

**SOUTHEAST VALLEY
TRANSIT SYSTEM STUDY**

WORKING PAPER #5

**EXISTING AND FUTURE POPULATION,
TRANSPORTATION, AND LAND USE CONDITIONS**

Prepared for:



**Maricopa Association of Governments
Valley Metro**

Prepared by:

URS

August 2014

Page left intentionally blank.



Table of Contents

1.0	INTRODUCTION.....	1
2.0	SOCIOECONOMIC CONDITIONS.....	5
2.1	Population	5
2.2	Employment.....	9
2.3	Population and Employment Combined.....	12
3.0	TRANSIT DEPENDENT POPULATIONS	15
3.1	Household Vehicles Availability.....	15
3.2	Disabled Populations and Populations Over 65-Years-Old	20
3.3	Population Under 18-Years-Old.....	25
3.4	Poverty	28
3.5	Transit Dependency on Key Local Routes.....	31
3.6	Overall Transit Dependency within the Study Area.....	32
4.0	LAND USE	34
4.1	Existing and Future Land Use	34
4.2	Activity Centers.....	37
5.0	FUTURE TRANSIT NETWORK	40
5.1	Planned Fixed Route Bus	40
5.2	Planned High Capacity Transit and LINK.....	42
5.3	Planned Transit Passenger Facilities.....	42
6.0	TRAVEL PATTERNS AND MARKETS.....	44
6.1	Regional Travel Patterns	44
6.1.1	Growth in Population and Employment.....	44
6.1.2	Increase in Travel for All Trips Purposes	46
6.1.3	Increase in Travel for Home-Based Work Trips.....	50
6.1.4	Regional Travel Patterns Summary	54
6.2	District Travel Patterns	55
6.2.1	District Travel Overview	57
6.2.2	Intra-District Travel Patterns	64
6.2.3	Inter-District Travel Patterns	73
6.3	Summary of Travel Patterns.....	76
7.0	CONCLUSIONS AND NEXT STEPS.....	78

Appendix A – MAG Trip Reduction Program Survey and Data

Appendix B – Pinal County Transit Feasibility Study



List of Figures

Figure 1: Southeast Valley Study Area by Jurisdiction.....	3
Figure 2: Southeast Valley Study Area by MPA	4
Figure 3: Existing Population Density (2010)	7
Figure 4: Future Population Density (2030)	8
Figure 5: Existing Employment Density (2010).....	10
Figure 6: Future Employment Density (2030)	11
Figure 7: Existing, Combined Population and Employment Density (2010).....	13
Figure 8: Future, Combined Population and Employment Density (2030).....	14
Figure 9: Zero Vehicle Household Density	18
Figure 10: Zero and One Vehicle Household Density.....	19
Figure 11: Disabled Population Density	23
Figure 12: Over 65 Population Density	24
Figure 13: Under 18 Population Density.....	27
Figure 14: Population Density of People in Poverty	30
Figure 15: Existing Land Use.....	35
Figure 16: Future Land Use.....	36
Figure 17: Activity Centers in the Southeast Valley.....	38
Figure 18: Planned Transit Network	41
Figure 19: Regional Trip Production Density of Study Area Attractions	47
Figure 20: Regional Attraction Density of Study Area Productions	48
Figure 21: Regional Work Trip Production Density of Study Area Attractions	51
Figure 22: Regional Work Trip Attraction Density of Study Area Productions	52
Figure 23: Southeast Valley Travel Districts	56
Figure 24: Volume of Daily Trips within Study Area Districts	65
Figure 25: Volume of Trips between Neighboring Districts for 2012 and 2035.....	75



List of Tables

Table 1: Study Area Breakdown by Acre.....	1
Table 2: Southeast Valley Study Area Existing and Future Population	6
Table 3: Southeast Valley Study Area Existing and Future Employment	9
Table 4: Combined Population and Employment	12
Table 5: Zero and One Vehicle Households	16
Table 6: Disabled Population in the Southeast Valley.....	21
Table 7: Population Over 65	22
Table 8: Population Under 18	26
Table 9: Department of Human and Health Service 2012 Poverty Guidelines.....	28
Table 10: Population in Poverty in the Southeast Valley	29
Table 11: Transit Dependency Characteristics of Key Local Routes in the Study Area	31
Table 12: Areas of Study Area with Strong Indicators of Transit Dependency	32
Table 13: Southeast Valley Study Area Existing and Planned Land Use	34
Table 14: Planned Supergrid and Express Bus Service	40
Table 15: Planned Transit Passenger Facilities.....	42
Table 16: Southeast Valley Population and Employment Share	45
Table 17: Increase in Regional and Study Area Trips for All Trips Purposes	49
Table 18: Increase in Regional and Study Area Trips for Home-Based Work Trips.....	53
Table 19: Travel Patterns Summary	55
Table 20: Breakdown of 2012 Daily Trips.....	60
Table 21: Breakdown of 2035 Daily Trips.....	61
Table 22: Change in Daily Trips between 2012 and 2035.....	62
Table 23: 2012 MAG Model District to District Daily Trip Flows.....	66
Table 24: 2035 MAG Model District to District Daily Trip Flows.....	68
Table 25: Percent Change of MAG Model Trip Flows from 2012 to 2035	70



Page left intentionally blank.



1.0 INTRODUCTION

The Southeast Valley Transit System Study (SEVTSS) will analyze transit services and ridership demand in transit-established and transit-aspiring communities within a multi-jurisdictional subarea of the Maricopa Association of Governments (MAG) region. The study area encompasses the City of Tempe, City of Mesa, Town of Guadalupe, City of Chandler, Town of Gilbert, City of Apache Junction, City of Queen Creek, City of Maricopa, and Town of Florence. The study area also includes portions of the City of Phoenix (Village of Ahwatukee), unincorporated Maricopa County, unincorporated Pinal County, and the Gila River Indian Community (GRIC). The number of acres within these communities' municipal planning areas (MPAs) is shown in Table 1: Study Area Breakdown by Acre. Figure 1 shows the study area by jurisdiction and Figure 2 shows the study area by MPA. Calculations performed in this report use the MPA boundaries not jurisdiction. In addition to the jurisdictions located within the study area, this study also includes input from transit partners that operate within the study area such as the City of Coolidge. This study will identify short- (0-5 years), mid- (5-10 years), and long- term (10+ years) recommendations to promote an integrated, performance-based transit system throughout the study area.

The purpose of this working paper provides an overview of the existing and future conditions within the study area including reporting and/or analysis of:

- Socioeconomic conditions;
- Transit dependent populations;
- Land use; and
- Travel patterns and markets;

In all, the SEVTSS study area includes approximately 790,000 acres of the southeast portion of the MAG region in the Gila River Indian Reservation, Maricopa County, and Pinal County. Table 1 summarizes the acreage breakdown for each municipal planning area within the study area.

Table 1: Study Area Breakdown by Acre

MPA	Total Acres	Total Acres in Study Area	% in Study Area	% of Study Area
Apache Junction	61,430	52,349	85%	7%
Chandler	45,697	45,697	100%	6%
Florence	121,496	85,675	71%	11%
Gila River Indian Community (GRIC)	375,143	303,364	81%	39%
Gilbert	46,535	46,535	100%	6%
Guadalupe	508	508	100%	<1%
City of Maricopa	148,718	30,514	21%	4%
Unincorporated Maricopa County	3,562,668	2,870	<1%	<1%
Mesa	108,742	107,390	99%	14%
Phoenix	422,979	25,188	6%	3%
Unincorporated Pinal County	455,487	18,106	4%	2%
Queen Creek	43,210	43,210	100%	5%

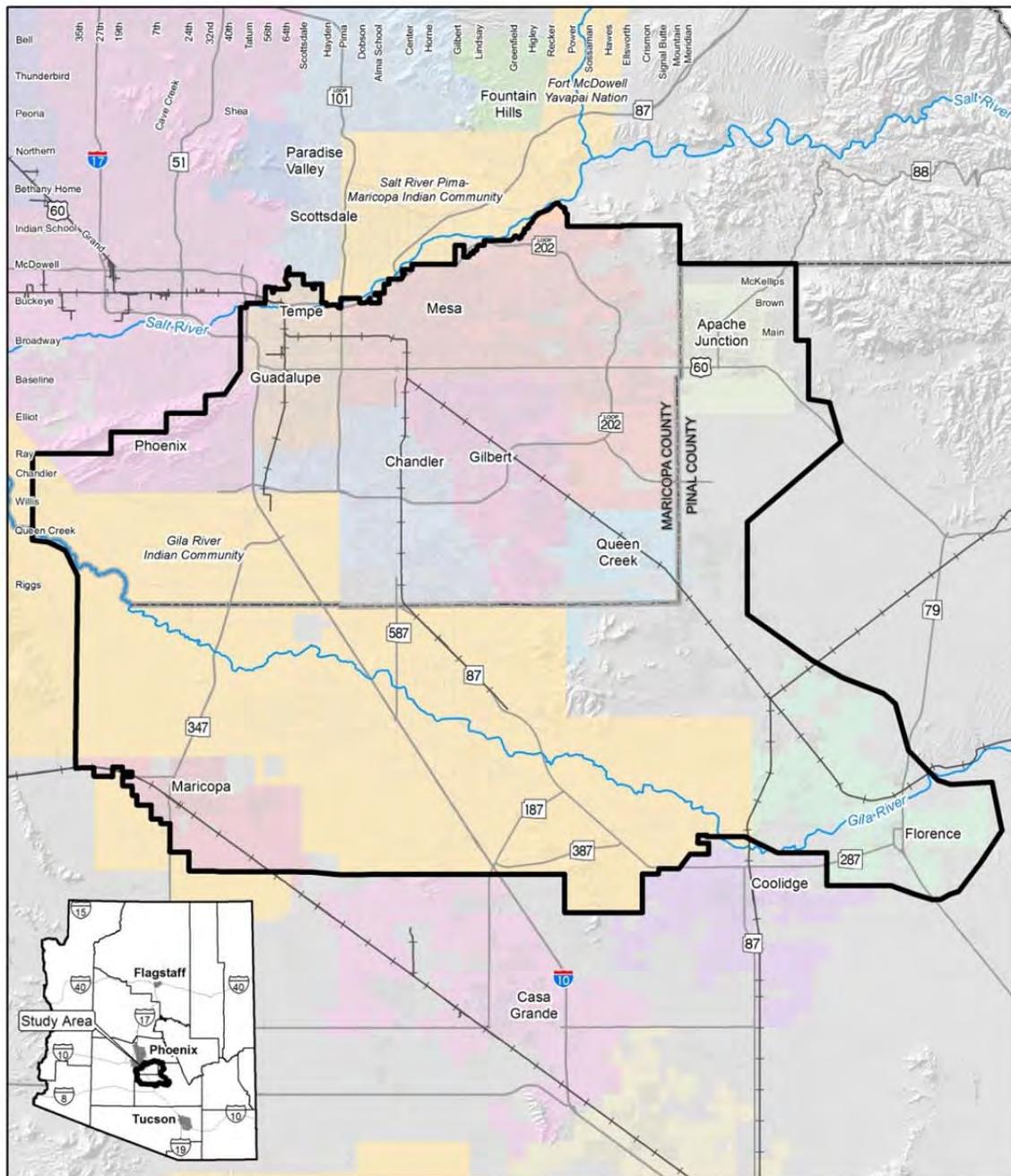


Tempe	25,848	25,787	99%	3%
Total	N/A	787,193	N/A	100%

Source: MAG, 2014; Pinal County, 2014.

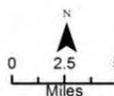


Figure 1: Southeast Valley Study Area by Jurisdiction



- Legend**
- Study Area
 - Highway
 - Local Road
 - Railroad
 - River/Stream
 - County Boundary

Study Area
Southeast Valley
Transit System Study

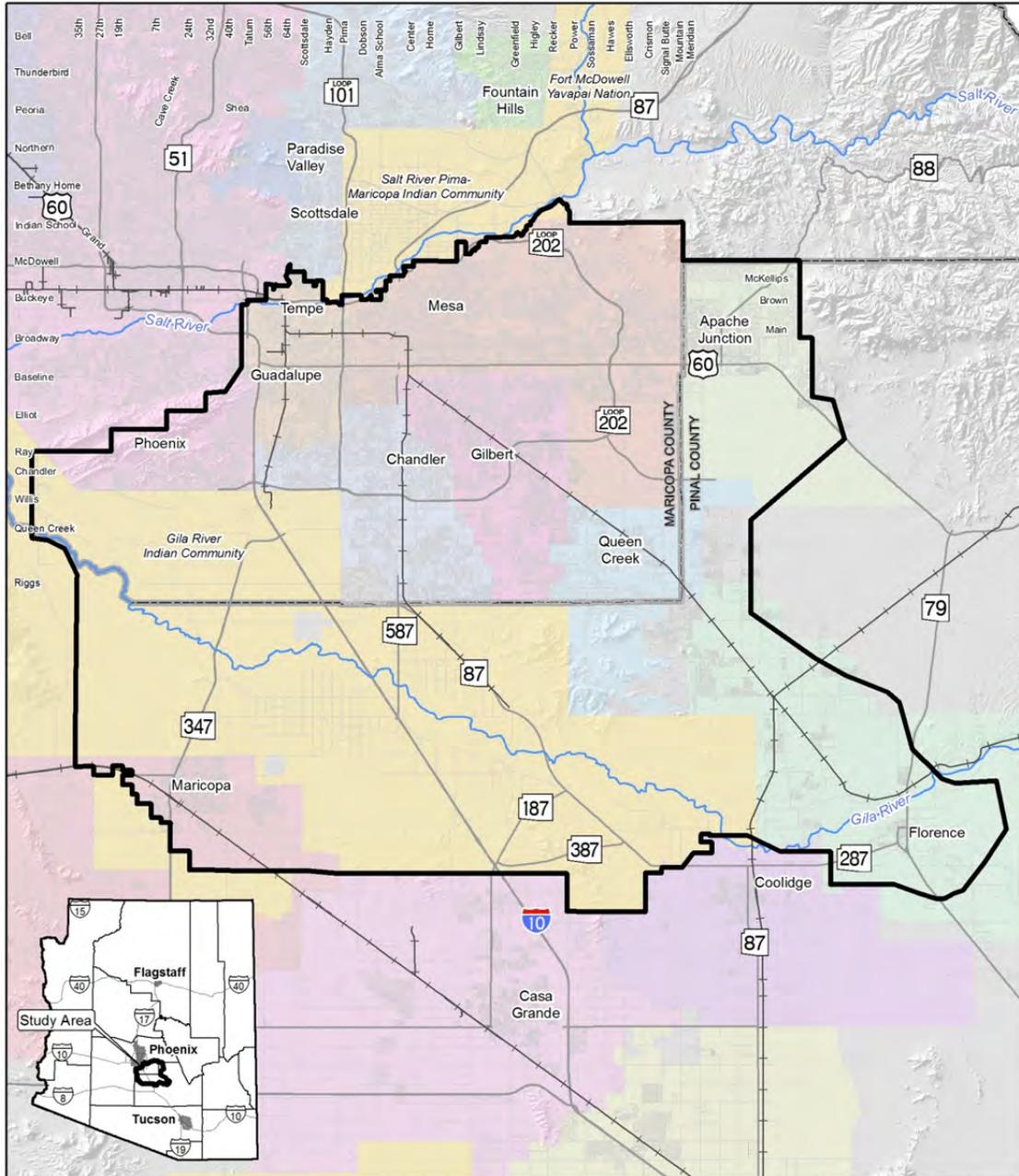


Source:
Base Map: ALRIS 1997 - 2014,
ADOT 2014,
Valley Metro 2014





Figure 2: Southeast Valley Study Area by MPA



- Legend**
- Study Area
 - Highway
 - Local Road
 - Railroad
 - River/Stream
 - County Boundary

Study Area
Southeast Valley
Transit System Study



Source:
Base Map: ALRIS 1997 - 2014,
ADOT 2014,
Valley Metro 2014





2.0 SOCIOECONOMIC CONDITIONS

An analysis of the existing and future socioeconomic conditions in the study area will provide an understanding of the baseline conditions and future growth potential for the participating communities in this study. This analysis will highlight the current characteristics of the study area and will suggest how planned growth potential could guide future transit service decisions.

2.1 POPULATION

According to MAG and US Census data, the MAG region had a 2010 population of 4,044,784 people. The study area accounted for nearly 36% of that total with 1,454,703 people. Within the study area, Mesa accounts for the majority of the 2010 population with over 480,000 people or 33% of the total. Chandler, Gilbert, and Tempe also represent a significant portion of the total 2010 population of the study area accounting for 17%, 15%, and 11%, respectively.

MAG future population projections are made using the most recent decennial census population counts (2010 US Census in this case). This study will use MAG projections for years 2020 and 2030 to help identify future transit needs throughout the study area; however, this working paper will only evaluate projected long-term growth (2030). Working Paper 6, the needs assessment, will look at more near-term projections (2020).

In the horizon year 2030 the distribution of population among the study area jurisdictions is not much different than the current (2010) year. Currently Mesa, Chandler, Gilbert, and Tempe account for 76% of the study area population. By 2030 they will account for 72% of the study area population. Rural communities such as Queen Creek and Florence are expected to not only experience an increase in population share of the study area by 2030 but are expected to experience the most growth of any jurisdiction in the study area as shown in Table 2.

Though Mesa is the largest in terms of population by sheer numbers, Guadalupe, far and away has the highest population density in the study area. Guadalupe is less than one square mile and totally landlocked within the cities of Tempe and Phoenix so there is no room for expansion which results in a high population density. Tempe has the second highest population density and Chandler has the third. Since these communities are much larger, there is more variability of population density within their jurisdictions than Guadalupe. By 2030 these three jurisdictions are still anticipated to have the highest population densities.

The Gila River Indian Community (GRIC) has the lowest population density in the study area and is anticipated to continue to have the lowest density by 2030. The community is over 375,000 acres but sparsely populated with only 11,000 living there currently. With that said, settlement on the reservation tends to be concentrated at different communities. This results in variability of population density throughout the reservation that is not represented at this high-level overview of density. Figure 3 and Figure 4 represent the existing (2010) and future (2030) population densities in the study area.



Table 2: Southeast Valley Study Area Existing and Future Population

Jurisdiction	Existing (2010)	2010 Density (sq mi)	Future (2030)	2030 Density (sq mi)	2010 - 2030 Percent Change
Guadalupe	5,540	6,981	6,516	8,211	18%
Unincorporated Maricopa County	10,656	2,376	10,882	2,427	2%
GRIC	11,131	23	11,940	25	7%
Queen Creek	35,307	523	82,479	1,222	134%
City of Maricopa	44,266	928	93,612	1,963	111%
Florence	47,757	357	100,340	750	110%
Apache Junction	49,532	606	75,067	918	52%
Unincorporated Pinal County	51,670	1,826	66,794	2,361	29%
Phoenix	95,888	2,436	116,768	2,967	22%
Tempe	162,116	4,023	211,740	5,255	31%
Gilbert	212,431	2,922	293,139	4,032	38%
Chandler	244,636	3,426	307,539	4,307	26%
Mesa	482,503	2,876	620,265	3,697	29%
Study Area Total	1,453,433	1,179	1,997,081	1,620	37%
MAG Region*	4,044,784	366	5,747,664	520	42%

Sorted by 2010 Existing; color ramp sorted for other categories

Largest Value

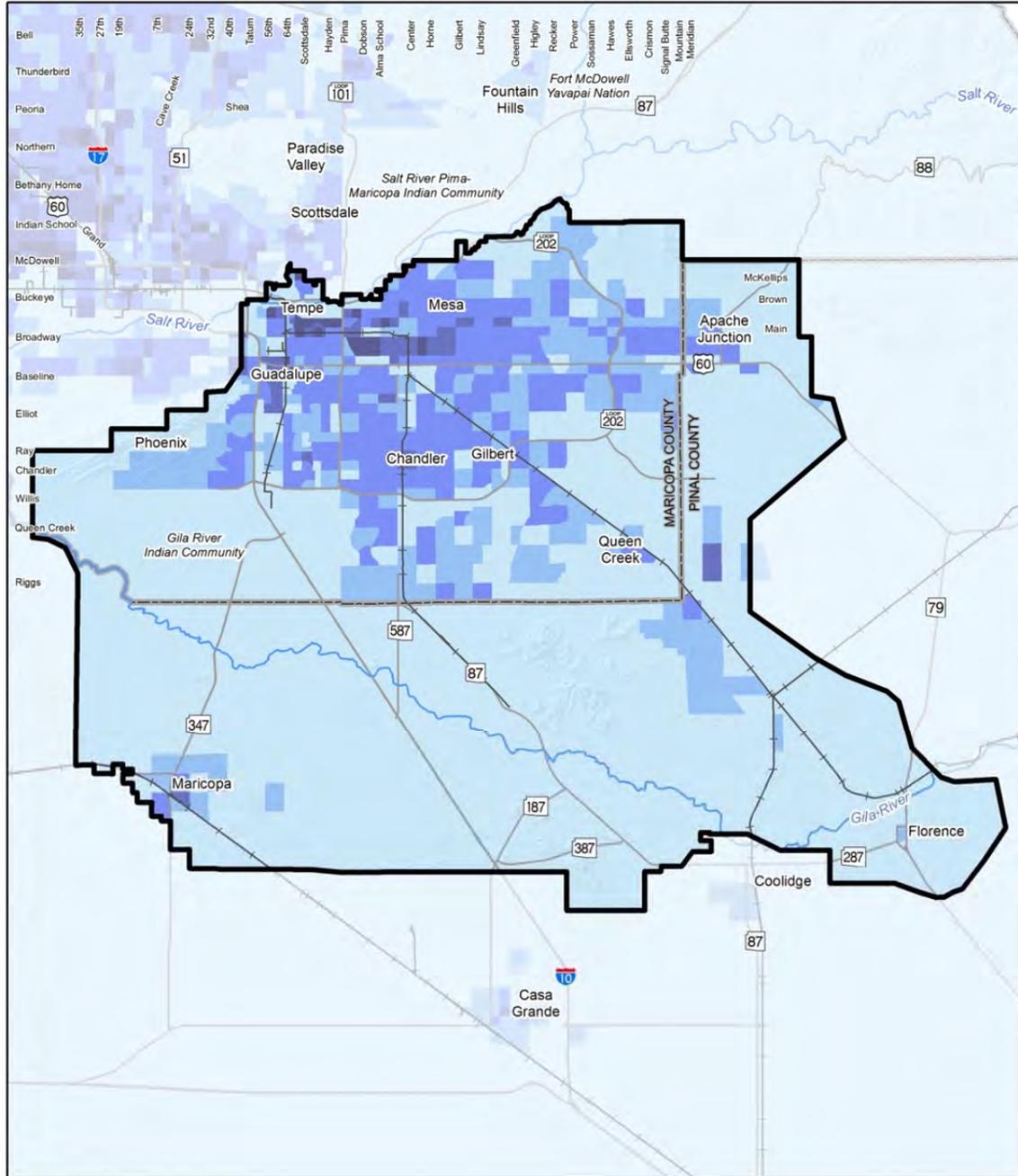
Smallest Value

*MAG Region definition includes all of Maricopa County and MAG member municipalities in Pinal County

Source: MAG, 2012; MAG, 2014



Figure 3: Existing Population Density (2010)



Legend

- Study Area
 - Highway
 - Local Road
 - Railroad
 - River/Stream
 - County Boundary
- Population per Square Mile**
- 0 - 1,500
 - 1,501 - 4,000
 - 4,001 - 7,000
 - 7,001 - 10,000
 - 10,001 +

2010 Population per Square Mile

*Southeast Valley
Transit System Study*

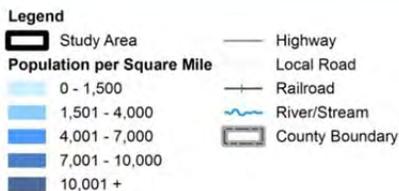
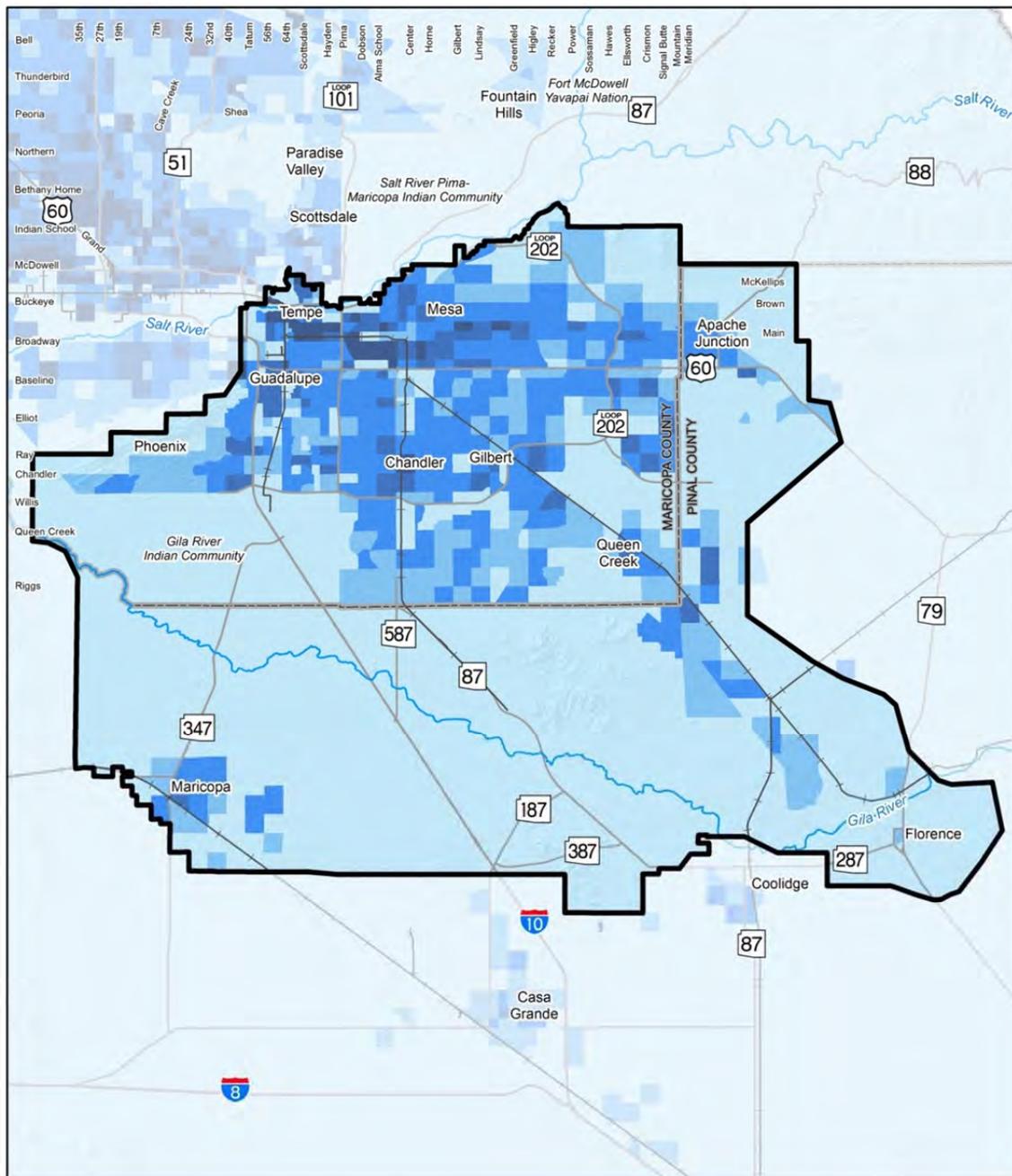


Source:
Population: MAG 2013
Base Map: ALRIS 1997 - 2014,
ADOT 2014.



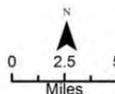


Figure 4: Future Population Density (2030)



2030 Population per Square Mile

Southeast Valley
Transit System Study



Source:
Population: MAG 2013
Base Map: ALRIS 1997 - 2014,
ADOT 2014.





2.2 EMPLOYMENT

According to MAG data, employment in the study area exceeded 600,000 jobs in 2010. Tempe has the most employment of any of the study area jurisdictions with nearly 170,000 jobs followed by Mesa with 161,000. The total number of jobs in the study area is expected to be nearly 980,000 jobs by 2030, an increase of 63%. Mesa will grow the most adding approximately 96,000 jobs while Tempe will add the second most with approximately 67,000 jobs. In 2030, Mesa is expected to have the most jobs of study area jurisdictions followed by Tempe.

The most significant percent growth, however, is projected in the City of Maricopa, Queen Creek, Apache Junction, and Unincorporated Pinal County as shown in Table 3. Because of modest existing employment and projected population growth, most of these communities will increase the number of jobs in themselves by over 250%.

Figure 5 and Figure 6 illustrate the employment density distribution in 2010 and 2030 throughout the study area. As can be seen in these figures, areas of future employment growth are expected to occur throughout the study area. Particular growth areas include areas west of Arizona Avenue, along the Power Road corridor and along SR 202 between Arizona Avenue and San Tan Village Parkway.

Table 3: Southeast Valley Study Area Existing and Future Employment

Jurisdiction	Existing (2010)	2010 Density (sq mi)	Future (2030)	2030 Density (sq mi)	2010 – 2030 Percent Change
Unincorporated Pinal County	743	26	2,988	106	302%
Guadalupe	967	1,218	1,266	1,595	31%
Unincorporated Maricopa County	2,213	494	2,583	576	17%
City of Maricopa	4,247	89	19,884	417	368%
Queen Creek	6,042	89	22,749	337	277%
GRIC	7,241	15	17,398	37	140%
Apache Junction	9,547	117	33,162	405	247%
Florence	11,494	86	32,185	240	180%
Phoenix	44,894	1,141	55,685	1,415	24%
Gilbert	74,558	1,025	126,665	1,742	70%
Chandler	112,851	1,581	171,447	2,401	52%
Mesa	160,814	958	256,016	1,526	59%
Tempe	169,095	4,197	236,384	5,867	40%
Study Area Total	604,706	491	978,412	794	62%
MAG Region*	1,736,467	157	2,804,147	254	61%

Sorted by 2010 Existing; color ramp sorted for other categories

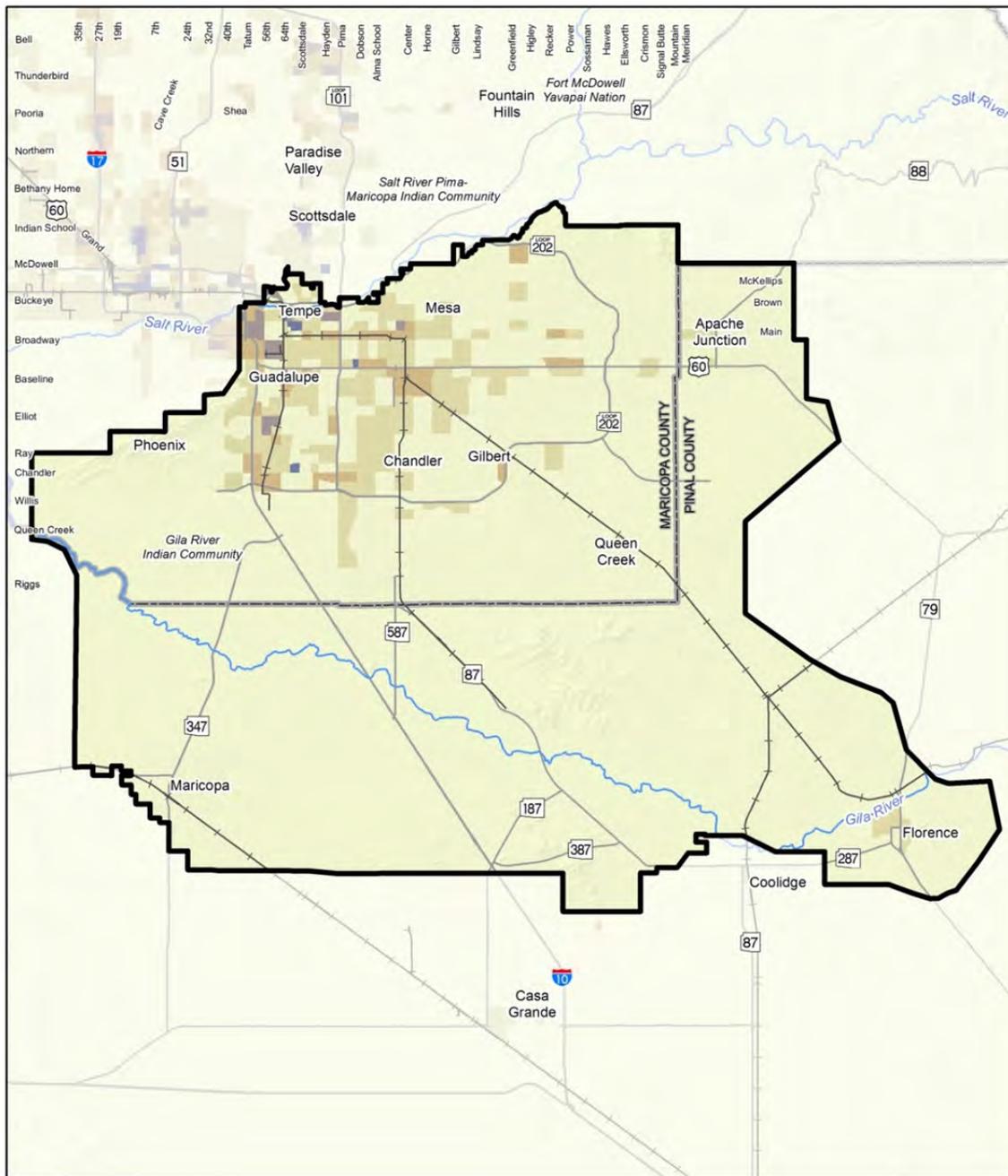
Largest Value Smallest Value

*MAG Region definition includes all of Maricopa County and MAG member municipalities in Pinal County

Source: MAG, 2012; MAG, 2014



Figure 5: Existing Employment Density (2010)

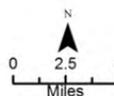


Legend

- Study Area
 - Highway
 - Local Road
 - Railroad
 - River/Stream
 - County Boundary
- Employment per Square Mile**
- 0 - 1,500
 - 1,501 - 5,000
 - 5,001 - 10,000
 - 10,001 - 20,000
 - 20,001 +

2010 Employment per Square Mile

Southeast Valley
Transit System Study

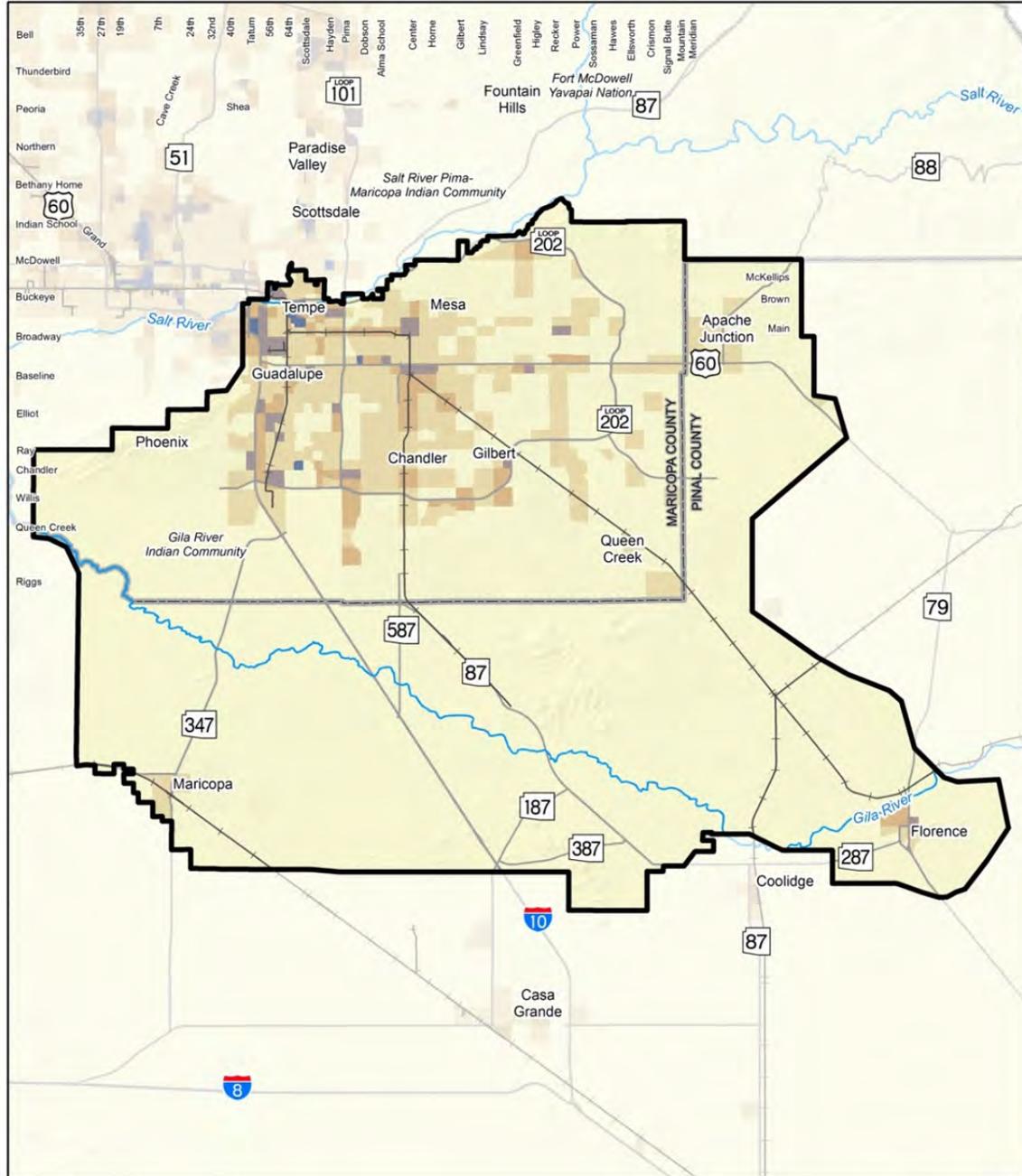


Source:
Employment: MAG 2013
Base Map: ALRIS 1997 - 2014,
ADOT 2014.





Figure 6: Future Employment Density (2030)



- Legend**
- Study Area
 - Highway
 - Local Road
 - Railroad
 - River/Stream
 - County Boundary
- Employment per Square Mile**
- 0 - 1,500
 - 1,501 - 5,000
 - 5,001 - 10,000
 - 10,001 - 20,000
 - 20,001 +

2030 Employment per Square Mile

*Southeast Valley
Transit System Study*



Source:
Employment: MAG 2013
Base Map: ALRIS 1997 - 2014,
ADOT 2014.





2.3 POPULATION AND EMPLOYMENT COMBINED

Adding population and employment together can give a better picture of how transit-supportive a place is because most trips are between an employment location and residential location. This is not to say that most trips are work trips, but rather that employment land uses are trip attractors for services, shopping and other daily needs that make up the majority of trips. Mesa, due to its size, once again has the greatest number of total residents and jobs. Tempe has the greatest density of residents and employment. It is anticipated to continue to have the highest density into the future also. Though their densities will still be in the middle of the pack, Florence, the City of Maricopa, and Queen Creek are anticipated to experience significant percent growth. Total density is once again by far lowest in the GRIC and is anticipated to be so in the future.

Table 4: Combined Population and Employment

Jurisdiction	Existing (2010)	2010 Density (sq mi)	Future (2030)	2030 Density (sq mi)	2010 - 2030 Percent Change
Guadalupe	6,507	8,199	7,782	9,806	20%
Unincorporated Maricopa County	12,869	2,870	13,465	3,003	5%
GRIC	18,372	39	29,338	62	60%
Queen Creek	41,349	612	105,228	1,559	154%
City of Maricopa	48,513	1,018	113,496	2,380	134%
Unincorporated Pinal County	52,413	1,853	69,782	2,467	33%
Apache Junction	59,079	722	108,229	1,323	83%
Florence	59,251	443	132,525	990	124%
Phoenix	140,782	3,577	172,453	4,382	22%
Gilbert	286,989	3,947	419,804	5,774	46%
Tempe	331,211	8,220	448,124	11,122	35%
Chandler	357,487	5,007	478,986	6,708	34%
Mesa	643,317	3,834	876,281	5,222	36%
Study Area Total	2,058,139	1,670	2,975,493	2,414	45%
MAG Region*	5,781,251	523	8,551,811	773	48%

Sorted by 2010 Existing; color ramp sorted for other categories

Largest Value

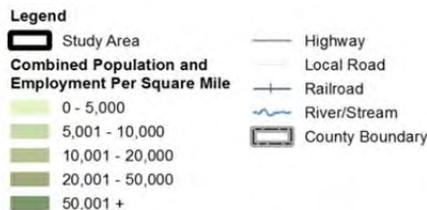
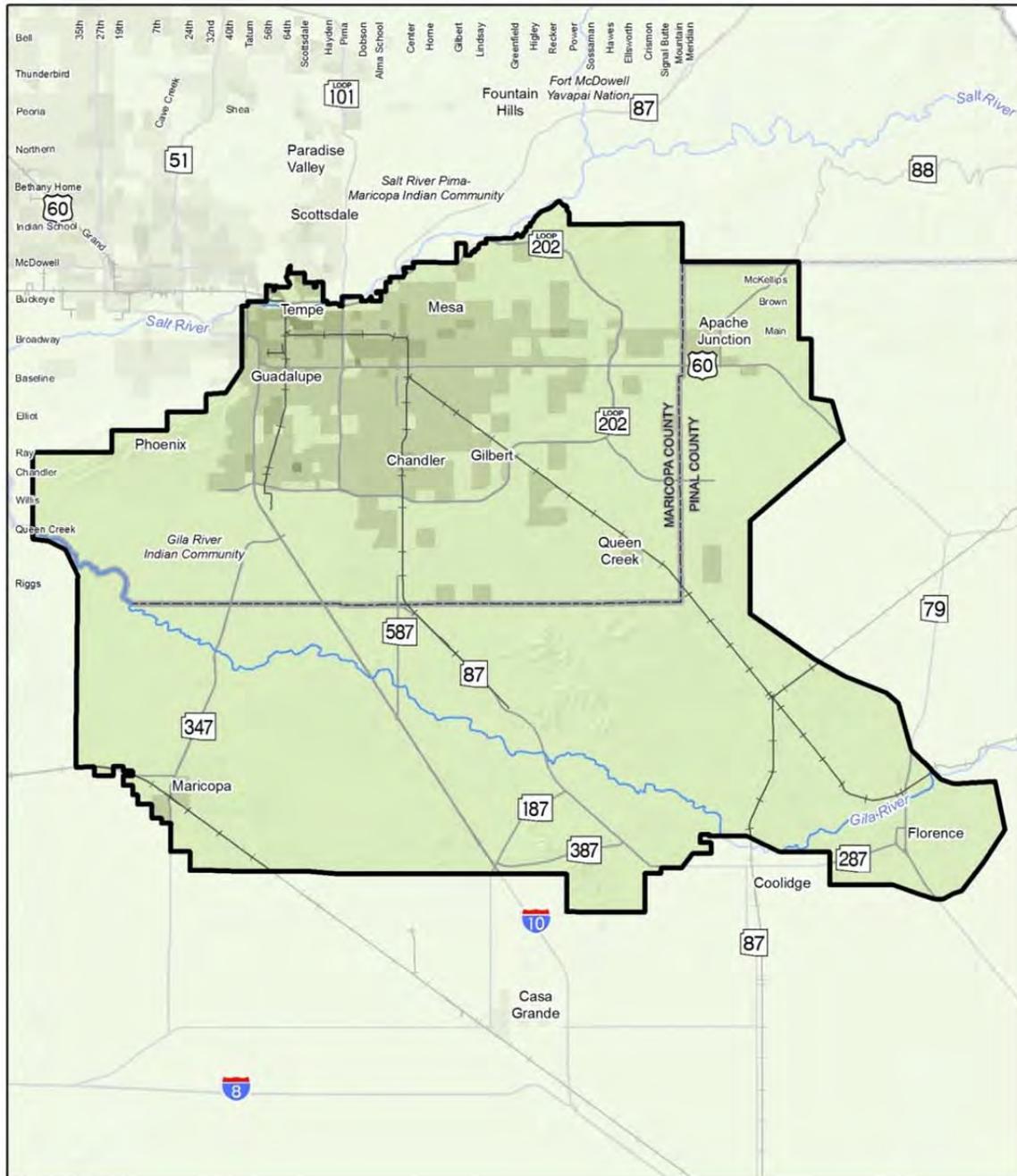
Smallest Value

*MAG Region definition includes all of Maricopa County and MAG member municipalities in Pinal County

Source: MAG, 2012; MAG, 2014



Figure 7: Existing, Combined Population and Employment Density (2010)



2010 Combined Population and Employment Per Square Mile

*Southeast Valley
Transit System Study*

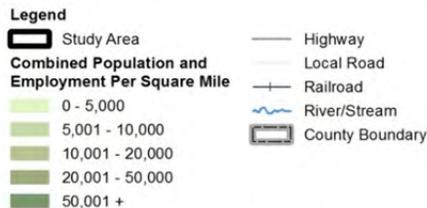
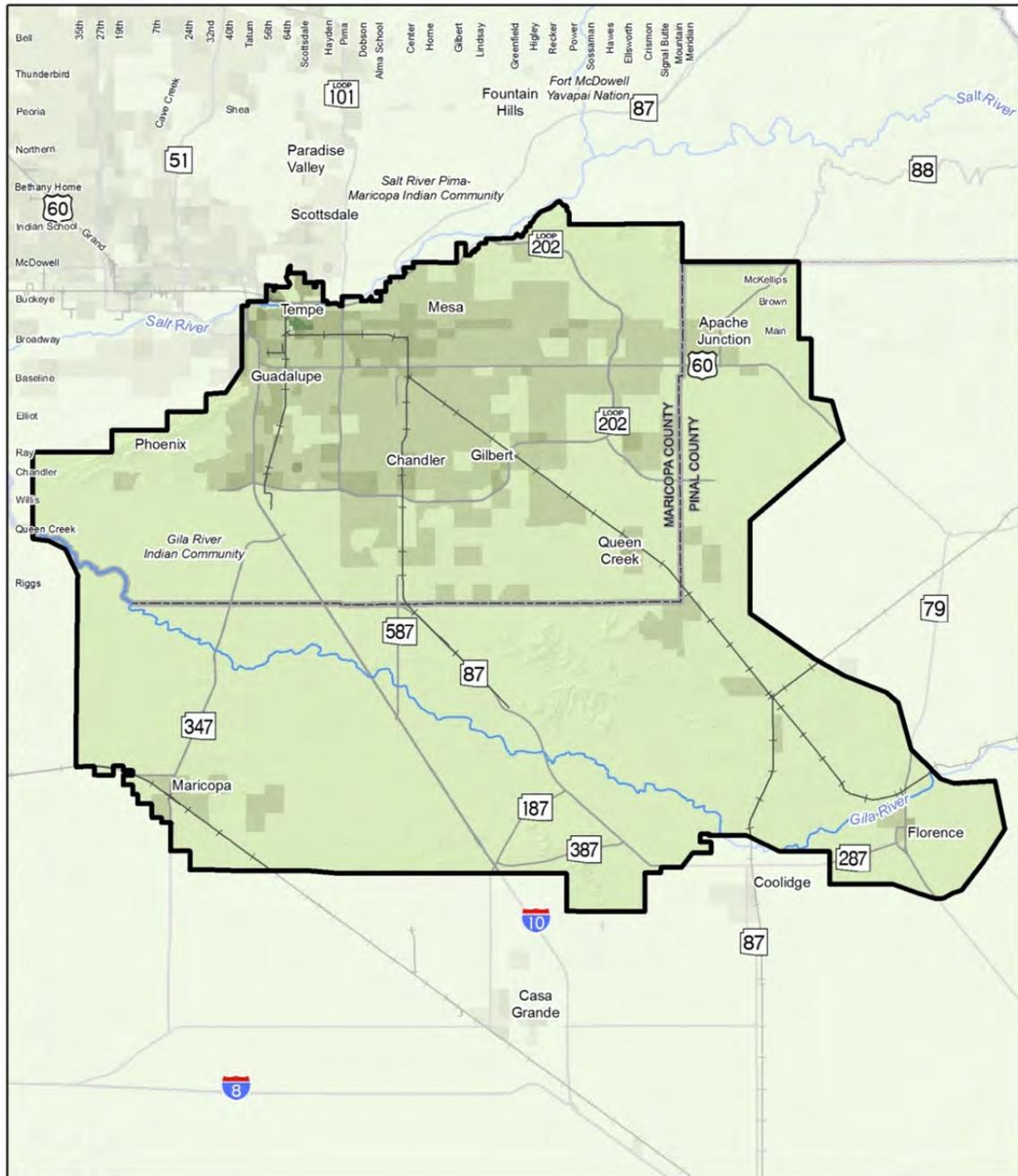


Source:
Population: MAG 2013
Base Map: ALRIS 1997 - 2014,
ADOT 2014.





Figure 8: Future, Combined Population and Employment Density (2030)



2030 Combined Population and Employment Per Square Mile

*Southeast Valley
Transit System Study*



Source:
Population: MAG 2013
Base Map: ALRIS 1997 - 2014,
ADOT 2014.





3.0 TRANSIT DEPENDENT POPULATIONS

Transit dependent populations represent the group of people most predisposed to use transit because for one or more reasons they lack regular, personal-automobile-mobility and heavily rely on transit to complete their trips. Thus, serving transit dependent populations is not only desirable from a policy standpoint; it's desirable for building a performance-based system. Indicators of transit dependency evaluated in this study include: household vehicle availability, disability status, income, and age.

Reporting and analysis for this section used exclusively American Community Survey data from the U.S. Census Bureau. Segments of the population are surveyed to determine estimates for the entire population for the given characteristic. Transit dependency characteristics are not projected by MAG so only the most current, available values are shown. The methodology for creating the tables included: attributing data values for individual census tracts to the MPA boundaries. When tracts overlapped more than one MPA, values were distributed, by area assuming uniform density, to the MPAs. For calculating the values within a half mile of transit, a half-mile buffer was calculated around the existing local transit routes and all tracts completely contained within the boundary had their values attributed to the buffer. Once again, when tract boundaries did not coincide with the buffer shape, values were distributed, by area assuming uniform density.

3.1 HOUSEHOLD VEHICLES AVAILABILITY

According to the U.S. Census Bureau American Community Survey, sections of the study area that appear to have high concentrations of zero vehicle households include downtown Chandler, Northern Tempe, Guadalupe, Western Mesa, and the area between Broadway Road and Main Street in Mesa. Overall, 7% of the total households located in the MAG region are considered zero vehicle households. Jurisdictions in the study area which have higher proportions of zero vehicle households than the MAG region include Tempe (9%), Guadalupe (21%) and the GRIC (25%). Figure 9 illustrates the density of zero vehicle households in the study area.

The density of zero and one vehicle households is very similar to the zero car household density. As shown in Figure 10 Northern Tempe, Guadalupe, Western Mesa, and the Broadway Road/Main Street corridor have high concentrations of these households. In addition, areas which have older adult populations such as Apache Junction and unincorporated Maricopa County islands between Apache Junction and Eastern Mesa seem to have a both a higher percentage and density of one vehicle households.

Most of the areas with the highest concentrations of zero and one vehicle households are areas that have existing transit service. Western Mesa, Guadalupe and Tempe have the most dense transit coverage and highest frequency service in the study area. Areas that have a relatively high concentration of zero and one vehicle households but have little to no existing transit investment include Apache Junction, Sun Lakes (a retirement community



south of Chandler), and pockets of Eastern Mesa (including unincorporated islands of Maricopa County).

The cities and towns of Apache Junction, City of Maricopa, and Queen Creek do not have any existing fixed route transit service. Of the study area jurisdictions that do have households located within ½ mile of transit, Guadalupe, Tempe, Florence and Mesa have the highest percentage of zero and one vehicle households that make up that total.

Table 5 summarizes the total number of households that have access to one or zero vehicle within the study area jurisdiction compared to the entire MAG region. Table 5 also identifies the number of zero and one vehicle household that are located with ½ mile existing transit services in those same areas throughout the study area and MAG region.

Table 5: Zero and One Vehicle Households

MPA	Total Number of Households	Zero Vehicle Households		Zero or One Vehicle Households	
		Estimate	Percent	Estimate	Percent
IN TOTAL					
MAG Region	1,476,130	96,253	7%	660,055	45%
Apache Junction	21,299	1,454	7%	11,594	54%
Chandler	90,304	3,143	3%	34,529	38%
Florence	15,636	420	3%	6,511	42%
GRIC	2,580	636	25%	1,712	66%
Gilbert	69,344	1,344	2%	18,912	27%
Guadalupe	1,351	279	21%	717	53%
City of Maricopa	13,969	251	2%	4,132	30%
Unincorporated Maricopa County	6,200	354	6%	3,890	63%
Mesa	184,567	12,615	7%	93,445	51%
Phoenix	33,857	878	3%	12,853	38%
Unincorporated Pinal County	10,269	178	2%	3,065	30%
Queen Creek	12,661	140	1%	2,679	21%
Tempe	63,824	5,708	9%	33,036	52%
SEV Study Area	525,861	27,400	5%	227,075	43%
WITHIN ½ MILE OF EXISTING TRANSIT					
MAG Region	941,464	80,266	9%	464,849	49%
Apache Junction	0	0	0%	0	0%
Chandler	58,860	2,560	4%	24,163	41%
Florence	1,395	119	9%	770	55%
GRIC	75	8	11%	34	45%
Gilbert	28,617	633	2%	8,294	29%
Guadalupe	1,351	279	21%	717	53%
City of Maricopa	0	0	0%	0	0%
Unincorporated Maricopa County	164	13	8%	90	55%
Mesa	130,104	10,777	8%	70,674	54%
Phoenix	27,315	828	3%	11,530	42%
Unincorporated Pinal County	0	0	0%	0	0%



Queen Creek	0	0	0%	0	0%
Tempe	63,793	5,707	9%	33,024	52%
SEV Study Area	311,674	20,924	7%	149,297	48%

Source: U.S. Census ACS 2008-2012 Estimates, Table B08014



Figure 9: Zero Vehicle Household Density

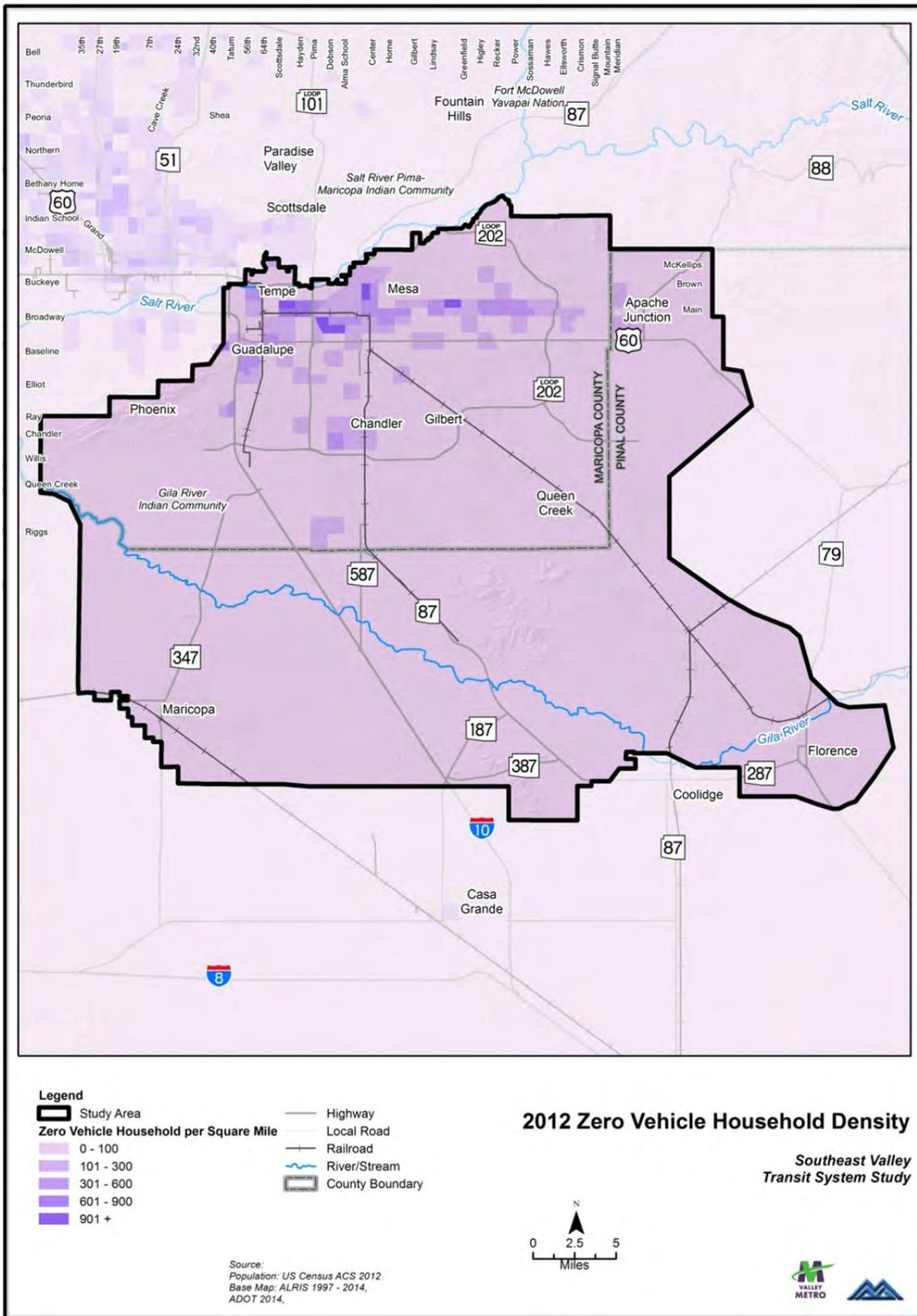
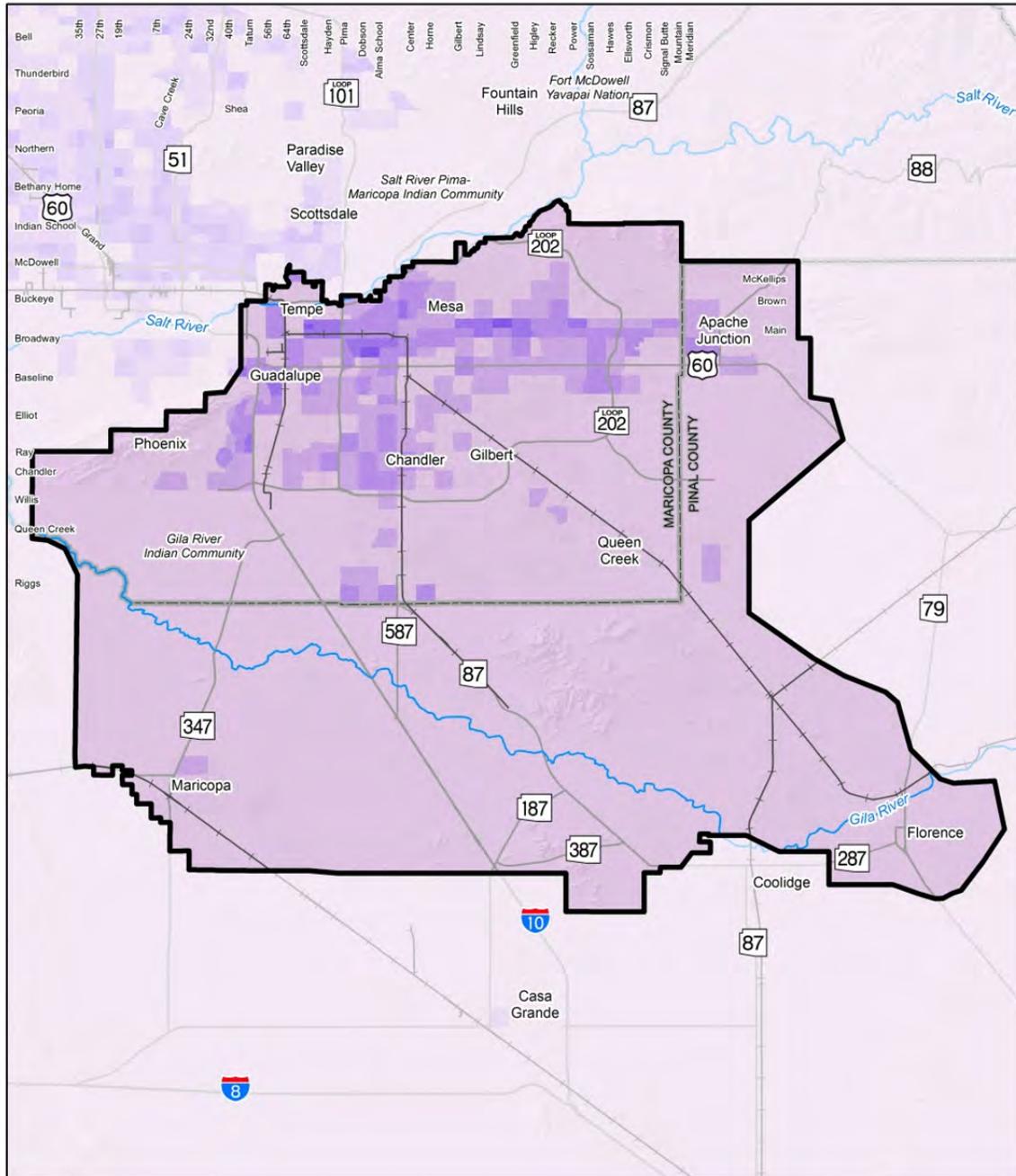




Figure 10: Zero and One Vehicle Household Density



Legend

- Study Area
- Zero and One Vehicle Household per Square Mile
 - 0 - 500
 - 501 - 1,000
 - 1,001 - 2,000
 - 2,001 - 4,000
 - 4,001 +
- Highway
- Local Road
- Railroad
- River/Stream
- County Boundary

Source:
Population: US Census ACS 2012
Base Map: ALRIS 1997 - 2014,
ADOT 2014.



2012 Zero and One Vehicle Household Density

*Southeast Valley
Transit System Study*





3.2 DISABLED POPULATIONS AND POPULATIONS OVER 65-YEARS-OLD

Disabled populations and populations over-65-years old tend to correlate very strongly. According to US Census data, this is true within the Southeast Valley study area. The locations of disabled and over 65 populations throughout the study area are strongly related. Similar to the vehicles available per household analysis, the concentrations of disabled and over 65 populations are highest in Apache Junction, Sun Lakes, Eastern Mesa (and the unincorporated Maricopa County islands between Eastern Mesa and Apache Junction), and the Broadway Road corridor in Central Mesa. The Broadway Road corridor has many mobile home parks that are occupied by older populations. Though downtown Chandler does not appear to have an especially high concentration of population over 65 people, it does a concentrated pocket of disabled population. Figure 11 and Figure 12 illustrate the density distribution of the disabled and over 65 populations throughout the study area.

As summarized in Table 6 and Figure 7, the areas of unincorporated Maricopa County including areas near South Chandler and between Eastern Mesa and the City of Apache Junction have a higher population that is disabled and over the age of 65 than the Maricopa County averages. Very little of these concentrated disabled and older populations in unincorporated Maricopa County, Apache Junction, or Eastern Mesa are currently served with transit. The only area occupied by high concentrations of older populations in the study area with access to transit is the Broadway Road/Main Street corridor and portions of Southern Avenue. Much of this population is located in East Mesa where route headways are typically thirty minutes on weekdays and Saturdays and hourly on Sunday. Therefore, it is likely that many of these people are reliant on paratransit services such as East Valley Dial-a-Ride or other voucher programs and do not necessarily rely on the fixed route services provided.

Areas which do not have especially high concentrations of people over 65-years-old but still have concentrations of disabled populations include Guadalupe, Western Mesa and Tempe. The higher number of disabled individuals per square mile in this instance may be a product of the fact that the overall population density in these areas is higher than other parts of the study area.



Table 6: Disabled Population in the Southeast Valley

MPA	Population for Which Disability Status Is Calculated	Disabled Population	
		Estimate	Percent
IN TOTAL			
MAG Region	4,023,608	398,646	10%
Apache Junction	49,629	8,895	18%
Chandler	246,404	18,813	8%
Florence	47,362	3,717	8%
GRIC	10,884	1,169	11%
Gilbert	211,191	13,700	6%
Guadalupe	5,635	645	11%
City of Maricopa	41,291	3,958	10%
Unincorporated Maricopa County	10,499	2,370	23%
Mesa	482,406	58,613	12%
Phoenix	86,514	5,416	6%
Unincorporated Pinal County	33,898	2,851	8%
Queen Creek	43,934	2,883	7%
Tempe	162,483	12,546	8%
SEV Study Area	1,432,130	135,577	9%
WITHIN ½ MILE OF TRANSIT			
MAG Region	2,548,235	255,580	10%
Apache Junction	0	0	0%
Chandler	156,478	12,257	8%
Florence	3,542	321	9%
GRIC	239	22	9%
Gilbert	85,157	5,823	7%
Guadalupe	5,635	645	11%
City of Maricopa	0	0	0%
Unincorporated Maricopa County	293	55	19%
Mesa	334,319	40,182	12%
Phoenix	67,730	4,522	7%
Unincorporated Pinal County	0	0	0%
Queen Creek	0	0	0%
Tempe	162,403	12,541	8%
SEV Study Area	815,796	76,367	9%

Source: U.S. Census ACS 2008-2012 Estimates, Table B18101



Table 7: Population Over 65

MPA	Total Population	Population Over 65-Years-Old	
		Estimate	Percent
IN TOTAL			
MAG Region	4,071,920	499,697	12%
Apache Junction	49,291	13,800	28%
Chandler	246,735	21,976	9%
Florence	58,488	5,691	10%
GRIC	10,694	609	6%
Gilbert	212,730	13,930	7%
Guadalupe	5,645	418	7%
City of Maricopa	41,377	2,498	6%
Unincorporated Maricopa County	10,490	7,333	70%
Mesa	485,758	81,161	17%
Phoenix	88,501	7,152	8%
Unincorporated Pinal County	39,463	2,495	6%
Queen Creek	40,265	2,566	6%
Tempe	162,892	13,378	8%
SEV Study Area	1,452,329	173,007	12%
WITHIN ½ MILE OF TRANSIT			
MAG Region	2,587,755	268,593	10%
Apache Junction	0	0	0%
Chandler	156,227	11,169	7%
Florence	8,251	596	7%
GRIC	231	9	4%
Gilbert	89,323	5,451	6%
Guadalupe	5,645	418	7%
City of Maricopa	0	0	0%
Unincorporated Maricopa County	279	183	66%
Mesa	335,809	52,539	16%
Phoenix	69,689	5,906	8%
Unincorporated Pinal County	0	0	0%
Queen Creek	0	0	0%
Tempe	162,819	13,370	8%
SEV Study Area	828,273	89,640	11%

Source: U.S. Census ACS 2008-2012 Estimates, Table B18101



Figure 11: Disabled Population Density

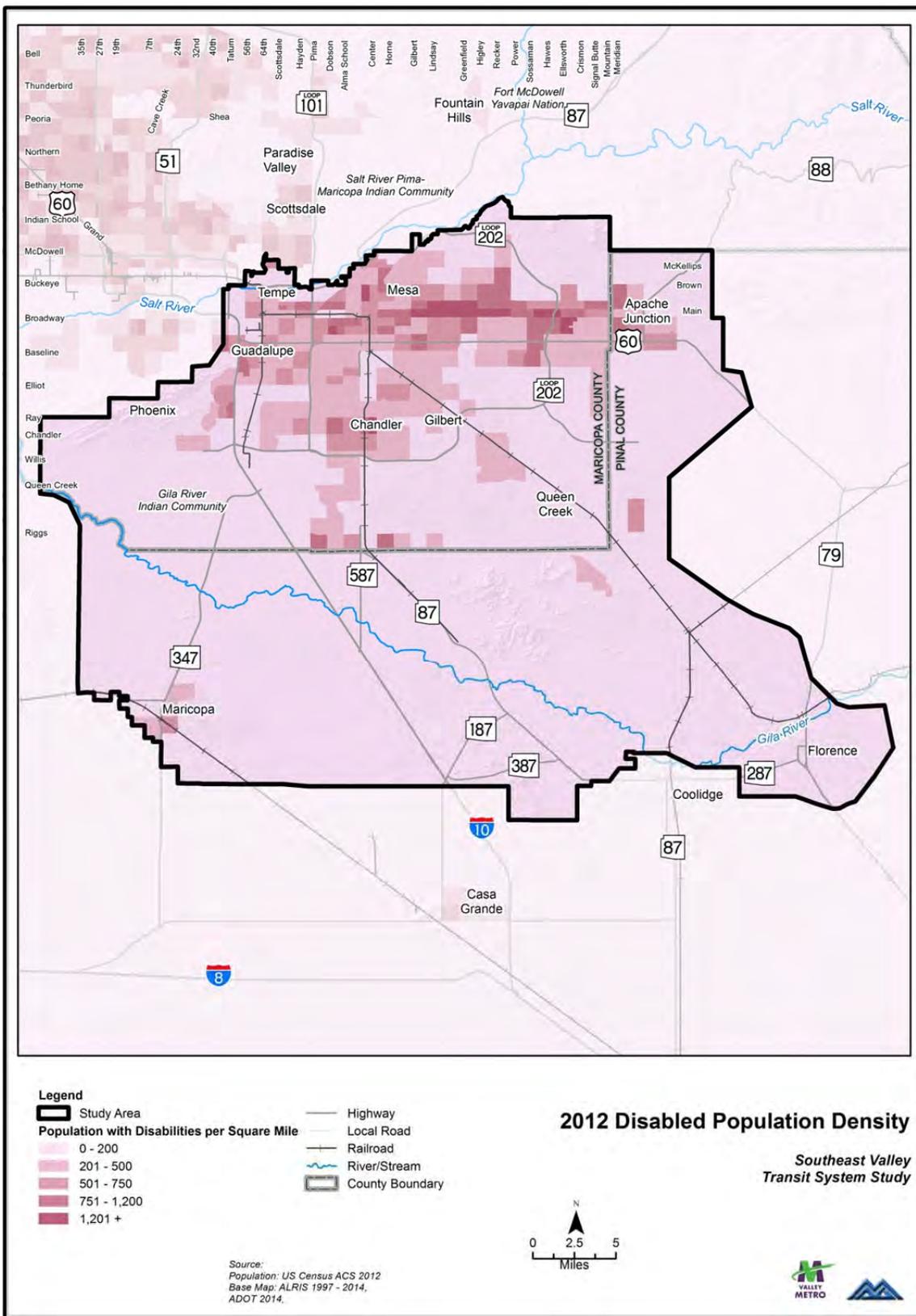
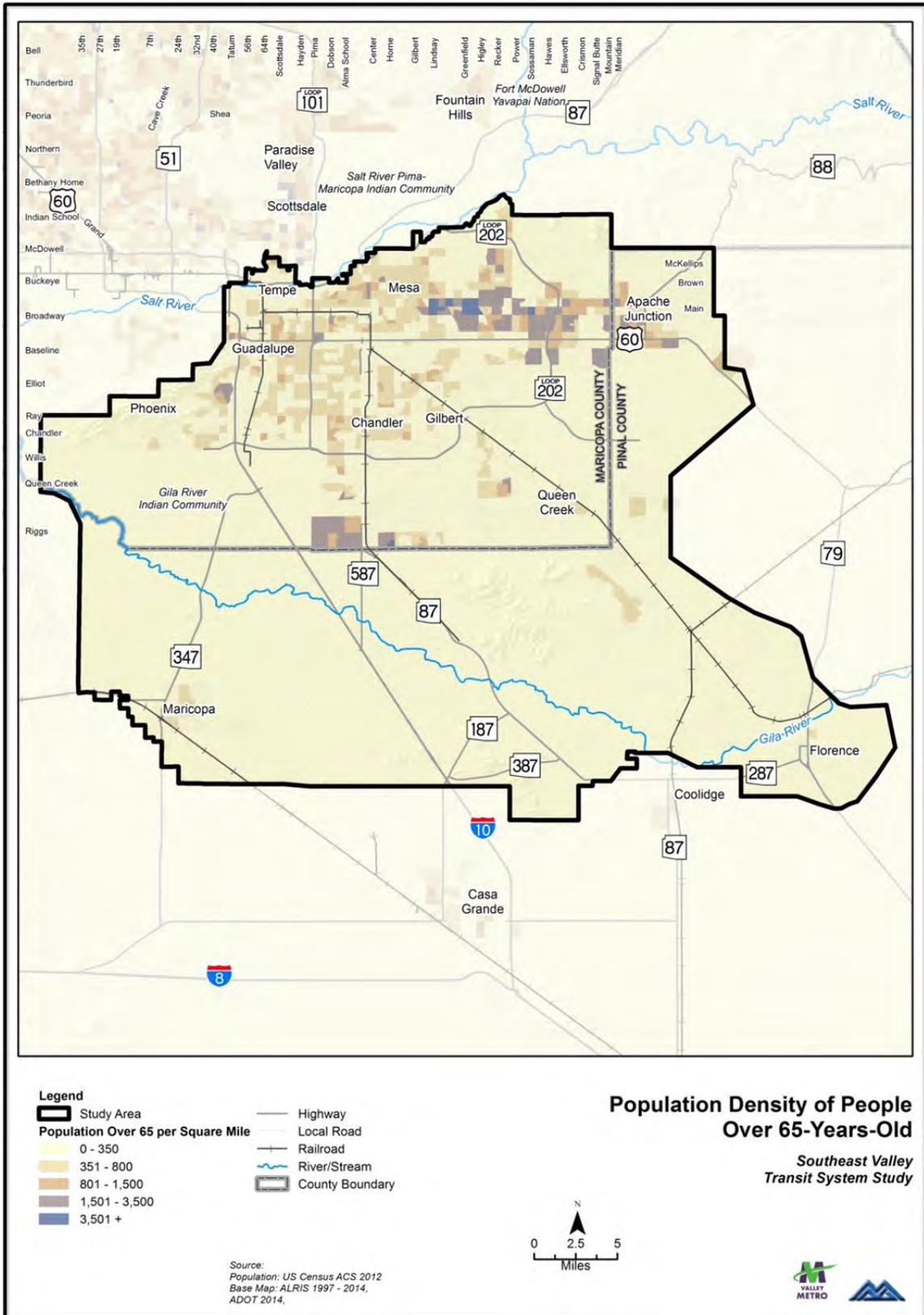




Figure 12: Over 65 Population Density





3.3 POPULATION UNDER 18-YEARS-OLD

Because people under the age of 16 are not legally permitted to drive, youth are mostly reliant on family, active transport (such as cycling or walking), and public transportation to meet their transportation needs. Not all youth are transit dependent; in fact, many exclusively rely on family and active transport to meet their needs. Even so, it's important to identify areas with high concentrations of youth because these populations may be transit dependent. Census Data for age is aggregated into groups. Since 16-years-of-age is not a breakpoint between groups, all persons under the age of 18 were considered potentially transit dependent.

Figure 13 shows the density of population under 18-years-old for the study area using the same symbology classification as Figure 12 which shows the population density of population over 65-years-old. Table 8 shows the breakdown of youth population by jurisdiction. The highest concentration of youth population density is in Western Mesa. Within Western Mesa, the absolute highest concentrations are located near the Broadway Rd./Main St. Corridor. This contrasts the portion of the Broadway Rd./Main St. Corridor in the eastern portion of Mesa which has very little youth population. Coincidentally, this eastern portion of the corridor is one of the areas with the highest concentration of adults over 65-years-old.

Central Chandler, Gilbert, and Queen Creek also have a reasonably high density of youth, but overall, they have less density of youth than West Mesa. North Tempe does not have very high concentrations of population under 18-years-old. This may be attributable in part to the presence of the university which attracts many college-age students to the surrounding housing.



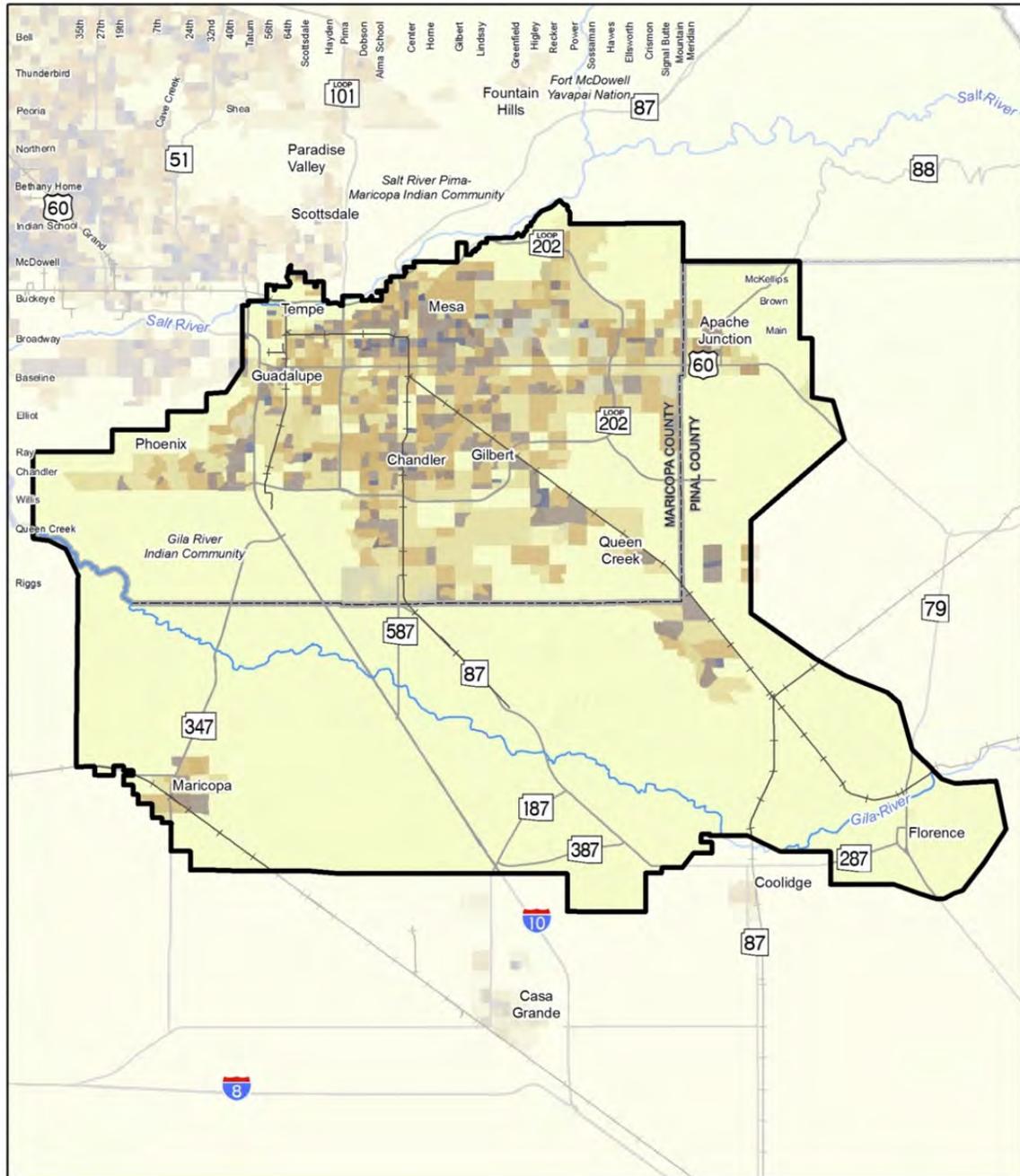
Table 8: Population Under 18

MPA	Total Population	Population Under 25-Years-Old	
		Estimate	Percent
IN TOTAL			
MAG Region	4,071,920	1,072,400	26%
Apache Junction	49,291	9,070	18%
Chandler	246,735	66,957	27%
Florence	58,488	15,657	27%
GRIC	10,694	3,276	31%
Gilbert	212,730	68,239	32%
Guadalupe	5,645	1,893	34%
City of Maricopa	41,377	12,831	31%
Unincorporated Maricopa County	10,490	134	1%
Mesa	485,758	117,479	24%
Phoenix	88,501	22,840	26%
Unincorporated Pinal County	39,463	14,131	36%
Queen Creek	40,265	14,744	37%
Tempe	162,892	28,551	18%
SEV Study Area	1,452,329	375,802	26%
WITHIN ½ MILE OF TRANSIT			
MAG Region	2,579,471	674,046	26%
Apache Junction	0	0	0%
Chandler	156,227	40,840	26%
Florence	8,251	923	11%
GRIC	231	76	33%
Gilbert	89,323	27,471	31%
Guadalupe	5,645	1,893	34%
City of Maricopa	0	0	0%
Unincorporated Maricopa County	279	2	1%
Mesa	335,809	80,913	24%
Phoenix	69,689	17,294	25%
Unincorporated Pinal County	0	0	0%
Queen Creek	0	0	0%
Tempe	162,819	28,536	18%
SEV Study Area	828,273	197,948	24%

Source: U.S. Census ACS 2008-2012 Estimates, Table B18101



Figure 13: Under 18 Population Density



Legend

- Study Area
- Population Under 18 per Square Mile**
- 0 - 350
- 351 - 800
- 801 - 1,500
- 1,501 - 3,500
- 3,501 +
- Highway
- Local Road
- Railroad
- River/Stream
- County Boundary

Population Density of People Under 18-Years-Old

*Southeast Valley
Transit System Study*



Source:
Population: US Census ACS 2012
Base Map: ALRIS 1997 - 2014,
ADOT 2014.





3.4 POVERTY

According to the US Census Bureau, the locations within the study area with the lowest household income classification are most centrally located and contiguous. They are mainly concentrated in Western Mesa and Northern Tempe in addition to areas along the Broadway Road and Main Street corridors from North Tempe to Apache Junction. Guadalupe and the GRIC also stand out as areas with low median incomes. As can be seen in Figure 14, all the areas previously mentioned excluding the GRIC also have the highest concentrations of population in poverty.

The definition of poverty used by the Federal Transit Administration (FTA) includes all people below 150% of the U.S. Department of Human and Health Service poverty guideline. Table 9 summarizes the Department of Human and Health Service Poverty Guidelines for 2012.

Table 9: Department of Human and Health Service 2012 Poverty Guidelines

Persons Per Household	Poverty Guideline	150% of Poverty Guideline
1	\$11,170	\$16,755
2	\$15,130	\$22,695
3	\$19,090	\$28,635
4	\$23,050	\$34,575
5	\$27,010	\$40,515
6	\$30,970	\$46,455
7	\$34,930	\$52,395
8	\$38,890	\$58,335

Source: U.S. Department of Health and Human Service, 2012

Table 10 summarizes the population in poverty throughout the jurisdictions of the study area as compared to the MAG region as a whole. This analysis reveals there is a strong correlation between zero vehicle households and population in poverty. The MAG region average for population in poverty is 26%. Tempe (30%), Guadalupe (52%), and the GRIC (67%) all have larger percentages of their population in poverty than region while the more suburban communities such as Chandler (15%), Gilbert (12%), City of Maricopa (14%), Ahwatukee (12%), and Queen Creek (13%) have less. Of the communities that have population with ½ mile of existing transit services, Florence, GRIC, and Guadalupe have the highest percentage of that population below the poverty threshold.



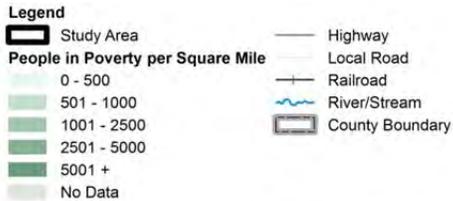
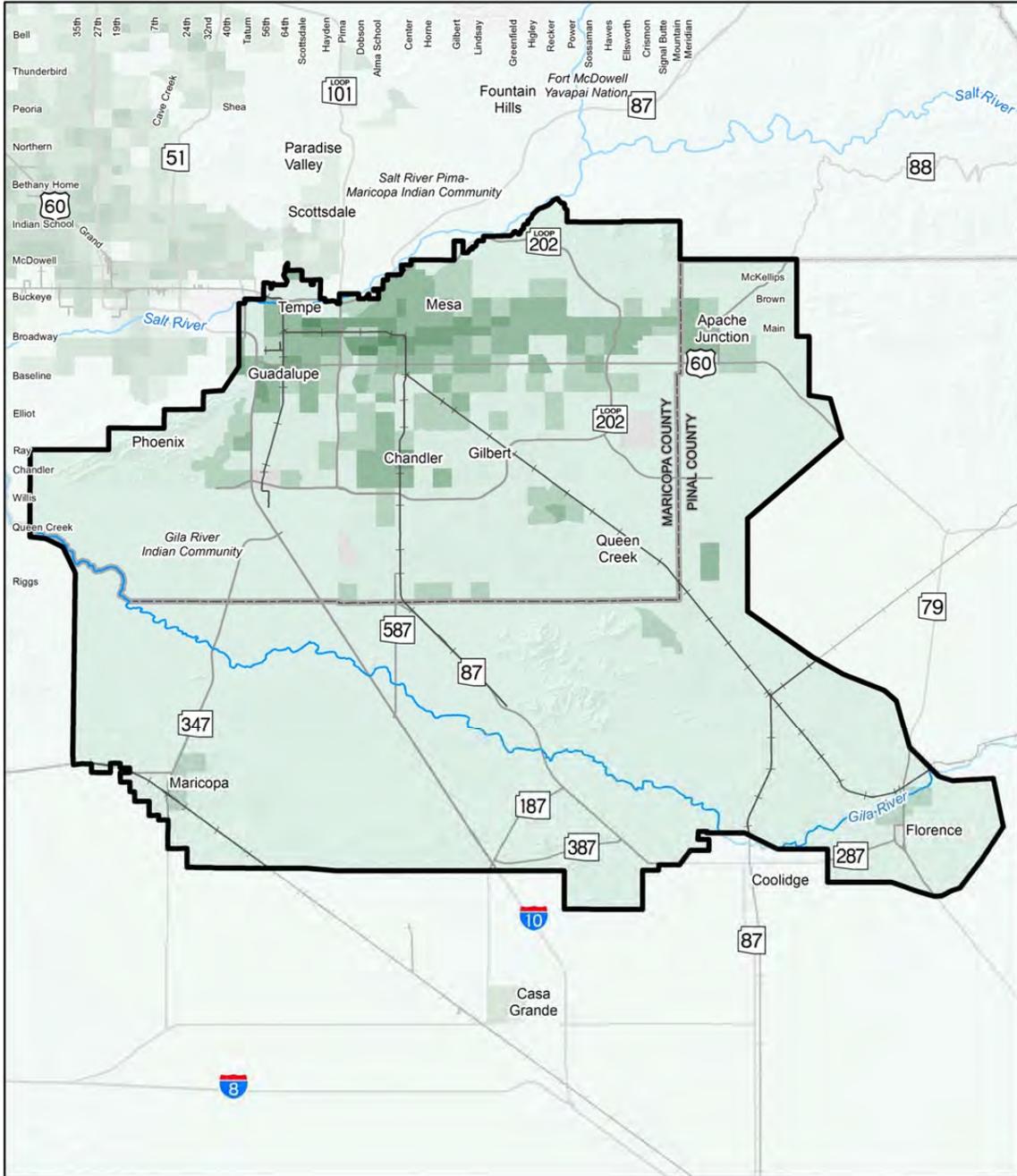
Table 10: Population in Poverty in the Southeast Valley

MPA	Population for Which Poverty Status Is Calculated	Population Below 2012 150% Poverty Guideline	
		Estimate	Percent
IN TOTAL			
MAG Region	4,002,752	1,028,190	26%
Apache Junction	49,483	14,381	29%
Chandler	245,700	35,865	15%
Florence	47,196	12,936	27%
GRIC	10,828	7,232	67%
Gilbert	210,877	24,725	12%
Guadalupe	5,633	2,951	52%
City of Maricopa	41,067	5,586	14%
Unincorporated Maricopa County	10,500	1,858	18%
Mesa	479,801	126,435	26%
Phoenix	86,250	10,480	12%
Unincorporated Pinal County	33,823	5,908	17%
Queen Creek	43,930	5,862	13%
Tempe	153,931	45,667	30%
SEV Study Area	1,419,020	299,886	21%
WITHIN ½ MILE OF TRANSIT			
MAG Region	2,530,221	778,196	31%
Apache Junction	0	0	0%
Chandler	155,939	26,387	17%
Florence	3,464	1,936	56%
GRIC	239	92	39%
Gilbert	84,972	10,489	12%
Guadalupe	5,633	2,951	52%
City of Maricopa	0	0	0%
Unincorporated Maricopa County	293	46	16%
Mesa	332,588	99,056	30%
Phoenix	67,466	9,406	14%
Unincorporated Pinal County	0	0	0%
Queen Creek	0	0	0%
Tempe	153,851	45,655	30%
SEV Study Area	804,444	196,017	24%

Source: U.S. Census ACS 2008-2012 Estimates, Tables: B19001, B17001, and B25010



Figure 14: Population Density of People in Poverty



Population Density of People in Poverty

Southeast Valley Transit System Study



Source:
Population: US Census ACS 2012
Base Map: ALRIS 1997 - 2014,
ADOT 2014.





3.5 TRANSIT DEPENDENCY ON KEY LOCAL ROUTES

As part of Valley Metro’s ongoing development of transit standards and performance measures, local routes that demonstrate high performance and serve transit dependent populations are classified as key local routes. In addition to operating as a local route, key routes must have strong ridership and serve a higher percentage of low-income persons and zero vehicle households than the system average (Valley Metro, 2013). Because key local routes are local examples of high performing transit, an additional analysis was performed to evaluate the transit dependency characteristics of key local routes within the study area. Key local routes that serve the study area in some capacity include:

- Route 3 – Van Buren Street
- Route 45 – Broadway Road
- Route 61 – Southern Avenue
- Route 72 – Rural/Scottsdale Road

As summarized in Table 11, the transit dependent characteristics within a ½ mile of each of the four key local routes that serve the study area are strong not only throughout the entire corridor of each route, but for the portion that exists solely within the study area as well. In general the portion of the route only within the study area serves a similar percentage of transit dependent population to the total length of the routes.

Table 11: Transit Dependency Characteristics of Key Local Routes in the Study Area

Route Number	Percent Zero Vehicle Households	Percent Zero or One Vehicle Households	Percent of Population Below 150% Poverty Threshold	Percent of Population Over 65-Years-Old	Percent of Population that Is Disabled
Study Area Key Local Routes (Total Length)					
*3	7.9 %	44.2 %	49.2 %	4.4 %	10.3 %
45	5 %	39.2 %	39.9 %	10 %	13.9 %
61	4.4 %	32.2 %	32.8 %	7.2 %	11 %
72	4.2 %	32.5 %	22.1 %	7.8 %	9.4 %
Study Area Key Local Routes (Portion in Study Area Only)					
*3	5.1 %	53.9 %	32 %	1.6 %	9.6 %
45	4.6 %	39.4 %	36.9 %	11.1 %	14.3 %
61	4.4 %	32.9 %	30 %	8.9 %	12.3 %
72	4.6 %	32.5 %	23.8 %	4.9 %	7.9 %

*Route 3 has less than 1/2 route mile within the study area

Source: U.S. Census ACS 2008-2012 Estimates, Tables: B19001, B17001, B25010, B18101, B08014, B01003



3.6 OVERALL TRANSIT DEPENDENCY WITHIN THE STUDY AREA

In summary, there are many areas within the study area that have demographic indicators of transit dependency. Most of these areas typically have low-income residents without convenient access to a personal vehicle, regardless of age, or are areas with significant disabled populations and populations over the age of 65. Overall, Western Mesa, Northern Tempe, Guadalupe, and the GRIC have many areas that have higher totals of multiple transit dependent categories. These areas tend to have pockets with high densities of low-income people and people without access to a personal vehicle.

Eastern Mesa, including areas of unincorporated Maricopa County and Apache Junction, all have areas with high densities of disabled and older adult populations. These areas have medium densities of population in poverty which are lower values than the areas located in Northern Tempe, Western Mesa, and Guadalupe but higher than the suburban communities. These areas are not well served by existing public transit fixed route service so it is likely there is a higher dependency on paratransit or other types of transit services.

The Broadway Road and Main Street corridors are a few of the only areas in the study area that appears to have a high concentration of both older adult population and zero vehicle/low-income households. However, even within this corridor the portion east of Gilbert Road appears to have the majority of older adult population. Table 12 summarizes which areas of the study area have strong indicators of transit dependency.

Table 12: Areas of Study Area with Strong Indicators of Transit Dependency

Transit Dependency Hotspots	Zero and One Vehicle Household Density	Disabled Population Density	Population Density of People Over 65-Years-Old	Population Density of People Under 18-Years-Old	Low-Income Population Density
Northern Tempe	X				X
Western Mesa	X	X		X	X
Guadalupe	X	X		X	X
Main St./Broadway Rd.	X	X	X	X	X
Unincorporated Maricopa County		X	X		
Sun Lakes		X	X		
Apache Junction		X	X		
Downtown Chandler	X	X			X

Source: Project Team, 2014.



Page left intentionally blank.



4.0 LAND USE

Land use indicates the potential for transit ridership as well as employment or activity center destinations. Land use policies that are compatible with transit, such as transit-oriented development, would promote the success of an enhanced transit network in growing communities throughout the study area.

4.1 EXISTING AND FUTURE LAND USE

The study area contains a variety of existing land uses, as shown in Figure 15. Table 13 summarizes the existing land uses and future land uses located throughout the study area. Other than Vacant land (43%), the most prevalent existing land use throughout the study area is Agriculture and Single Family Residential which total 14% and 19% of the total area, respectively. The other land uses in the study area are distributed fairly evenly across each land use category.

Future land uses are defined based on data collected from MAG. The data represent land use at the projected build-out stage for the study area and do not necessarily reflect the condition in the year 2030. The majority of vacant and undeveloped land is projected to be developed as Mixed Use and Single Family Residential land uses. Other significant land use growth is projected to be associated with Transportation and Open Space uses.

Figure 16 illustrates the general plan land uses identified by MAG in the build-out scenario.

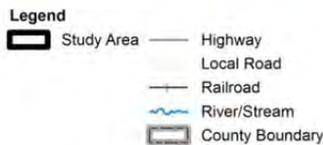
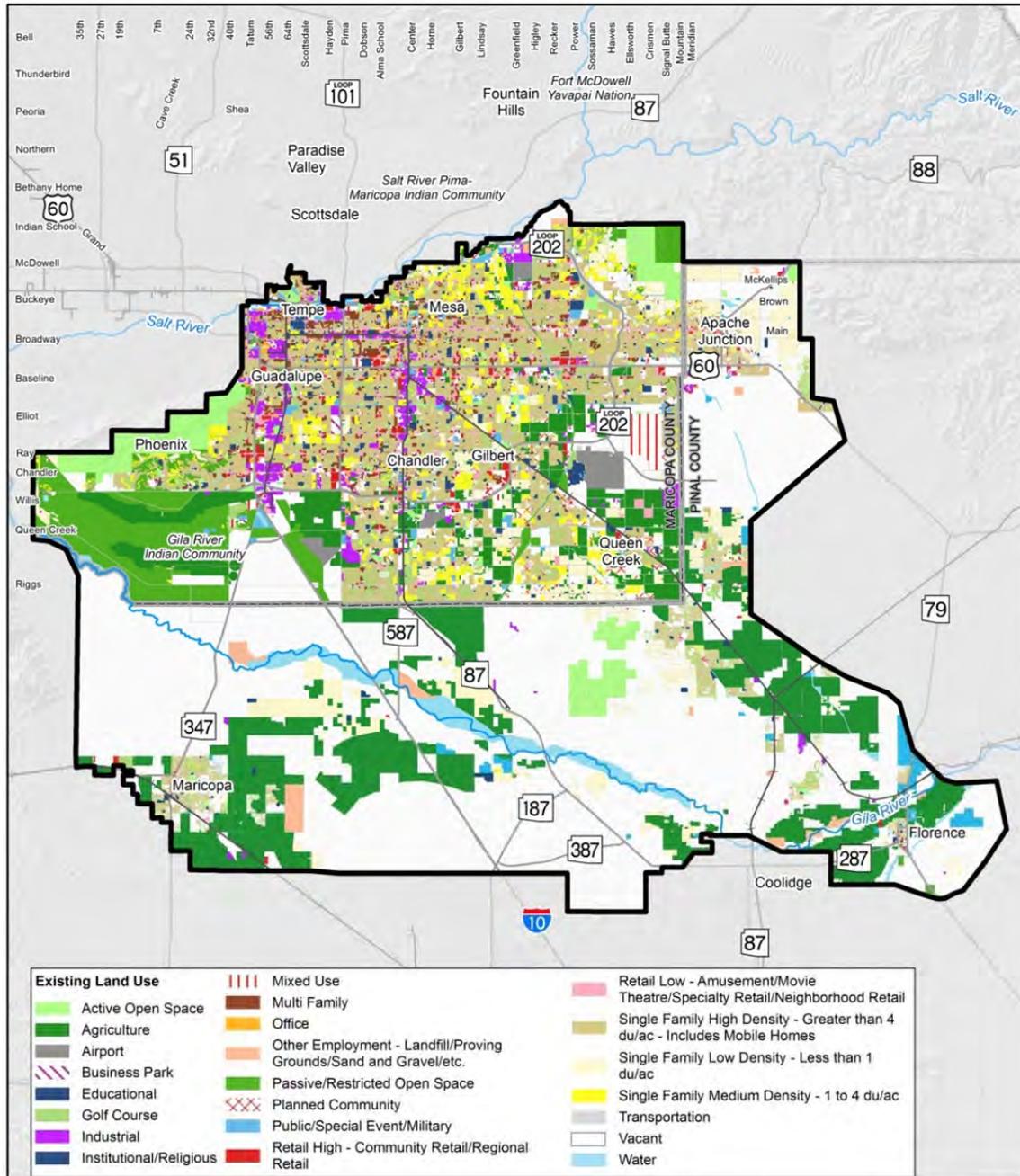
Table 13: Southeast Valley Study Area Existing and Planned Land Use

Land Use Category	Existing Land Use		Planned Land Use (Build-out)	
	Acres	Percent of Total	Acres	Percent of Total
Active Open Space	30,983	4%	39,417	5%
Agriculture	110,922	14%	27,522	3%
Airport	4,970	1%	850	0%
Business Park	464	0%	21,935	3%
Commercial High Density	5,032	1%	11,334	1%
Commercial Low Density	7,527	1%	14,228	2%
Educational	8,045	1%	3,146	0%
Golf Course	9,196	1%	937	0%
Industrial	11,682	1%	25,761	3%
Mixed Use	5,863	1%	276,733	35%
Multi Family	10,443	1%	2,465	0%
Office	2,812	0%	1,920	0%
Other Employment	5,760	1%	147	0%
Restricted Open Space	34,246	4%	35,375	4%
Planned Community	3,978	1%	51,310	7%
Public/Special Event/Military	10,216	1%	11,363	1%
Religious/Institutional	2,724	0%	8	0%
Single Family (> 4 du/ac)	83,436	11%	121,441	15%
Single Family (< 1 du/ac)	40,611	5%	63,364	8%
Single Family (1 to 4 du/ac)	21,257	3%	70,000	9%
Transportation	26,546	3%	7,381	1%
Vacant	335,986	43%	0	0%
Water	16,097	2%	2,129	0%
Total	788,798	100%	788,766	100%

Source: MAG, 2012



Figure 15: Existing Land Use



Existing Land Use

Southeast Valley
Transit System Study

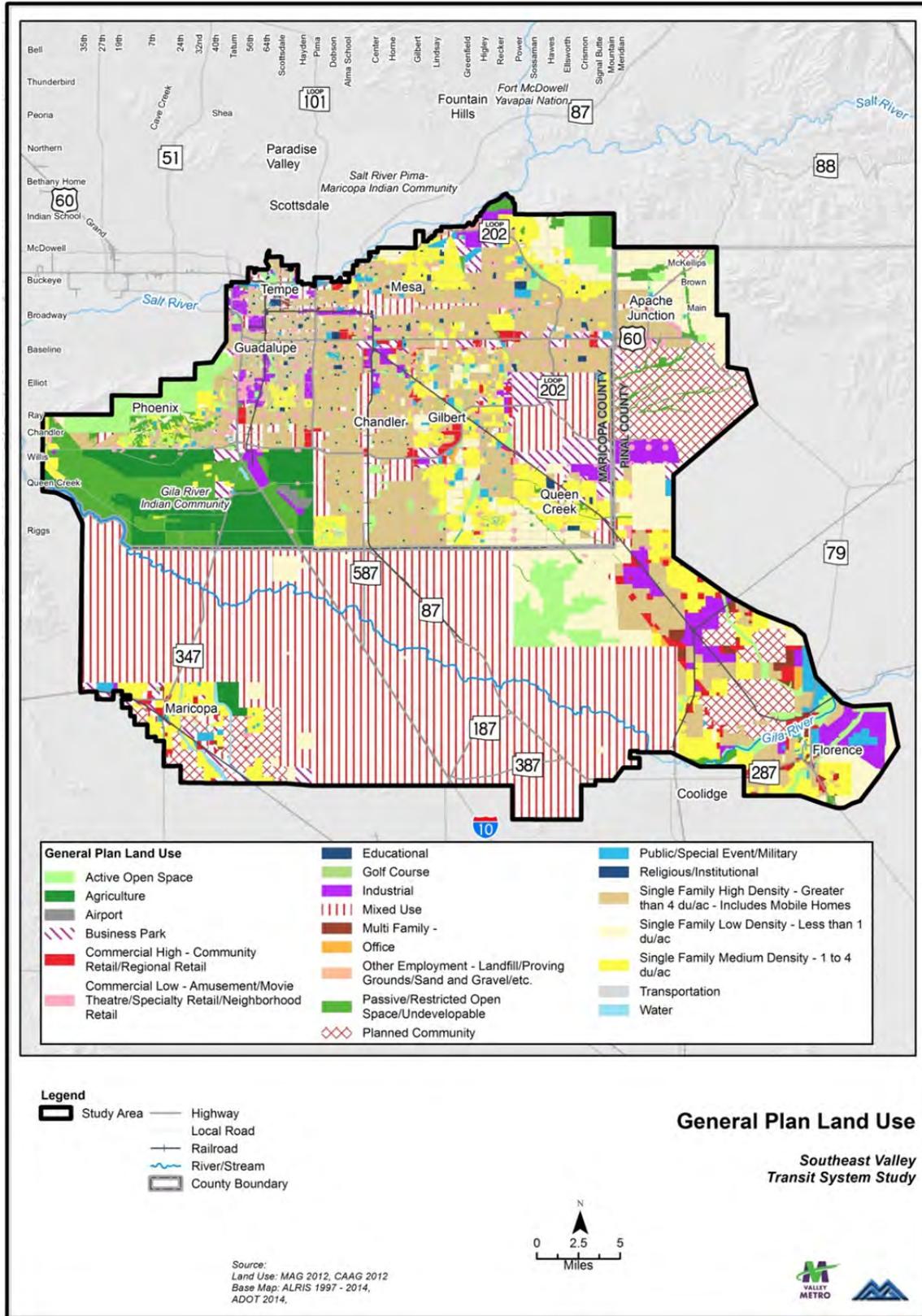


Source:
Land Use: MAG 2012, CAAG 2012
Base Map: ALRIS 1997 - 2014,
ADOT 2014.





Figure 16: Future Land Use





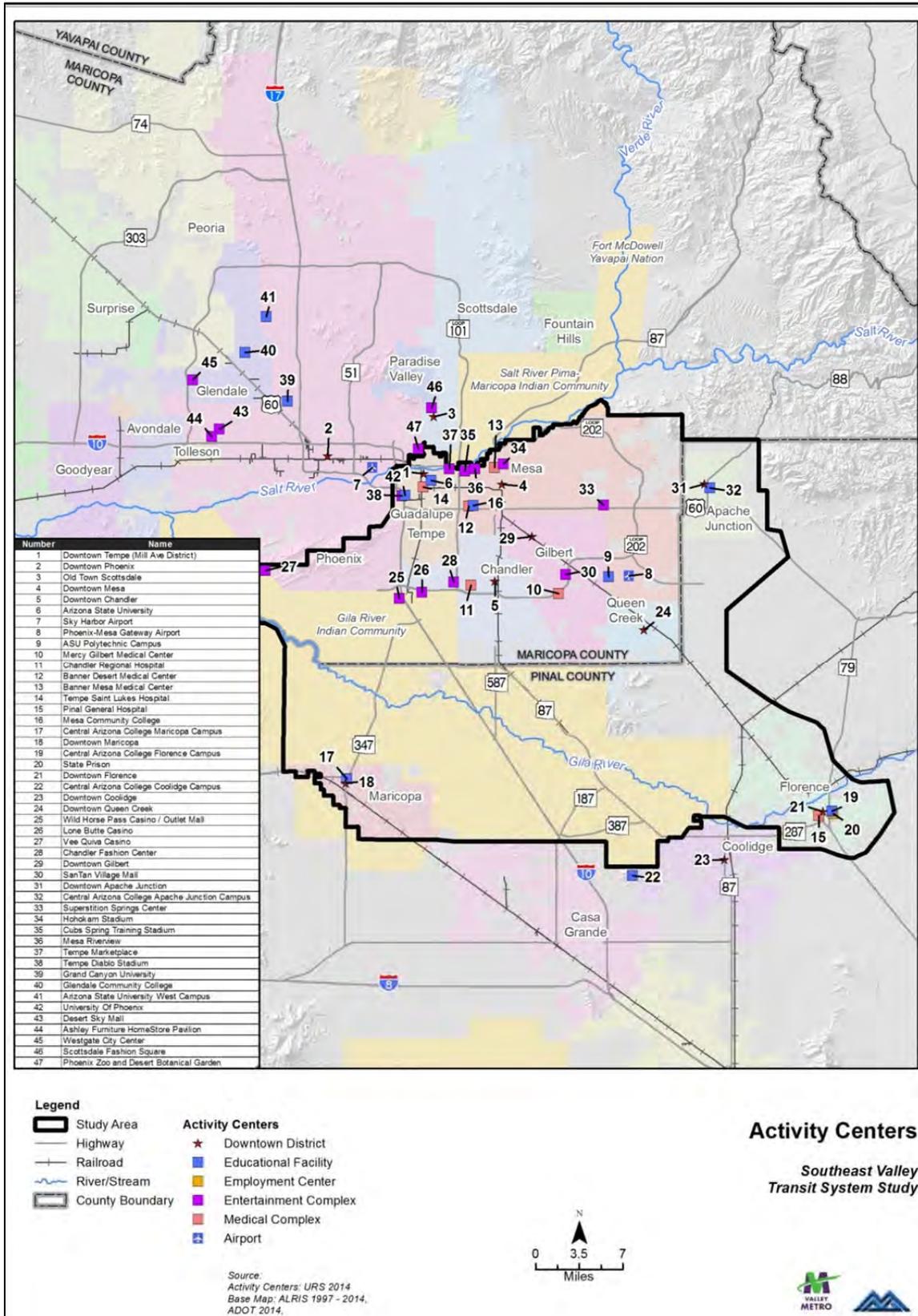
4.2 ACTIVITY CENTERS

Regional and local destinations located throughout the study area that have the potential to generate transit ridership are identified as activity centers. These destinations have been categorized as downtown districts, employment centers, educational facilities, entertainment complexes, or medical complexes.

Figure 17 illustrates the locations of some prominent activity centers throughout the study area and in the MAG region.



Figure 17: Activity Centers in the Southeast Valley





Page left intentionally blank.



5.0 FUTURE TRANSIT NETWORK

Existing transit service was reviewed as part of Working Paper #2, Existing Conditions. This section outlines the future planned transit services that are financially constrained to the MAG 2035 RTP update. Transit services that are planned for future implementation throughout the study area include: fixed route bus, light rail transit (LRT), LINK, and transit passenger facilities.

5.1 PLANNED FIXED ROUTE BUS

Local Bus (Supergrid)

The RTP identifies a total of six new supergrid routes that are planned to serve the study area by 2035. These routes are planned to either extend existing local fixed routes or fill in gaps in the current service area with the study area. Supergrid routes offer a consistent level of service and improved passenger access throughout all jurisdictions with the MAG region. Table 14 identifies the planned supergrid routes for the study area as well as their planned implementation group year in the 2035 RTP, and anticipated weekday headways. This information only identifies RTP funded service, and these service levels may be enhanced through locally raised funds. In addition, the planned supergrid routes and operating scenarios listed are subject to change or modification.

Express Bus

The RTP identifies six planned express bus routes that will serve the study area in some capacity by 2035. Table 14 lists the planned express routes including their implementation group year and total number of weekday trips.

Table 14: Planned Supergrid and Express Bus Service

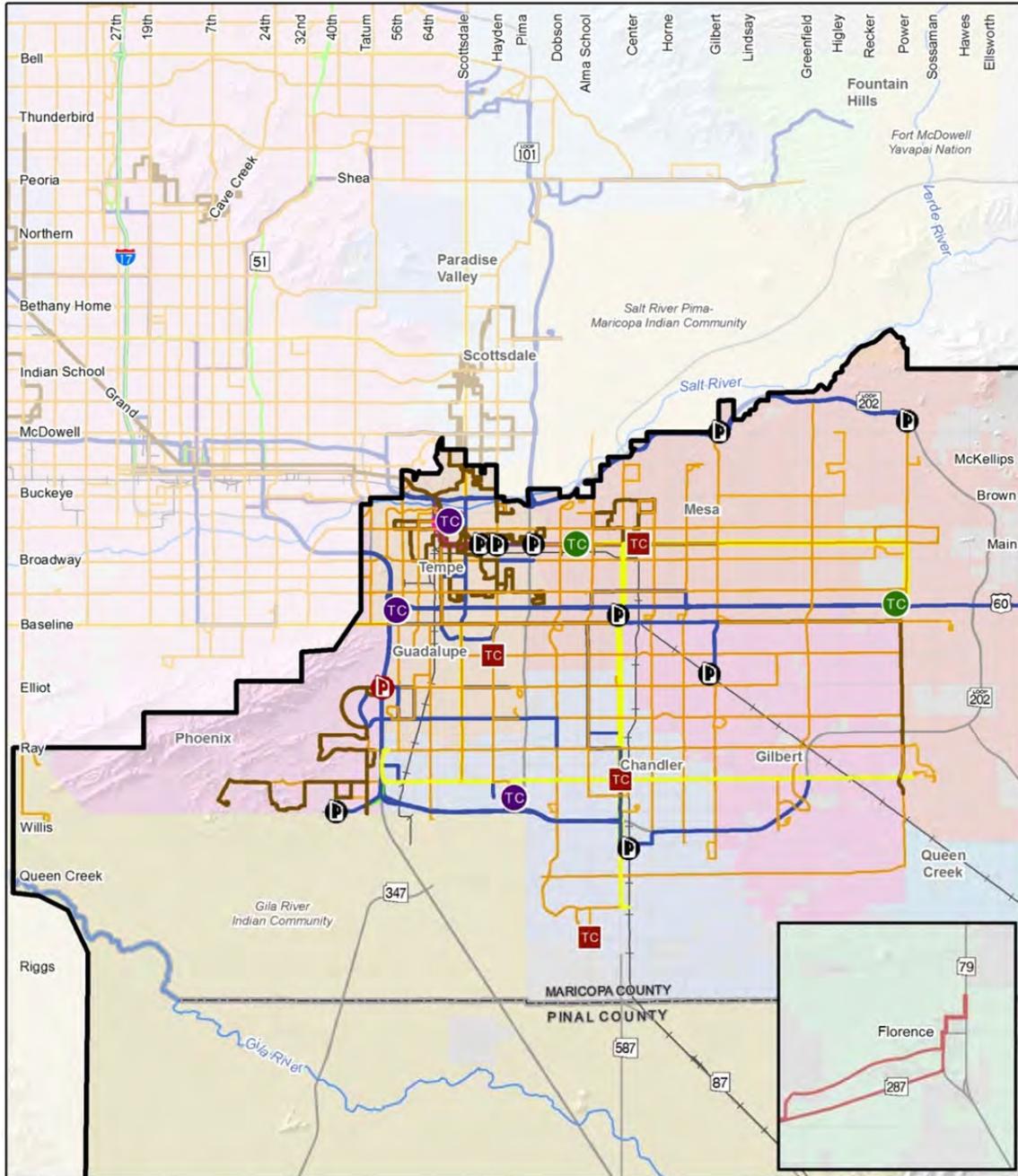
Route	RTP Group	Weekday	
		Peak Headway (min)	Base Headway (min)
Supergrid			
University Dr	Grp 2 ('19-'26)	30	30
Baseline Rd	Grp 2 ('19-'26)	30	30
Alma School Rd	Grp 1 ('14-18)	30	60
Ray Rd	Grp 3 ('27-'35)	60	60
Greenfield Rd	Grp 3 ('27-'35)	60	60
Queen Creek Rd	Grp 3 ('27-'35)	30	30
Express Bus			
Ahwatukee Connector	Grp 3 ('27-'35)	8 Weekday Peak Trips	
Apache Junction Express	Grp 3 ('27-'35)	8 Weekday Peak Trips	
Red Mountain Connector	Grp 3 ('27-'35)	4 Weekday Peak Trips	
San Tan Express	Grp 3 ('27-'35)	8 Weekday Peak Trips	
Superstition Connector	Grp 3 ('27-'35)	8 Weekday Peak Trips	
Superstition Springs Express	Grp 3 ('27-'35)	8 Weekday Peak Trips	

Source: MAG, 2014; Valley Metro

Figure 18 illustrates the planned RTP transit network in the study area.



Figure 18: Planned Transit Network



- Legend**
- Study Area
 - Existing Transit Centers
 - Existing Transit Centers with Park and Ride
 - Existing Park and Ride
 - Future Transit Centers
 - Future Park and Ride
 - Future Transit Routes**
 - Circulator
 - Local
 - Light Rail
 - Streetcar
 - LINK
 - Express
 - RAPID
 - Regional
 - Highway
 - Local Road
 - Railroad
 - River/Stream
 - County Boundary

**Future Transit Networks
in the Southeast Valley**

*Southeast Valley
Transit System Study*



Source:
Base Map: ALRIS 1997 - 2014,
ADOT 2014,
Valley Metro 2014





5.2 PLANNED HIGH CAPACITY TRANSIT AND LINK

High capacity transit (HCT) and LINK service refers to service that can carry large numbers of passengers per mile and per hour at higher speeds than local bus service. As identified in Working Paper #2, Existing Conditions, there is currently one existing HCT service and two LINK routes operating in the study area. Plans are in place to extend the current LRT line in Mesa to Gilbert Road, construct a Modern Streetcar in Tempe by 2018, and implement two additional LINK routes along Scottsdale/Rural Road and Chandler Boulevard by 2018 and 2035, respectively.

Although it is currently included as part of the RTP, the Scottsdale/Rural Road LINK service is under consideration to be modified to enhanced local service in that same corridor.

5.3 PLANNED TRANSIT PASSENGER FACILITIES

In addition to the existing passenger facilities identified in Working Paper #2, Existing Conditions, there are programmed facilities located throughout the study area as defined in the RTP. Table 15 identifies the RTP programmed passenger facilities in the study area and their respective implementation group year.

Table 15: Planned Transit Passenger Facilities

Location	RTP Group Year
Transit Centers	
Elliot Rd/I-10	Grp 3 ('27-'35)
Park and Rides	
Downtown Chandler 4-Bay	Grp 3 ('27-'35)
Downtown Mesa 6-Bay	Grp 1 ('14-'18)
South Chandler	Grp 3 ('27-'35)
South Tempe 4-Bay	Grp 3 ('27-'35)

Source: MAG, 2014



Page left intentionally blank.



6.0 TRAVEL PATTERNS AND MARKETS

In an effort to better understand travel demand and trip patterns in the MAG region and the study area, the project team analyzed recent studies relevant to study area travel patterns, data collected through the Maricopa County Air Quality Department trip reduction program (TRP) survey, and the current and projected trip interchanges in the MAG travel demand model. The MAG model uses current, observed travel data and projections for population, employment, and land use to estimate future travel patterns and volumes by traffic analysis zone (TAZ).

The analysis was conducted at two levels of granularity: study area wide/region wide and district level. Travel patterns for the study area/region are derived from a gross aggregation of TAZs and provide the most general overview of travel patterns. This level of analysis reveals how the study area interacts and functions with the region as a whole. The district level analysis is more granular and looks at how distinct geographic areas within the study area and adjacent areas outside of the study area (“collar districts”) interact and function with one another. Understanding important current and future interchanges will help the study team optimize existing service and prioritize future transit investments for the Southeast Valley.

For the study area/region level analysis travel patterns were evaluated for trips of any purpose as well as specifically home-based work trips. Work trips are typically the longest trip that people complete on a regular basis. This and the fact that employment centers are often concentrated in small geographic areas often make work trip patterns strongly contrast that of other trip purposes. For the district level analysis only trips of any purpose were evaluated. This analysis of travel patterns is a broad overview of study area travel patterns that will be analyzed in more detail, including work trips by district, in the Working Paper #6 Needs Assessment.

6.1 REGIONAL TRAVEL PATTERNS

6.1.1 Growth in Population and Employment

Growth in population and employment are the principal drivers of travel demand growth. Current population and employment estimates, future population and employment projections, and the corresponding trip tables were aggregated from the MAG travel demand model to estimate current and projected travel patterns for the study area. Population and employment levels for both the study area and MAG region were analyzed to determine areas of future growth.

Table 16 shows existing and projected population and employment numbers for the study area and region. Percent growth from the baseline year, 2010, and future years are also shown so comparisons can be made between the study area, entire region, and entire region excluding the study area. As can be seen in Table 16, population is anticipated to increase from 4.2 million in 2010 to over 7 million in 2040. Similarly, employment is anticipated to increase from 1.8 million to 3.4 million in the same time period. In the study



area, from 2010 to 2040 population and employment are anticipated to grow from 1.5 million to 2.2 million and 600,000 to 1.1 million, respectively. Most of the growth in the study area is anticipated to occur within the next two decades and then slow down slightly while the rest of the MAG region is anticipated to continue significant growth through the next 30 years. Thus, the area outside the study area is anticipated to outpace the study area in percent growth with approximately 80% growth in population and 96% growth in employment by 2040. By comparison, the study area is anticipated to grow in population by 49% and in employment by 86% over that same timeframe.

The current population of the study area accounts for nearly 35% of the total regional population, but will only account for 25% of the population growth between 2010 and 2040. Similarly, the study area accounts for 34% of total regional population, but it will account for 31% of the employment growth between 2010 and 2040.

Though the rest of the region is projected to outpace the study area in terms of percent growth for both employment and population, the study area has a higher ratio of employment to population growth. While the MAG region outside of the study area will add approximately 0.52 jobs for every additional resident, the study area will add approximately 0.72 jobs for every additional resident. This means that the study area's growth, relative to the region's growth, will be more employment-oriented. Intensification of employment land uses generally results in more infill development and higher overall densities than areas which have growth mostly of residential land uses. Taken altogether this suggests the study area will relatively experience more infill development and densification than the rest of the MAG region as a whole.

Table 16: Southeast Valley Population and Employment Share

		MAG Region		MAG Region Excluding SEV		Southeast Valley	
		Projection	Percent Change	Projection	Percent Change	Projection	Percent Change
Population	2010	4,174,843	-	2,720,140	-	1,454,703	-
	2020	4,969,421	19%	3,252,653	20%	1,716,768	18%
	2030	6,004,017	44%	4,005,541	47%	1,998,476	37%
	2040	7,065,703	69%	4,892,412	80%	2,173,291	49%
Employment	2010	1,771,208	-	1,165,854	-	605,354	-
	2020	2,426,543	37%	1,595,158	37%	831,385	37%
	2030	2,901,633	64%	1,920,810	65%	980,823	62%
	2040	3,411,594	93%	2,285,960	96%	1,125,634	86%

Source: MAG, 2014



6.1.2 Increase in Travel for All Trips Purposes

The implication of growth in employment and residents for the MAG region and the study area alike is an increase in transportation demanded. Figure 19 shows the density of daily trips of any purpose (number of trips in the model for that TAZ divided by its area) produced anywhere in the region that terminated in the study area for both 2012 and 2035. Figure 20 shows the opposite—density of daily trips of any purpose attracted anywhere that originated in the study area. Table 17 summarizes the trip exchange information shown in these figures by the the study area, region excluding the study area (called “Outside SEV” in Table 17), and the entire region.



Figure 19: Regional Trip Production Density of Study Area Attractions

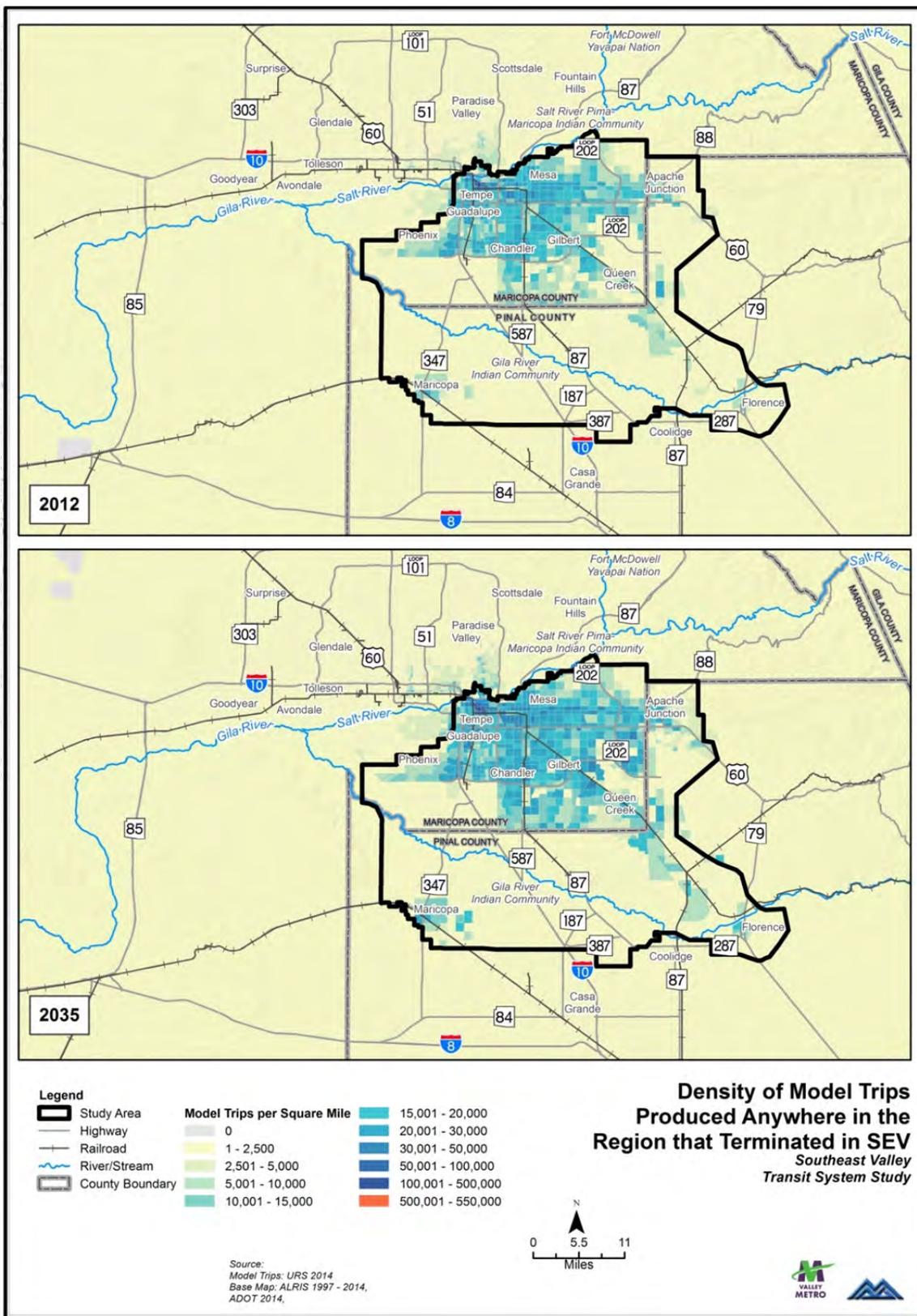
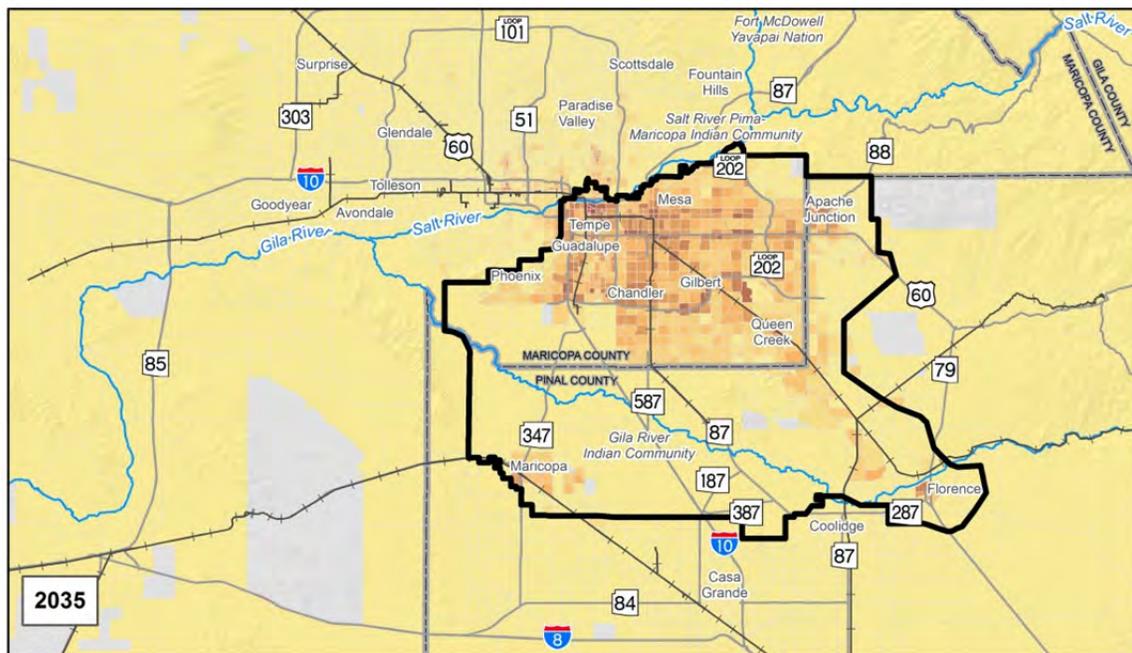
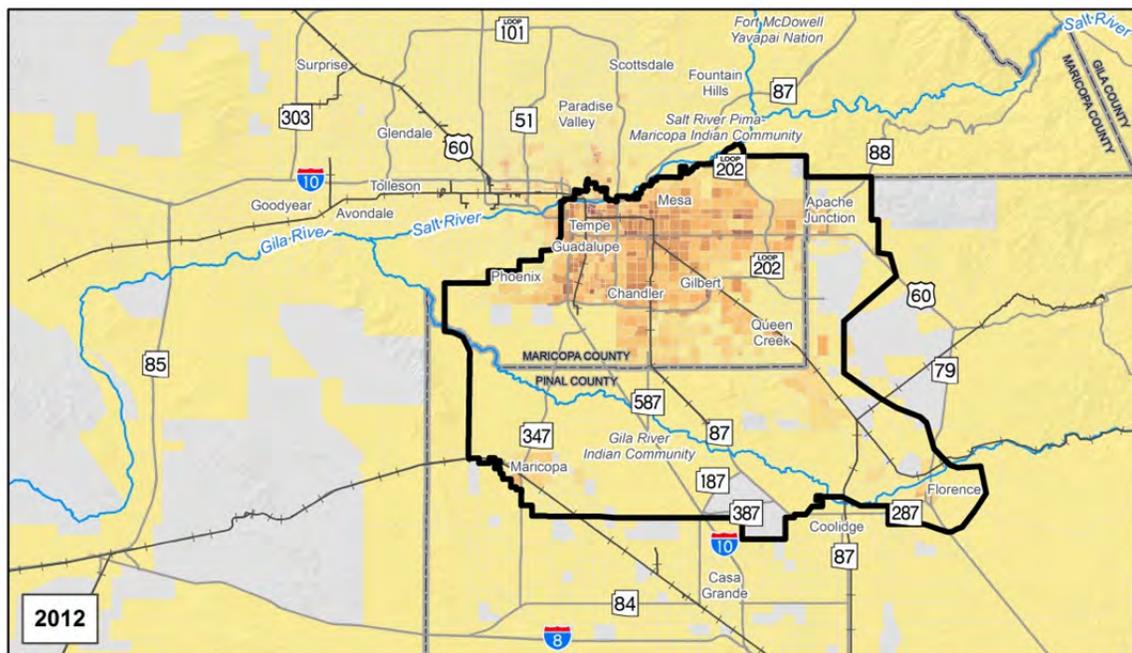


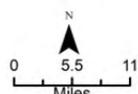


Figure 20: Regional Attraction Density of Study Area Productions



Legend		Model Trips per Square Mile	
	Study Area		0
	Highway		1 - 2,500
	Railroad		2,501 - 5,000
	River/Stream		5,001 - 10,000
	County Boundary		10,001 - 15,000
			15,001 - 20,000
			20,001 - 30,000
			30,001 - 50,000
			50,001 - 100,000
			100,001 - 500,000
			500,001 - 550,000

**Density of Model Trips
Attracted Anywhere in the
Region that Originated in SEV**
Southeast Valley
Transit System Study



Source:
Model Trips: URS 2014
Base Map: ALRIS 1997 - 2014,
ADOT 2014.





As shown in Table 17, the total number of daily trips in the MAG region is 16.7 million in 2012 and 25.8 million in 2035 which is 65% growth. By comparison the number of trips associated with the study area (have at least one trip end in the study area) are 6.5 million trips in 2012 to 9.3 million in 2035 which is 71% growth. Of the 9 million additional trips projected to occur in the region, the study area is anticipated to account for 2.8 million of these or 31% which is roughly similar to the anticipated proportion of regional population growth that will occur in the study area.

Though this growth will certainly not occur uniformly within the region and study area, projections suggest that overall the existing distribution of trip productions (where trips originate) and trip attractions (where trips terminate) will be largely the same. This is confirmed in Figure 19 and Figure 20. The TAZs that have already existing concentrations/ hotspots of productions or attractions will continue to be relatively concentrated compared to their peers in the future. The general density for trips produced and attracted for most all TAZs throughout the region, however, will increase.

Table 17: Increase in Regional and Study Area Trips for All Trips Purposes

		Attracted to SEV			Attracted Outside of SEV			Attracted Anywhere in Region		
		2012	2035	Percent Growth	2012	2035	Percent Growth	2012	2035	Percent Growth
Produced From	Trips of All Purposes in 1,000s									
	Whole Region	5,987	8,641	44%	10,732	17,130	60%	16,719	25,771	54%
	Outside SEV	497	741	49%	10,180	16,436	61%	10,677	17,177	61%
	Inside SEV	5,489	7,900	44%	490	607	24%	5,979	8,507	42%

Source: MAG, 2014

Most trips terminate near the place they originated from. Of the daily 6 million trips attracted to the study area in 2012, nearly 5.5 million originated within the study area. The current and projected production core of trips to the study area is in North Tempe including the Mill Avenue District, Arizona State University, and the TAZs to the east of the university. As can be seen in Figure 19, production density generally diminishes towards the fringe of the metropolitan area. The notable exception to this is the sharp drop off that occurs at the border of the GRIC. Trips produced and attracted by TAZs within the GRIC are some of the smallest in the study area in 2012 and are projected to continue to be so in 2035. Some significant production centers to study area attractions that are located outside of the study area include South Scottsdale and downtown Phoenix. In 2035, this will increase to include the Central Corridor and portions of the existing light rail corridor between Tempe and central Phoenix.



In addition to being the main production core of trips to the study area, North Tempe is also the main attractor of trips to the study area which is illustrated in Figure 20. While North Tempe is the largest trip attractor in the study area, many individual TAZs dispersed throughout the study area show-up as major trip attractors. Most of these locations include major malls, large industrial operations, or other institutions such as the ASU Polytechnic Campus in Southeast Mesa. There does not appear to be a significant change in trends between 2012 and 2035; already existing attraction centers become even more concentrated and the overall density of productions and attractions throughout the whole region increases in the already developed areas.

6.1.3 Increase in Travel for Home-Based Work Trips

Population growth and employment growth causes growth in travel demanded for work trips just as it does for trips of all purposes. Similar to the figures in Section 6.1.2, Figure 21 shows the density of daily home-based work trips produced anywhere in the region that terminated in the study area for both 2012 and 2035, and Figure 22 shows the density of daily home-based work trips attracted anywhere in the region that originated in the study area. Table 18 summarizes the trip exchange information shown in these figures by the the study area, region excluding the study area, and the entire region.



Figure 21: Regional Work Trip Production Density of Study Area Attractions

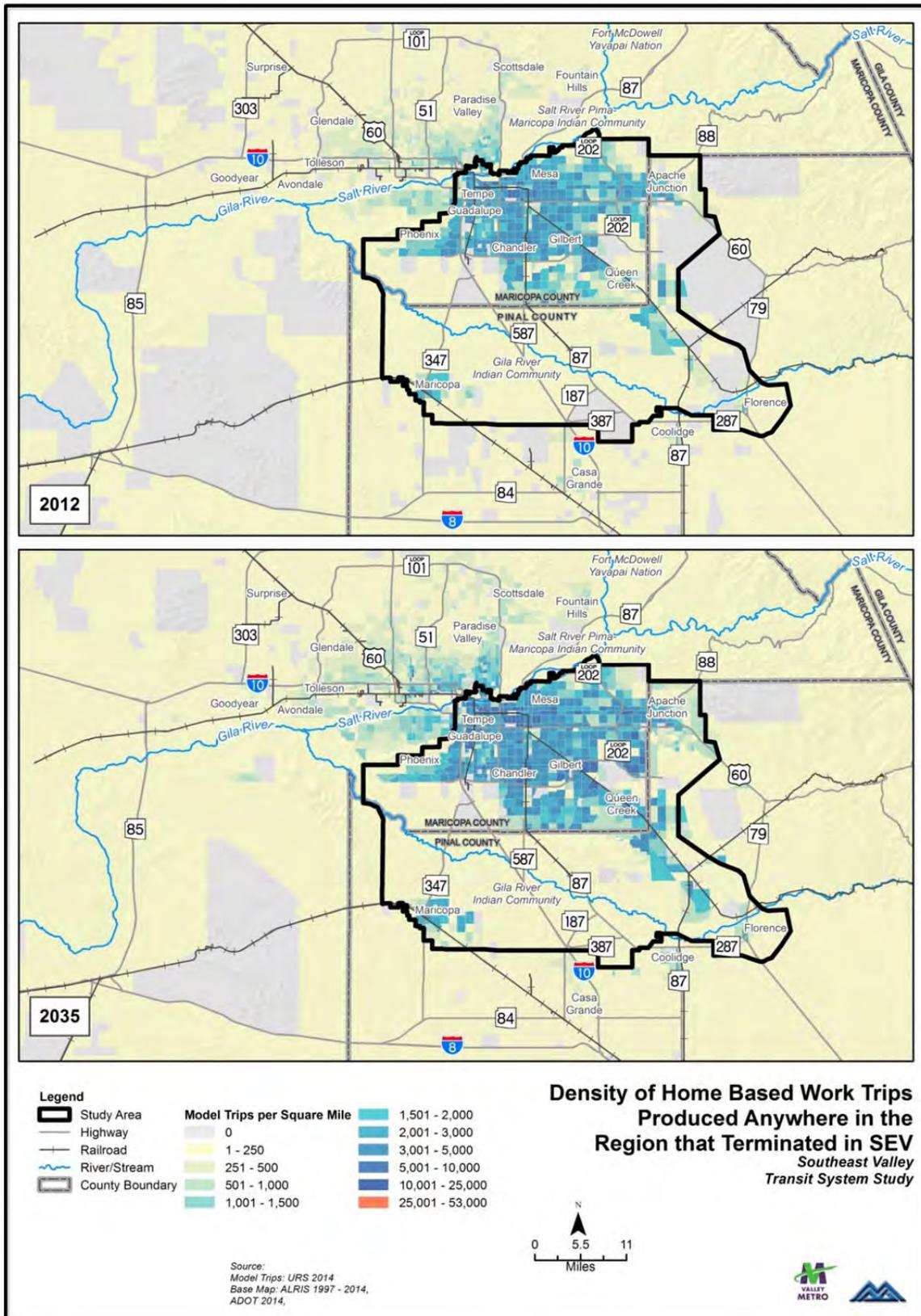
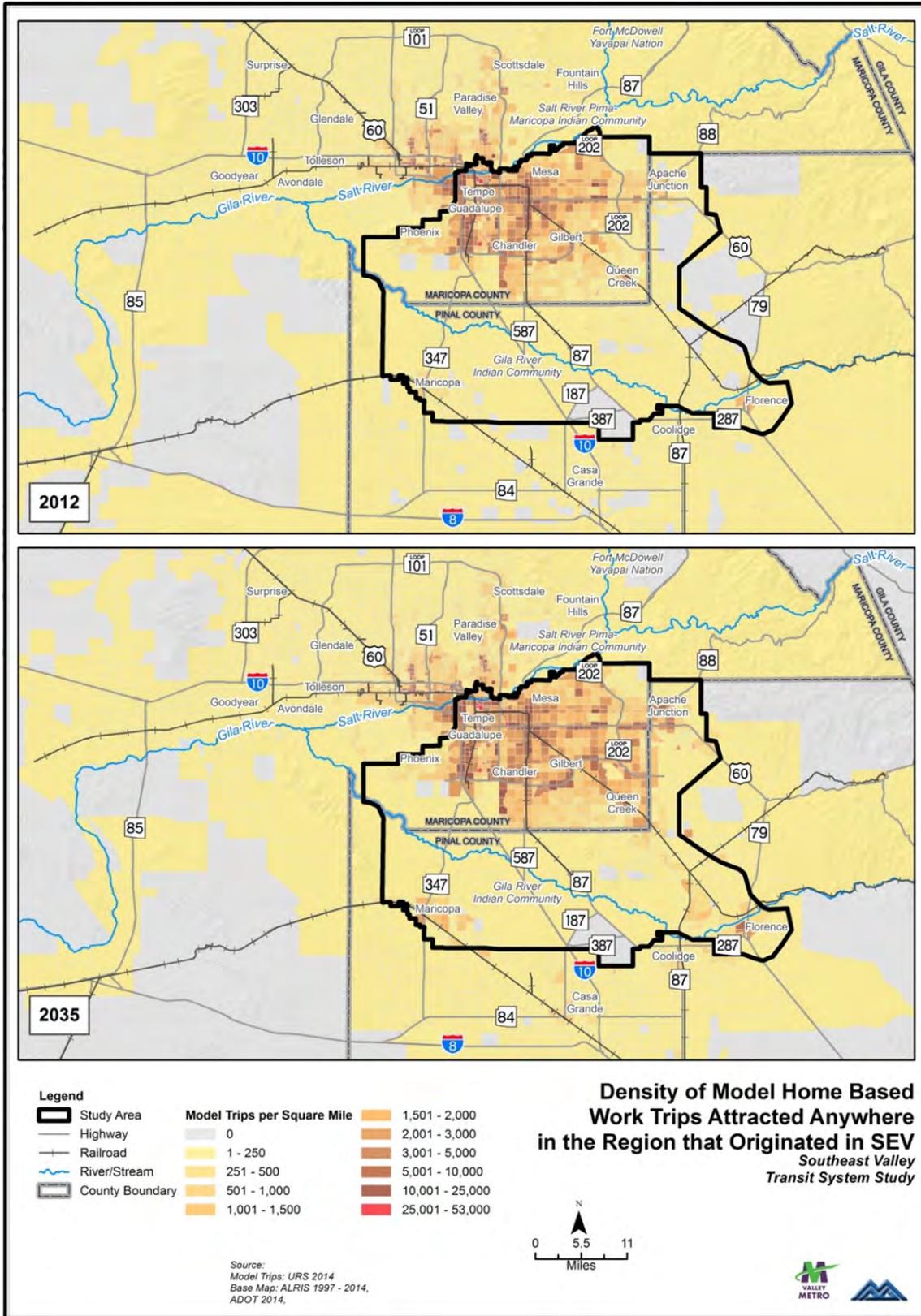




Figure 22: Regional Work Trip Attraction Density of Study Area Productions





As shown in Table 18, in 2012 3 million work trips will be made. 1.3 million of these trips will be associated with the study area by having at least one trip end in the study area or 43%. By 2035 nearly 4.7 million work trips are expected to be made every day. 1.8 million of these will be associated with the study area or 38%. Of the total growth in regional work trips between 2012 and 2035, the study area will account for 32% of the growth which is once again similar to the share of regional employment growth the study area is expected to experience over 2010 to 2040.

While the percentage of work trips produced in the study area and terminating outside of the study area will only increase by 7% (approximately 16,000 trips) from 2012 to 2035, the number of work trips attracted to the study area from the region excluding the study area will increase 67% (approximately 120,000 trips) in the same time period. This corroborates the earlier observation that study area will proportionally add more jobs per resident than the rest of the region. Currently, the study area retains 860,000 of the 1.1 work trips it produces to the entire region or 79%. By 2035 this will increase to 1.3 million of 1.5 million or 84%. These trends further suggest the study area will become a more concentrated employment center.

Table 18: Increase in Regional and Study Area Trips for Home-Based Work Trips

	Attracted to SEV			Attracted Outside of SEV			Attracted Anywhere in Region			
	2012	2035	Percent Growth	2012	2035	Percent Growth	2012	2035	Percent Growth	
Home-Based Work Trips in 1,000s										
Produced From	Whole Region	1,037	1,568	51%	2,010	3,133	56%	3,047	4,701	54%
	Outside SEV	177	297	67%	1,785	2,892	62%	1,962	3,189	63%
	Inside SEV	860	1,270	48%	225	241	7%	1,085	1,512	39%

Source: MAG, 2014

The pattern and distribution of work trips produced region-wide that terminate at study area attractions, shown in Figure 21, is quite similar to that of trips of all purposes (Figure 19). The core is once again centered on Northern Tempe with trip concentrations reducing to the southeast. Significant trip origins outside of the study are once again relatively most concentrated in South Scottsdale, downtown Phoenix, and southeastern Phoenix. Currently the Central Corridor does not generate a high density of trip productions to study area attractions, but projections suggest it will by 2035.

Attractions for work trips, however, vary from attractions for all trips. Employment tends to be clustered and more predominantly located in the urban core of metropolitan areas than the outlying, suburban areas. Figure 22 shows, overall, this is currently and projected to be the case for the employment locations of study area residents. Overall, freeway corridors such as the I-10 and U.S. 60 have significant employment concentrations as do Northern



Tempe, downtown Phoenix, the Central Avenue corridor, and Old Town Scottsdale. The TAZs with the highest employment attraction density are Downtown Mill/ASU and the Intel plant in Chandler. The Intel plant is not contiguous to the actual study area employment core located adjacent the I-10 corridor. Intel is rather a very large employer with its own campus that amounts to a major trip attractor on its own. The Boeing plant in north central Mesa functions similarly.

Appendix A shows the observed density of where study area residents live and work from the Maricopa County Air Quality Department trip reduction program (TRP) survey. The data collected through this survey corroborates the travel demand model outputs in Figure 21; study area workers live mostly within the Loop 202 ring road and area west of it. The survey data for attractions, however, tells a different story than the MAG travel demand model outputs shown in Figure 22. In the TRP, the highest concentration of employment is centered over North Tempe and the bordering portion of Phoenix. From there the employment density decreases overall at a steady gradient aside for some hotspots in the study area. The MAG model data, however, suggests that there is more variation in employment density throughout the study area. These differences may be attributable to the fact that the TRP survey is only taken by employees at firms of fifty or more people and these large employers tend to be more concentrated in the urban core. The TRP data will be further evaluated in Working Paper 6: Needs Assessment.

6.1.4 Regional Travel Patterns Summary

Current and future travel patterns suggest the study area already meets many of its travel needs within its own boundaries and will be able to meet even more of its travel needs as time passes. The study area currently provides many of the services and employment its residents require so longer distance trips to other parts of the metropolitan area are often unnecessary due to intervening opportunities.

As summarized in Table 19, 79% of trips that originate in the study area terminate in the study area. This will further increase to 84% by 2035. In addition, the study area currently attracts 9% of outside produced work trips and is projected to do so in 2035 also. By holding its current share of work trips attracted from the region in 2035, the study area is in fact attracting significantly more outside work trips than it currently does because of regional growth. Taken altogether this indicates that the study area is going to become more dense both in population and employment.



Table 19: Travel Patterns Summary

	All Trips		Work Trips	
	2012	2035	2012	2035
Study Area Productions				
Trips Produced in SEV That Stay Within SEV	92%	93%	79%	84%
Trips Produced in SEV That Leave SEV	8%	7%	21%	16%
Non-Study Area Productions				
Trips Produced Outside SEV That Stay Outside SEV	95%	96%	91%	91%
Trips Produced Outside SEV That Enter SEV	5%	4%	9%	9%
Study Area Share of Trips				
Total Share of Regional Trips Produced	36%	33%	36%	32%
Total Share of Regional Trips Attracted	36%	33%	34%	33%

Source: MAG, 2014

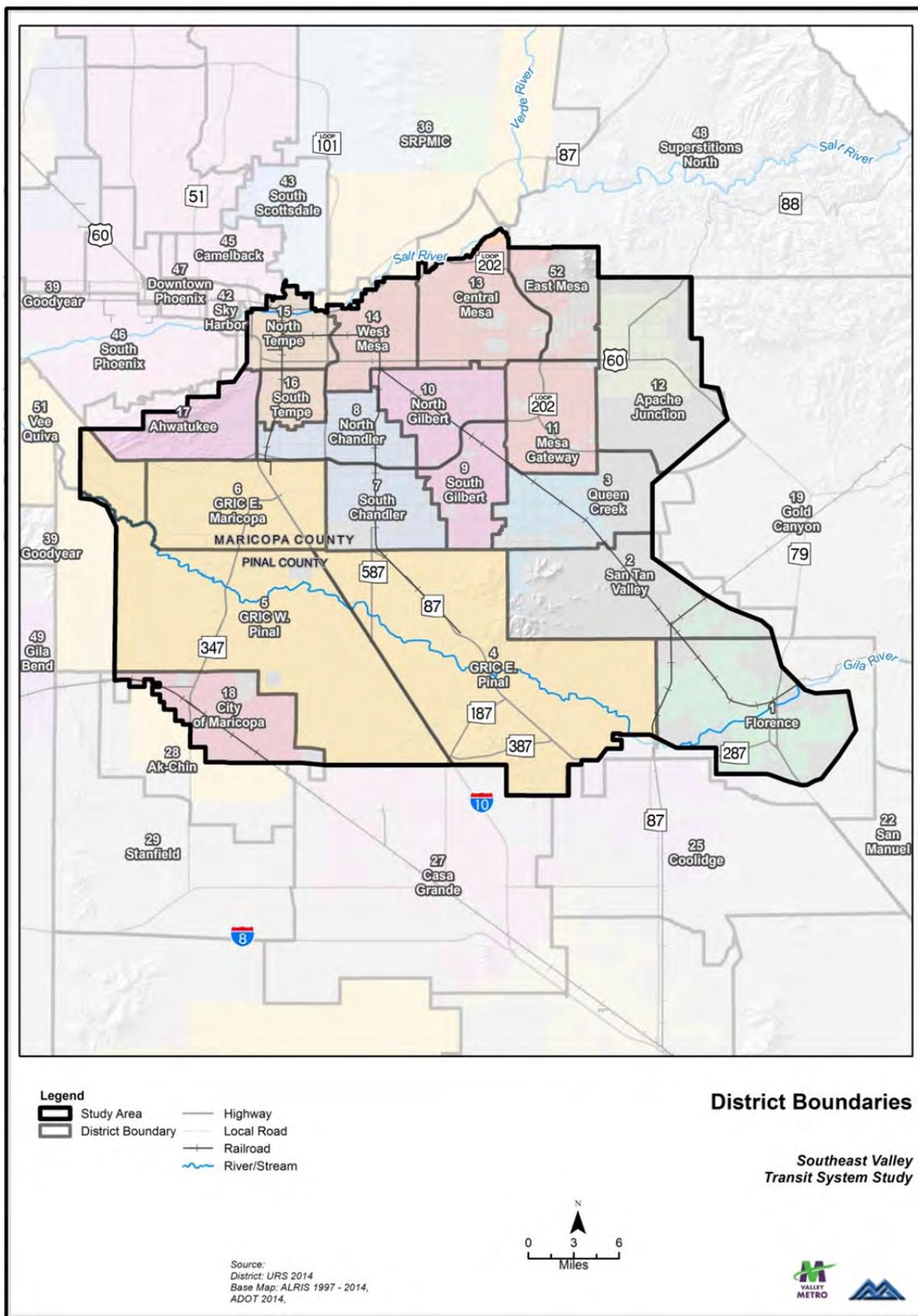
6.2 DISTRICT TRAVEL PATTERNS

To better understand travel within the study area, MAG region TAZs were aggregated into individual districts. District boundaries were based on regional travel districts identified from previous studies including the 2009 MAG Regional Transit Framework Study (RTFS) and the 2011 Pinal County Transit Feasibility Study (PCTFS). To make the district sizes more appropriate for a study of the Southeast Valley than the whole region, districts within the study area were further subdivided and realigned to create contiguous, representative geographic groups that are similar in terms of land use and/or demographics. The study area was divided into twenty districts numbered 1-18, 51 and 52. Districts outside the study area were drawn to match the original boundaries used in the RTFS and PCTFS as closely as possible. Outside districts were number 19-50, 53 and 54 making for a total of 34 outside districts. Figure 23 identifies each district used throughout this travel patterns analysis.

District travel was evaluated in three different ways. First, total travel to, from, and within districts was compared for 2012 and 2035. Secondly, travel within study area districts (called intra-district) was evaluated to compare how much districts satisfy their travel needs within their own boundaries. Lastly, trip patterns between districts (called inter-district) were evaluated to compare how much districts interact with other districts. For all three of these evaluations current model volumes for all trip purposes were used. Evaluation of district travel patterns for specific purposes and other time frames will be further evaluated in Working Paper 6: Needs Assessment.



Figure 23: Southeast Valley Travel Districts





6.2.1 District Travel Overview

Table 20 and Table 21 show the total number of daily trips involving study area districts. Intra-district trips, trips produced to other districts, and trips attracted from other districts are shown for 2012 and 2035, respectively. The shares of the trips that stay within the district and exit/enter are also calculated. Areas with a higher share of trip productions are typically suburban, areas with balanced shares are typically urban, and areas with a higher share of attractions are typically urban with major employment/activity centers.

Table 22 shows the projected change in volume of trips for districts between 2012 and 2035. This allows for comparison of anticipated production and attraction growth between districts. All the tables are double sorted. The order that districts appear is in ascending order of total trips. The other columns are color gradient sorted. Red indicates the value has a low value for the distribution for that characteristic while blue indicates the opposite.

North Tempe (15) currently has the most combined intra and inter-district trips completed in it with over 1.25 million trips per day. It has the most intra-district trips completed within it (430,000) and it also attracts the greatest number of trips from outside districts (530,000). North Tempe is projected to have the greatest number of combined intra and inter-district trips in 2035 also. West Mesa (14), however, is currently the largest producer of trips to other districts with approximately 310,000 trips produced per day. By 2035, however, North Gilbert (10) is projected to be the largest producer to other districts. It will produce over 375,000 trips ending in other districts.

The significance of the North Tempe district as an attractor and producer is further magnified by the fact that it is the second smallest district in the study area. This means that the density of trips attracted and produced in North Tempe is much higher than the other study area districts. The density of trips attracted and produced by districts rather than just sheer volumes will be further evaluated in Working Paper 6: Local Transit Service Needs Assessment.

On the other end of the spectrum, the GRIC districts (4, 5, 6, 51) have the smallest current and projected trips produced and attracted of all the study area districts. As can be seen in Table 24, by 2035 the four districts that make up the reservation will have a combined intra and inter-district trip total of approximately 110,000. As was the case with North Tempe, the difference in trips produced and attracted compared to other study area districts will be further exemplified when they are compared by production and attraction density. The GRIC districts are some of the largest districts in the study area which means the density will be very low. In addition to having relatively small trip flows, the share of productions and attractions between GRIC districts are typically very unbalanced. This suggests that residences are typically in different districts than important activity and employment centers.



Mesa Gateway (11) is projected to experience the most growth of combined intra and inter-district trips (475,000) between 2012 and 2035. Currently, it daily produces about 135,000 trips to other districts and attracts nearly 100,000. By 2035 it is anticipated to have a more balanced travel flow with approximately 260,000 trips produced and 285,000 attracted. It is likely that anticipated growth in the ASU Polytechnic Campus and development near the Phoenix Mesa Gateway Airport are the principal drivers in the significant growth in trips. Though the district will experience significant growth in daily trips, it will still produce less and attract fewer trips than established centers such as North Chandler (8), North Gilbert (10), Central Mesa, West Mesa, and North Tempe.



Page left intentionally blank.



Table 20: Breakdown of 2012 Daily Trips

District		Daily Trips				Percent		
Name	Number	Total	Intra-District	To/From Other Districts		Intra-District	To/From Other Districts	
				Produced	Attracted		Produced	Attracted
GRIC W. Pinal	5	4,210	600	2,884	727	14%	68%	17%
Vee Quiva	51	12,283	1,886	7,610	2,787	15%	62%	23%
GRIC E. Pinal	4	22,337	4,711	12,892	4,734	21%	58%	21%
GRIC E. Maricopa	6	25,435	1,235	9,447	14,752	5%	37%	58%
Florence	1	90,391	59,510	13,608	17,272	66%	15%	19%
City of Maricopa	18	159,258	112,734	33,008	13,516	71%	21%	8%
San Tan Valley	2	187,650	85,475	84,988	17,186	46%	45%	9%
Apache Junction	12	240,326	91,195	90,987	58,144	38%	38%	24%
Queen Creek	3	274,304	106,079	109,470	58,755	39%	40%	21%
East Mesa	52	292,336	72,687	149,479	70,170	25%	51%	24%
Mesa Gateway	11	317,506	88,050	133,333	96,124	28%	42%	30%
South Gilbert	9	413,497	123,955	178,208	111,334	30%	43%	27%
Ahwatukee	17	426,461	156,781	173,770	95,909	37%	41%	22%
South Tempe	16	500,323	106,750	161,958	231,616	21%	32%	46%
South Chandler	7	514,698	198,403	200,168	116,127	39%	39%	23%
North Gilbert	10	916,110	280,115	302,413	333,582	31%	33%	36%
North Chandler	8	1,028,758	368,126	295,679	364,954	36%	29%	35%
Central Mesa	13	1,041,261	442,006	299,027	300,228	42%	29%	29%
West Mesa	14	1,127,209	416,162	310,477	400,571	37%	28%	36%
North Tempe	15	1,226,380	428,637	264,787	532,957	35%	22%	43%

Sorted by total daily trips; color ramp sorted for other categories: Highest Value Lowest Value Source: MAG, 2014

Table 21: Breakdown of 2035 Daily Trips

District		Daily Trips				Percent		
Name	Number	Total	Intra-District	To/From Other Districts		Intra-District	To/From Other Districts	
				Produced	Attracted		Produced	Attracted
GRIC W. Pinal	5	7,291	1,070	3,833	2,389	15%	53%	33%
Vee Quiva	51	13,511	1,295	9,093	3,122	10%	67%	23%
GRIC E. Pinal	4	42,382	8,550	18,407	15,425	20%	43%	36%
GRIC E. Maricopa	6	56,956	5,194	17,382	34,380	9%	31%	60%
Florence	1	311,063	202,175	41,991	66,898	65%	13%	22%
San Tan Valley	2	352,768	147,517	155,641	49,610	42%	44%	14%
City of Maricopa	18	360,464	267,802	53,619	39,042	74%	15%	11%
East Mesa	52	390,082	87,081	200,969	102,032	22%	52%	26%
Apache Junction	12	510,539	202,401	153,849	154,289	40%	30%	30%
Ahwatukee	17	529,512	183,584	228,840	117,089	35%	43%	22%
South Tempe	16	545,197	114,602	185,857	244,738	21%	34%	45%
Queen Creek	3	568,014	221,858	194,468	151,688	39%	34%	27%
South Gilbert	9	730,735	219,402	318,048	193,286	30%	44%	26%
South Chandler	7	766,572	293,135	285,127	188,310	38%	37%	25%
Mesa Gateway	11	795,881	250,847	259,870	285,164	32%	33%	36%
North Chandler	8	1,218,284	423,415	354,679	440,190	35%	29%	36%
North Gilbert	10	1,219,335	364,183	376,392	478,760	30%	31%	39%
Central Mesa	13	1,251,745	513,585	367,682	370,478	41%	29%	30%
West Mesa	14	1,301,765	484,418	355,252	462,095	37%	27%	35%
North Tempe	15	1,580,536	603,970	330,393	646,172	38%	21%	41%

Sorted by total daily trips; color ramp sorted for other categories: Highest Value Lowest Value Source: MAG, 2014



Table 22: Change in Daily Trips between 2012 and 2035

District		Growth in Daily Trips: 2012 - 2035				Ranking	
Name	Number	Total	Intra-District	To/From Other Districts		Total Trips	
				Produced	Attracted	2012	2035
Vee Quiva	51	1,228	-590	1,483	335	19	19
GRIC W. Pinal	5	3,081	470	949	1,663	20	20
GRIC E. Pinal	4	20,045	3,838	5,515	10,692	18	18
GRIC E. Maricopa	6	31,522	3,958	7,935	19,628	17	17
South Tempe	16	44,874	7,852	23,899	13,122	7	10
East Mesa	52	97,746	14,394	51,490	31,862	11	13
Ahwatukee	17	103,052	26,803	55,069	21,180	8	11
San Tan Valley	2	165,119	62,042	70,652	32,424	14	15
West Mesa	14	174,556	68,256	44,775	61,524	2	2
North Chandler	8	189,525	55,290	59,000	75,236	4	5
City of Maricopa	18	201,206	155,068	20,611	25,526	15	14
Central Mesa	13	210,484	71,578	68,655	70,251	3	3
Florence	1	220,672	142,665	28,382	49,626	16	16
South Chandler	7	251,875	94,732	84,960	72,183	6	7
Apache Junction	12	270,212	111,206	62,861	96,145	13	12
Queen Creek	3	293,710	115,778	84,998	92,933	12	9
North Gilbert	10	303,226	84,068	73,979	145,178	5	4
South Gilbert	9	317,239	95,447	139,840	81,952	9	8
North Tempe	15	354,155	175,333	65,607	113,215	1	1
Mesa Gateway	11	478,375	162,797	126,537	189,041	10	6

Sorted by total daily trips; color ramp sorted for other categories:

Total includes Intra-District

Smallest

Largest

Source: MAG, 2014



Page left intentionally blank.

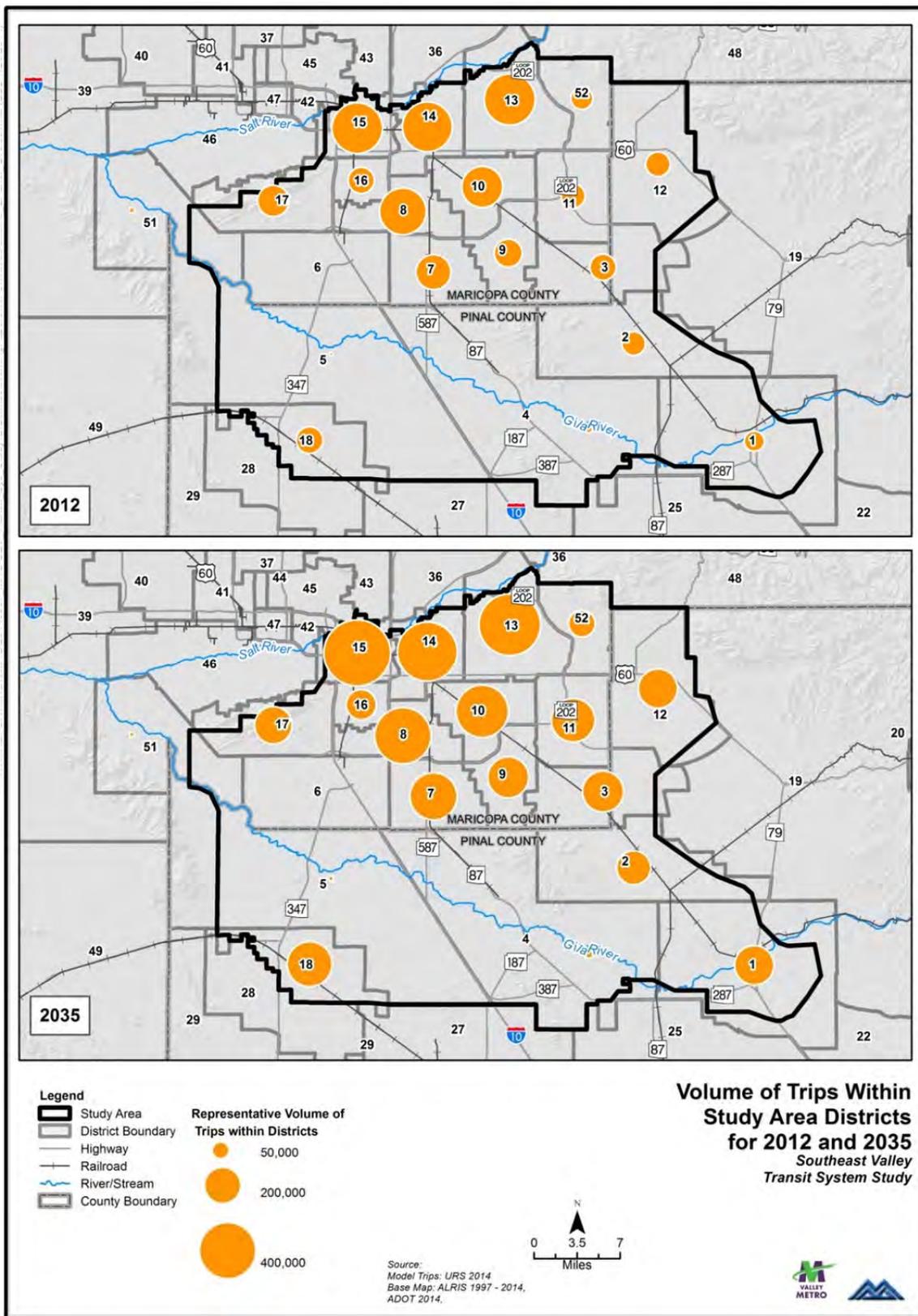


6.2.2 Intra-District Travel Patterns

In the study area, on average, intra-district travel accounts for about 1/3 of the trips in a district. Nearly every district's single largest trip flow, even for suburban and ex-urban communities, is within its own borders. In fact, on its own, intra-district trips typically account for 30% to 40% of all the trips for that district. Figure 24 shows proportionally-sized circles that represent the number of trips completed within a district for 2012 and 2035. Table 23 and Table 24 are matrices that show trip flows (in 1,000s) that are either produced or attracted to a study area district to/from another study area district or neighboring collar district for 2012 and 2035, respectively. Table 25 shows the percent change in these flows between 2012 and 2035.



Figure 24: Volume of Daily Trips within Study Area Districts





Page left intentionally blank.



Page left intentionally blank.



Page left intentionally blank.



Central Mesa (13) has approximately 442,000 trips that originate and terminate within its own boundaries daily (shown in Table 23). This is the largest intra-district flow in the study area. North Tempe (15) and West Mesa (14) are not far behind with 429,000 and 416,000, respectively. By comparison, 13 of the 20 study area districts have less than 150,000 intra-district trips per day. By 2035 North Tempe is projected to overtake Central Mesa by almost 100,000 trips for a total of 604,000 daily trips. Central Mesa and West Mesa are projected to still have the second and third most intra-district trips, respectively. This is because the number of intra-district trips completed within North Tempe is projected to increase by 41% while Central Mesa and West Mesa will both only increase by 16%.

Table 24 also shows that by 2035 the outlying Pinal County districts such as City of Maricopa (18), Florence (1), Queen Creek (3), and Apache Junction (12) will have a similar number of internal trips as the lower-density/suburban portion of the study area core like South Gilbert (9). Because the existing number of intra-district trips in these districts is generally relatively low (fewer than 100,000), they will undergo very large percent growth. As can be seen in Table 25, nearly all of these districts, excluding San Tan Valley (2), will have an increase of trips by 100% or more which tracks closely with projected population growth. For certain communities such as Florence and Apache Junction, the number of trips completed significantly outpaces anticipated population growth. This large increase in intra-district trips is an indication of the expected maturation of the community. More trips are being made not only because of population and employment growth occurring in the district, but because the community is more self-sufficient and more of residents' needs can be met within the district. Relevant findings from the PCTFS are available in Appendix B.

Centrally located districts such as the Chandler, Gilbert and Mesa districts generally will experience more modest intra-district trip percent growth, though their actual growth is often of similar volumes to these outlying Pinal County districts. The reason this is the case is likely because these districts are already fairly built out. The exception to this is Mesa Gateway (11) which is projected to grow from 88,000 to 250,000 or 185% in that time period.

The GRIC districts (4, 5, 6, 51) have the smallest intra-district flows in both 2012 and 2035. Of these four districts, the largest intra-district flow in 2012 is 5,000 and the largest in 2035 is 9,000. Because the districts' initial number of intra-district trips is so low, the percent growth between 2012 and 2035 fluctuates wildly though the actual change in the number of trips is quite small.

Florence (1) and Maricopa City (18) are the two districts which have the highest percentage of intra-district trips at 66% and 71%, respectively. This may be attributable to the fact that these locations are geographically removed from many other activity centers in other districts so residents may opt to complete more trips within their own district. There is not anticipated to be a significant change in the percentage of intra-district trips completed by these districts in 2035.



6.2.3 Inter-District Travel Patterns

Of total inter-district travel, flows to/from neighboring districts generally make up the majority of inter-district travel. Similarly to Figure 24, Figure 25 shows trip flows through proportionally sized symbols, however, rather than showing intra-district flows, Figure 25 shows inter-district flows between neighboring study area districts and collar districts.

North Tempe (15) is the study area district which completes the most inter-district trips with 785,000 daily trips. It currently attracts over 530,000 trips from other districts and produces 265,000 to other districts. The other study area districts which have major inter-district travel patterns, such as West Mesa (14), Central Mesa (13), North Chandler (8), and North Gilbert (10), typically have a much higher ratio of trips produced to trips attracted.

Over half of the trips attracted to Tempe are from other study area districts (principally neighbors) and neighboring collar districts. North Tempe is the largest study area district attractor of trips from the SRPMIC, Camelback, South Scottsdale, Sky Harbor, South Phoenix, and Downtown Phoenix districts. Similarly it is the largest study area district producer to Camelback, South Scottsdale, Sky Harbor, and the Downtown Phoenix districts (shown in Table 23). In fact, North Tempe is projected to attract approximately 235,000 from Maricopa County collar districts while the rest of the study area districts combined are anticipated to attract only 208,000 altogether from these same collar districts. The reason for this is two-fold. For one, North Tempe is located in the production and attraction core of the metropolitan area and many of the collar districts that border it are in the core also. The second reason is that the area has major regional attractors such as Arizona State University and concentrated employment corridors such as the 52nd Street corridor and the Mill Avenue District.

In the southeastern corner of the study area Florence (1), San Tan Valley (2) and Queen Creek (3) all currently interchange some trips, but will undergo large percent growth of trips between one another by 2035 (shown in Table 25). The growth in actual number of trips exchanged, however, is still fairly small as can be seen in Table 24. Overall, projections suggest that Queen Creek (3) and San Tan Valley (2) will still be more strongly attracted to nearby Maricopa County districts than Florence (1). Apache Junction (12) is currently primarily a trip producer to nearby Mesa districts (11, 52, 13). As can be seen in Table 24, by 2035, however, it is anticipated to become fairly balanced as an attractor and producer of trips with the same Mesa districts in addition to attracting trips from Queen Creek (3). It should be noted that in the PCTFS Apache Junction district was identified as the strongest candidate for adding transit coverage. This is in part because of the already strong established trip flows between Mesa districts which already have transit service and the contiguity of Apache Junction to the Phoenix urbanized area.

As discussed previously, Mesa Gateway (11) is anticipated to grow from a relatively minor trip producer/attractor to a more major one. It will still switch from being primarily a producing district to an attracting district. As can be seen in Table 25, much of the growth



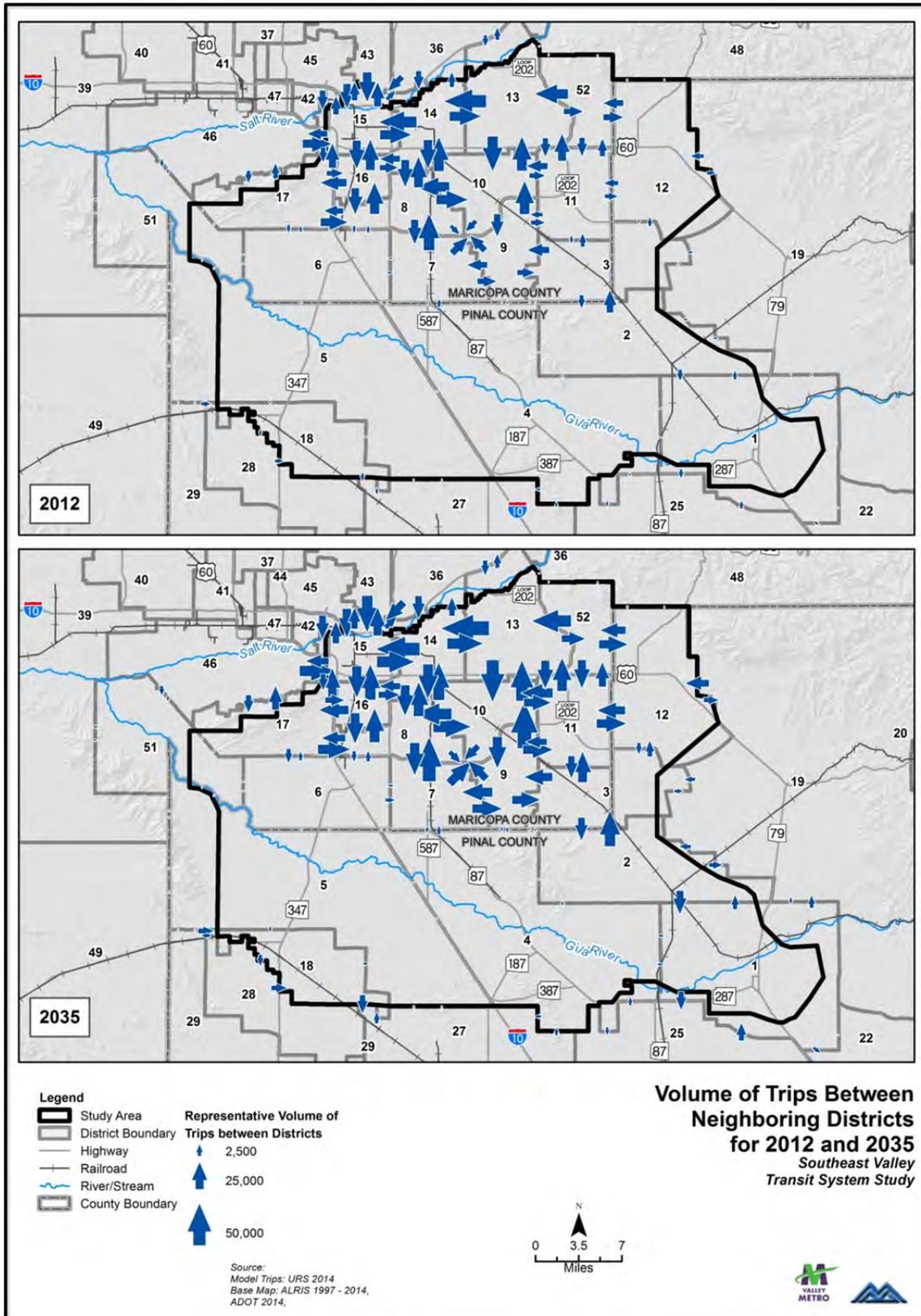
experienced by Mesa Gateway will be from not only neighbor districts but also districts further away in the study area.

Once again the GRIC districts currently have the least inter-district travel of all the study area districts. These four districts currently attract 23,000 trips (including trips made between them) from outside districts and produce approximately 33,000. By 2035 this will increase to 55,000 and 50,000, respectively.

A break appears to occur near the GRIC where major trip patterns change. San Tan Valley (2) and Queen Creek (3) are both still principally attracted to Maricopa County districts. It appears, however, that the friction of distance becomes too great for Florence (1) and the City of Maricopa (18) to have many trip interchanges with Maricopa County districts (shown in Table 23). Florence produces and attracts some trips from San Tan Valley and Queen Creek, but overall it typically interacts with other Pinal County collar districts such as Coolidge and Casa Grande. This supports the notion that by year 2035 sub-regional centers will be established in Northern Pinal County that serve many of Pinal County residents' trip needs which would make trips to Maricopa County less frequent and necessary.



Figure 25: Volume of Trips between Neighboring Districts for 2012 and 2035





6.3 SUMMARY OF TRAVEL PATTERNS

Both the Southeast Valley and the MAG region will continue to grow over the course of the next twenty years. Though the rest of the region will outpace the Southeast Valley in percent growth, the Southeast Valley is anticipated to become more attraction-oriented and overall increase its ratio of employment to population. In the Southeast Valley, the established production and attraction core is centered on North Tempe. The core attracts more trips than it produces. The density of productions and attractions lessens gradually the further one heads south and/or east. The area becomes more and more suburban in nature and primarily produces trips rather than attract. The GRIC represents a major shift in travel patterns. The sheer number of trips produced and attracted sharply drop off at the GRIC, and districts beyond it in Pinal County such as Florence and Maricopa City become more attracted to Pinal County regional centers such as Casa Grande and Coolidge.

Existing trends are anticipated to continue into the future including the expansion of the metro area and the densification of the core. Areas that currently represent the fringe will become more mature and likely have a similar number of productions and attractions to centrally located suburban communities today. This will also lead to a more even split of productions and attractions. The Mesa Gateway district is one of the few areas that are expected to deviate substantially from past trends. Rather than growing gradually like many of its neighbors, this area is anticipated to go from a relatively minor district to a significant regional attractor that attracts significant trip volumes from neighbor districts and districts further away alike.



Page left intentionally blank.



7.0 CONCLUSIONS AND NEXT STEPS

The analysis of existing and future demographics, transportation, and land use conditions suggests some conclusions about the travel demand in the study area and potential transit needs. The following conclusions were determined based on this evaluation:

- Existing population density is mostly clustered within the Loop 202 boundaries in 2010. Future growth is expected south and east of the Loop 202 into Chandler and Apache Junction and expands southeast along the UPRR corridor through Gilbert into Queen Creek and beyond by 2030. There also appears to be concentrated growth expected in the City of Maricopa.
- Existing employment density is mostly clustered within the Loop 202 between I-10 and SR 87 in 2010. Future employment is expected along SR 87 and area to the east mostly along the Loop 202 corridor and in areas of Queen Creek and Apache Junction.
- High densities of transit dependent populations are principally concentrated in the northwest quadrant of the study area, along the Main Street and Broadway corridors, near SR 87, as well as areas principally occupied by older adults near Southern Chandler, and in Apache Junction, East Mesa, and nearby unincorporated portions of Maricopa County.
- Planned transit improvements are programmed for the areas of the study area mostly within the Loop 202 boundaries and do not stretch to all areas of future population and employment growth.
- Areas with high concentrations of transit dependent populations have access to existing transit services.
- Northern Tempe and the immediately surrounding area is the production and attraction core of the study area and is projected to become even more so in the future.
- The GRIC has unique travel patterns that do not mirror the rest of the metropolitan area.
- Apache Junction, Queen Creek, San Tan Valley, and Florence are expected to have significantly more trip interaction in the future
- Mesa Gateway is projected to experience the most growth in trips attracted and produced within the study area

The next step in this study is to identify transit needs based on further evaluation of local travel patterns, projected deficiencies in the planned network, input from stakeholders and the public, and observations from the transit optimization task. The understanding of needs will drive the subsequent development of transit service recommendations.



Page left intentionally blank.



APPENDIX A

Maricopa County Air Quality Department Trip Reduction Program Survey and Data



Page left intentionally blank.



MARICOPA COUNTY TRIP REDUCTION PROGRAM SURVEY

The Maricopa County Department of Air Quality annually conducts a trip reduction survey as part of its Trip Reduction Program (TRP) with all employers in Maricopa County with 50 or more employees. It asks about interests in alternate modes (alternatives to the single occupant vehicle) and also obtains information on work and residential location. Note that there are no data for Pinal County at this time.

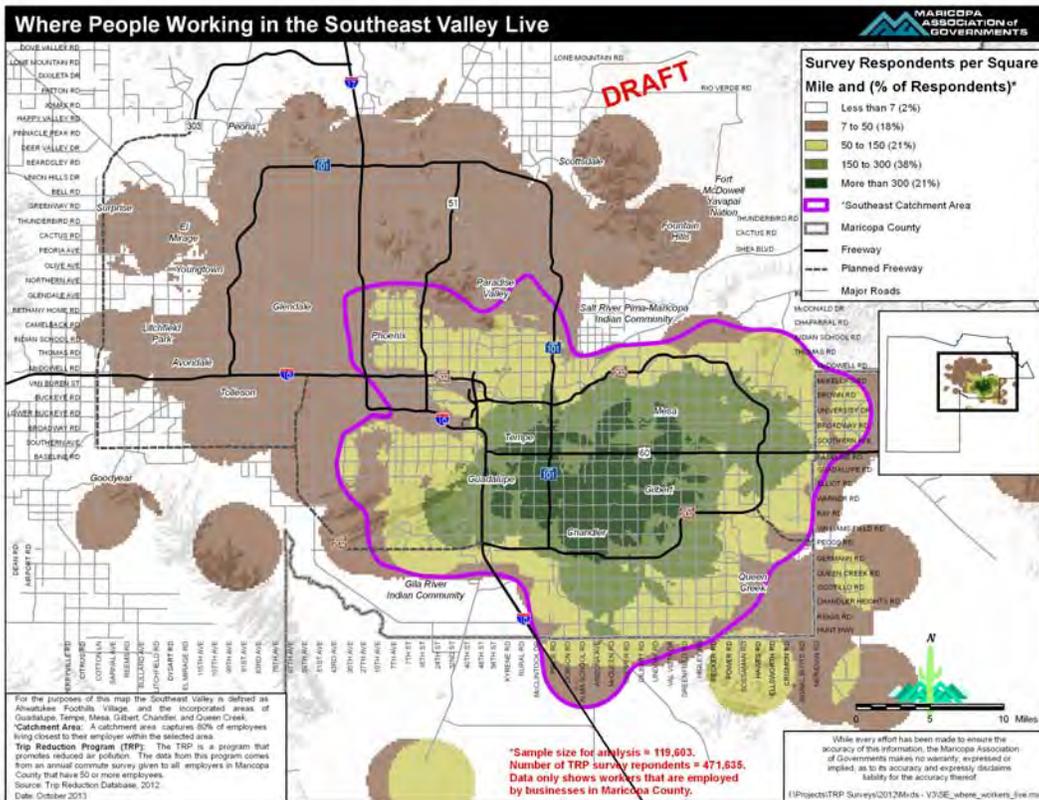
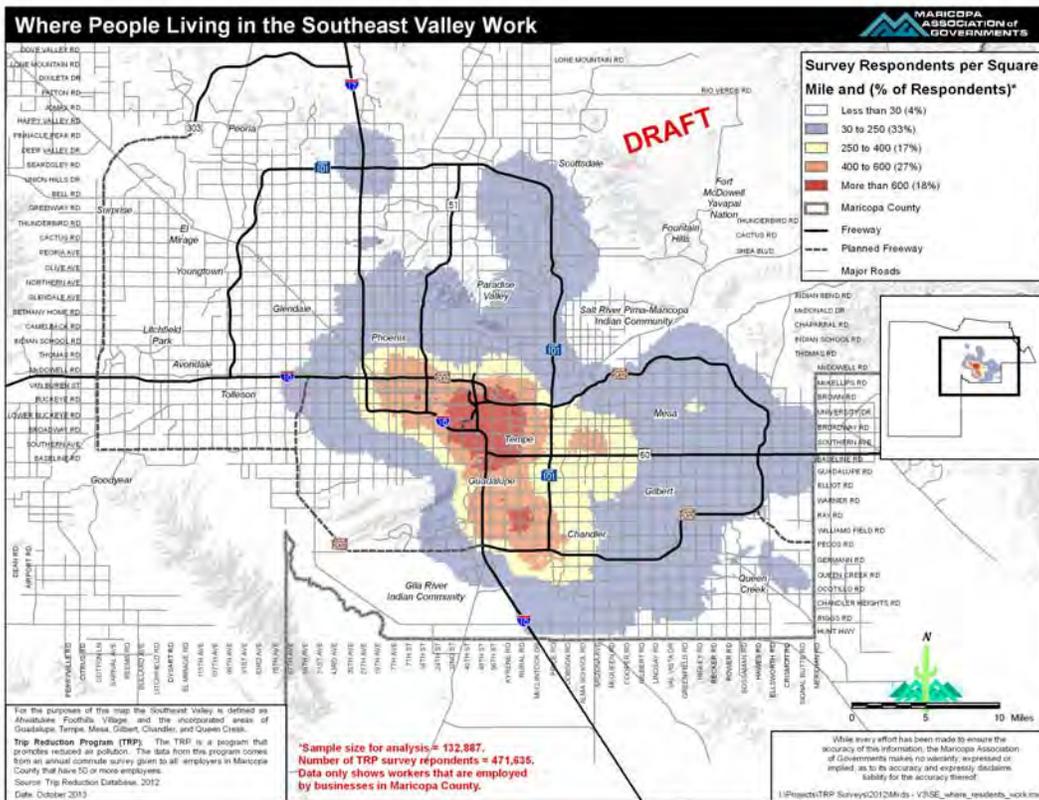
The Study Team will continue to integrate the TRP data into the transit needs assessment in Task 6. It is likely to need some factoring to adjust for varying sample sizes across the geography of Maricopa County. Enclosed are multiple maps prepared by the Maricopa Association of Governments (MAG) showing where people live who work in a certain area, and of where people work who live in a certain area. Two summary maps for work and residence are mapped to the study area defined by this project.

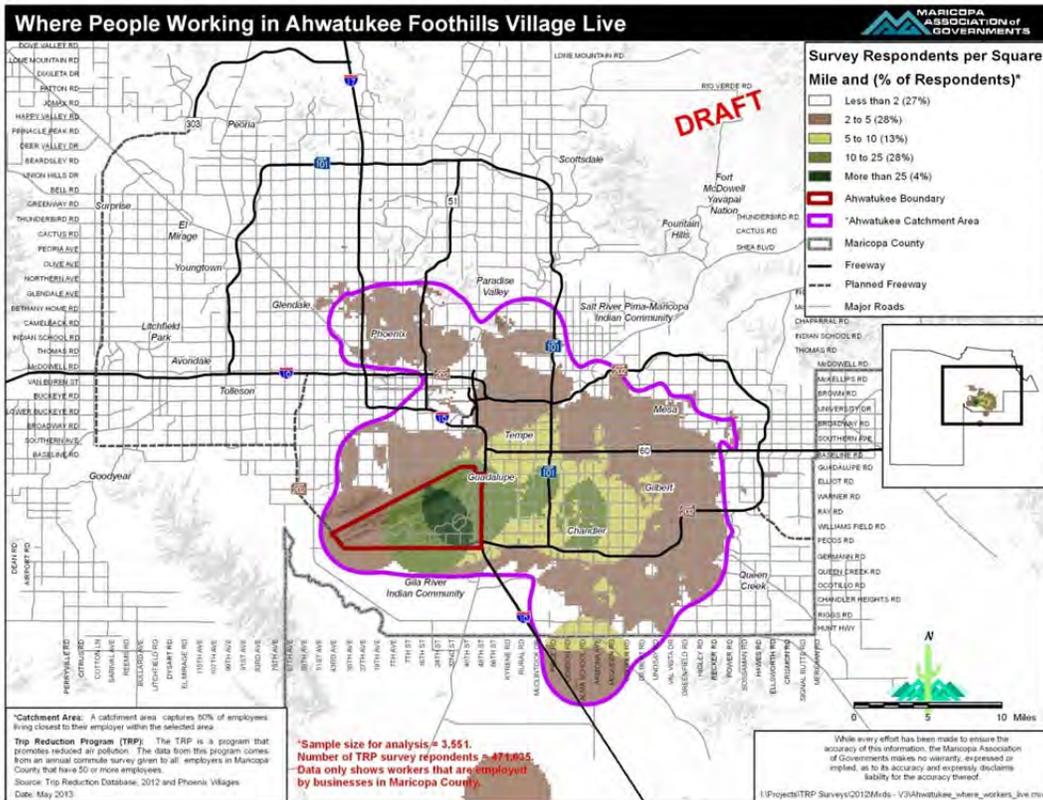
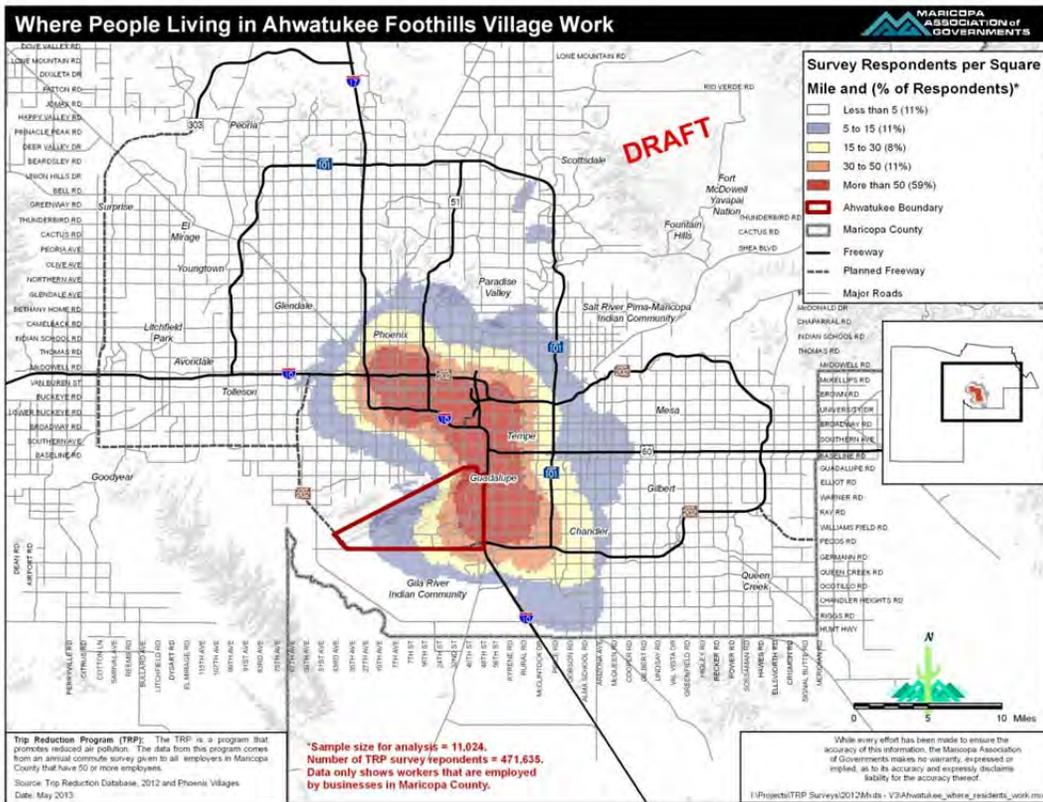
The map of where people working in the Southeast Valley live appears, at first glance, to reasonably represent the similar corresponding map produced from MAG travel model data for 2012, even after accounting for the difference in plot density intervals compared to the travel model data. The map of where people living in the study area work, however, appears to vary somewhat from the corresponding 2012 travel model map. This is probably due to the cutoff of employers with at least 50 workers at the site. The TRP data map is more skewed to the west and northwest parts of the study area than the corresponding map from the travel model data. Those parts of the study area have activity centers where larger employers are likely to be located. Transit services are also more likely to be serving these larger activity/employment centers. Small employers, on the other hand, are probably more evenly distributed across the study area than are the larger employers.

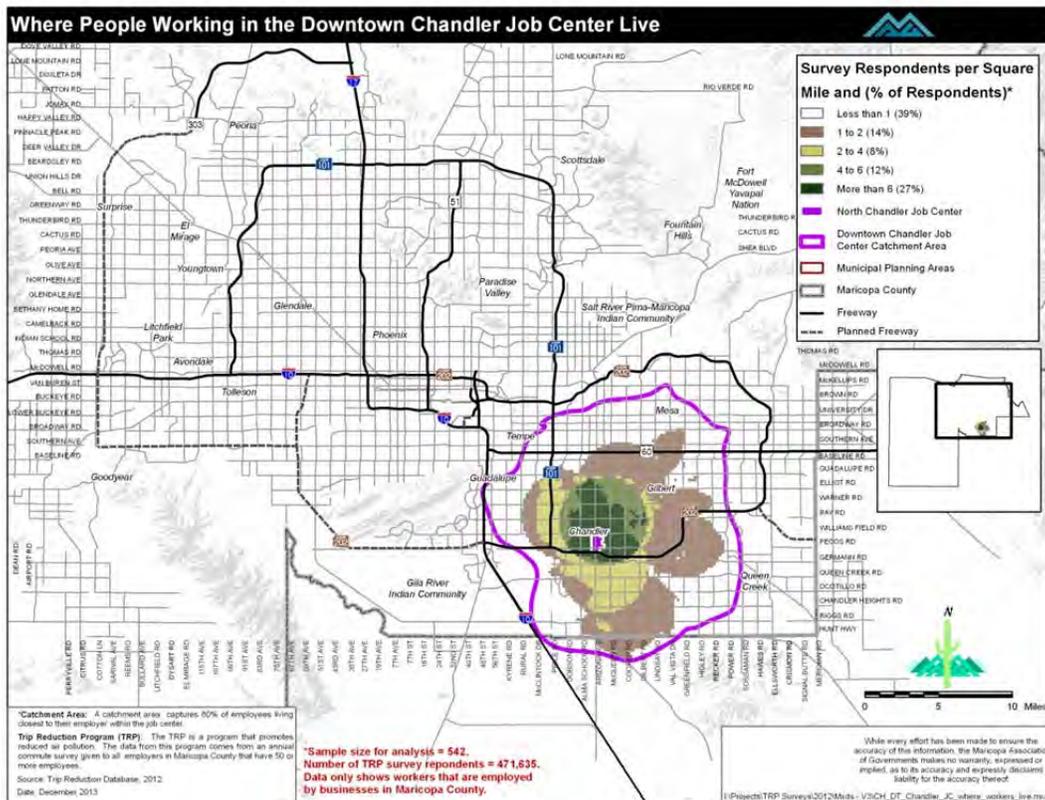
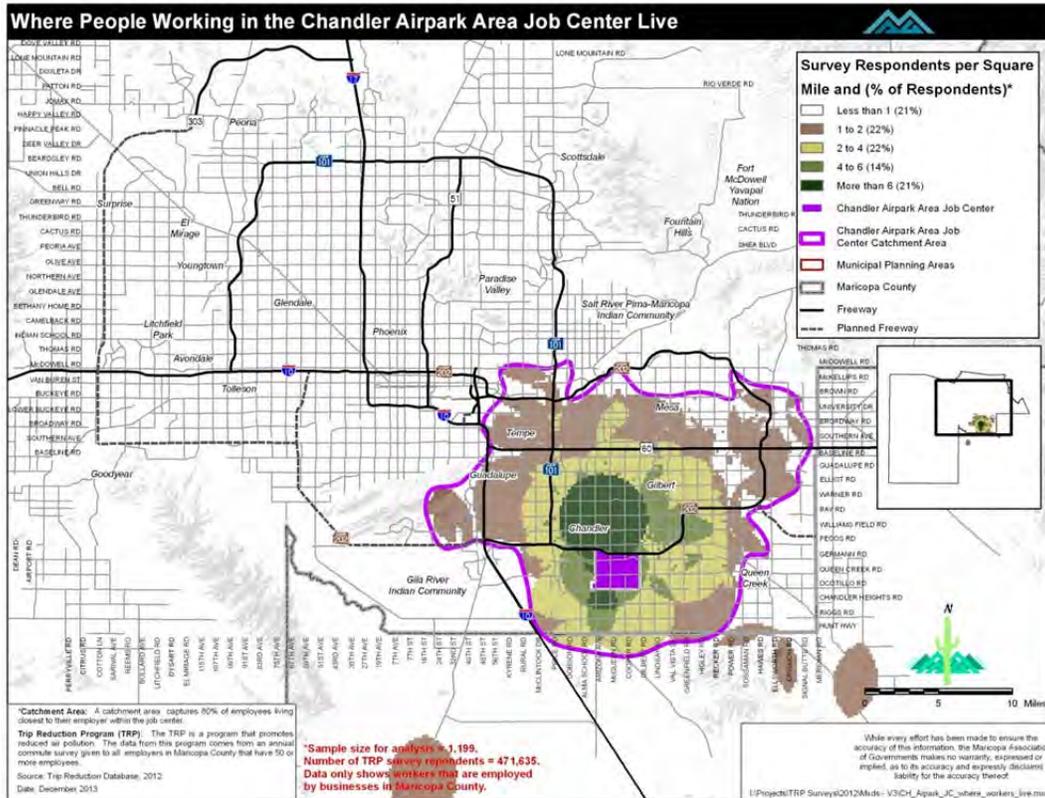
The TRP data will be analyzed in much more detail in the needs assessment and will provide a complement to the data from the travel model and bus farebox data (under review as part of the optimization task). Adjusting the TRP data for the sample size/distribution and cautioning on some of its interpretation due to the employer threshold will also be addressed in the needs assessment. Both the geo-location data and the alternate modes of interest data will be further analyzed.

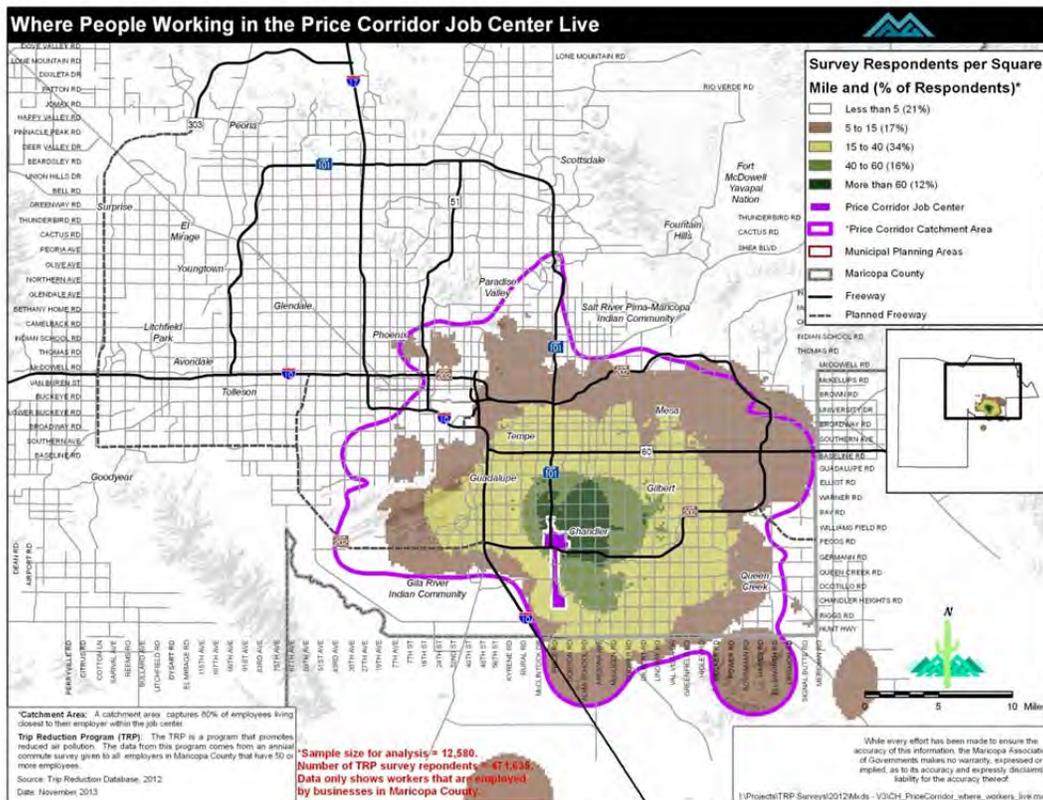
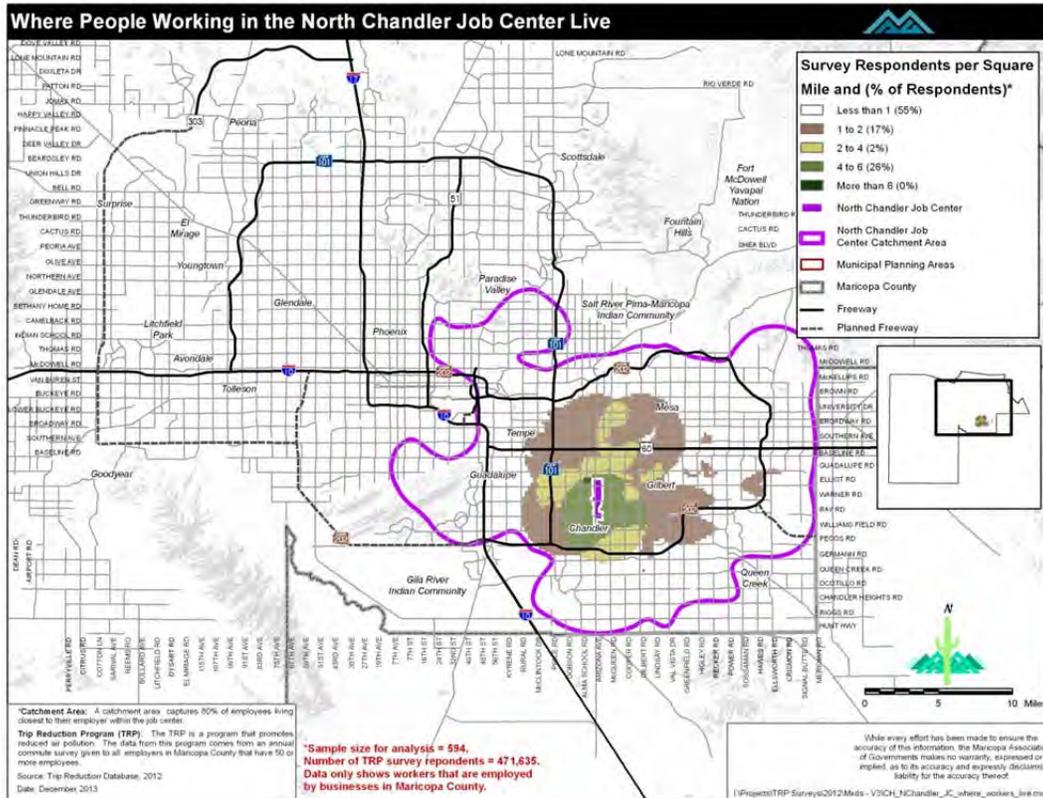


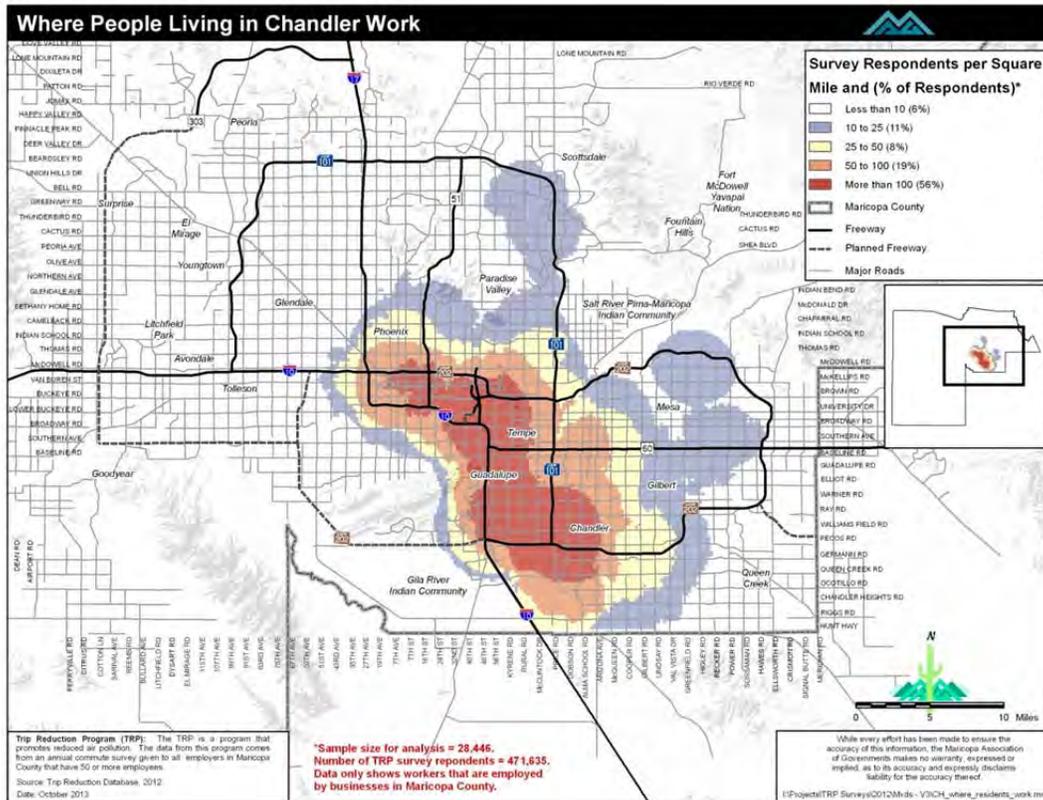
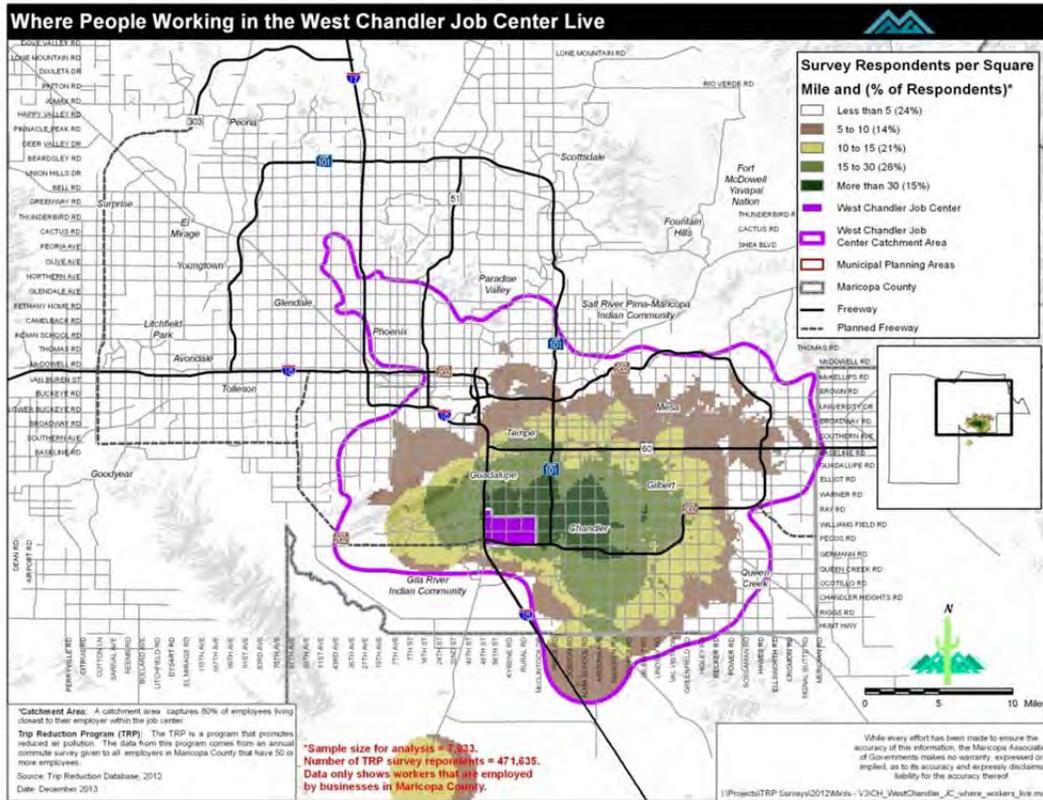
Page left intentionally blank.

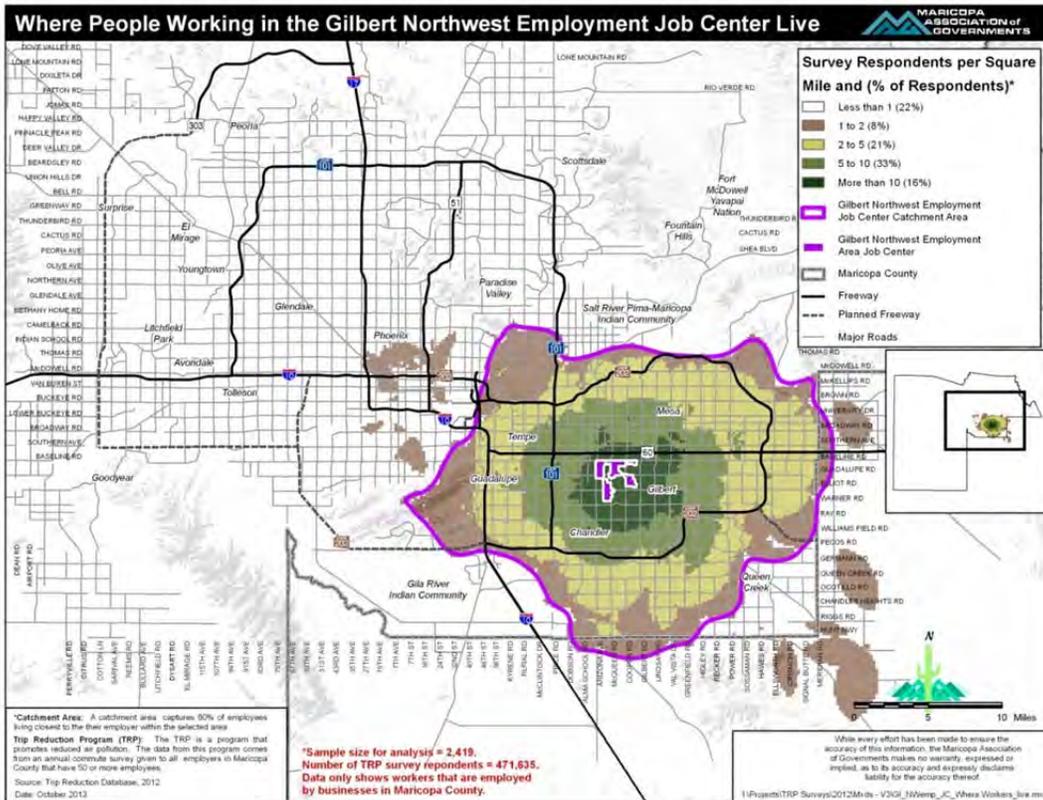
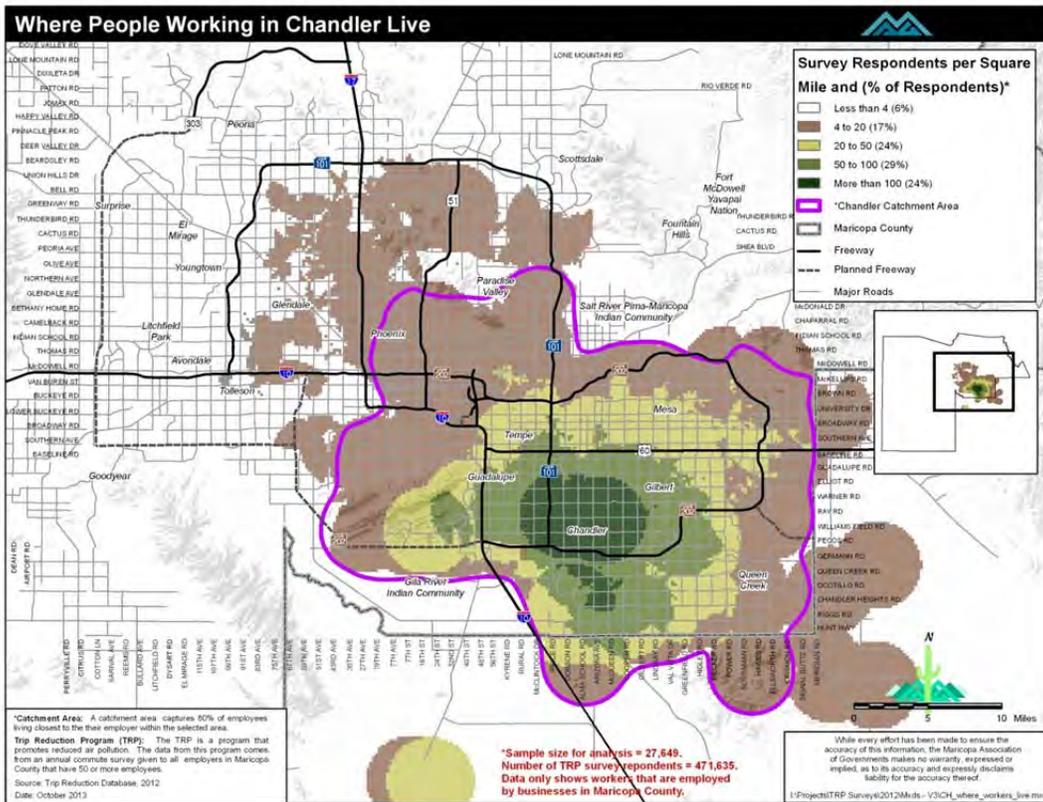


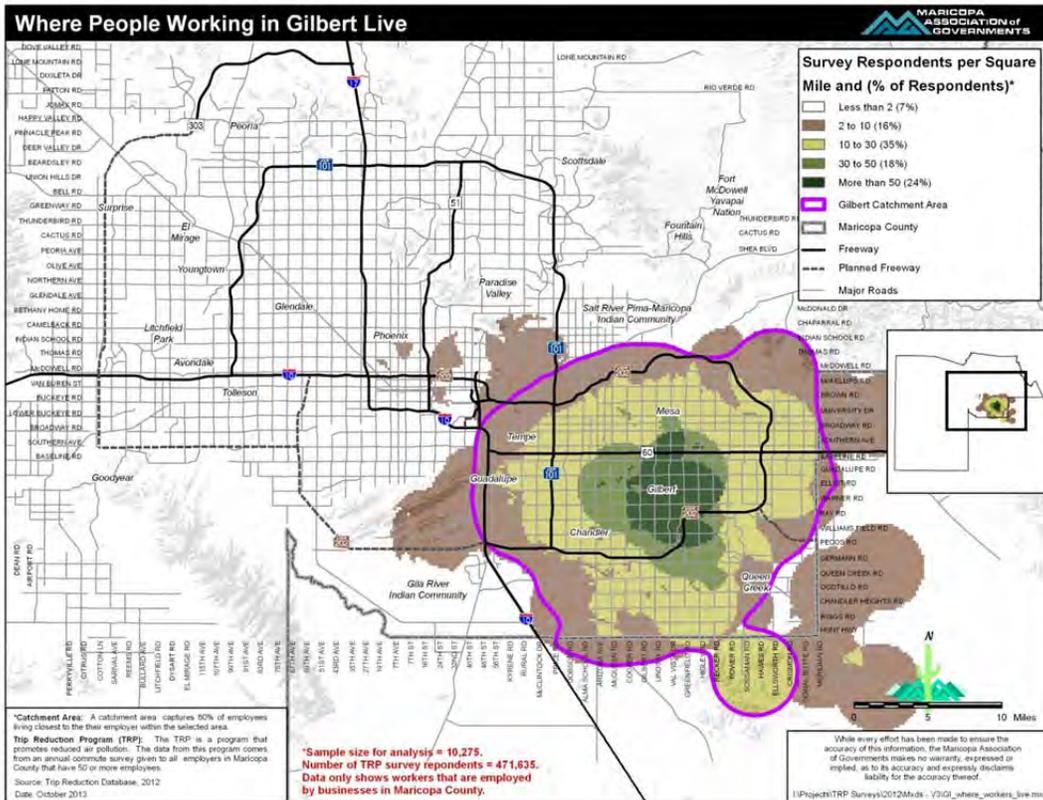
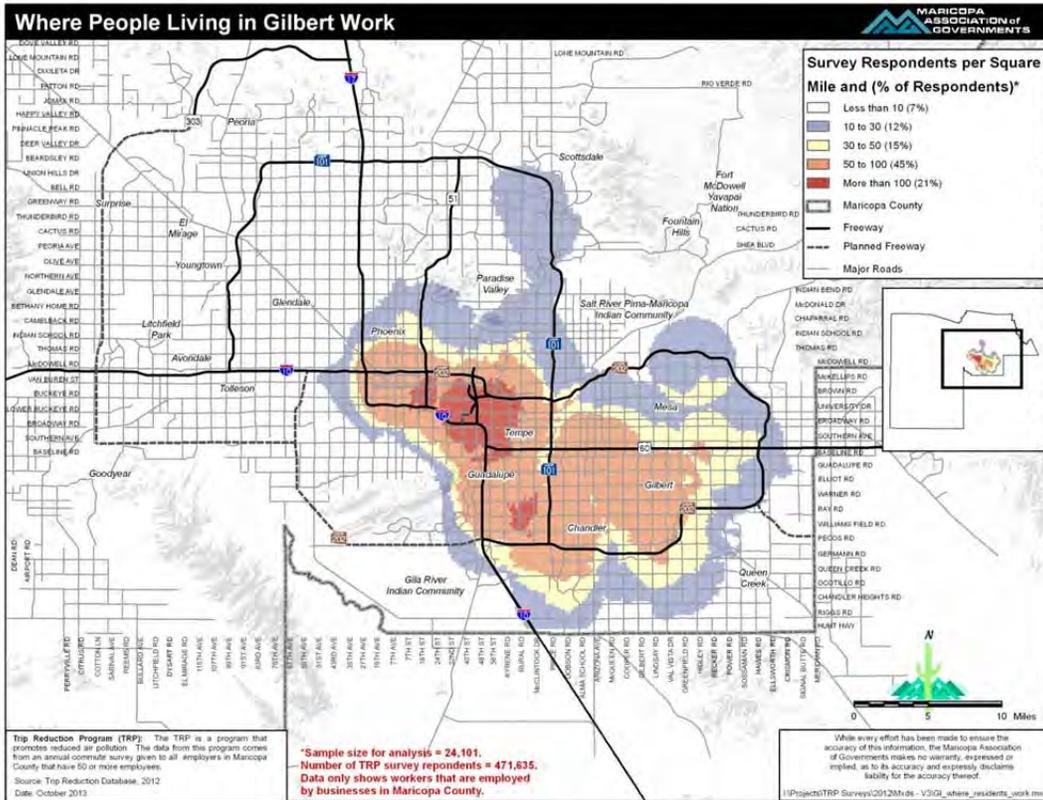


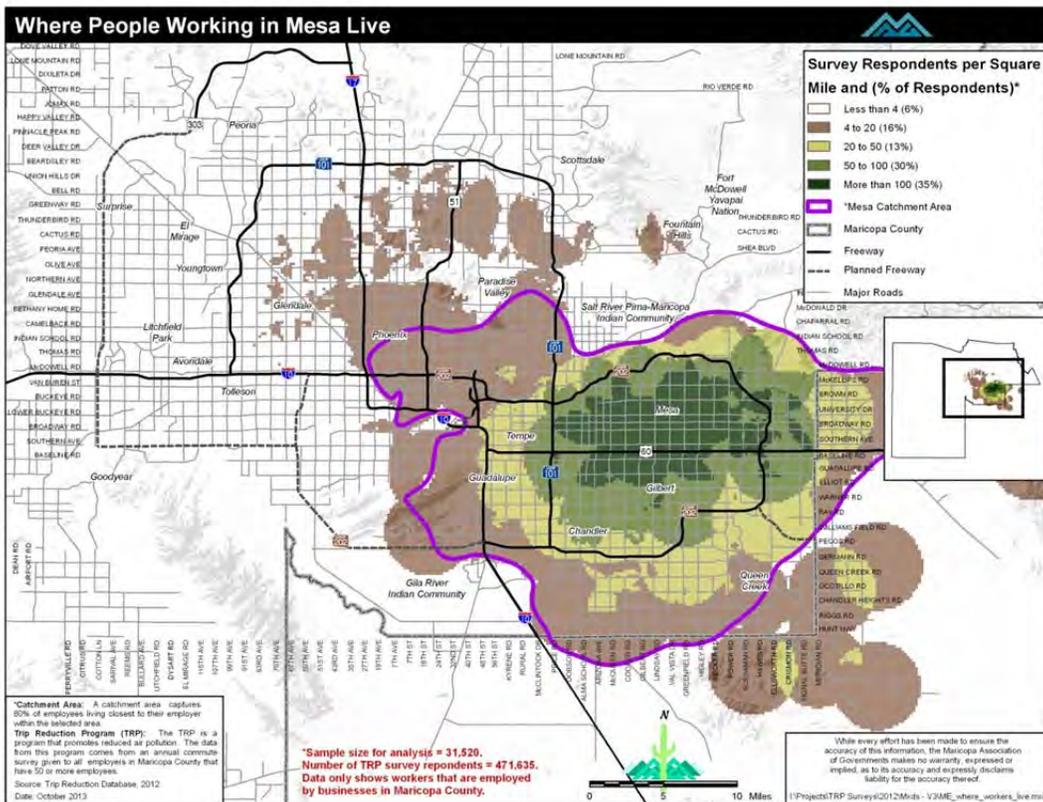
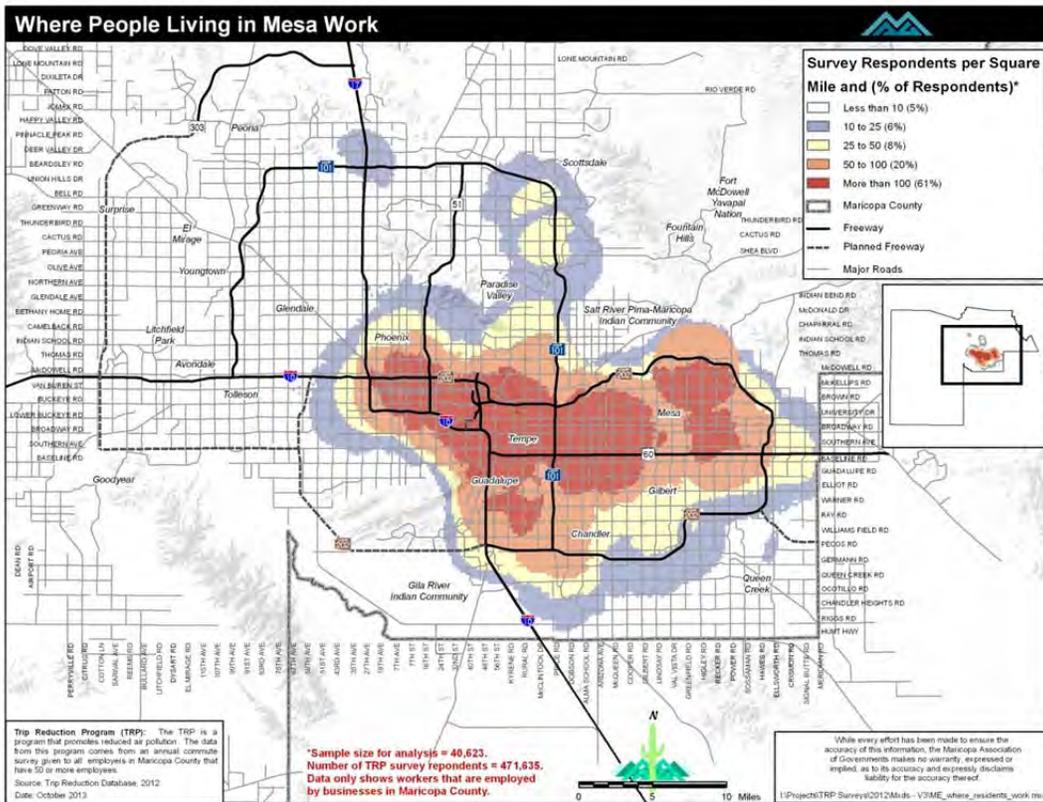


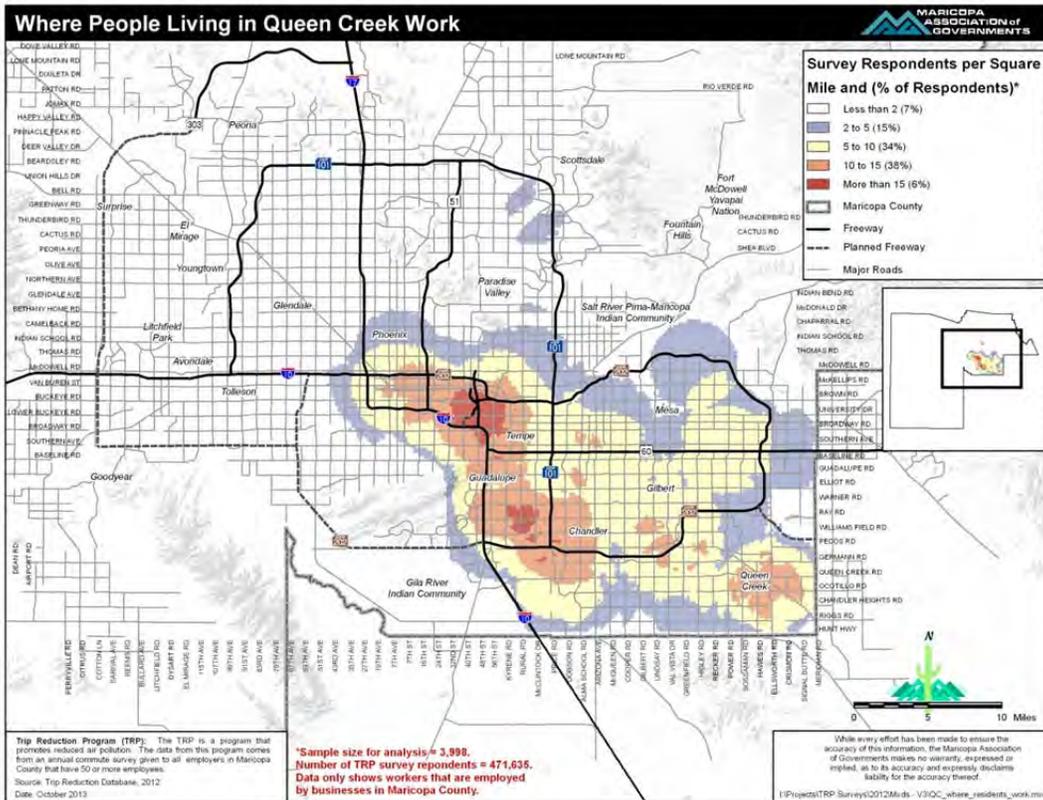
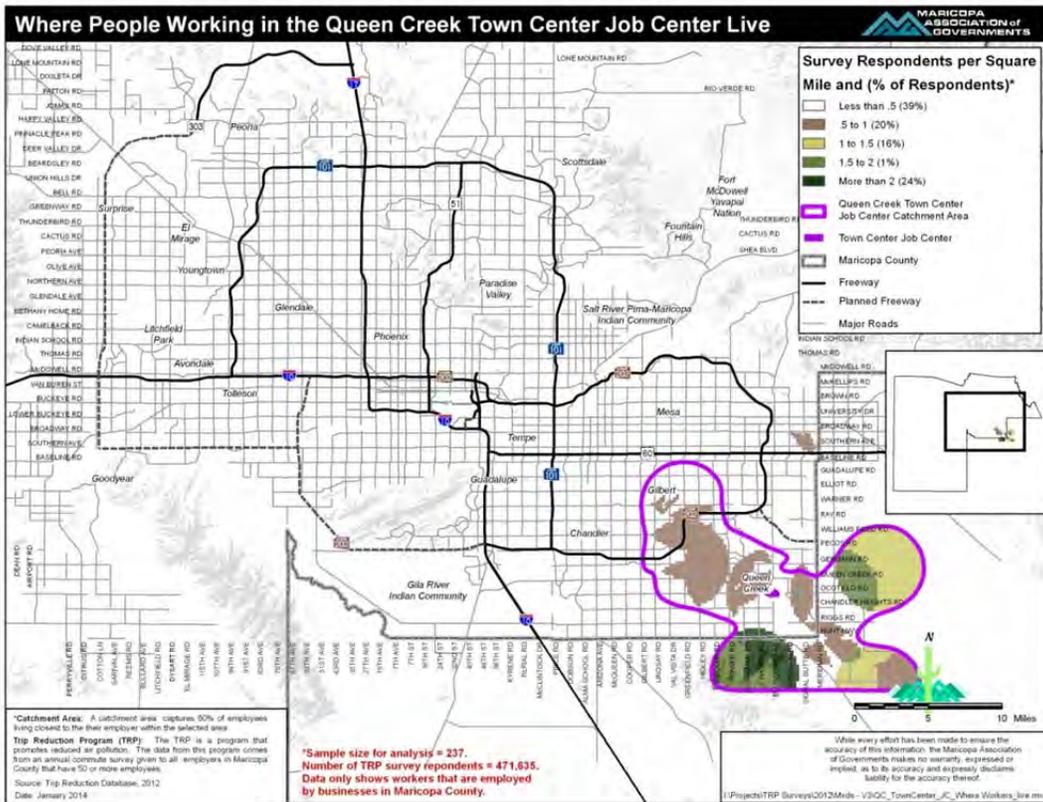


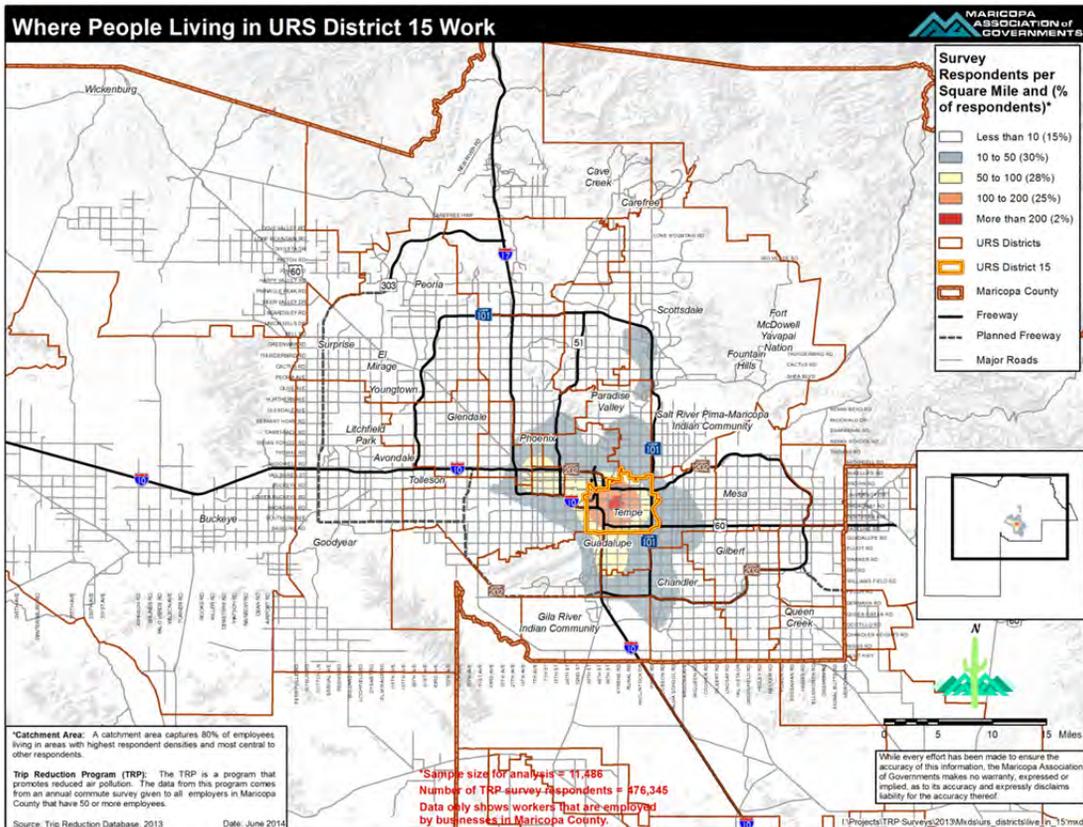
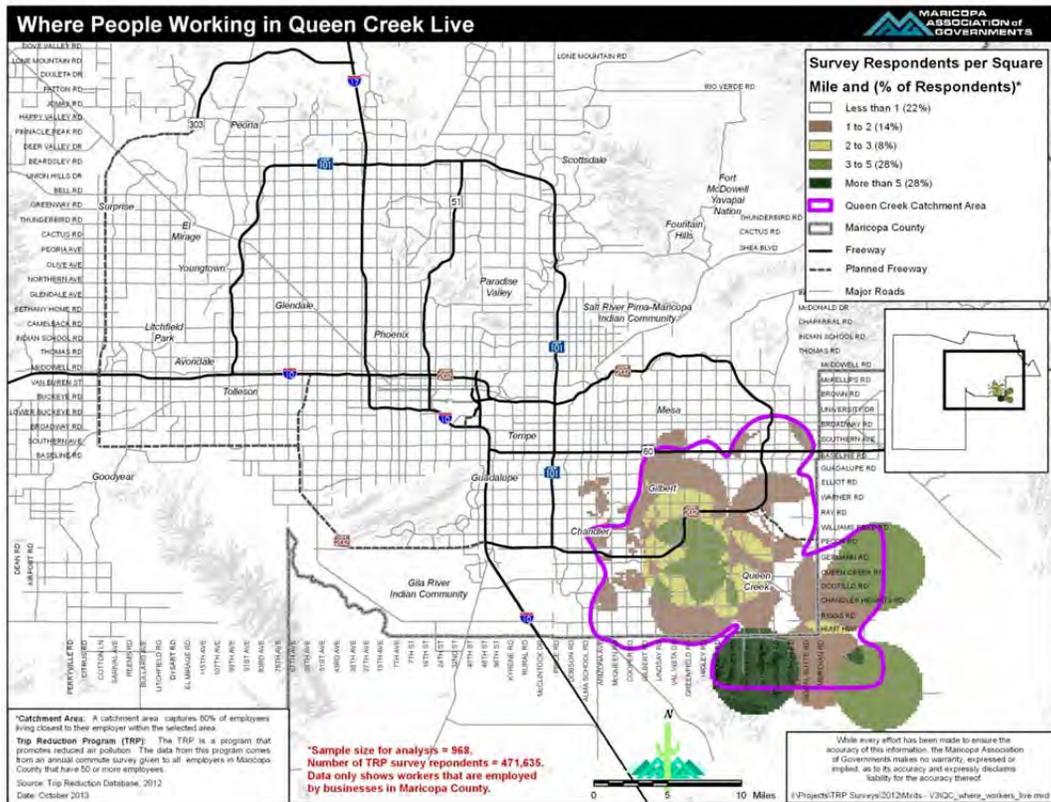


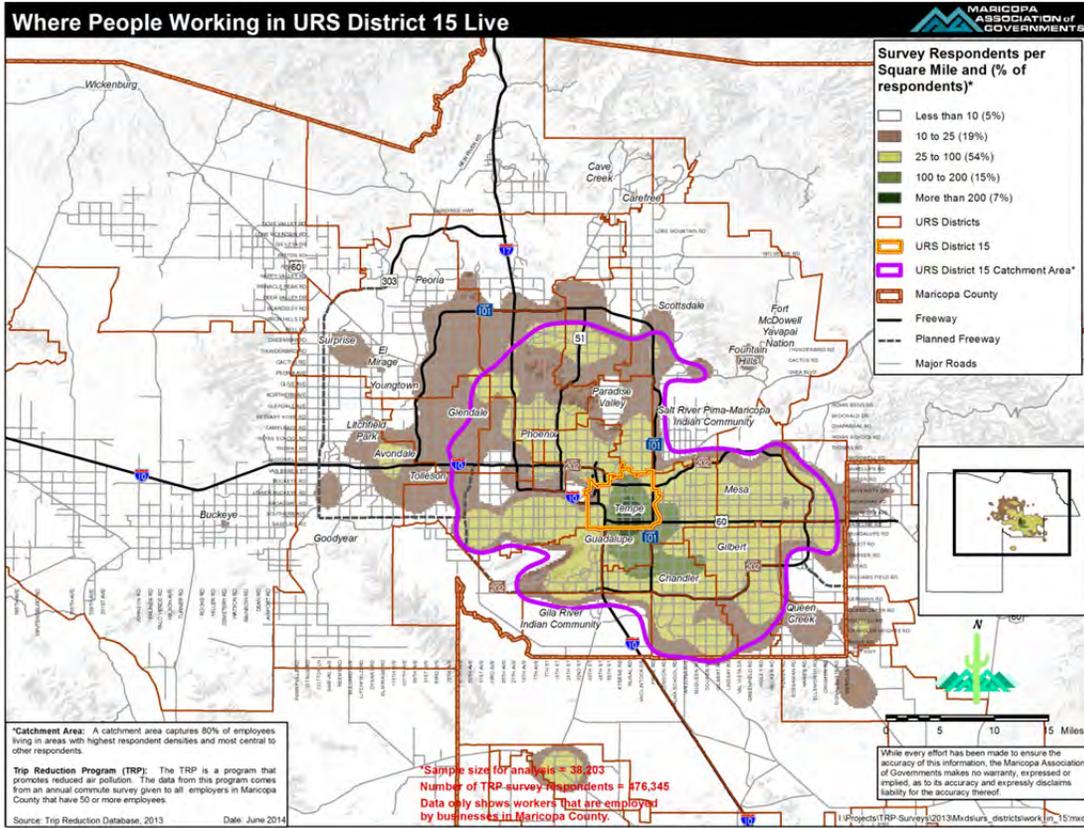














Page left intentionally blank.



APPENDIX B

Pinal County Transit Feasibility Study



Page left intentionally blank.



PINAL COUNTY TRANSIT FEASIBILITY STUDY

In 2011 a study was completed that evaluated the feasibility of implementing transit service in Pinal County. The study considered factors such as existing travel patterns and projected future growth to determine what areas would be prudently feasible to serve with transit in the next 20 years. The strongest existing and projected trip interchange found in the study was between Apache Junction and Maricopa County with the majority of trips terminating in Mesa (shown in Figure B-1 and Figure B-3). As of 2006, approximately 140,000 trips of any purpose and 30,000 work trips were exchanged between Apache Junction and Maricopa County. As can be seen in Figure B-2 and Figure B-4, this is anticipated to increase to 670,000 trips of any purpose and 140,000 work trips by 2025. A strong projected trip interchange from Apache Junction and Mesa was found also by the Southeast Valley Transit System Study. Because of the strong trip interchange between Apache Junction and the study area, one of the major recommendations of the Pinal County study was to eventually extend fixed route or express-style service from Mesa to Apache Junction as seen in Figure B-2 and Figure B-4.

Many of the jurisdictions within Pinal County will soon likely be part of a new metropolitan planning organization (MPO), the Sun Corridor MPO. This is anticipated to result in a re-evaluation of previous regional transportation planning efforts and adoption of a plan update.



Page left intentionally blank.

