



# 2023 Transportation Network Monitoring Report



## October 2023

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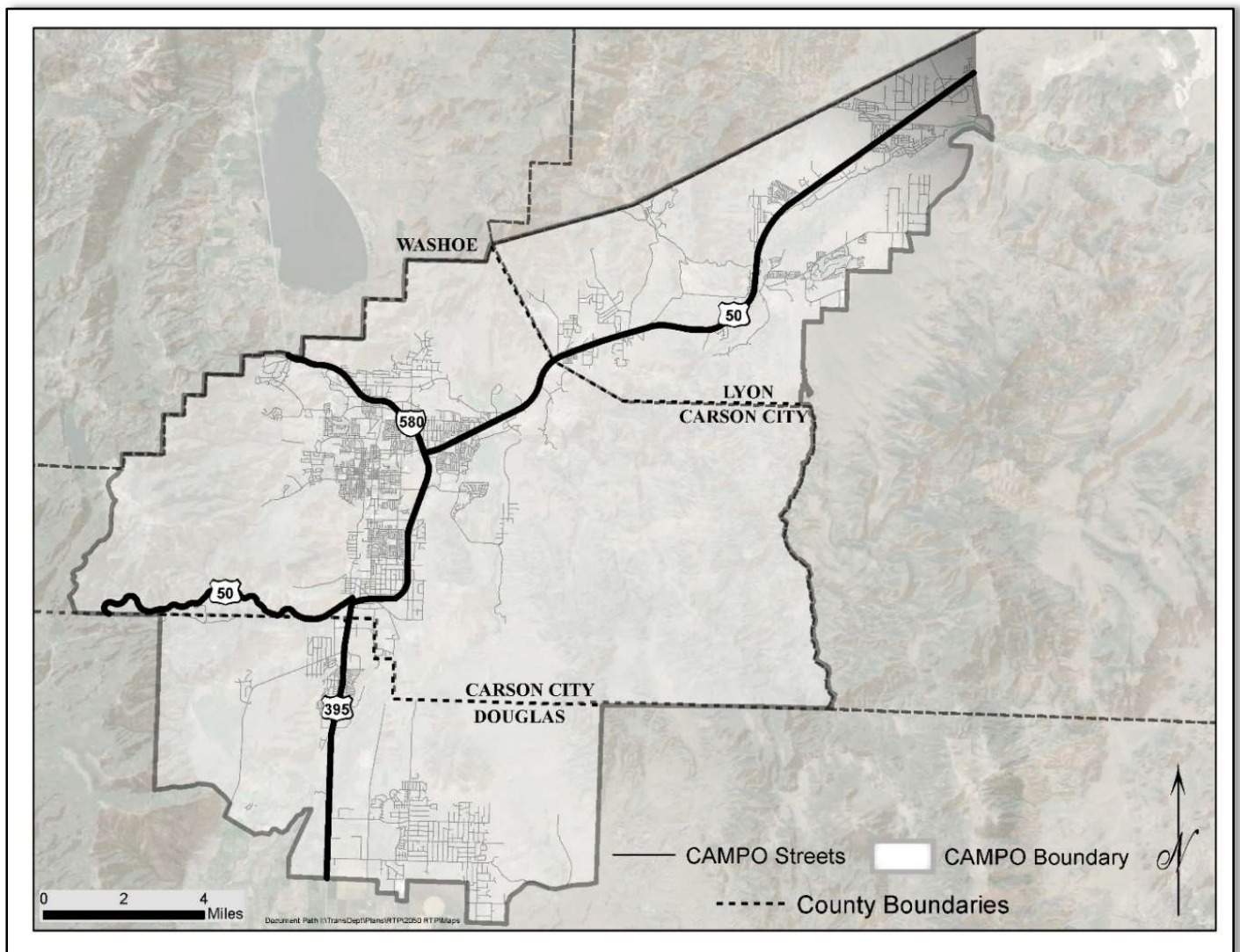
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## Chapter 1 - Introduction

The Carson Area Metropolitan Planning Organization (CAMPO) is a federally recognized metropolitan planning organization (MPO), formed on February 26, 2003. CAMPO is responsible for carrying out the metropolitan transportation planning process for the Carson City Metropolitan Planning Area (MPA). The Carson Area MPA encompasses nearly all of Carson City (except the area within the Lake Tahoe Basin) and portions of northern Douglas County and western Lyon County, including the Dayton Valley and Johnson Lane urbanized areas. The geographic scope of this report is depicted in Figure 1.1. Additional information about CAMPO is available at: [www.CarsonAreaMPO.com](http://www.CarsonAreaMPO.com).

**Figure 1.1: CAMPO Metropolitan Planning Area (MPA) Boundary**





## 1.1 Performance-Based Planning

Performance-based planning and programming apply performance management principles and performance measures to transportation system policy and investment decisions. Performance-based planning and programming is a system-level, data-driven process to identify strategies and investment areas. Performance-based planning helps to define key goals and objectives and to analyze and evaluate strategies for meeting these goals.

In November 2021, the federal Infrastructure Investment and Jobs Act (IIJA) was signed into law. This legislation carries forward and expands the policies, programs, performance measures, and initiatives established by preceding legislation (including ISTEA, TEA-21, SAFETEA-LU, MAP-21 and the FAST Act) by introducing new policies and programs that address new and emerging issues that face the nation's transportation system. This legislation requires MPOs to track and utilize certain performance measures and establish performance targets to inform decision-making for investment into the multi-modal transportation system.

This 2023 Transportation Network Monitoring Report is federally funded through CAMPO's Unified Planning Work Program, and it presents transportation network information derived from transportation data collected within CAMPO. The information is presented to show regional trends and changes that influence the transportation system. This document presents information on **who** uses the transportation system (socio-demographic data), **what** residents travel on (Roadway Condition, Local Roadway Pavement Condition), **where** they travel (trip origins, destinations), and **how** they travel (transit, walking, biking, driving). CAMPO Staff have continued to monitor socioeconomic factors, mobility, and safety needs of the region and strive to increase consistency and coverage of bicycle and pedestrian monitoring to better inform investment decisions. The data collected for this report is processed, organized, and analyzed to present information about the overall performance of the transportation system. This information informs project prioritization and tracks the progress of those projects toward achieving the goals and objectives established in CAMPO's Regional Transportation Plan. <sup>1</sup> The strategies and projects within CAMPO's Regional Transportation Plan support the following five goals:

### CAMPO Regional Transportation Plan Goals

1. Increase the safety of the transportation system for all users
2. Maintain a sustainable regional transportation system
3. Increase the mobility and reliability of the transportation system for all users
4. Maintain and develop a multi-modal transportation system that supports economic vitality
5. Provide an integrated transportation system

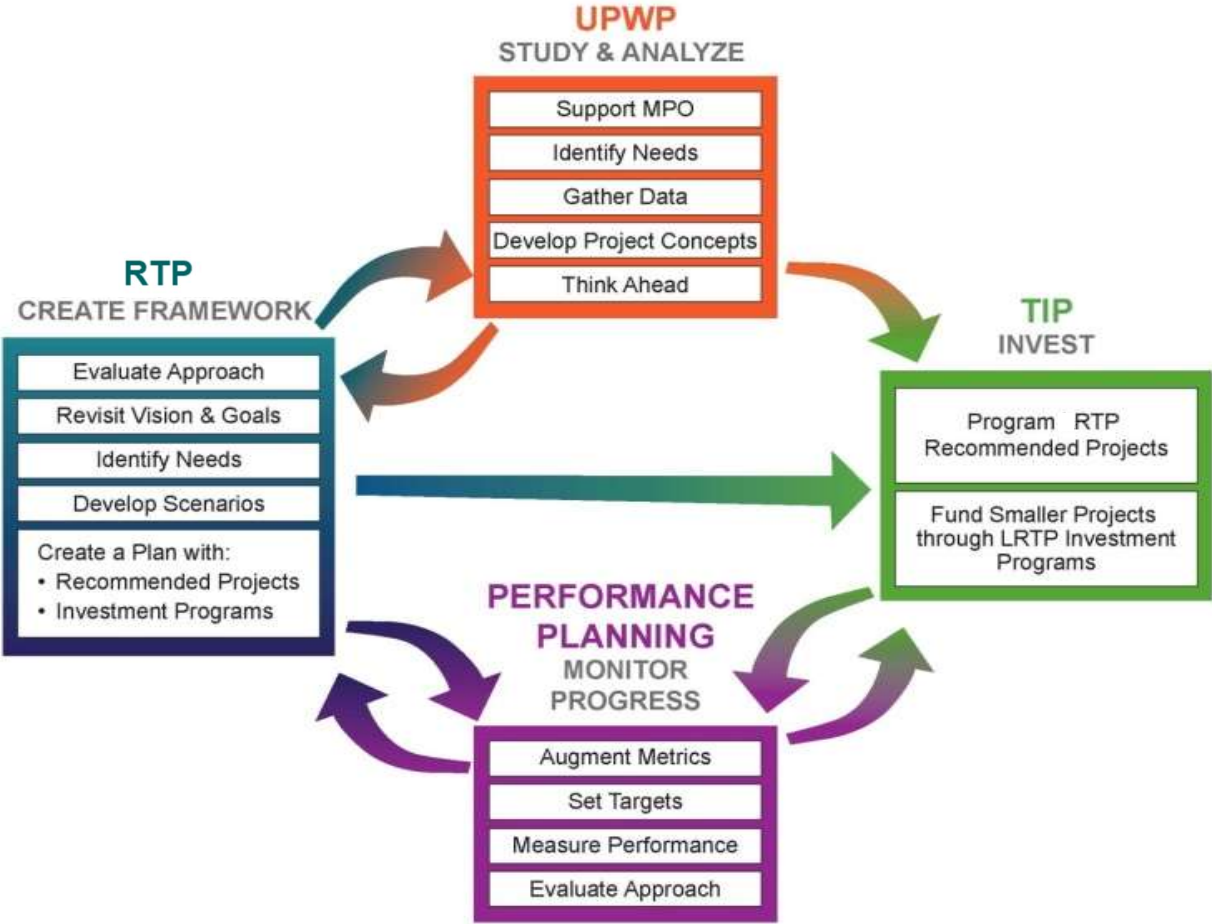
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<sup>1</sup> Carson Area Metropolitan Planning Organization 2050 Regional Transportation Plan - <https://www.carson.org/home/showpublisheddocument/74094/637462257582430000>



Together, the established goals, objectives, and performance measures form the basis of CAMPO’s performance-based planning framework that informs policymaking, assists with investment decisions, and serves as the basis for project prioritization (capital improvements and maintenance) for projects contained within CAMPO’s Transportation Improvement Program (TIP)<sup>2</sup>. The relationship between CAMPO’s planning documents and performance-based planning framework is displayed graphically in Figure 1.2.

**Figure 1.2: CAMPO’s Primary Responsibilities**

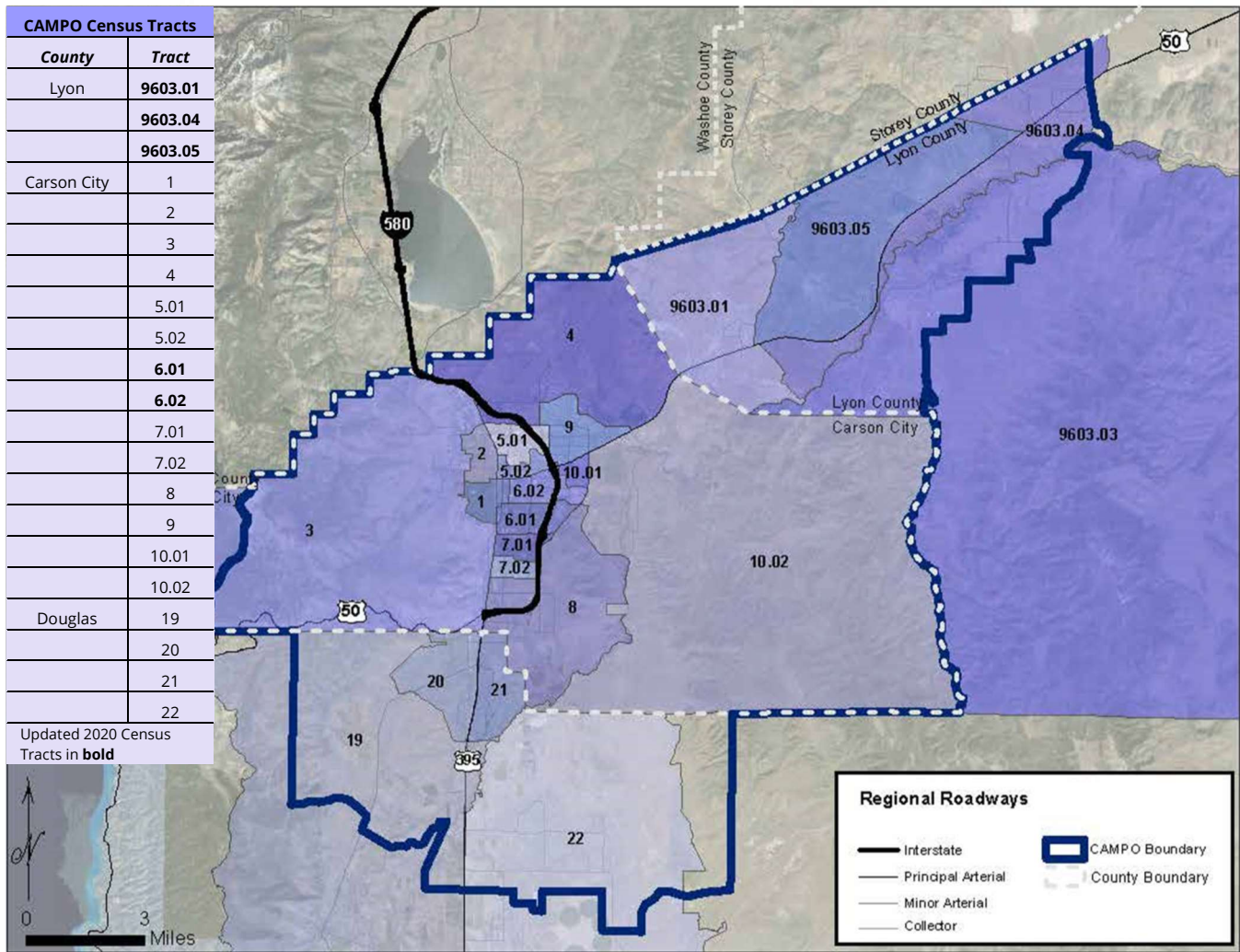


<sup>2</sup> Nevada Transportation Improvement Program - <https://estip.nevadadot.com/>

## Chapter 2 – WHO: Socio-Demographics

Transportation is innately personal – each of us experiences the transportation network through the unique lens of our daily activities. The ‘WHO’ (socio-demographic composition of neighborhoods and regions) influences travel behavior, i.e., the where, when, why, what we travel on, and how each of us travels. By monitoring regional socio-demographic data<sup>3</sup>, CAMPO is better informed and equipped to plan for and manage the region’s use of regional transportation infrastructure for those that rely upon it. Figure 2.1 displays the 21 census tracts within the CAMPO Metropolitan Planning Area. The following socio-demographic data was compiled using all or portions of all 21 tracts. Tracts within the CAMPO region were updated in the 2020 Decennial Census to include Tracts 6.01 and 6.02 in Carson City and all or portions of tracts 9603.01, 9603.03, 9603.04, and 9603.05 in Lyon County. Douglas County tracts within the CAMPO region remain unchanged from previous years.

**Figure 2.1: Census Tracts within the CAMPO Boundary**



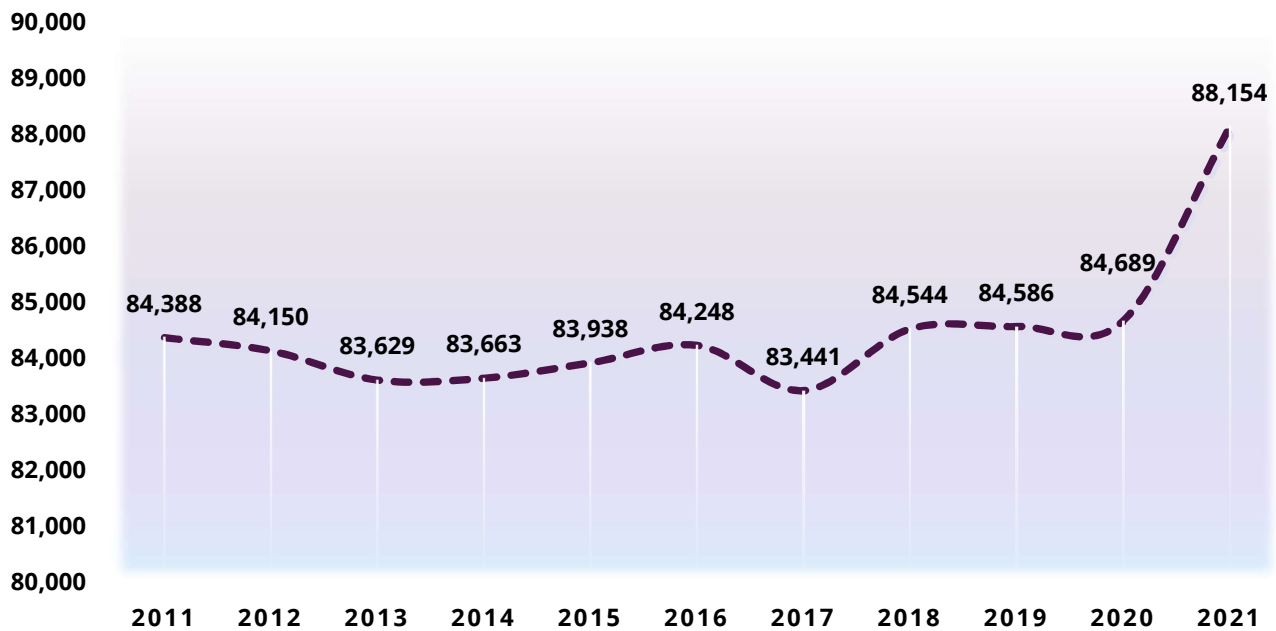
<sup>3</sup> American Community Survey (ACS), US Census Bureau - <https://www.census.gov/programs-surveys/acs>



## 2.1 Population

The CAMPO population has increased 4.25% in the last year as shown in Figure 2.2. From 2020 to 2021, CAMPO Census tracts 4, 7.02, 8, and 10.01 in Carson City, and 9603.05, 9603.04 in Lyon County have the highest increases in population.

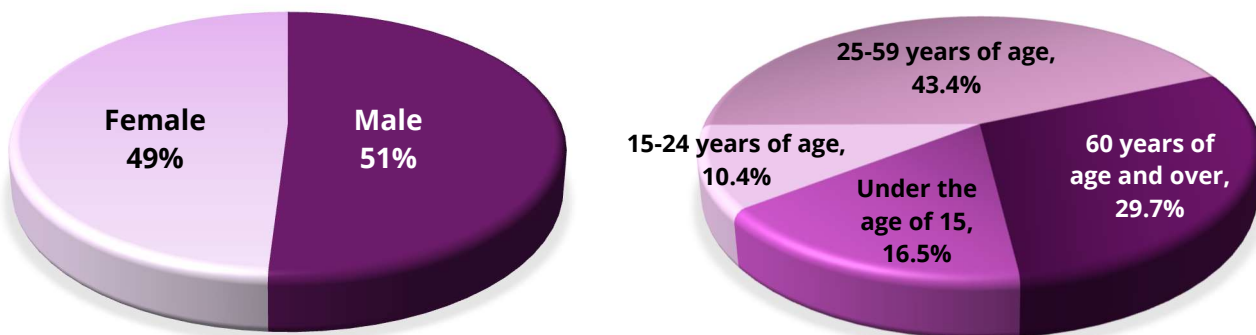
**Figure 2.2: CAMPO Total Population (2011-2021)**



Source: ACS Demographic and Housing Estimates, Table DP05. Annual Estimates from American Community Survey (ACS) 5-year Estimates

Figure 2.3 displays the percentage of the population by gender and age group. The CAMPO region remains consistent with a 49% female and 51% male population. Notably, more than a quarter of the population is 60 years of age or older.

**Figure 2.3: Percentage of Population by Gender and Age Group (2021)**



Source: ACS Demographic and Housing Estimates, Table DP05. Annual Estimates from American Community Survey (ACS) 5-year Estimates.

Figure 2.4 shows the racial/ethnic breakdown in CAMPO in 2021. The percentage the of Hispanic population within the region is at its highest point in the last ten years reaching almost one-quarter percent of the CAMPO population, as shown in Figure 2.5. This percentage share is forecasted to continue growing over the coming decades according to the Nevada Department of Taxation (Table 2.1).

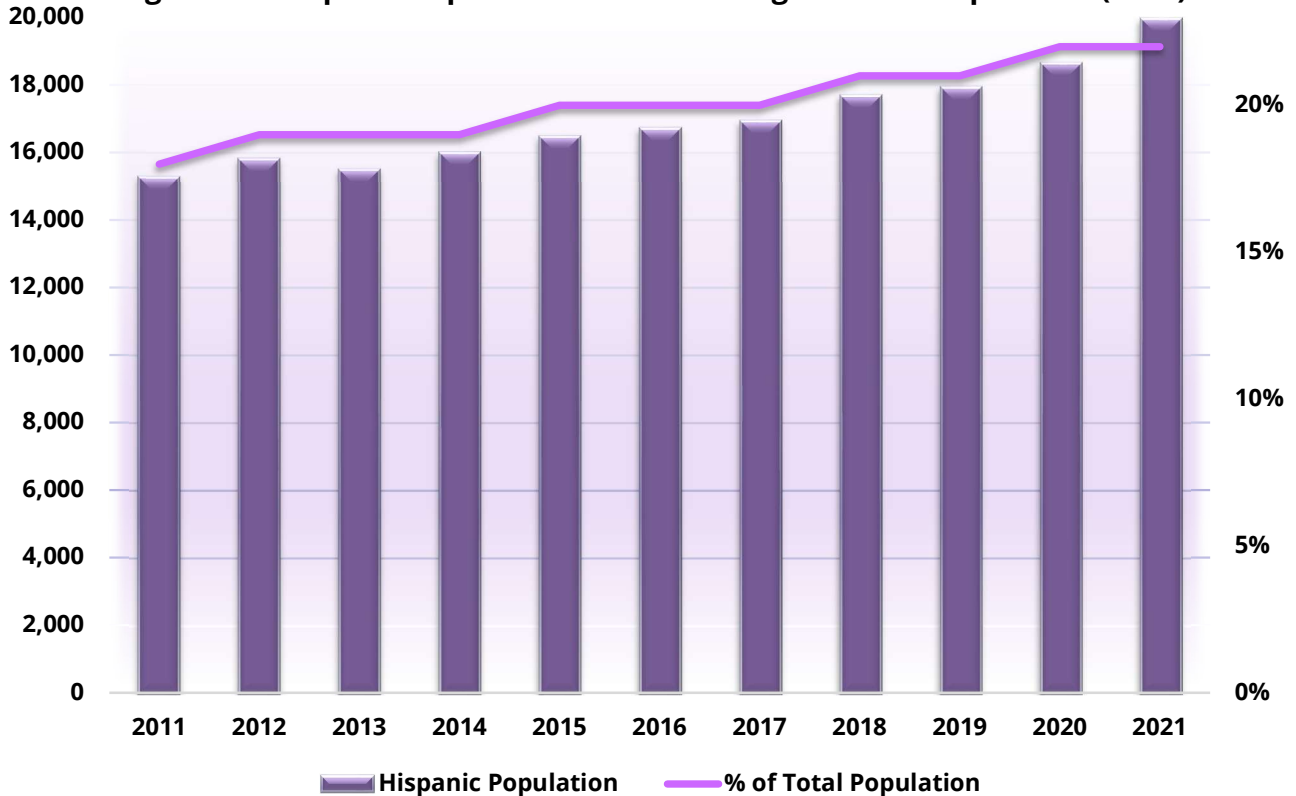
**Figure 2.4: Percentage of Population by Race/Ethnicity (2021)**



Source: ACS Demographic and Housing Estimates, Table DP05. Annual Estimates from American Community Survey (ACS) 5-year Estimates

To facilitate effective, equitable community outreach, it is vital to ensure that engagement strategies include translated materials, partnerships with local Hispanic community groups, and an understanding of how to best collaborate with stakeholders from this community.

**Figure 2.5: Hispanic Population and Percentage of Total Population (2021)**



Source: ACS Demographic and Housing Estimates, Table DP05. Annual Estimates from American Community Survey (ACS) 5-year Estimates.



**Table 2.1: 2022-2041 Nevada State Demographer Population Projections**

Five-Year Cohorts	Carson City			Douglas County			Lyon County		
	Year 2022	Year 2041	Percent Change 2022-2041	Year 2022	Year 2041	Percent Change 2022-2041	Year 2022	Year 2041	Percent Change 2022-2041
Ages 0-4	2,600	3,451	33%	1,741	1,843	6%	3,231	3,727	15%
Ages 5-9	2,433	4,086	68%	2,305	2,391	4%	3,515	4,096	17%
Ages 10-14	2,612	3,955	51%	2,813	2,735	-3%	3,430	4,022	17%
Ages 15-19	4,658	3,742	-20%	2,089	2,462	18%	3,725	3,963	6%
Ages 20-24	2,768	2,528	-9%	1,807	1,616	-11%	3,205	3,647	14%
Ages 25-29	2,769	2,557	-8%	1,696	2,020	19%	3,785	3,765	-1%
Ages 30-34	4,419	5,032	14%	3,086	2,399	-22%	4,995	3,856	-23%
Ages 35-39	3,751	4,168	11%	2,780	2,837	2%	2,185	4,284	96%
Ages 40-44	2,358	2,954	25%	2,452	3,348	37%	3,245	4,350	34%
Ages 45-49	3,614	2,679	-26%	2,640	3,611	37%	3,529	4,895	39%
Ages 50-54	4,339	3,899	-10%	2,898	4,025	39%	3,970	5,046	27%
Ages 55-59	4,917	2,781	-43%	3,697	3,298	-11%	3,853	2,947	-24%
Ages 60-64	2,868	2,826	-1%	4,233	3,811	-10%	3,893	4,102	5%
Ages 65-69	4,988	3,622	-27%	4,589	4,119	-10%	4,068	3,911	-4%
Ages 70-74	3,230	5,384	67%	3,865	3,955	2%	3,211	3,881	21%
Ages 75-79	2,220	2,966	34%	2,773	3,577	29%	2,362	2,834	20%
Ages 80-84	1,178	1,953	66%	1,873	2,661	42%	1,638	2,150	31%
Ages 85 over	1,724	3,093	79%	1,740	2,839	63%	1,194	2,200	84%
<b>Total</b>	<b>57,446</b>	<b>61,674</b>	<b>7%</b>	<b>50,076</b>	<b>53,549</b>	<b>7%</b>	<b>59,035</b>	<b>67,678</b>	<b>15%</b>
<b>Sex</b>									
Female	29,511	32,292	9%	25,585	28,192	10%	29,560	34,203	16%
Male	27,935	29,382	5%	24,491	25,358	4%	29,476	33,475	14%
<b>Race &amp; Ethnicity</b>									
Race and Ethnicity White Not of Hispanic Origin	40,112	29,889	-25%	39,502	37,877	-4%	45,695	49,232	8%
Black Not of Hispanic Origin	800	825	3%	357	737	106%	668	970	45%
American Indian, Eskimo, or Aleut Not of Hispanic Origin	1,403	1,335	-5%	1,329	1,942	46%	1,700	1,909	12%
Asian or Pacific Islander Not of Hispanic Origin	1,159	1,089	-6%	1,608	2,311	44%	1,182	1,861	57%
Hispanic Origin of Any Race	13,972	28,537	104%	7,280	10,683	47%	9,791	13,706	40%

\*Highlighted areas note age cohorts with growth rates at or above 14%

\*\* Source: Nevada Department of Taxation:

[https://tax.nv.gov/uploadedFiles/taxnvgov/Content/TaxLibrary/2022\\_ASRHO\\_Estimates\\_and\\_Projections.pdf](https://tax.nv.gov/uploadedFiles/taxnvgov/Content/TaxLibrary/2022_ASRHO_Estimates_and_Projections.pdf)

Over the next 30 years, demand for the transportation system will grow and evolve because of increased population. In total, between the years 2020 and 2050, CAMPO's population is anticipated to grow by approximately 24%, to approximately 105,000 people. Population estimates for 2022 through 2041 (Table 2.1) from the Nevada Department of Taxation anticipate a growing senior population that will necessitate investment in safety enhancements to address seniors with changing needs, related to diminishing eyesight, hearing, and slower reaction times and decision-making. Investment in public transportation, pedestrian, and bicycle facilities will be important for providing an aging population with mobility options and independence, along with improved integration and mobility for all system users.

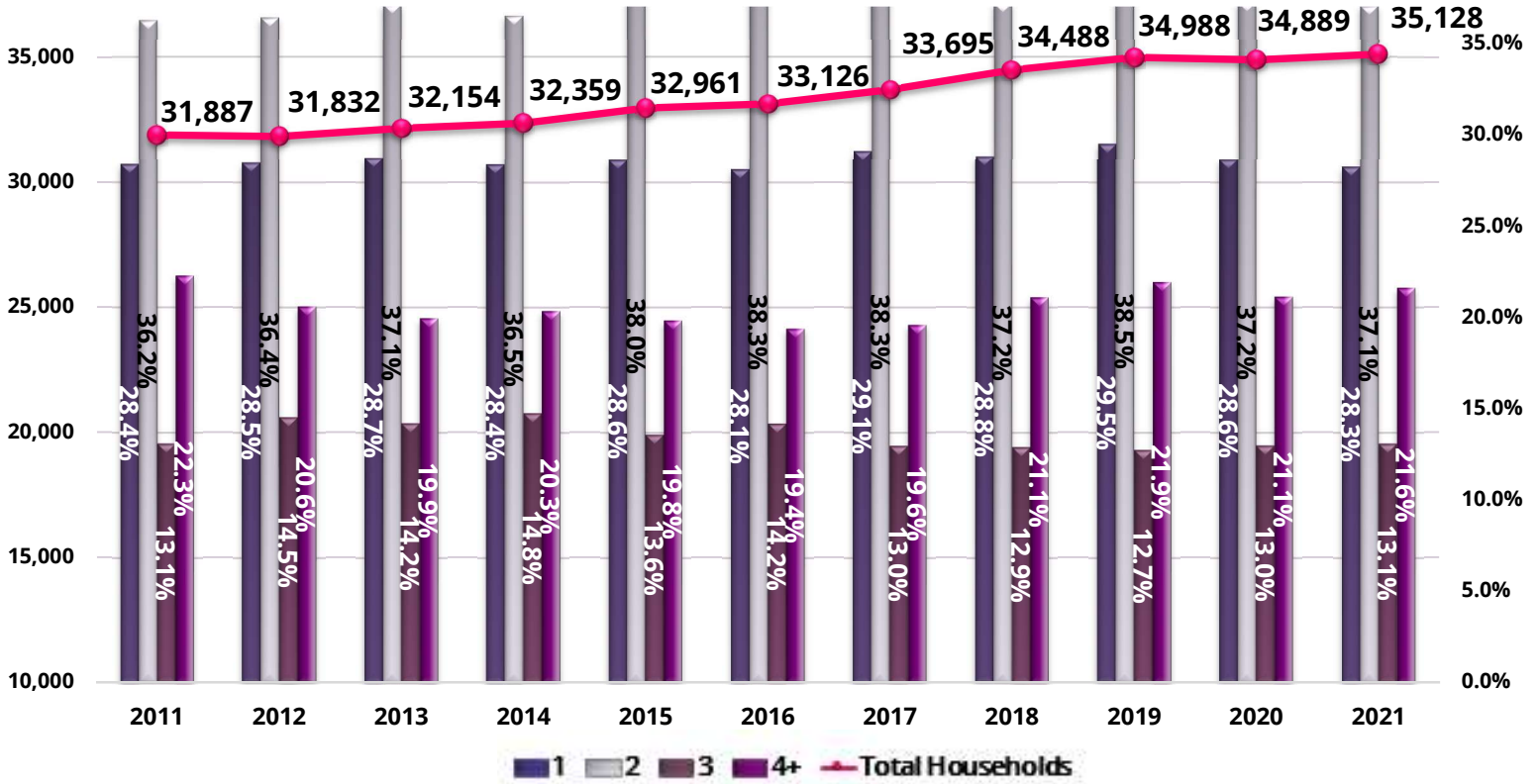


## 2.2 Households

A community's distribution of household size has implications on the number and types of daily trips. Larger households tend to be comprised of families with children, which may generate travel for school and after-school activities, while smaller households may generate fewer trips overall, but may have more flexibility in their schedules to generate longer, inter-regional or interstate trips. Figure 2.6 displays the distribution of household size from 2011 to 2021.

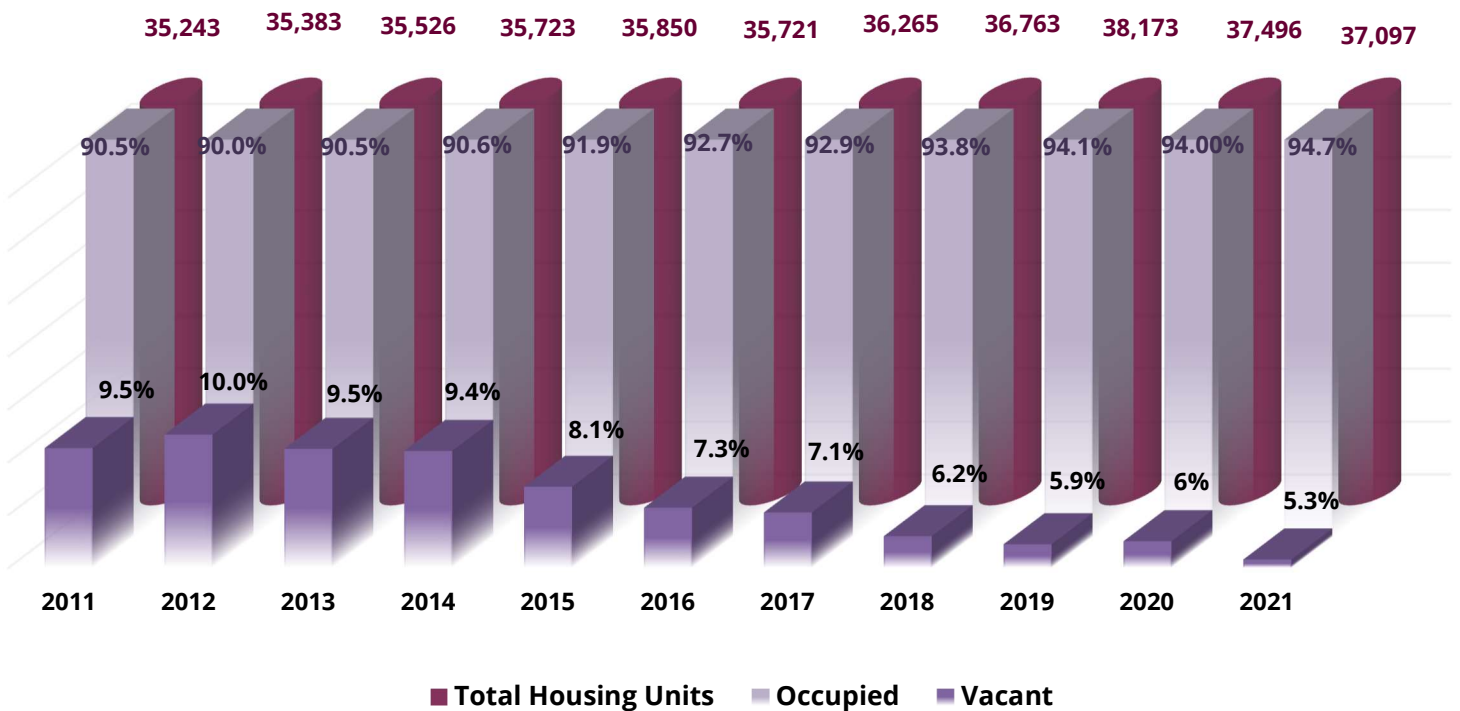
- A household includes all people occupying a housing unit.
- The household size equals the number of persons per household and is expressed as a percentage.
- Over the ten-year reporting period, total households in the CAMPO Area are increasing and the distribution of people within a household has remained consistent.

Figure 2.6: Total/ Percent Household Size (2011-2021)



Source: ACS Household Size by Vehicles Available, Table B08201. Annual Estimates from American Community Survey (ACS) 5-year Estimates.

Figure 2.7: Housing Unit/ Percent Occupancy Status (2011-2021)

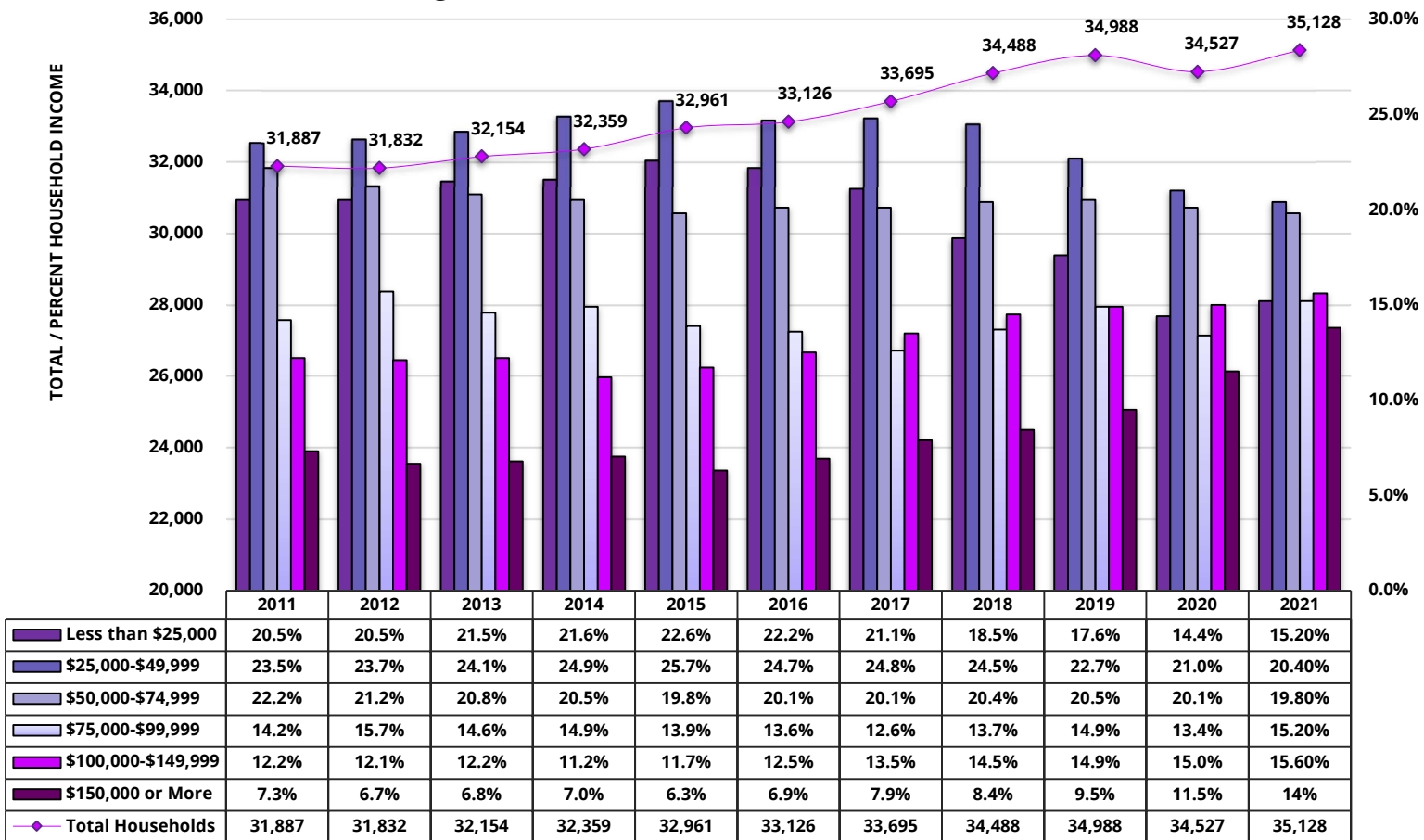


Source: ACS Occupancy Status, Table B25002. All Annual Estimates Represent American Community Survey (ACS) 5-year Estimates

A housing unit is a house, apartment, mobile home, group of rooms, or an occupied single room, separated from other living quarters. Housing unit occupancy is an indicator of population growth and economic activity, which results in additional demand on the transportation system. Long-term increases in housing unit occupancy can result in local zoning ordinance policy changes to encourage higher densities, which over time, can lead to more pedestrian, bicycle, and transit trips in place of traditional automobile trips. Housing occupancy rates are also correlated with housing affordability, with higher occupancy rates being tied to the more expensive housing stock. Figure 2.7 displays the vacancy/occupancy status of housing units between 2011 to 2021. The occupancy rate has increased reaching its highest point of 94.7% in 2021. The occupancy rate has increased by 4.2% since 2011. The vacancy rate has decreased by 4.2% since 2011.

Figure 2.8 displays reported household income from 2011 to 2021. The number of households has increased by 9% from 2011 to 2021. The percentage of total households earning less than \$25,000 has decreased by five percentage points over the decade, while the percentage of total households earning \$150,000 or more has almost doubled since 2011. These changes in percentage mark a historic low and high, respectively.

**Figure 2.8: Household Income (2011-2021)**



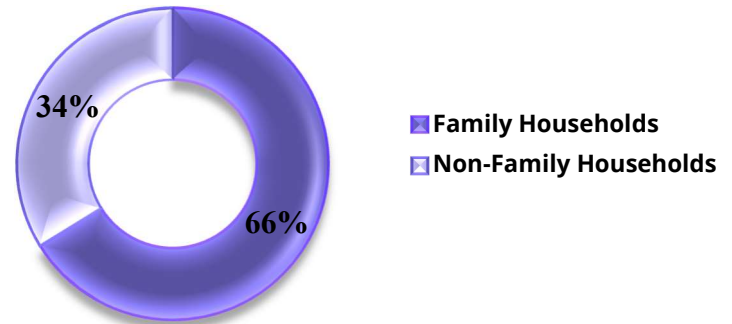
Source: ACS Selected Economic Characteristics, Table DP03. Annual Estimates from American Community Survey (ACS) 5-year Estimates.



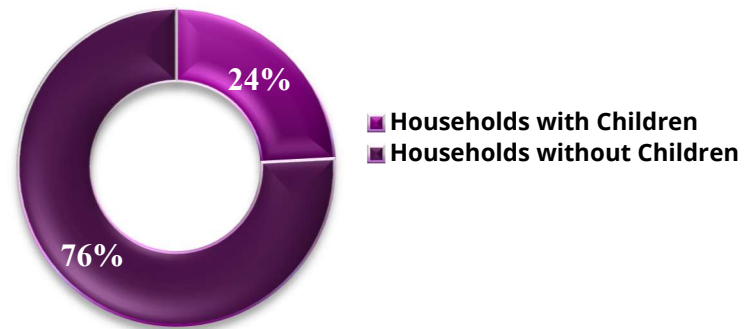
There are two major categories of households, “family” and “nonfamily”. A family household is any two or more people residing together and related by birth, adoption, or marriage. A nonfamily household defines a householder living alone, or with an unrelated person, or persons. Within CAMPO, the average household has two people, with 66% identifying as family households. Less than a quarter of CAMPO households live with children, as shown in Figure 2.9.

**Figure 2.9 CAMPO Household Types (2021)**

Total Households	<b>35,128</b>
Average People Per Household	<b>2</b>
Family Households	<b>23,264</b>
Non-Family Households	<b>11,864</b>



Households with Children	<b>8,490</b>
Households without Children	<b>26,638</b>



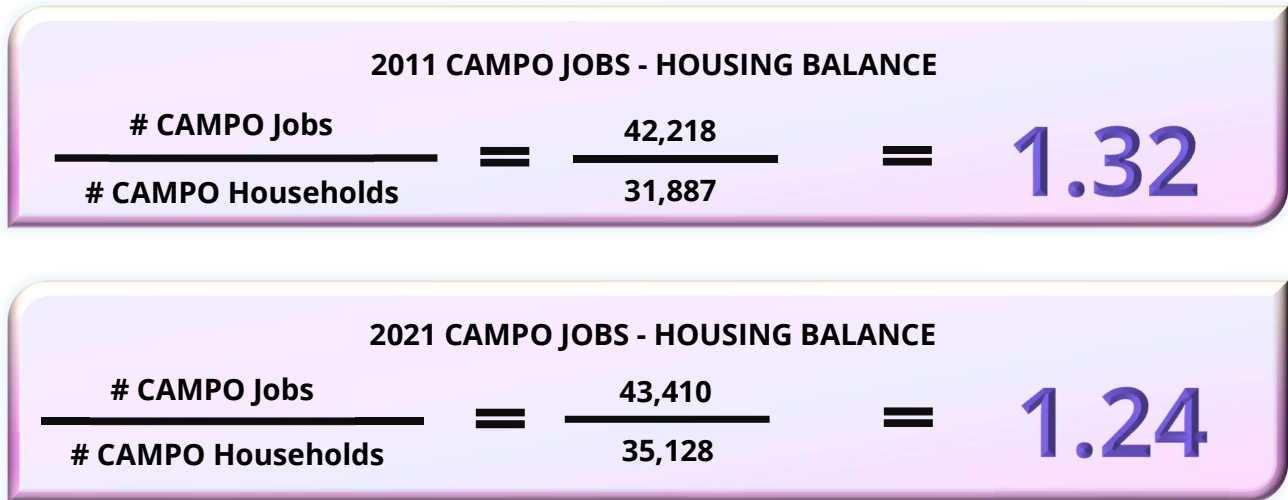
Source: ACS Household Size by Vehicles Available, Table S1101. Annual Estimates from American Community Survey (ACS) 5-year Estimates.



## 2.3 Jobs-Housing Balance

The jobs-housing balance is the ratio of jobs to housing within the CAMPO Area. Typically, a jobs-housing balance of 1.5 is considered a target standard, though this number can vary by community. In general, the standard should be based on the local data of workers per household. If a jobs-housing balance is too high, adequate housing may be unaffordable or unavailable to workers and can possibly lead to housing unaffordability, increased traffic congestion from in-commuting workers, or a lack of sufficient workers living in the area. If a jobs-housing balance is too low, there may not be enough jobs in the area for all workers which may lead to traffic congestion from out-commuting workers. The ‘jobs’ and the ‘housing’ sides of the equation are sourced from the ACS Table DP03.

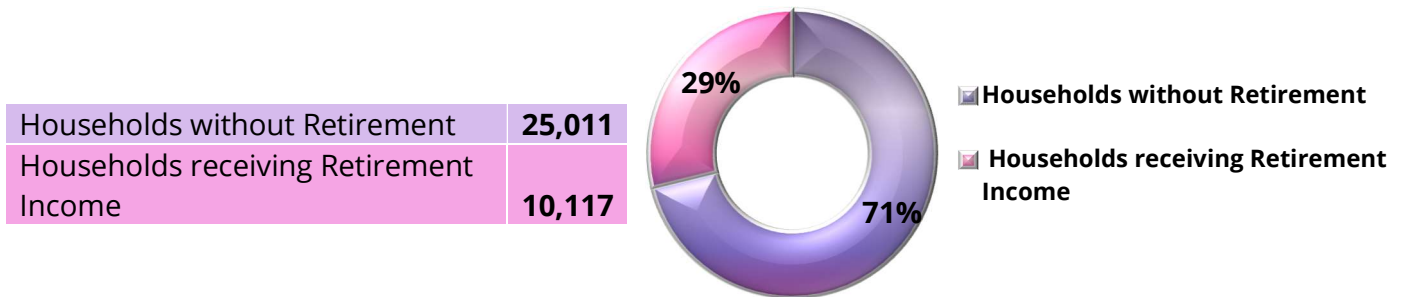
**Figure 2.10 CAMPO Jobs – Housing Balance**



"Jobs-Housing Balancing and Regional Mobility." APA Journal (American Planning Association), Spring 1989, p.136-150. Reprint available at: <http://escholarship.org/uc/item/7mx3k73h>. <sup>1</sup>University of California Transportation Center.

During the last decade, the number of CAMPO jobs has increased by 3% and the number of households has increased by about 9%. As indicated in Table 2.1, there is an increasing population of CAMPO residents aged 70 and older. Over the last decade, there has been a 25% increase in total households that receive retirement income. The jobs-housing balance in CAMPO has decreased slightly over the last decade, most likely due to housing increasing at a faster rate than jobs, more retired residents, or residents travelling outside the MPO to work.

**Figure 2.11 Households with Retirement Income**



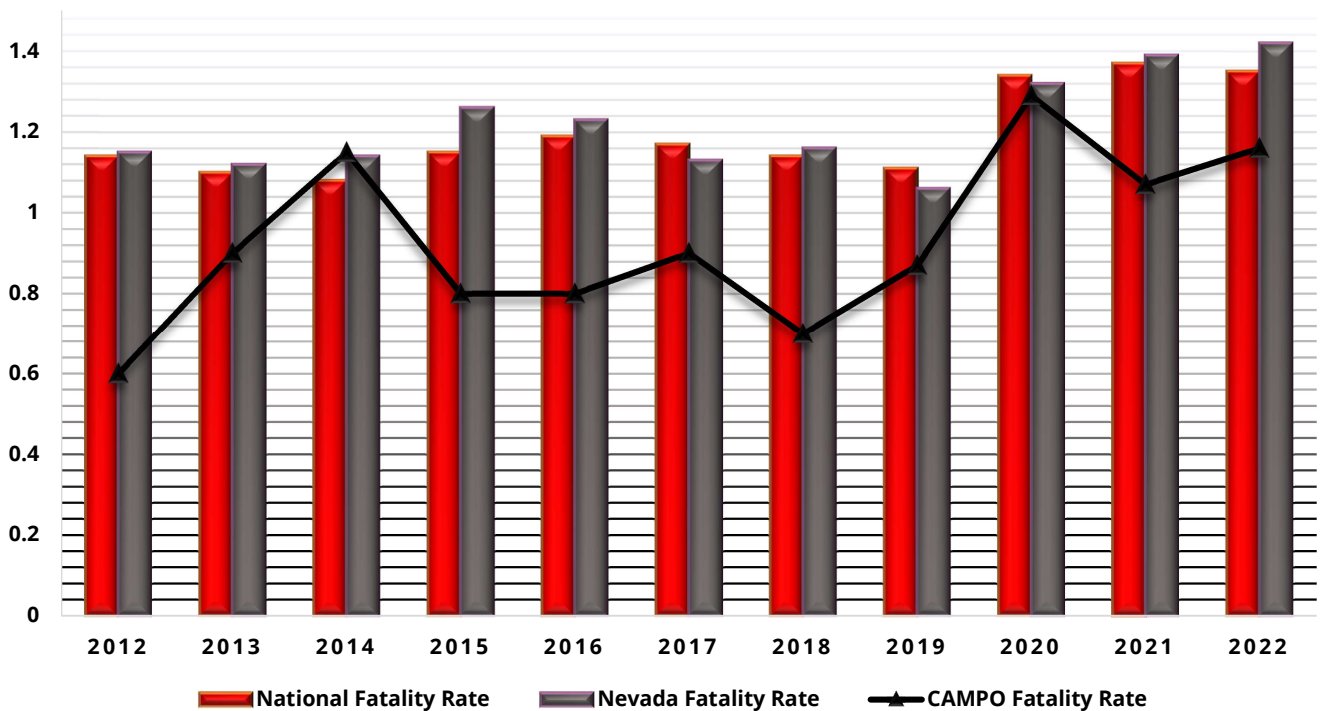
Source: ACS Households with Retirement Income Table DP03. Annual Estimates from American Community Survey (ACS) 5-year Estimates.



## 2.4 Safety

CAMPO monitors fatality rates compared with state and national trends. A comparison of the fatality rate per 100 million vehicle miles of travel of the Nation, State of Nevada, and CAMPO is displayed in Figure 2.12. CAMPO's member agencies continually aim to infuse safety elements and best practices into all transportation projects. This includes FHWA's Proven Safety Countermeasures Initiative, which identifies safety treatments and strategies that are encouraged to be implemented by state, tribal, and local transportation agencies to reduce serious injuries and fatalities. CAMPO has reported lower fatality rates than the State of Nevada and the United States since 2015, however, CAMPO's fatality rate has increased from 0.6 in 2012 to 1.16 in 2022.

**Figure 2.12: Comparative Fatality Rates (2012-2022)**



Source: <https://www.fhwa.dot.gov/tpm/>

Each year, about one-quarter of traffic fatalities and one-half of all traffic injuries in the United States are attributed to intersections.<sup>1</sup> CAMPO staff analyzed all signalized intersections for crash rate and number of severe crashes. The results can be seen in Figures 2.13 and 2.14 for the period of 2016-2020. A crash rate analysis is a more effective comparison of similar locations with safety issues and is key to data driven decision making. CAMPO is working on a Local Road Safety Plan with NDOT to understand the crash causes and successful mitigations within the CAMPO region.

<sup>1</sup> <https://safety.fhwa.dot.gov/intersection/about/>



**Figure 2.13: Signalized Intersection Crash Rate per Million Vehicles (2016-2020)**

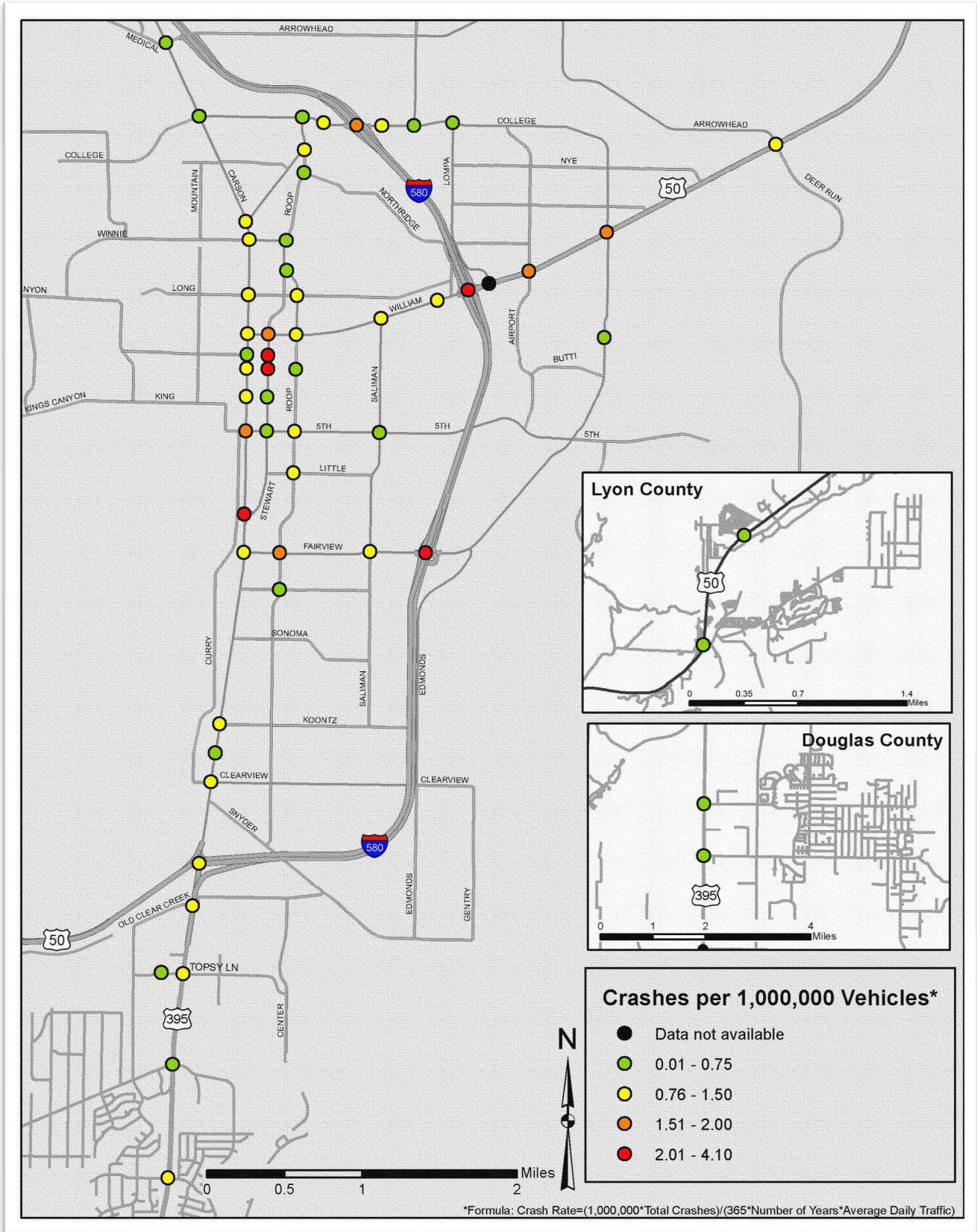
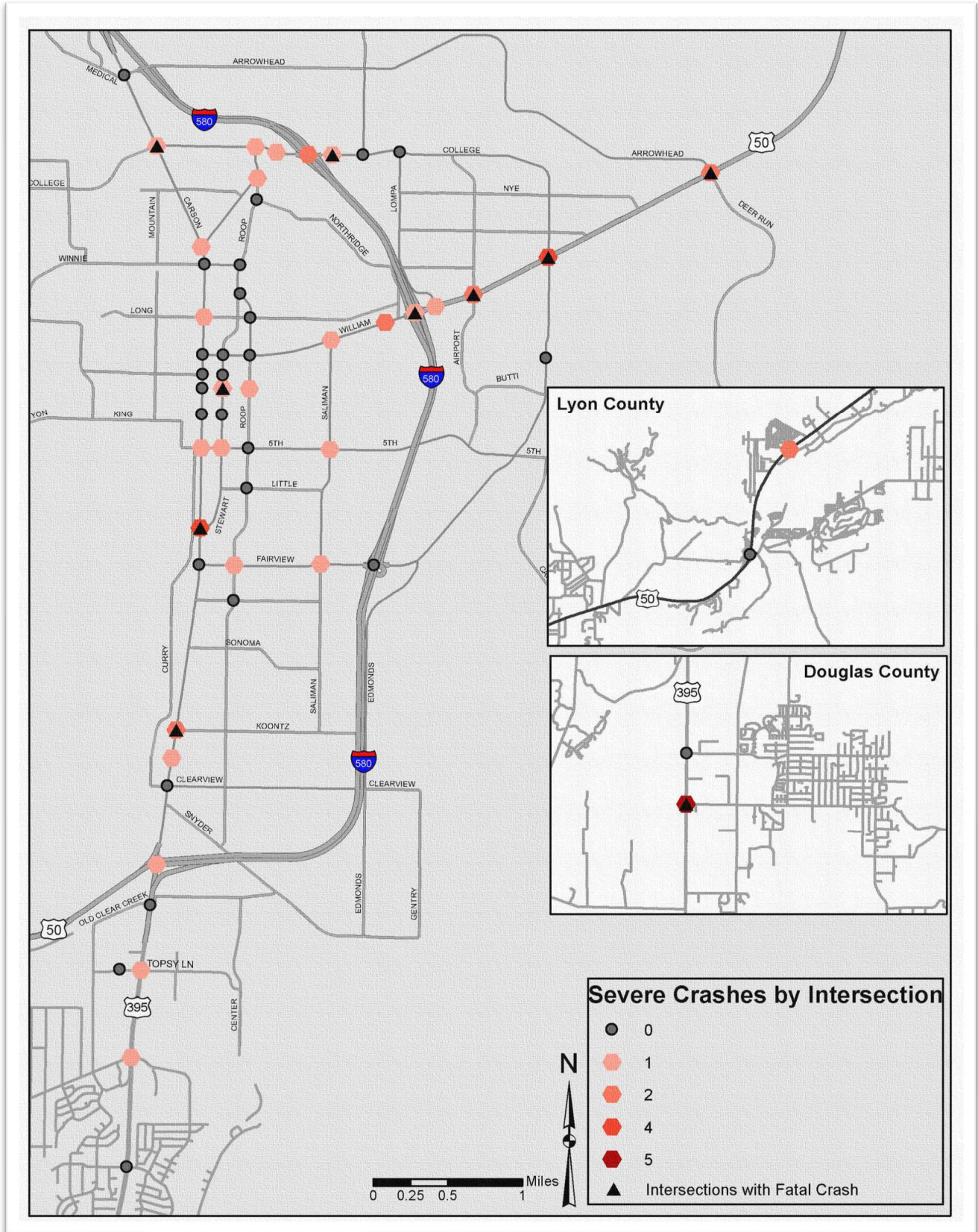




Figure 2.14: Number of Severe Crashes per Signalized Intersection (2016-2020)



## Nevada Strategic Highway Safety Plan (SHSP)<sup>4</sup>

The Nevada Department of Transportation (NDOT) and Department of Public Safety formed a Technical Working Group to develop a statewide safety plan in 2004, with a recent update in 2021 for the years 2021-2025. Nevada's Strategic Highway Safety Plan (SHSP) is a comprehensive data-driven statewide safety plan that identifies the highest causes of fatalities and serious injuries on Nevada's roadways and provides a coordinated framework for reducing the crashes that cause fatalities and serious injuries. The SHSP establishes statewide goals and critical emphasis areas focusing on the 6 E's of traffic safety: Equity, Engineering, Education, Enforcement, Emergency Medical Services/Emergency Response/Incident Management, and Everyone. The purpose of the SHSP is to eliminate traffic-related fatalities and serious injuries by combining and sharing resources across disciplines and strategically targeting efforts to the areas of greatest need.

### **6 E's of Traffic Safety**

- 1. Equity**
- 2. Engineering**
- 3. Education**
- 4. Enforcement**
- 5. Emergency Medical Services**
- 6. Everyone**



### **2.4.1 Safety Performance Measures**

The Federal Highway Administration (FHWA) has established defined safety performance measures and a target-setting methodology for MPOs and state transportation agencies to monitor and report. The Safety Performance Measure (PM) Final Rule establishes requirements to assess fatalities and serious injuries on public roads. The five established performance measures, based on a five-year rolling average are listed below. Developing transportation projects and programs that aim to address these safety performance measures is a top priority for CAMPO and will help CAMPO's member agencies be competitive when applying for State and Federal discretionary grant funding. Notably, between fiscal years 2017 and 2022, 83 percent of existing funding within the CAMPO Area is from a state or federal source.

#### **Safety Performance Measures**

- 1. Number of Fatalities**
- 2. Rate of Fatalities per 100 million Vehicle Miles Traveled**
- 3. Number of Serious Injuries**
- 4. Rate of Serious Injuries per 100 million Vehicle Miles Traveled**
- 5. Number of Non-motorized Fatalities and Serious Injuries**

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<sup>4</sup> Nevada Strategic Highway Safety Plan (SHSP) - <https://zerofatalitiesnv.com/safety-plan-what-is-the-shsp>

These performance measures create a consistent method to count and gauge the safety of CAMPO's Transportation Network. The Fatality Analysis Reporting System (FARS) and the National Highway Transportation Safety Administration (NHTSA) provide the data for measuring fatalities and serious injuries, respectively. Vehicle Miles Traveled (VMT) statistics are estimated using the statewide travel demand model maintained by NDOT.

Target-Setting Process - The Safety PM Final Rule establishes the process for State Departments of Transportation (DOTs) and MPOs to adopt and report safety targets along with a set of performance measures to assess progress toward targets. MPOs shall establish their performance targets for each of the five measures no later than 180 days after the State submits annual targets.

State Targets - NDOT's statewide targets are reported in their Highway Safety Improvement Program Annual Report.

CAMPO Requirements for Safety Target-Setting - CAMPO chooses to support the State's targets for the five performance measures noted above. Performance targets must be set annually by the MPO Board.

Each year, staff analyzes alternative statistical trend line projections to evaluate appropriate targets for CAMPO. A five-year baseline projection trend is required to be evaluated. Additional projection trends are encouraged to be evaluated against the five-year baseline. Targets must be data-driven, realistic, and attainable.

This Monitoring Report does not adopt any new targets, it simply reports them. A 0.5% reduction of the five-year baseline trend was adopted for CAMPO's 2018-2021 targets, for each of the five required performance measures. In a review of the 2021 Targets, CAMPO did not meet any of the five targets, which are highlighted in red below. Table 2.2 contains information on the five safety performance measures, including the five-year baseline data and CAMPO's relative 2018-2022 targets, respectively. Since February 2021, CAMPO has chosen to support Nevada statewide safety targets in lieu of the CAMPO-specific targets used previously.



**Table 2.2: CAMPO Safety Performance Measure Data and Targets**

	Fatalities			Serious Injuries			Fatalities and Serious Injuries Non-Motorized			Rate of Fatalities		Rate of Serious Injuries		Vehicles Miles Traveled (VMT)
	Target	#	Rolling Average	Target	#	Rolling Average	Target	#	Rolling Average	Target	Rate	Target	Rate	
2008	-	1	-	-	12	-	-	6	-	-	-	-	-	-
2009	-	2	-	-	7	-	-	2	-	-	-	-	-	-
2010	-	6	-	-	8	-	-	1	-	-	-	-	-	-
2011	-	5	-	-	8	-	-	0	-	-	-	-	-	458,370,939
2012	-	1	3	-	7	8.4	-	5	2.8	-	0.64	-	1.79	470,558,752
2013	-	9	4.6	-	11	8.2	-	7	3	-	0.94	-	1.68	487,520,736
2014	-	8	5.8	-	12	9.2	-	12	5	-	1.19	-	1.89	487,200,339
2015	-	3	5.2	-	8	9.2	-	5	5.8	-	0.91	-	1.61	571,234,641
2016	-	7	5.6	-	10	9.6	-	8	7.4	-	0.9	-	1.55	619,768,739
2017	-	6	6.6	-	2	8.6	-	6	7.6	-	0.97	-	1.27	677,473,469
2018	5.57	5	5.8	9.55	11	8.6	7.36	4	7	0.9	0.83	1.54	1.24	696,272,881
2019	6.57	8	5.8	8.56	13	8.8	7.56	3	5.2	0.97	0.87	1.26	1.32	665,777,895
2020	6.24	8	6.8	8.13	11	9.4	6.97	5	5.2	0.83	1.29	1.23	1.78	617,009,797
2021	6.61	9	7.2	9.09	32	13.8	4.74	6	4.8	0.98	1.07	1.35	2.05	673,191,017
2022	6.84	8	7.6	13.11	33	20	4.74	11	5.8	1.02	1.16	1.95	3.06	653,641,290
2023	7.33			19.29			5.59							

1. Targets for Fatalities, Serious Injuries, and Non-Motorized Fatalities & Injuries are calculated based on 5-year rolling averages with future years interpolated based on Zero Fatalities in 2050.
  2. Rolling averages consist of a five-year rolling average, which includes the reporting year
  3. Serious Injuries are when an injured person is unable to leave the accident scene without assistance
  4. Rate of Fatalities and Serious Injuries are per 100 million Vehicle Miles Traveled (VMT)- Example: 2021 Target Rate of Fatalities =Target Fatalities\*CAMPO VMT/100 Million=6.61/6.73=0.98
  5. Green shading denotes target was met; red shading denotes target was not met.
- \* Since February 2021, CAMPO has supported the State's safety targets in lieu of using CAMPO-specific targets.



## Chapter 3 – WHAT: Mobility Network

The accessibility, availability, connectivity, efficiency, and safety of traveling on the transportation network all influence how people travel between destinations. Road design, pavement condition, and travel time all influence the viability of vehicle trips. Connectivity and level of safety influence the probability of short- or long-distance bicycle travel. Connectivity, accessibility (e.g. presence of Americans with Disabilities (ADA) compliant curb ramps), and convenience influence whether someone chooses to walk to their destination. The location of bus stops, and bus frequency (headway) will determine whether someone chooses to take transit.

How and where each of the mobility modes connects with other modes further determines the feasibility of those modes. For example, the ability of someone to leave their house, safely bicycle to the bus stop, load their bicycle onto the bus, take the bus to a location in proximity to their employment, and secure their bicycle once they arrive directly influences which mode of transportation someone will utilize. In the winter months when it gets dark early, the presence of street lighting along sidewalks, bicycle lanes, and bus stops further influences mode choice decisions. When a mode of transportation is not efficient, easy-to-use, or safe, travelers may choose not to make the trip at all or choose a transportation mode that they perceive to be easier or quicker. By monitoring the location and characteristics of all modes in the mobility network, CAMPO is better informed and equipped to plan for and manage the region's use of, and demand for, regional transportation infrastructure connecting travelers with their destinations.



### 3.1 - Roadways

The quality of the roadway system is of central importance to the region's economy and the quality of life for people living and traveling in CAMPO. As required by the Federal government for the use of federal funds, CAMPO is responsible for collecting data and tracking performance measures related to investments made to the transportation network. Performance measures are used to inform planning, design, pavement management, capital improvements, operations, and maintenance activities on area roadways.

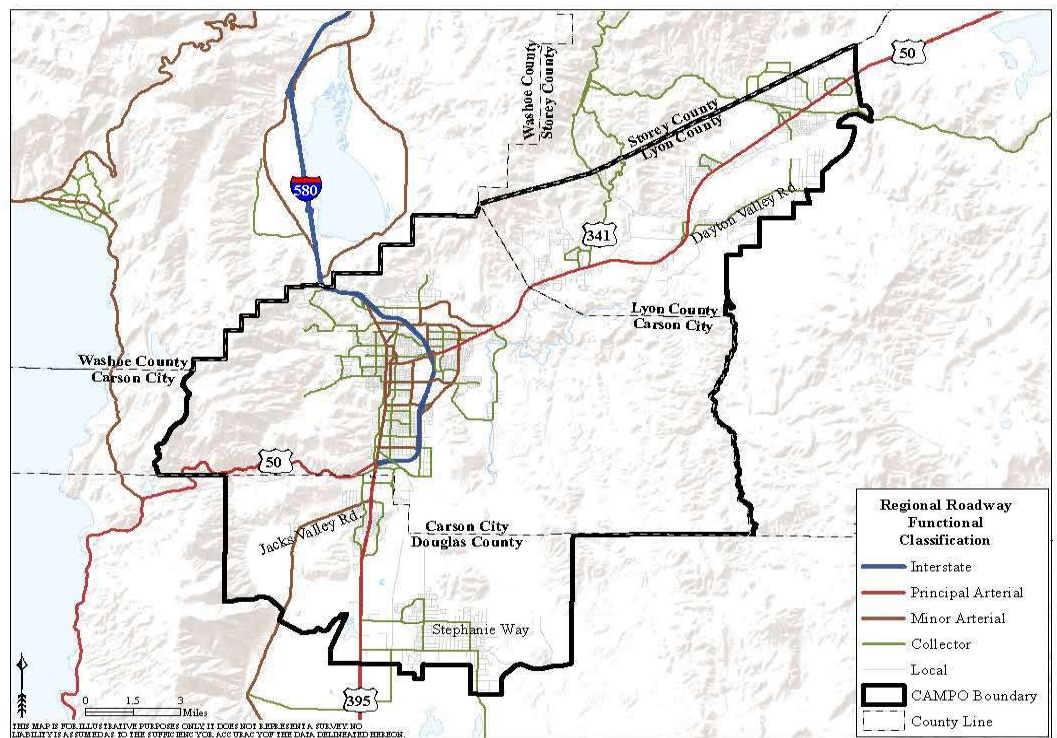
All roadways have a functional classification. Functional classification is the process by which streets and highways are grouped into classes according to the character of the service they are intended to provide. Roads with higher classifications serve the mobility needs of a greater number of people and typically carry more traffic. Roads with lower classifications tend to provide access more to individual properties than serve the mobility needs of a greater number of people.

To be eligible for federal funding, federal regulations require a roadway to be functionally classified as a collector or an arterial. With the exception of safety funds (e.g. HSIP), local/neighborhood streets are not eligible to receive federal funding.

Arterial roadways are those roadways that provide a high level of regional mobility; Local/neighborhood roadways are those that provide a high level of accessibility and local access to neighborhoods; and collector roadways are those that provide a more balanced blend of mobility and accessibility.

Figure 3.1 displays the functional classification of roadways within CAMPO. The classification of roadways is a joint effort between local, regional, state, and federal agencies.

**Figure 3.1: 2021 Roadway Functional Classification Map**



Source: <https://www.nevadadot.com/travel-info/maps/functional-classification-maps>



### 3.2 Local Roadway Pavement Condition

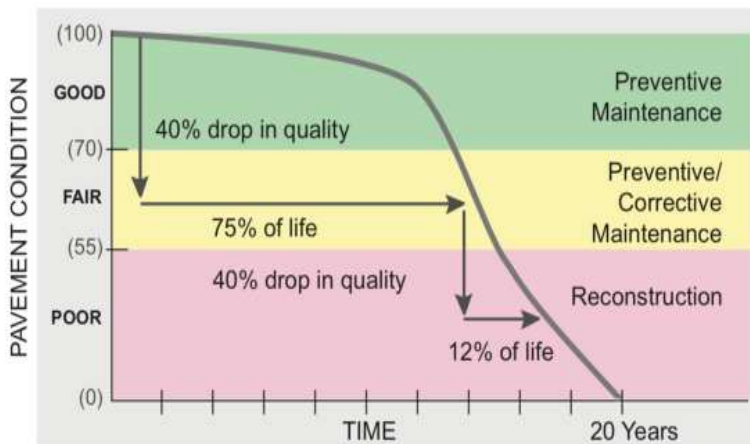
The roadway network provides vehicle mobility and is by far one of the most significant investments made by local agencies. Preservation of the roadway network has been identified as a high priority by federal, state, regional, and local agencies. The updated 2024-2028 Pavement Management Plan was developed through a partnership between Carson City Public Works and CAMPO. The plan serves as a framework for preserving, rehabilitating, and reconstructing Carson City's and CAMPO's roadway network. Although the plan was originally developed to incorporate only Carson City's roadways, CAMPO has since collected Pavement Condition Index (PCI) data for

Douglas County and looks forward to eventually supporting pavement management planning for Western Lyon County as well.

Annual reporting of pavement condition will assist decision makers in priority-based budgeting. Carson City has established targets for pavement condition using a Pavement Condition Index (PCI). Target setting helps staff and decision makers evaluate and allocate limited funding resources toward maintaining pavement infrastructure.

- PCI Rating Target for Regional Roads – 75 and above
- PCI Rating Target for Local Roads – 70 and above

**Figure 3.2 Pavement Deterioration Rates**  
**Proper Maintenance Saves You Money!**  
*Pavements deteriorate with time if not maintained.*



**Pavement not treated at the right time,  
costs 4-5 times as much to fix later!**

**Standard PCI Rating Table**

100	Good
85	Satisfactory
70	Fair
55	Poor
40	Very Poor
25	Serious
10	Failed
0	

Table 3.1 presents the PCI for roadways within Carson City and across the five performance districts. The data reflects increases in regional road PCI in the Performance Districts where projects, such as the South Carson Complete Streets Project has been completed. Overall, Carson City roadway condition

has decreased thirteen percent since 2017, with local road condition deteriorating by twenty percent. Regional Road PCI has improved because of the RTC’s efforts and one-time federal transportation grant projects. To reverse the deterioration, additional resources must be invested in the roadway system. The long-term condition of the City’s roadway pavement will continue to deteriorate unless or until the funding gap is reduced. The current estimated deficit in funding to meet our targeted pavement condition is \$20M per year.

Pavement preservation treatments are the most efficient use of funding because the treatments are typically low cost and preserve past investment in infrastructure. It is important to note that

the PCI values are beginning to decline at a faster rate (see Table 3.1 and Figure 3.2). This is because the bulk of the City's roads are approaching the performance curve that has the sharpest decline, which is approximately between 69 PCI and 25 PCI. For reference, the average PCI for local roads is 49, which is near the middle of the mentioned range.

**Table 3.1: Carson City Pavement Condition Index - Annual Report Card**

Facility Type		Inspected PCI		Estimated PCI	Percent Change 2017 to 2023
		2017	2022	2023	
City-wide	Regional Roads	67	74	67	-1%
	Local Roads	61	56	49	-20%
	All Roads	63	62	55	-13%
Performance District 1	Regional Roads	67	69	60	-10%
	Local Roads	62	57	50	-20%
	All Roads	64	61	53	-17%
Performance District 2	Regional Roads	73	80	73	-1%
	Local Roads	64	53	46	-28%
	All Roads	67	63	55	-18%
Performance District 3	Regional Roads	72	77	68	-5%
	Local Roads	57	58	53	-8%
	All Roads	62	64	57	-7%
Performance District 4	Regional Roads	61	79	74	21%
	Local Roads	58	51	45	-23%
	All Roads	59	61	55	-7%
Performance District 5	Regional Roads	64	65	58	-9%
	Local Roads	66	60	52	-21%
	All Roads	65	62	54	-17%



Figure 3.3: 2023 Carson City Pavement Condition - Northwest Carson City

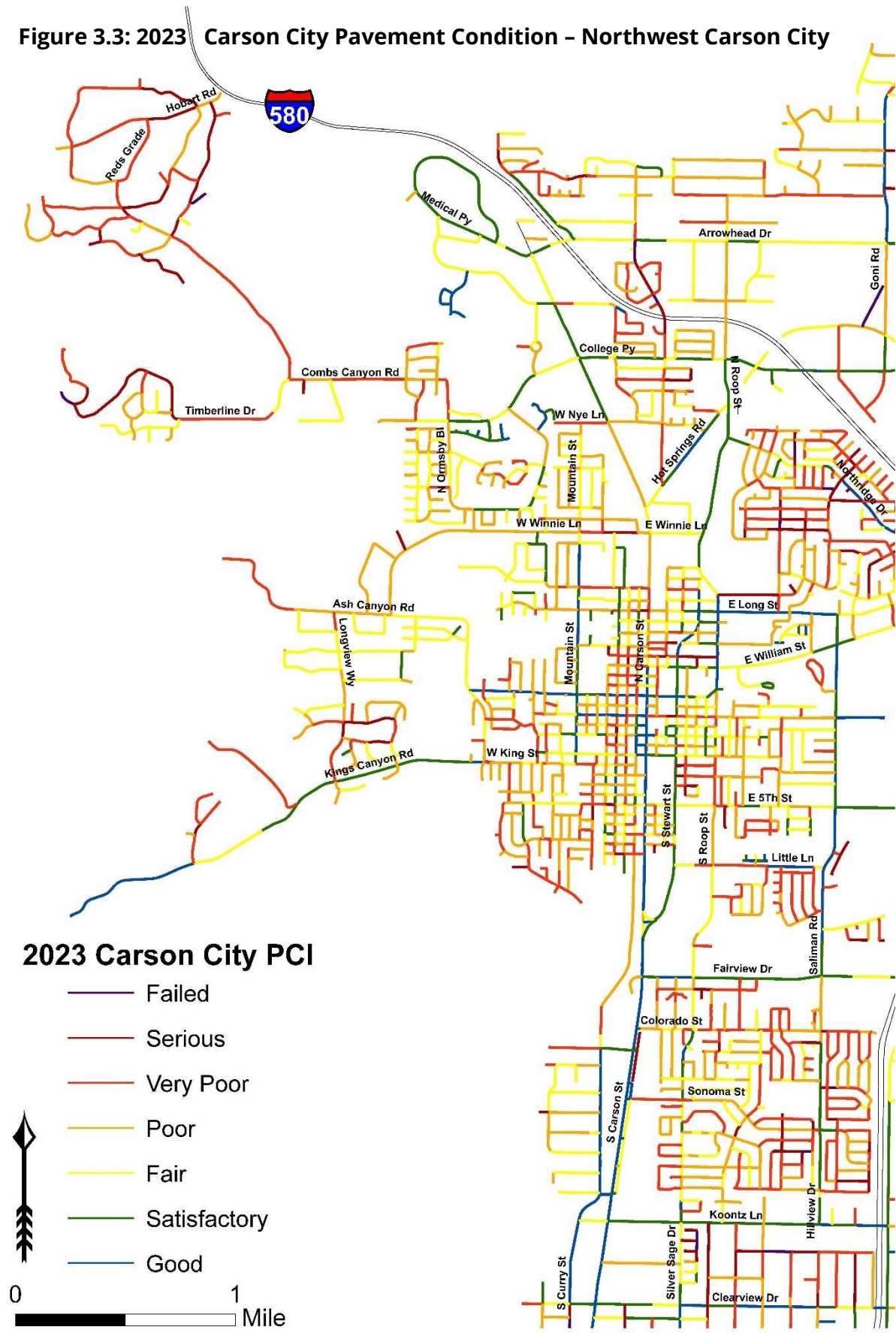


Figure 3.4: 2023 Carson City Pavement Condition - Northeast Carson City

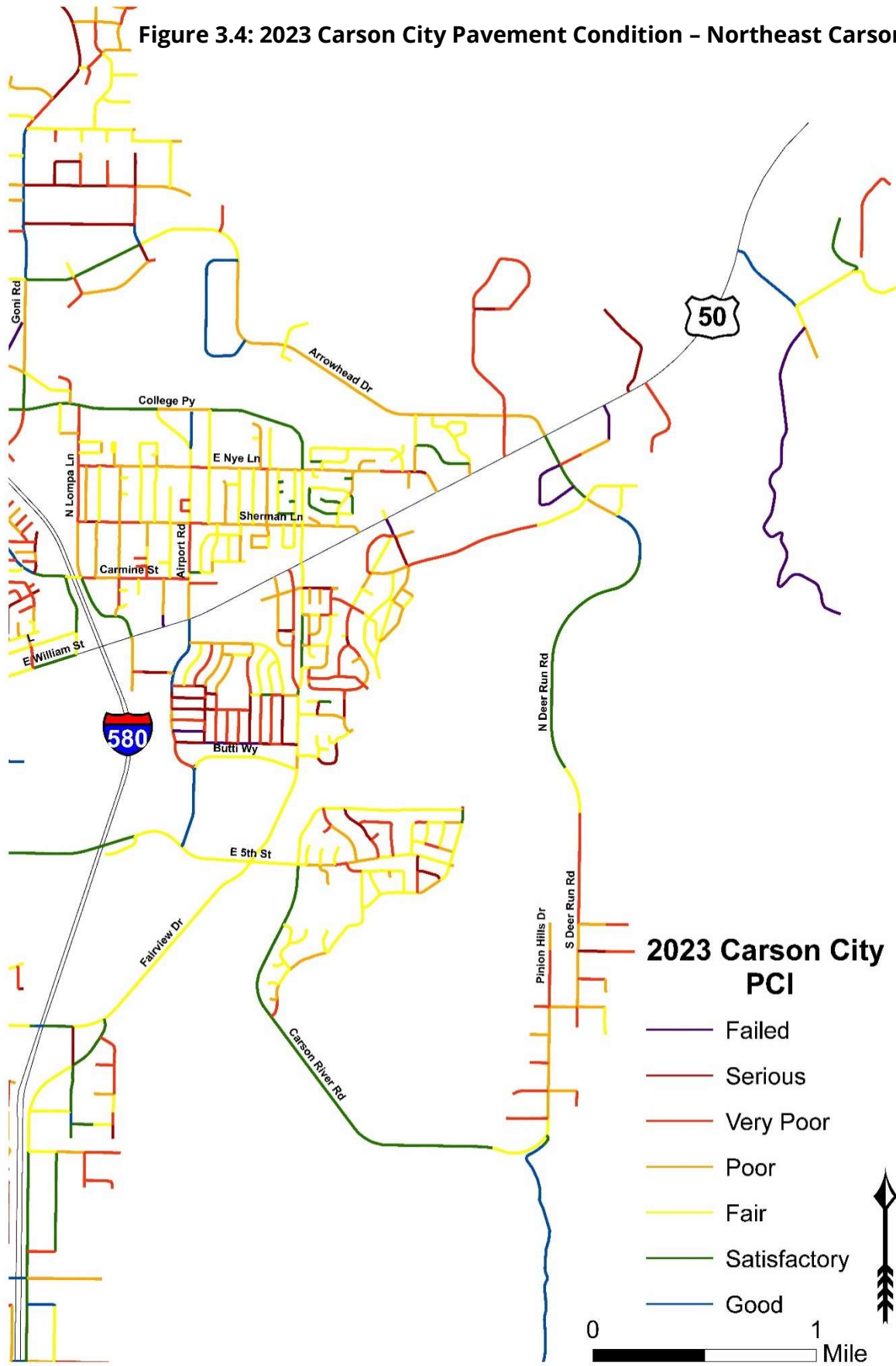
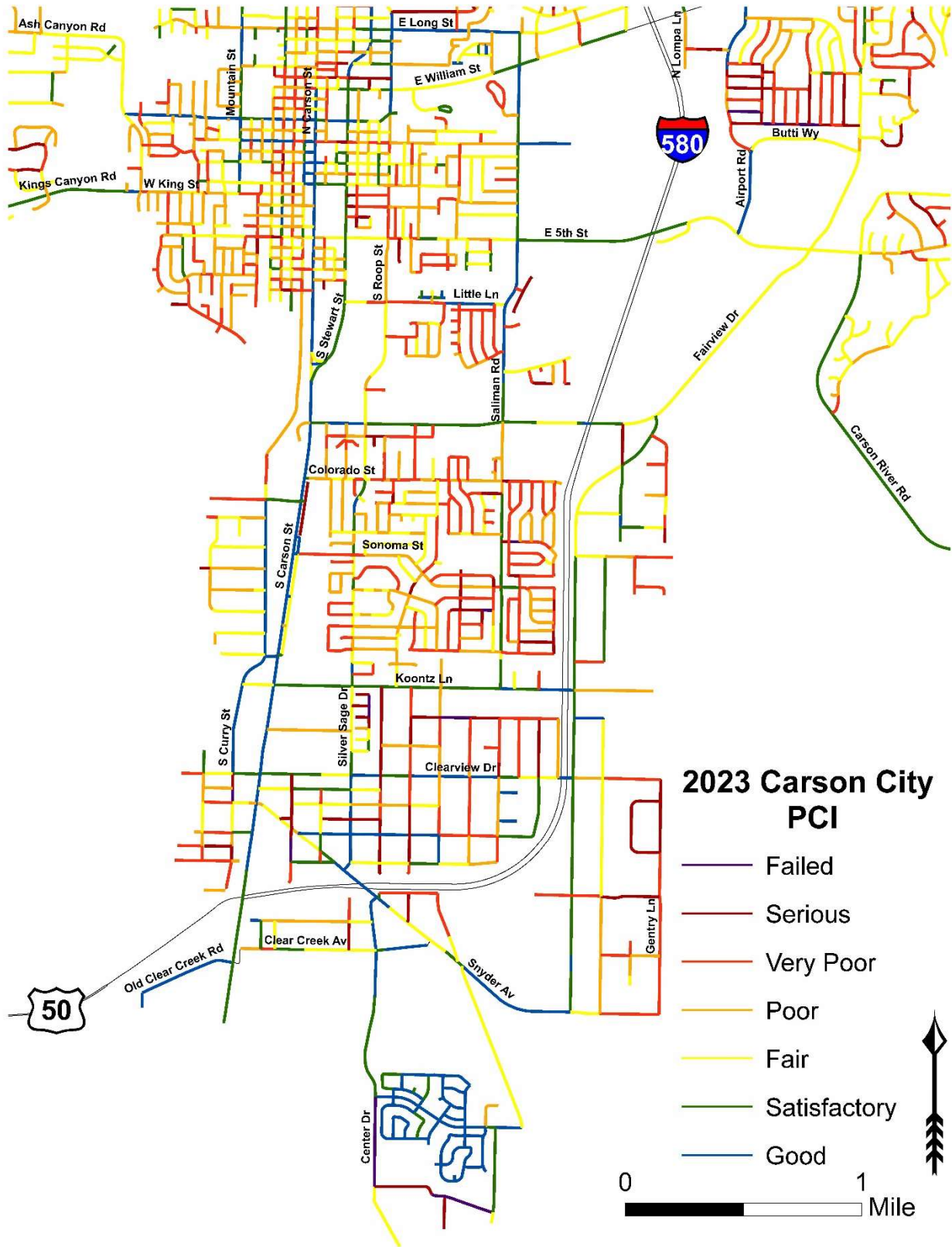


Figure 3.5: 2023 Carson City Pavement Condition - Southern Carson City







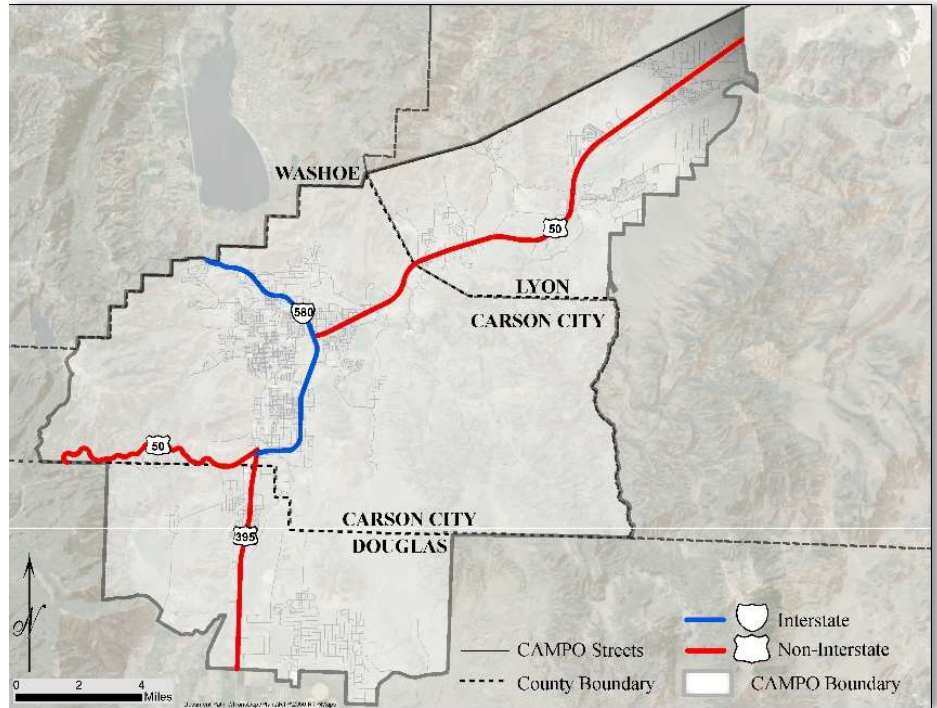
### 3.3 Pavement & Bridge Condition and System Reliability Performance Measures

FHWA published the Pavement and Bridge Condition Performance Measures Final Rules in the Federal Register on January 18, 2017, with an effective date of May 20, 2017. The rule established performance measures to assess the condition of pavements and bridges on the National Highway System (NHS) (see Figure 3.9).

**Figure 3.9: National Highway System Roadways and Bridges within CAMPO's Boundary**

#### Federally Required Performance Measures for Pavement Condition:

- % of Interstate pavements in **Good** condition
- % of Interstate pavements in **Poor** condition
- % of non-Interstate NHS pavements in **Good** condition
- % of non-Interstate NHS pavements in **Poor** condition



Pavement conditions for this Final Rule use the International Roughness Index (IRI) along with cracking, rutting, and faulting distresses to measure roadway condition. This is different than how local member agencies measure roadway condition. Local member agencies use the Pavement Condition Index (PCI) to measure pavement condition. The difference between IRI and PCI is that IRI measures smoothness or ride quality while PCI measures conditions based on surface distresses.

#### Federally Required Performance Measures for Bridge Condition\*:

- % of NHS bridges by deck area in **Good** condition
- % of NHS bridges by deck area in **Poor** condition

\* includes all bridges on the NHS, including bridges that function as on- and off-ramps



The performance measures evaluate the bridge deck, bridge structure above ground, bridge structure below ground, and associated culverts. These evaluations are performed, monitored, and reported by NDOT. CAMPO monitors these performance measures to advocate for resources as needed.

FHWA published the National Highway System and Freight Performance Measures Final Rules in the Federal Register on January 18, 2017, with an effective date of May 20, 2017.

#### **Federally Required Performance Measures for System Reliability\*:**

- Interstate Travel Time Reliability Measure: Percent of person-miles traveled on the Interstate that are reliable
- Non-Interstate Travel Time Reliability Measure: Percent of person-miles traveled on the non-Interstate NHS that are reliable
- Freight Reliability Measure: Truck Travel Time Reliability (TTTR) Index

\* Developed to assess the performance of the interstate and non-interstate segments of the National Highway System as well as regional freight movement

The Final Rules for Pavement Condition, Bridges, and System Reliability performance measures require a performance report which includes baseline conditions along with two- and four-year targets. CAMPO supports NDOT's targets. These performance measures are calculated, tracked, and reported by NDOT. CAMPO monitors these performance measures to advocate for resources as needed. CAMPO currently supports NDOT's two- and four-year targets for Pavement Condition, Bridge Condition, and System Performance measures. CAMPO staff has requested that NDOT provide all NHS data for these performance measures that are specific to CAMPO's Metropolitan Planning Area. Acquisition of this data will allow for a statewide and nationwide comparison. Table 3.4 contains the latest data for roadways and bridges on the National Highway System.

**Table 3.4: Nevada Performance Measures for Pavement Condition, Bridge Condition, and System Reliability**

Performance Measure	Baseline	2021	
		2-Year Target	4-year Target
Percentage of Pavements of the Interstate System in Fair or Better Condition	--	--	74.7%
Percentage of Pavements of the Interstate System in Poor Condition	--	--	1.4%
Percentage of Pavements of the Non-Interstate National Highway System (NHS) Classified as in Good Condition	79.4%	67.6%	55.8%
Percentage of Pavements of the Non-Interstate National Highway System (NHS) Classified as in Poor Condition	4.7%	5.7%	6.5%
Percentage of National Highway System (NHS) Bridges Classified as in Good Condition	42.2%	35.0%	35.0%
Percentage of National Highway System (NHS) Bridges Classified as in Poor Condition	0.5%	7.0%	7.0%
Percent of the Person-Miles Traveled on the Interstate that are Reliable	86.8%	86.9%	87.0%
Percent of the Person-Miles Traveled on the Non-Interstate National Highway System (NHS) that are Reliable	--	70.0%	87.0%
Truck Travel Time Reliability (TTTR) Index	1.28	1.26	1.26

Source: NDOT 2022 Performance Management Report; <https://www.fhwa.dot.gov/tpm/reporting/state/state.cfm?state=Nevada>

## Chapter 4 – WHERE: CAMPO

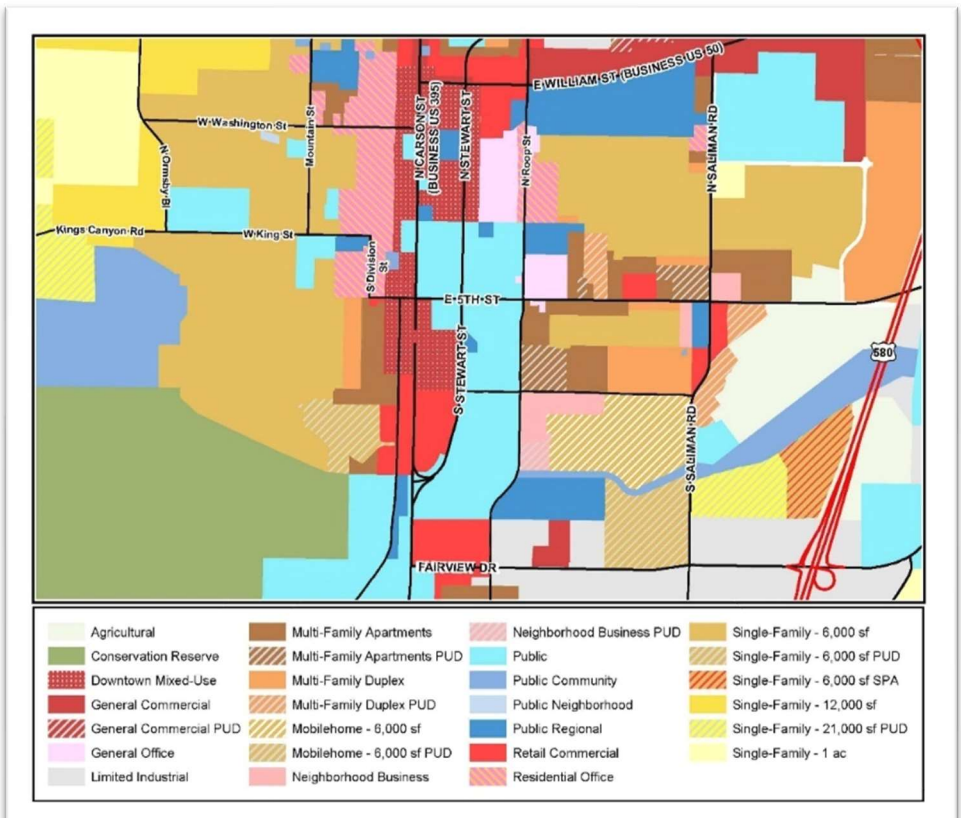
Where people travel is determined by a complex interrelationship of land uses. The location of, and distance between residences, jobs, industrial complexes, and schools, all influence routine daily trip-making from home to school, and to work. The location of post offices, grocery stores, restaurants, recreational facilities, entertainment centers, shopping malls, and other destinations, all influence additional, discretionary trip-making. On a bigger scale, a community's proximity to regional destinations (Lake Tahoe, for example) influences weekend interregional travel or seasonal influx of visitor travel.



### 4.1 Land Use

By monitoring land uses and zoning districts, CAMPO is better informed and equipped to plan for and manage the region's use of, and demand for, regional transportation infrastructure that connects these land uses. The type of residential and commercial land uses in a community influences trip-making. A 1-bedroom apartment that houses one or two adults typically generates fewer and a different mix of daily trips than a single-family home with a 4+ person household. Likewise, an administrative office complex will generate fewer and a different mix of daily trips than a high-turnover restaurant or a manufacturing/shipping facility. Daily trip generation is a key component in travel demand modeling.

**Figure 4.1: Example of Zoning Districts, CAMPO Sub-Area (Central Carson City)**





## 4.2 Travel Demand Model

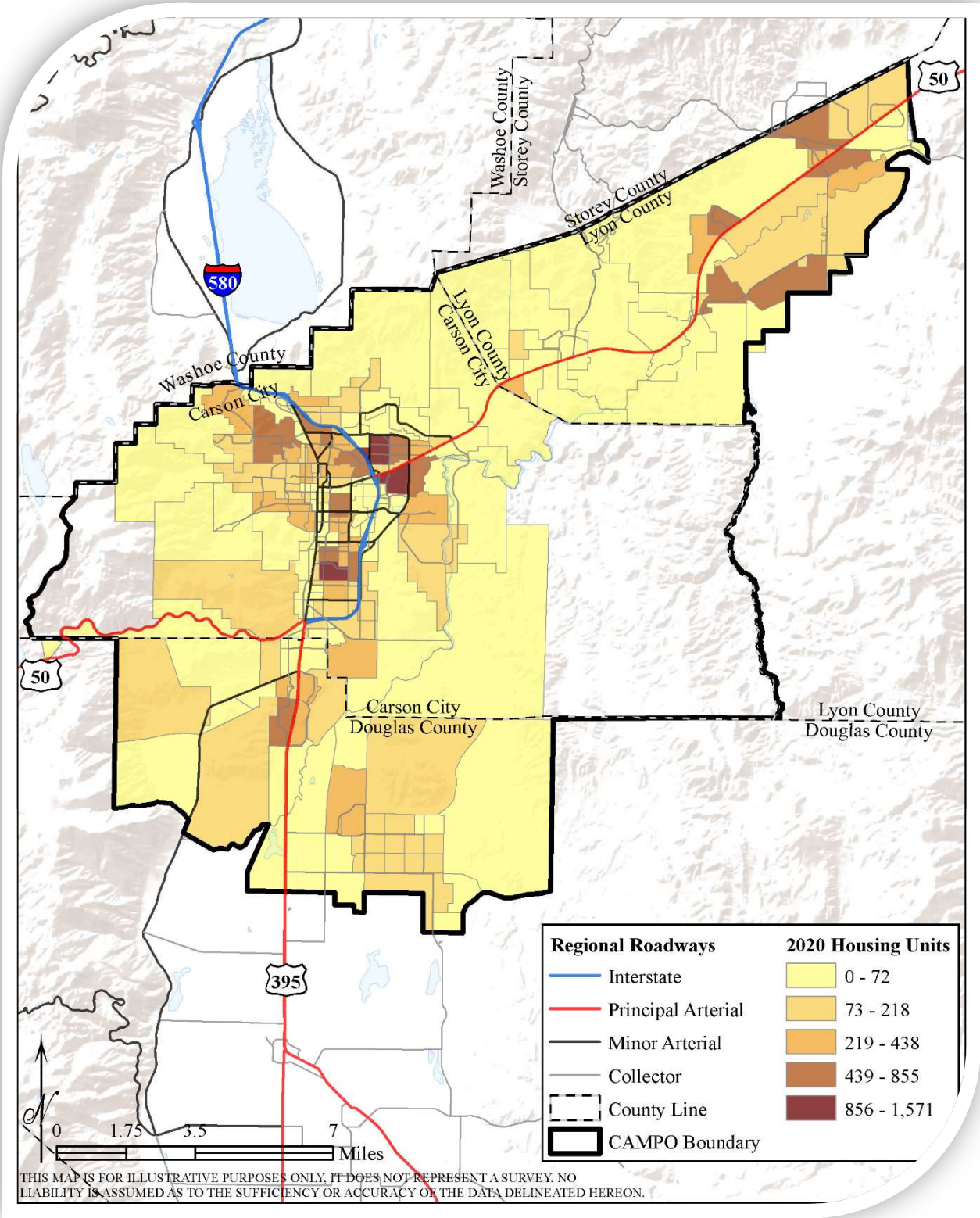
CAMPO's Travel Demand Model (TDM) is the primary tool used to help understand and forecast the usage of the transportation network. A critical input to the travel demand model is current and future land use information. CAMPO's TDM is regularly updated with known changes to land uses and approved projects that can influence travel behavior in the area. Carson City has 27 different zoning districts (Figure 4.1) that permit and prohibit certain land uses. City zoning regulations consist of both a zoning map and a written ordinance that divides the City into zoning districts, including various residential, commercial, and industrial districts. The zoning regulations describe what type of land use and specific activities are permitted in each district.

The land use information is grouped into geospatial areas called Transportation Analysis Zones (TAZs). The size and spatial extent of a TAZ vary, but they typically range from very large in rural areas to very small in urban areas and business districts. A TDM uses TAZs to pair land use (Chapter 4) and socio-economic data (Chapter 2), such as the number of household or employment units, to assign current and future trips to the transportation network. This information helps to identify travel and traffic trends. Figures 4.2 through 4.7 display the density of housing units and commercial employment by TAZ that is assumed in CAMPO's travel demand model for a base model year of 2020, and two forecast years; a near-term scenero of 2030 and a long-term scenero of 2050. The CAMPO model was updated in 2016, 2018, and again in 2020. In 2023, CAMPO partnered with Douglas County to update both the CAMPO and the Douglas County TDM. This is expected to be complete by the end of 2023.

The modeling considers future population, economic factors, and other variables, including land use patterns and estimates of future activity from local governments to forecast demand on the roadway network. The near-term and long-range scenarios are further analyzed by adding transportation improvement projects, which are categorized by projects that are reasonably anticipated to be funded (constrained), and which projects do not have funding identified (unconstrained). CAMPO staff utilizes two model outputs Level of Service (LOS) and travel time estimates.

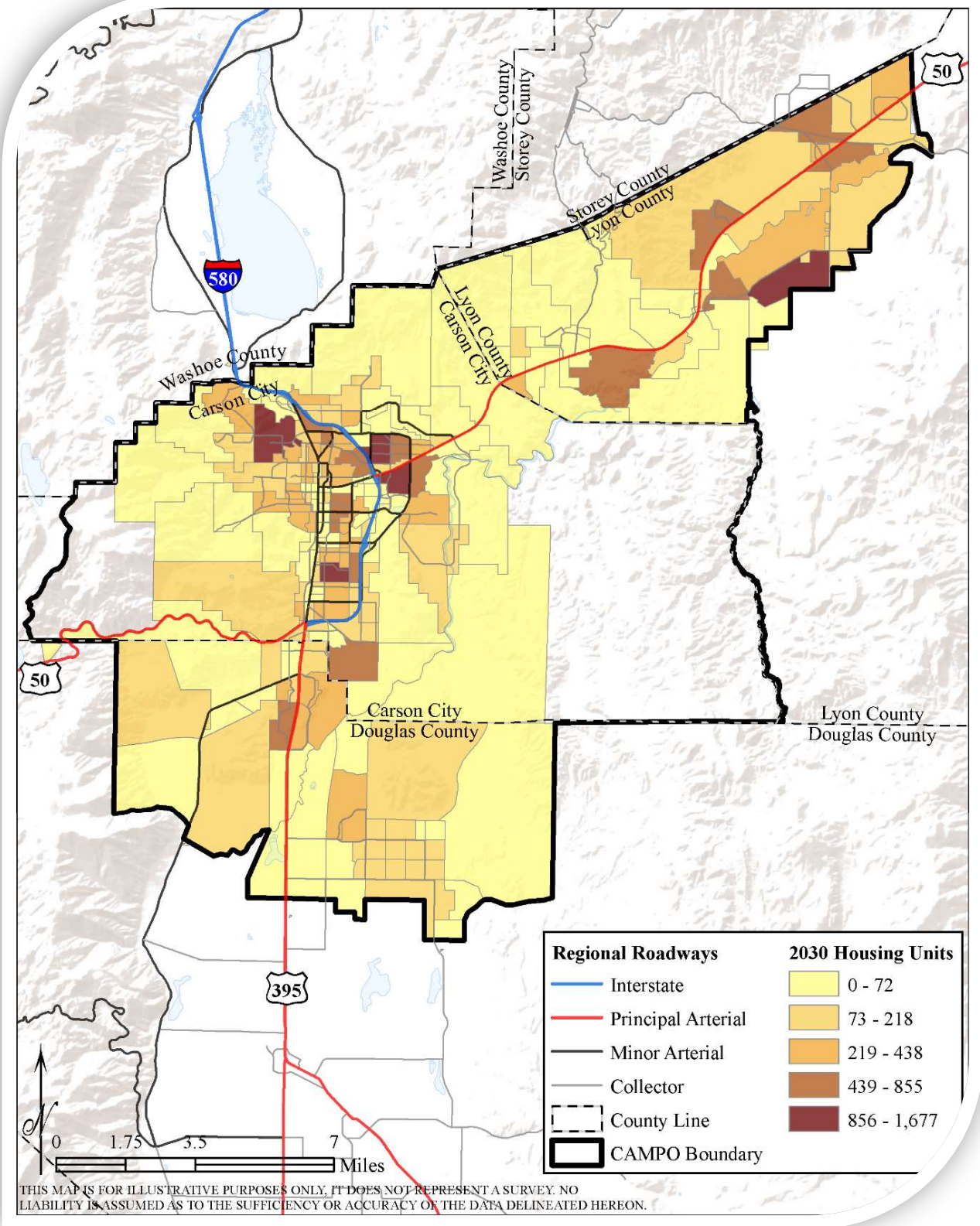


**Figure 4.2: 2020 Housing Units by Transportation Analysis Zone (TAZ)**



Source: CAMPO 2050 Travel Demand Model, September 2020.

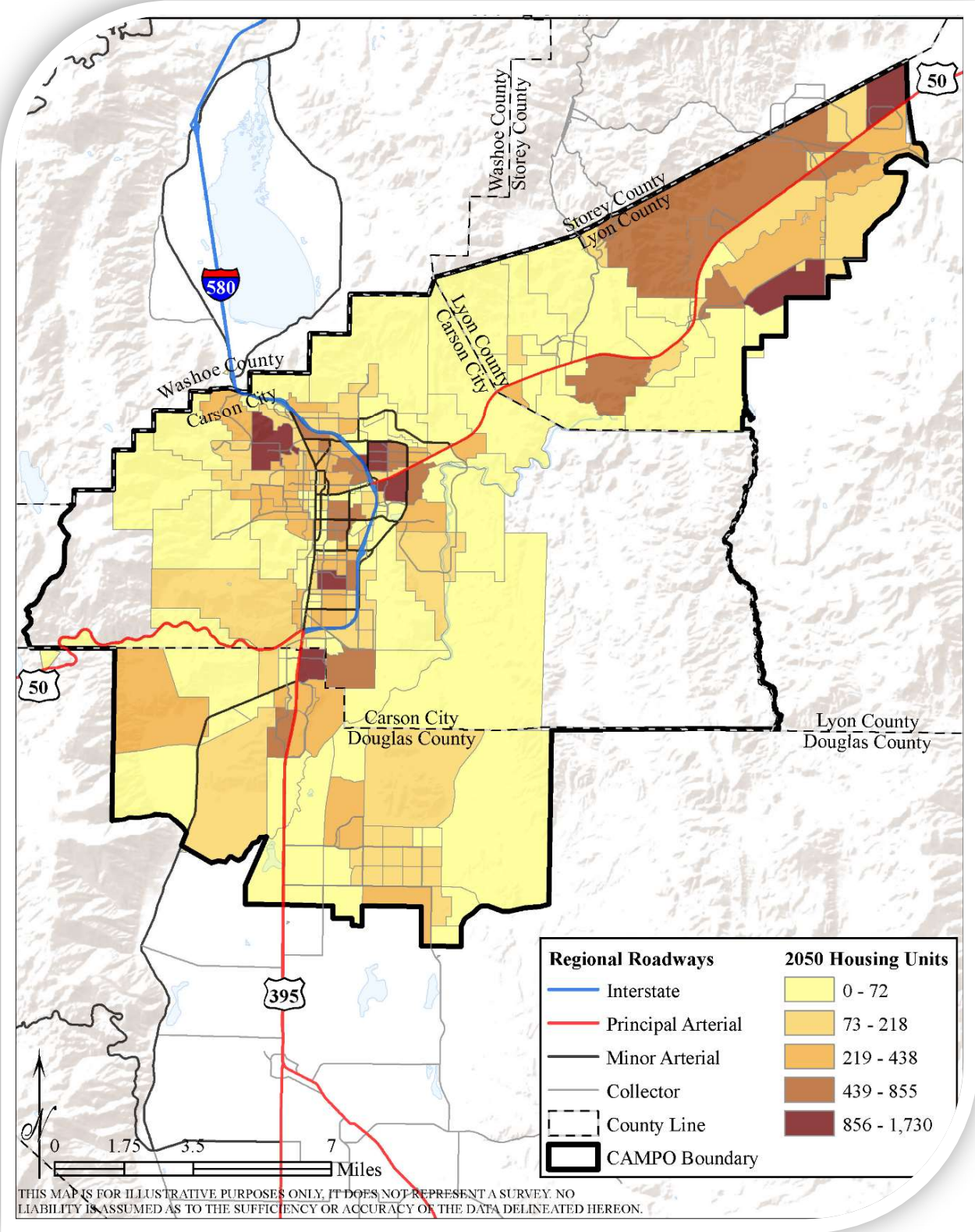
**Figure 4.3: 2030 Housing Units by Transportation Analysis Zone (TAZ)**



Source: CAMPO 2050 Travel Demand Model, September 2020.

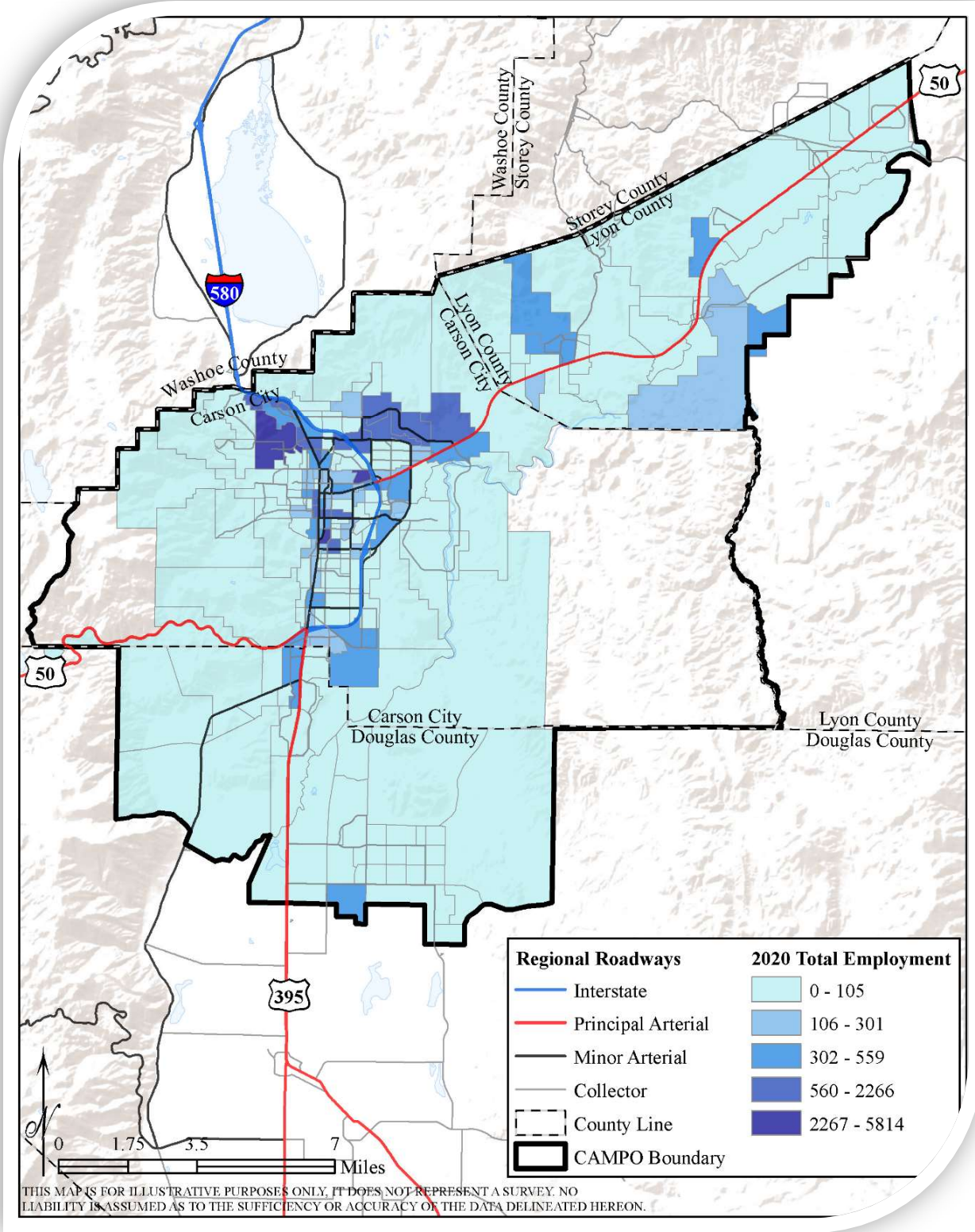


**Figure 4.4: 2050 Housing Units by Transportation Analysis Zone (TAZ)**



Source: CAMPO 2050 Travel Demand Model, September 2020.

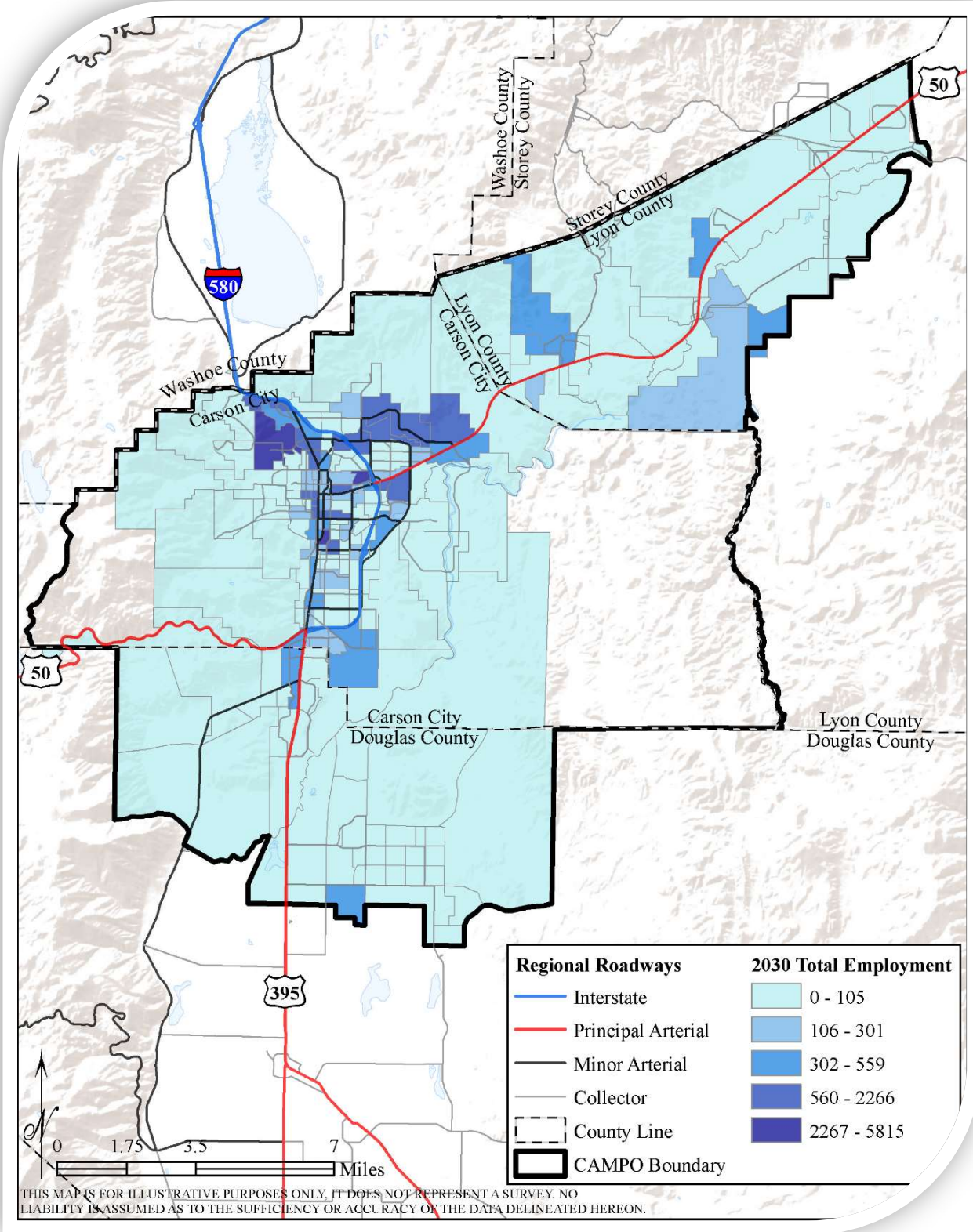
**Figure 4.5: 2020 Commercial Employment by Transportation Analysis Zone (TAZ)**



Source: CAMPO 2050 Travel Demand Model, September 2020.

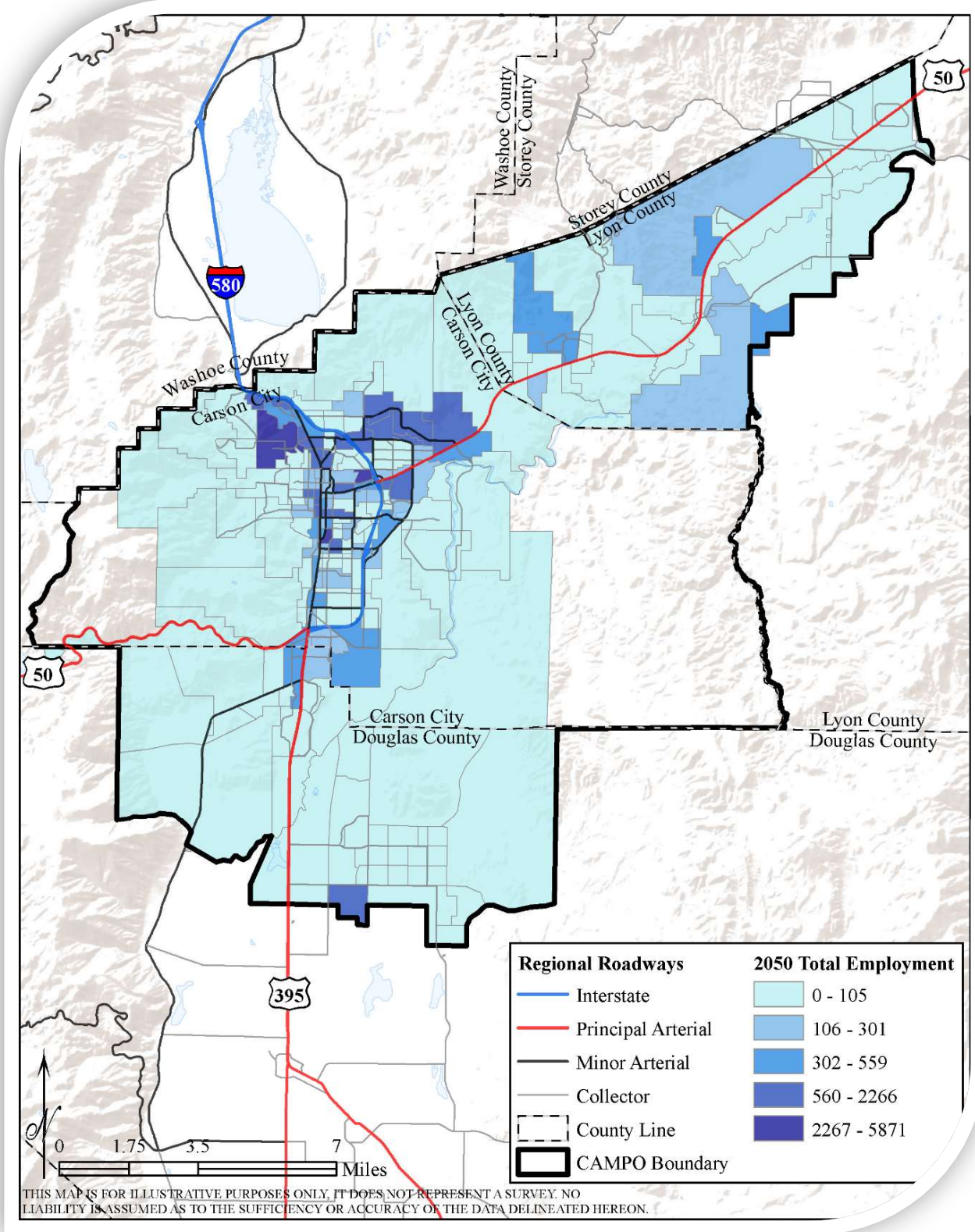


**Figure 4.6: 2030 Commercial Employment by Transportation Analysis Zone (TAZ)**



Source: CAMPO 2050 Travel Demand Model, September 2020.

**Figure 4.7: 2050 Commercial Employment by Transportation Analysis Zone (TAZ)**



Source: CAMPO 2050 Travel Demand Model, September 2020.





### 4.3 Travel Time Index (TTI) & Planning Time Index (PTI)

Travel Time Index (TTI) and Planning Time Index (PTI) are calculated using the Regional Integrated Transportation Information System (RITIS) utilizing data from mobile phones, vehicles, and portable navigation devices to track CAMPO transportation performance and prioritize future investments.

TRAVEL TIME INDEX (TTI)	PLANNING TIME INDEX (PTI)			
<p>Measures the unexpected delay or congestion experienced in a traffic versus a no-traffic situation. The TTI is the ratio of the travel time during the peak period to the time required to make the same trip at free-flow speeds.</p> <p><b>SAMPLE SCENARIO</b> A TTI value of <b>1.3</b>, for example, indicates a <b>20-minute</b> free-flow trip requires <b>26 minutes</b>.</p> <p><b>20 Minutes × 1.3 TTI = 26 Minutes</b></p>	<p>Measures the day-to-day variability of travel time experienced by drivers. It is calculated as the 95<sup>th</sup> percentile travel time compared to the free flow travel time. The 95<sup>th</sup> percentile is the 19<sup>th</sup> worst travel day in a month of 20 travel days.</p> <p><b>SAMPLE SCENARIO</b> A PTI value of <b>2.0</b> suggests that travelers should budget <b>double</b> their free-flow travel time to reach their destination on time 95% of the time.</p> <p><b>20 Minutes × 2.0 PTI = 40 Minutes</b></p> <table style="width: 100%; text-align: center;"> <tr> <td style="width: 33%;"><b>H</b> Reliable 1.00-1.30</td> <td style="width: 33%;"><b>H</b> Moderately Unreliable 1.31-1.80</td> <td style="width: 33%;"><b>H</b> Unreliable 1.81-3.00</td> </tr> </table>	<b>H</b> Reliable 1.00-1.30	<b>H</b> Moderately Unreliable 1.31-1.80	<b>H</b> Unreliable 1.81-3.00
<b>H</b> Reliable 1.00-1.30	<b>H</b> Moderately Unreliable 1.31-1.80	<b>H</b> Unreliable 1.81-3.00		

**Table 4.1: Select Corridor TTI and PTI**

Corridor Name	2022 TTI	2022 PTI
Downtown Carson Street	1.29	1.61
South Carson Street	1.17	1.45
HWY 50 East	1.2	1.48
College Parkway	1.19	1.47
US 395 (Minden)	1.12	1.37

Outputs from CAMPO’s travel demand model on travel time are contained in Table 4.2. Due to the I-580 extension, constructed in 2017, the travel times between the years 2015 and 2021 have reduced. Over the long term, the travel demand model is forecasting increases in travel time during the afternoon peak travel times (PM) and along the U.S. 50 East corridor. CAMPO commute time continues to increase annually, as seen in Figure 5.2.

**Table 4.2: Travel Times in Minutes between Metropolitan Planning Area Gateways**

		Year 2015		Year 2020		Year 2030		Year 2050	
From	To	AM	PM	AM	PM	AM	PM	AM	PM
<b>U.S. Hwy 395 North (Carson City and Washoe County Line near Hobart Road)</b>	U.S. Hwy 50 East (Near Chaves Road)	30.2	39.4	24.6	34.1	24.6	37.5	24.6	47.8
	U.S. Hwy 395 South (0.4 miles south of Johnson Lane)	23.1	30.4	16.0	24.5	16.0	25.6	16.0	27.9
	U.S. Hwy 50 West (2.7 miles west of U.S. Hwy 395)	16.8	18.7	11.7	13.0	11.7	13.2	11.7	13.7
<b>U.S. Hwy 50 East (Near Chaves Road)</b>	U.S. Hwy 395 North (Carson City and Washoe County Line near Hobart Road)	35	33.6	24.7	28.3	24.8	28.9	24.9	30.2
	U.S. Hwy 395 South (0.4 miles south of Johnson Lane)	48.2	53.6	32.2	43.2	32.3	44.6	32.4	47.8
	U.S. Hwy 50 West (2.7 miles west of U.S. Hwy 395)	41.9	41.9	27.9	31.7	28.0	32.3	28.1	33.5
<b>U.S. Hwy 395 South (0.4 miles south of Johnson Lane)</b>	U.S. Hwy 395 North (Carson City and Washoe County Line near Hobart Road)	26.4	26.4	16.1	19.3	16.1	19.8	16.2	20.9
	U.S. Hwy 50 East (Near Chaves Road)	46.6	55.2	31.9	43.3	31.9	47.1	31.9	57.8
	U.S. Hwy 50 West (2.7 miles west of U.S. Hwy 395)	16.1	15.3	10.4	12.5	10.4	12.8	10.5	13.5
<b>U.S. Hwy 50 West (2.7 miles west of U.S. Hwy 395)</b>	U.S. Hwy 395 North (Carson City and Washoe County Line near Hobart Road)	17.3	18.5	11.7	13.0	11.7	13.3	11.7	13.7
	U.S. Hwy 50 East (Near Chaves Road)	37.5	47.3	27.5	37.0	27.5	40.5	27.5	50.7
	U.S. Hwy 395 South (0.4 miles south of Johnson Lane)	13.3	19.1	10.3	17.8	10.3	18.6	10.3	20.6

Source: CAMPO's 2050 Regional Transportation Plan

\*AM represents morning peak travel times and PM represents afternoon peak travel times

\*\*Year 2015 data is from CAMPO's 2040 Regional Transportation Plan





## 4.4 Level of Service

Level of Service (LOS) is a measurement used to determine how well a transportation facility is operating from a traveler's perspective and is used to evaluate roadway sections based on a comparison of vehicle volume and roadway capacity. The travel demand model assigns a letter designation from A to F, with LOS A representing the best operating conditions, and LOS F the worst. As an example, Carson City Municipal Code Title 18 Appendix, Division 12.13.3.3 #5: Traffic Impacts and Mitigation states, "a traffic LOS D or better, in the context of providing a safe, efficient, and convenient transportation system, shall be maintained through mitigation of impacts from all conditions on all city maintained arterial, and collector roads and at city road intersections." The LOS is based on the average daily traffic, as opposed to using a peak travel period.

Outputs from CAMPO's travel demand model on LOS are provided on the following pages. Only the near- and long-term scenarios that incorporate fiscally constrained projects are provided, all other scenarios are contained within the model documentation report. Figures 3.6, 3.7, and 3.8 delineate the LOS for all road segments in each of the three scenarios (base-year, near-term, and long-range). Between 2020 and 2050, the LOS will diminish primarily on U.S. Highway 50 East and U.S. Highway 395.

Figure 3.6: 2020 Base Year Conditions: Roadway Level of Service (LOS)

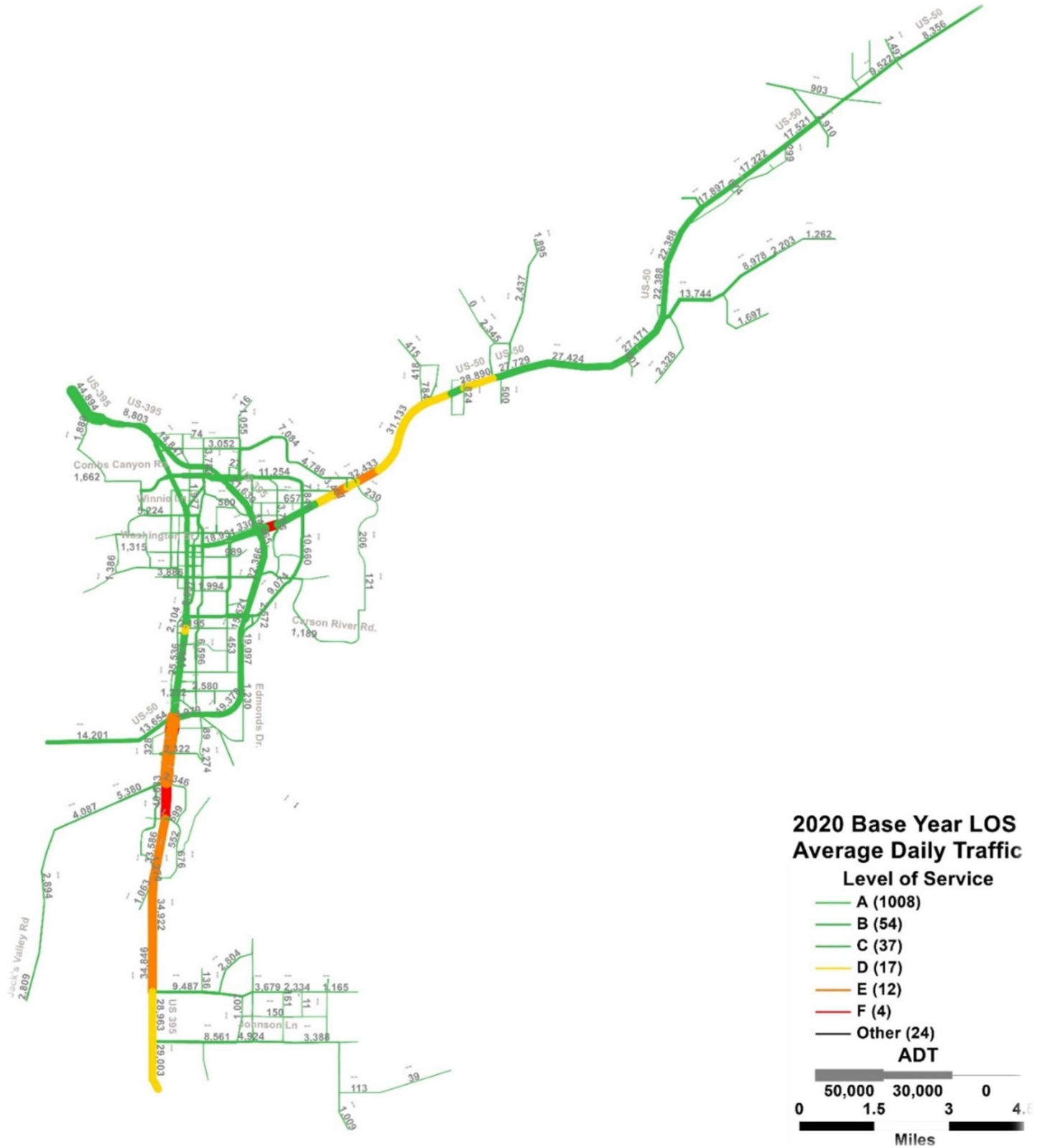


Figure 3.7: 2030 Near-Term Conditions: Roadway Level of Service

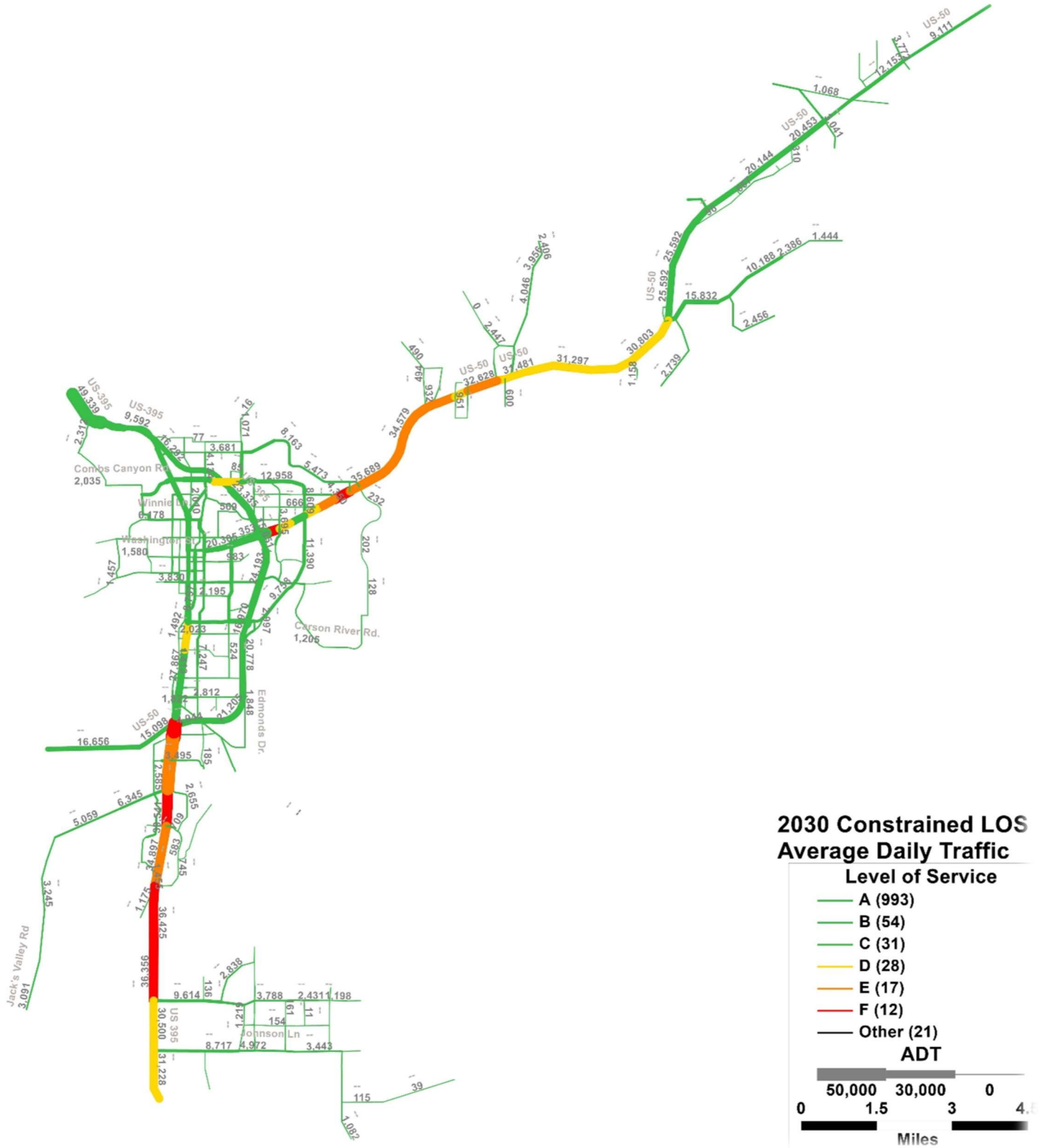
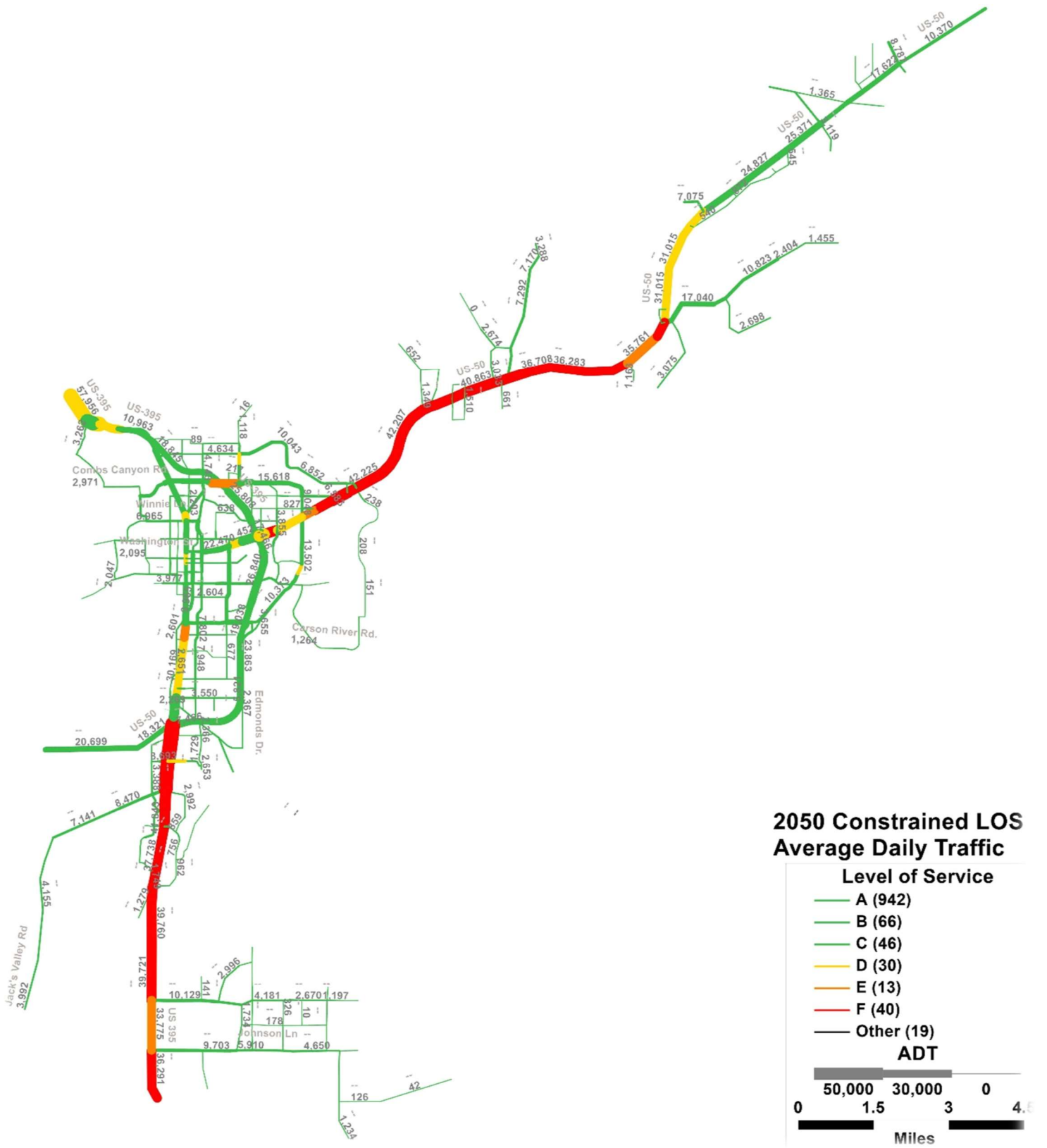


Figure 3.8: 2050 Long-Range Conditions: Roadway Level of Service





## Chapter 5: HOW

How someone travels from place to place within the CAMPO Area is a matter of their choices, or lack of choices, and transportation mode options available. Many factors contribute to people choosing one transportation mode over another including cost, both monetary and temporal, benefits, and convenience. Overwhelmingly, people choose to travel in vehicles throughout the CAMPO Area. With the Complete Streets Initiative, CAMPO is committed to planning for and supporting safe transportation infrastructure for all modes and all users.



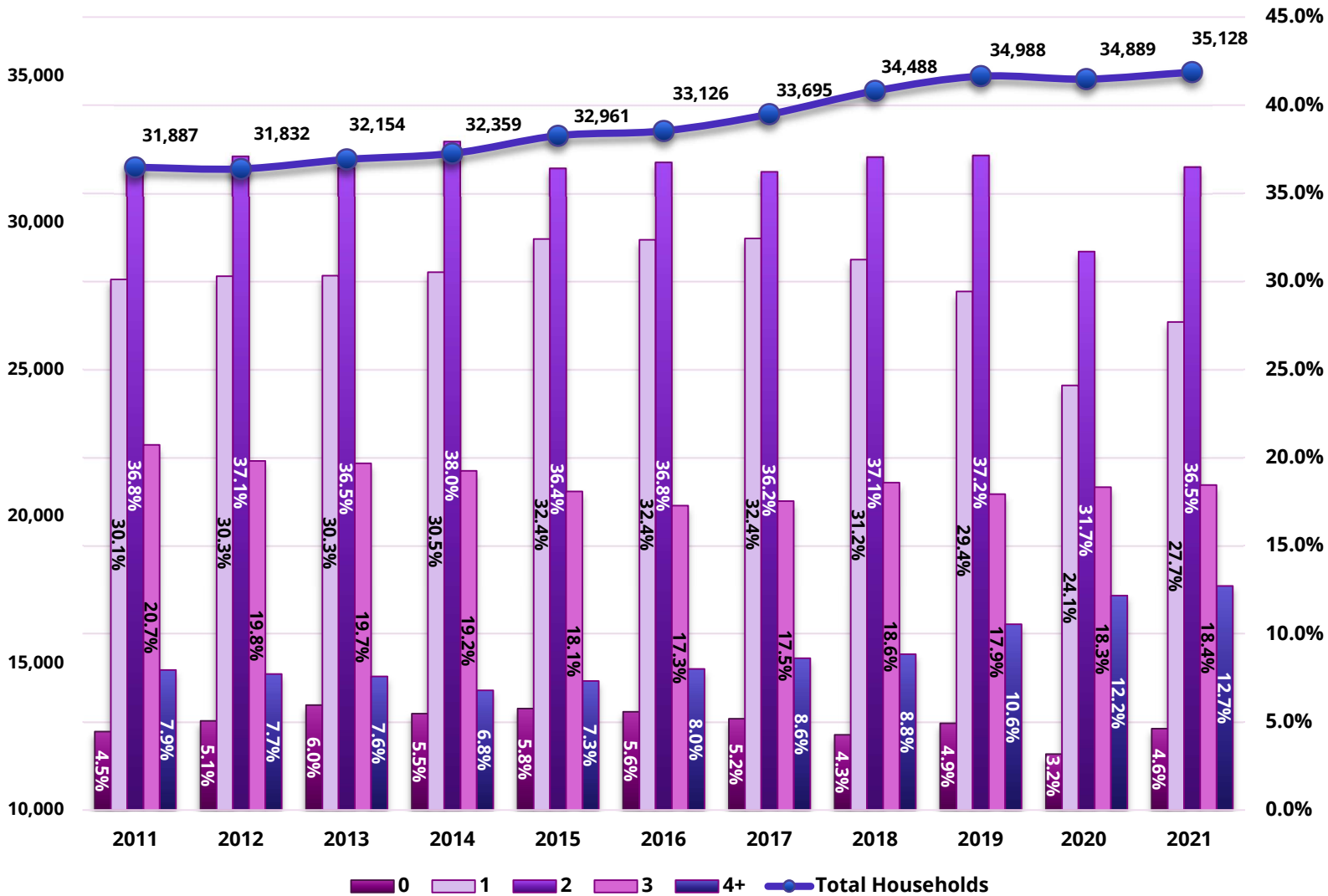
### 5.1 Commuting

If you work outside your neighborhood, a commute to work is expected. Staff used three core variables to analyze commuting in the CAMPO region.

1. Percent of Vehicles Available
2. Commute Length, in Minutes
3. Commute Type (Means of Transportation)



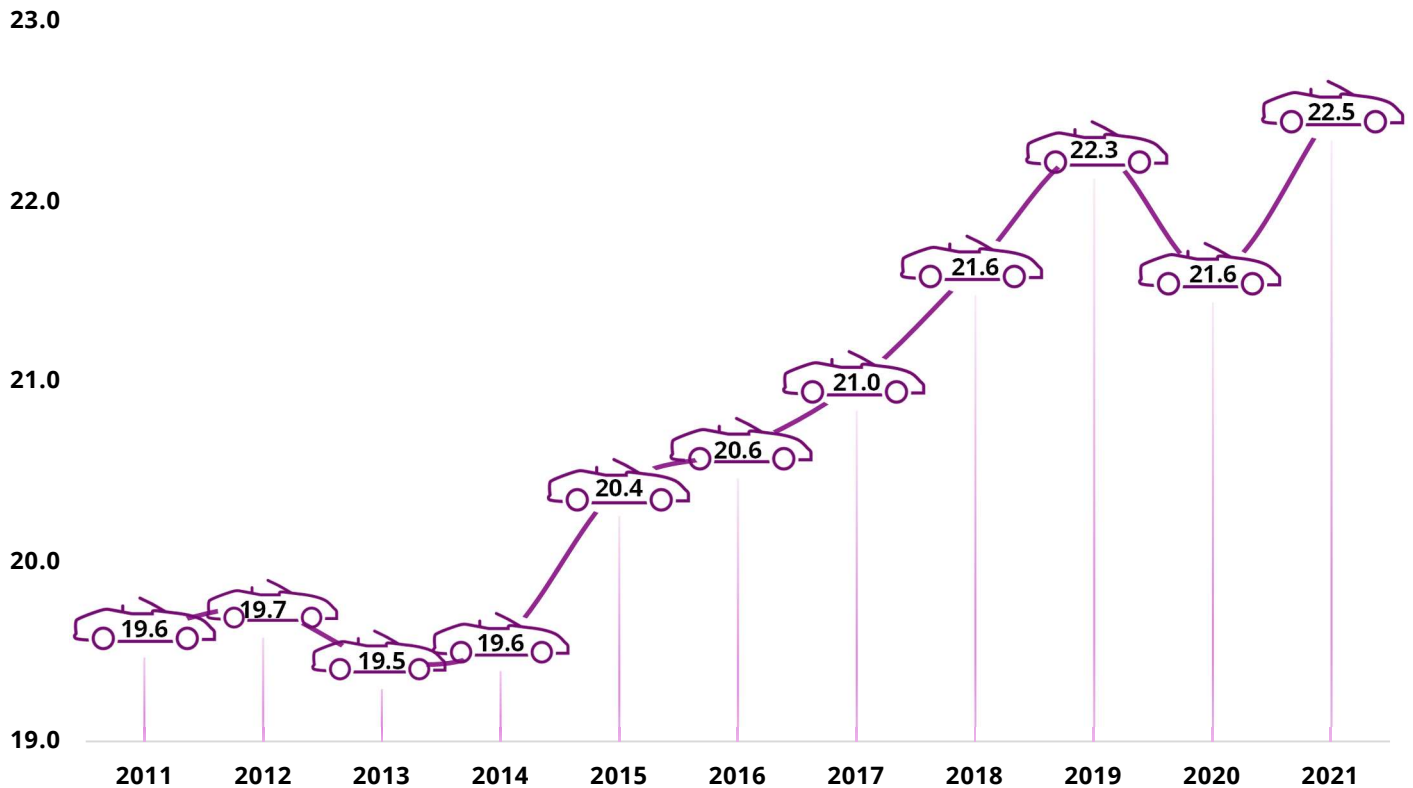
**Figure 5.1: Total Households/ Percent Household Vehicles (2011-2021)**



Source: ACS Household Size by Vehicles Available, Table B08201. Annual Estimates from American Community Survey (ACS) 5-year Estimates.

Figure 5.1 displays information on the number and percentages of vehicles per household. The amount and availability of vehicles in a household can be an indicator of reliance on public transit or non-motorized modes, as well as an indicator of an individual household’s ability to make discretionary trips. In the CAMPO Area, over the last decade, there has been a decline in 0-, 1-, and 2-car households. 3-car households have retained an average of 18% of households and 4+ car households have increased 43% from 2,532 in 2011 to 4,469 in 2021.

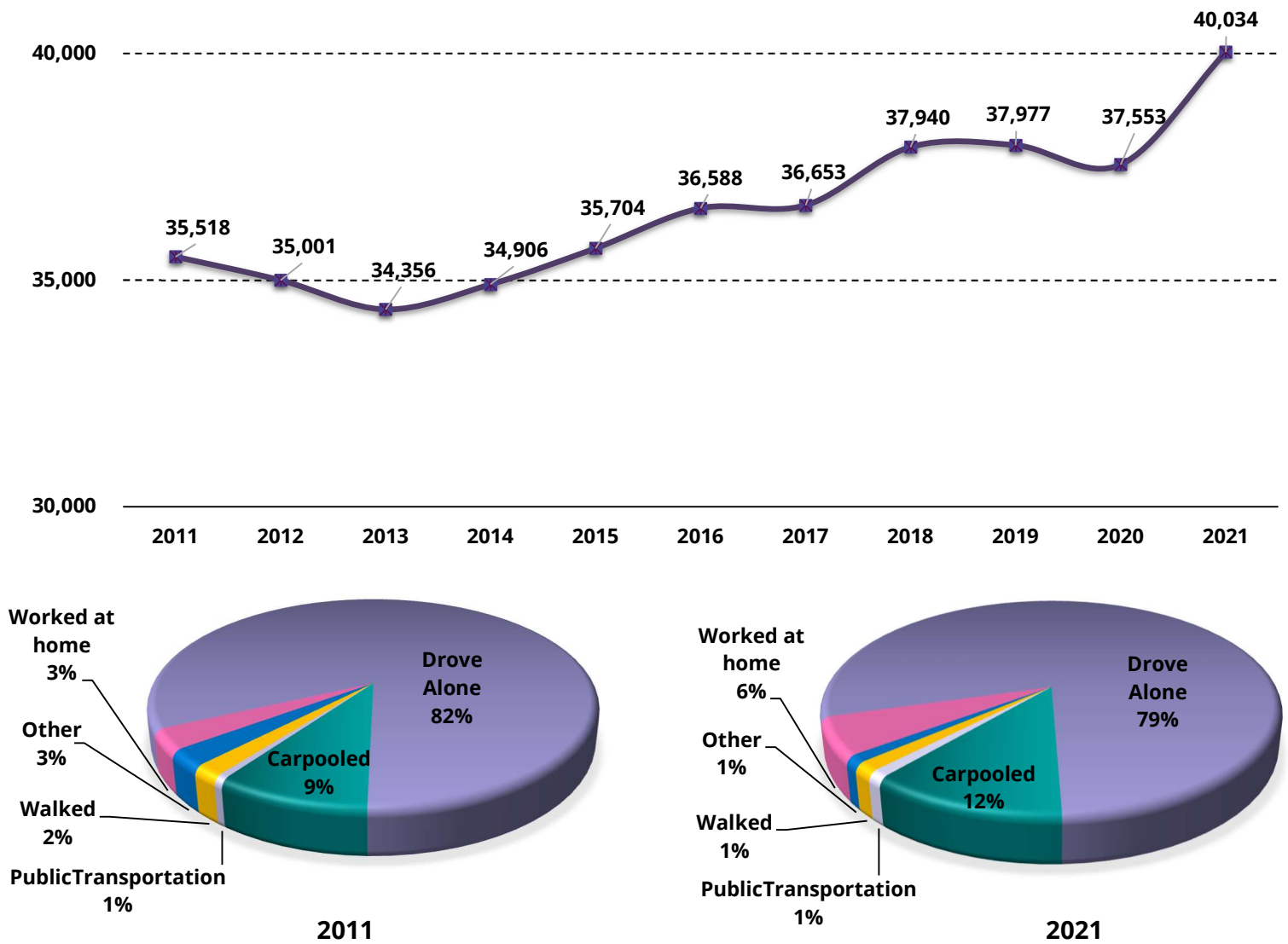
**Figure 5.2: Mean Travel Time to Work (Minutes) (2011-2021)**



Source: ACS Selected Economic Characteristics, Table DP03. Annual estimates from American Community Survey (ACS) 5-year Estimates.

Figure 5.2 displays the mean travel time to work. In 2020, travel times decreased slightly from the previous year, most likely a factor of fewer people driving to work, school, or shopping and more people working from home during the COVID-19 pandemic. Over the last decade, travel times have increased by 13 percent, from 19.6 to 22.5 minutes, with the longest travel time recorded in 2021 as a 22.5-minute commute. The increase in commute times may relate to the Jobs-Housing balance seen in Figure 2.10.

**Figure 5.3: Commute Type: Working Population and Percent Commuting to Work (2011-2021)**



Source: ACS Selected Economic Characteristics, Table DP03. Annual Estimates from American Community Survey (ACS) 5-year Estimates.

Figure 5.3 displays the travel mode to work for workers aged 16 years and over within the CAMPO planning area from 2011 to 2021. The number of total workers that report commuting to work has increased by 11 percent over the last ten years. Consistently, CAMPO residents drive alone to work, though the percentage is trending downward from 82% in 2011 to 79% in 2021. Carpooling has increased from 9.5% in 2011 to 12.8% in 2021. The percentage of workers that report “Worked at Home” increased from 3.2% in 2011 to 6.2% in 2021 with the biggest jump of 1.2% seen from 2019 to 2020, where there was a significant increase in workers working-from-home due to the COVID-19 pandemic.





## 5.2 Vehicle Volumes

Monitoring of traffic volumes along roadways within CAMPO is conducted in two ways. The NDOT's Traffic Information Division in cooperation with FHWA, provides annual reports that contain details on the amount and type of traffic at certain locations along National Highway System (see Figure 3.1) and other regional roadways. This information is used to validate CAMPO's travel demand model, plan short-term and long-term projects, and influence project design. Traffic Volume Data is published through an online application referred to as Traffic Records Information Access (TRINA)<sup>5</sup>.

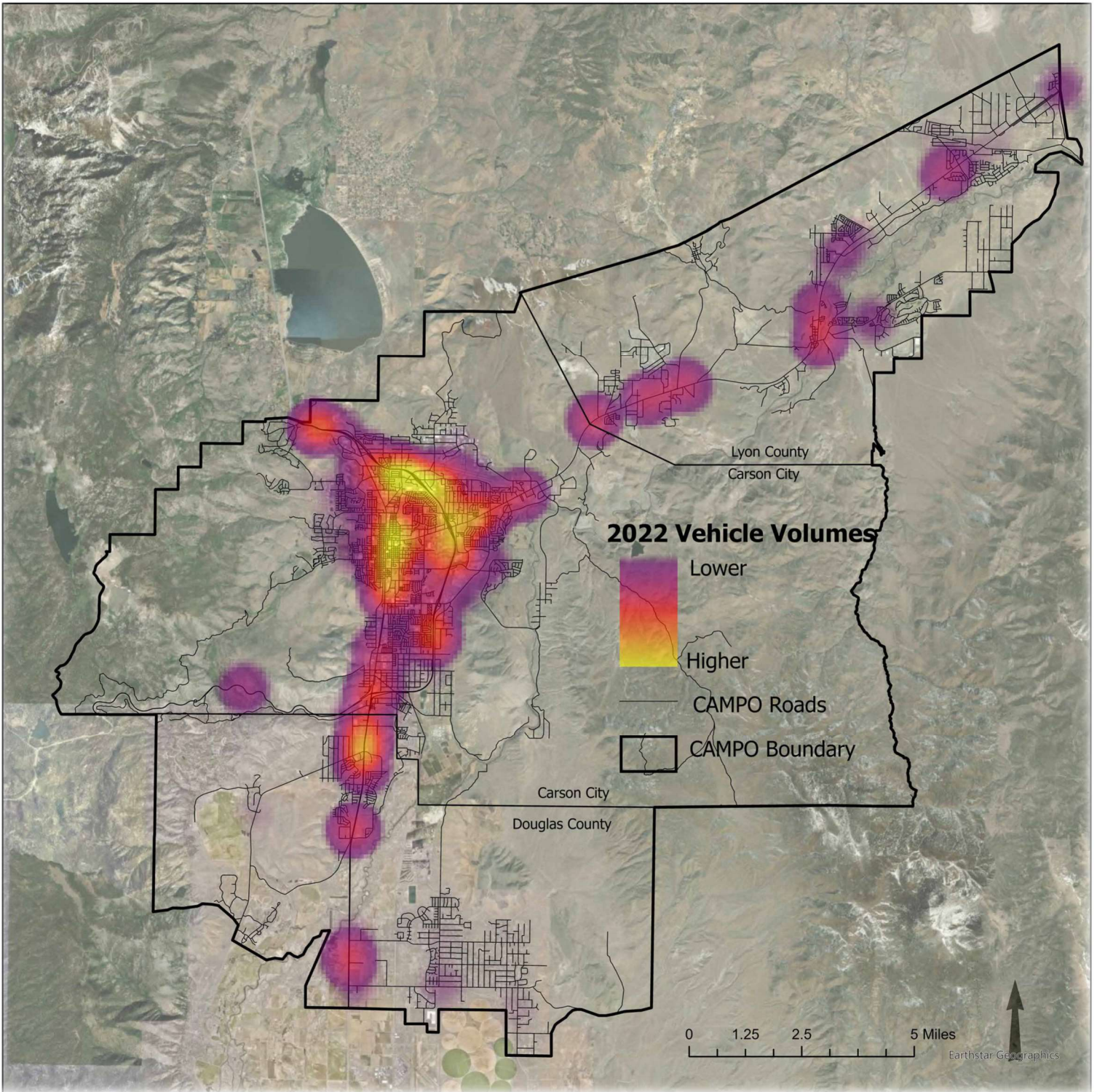
Vehicle volumes in TRINA are measured in AADT, or Average Annual Daily Traffic. Most roads in CAMPO have less than 3000 vehicles per day. The median, or average is 6,570 vehicles per day. The highest daily volumes are found on I-580, US 395, and US 50. Vehicle volumes from TRINA are displayed in Figure 5.4, as a heat map with volumes ranging from 80 to 44,000 vehicles per day.

In addition to data collected by NDOT, traffic volume and speed data along local and regional roadways are obtained with resources from CAMPO and member agencies. Information derived from the data is used in conjunction with data collected by NDOT to fully understand the demand on the comprehensive roadway network. CAMPO's traffic counters are commonly deployed by Carson City staff in response to a citizen or private developer inquiry regarding volumes or speeding on local and regional roadways. The data is used to conduct traffic control warrant analyses at or along specific intersections or corridors. Information can also assist in identifying areas where vehicle speeds exceed the posted speed limit. Traffic counters have been deployed since 2016.

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<sup>5</sup> Nevada Traffic Records Information Access - <https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/planning/traffic-information>

Figure 5.4 CAMPO Vehicle Volumes (2022)







### 5.3 Complete Streets

Complete Streets are designed and operated to enable safe access and comfortable accommodation of users of all ages and abilities, including pedestrians, cyclists, movers of commercial goods, persons with disabilities, public transportation vehicles and their passengers, older adults, children, and motorists. Since 2017, CAMPO staff have monitored pedestrian and bicycle activity on four corridors designated by the Carson City Board of Supervisors for Complete Streets treatment. The corridors are North Carson Street, East William Street, Downtown Carson Street, and South Carson Street. Complete Streets enhancements were completed in the Downtown Corridor (2017) and South Carson Street Corridor (2020). Complete Streets improvements are planned for East William Street in 2024 and North Carson Street in 2026.

**Figure 5.5: Complete Streets Monitoring Locations (2017-2023)**

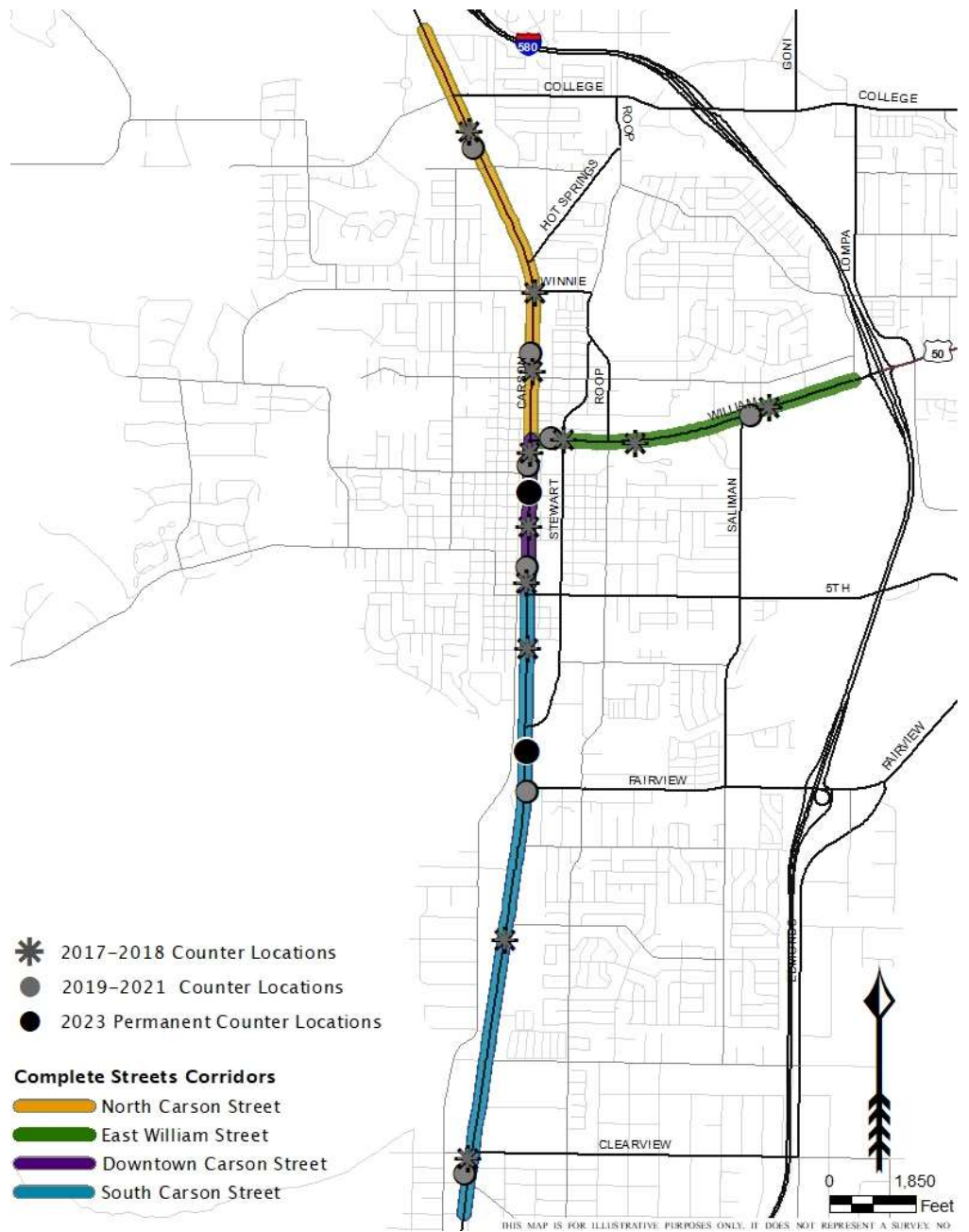


Figure 5.5 displays pedestrian counter locations from 2017 through 2023. In 2023, two permanent counters were installed in the Downtown Carson Street Corridor and the South Carson Street Corridor.



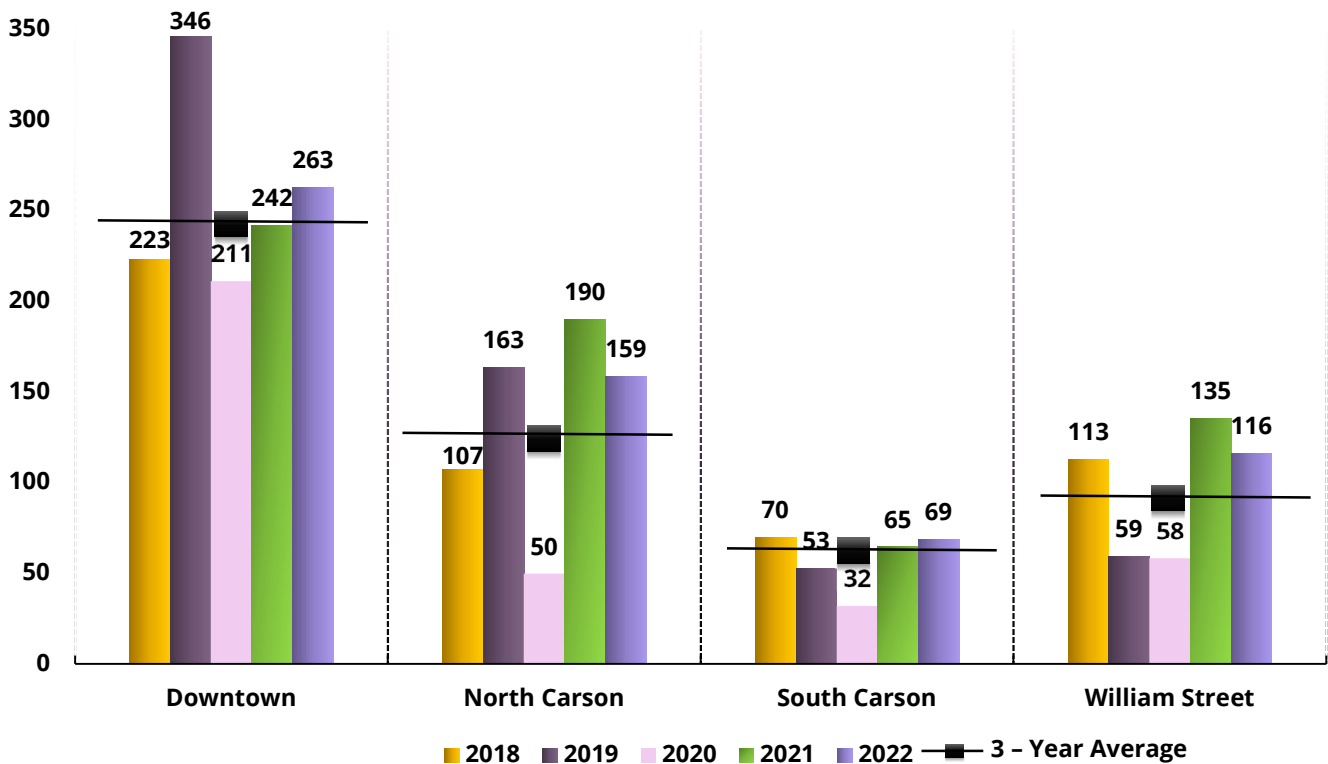
## 5.4 Pedestrian Monitoring

Pedestrian volume is one of several ways to measure the success of Complete Streets investment. It is logical to expect Complete Streets treatments to induce pedestrian demand, increasing in pedestrian use of the improved corridors. However, there are factors beyond just roadway improvements, such as adjacent land use, that play a role in a corridor’s attractiveness to pedestrians. Therefore, a lack of growth from year to year does not mean that the investment is not worthwhile. Significant increases in utilization may take multiple years to manifest in the data, which is why continued monitoring is imperative.

New Pedestrian Counter in Downtown Carson City



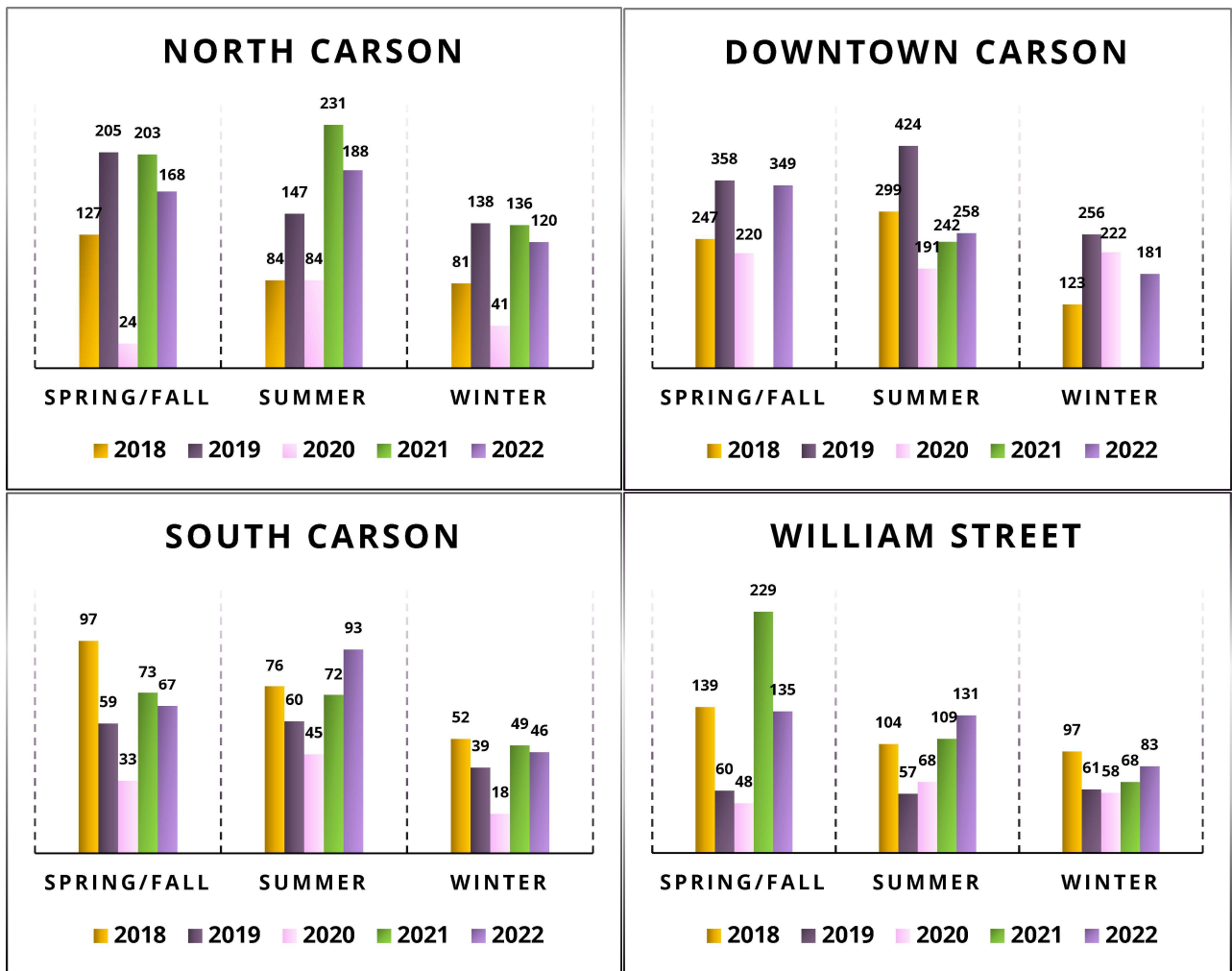
Figure 5.6: Average Daily Pedestrian Volumes by Complete Streets Corridor (2018-2022)





Figures 5.6 and 5.7 provide the average daily pedestrian volumes by a corridor from 2018 to 2022. The impact of Covid-19 is apparent in the 2020 data, which is below the 3-year average on all four corridors. Despite a national trend of increased pedestrian activity during the pandemic, counter data shows a decrease. This is likely due to the placement of the counters near schools and retail stores, both of which were frequently closed in 2020.

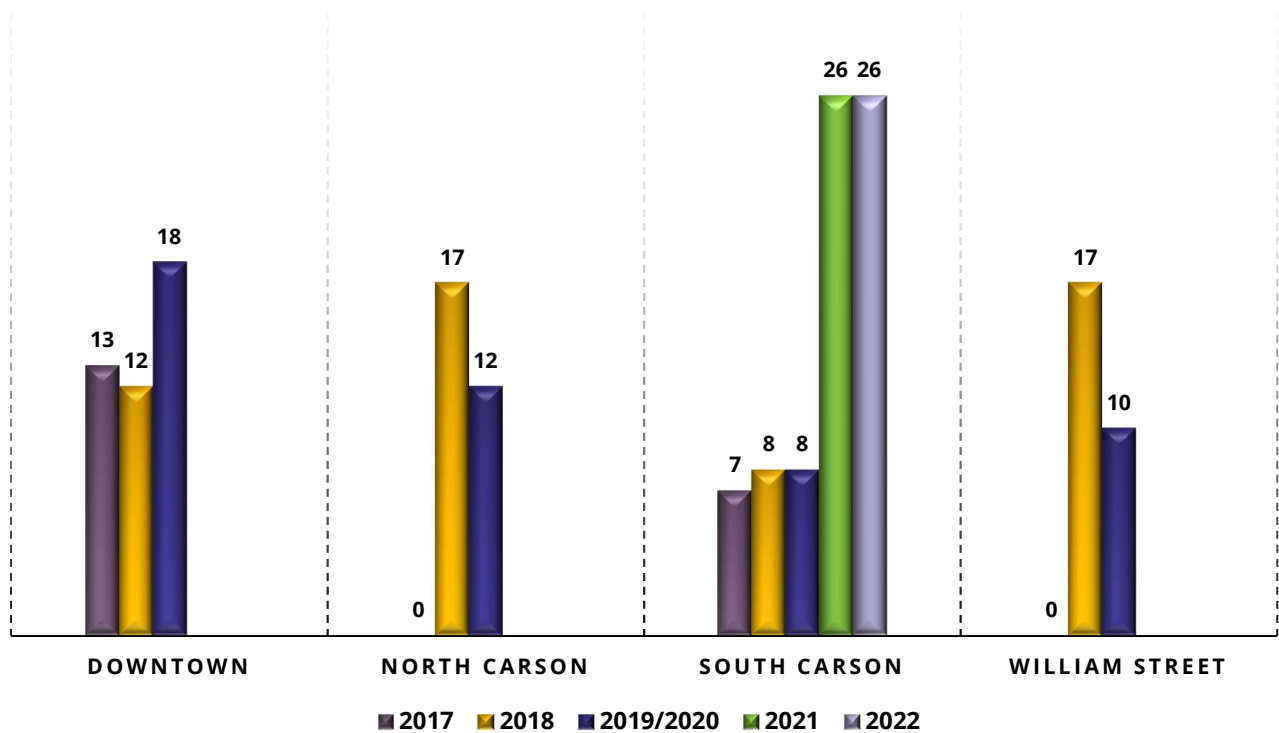
**Figure 5.7 Average Daily Pedestrian Volume per Season by Complete Streets Corridor and Year (2018-2022)**



Notes:

- Seasonal months are defined as follows: Summer (May, June, July, August); Spring / Fall (March, April, September, October); Winter (November, December, January, February).
- Outliers have been removed.
- Downtown Carson Street data was only collected during the summer season of 2021.

**Figure 5.8 Daily Bicycle Counts (2017-2022)**



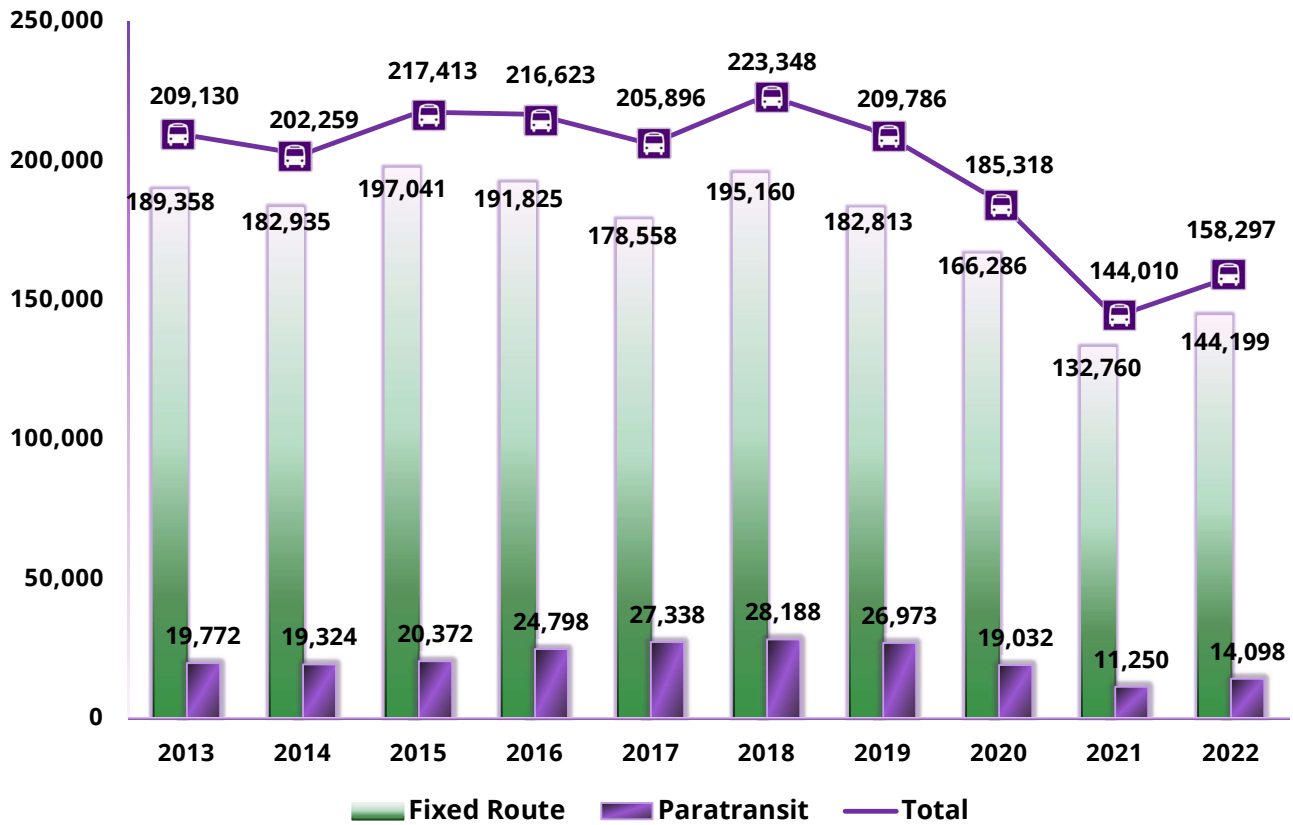
Daily bicycle counts will continue to improve with the installation of permanent counters in the completed Downtown and South Carson Complete Street corridors. CAMPO plans to install permanent counters in the East William Street and North Carson Complete Streets corridors after reconstructions are complete. CAMPO is working on a comprehensive review of perceived stress on bicycle networks throughout the region to understand how and where to build a connected network to support and encourage every level of bicyclist in the community.



## 5.6 Transit Monitoring

In the CAMPO Area, Jump Around Carson (JAC) is the primary transit provider. The JAC bus transit system is comprised of 62 bus stops along four fixed routes. As required by federal regulations, JAC provides a complementary paratransit service that provides "curb-to-curb" bus service for persons with disabilities who cannot access the fixed bus routes and are located within a mile of an established fixed route.

Figure 5.8: JAC Ridership (FY 2013-FY 2022)



Source: Jump Around Carson National Transit Database, Annual Reports, 2013-2022

Figure 5.8 shows ridership data between 2013 and 2022. Ridership is defined as the number of boarding passengers. The demand for transit mobility in the United States and the Carson Area is significantly influenced by socioeconomic factors, such as demographics (age and gender), economics (income and occupation), public resources (transit infrastructure and performance), and land use. Fluctuations in employment levels, gas prices, headways, household income, bus cleanliness, and bus on-time performance can significantly impact annual ridership.

Ridership dropped by 12% in 2020, and again by 22% in 2021 to the lowest level of the decade. This was caused largely by the COVID-19 pandemic. Ridership is slowly beginning to increase as public health conditions improve and normal travel patterns resume. Beginning in 2020 in response to the COVID-19 pandemic, JAC waived fares. Table 5.1 provides the annual performance reporting of key metrics utilized to understand the efficiency and effectiveness of JAC's transit operation from 2019 through 2022.

JAC maps and rider information can be found by visiting [www.ridejac.com](http://www.ridejac.com).

**Table 5.1: Jump Around Carson Operating Statistics (2019-2022)**

	FY 2019		FY 2020		FY 2021		FY 2022	
	Fixed	Paratransit	Fixed	Paratransit	Fixed	Paratransit	Fixed	Paratransit
<b>Annual Unlinked Trips</b>	169,067	26,973	166,286	19,032	132,760	11,250	144,199	14,098
<b>Operating Expenses per Unlinked Passenger Trip</b>	\$4.59	\$18.62	\$7.02	\$11.70	\$9.95	\$18.40	\$10.31	\$29.42
<b>Operating Expenses per Vehicle Revenue Mile</b>	\$4.47	\$6.14	\$6.77	\$3.98	\$8.77	\$4.86	\$9.48	\$7.87
<b>Operating Expenses per Vehicle Revenue Hour</b>	\$51.84	\$59.93	\$78.20	\$36.84	\$101.30	\$42.47	\$111.49	\$71.99
<b>Number of Passengers per Revenue Hour</b>	11.3	3.2	11.1	3.1	10.2	2.3	10.8	2.4
<b>Number of passengers per Revenue Mile</b>	1.0	0.3	1.0	0.3	0.8	0.3	0.9	0.3
<b>Number of passengers per revenue day</b>	545.4	88.1	539.9	61.8	444.0	38.5	493.8	48.3
<b>Monthly ridership</b>	14,089	2,248	13,857	1,586	11,064	938	12,016	1,175
<b>Farebox recovery rate</b>	6.1%	3.5%	3.3%	6.5%	0.0%	0.0%	0.0%	0.0%

*Note: Farebox recovery rates in FY 2021-2022 are 0.0% due to JAC running fare-free service during the COVID-19 pandemic.*





## 5.7 Public Participation

CAMPO is constantly seeking opportunities to increase meaningful public participation in the transportation planning process. To ensure continued improvement, the agency is committed to evaluating the effectiveness of outreach strategies being employed on a regular basis. Outreach strategies CAMPO has used throughout the 2022 planning process are summarized in the table below. CAMPO will use a combination of qualitative and quantitative evaluation measures to create a more holistic view of success.

**Table 5.2 Evaluation of Public Outreach Strategies**

Strategy	2022 Public Participation Outreach
Participation in community events	<ul style="list-style-type: none"> <li>• May 3, 2022, East William Complete Streets Project meeting (<b>300+</b> comments)</li> </ul>
Stakeholder meetings	<ul style="list-style-type: none"> <li>• <b>4</b>; Regional Transportation Stakeholder Coalition</li> </ul>
Council meetings/ presentations	<ul style="list-style-type: none"> <li>• <b>12</b> CAMPO Board Meetings</li> </ul>
Open house events	<ul style="list-style-type: none"> <li>• <b>1</b>; Public Works Week</li> </ul>
Public hearings*	<ul style="list-style-type: none"> <li>• May 3, 2022, East William Complete Streets Project meeting (<b>300+</b> comments)</li> </ul>
Electronic newsletters/email lists (eNews)	<ul style="list-style-type: none"> <li>• RTSC; Regional Transportation Stakeholder Coalition (<b>20</b> members)</li> </ul>
Website*	<ul style="list-style-type: none"> <li>• Continual Updates</li> </ul>
Surveys	<ul style="list-style-type: none"> <li>• East William Complete Streets Survey &amp; map (<b>349</b> entries)</li> <li>• Title VI Limited English Proficiency (LEP) survey (<b>15</b> entries)</li> </ul>
Visualization techniques*	<ul style="list-style-type: none"> <li>• Continual Updates</li> </ul>
Press releases	<ul style="list-style-type: none"> <li>• <b>4</b> Press Releases</li> </ul>
Legal ads*	<ul style="list-style-type: none"> <li>• <b>3</b> Legal Ads in the Nevada Appeal</li> </ul>
Mail notices	<ul style="list-style-type: none"> <li>• <b>750</b> Postcards -Colorado St.</li> </ul>
Comment forms	<ul style="list-style-type: none"> <li>• <b>2</b>; CAMPO Comments</li> </ul>
Language translation*	<ul style="list-style-type: none"> <li>• <b>1</b>; JAC website page EN ESPAÑOL</li> <li>• CAMPO updated Language Assistance Plan for JAC</li> </ul>
ADA-accessible websites and digital materials*	<ul style="list-style-type: none"> <li>• <b>16</b> pages within the CAMPO/ CC website with continual updates</li> </ul>

\*Required by federal and/or state statute

## Chapter 6 – Ongoing and Future Monitoring Efforts

Outlined within CAMPO's 2050 Regional Transportation Plan, CAMPO's established goals, objectives, and performance measures form the basis of CAMPO's performance-based planning framework that informs ongoing policymaking and investment decisions. CAMPO staff will continue to monitor the changing socioeconomic factors and the mobility needs of the region to appropriately respond to demands on CAMPO's transportation infrastructure. In the next fiscal year, CAMPO staff intend to focus on improving bicycle and pedestrian monitoring methodologies and permanent counter-deployment to better monitor and inform investment decisions. CAMPO staff also plan to analyze changes in road vehicle volumes to determine which roads are seeing increases in traffic volume to assist in data-driven, performance-based project identification.

Several resources will be available for use for future monitoring reports including the 2024 Growth Management Report, updated Traffic Analysis Zones (TAZ) along with an updated Travel Demand Model, and the continued public participation metrics. Additionally, staff are considering potential methodologies to better analyze vehicle counts within the CAMPO Area and coordinated monitoring for bicycles and pedestrians for smaller engineering projects. CAMPO is looking forward to a new Local Road Safety Plan, in partnership with NDOT, identifying safety improvements in high crash areas, reducing the number and frequency of fatal and serious injury crashes, prioritizing traffic safety investments, and encouraging safety stakeholder engagement.

CAMPO staff are also continuing to coordinate with NDOT regarding possible changes to performance measures including potential legislation that would require smaller MPO's to measure and target greenhouse gas emissions. Staff will also continue discussions with NDOT to better understand the type and availability of data as it relates to annual monitoring and reporting by CAMPO. CAMPO staff will continue to analyze Census data to report reflections and observations through and following the COVID-19 pandemic. In addition, CAMPO Staff will continue to include demographics with an Environmental Justice lens and inclusive of Title VI requirements.