1) No...2

1. To begin, what do you feel is the number one biggest problem with the transportation system in your area of Arizona? (PROBE) What else?

2. Next, as you are aware, Arizona residents have a variety of transportation options they can rely on to meet their transportation needs. I'd like to mention a few of these options and have you tell me if you or other members of your household always, regularly, rarely or never rely on each to meet your personal transportation needs in your area. (ROTATE)

	Always	Regu- larly	Rarely	Never
A. A car, truck, SUV or van	1	2	3	4
B. A motorcycle	1	2	3	4
C. A bicycle	1	2	3	4
D. Regularly scheduled bus service within your community	1	2	3	4
E. Taxi cabs	1	2	3	4
F. A van pool or car pool	1	2	3	4
G. Dial-A-Ride service	1	2	3	4
H. Bus service between your area and other Arizona communities	1	2	3	4
I. Walking	1	2	3	4
J. Car – sharing services	1	2	3	4
K. Transportation provided by local community organizations such as a senior centers, veterans organizations or the like	1	2	3	4

3. And to meet your household's transportation needs in your area, would you like to have the opportunity to make greater use of each of the following transportation options or not? (ROTATE)

	Yes	No	Not Sure
A. A car, truck SUV or van	1	2	3
B. A motorcycle	1	2	3
C. A bicycle	1	2	3
D. Regularly scheduled bus service within your community	1	2	3
E. Taxi cabs	1	2	3
F. A van pool or car pool	1	2	3
G. Dial-A-Ride service	1	2	3
H. Bus service between your area and other Arizona communities	1	2	3
I. Walking	1	2	3
J. Car – sharing services	1	2	3
K. Transportation provided by local community organizations	1	2	3

4. Next, I'd like to ask you some questions about public transit in your area of Arizona. By public transit I mean such things as regularly scheduled bus service, Dial-A-Ride service, intercity bus service or van pools. Overall, would you rate the availability of public transit in your area as excellent, good, only fair or poor?
- 4a. Would you say the availability of public transit in your area of Arizona has improved, remained about the same or gotten worse over the past few years?
- 4b. And would you say the need for public transit in your area of Arizona has increased, remained about the same or decreased in the past few years?

Excellent...1
 Good...2
 Only fair...3
 Poor...4
 Not sure...5

Improved...1
 Remained same...2
 Worse...3
 Not sure...4

Improved...1
 Remained same...2
 Decreased...3
 Not sure...4

5. To the best of your knowledge, are each of the following types of public transit available or not available in your area of Arizona? If you are not sure, just say so. (ROTATE)

	Available	Not Available	Not Sure
A. Regularly scheduled bus service within your community	1	2	3
B. Taxi cabs	1	2	3
C. Van pools	1	2	3
D. Dial-A-Ride service	1	2	3
E. Bus service between your area and other Arizona communities	1	2	3
F. Transportation provided by local community organizations	1	2	3

6. Let's assume for a minute that the following types of transit services were available throughout your area of Arizona at a reasonable cost. If each of these services was available would you or other members of your household definitely, probably, probably not or definitely not consider using it?

	Definitely	Probably	Probably Not	Definitely Not	Not Sure
A. Regularly scheduled bus service within your community	1	2	3	4	5
B. Taxi cabs	1	2	3	4	5
C. Van pools	1	2	3	4	5
D. Dial-A-Ride service	1	2	3	4	5
E. Bus service between your area and other Arizona communities	1	2	3	4	5
F. Transportation provided by local community organizations	1	2	3	4	5

(IF RESPONSE 1 OR 2 FOR Qs 6A-F, GO TO Q7, OTHERWISE GO TO Q8)

7. And would or other members of your household definitely, probably, probably not or definitely not use transit service for each of the following specific purposes? (ROTATE)

	Definitely	Probably	Probably Not	Definitely Not	Not Sure
A. To go to work	1	2	3	4	5
B. To go to medical appointments	1	2	3	4	5
C. To go to school	1	2	3	4	5
D. To conduct personal business	1	2	3	4	5
E. To participate in leisure time activities	1	2	3	4	5
F. To travel between your area and other Arizona communities	1	2	3	4	5

Now before we finish, I need a few pieces of information about yourself for classification purposes only.

- A. First, in what year were you born? YEAR: / 1/ 9/ / /
- B. Are you currently employed, a homemaker, a student, unemployed or retired? (RECORD ONE RESPONSE)
- (GO TO QB1) Employed...1
Homemaker...2
Student...3
(GO TO QC) Unemployed...4
Retired...5

APPENDIX B. GREATER ARIZONA TRANSPORTATION PROVIDERS ONLINE SURVEY POSTCARD

ADOT



Keep Your Transportation Business in the Mainstream!

The Arizona Department of Transportation (ADOT) is seeking your input to better understand how to serve rural Arizona.

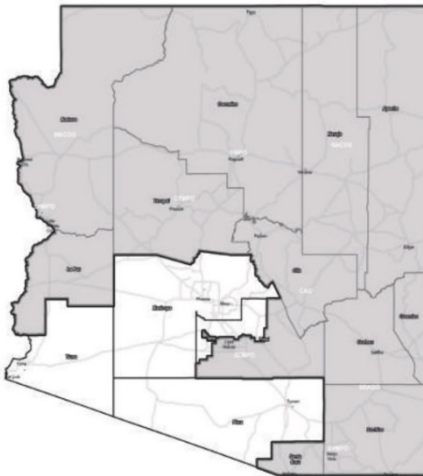
Your input on the **Survey of Private and Non-Profit Sector Transportation Service Providers** will help ADOT prepare plans and budgets, including funds to help support private and non-profit transportation providers -- organizations such as your own -- to best meet the needs of residents outside Arizona's major cities.

Please complete this survey at <https://www.surveymonkey.com/s/G-AZTRANS> within 10 days of receiving this notice. This survey is intended for: *Businesses and organizations (not municipal bus lines) that provide transportation on a regular basis to persons to, from or within any part of "Greater Arizona" as shown in the dark area on the map on the other side of this postcard, (regardless of where your organization is based).*

If you have questions: McClure Consulting LLC, consultants to ADOT for this project, can be reached at (602) 840-3699. The ADOT contact is Dianne Kresich at dkresich@azdot.gov.



**McClure Consulting LLC
5070 N. 40th St., Suite 205
Phoenix, AZ 85018**



APPENDIX C. GREATER ARIZONA TRANSPORTATION PROVIDERS ONLINE SURVEY

Greater Arizona Transportation Providers Survey

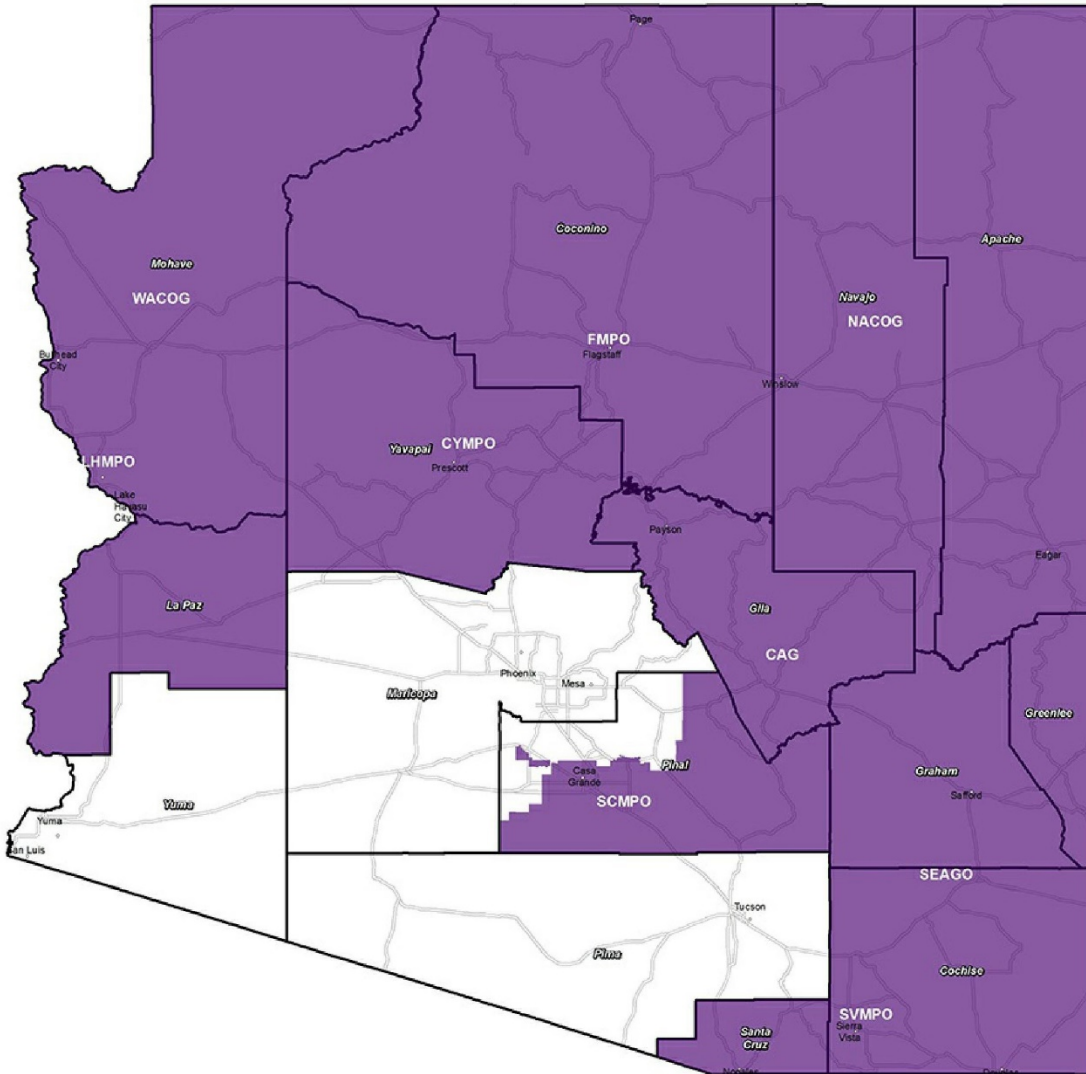
1.



Survey of private/non-profit-sector transportation service providers from the Arizona Department of Transportation (ADOT).

ADOT is seeking your input to better understand how to allocate transportation resources to serve rural Arizona, including funds to help support private/non-profit transit/transportation providers - organizations such as your own.* **Please complete this survey within 10 days of being notified of the survey link.** Thank you for your time -- your input is very much appreciated.

*ADOT contact and other details are provided at the end of survey.



1. Passenger transportation service is the primary activity, or a secondary/ancillary activity of my firm/organization.

* 2. My firm/organization provides passenger transportation services within some portion of Greater Arizona.

(Note: Greater Arizona is the area shaded in purple on the map shown above)

Next

Greater Arizona Transportation Providers Survey

2.

3. Does your organization have multiple divisions, for example coach services and taxi services, providing transportation services in Greater Arizona?

- Yes
- No

4. If your response to Question 3 is yes, then please indicate if your responses to this survey are for:

- All Divisions
- A Single Major Division

5. Does your organization receive Federal Transit Authority (FTA) funding?

- Yes
- No

6. Which of the following best describes the operations of your organization?

"Other" Description

7. How long has your organization been in business?

8. Which of the following best describe your passenger transportation business (indicate all that apply):

- Regularly scheduled and routed service (such as a city-to-city/airport shuttle)
- Respond to call-in or standing requests under contract (such as a dial-a-ride service), including transporting people with special needs
- Group charter service
- Respond to call-in or online requests by individuals (such as a limousine service)
- Follow a more-or-less defined route or series of stops where passengers might be found, when not otherwise carrying passengers (such as a taxi)

9. What is the primary service area(s) in which you provide passenger transportation services?

Please provide the name of the service areas where you provide service in the comment box below.

10. Do you believe that your organization has been affected by ridership captured by transportation network companies (i.e. Uber, Lyft, Sidecar, Haxi, etc.)?

Yes / No

If so, please tell us how you determined that?

Additional comments concerning transportation network companies (Optional)

Greater Arizona Transportation Providers Survey

3.

11. If you provide regularly scheduled and routed service (such as a city-to-city/airport shuttle, or tour route), please provide the names of the origin-destination communities:

Origin Community

(Optional) Origin Street Crossroads

Destination Community

(Optional) Destination Street Crossroads

12. How many trips per day?

13. Based on the origin-destination information, does this trip generally involve a return to the place of origin?

Yes

No

14. Does your service include additional routes?

- Yes
- No

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Greater Arizona Transportation Providers Survey

4.

15. If you provide regularly scheduled and routed service (such as a city-to-city/airport shuttle, or tour route), please provide the names of the origin-destination communities:

Origin Community

(Optional) Origin Street Crossroads

Destination Community

(Optional) Destination Street Crossroads

16. How many trips per day?

17. Based on the origin-destination information, does this trip generally involve a return to the place of origin?

- Yes
- No

18. Does your service include additional routes?

- Yes
- No

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Greater Arizona Transportation Providers Survey

5.

19. If you provide regularly scheduled and routed service (such as a city-to-city/airport shuttle, or tour route), please provide the names of the origin-destination communities:

Origin Community

(Optional) Origin Street Crossroads

Destination Community

(Optional) Destination Street Crossroads

20. How many trips per day?

21. Based on the origin-destination information, does this trip generally involve a return to the place of origin?

Yes

No

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Greater Arizona Transportation Providers Survey

6.

22. What type of vehicle does your firm use in providing passenger transportation services (check all that apply):

- Taxi Cab
- Limousine
- Small Van (Regular)
- Small Van (Modified for Special Needs Passengers)
- Large Van (10 - 15 Passengers)
- Cutaway Bus
- Standard Bus (Bike Racks/Interior Storage Racks)
- Intercity Bus (Bathroom/Luggage Racks)
- School-Type Bus (Regular Size)
- School-Type Bus (Small)
- Trolley-Like Vehicle

Other (please specify)

23. Passenger Trip Length (indicate the number of miles)

What would you estimate to be your longest (passenger-carrying) trip length in any typical week?

What would you estimate to be your shortest trip length in any typical week?

What would you estimate to be your *average* trip in any typical week?

What is the longest trip you might take in any given year?

24. Does your Arizona-based service carry people out of state?

- Yes
- No

If you answered yes, please indicate to where?

25. Which of the following purposes describe your typical trip purpose? (check all that apply)

- We serve people with a wide variety of transportation needs, consequently there is no "typical" purpose
- Access workplace
- Access educational institution
- Access commercial and shopping destinations
- Access medical care or senior center
- Access recreation/tourism sites, or sightseeing
- Connect to other transportation modes (i.e. airport, bus, train)

Other (please describe)

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Greater Arizona Transportation Providers Survey

7.

26. How many staff members, including yourself, did you employ on average during all of 2014? (If passenger transportation is not the only service your firm/organization provides, please provide information that pertains to only the passenger transportation portion, to the best of your ability.)

27. Employment Detail:

How many of these employees were full-time?

How many of these employees were part-time?

-- If you had part-time employees, what was the average number of hours per week worked?

How many of these were seasonal?

-- If you had seasonal employees, what was the average number of months seasonal employees work?

28. In which county is your primary place of business located?

Outside Arizona state boundaries (Please specify)

29. What is the NAICS code assigned to your business (as the primary economic activity)?

30. We may have follow-up questions regarding this survey. If you would be willing to answer questions about your survey, please provide your contact information.

Contact person:

Firm/organization name:

E-mail:

Phone number:

Are you interested in learning more about the eligibility requirements under which the Arizona Department of Transportation (ADOT) may be able to provide support to private transportation providers? ADOT regularly accepts applications to participate in their intercity and rural transit programs. Please visit www.azdot.gov/transitprograms for more information, or contact Transit Programs at 602-712-7333 or via e-mail: Sara Allred at SAllred@azdot.gov or Mike Normand at MNormand@azdot.gov

