

**Public Opinion on Phoenix Public Transportation  
Survey Report  
2014**

Prepared for the Citizens Committee  
on the Future of Phoenix Transportation

**December 2014**

**About the Center for Urban Innovation  
and School of Public Affairs**

The Center for Urban Innovation serves as Arizona State University’s focal point for research on urban affairs and is part of the College of Public Programs. Its mission is to improve the quality of life in neighborhoods, cities and urban regions by promoting innovation in governance, policy, and management. The Center undertakes basic and applied research published in books, journal articles, research reports, and public testimony. We provide training and development activities for local government officials. While the Center has a special interest in Arizona and the Phoenix region, its research and outreach has global impact through innovative education and training, critical research and community involvement in cities around the world.

The mission of the School of Public Affairs is to advance excellence in governance by creating, sharing, and applying knowledge of public administration. In support of this mission, the School is committed to enabling students to analyze public problems, communicate, collaborate, make decisions, and manage public institutions effectively, ethically, and democratically; teaching and providing continuing education at times and locations appropriate for working students and practitioners; identifying emerging public issues, applying research to public programs, disseminating information, and proposing solutions to public problems; assisting public, private, and nonprofit organizations; facilitating community discourse on public issues; contributing to public affairs scholarship; and fostering the next generation of public affairs scholars.

The opportunity to work with the City of Phoenix Public Transit Department on this project for the *Citizens Committee on the Future of Phoenix Transportation* provides the Center and the School the opportunity to contribute to the important discussions surrounding the future of public transportation in the Phoenix region. It also provides us a valuable opportunity to integrate students from the Master of Public Administration and Master of Public Policy programs into the execution of this project in an applied setting as part of their advanced public service training (a required statistics course for these students). The team behind this report includes:

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## Executive Summary

As a task on behalf of the City of Phoenix Public Transit Department (hereafter the Department) and the Citizens Committee on the Future of Phoenix Transportation (hereafter the Committee), we present this report on the results of the public opinion survey conducted by the Arizona State University Center for Urban Innovation and graduate students in the Master of Public Administration and Master of Public Policy programs in ASU's School of Public Affairs under the supervision of Dr. David Swindell. These results highlight a non-random sampling of respondents in the region to a series of questions focused on usage, satisfaction, and future ideas concerning public transportation.

Some of the highlights from the survey include:

- 82.1% of respondents indicate that they use light rail transit and 50.3% indicate that they use bus services; 46.6% use both LRT and bus.
- Slightly over one-third of respondents (35.0%) report using LRT only for special occasions (the most common response).
- Male respondents are more likely to report LRT and more reasons for LRT usage than female respondents.
- Male respondents are more likely to report bus usage than female respondents.
- Respondents with higher incomes are less likely to report bus usage or reliance than respondents with lower incomes.
- Among the 267 light rail users, nine out of every ten indicate that they are *very* or *somewhat satisfied* with LRT. Higher income riders are more satisfied with LRT than lower income riders.
- Over two-thirds of bus users report being very or somewhat satisfied with bus service. Higher income riders are more satisfied with bus service than lower income riders, and female riders were more satisfied than male riders.
- Approximately 89% of LRT users report feeling safe riding LRT in the daytime, while only 71% say they feel safe riding at night.
- LRT users living in Phoenix and Caucasian users both report higher levels of sense of safety than their counterparts in both daytime and nighttime. Female riders and lower income riders report less sense of safety at night on LRT.

- Approximately four out of five of all respondents agree that the current fares for bus and light rail services are fair, though LRT and bus users that are more reliant on the services are less likely to agree.
- Nine out of ten respondents agree or strongly agree that expanding bus and LRT services is important for the city's future.
- Respondents that ride the bus, that use bus services more frequently, or that rely more heavily on bus services to get to more destinations are more likely to agree and strongly agree with the importance of expanding bus services.
- Respondents that ride LRT more frequently, that rely more heavily on LRT to get to more destinations, or that are more satisfied with LRT services are more likely to agree and strongly agree with the importance of extending light rail.
- Among all respondents, 65.8% favor expanding public transit services, 29.9% favor maintaining the current levels, and only 4.3% favor any form of service reduction.
- Those favoring expansion of services prefer funding the expansion through an increase in the sales tax.
- Those favoring maintaining currently service levels prefer funding services through a combination of increased fares and taxes.
- Among respondents that do not use public transportation, the majority (54.2%) prefer that any expansion of services be paid for through increased fares. Those who use either LTR or bus services prefer any expansion be paid for through a gasoline tax. Respondents that use both LRT and bus services prefer expanded services be funded by an increased sales tax.

This last item highlights the likely lines of division for future funding based on usage. Since this is a self-selected sample of residents (likely inclined to be sympathetic to public transit), seeing such difference in opinion over funding along usage lines suggests real cleavages may exist. It also highlights the importance of conducting a random sample to measure community support and gather a more representative collection of citizen input on these policy issues.

The report is based on an analysis of the survey questions grouped into several themes. Furthermore, the report presents the analysis of each survey question by respondent's home community, race, ethnicity, and income variables to identify any patterns in responses among participants.

Section 1 focuses on the responses to questions related to usage of both light rail (LRT) as well as bus transit. Section 2 highlights the results to questions about respondent satisfaction with their public transit usage. Section 3 explores the responses to a series of questions concerning respondents' support for future transit changes and financing alternatives. Appendix A includes the questionnaire used for the on-line survey.



## Section 1: Public Transportation Usage Patterns

This report highlights respondents' usage patterns, service satisfaction, and public opinion about the future of public transportation in the Phoenix region. The report uses data collected from 354 respondents to a brief online survey collected from mid-October to mid-November, 2014, hosted on the *talktransportation.org* website.<sup>1</sup> The survey contains 14 substantive transit-related questions, along with five (5) socio-economic and demographic questions. The results provide an initial insight into respondent attitudes concerning public transportation, and will illustrate the value of a more rigorous random sample of community members in the near future as a means of gauging public opinion regarding transit policy options more accurately than any other form of citizen input. Appendix A presents the questionnaire used for this initial study.

### Frequency of Light Rail Use

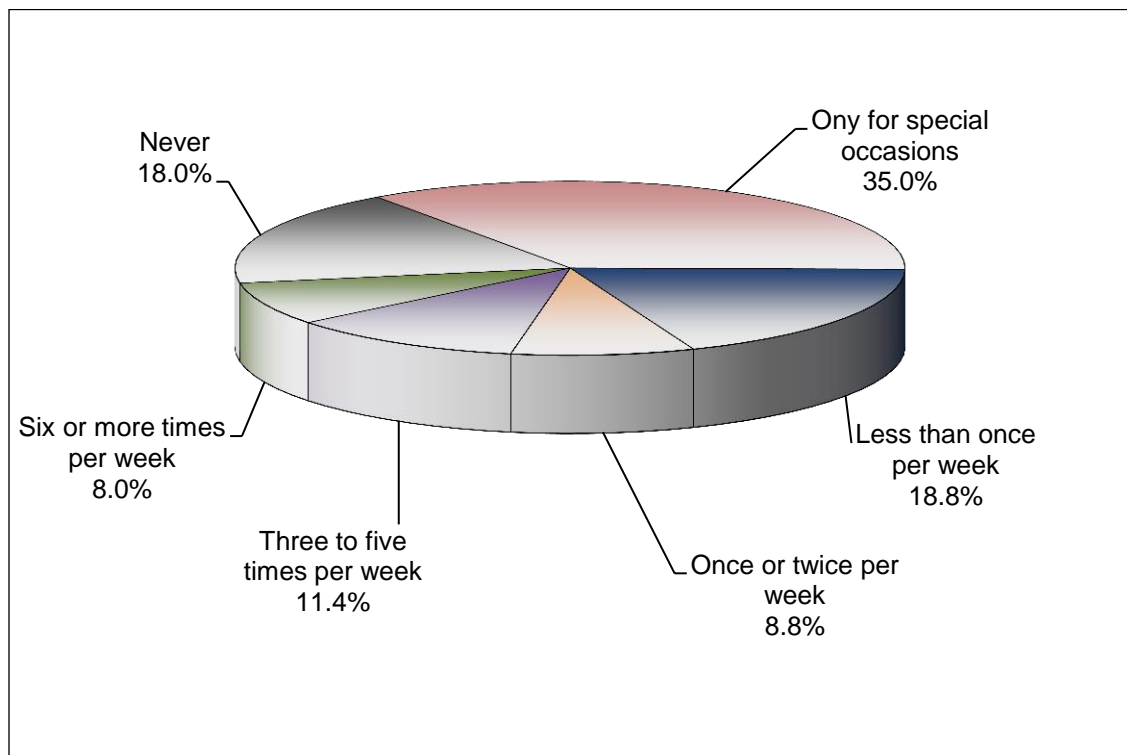
The first question the survey asks of respondents is: "First, how often do you ever use the Phoenix *light rail* system?" (see Appendix A, Question 1). More than four out of five of the 351 valid responses (82.1%) report that they use the light rail transit (LRT) system; only 17.9% report never using light rail. This rate of usage is far higher than most estimates of overall ridership and reflects the self-selection of respondents to the survey.

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<sup>1</sup> Respondents to the survey self-selected themselves to participate. Their inclusion was not part of a random sampling process and therefore the findings in this report may not be representative of all residents in Phoenix or the Phoenix region. Response rates cannot be calculated as the team does not know how many potential respondents knew about the opportunity to participate but chose not to. Therefore, all tests for statistical significance in this report are presented only for purposes of illustration.

In addition to simply identifying those that ride light rail and those that do not, the survey also differentiates the extent to which riders utilized LRT in the Phoenix area. Figure 1 illustrates the range of answers. Slightly over one-third of respondents (35.0%) report using LRT only for special occasions (the most common response). At the high end, 8.0% of respondents indicate that they use LRT six or more times per week.

**Figure 1: How Often Do You Use Light Rail?**

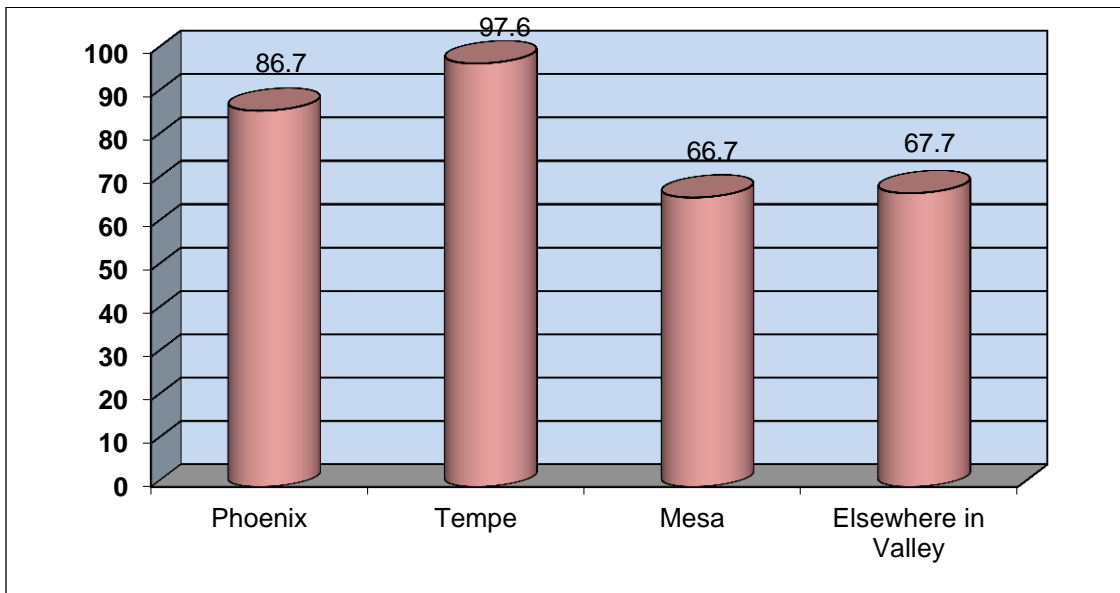


n = 351

The survey includes an array of several socio-economic and demographic characteristics as well. For instance, 87.0% of male respondents say they use LRT, while only 79.7% of female respondents report usage. Male respondents also use LRT more often than female respondents to a statistically significant extent ( $z = -3.11$ ;  $p < 0.002$ ). On the other hand, there is no meaningful

difference in ridership between Caucasian and non-Caucasian riders.<sup>2</sup> Also, there is no difference in ridership between respondents that indicate they are of Hispanic descent and those that do not. However, the common negative correlation between income and LRT usage rate found in other studies is apparent here as well. Higher income respondents report lower levels of usage than lower income respondents ( $\rho = -0.20$ ;  $p < 0.0004$ ). Finally, usage of LRT is associated with where the respondents live ( $\chi^2 = 26.5$ ;  $p < 0.0001$ ). As Figure 2 illustrates, respondents that reside in Phoenix and Tempe are more common users of LRT than are residents living in Mesa or other parts of the Valley.

**Figure 2: Percent of LRT Users (by Place of Residence)**



n = 325

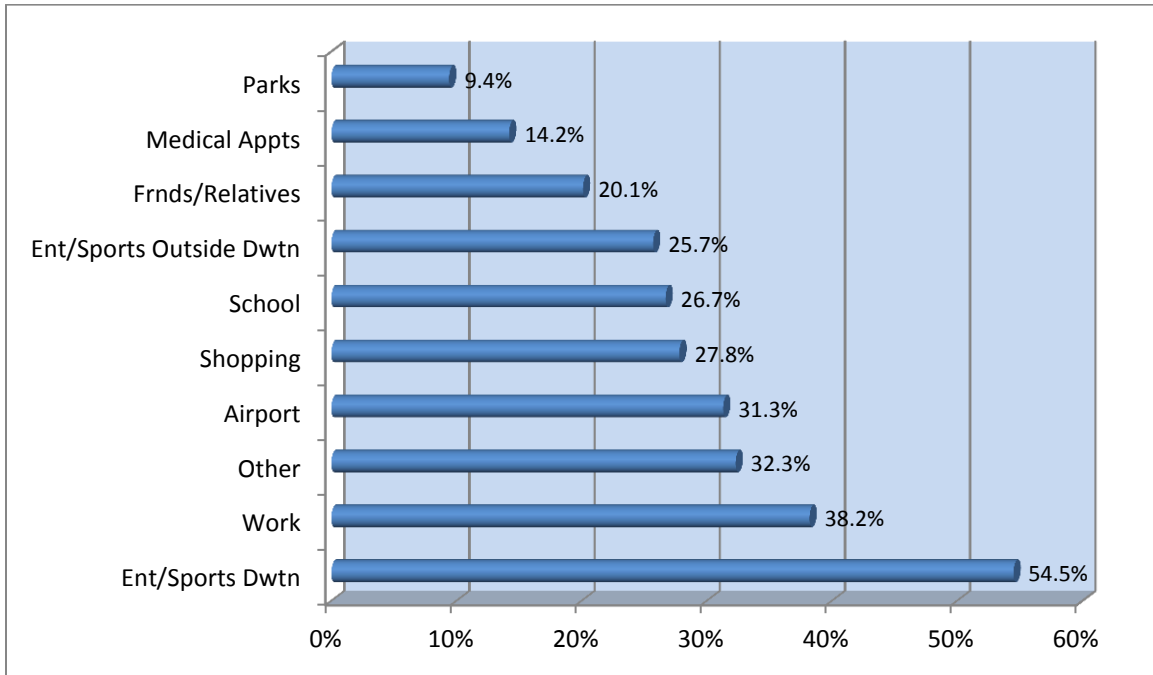
<sup>2</sup> The survey allowed respondents to self-identify as Native-American, Caucasian, African-American/Black, Asian, or Pacific Islander. The vast majority of respondents to the survey (86.3%) indicated that were of Caucasian descent. There were relatively few respondents in the other racial categories. In order to have sufficient respondents to comment on possible usage differences by race, the racial categories are collapsed into Caucasian and non-Caucasian for purposes of analysis.

## **Purposes of Light Rail Usage**

The survey includes a question to explore the various reasons respondents might use light rail transit. Specifically, the survey asks: "Please check any of these destinations for which you have used the Phoenix light rail for any part of your travel in the last year (check as many as are applicable)" (see Appendix A, Question 2). Respondents can choose from nine specific options plus an option for "other reasons" not listed. The specific options include: taking the bus to their job, for shopping, to medical appointments/needs, to school, to the airport, to sports and entertainment venues within the downtown area, to sports and entertainment venues outside the downtown area, to parks, and to visit friends or relatives. Respondents could check as many options as appropriate to their situation.

Figure 3 summarizes the reasons for LRT usage. Over half of the respondents say that the most common reason they use LRT is to travel to downtown Phoenix for entertainment or sports events (54.5%). The remaining responses are far less common with 38.2% reporting that they use LRT to get to work (which is the most common reason for bus usage). Very few respondents report using LRT (or bus service) to get to parks with less than one in ten listing this as a reason for LRT use in the last year (9.4%).

**Figure 3 Reasons for LRT Usage**



n = 288

Figure 3 illustrates the array of reasons that respondents use light rail, but it does not differentiate between those who are more or less intensive/reliant users in terms of the number of different reasons they utilize the service. One might only use LRT to get downtown for a ballgame. Someone else may utilize LRT for multiple reasons such as getting to work, visiting friends, and regular trips to the airport.

Table 1 displays a count of the 288 respondents' answers to this question. The table shows the number of respondents who selected one to ten of the options given as reasons for why they use LRT (though no one chose all ten options). Just over one-quarter (26.7%) of the respondents say they only use LRT for one reason. The median average number of reasons for this sample of respondents is two. Almost half of the respondents using light rail (49.0%) use it for three or more reasons (suggesting that rail riders are more reliant on LRT for transit than bus riders are for bus transit, as noted below).

**Table 1: LRT Reliance Index**

# of Reasons for Riding LRT	Count of Respondents	Percent of Total
0	8	2.8
1	77	26.7
2	62	21.5
3	60	20.8
4	33	11.5
5	17	5.9
6	17	5.9
7	8	2.8
8	3	1.0
9	3	1.0
<b>Total</b>	<b>288</b>	<b>100.00</b>

Perhaps not surprisingly, respondents living in Phoenix report greater reliance on light rail, followed by Tempe, Mesa, and elsewhere in the Valley. These differences are statistically significant ( $\chi^2 = 12.7$ ;  $p < 0.0054$ ). Reliance is also associated with gender as male respondents report using LRT for more reasons than female respondents ( $t = -1.79$ ;  $p < 0.037$ ). Also, those respondents reporting higher income are more likely to report fewer reasons for using LRT ( $\rho = -0.21$ ;  $p < 0.001$ ). Reliance does not exhibit any relationship with the respondent's race or Hispanic ethnicity.

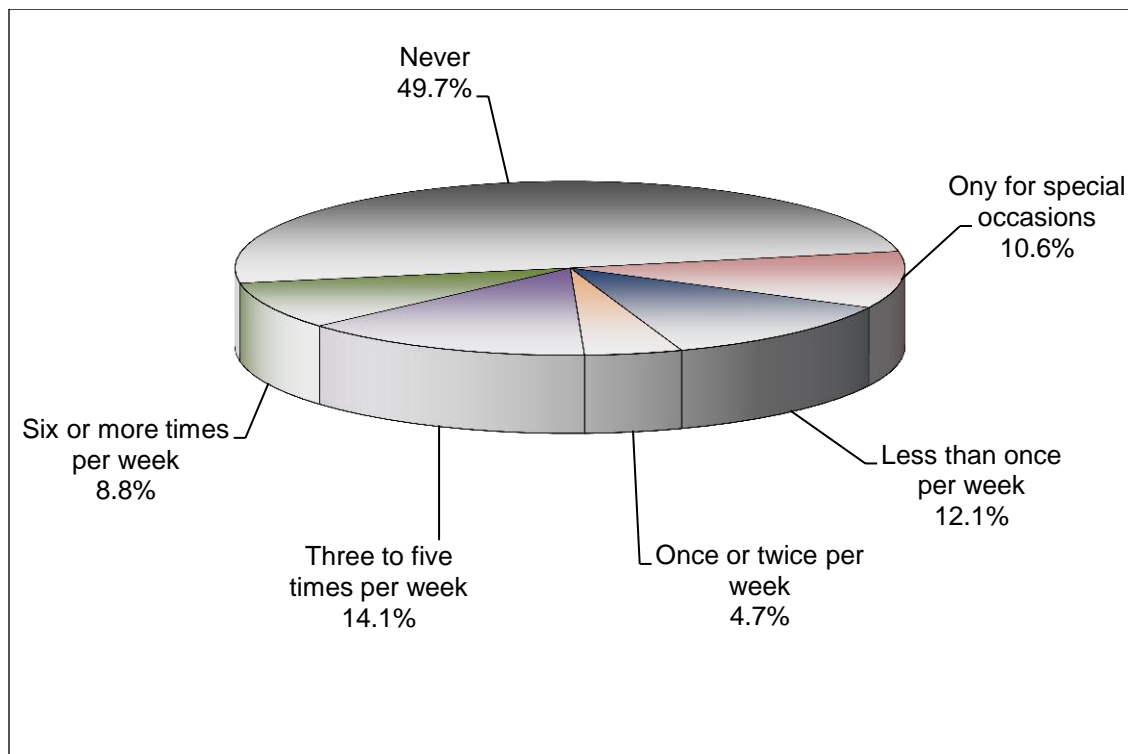
### **Frequency of Bus Use**

Question 4 in the survey asks respondents: "Next, how often do you ever use Phoenix bus service?" (see Appendix A). The 340 valid responses indicate that approximately half of respondents use public bus service (50.2%) and the other half never use a bus. As with LRT usage, this rate of bus usage is far higher than

most estimates of cities like Phoenix and its suburbs; probably again reflecting the self-selection of respondents to the survey.

Beyond creating a simple comparison of users relative to non-users of bus service, Question 3 also measures extent of usage. Figure 4 shows the range of usage intensity. Relative to LRT usage, bus users are more likely to use bus services regularly as opposed to simply for special events. Only 10.6% of the respondents use a bus only for special events. Over one-quarter (27.6%) of the respondents say they use a bus at least once per week or more.

**Figure 4: How Often Do You Use Public Bus Services?**



n = 351

Cross-referencing this usage question with the socio-economic and demographic characteristics highlights some additional patterns. As with LRT usage, bus usage also varies by gender: 62.2% of male respondents said they use bus services

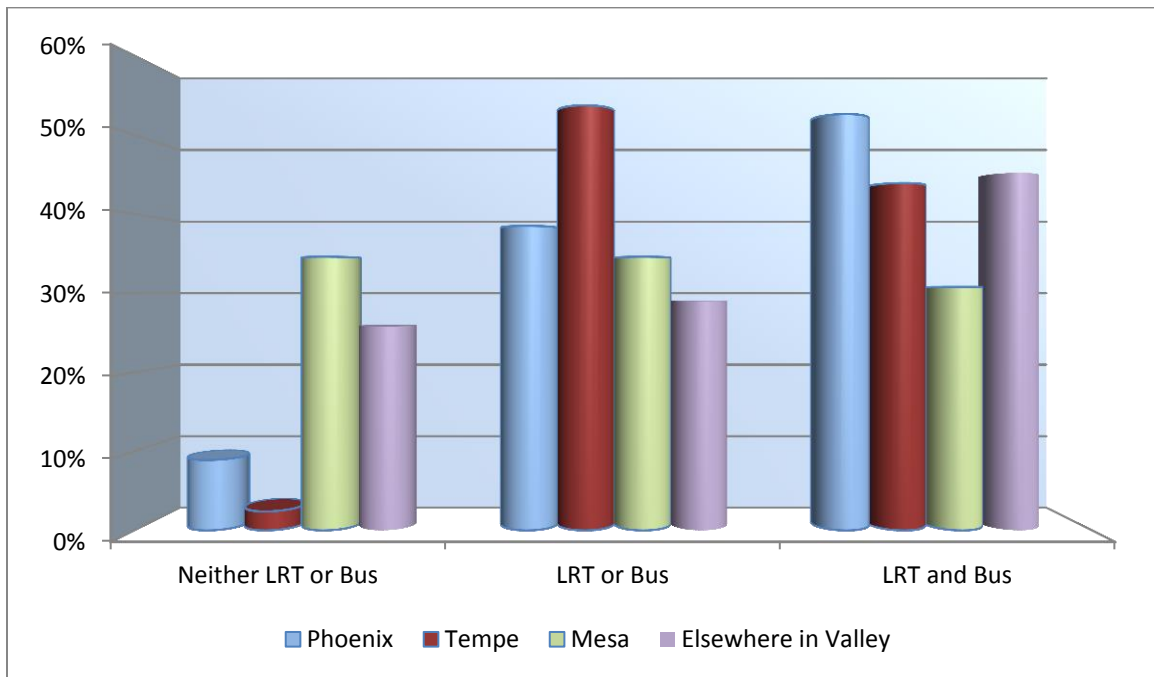
and only 42.5% of female respondents report usage. Note that bus usage among these survey respondents is lower overall than LRT usage (82.1% and 50.3%, respectively). Also, male respondents utilize bus services *more often* than female respondents ( $z = -3.31$ ;  $p < 0.001$ ). In addition to gender, race appears associated with bus service usage: 53.4% of Caucasian respondents indicate never using bus services while only 30.6% of non-Caucasian respondents say they never use a bus ( $z = 3.05$ ;  $p < 0.002$ ).

While race is associated with bus usage, ethnicity is not. There is no difference in bus ridership or intensity of usage between respondents that indicate they are of Hispanic descent and those that do not. Perhaps surprisingly, the survey results do not indicate the common negative correlation between income and bus usage rate. Bus usage and intensity do not correlate with respondent's income. Bus usage and intensity similarly do not correlate with the place of respondent's residence as usage and intensity rates are relatively similar in Phoenix, Tempe, Mesa, and elsewhere in the Valley among these respondents.

One interesting relationship that the data indicate is the strong association between whether one uses LRT and bus service. Users of one are likely to be users of the other: 92.4% of bus users are also LRT users, while only 70.8% of non-bus users were LRT users ( $\chi^2 = 26.4$ ;  $p < 0.001$ ). Overall, 14.5% of all respondents said they use neither LRT nor bus while 38.9% report using either LRT or bus service, and the remaining 46.6% use both LRT and bus service. This pattern varies depending on the location of one's residence ( $\chi^2 = 29.2$ ;  $p < 0.001$ ), as illustrated in Figure 5.



**Figure 5: LRT and Bus Usage (by Residence)**



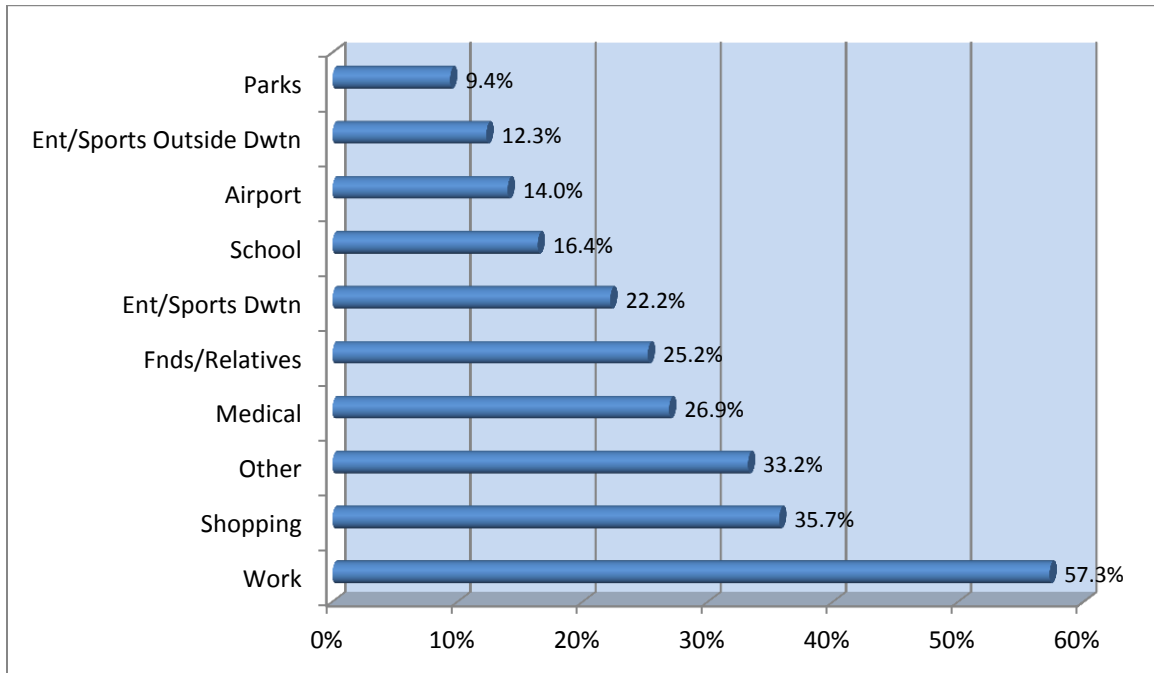
n = 321

### **Reasons for Bus Usage**

The survey records the various reasons for use of bus services using a multiple response question. Specifically, the survey asks: "Please check any of these destinations for which you have used the Phoenix bus service for any part of your travel in the last year (check as many as are applicable)" (see Appendix A, Question 5). The survey included the same nine specific options as for the light rail version (Question 2) plus an option for "other reasons" not listed.

Figure 6 summarizes these reasons for bus service usage. The most common reason respondents cite for using bus services is getting to their place of work (57.3%), with shopping a distance second (35.7%). While getting to entertainment and sports events is the most common reason respondents cite for using LRT, less than one-quarter (22.2%) cite this as their reason for utilizing bus services.

**Figure 6 Reasons for Bus Usage**



n = 171

Figure 6 illustrates all the reasons respondents use bus services, but it does not differentiate between those who are more or less intensive users in terms of the array of reasons they use the bus. Some might only use the bus to get to work. Another respondent may rely more heavily on bus services for a wider array of activities like getting to work, shopping, medical appointments, and going downtown for a baseball game.

Table 2 displays a count of the 171 respondents' answers to this question. The table shows the number of respondents who selected one to ten of the options given as reasons for why they take the bus. The table also indicates that three of the respondents did not select any of the reasons for why they take the bus. Almost half (47.3%) of the respondents report only one reason for using the bus, though the median average number of reasons for this sample of respondents is

two. Over one-third of the 171 bus users report three or more reasons they use the bus, suggesting heavier reliance than others.

**Table 2: Bus Reliance Index**

# of Reasons for Riding Bus	Count of Respondents	Percent of Total
0	3	1.75
1	81	47.37
2	26	15.20
3	18	10.53
4	11	6.43
5	12	7.02
6	9	5.26
7	6	3.51
8	3	1.75
9	1	0.58
10	1	0.58
<b>Total</b>	<b>171</b>	<b>100.00</b>

Greater reliance on bus services does not exhibit any relationship with the respondent’s place of residence, race, Hispanic ethnicity, or gender. However, bus reliance is negatively associated with respondent’s income ( $\rho = -0.38$ ;  $p < 0.0001$ ). Respondents reporting higher income also report lower reliance on bus services.

**Commute Times**

One of the policy goals of public transit is providing citizens with transportation options. Citizens optimize their personal choices across these options and one of the primary drivers of transit choice is expected commute times, particularly in terms of commute times to/from work.

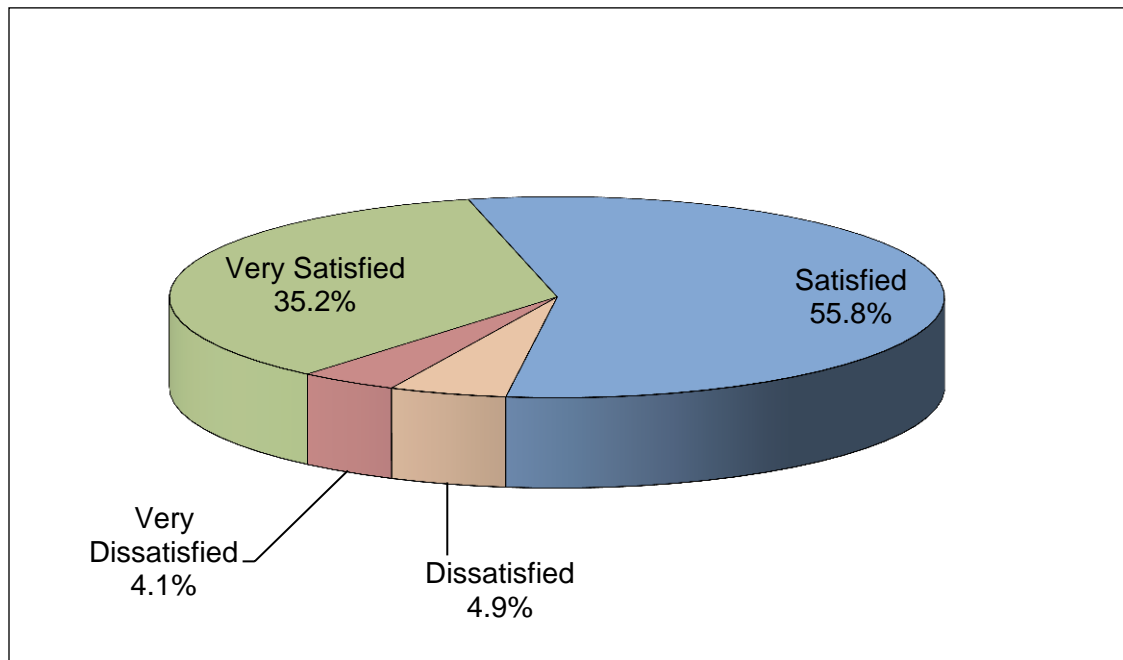
The survey asked respondents: "Regardless of your form of transportation, how long is your average commute to work (in minutes)?" (see Appendix A, Question 7). Of the 354 survey participants, 281 were eligible and willing to answer this question. Their answers ranged from a few who live very close to their place of work (which might be their home), to a high of a few respondents that commute a couple of hours. But the average work commute among these respondents is approximately 32 minutes. Just over 80 percent of respondents reported commute times of 45 minutes or less. One-quarter of respondents reported commutes of 15 minutes or less.

In addition to the basic commute times, the socio-economic and demographic variables provide an opportunity to determine variations in commute times among different groups of respondents. For instance, respondents living in Phoenix report the shortest average commute time (29.2 minutes). Tempe and Mesa are slightly longer on average, but those living elsewhere in the Valley report average commute times of 40.6 minutes. These differences are statistically significant ( $F = 3.62$ ;  $p < 0.0137$ ). This is the only socio-economic or demographic variable that exhibits a significant relationship with commute time. Race, Hispanic ethnicity, gender, and income do not associate with commute time.

## Section 2: Satisfaction with Public Transportation

In addition to basic usage questions, the survey also sought information from users and non-users on a range of service quality aspects. The first two focus on traditional citizen satisfaction scoring of light rail by LRT riders and satisfaction scoring of bus service by bus riders. The survey asked those who use light rail the following: "Thinking in general about your use of Phoenix light rail services that you used over the past year, how satisfied would you say you are with those services?" (see Appendix A, Question 3). Respondents answered on a four-point scale from very dissatisfied to very satisfied. Overall, LRT riders indicate a high level of satisfaction with their light rail usage. Among the 267 light rail users, over nine out of every ten (91.0%) indicate that they are very or somewhat satisfied with LRT. Figure 7 illustrates the overall results.

**Figure 7: Light Rail Rider Satisfaction LRT Services**

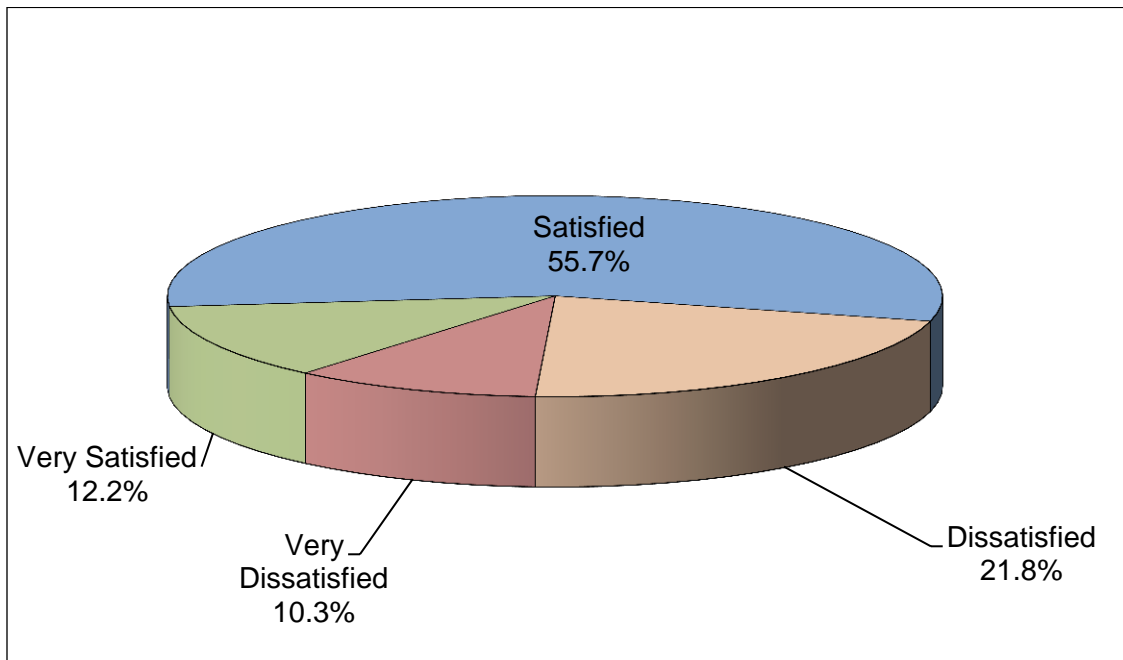


n = 267

The overall satisfaction with LRT ratings may vary over different types of users. For instance, light rail users that report higher incomes are more likely to report satisfaction with the service ( $\rho = 0.19$ ;  $p < 0.0032$ ). However, satisfaction does not vary significantly by residence, race, ethnicity, or gender of the respondent. All these groups share the generally high satisfaction ratings as the respondents overall. Satisfaction might also be expected to vary by usage, but the data do not support that expectation either. Riders that are more reliant on light rail are just as satisfied as those that rely on it less.

The survey asked a similar question of bus service users: "Thinking in general about your use of Phoenix bus services that you used over the past year, how satisfied would you say you were with those services?" (see Appendix A, Question 6). Respondents used the same scale from very dissatisfied to very satisfied. While satisfaction was lower than satisfaction with LRT, there is still a significant majority (68.0%) of bus users that report being very or somewhat satisfied with bus service. The intensity of satisfaction among bus users is notably lower than among light rail users. Figure 8 illustrates the full results.

**Figure 8: Bus Rider Satisfaction with Bus Services**



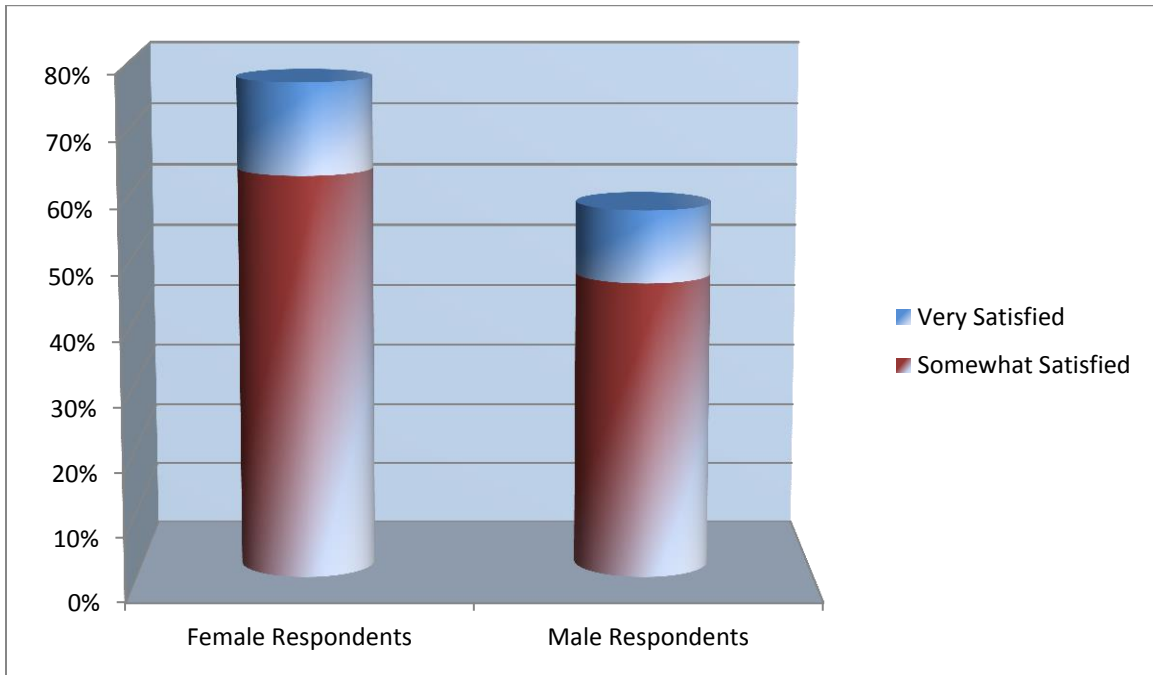
n = 156

Unlike the lack of associations with different groups relative to LRT satisfaction, bus satisfaction does appear to vary across groups along different characteristics. For instance, satisfaction with bus service is associated with where one resides. Bus users living in Tempe report the highest level of satisfaction along with those from elsewhere in the Valley. Phoenix residents reported the 3<sup>rd</sup> highest level of satisfaction while users living in Mesa reported the lowest level of satisfaction.<sup>3</sup>

Satisfaction with bus service also varies by respondent's gender: female respondents are far more satisfied than male respondents ( $z = 2.24$ ;  $p < 0.0254$ ). They are also more intensely satisfied with bus service than male respondents (see Figure 9). Satisfaction also varies by respondent income. Those reporting higher income are more satisfied with their usage of bus services ( $\rho = 0.26$ ;  $p < 0.0018$ ). Intensity of satisfaction does not indicate a clear pattern of association. Figure 10 illustrates this relationship.

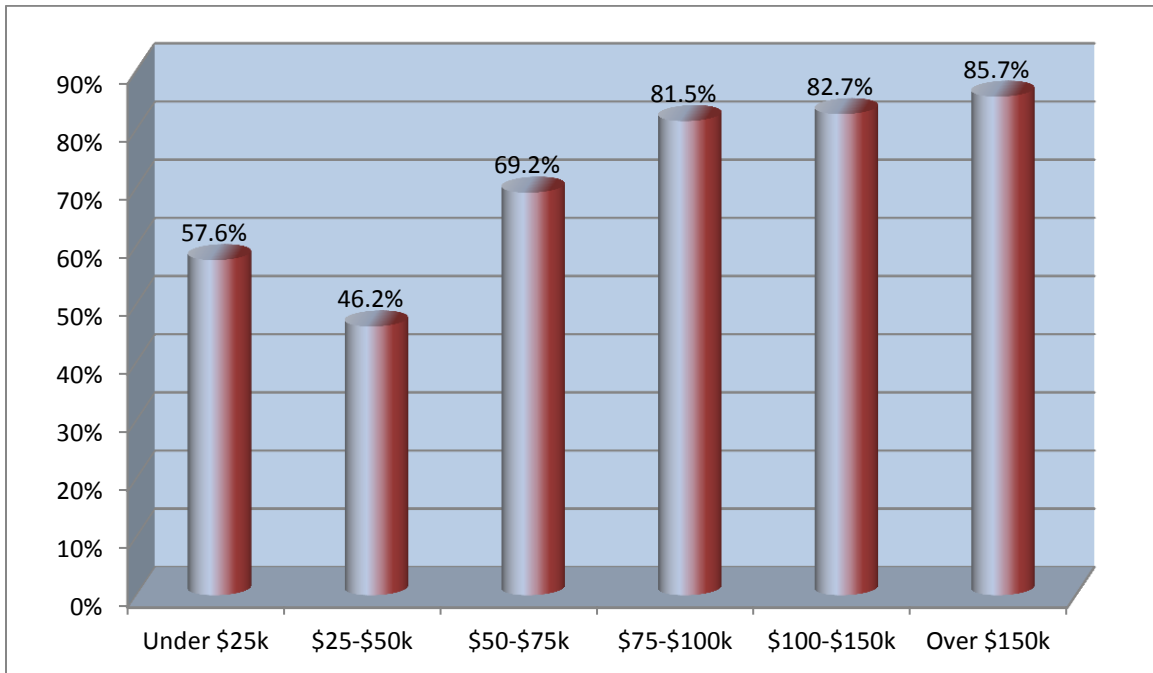
<sup>3</sup> One should not there were only eight (8) respondents from Mesa that used Phoenix bus services and answered the satisfaction question.

**Figure 9: Satisfaction with Bus Service (by Gender)**



n = 150

**Figure 10: Percent of Users Very and Somewhat Satisfied with Bus Services (by Income)**



n = 141



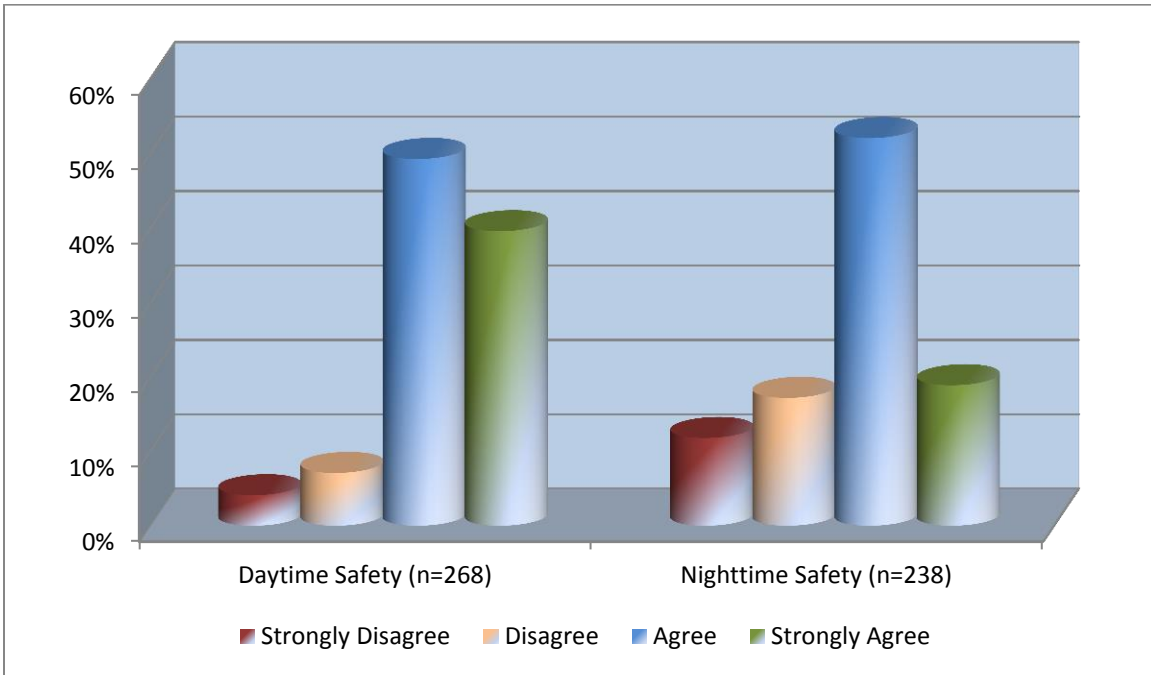
In addition to the two survey questions asking users to rank satisfaction with LRT and bus services, there are two additional questions included in the survey that reflect the public safety dimension of satisfaction, specifically on the light rail.<sup>4</sup> All light rail riders were asked to rate their sense of safety while riding light rail, first in the daytime then at night. Specifically, the survey asked light rail riders to specify their degree of agreement with the following statements: "I feel safe riding Phoenix light rail during the daytime," and "I feel safe riding Phoenix light rail at night" (see Appendix A, Questions 8 and 9).

In general, there is a relative high level of sense of safety. Almost nine out of 10 users (88.8%) report that they agree or strongly agree with the statement about daytime safety; two out of five (39.6%) *strongly agree* (see Figure 11). This sense of safety does decline among nighttime riders. Less than three-quarters of users (71.0%) say they agree or strongly agree with the statement about nighttime safety. Disagreement is twice as high among nighttime users.

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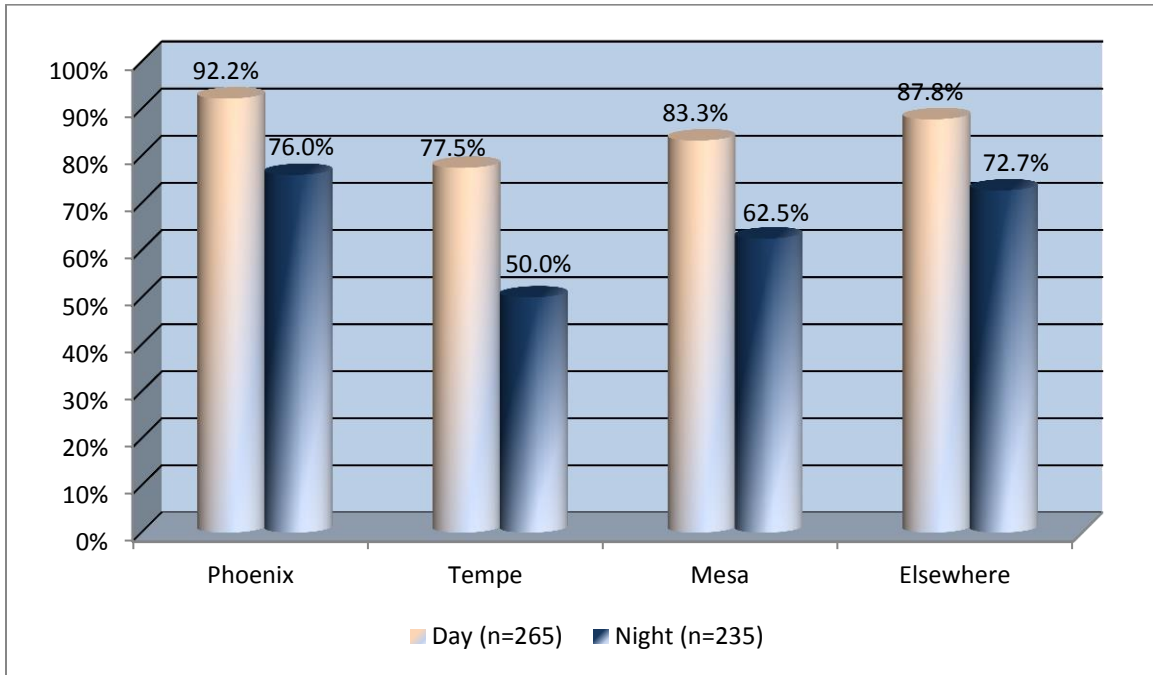
<sup>4</sup> Satisfaction is significantly related to sense of safety in both daytime and nighttime. The results from the survey affirm this common finding ( $\rho = 0.34$  and  $\rho = 0.36$ , respectively).

**Figure 11: I Feel Safe Riding Light Rail**



One's sense of safety may also be expected to vary among different groups of respondents. Light rail users residing in Phoenix are more likely to agree with the safety questions (both day and night). Fully 92.2% of Phoenix respondents feel safe during the day relative to only 77.5% of Tempe riders ( $\chi^2 = 8.6$ ;  $p < 0.0353$ ). While lower, Phoenix riders feel safer at night too: 76.0% relative to 50.0% among Tempe riders ( $\chi^2 = 12.6$ ;  $p < 0.0057$ ). Figure 12 illustrates these patterns.

**Figure 12: I Feel Safe Riding Light Rail (by Residence)**



In addition to the association with place of residence, respondents also vary by race in terms of their perceived safety on the light rail. Caucasian respondents (91.6%) feel significantly safer (and more intensely safer) than non-Caucasian respondents (75.0%) ( $z = -2.56$ ;  $p < 0.0104$ ). While overall sense of safety declines for both groups at night, the differential between the groups remains. Almost three-quarters (73.7%) of Caucasian riders feel safe at night on light rail while only 56.3% of non-Caucasian riders report the same sense of safety at night ( $z = -2.90$ ;  $p < 0.0038$ ). There were no significant differences between those of Hispanic descent and those not of Hispanic descent.

Male and female light rail users both reported similar levels of sense of safety during the daytime. However, at night, female respondents report a lower level of sense of safety than male users (71.4% compared to 80.4%). This is a statistically significant difference ( $z = -2.49$ ;  $p < 0.0129$ ).

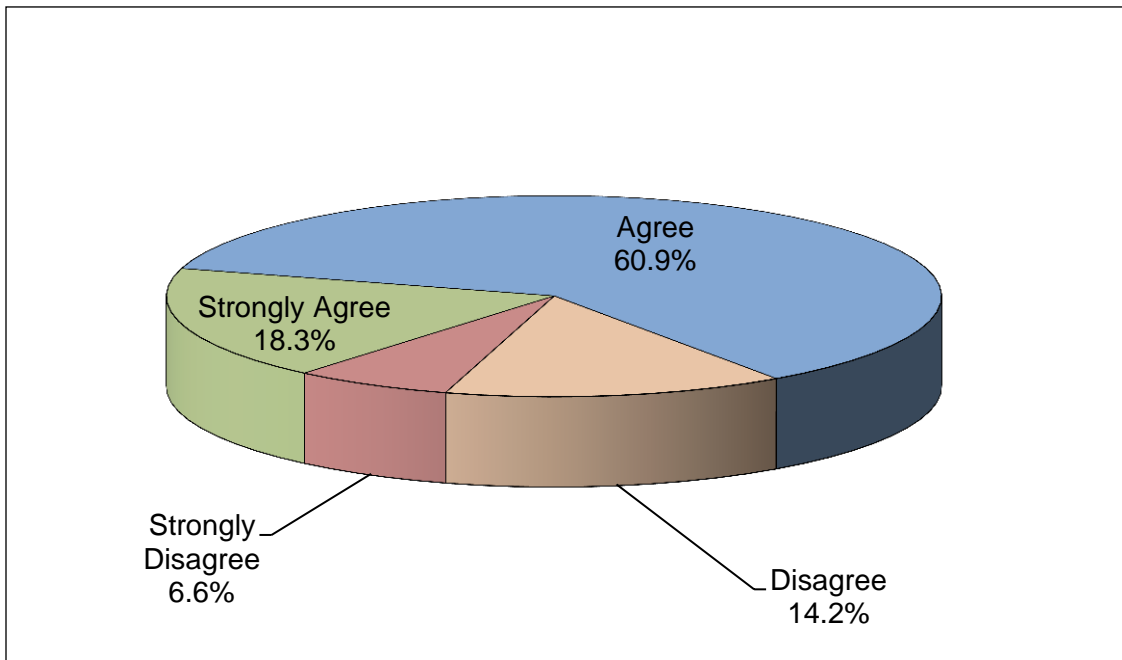
Similarly, there is no difference in sense of safety among daytime riders by income group. But the sense of safety does change in terms of nighttime safety. Light rail riders that report higher levels of income are more likely to report feeling safe using the light rail at night than lower income users ( $\rho = 0.16$ ;  $p < 0.0178$ ).

Finally, sense of security is not associated with more usage/reliance on light rail. While the relationship is close to statistical significance for the daytime users and indicates a positive relationship (more reliance tends towards more sense of safety), it is not quite at the threshold used here.

### Section 3: The View Looking Forward

In addition to public transit usage and satisfaction, the survey also seeks input from respondents on policy issues regarding current practices and future options. The first of these asks respondents to gauge their level of agreement with the statement: "The current fares for bus and light rail services are fair" (see Appendix A, Question 11). Respondents answer on a four-point scale from strongly disagree to strongly agree. Approximately four out of five of all respondents agree with the statement (79.2%). Figure 13 illustrates the full range of responses.

**Figure 13: Current Fares for Bus and LRT Are Fair**



n = 289

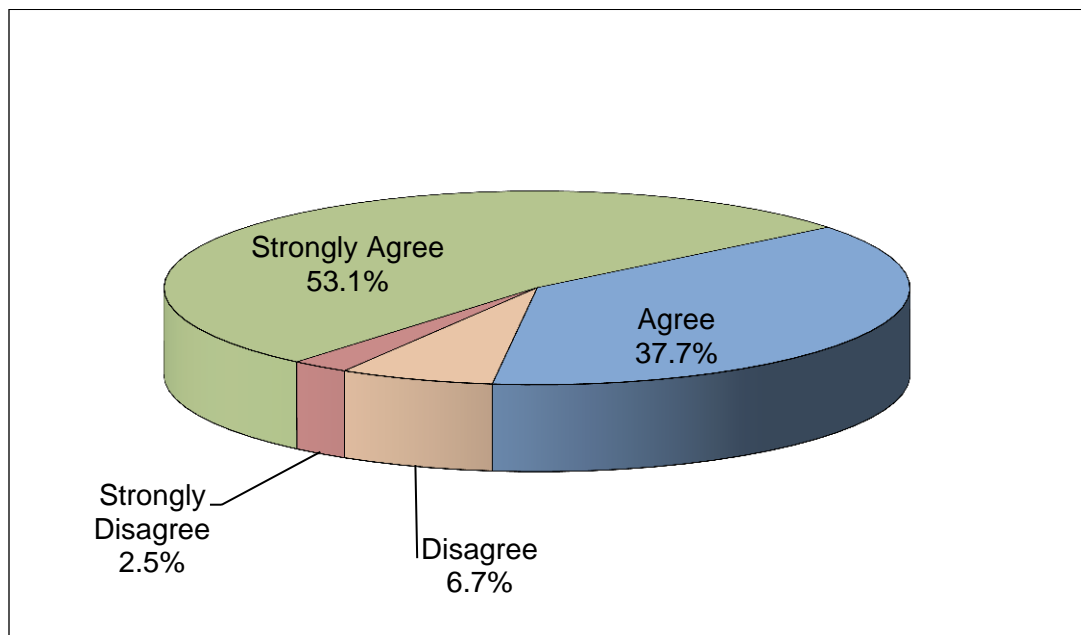
There is very little variation over the demographic variables in terms of place of residence, race, Hispanic ethnicity, or gender. In terms of income, respondents

reporting higher income are more likely to agree that fares are fair than respondents reporting lower incomes ( $\rho = 0.18$ ;  $p < 0.0032$ ).

LRT and bus usage has a complicated association with attitudes about the fares. Generally speaking, users are equally supportive of the fares as are non-users of both LRT and bus services. The same is true regardless of how often one uses the services. However, LRT and bus users that are reliant on the services for a wider array of destinations are more likely to indicate that the fares are not fair ( $\rho = -0.15$ ,  $p < 0.0157$  and  $\rho = -0.22$ ,  $p < 0.0047$ , respectively).

Because public transit must adapt the survey seeks information on attitudes concerning the future growth of public transit in the region. For instance, the survey asks all respondents their level of agreement with the statement: "Expanding bus services is important for the city's future" (see Appendix A, Question 13). Nine out of ten respondents agree or strongly agree (90.8%). Over half (53.2%) *strongly* agree with the statement.

**Figure 14: Expanding Bus Service Is Important for the City's Future**

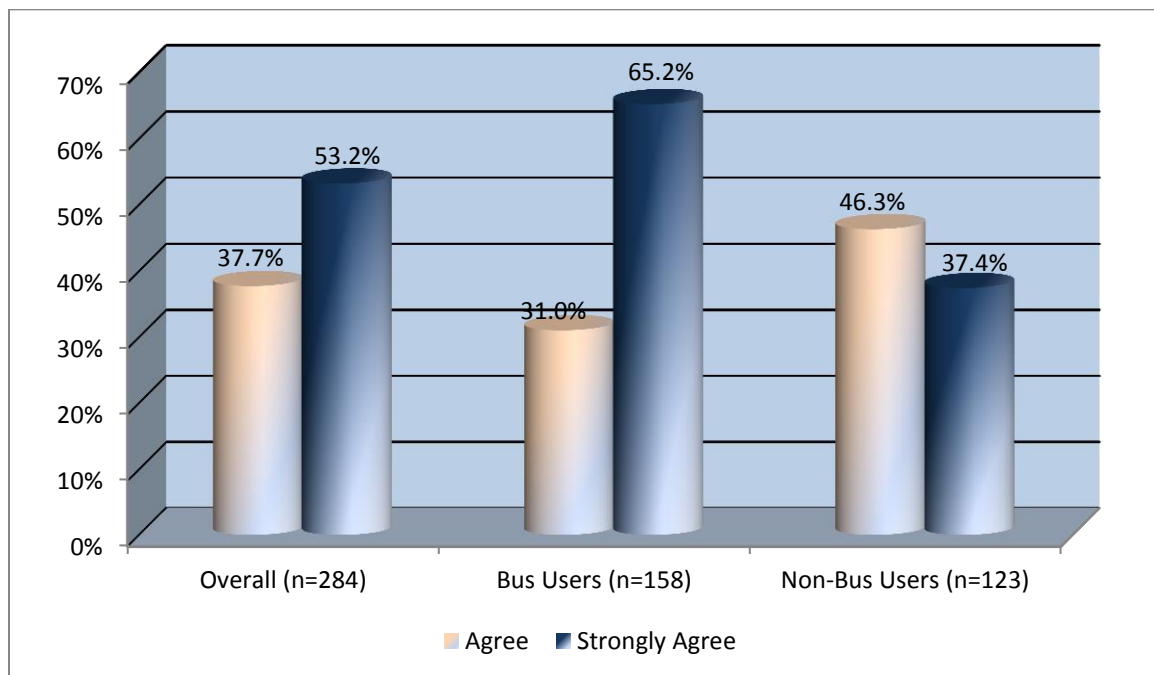


n = 284

This high level of agreement over the importance of expanding bus service is consistent across all the demographic groups in the sample. Furthermore, agreement does not vary by respondent income level.

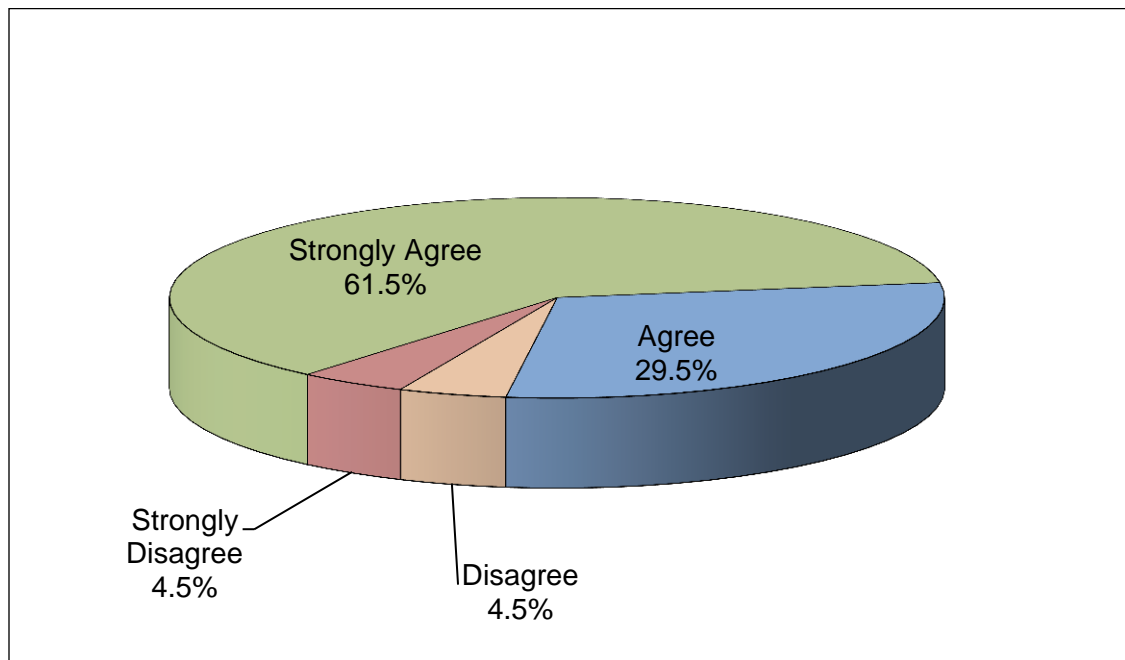
However, agreement does vary depending on usage. Bus riders are more likely to agree with the statement (96.1%) while non-riders are less likely (83.7%). Figure 15 illustrates these differences. But the difference in agreement is also apparent in terms the *extent* to which one uses bus services. Those who use a bus more frequently are more likely to agree with expanding the service ( $\rho = 0.30$ ;  $p < 0.0001$ ). Furthermore, those respondents that rely on bus service for a wider range of reasons are also more likely to agree with expansion ( $\rho = 0.18$ ,  $p < 0.0207$ ). Agreement is *not* associated with user satisfaction. In other words, those who are less satisfied with bus services agree with expansion as much as those who are satisfied.

**Figure 15: Expanding Bus Service Is Important (by Usage)**



The survey contains a similar question aimed at light rail. Respondents are asked to indicate their level of agreement with the statement: "Extending the light rail system is important for the city's future" (see Appendix A, Question 12). Similar to the results for bus expansion, nine out of ten respondents agree or strongly agree with the light rail extension statement (90.4%). However, there is higher intensity of support: over half (61.5%) *strongly* agree with the statement. Figure 16 illustrates the range of responses.

**Figure 16: Extending Light Rail Is Important for City's Future**



n = 309

As with support for expanding bus services, overall agreement on extending light rail is very high which limits the amount of variation in support across different demographic groups. There is no difference in support by residence, race, ethnicity, or gender of respondents. Support does not vary by the socio-economic measure of respondent's income either.



While support for bus expansion did differentiate to some extent between bus users and non-users, there is no similar differentiation about extending the light rail system between LRT users and non-users.<sup>5</sup> However, degree of support does vary in terms of frequency of usage, reliance on LRT, and satisfaction with LRT service. Respondents that ride light rail more often are more likely to express agreement (and strong agreement) with the statement than those using light rail less often ( $\rho = 0.20$ ,  $p < 0.0003$ ). Light rail users that are more reliant on LRT to get to more destinations are also more likely to agree (and strongly agree) with the statement ( $\rho = 0.32$ ,  $p < 0.0001$ ). Finally, LRT users that are more satisfied with the quality of their service are also more likely to express agreement (and strong agreement) with the importance to the city's future of extending light rail ( $\rho = 0.30$ ,  $p < 0.0001$ ).<sup>6</sup>

In the near future, voters will need to decide how to continue funding for the light rail and bus system. Therefore, the survey concludes the substantive questions seeking respondent input on what shape that future might take. Question 14 (see Appendix A) asked respondents to choose one option from a set of 11 ranging from suspension of light rail service, reduced frequency of services, maintaining services with some form of revenue enhancement, or expanding service with some form of revenue enhancement.

The question design provides two ways of examining the results. First, the results are grouped into general categories to determine support for reducing service levels, maintaining them, or expanding them. As Figure 17 illustrates, the

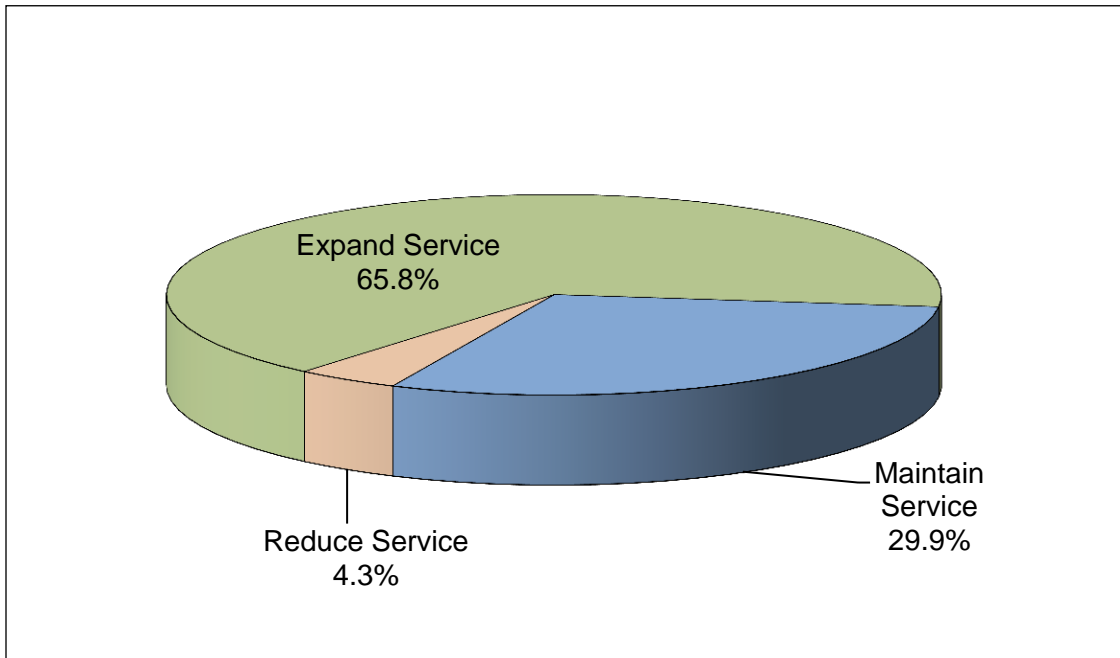
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<sup>5</sup> While the association does not achieve statistical significance, it is close to the cut-off and does trend in the same direction as the bus results: users tend to be more likely to agree with light rail extension than non-users.

<sup>6</sup> The survey contains a counter-question for purposes of increasing the reliability and insuring respondents were not providing patterned responses. Question 10 (see Appendix A) asks respondents to rate their level of agreement with the statement: "Extending light rail is a poor use of public resources." The results are the mirror opposite of those reported in this section concerning extension of the light rail. This adds confidence that respondents were not providing patterned responses and were reliably responding to the questions. Because the results for the counter-question are the same but inverted, the results are not presented here.

vast majority of respondents favor expanding services.<sup>7,8</sup> Very few prefer to see services reduced or eliminated.

**Figure 17: Future Public Transit Service Levels**



n = 325

Opinion on future service levels is not associated with demographic or socio-economic characteristics. Support for expanded services is high regardless of where the respondent resides, their race, ethnicity, gender, and income.

However, the extent of support for more services is related to current LRT and bus usage. Current bus users are more likely to favor maintaining or expanding

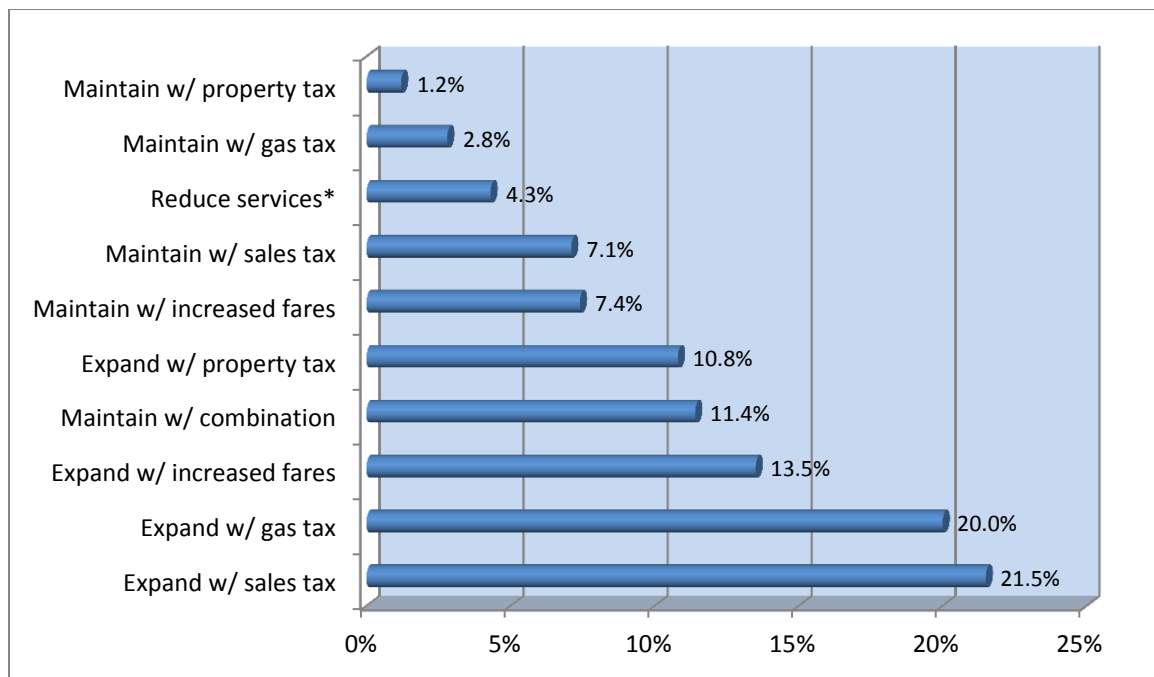
<sup>7</sup> The question includes options for reducing frequency of service as well as suspending light rail service. Given the small number of respondents indicating these options, they were combined into one category "reduced services."

<sup>8</sup> These results indicate a very high level of support for maintaining or expanding services. However, as noted previously, respondents to the questionnaire are self-selected and likely disproportionately inclined to favor public transportation services. These results should not be used to draw conclusions about the larger Valley population. Should more accurate estimates of service support be desired, a random sample of community residents should be surveyed to better measure public opinion.

public transit services ( $z = -2.12, p < 0.0344$ ). The relationship becomes more pronounced for extent of usage. The more often riders use LRT and bus services, the more likely they are to support maintaining or expanding public transit services ( $\rho = 0.16, p < 0.0037$  and  $\rho = 0.12, p < 0.0288$ , respectively).

As the answer set to Question 14 indicates (see Appendix A), those in favor of maintaining or expanding public transit services can also indicate their funding preference: increased fares, sales tax, property tax, or gas tax. Figure 18 illustrates the full array of results.

**Figure 18: Service and Funding Preference in the Future**



n = 325

\* see footnote 7

The top three preferences are for expanded services, with the most favored mechanism being to pay for the expanded services with dedicated revenues from an increase in the sale tax. A close second is paying for expanded services with revenues from a gas tax.

Upon closer examination of only those favoring an expansion of services, some variations emerge in terms of the types of funding mechanisms preferred by different groups of respondents. For instance, respondents residing in different communities prefer different funding mechanisms ( $\chi^2 = 22.9$ ;  $p < 0.007$ ).

Respondents from Phoenix favor paying for expanded services with taxes levied on gasoline. Tempe respondents favor expansion paid by increased sales taxes, as do respondents from elsewhere in the Valley. Mesa respondents are split between paying for expanded services from increased fares or property taxes.

Table 3 reports the full array results by residence.

**Table 3: Favored Funding for Service Expansion (by Residence)**

	Phoenix	Tempe	Mesa	Elsewhere in Valley	Total
<b>Increased Fares</b>	18.1%	13.0%	36.4%	21.1%	20.0%
<b>Increase Sales Tax</b>	31.5%	43.5%	22.7%	39.5%	33.3%
<b>Property Tax</b>	13.4%	26.1%	36.4%	8.9%	16.2%
<b>Gasoline Tax</b>	37.0%	17.4%	4.6%	31.6%	30.5%
<b>n</b>	127	23	22	38	210

Expanded service funding preferences also vary by gender ( $\chi^2 = 10.5$ ;  $p < 0.015$ ). Female respondents are more likely to support funding with an increase to the sales tax. Male respondents are more likely to prefer reliance on a gasoline tax. Preference is not associated with race, ethnicity, or income.

However, preferences do vary across public transit user type ( $\chi^2 = 25.9$ ;  $p < 0.0001$ ). For instance, among respondents that do not use LRT or bus services, the preferred type of funding for expanded services is through increased fares.

Among those that use either LRT or bus services, the favored funding mechanism is a gasoline tax. And for those that use both LRT and bus services, the favored mechanism to pay for expanded services is through a sales tax. Table 4 reports the full array of findings and illustrates the likely lines of division for future funding based on usage (and the importance of conducting a random sample to measure community support as opposed to relying only on these self-selected respondents).

**Table 4: Favored Funding for Service Expansion (by Type of User)**

	Non-User	LRT or Bus User	LRT and Bus User	Total
<b>Increased Fares</b>	54.2%	21.8%	11.8%	20.3%
<b>Increase Sales Tax</b>	8.3%	30.8%	40.0%	33.0%
<b>Property Tax Revenues</b>	20.8%	15.4%	15.5%	16.0%
<b>Gasoline Tax Revenues</b>	16.7%	32.1%	32.7%	30.7%
<b>n</b>	24	78	110	212

A similar analysis was performed to determine preferred funding mechanisms among those who favored *maintaining current service levels*. However, given that this is a smaller group, subdividing them by the demographic, socio-economic, and usage characteristics reduces the number of respondents to the point that no meaningful differences are apparent. Future work to measure public opinion on future service levels and funding mechanisms should include a random survey to insure representativeness of the general population, and should include sufficient participants to allow these more detailed categorizations.

## Appendix A: The Survey Questionnaire

**Introduction: We are conducting a very short survey about transit in Phoenix on behalf of the City of Phoenix Public Transit Department. We hope you will share your thoughts and opinions on the following questions that we will use to help guide future planning.**

1. First, how often do you ever use the Phoenix **light rail** system?

- 1 Never (Go to Q4)
- 2 Only for special events
- 3 Less than once per week
- 4 Once or twice per week
- 5 Three to five times per week
- 6 Six or more times per week
- 8 Unsure/Don't Know (Go to Q4)
- 9 Refused (Go to Q4)

2. Please check any of these destinations for which you have used **Phoenix light rail** for any part of your travel in the last year. (check as many as are applicable to you)

0=no 1=yes

- 2a Job
- 2b Shopping
- 2c Medical appointments/needs
- 2d School
- 2e Airport
- 2f Sports/Entertainment venues downtown
- 2g Sports/Entertainment venues outside of downtown
- 2h Parks
- 2i Visit friends/relatives
- 2j Other reason

3. Thinking in general about your use of **Phoenix light rail** services that you used over the past year, how satisfied would you say you are with those services?  
Would you say you are:

- 4 Very Satisfied
- 3 Satisfied
- 2 Dissatisfied
- 1 Very dissatisfied
- 9 Unsure/don't know

4. Next, how often do you use the **Phoenix bus** service?

- 1 \_\_\_\_\_ Never (Go to Q7)
- 2 \_\_\_\_\_ Only for special events
- 3 \_\_\_\_\_ Less than once per week
- 4 \_\_\_\_\_ Once or twice per week
- 5 \_\_\_\_\_ Three to five times per week
- 6 \_\_\_\_\_ Six or more times per week
- 8 \_\_\_\_\_ Unsure/Don't Know (Go to Q7)
- 9 \_\_\_\_\_ Refused (Go to Q7)

5. Please check any of these destinations for which you have used **Phoenix bus service** for any part of your travel in the last year. (check as many as are applicable to you)

0=no 1=yes

- 5a \_\_\_\_\_ Job
- 5b \_\_\_\_\_ Shopping
- 5c \_\_\_\_\_ Medical appointments/needs
- 5d \_\_\_\_\_ School
- 5e \_\_\_\_\_ Airport
- 5f \_\_\_\_\_ Sports/Entertainment venues downtown
- 5g \_\_\_\_\_ Sports/Entertainment venues outside of downtown
- 5h \_\_\_\_\_ Parks
- 5i \_\_\_\_\_ Visit friends/relatives
- 5j \_\_\_\_\_ Other reason

6. Thinking in general about your use of **Phoenix bus** services that you used over the past year, how satisfied would you say you are with those services? Would you say you are:

- 4 \_\_\_\_\_ Very Satisfied
- 3 \_\_\_\_\_ Satisfied
- 2 \_\_\_\_\_ Dissatisfied
- 1 \_\_\_\_\_ Very dissatisfied
- 9 \_\_\_\_\_ Unsure/don't know

7. Regardless of your form of transportation, how long is your average commute to work (in minutes)?

\_\_\_\_\_ Minutes      check here if not applicable: 999

Please indicate your level of agreement or disagreement with the following statements:

SD=Strongly Disagree    D=Disagree    A=Agree    SA=Strongly Agree    DK=Don't Know    NA=Not Applicable

1                      2                      3                      4                      8                      9

8. I feel safe riding Phoenix light rail during the daytime.

SD\_\_\_\_    D\_\_\_\_    A\_\_\_\_    SA\_\_\_\_    DK\_\_\_\_    NA\_\_\_\_

9. I feel safe riding Phoenix light rail at night.

SD\_\_\_\_    D\_\_\_\_    A\_\_\_\_    SA\_\_\_\_    DK\_\_\_\_    NA\_\_\_\_

10. Extending the light rail system is a poor use of public resources.

SD\_\_\_\_    D\_\_\_\_    A\_\_\_\_    SA\_\_\_\_    DK\_\_\_\_    NA\_\_\_\_

11. The current fares for bus and light rail services are fair.

SD\_\_\_\_    D\_\_\_\_    A\_\_\_\_    SA\_\_\_\_    DK\_\_\_\_    NA\_\_\_\_

12. Extending the light rail system is important for the city's future.

SD\_\_\_\_    D\_\_\_\_    A\_\_\_\_    SA\_\_\_\_    DK\_\_\_\_    NA\_\_\_\_

13. Expanding bus services is important for the city's future.

SD\_\_\_\_    D\_\_\_\_    A\_\_\_\_    SA\_\_\_\_    DK\_\_\_\_    NA\_\_\_\_



14. In the future, funding for the current public transit system may need to be altered to meet new challenges and opportunities to serve citizens. Which of the following options would you most likely support should such changes become necessary? (choose only one)

- 1 Reduce frequency of services
- 2 Suspend light rail operations
- 3 Maintain current service levels with increased fares
- 4 Maintain current service levels with a sales tax
- 5 Maintain current service levels with piece of the property tax
- 6 Maintain current service levels with a gasoline tax
- 7 Maintain current service levels with a combination of increased fares and taxes
- 8 Expand service levels with increased fares
- 9 Expand service levels with increased a sales tax
- 10 Expand service levels with piece of the property tax
- 11 Expand service levels with a gasoline tax

These final questions are for classification purposes only and are in no way tied to you personally or by name. We want to insure your anonymity in the survey.

15. In which city do you reside?

- 1 Phoenix
- 2 Tempe
- 3 Mesa
- 4 Elsewhere in the Valley
- 5 Outside the Valley
- 9 Prefer not to say

16. Which race do you consider yourself to be? (check all that apply)

- 1 Native American
- 2 Caucasian
- 3 African-American/Black
- 4 Asian
- 5 Pacific Islander
- 8 Unsure/Don't know
- 9 Prefer not to say

17. Would you consider yourself to be of Hispanic descent?

- 1 Yes
- 0 No
- 8 Unsure/Don't Know
- 9 Prefer not to say

18. What is your gender identity?

- 0 Female
- 1 Male
- 2 Other
- 9 Prefer not to say

19. Lastly, can you tell me into which category your household income falls?

- 1 Under \$25,000
- 2 Between \$25,000 and \$50,000
- 3 Between \$50,000 and \$75,000
- 4 Between \$75,000 and \$100,00
- 5 Between \$100,000 and \$150,000
- 6 Over \$150,000
- 8 Unsure/Don't Know
- 9 Prefer not to say

Thank you very much for your input as we plan for Phoenix's transit future!