Tahoe Metropolitan Planning Organization

TAHOE REGIONAL PLANNING AGENCY

2014 TRANSPORTATION MONITORING REPORT

TAHOE METROPOLITAN PLANNING ORGANIZATION
TAHOE REGIONAL PLANNING AGENCY

lake Tahoe

December 2015

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Introduction

The Tahoe Metropolitan Planning Organization (TMPO) and Tahoe Regional Planning Agency (TRPA) conduct on-going monitoring to inform transportation policy and programs with the goal of providing a successful multi-modal transportation system that appeals to users, supports mobility needs and decreases dependency on the private automobile. The *Mobility 2035: Transportation Monitoring Program Report* brings together the results of performance indicator monitoring since the early 1970s—from traffic counts, travel mode choice, demographic and air quality trends so that the Lake Tahoe Region's transportation system can be evaluated and best available science can inform policy-making. Due to the "data lag" associated with quality control from the agencies and jurisdictions collecting much of this information, a common year is not possible for all of the information provided. TMPO and TRPA staff utilized the most current year information that was available to compile this report.

Performance Measures

Identifying and analyzing data trends are at the core of any planning effort. The TRPA and TMPO, in cooperation with other state and local agencies, monitor a number of performance indicators and also maintain demographic data for the Lake Tahoe Region. In December of 2012, the TRPA Governing Board approved the Lake Tahoe Regional Transportation Plan and Sustainable Communities Strategy (*Mobility 2035*). Part of this effort included identifying a number of performance indicators to assess the transportation system. These performance measures, as well as additional measures identified during the 2016 Regional Transportation Plan (RTP) update, are shown in Table 1. This document is intended to report on the status of these indicators, as well as the other transportation and demographic data that TRPA and TMPO have tracked over time.

Table 1. Transportation Performance Measures

Trend Measured	Target	Status
System Usage & Mode Share		
Mode share (within, to, and from the region)	Increase non-auto mode share	Not measured in this report
Mode share (to commercial and recreation sites)	Increase non-auto mode share to 19.3% by 2016 (average of winter and summer)	Current non-auto mode share: 18%
Access		
Share of dwelling units with access to transit, bike, and pedestrian facilities	Increase	Not measured in this report
Share of recreation areas served by transit, bike, and pedestrian facilities	Increase	Increased from 2010 and 2012 measurements
Share of commercial core areas meeting pedestrian and transit-oriented development design standards	Increase	Not measured in this report
Quality of Service	Consider for all modes, not just automobiles	Not measured in this report
Environmental Impact		
Vehicle Miles Traveled	10 percent reduction from 1981 levels, to 2,000,000 daily VMT.	In attainment
Traffic Volume	7 percent reduction from 1981 levels on U.S. Highway 50	In attainment

	Greenhouse Gas Emissions	From the 2005 base year: 7 percent per capita reduction by 2020; 5 percent per capita reduction by 2035	In attainment
Safety			
	Vehicle Collisions	Decrease	Not enough data to report
	Bicycle and Pedestrian Collisions	Decrease	Not enough data to report

Demographic Trends

Transportation trends are influenced by many local demographic factors, including population levels, school enrollment, and employment opportunities throughout the region. Transportation trends are also influenced by changes in the nation's economy that can affect visitation to the Basin and impact hotel-motel occupancies, recreational and commercial facilities, and gaming revenues.

Just over 56,000 people are estimated to reside year-round in the Lake Tahoe Region. Figure 1 illustrates the current (2014) population as estimated by the TRPA's TransCAD Model, the 2010 population estimate as tabulated by the U.S. Census Bureau, and the historical population estimates dating back to 1980. In interim years when Census Information is not available, TRPA estimates population based on the number of residential allocations utilized by the respective counties and City of South Lake Tahoe. Over the next decade, the population of the Lake Tahoe Region is expected to grow moderately, rising to approximately 60,000 by 2035. These projections account for residents and do not include temporary workers or those who own vacation and second homes in the Lake Tahoe Region.

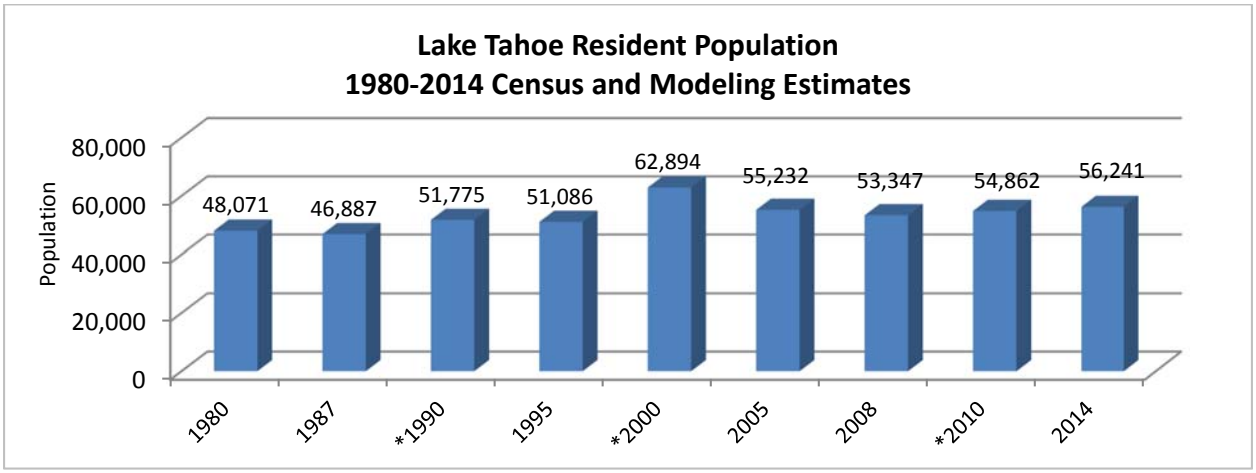


Figure 1. Sources: TMPO TransCAD Model. *Data from decennial U.S. Census.

Second Home Ownership

As shown in Figure 2, the Tahoe Basin has a relatively high percentage of housing that is used seasonally and this is particularly true on the North Shore. Owner-occupancy is just 25 percent Basin-wide.

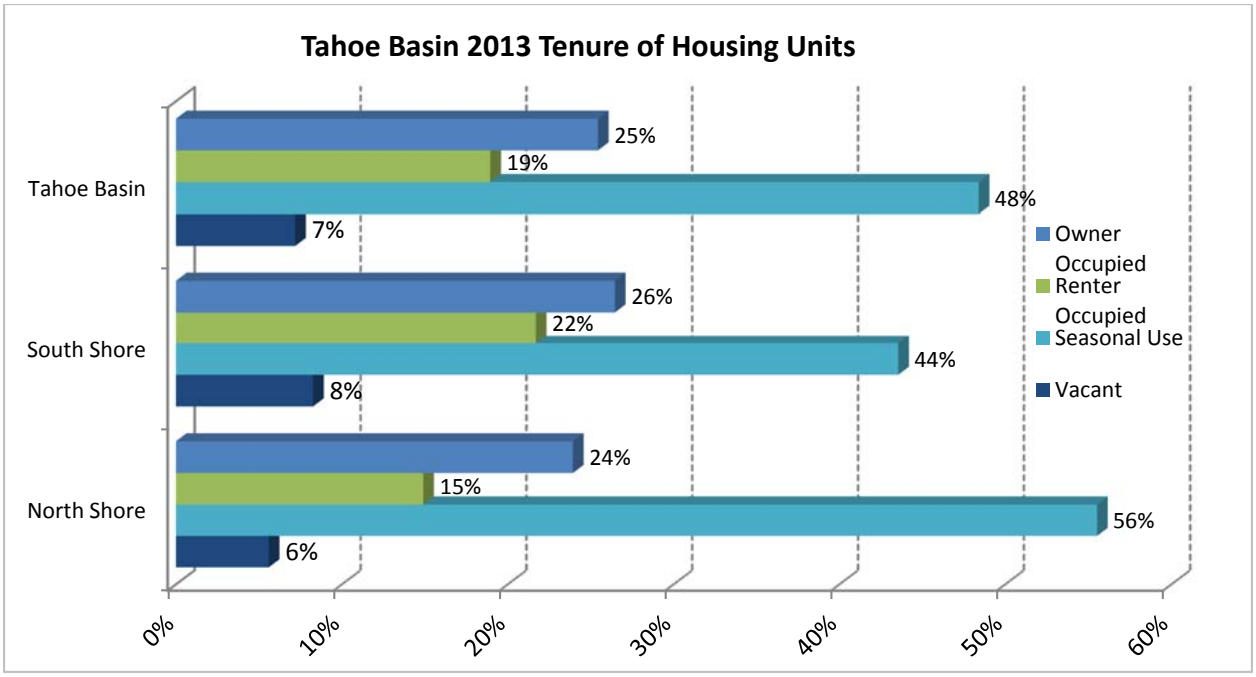


Figure 2. Source: 2009-2013 American Community Survey, Table B25004 Geographic Boundaries, Census Tracts: North Shore, Placer County - 201.04, 201.05, 201.06, 201.07, 221, 222, 223; North Shore, Washoe County - 33.05, 33.06, 33.07, 33.08, 33.09; South Shore, Douglas County - 16, 17, 18; South Shore, El Dorado County - 302, 303.01, 303.02, 304.01, 304.02, 305.02, 305.04, 305.05, 316, 320

As compared with other Counties, the 2009-2013 American Community Survey estimates Placer County to have the greatest percentage of homes used seasonally (63%); Washoe County is estimated to have the greatest percentage of owner-occupied homes (32%). Additional detail is contained within Figure 3.

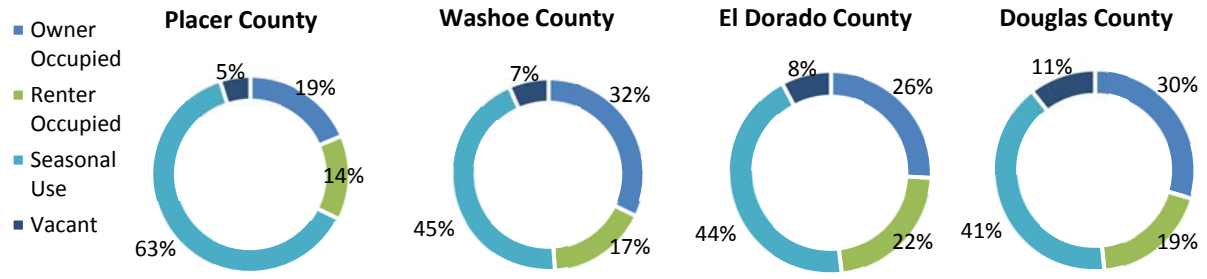


Figure 3. Source: 2009-2013 American Community Survey, Table B25004 Geographic Boundaries, Census Tracts: North Shore, Placer County - 201.04, 201.05, 201.06, 201.07, 221, 222, 223; North Shore, Washoe County - 33.05, 33.06, 33.07, 33.08, 33.09; South Shore, Douglas County - 16, 17, 18; South Shore, El Dorado County - 302, 303.01, 303.02, 304.01, 304.02, 305.02, 305.04, 305.05, 316, 320

School Enrollment

Figure 4, below, displays grades K-12 school enrollment and school enrollment as a percentage of total resident population in the Lake Tahoe Region. As this figure illustrates, school enrollment in the Region has declined significantly over the last decade. School enrollment as a percentage of resident population has decreased from 15 percent in 2000 to 12 percent in 2010. This shift in resident household

composition, from more school-aged children to fewer, has contributed to the closure of two elementary schools and two middle schools in the Region.

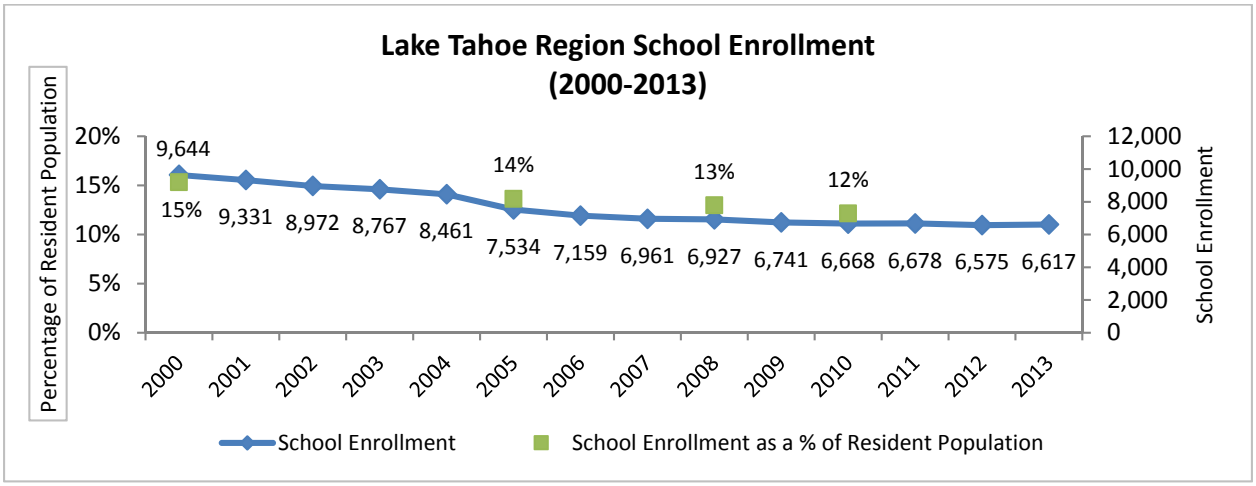


Figure 4. School Enrollment Sources: Lake Tahoe Unified School District, Truckee Tahoe School District, Washoe and Douglas School Districts; Resident Population Sources: Decennial U.S. Census, TMPO TransCAD Model

Home Values and Housing Affordability

In addition to the significant decreases in school enrollment, another factor contributing to demographics changes is the housing market. Over the past several decades, the cost of housing has increased beyond the levels that many workers in the Tahoe Region can afford. While recent housing policies have been implemented with the goal of helping to reduce the cost of housing in some areas, the Region has yet to see significant changes in housing stock composition, resulting in ongoing challenges of affordability.

Table 2 displays Median Home Values, Median Household Incomes, and Home Price to Income Ratio Indicators for 1990, 2000, and 2010. Household incomes have not kept pace with home values throughout the Basin, and the result is a Total Tahoe Basin home price to income ratio that has increased from 468 percent in 1990 to 1007 percent in 2010. In other words, the median home value is priced at 1007 percent of the median household income in the Lake Tahoe Basin. Figure 5, Figure 6, and Figure 7, below, provide a visual display of the data within Table 1.

Table 2. Housing Affordability Trends

		Median Home Value (Adjusted for Inflation)	Median Household Income (Adjusted for Inflation)	Housing Price to Income Ratio Indicator
North Lake	1990	$298,039.97	$60,409.45	493%
	2000	$442,785.64	$69,038.62	641%
	2010	$648,409.26	$60,948.00	1064%
South Lake	1990	$249,063.64	$59,057.00	422%
	2000	$289,348.20	$66,481.75	435%
	2010	$531,268.45	$52,465.00	1013%
Total Tahoe Basin	1990	$282,970.33	$60,409.45	468%
	2000	$395,574.12	$68,003.47	582%
	2010	$612,365.93	$60,833.00	1007%

Source: Decennial U.S. Census, Summary File 3 (1990, 2000); 2006-2010 American Community Survey, Table B25077 (2010). Inflation Adjustment: West Region CPI, Bureau of Labor Statistics.

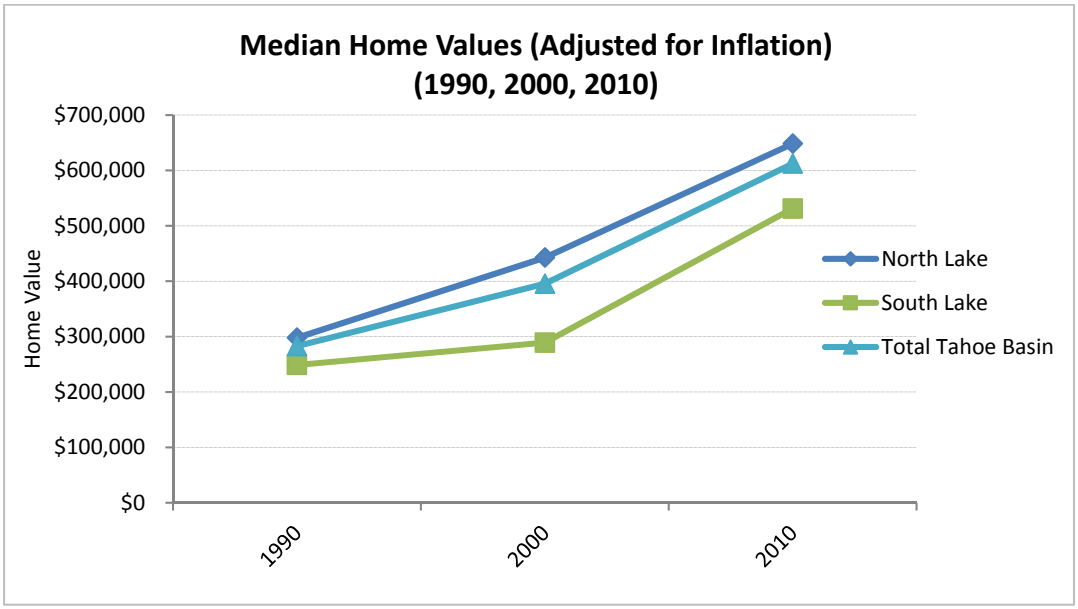


Figure 5. Source: Decennial U.S. Census, Summary File 3 (1990, 2000); 2006-2010 American Community Survey, Table B25077 (2010)

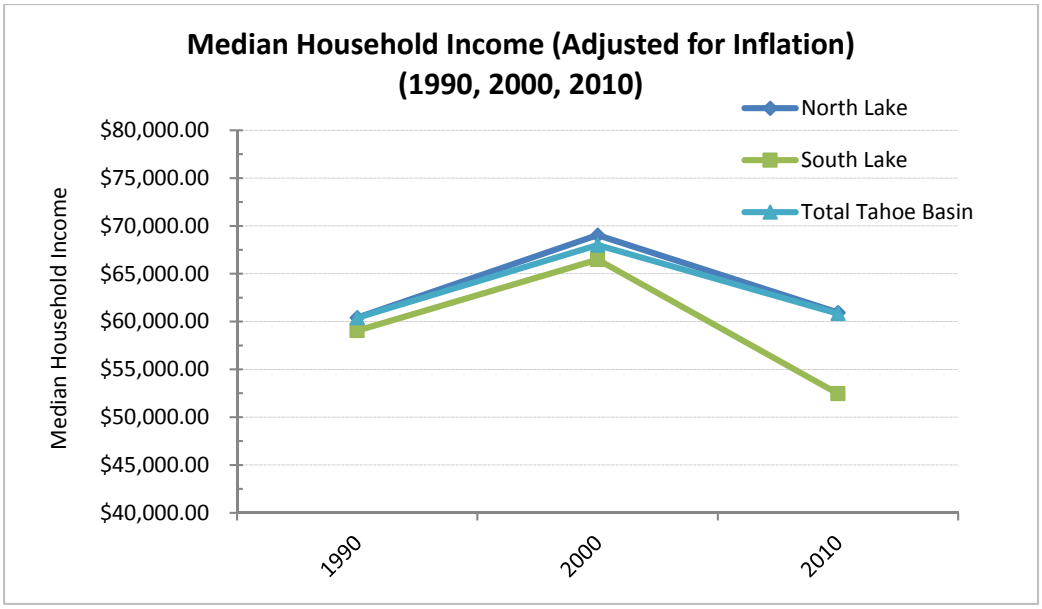


Figure 6. Source: Decennial U.S. Census, Summary File 3 (1990, 2000); 2006-2010 American Community Survey, Table B25077 (2010)

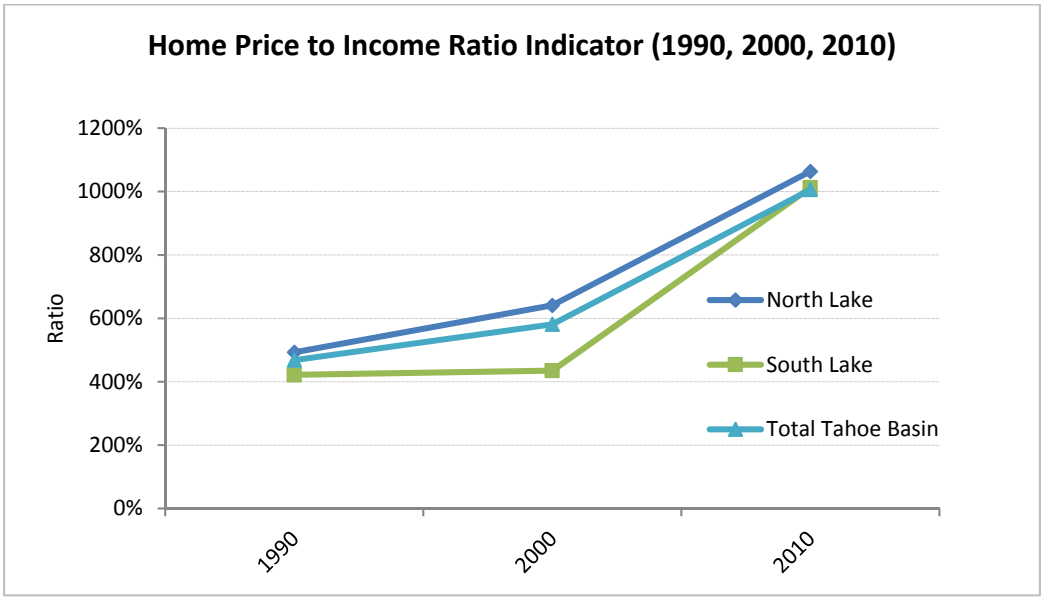


Figure 7. Source: Decennial U.S. Census, Summary File 3 (1990, 2000); 2006-2010 American Community Survey, Table B25077 (2010)

Traditionally Underserved Populations

TMPO and the Census Bureau monitors concentrations of traditionally underserved population groups in order to ensure they are equitably served by new and existing transportation investments. Lake Tahoe communities have a high proportion of Latino residents, particularly in South Lake Tahoe and Kings Beach, and Filipino residents, particularly in South Lake Tahoe. TMPO also monitors locations of seniors (age 65+) and households that lack access to a private vehicle, because they are more likely to depend on public transportation than the population as a whole. As compared with other areas in the Tahoe Region, Incline Village has the highest percentage of seniors (18%), while Kings Beach and South Lake Tahoe have the highest percentage of zero-car households (10%). Additional information on traditionally underserved populations is contained in Table 3, below.

Table 3. Transit-Dependent and Historically Underserved Populations

	Latino	Filipino	Seniors (65+)	Zero-Car Households
Kings Beach CDP	68%	0%	1%	10%
South Lake Tahoe (city)	33%	4%	11%	10%
Sunnyside-Tahoe City CDP	16%	0%	9%	3%
Tahoe Vista CDP	27%	1%	11%	2%
Incline Village CDP	16%	2%	18%	2%
Stateline CDP	53%	1%	4%	0%

Source: Latino, Filipino, Seniors: 2009-2013 American Community Survey 5-year estimates, Table DP05
Source: Zero-Car Households: 2009-2013 American Community Survey 5-year estimates, Table B08201

Employment

The Tahoe Region's economy has experienced a decline that predates the recession that began in early 2008, although it has recently rebounded slightly. A comparison of unemployment rates for the Tahoe Basin, California, and Nevada is displayed in Figure 8. Although Tahoe's unemployment rate has decreased since its high in 2010 (13.7%), as of 2014 it remains at 8.3%. Since 2010, Tahoe's unemployment rate has remained, for the most part, higher than California and Nevada unemployment rates.

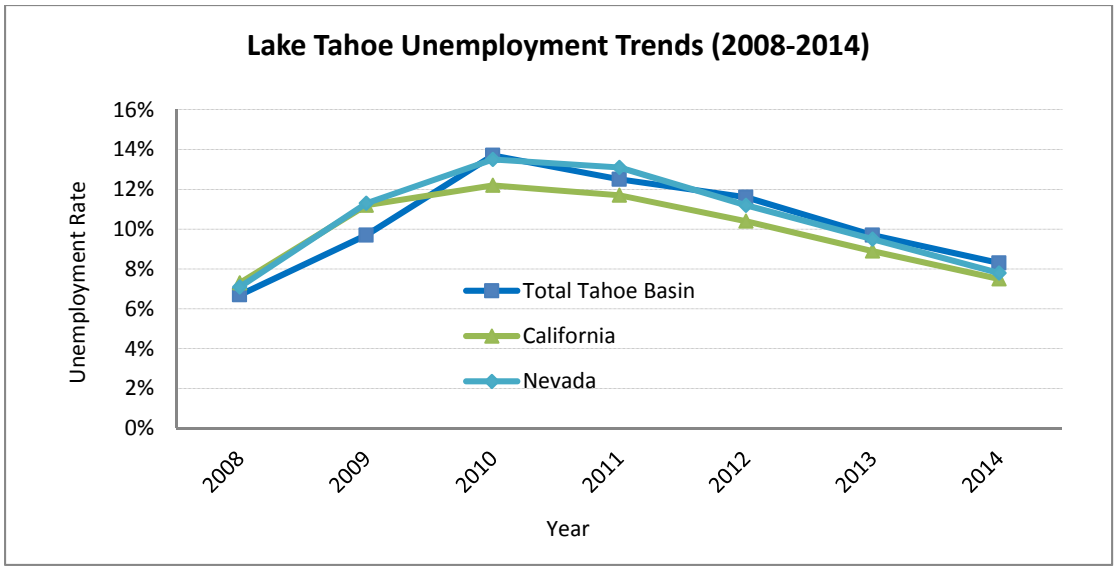


Figure 8. Source: *Measuring For Prosperity.* Tahoe Prosperity Center, 2015.

Lake Tahoe gaming win has declined by 60 percent over the 14-year period from 1999 to 2013. Over this period, South Shore gaming revenue declined by 40 percent and North Shore declined roughly the same amount (by 39%). As of 2013, South Shore gaming win represents 88 percent of total Lake Tahoe gaming win. See Figure 9 for additional information.

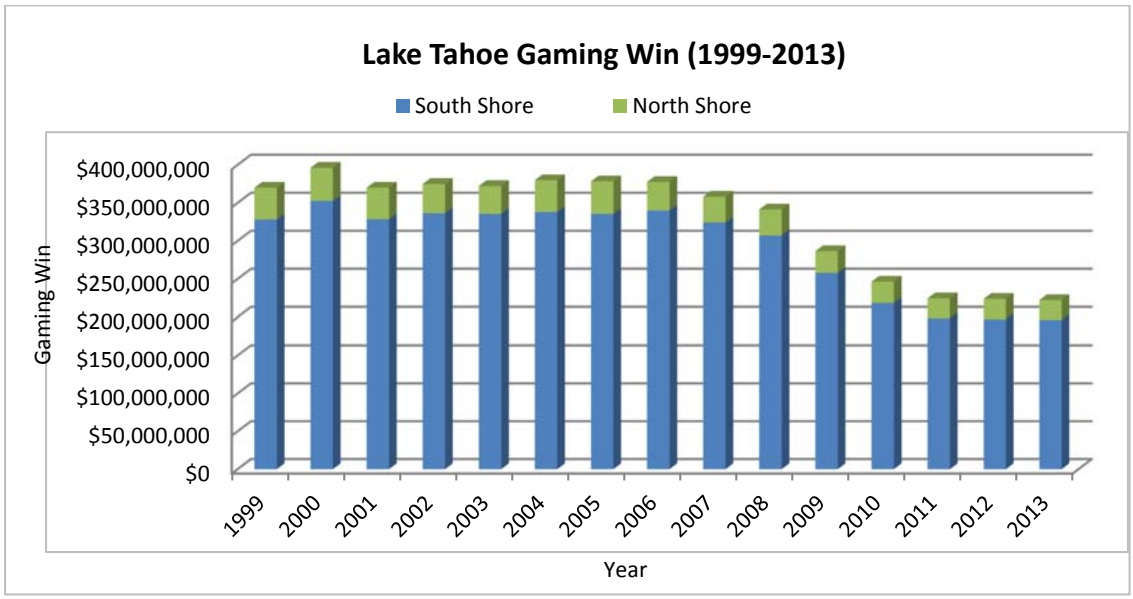


Figure 9. Source: Nevada Gaming Abstracts, Unadjusted for Inflation

Based on information provided by the Nevada Gaming Control Board and as depicted in Figure 10, South Shore Gaming Employment has declined by 60 percent from 1994 to 2013.

Figure 10. Source: Nevada Gaming Abstracts

Hotel-Motel Occupancies

Hotel and motel room occupancies have declined on the South Shore with hotel room nights rented down by 47 percent over the 13-year period from 2000 to 2013. Additional detail is depicted in Figure 11.

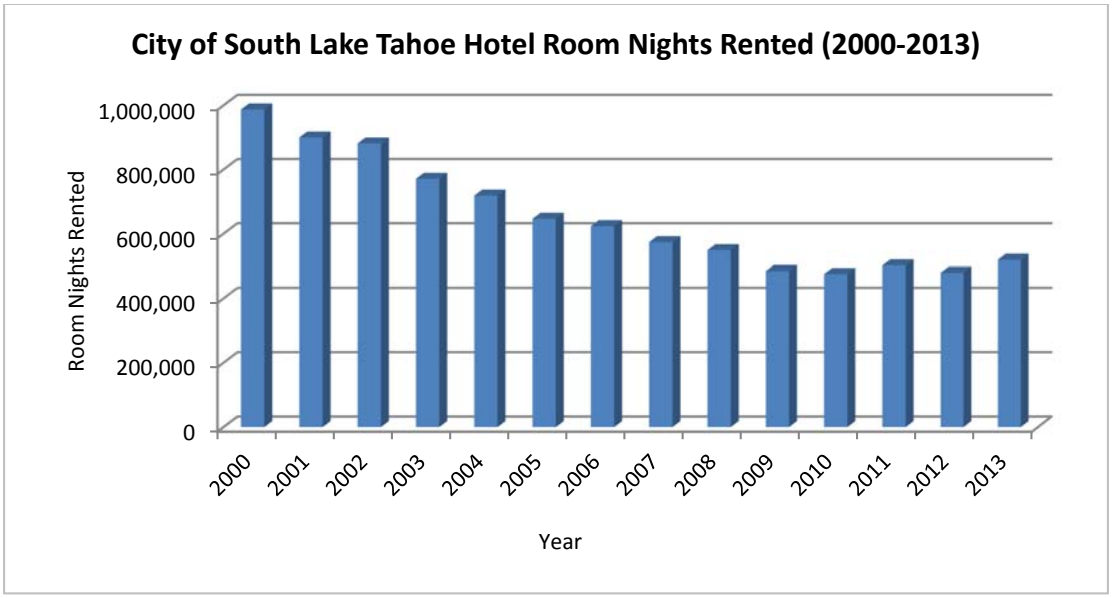


Figure 11. Source: City of South Lake Tahoe, Nevada Commission on Tourism

As reported within the Nevada Gaming Abstracts and shown in Figure 12, occupancy rates in the South Shore/Stateline areas have fallen from 81 percent in 2000 to 67 percent in 2013.

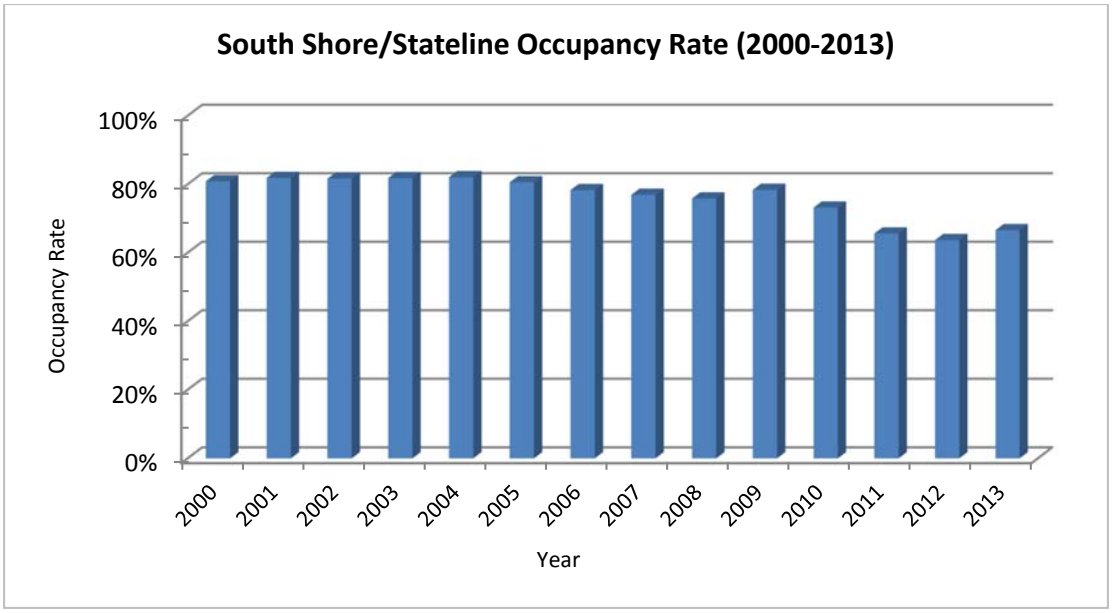


Figure 12. Source: Nevada Gaming Abstracts

Sales Tax and Transient Occupancy Tax (TOT)

Despite the decline in visitor levels and hotel-motel occupancies since 2000 (See Figure 13), sales tax and revenues collected by the City of South Lake Tahoe have increased. Sales tax revenues have increased 46 percent in the City of South Lake Tahoe over the 12-year period from 2001 to 2013.

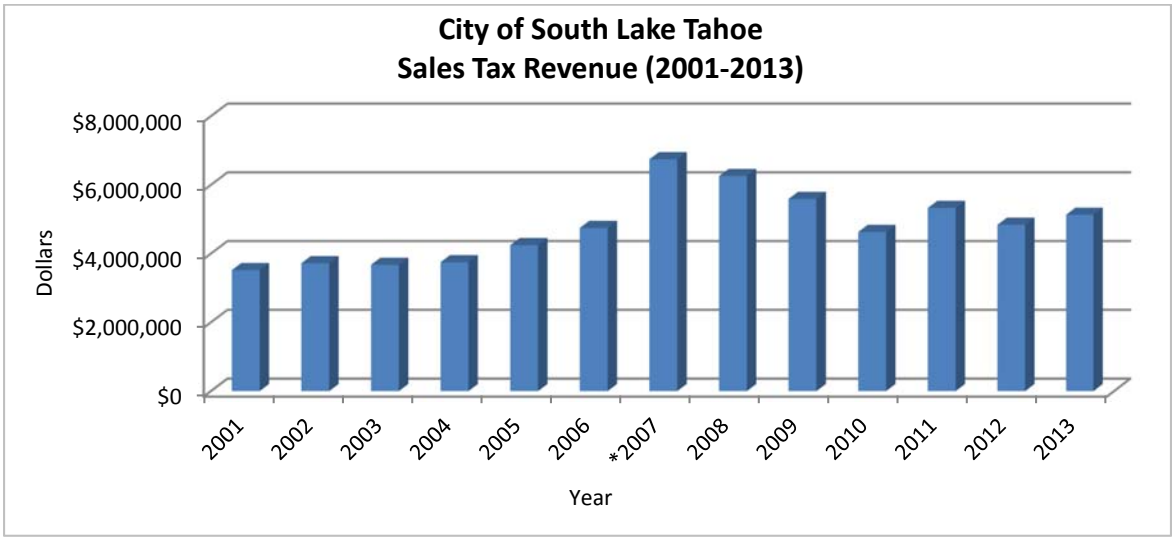


Figure 13. Source: City of South Lake Tahoe; * Measure Q Approval

North Lake Tahoe sales tax revenues are depicted in Figure 14. Sales tax revenues increased by 2 percent from 2000 to 2014.

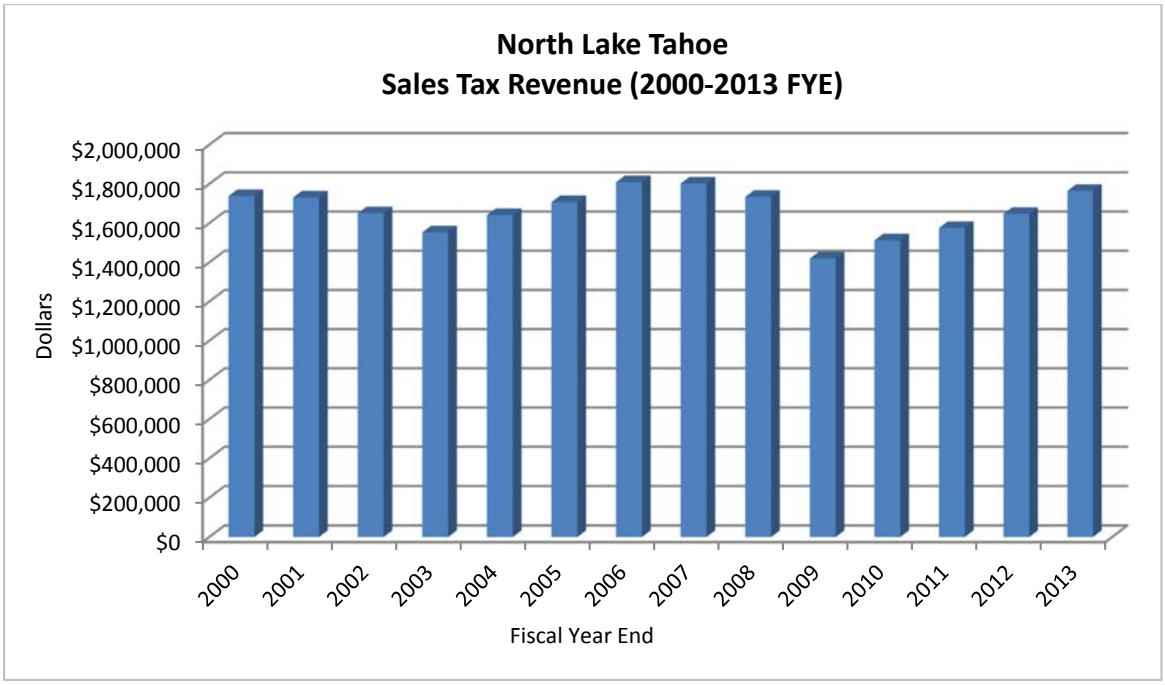


Figure 14. Source: Placer County Executive Offices, November 2015

City of South Lake Tahoe Transient Occupancy Tax revenue has remained roughly the same, with just a 3 percent increase over the 10-year period from 2003 to 2013. See Figure 15 for additional detail.

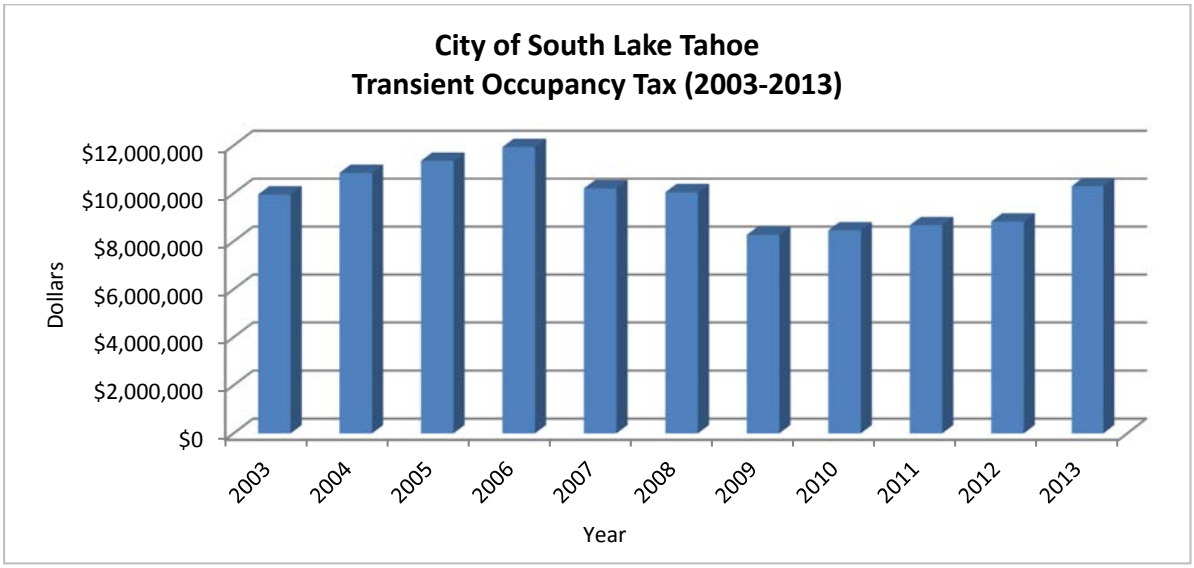


Figure 15. Source: City of South Lake Tahoe; Revenues do not include Measure Z Proceeds

North Lake Tahoe's transient occupancy tax revenues increased by 67 percent from 2003 to 2013. The increases are due to a combination of factors, including some new hotels starting operations, the

County starting to collect TOT tax from vacation rentals, and that visitation in North Lake Tahoe has increased[1]. See Figure 16 for additional detail.

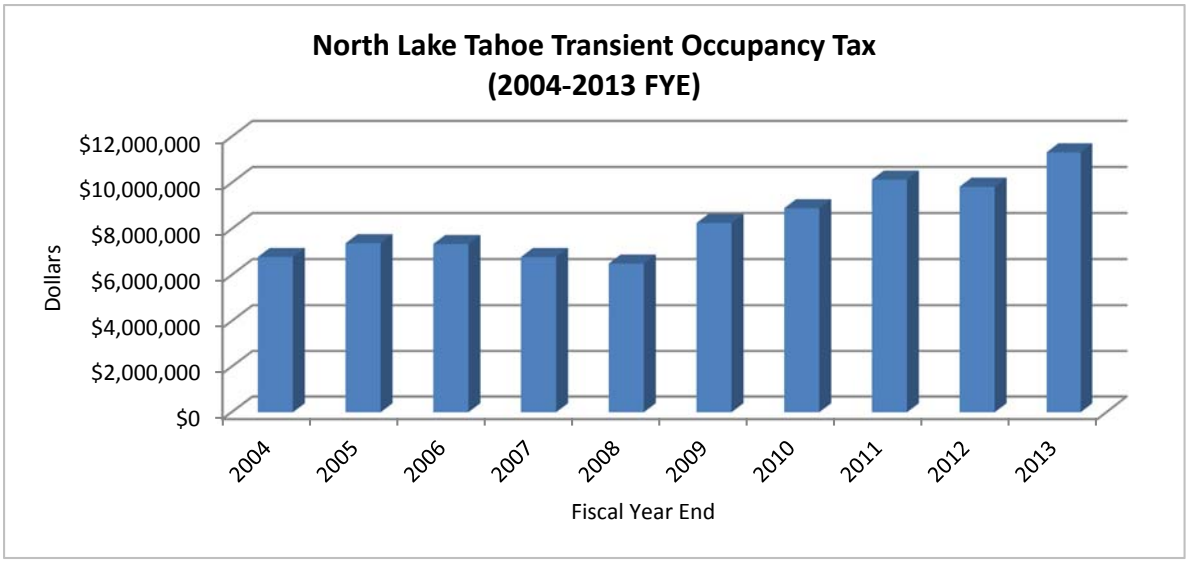


Figure 16. Source: Placer County Executive Office, July 2014

Transportation Trends

Traffic volumes are measured with automatic counters placed in roadways to count vehicles as they pass through. Within the Lake Tahoe Basin there are 23 permanent count stations owned and managed by the California Department of Transportation (Caltrans) and the Nevada Department of Transportation (NDOT). TMPO tracks several kinds of traffic volumes: Annual Average Daily Traffic (AADT), Peak Month Average Daily Traffic Volumes (PMADT), and Winter Traffic Volumes at Park Avenue. AADT volumes reached their peak in 1990, and have since decreased by 20 percent between 1990 and 2013. PMADT volumes were highest in 1986; from 1986 to 2013 PMADT volumes decreased by 22 percent. See Figure 17 and Figure 18 for additional detail.

[1] Conversation with North Lake Tahoe Resort Association, April 7, 2016.

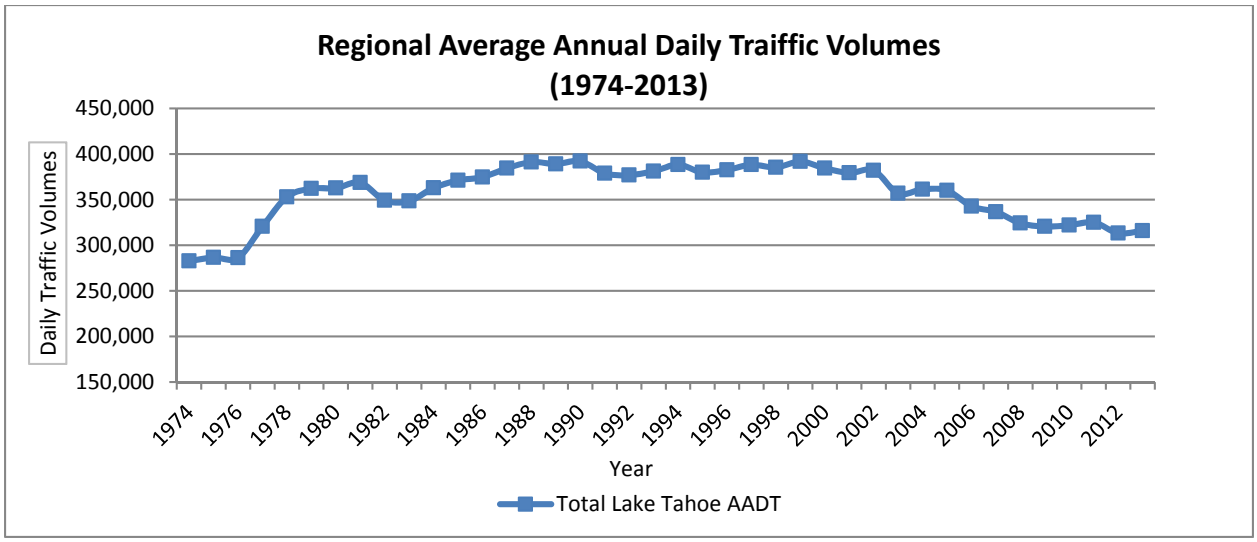


Figure 17. Source: Caltrans and NDOT

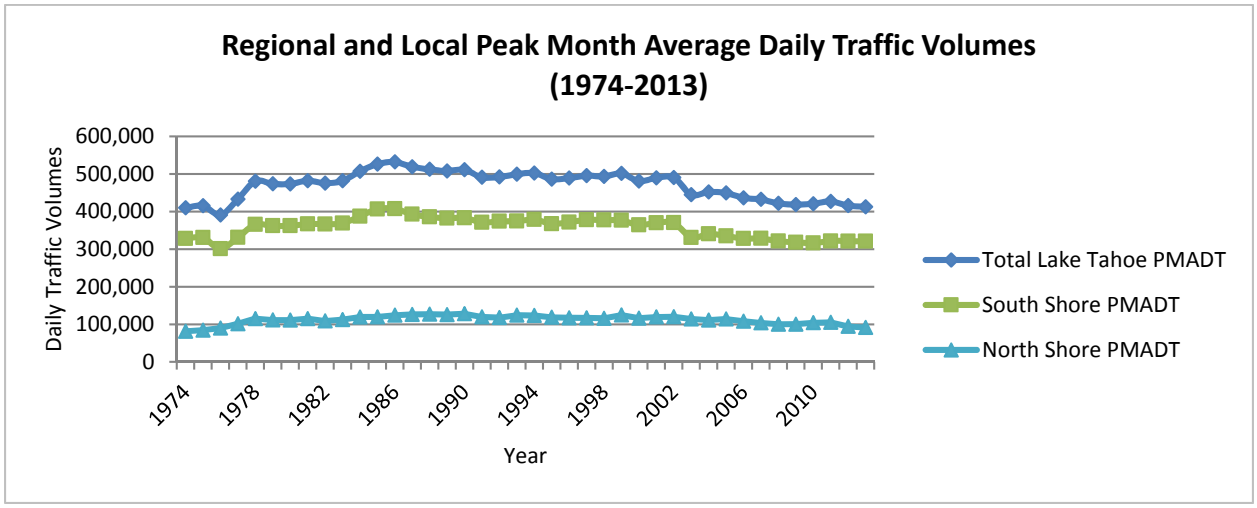


Figure 18. Source: Caltrans and NDOT

One of the TRPA Air Quality threshold indicators is winter traffic counts at the intersection of U.S. 50 and Park Avenue. TRPA tracks and analyzes the traffic volumes recorded at Park Avenue and U.S. 50 from 4 p.m. to 12 a.m. (midnight) for all days during the winter months of November through February, coinciding with previous episodic monitoring of CO standards. Figure 19 shows the traffic volumes on the Saturday of Presidents' Day Weekend. The traffic counter was out of operation from 1998 to 2002 and November and December of 2004, so data for those times are not available. As of 2013, traffic volumes on U.S. 50 at Park Avenue were 15,786, indicating a 37 percent decrease from the 1981 threshold standard.

Threshold Benchmark: Reduce traffic volumes on the U.S. 50 Corridor by 7 percent during the winter from the 1981 base year between 4 p.m. and 12 p.m. (midnight).

Monitoring Frequency: Annually.

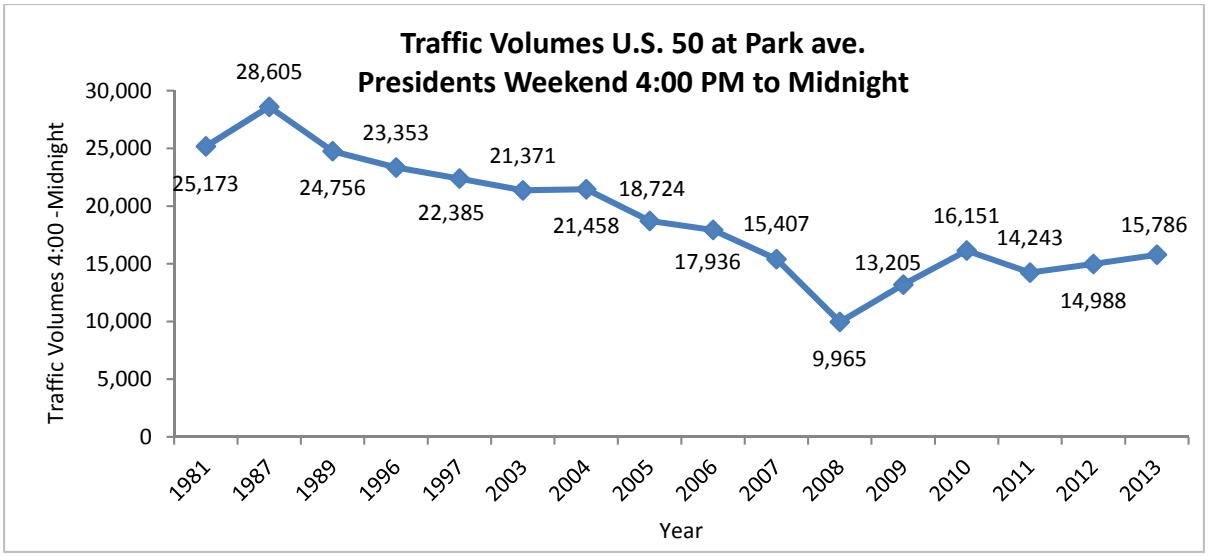


Figure 19. Source: Caltrans Hourly Traffic Volumes

Traffic - Seasonal and Daily Variations

Seasonal and daily variations in traffic volumes reflect the elastic nature of the Tahoe Region's tourist economy. As shown in Figures 20 and 21, July and August represent the busiest travel months and Friday and Saturday represent the busiest days of the week.

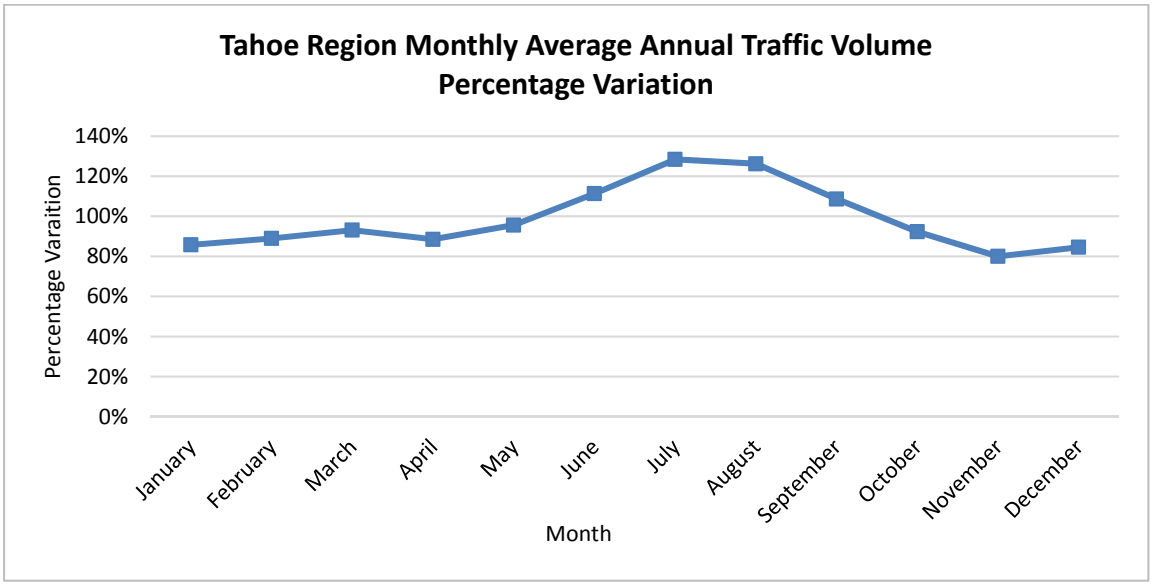


Figure 20. Source: NDOT Annual Traffic Report (ATR's) 1992-2004; Caltrans Traffic Data 2003-2006

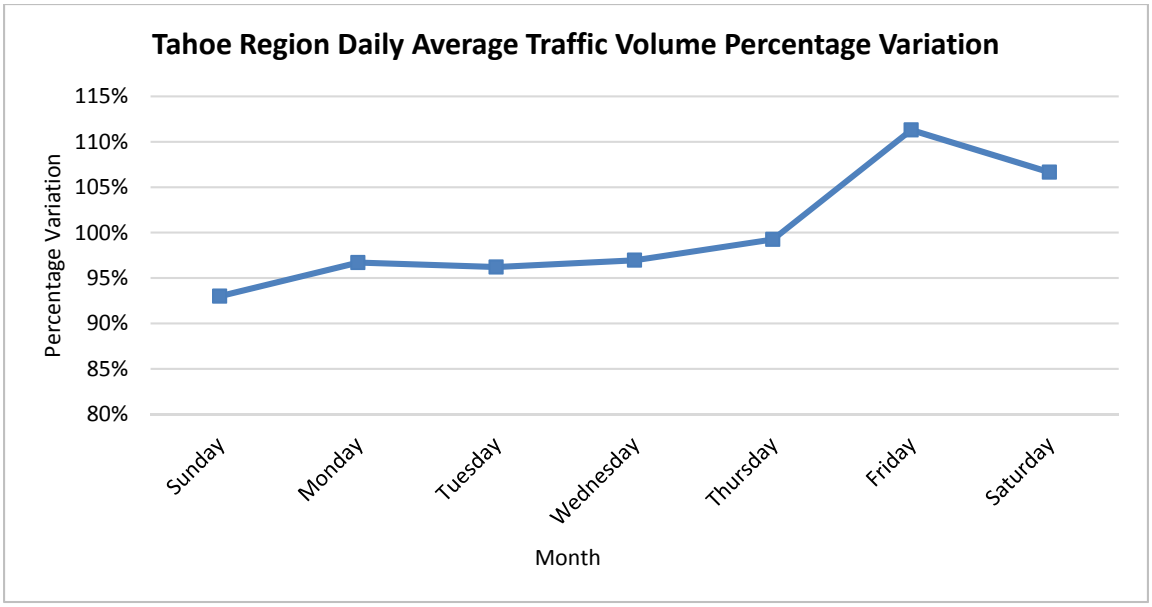


Figure 21. Source: NDOT Annual Traffic Report (ATR's) 1992-2004; Caltrans Traffic Data 2003-2006

Vehicle Miles Traveled (VMT)

VMT is a modeled value that measures the extent of travel for a given area. Since 1981, the TRPA has used a series of progressively more sophisticated models to estimate VMT. As the models improve and old software becomes obsolete, it is not possible to update previous VMT estimates to be comparable with more recent model estimates. The new TransCAD model uses a "tour-based" modeling approach in order to account for the propensity of many drivers to link their trips. In order to determine compliance with the TRPA water quality and air quality visibility threshold indicator to reduce Vehicle Miles Traveled (VMT) by 10 percent from the 1981 estimate and to determine compliance on an annual basis, August traffic counts are used to gauge vehicle activity and compliance with the VMT threshold. Based on these annual changes in traffic count volumes TRPA estimates that VMT for 2014 is 1,974,026 indicating a 13 percent decrease from the 1981 VMT estimate threshold standard.

Benchmark: Reduce VMT to 10 percent below 1981 values (or reduce to 2,000,000 VMT per day).

Monitoring Frequency: Annually.

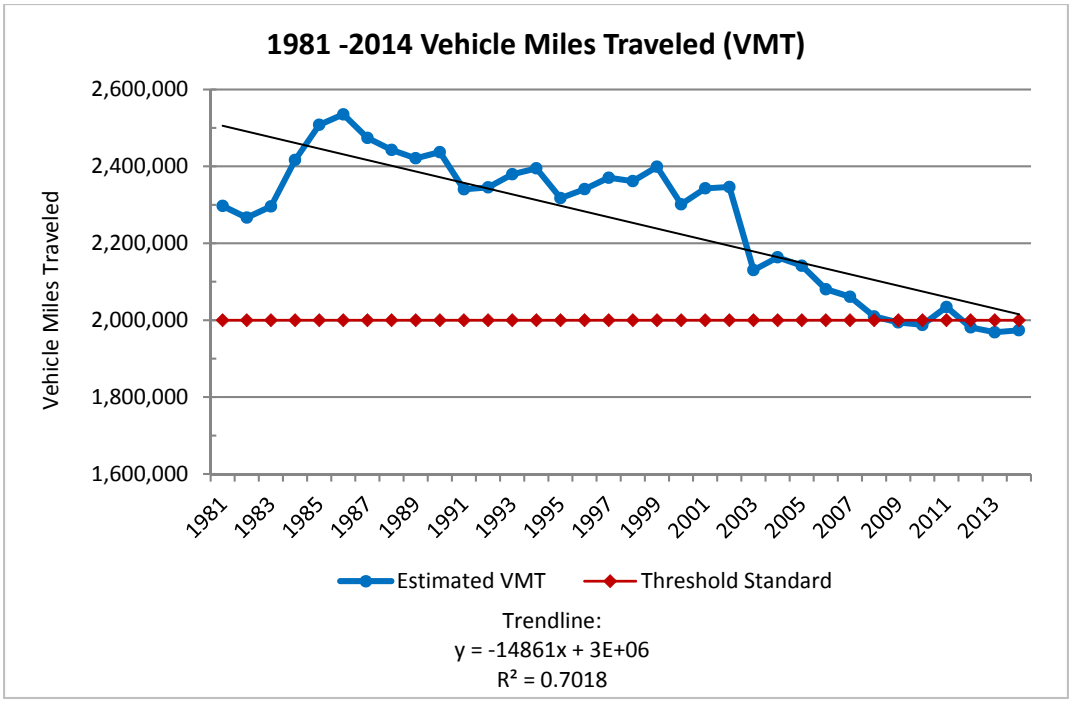


Figure 22. Source: TMPO

Travel Mode

The travel mode indicators described in this section show the percentages of people using the different transportation modes available for residents and visitors of Lake Tahoe to reach their destinations. Recreation and commercial core areas were chosen as survey locations for these indicators because they represent areas to which the majority of travel is made. Commercial core areas generally cover large areas of land that capture many businesses and employment establishments. Because travel mode is influenced by weather conditions, TMPO and TRPA conduct surveys during summer and winter. Travel mode indicators are important because they demonstrate where there is a shift among residents and visitors out of their cars and into other travel modes over time.

Summer Travel Mode Results

The two most recent summer travel mode share surveys were conducted in 2010 and 2014. The next survey is scheduled for 2018. From 2008 to 2014, region-wide summer mode shares have remained relatively constant, with a slight shift from walk to transit. See Figure 23, below, for additional detail.

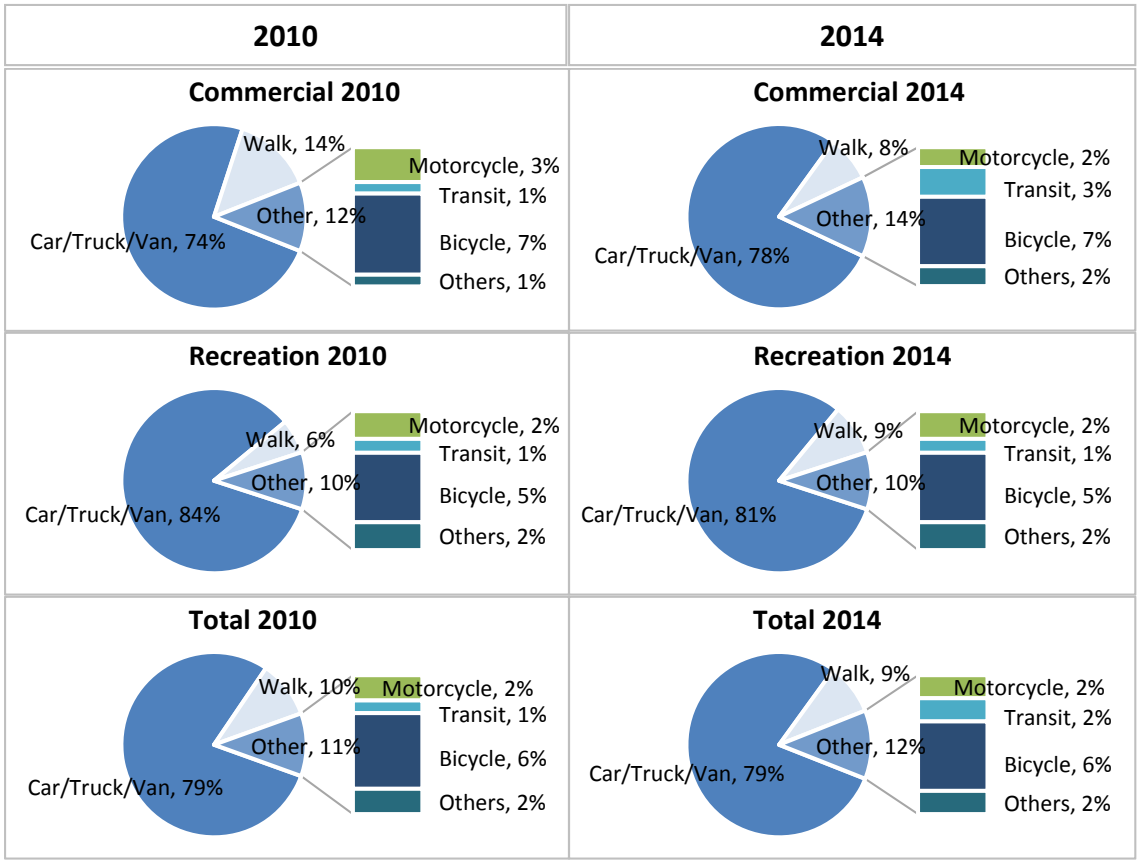


Figure 23. Source: Tahoe Regional Planning Agency Travel Mode Share Survey (Summer), 2010 and 2014.

Winter Travel Mode Results

Winter travel surveys were conducted in 2008 and 2012. Shown in Figure 24, there was a slight basin-wide increase in bicycle mode share from 2008 to 2012 (1% to 2%, respectively).

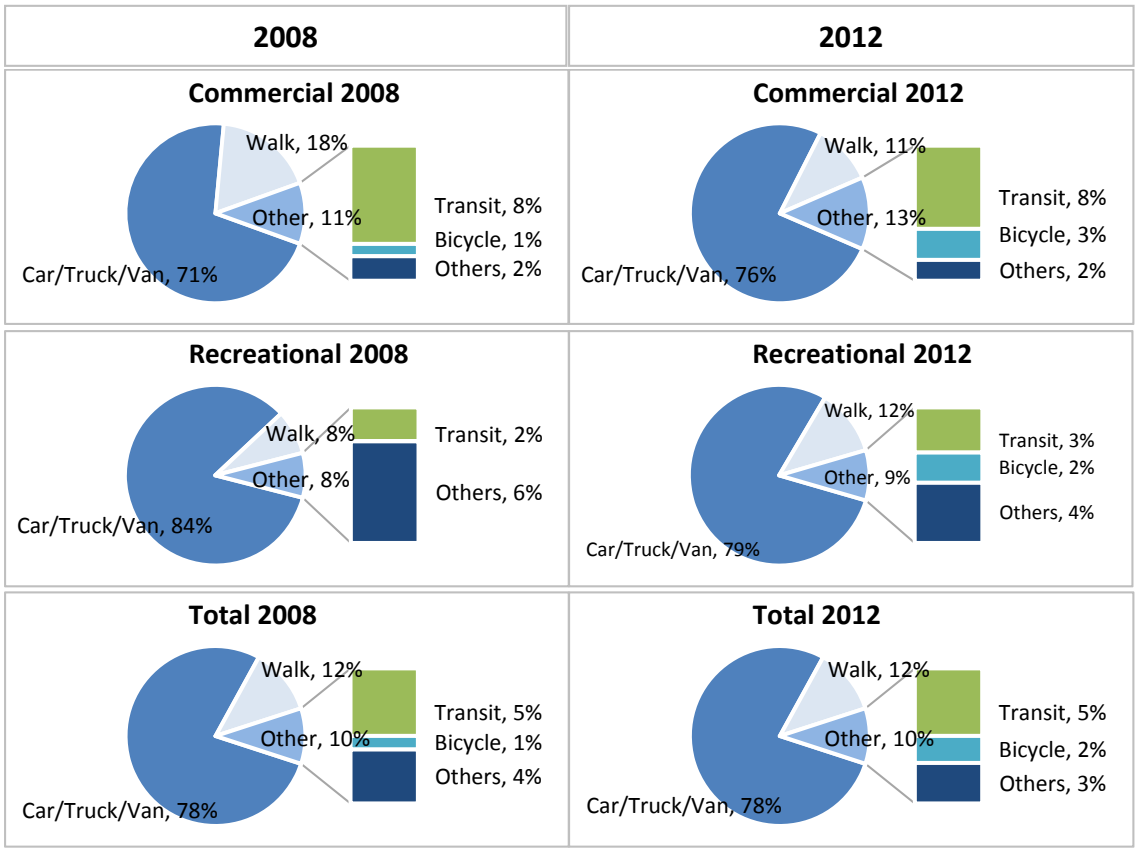


Figure 24. Source: Tahoe Regional Planning Agency, Travel Mode Share Survey (Winter), 2008 and 2012.

Average Non-Auto Mode Share to Commercial and Recreation Areas

Non-Auto Mode Share to Commercial and Recreation Areas is one of the performance measures that the TRPA tracks. The current non-auto mode share, based on the average of the 2014 Summer and 2012 Winter Travel Mode results above, is 18%. The target is 19.3% non-auto mode share by 2016.

Recreation Areas Served by Transit, Bicycle and Pedestrian Facilities

The Transit, Bicycle and Pedestrian Access to Recreation Areas indicators are rough measures of how many recreation areas are accessible by transit, bicycle and pedestrian facilities. As shown in Figure 25, 52 percent of recreation facilities are within ¼ mile of a fixed-route transit stop, and 64 percent are accessible by all transit (including Dial-a-Ride service). Seventy-percent of recreation facilities are accessible by bicycle (Class 1-3 facility within ½ mile) and 54 percent are accessible to pedestrians (within ¼ mile of a pedestrian facility). As with the recreation access indicators, many nuances related to good access that may be important to cyclists or transit users are not accounted for in the figure, such as frequency of service or quality of path.

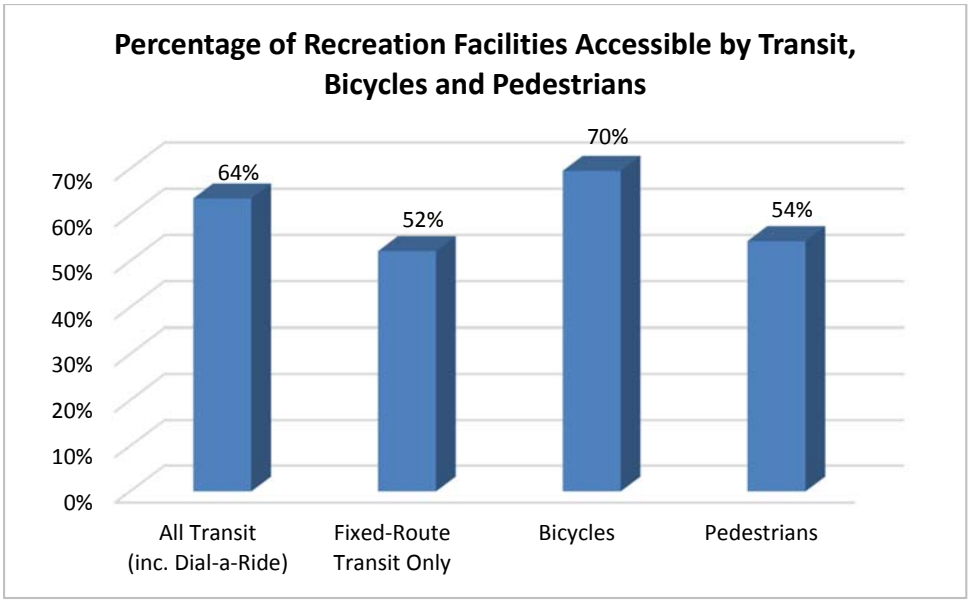


Figure 25. Source: TMPO, 2014.

This data informs the performance measure: "Share of recreation areas served by transit, bike, and pedestrian facilities." In the 2010 Monitoring Report, access to recreation areas was reported as:

- Percent of recreation facilities within ¼ mile of a fixed-route transit stop – 42%
- Percent of recreation facilities within ¼ mile of all transit -- 64%
- Percent of recreation facilities accessible by bicycle—62%
- Percent accessible to pedestrians – not reported

Compared to the 2010 values, the 2014 values show an increase, in line with the target for this performance measure, which simply calls for an increase.

Public Transit

South Shore transit ridership has experienced a downward trend since 2003 as depicted in Figure 26. This downward trend is consistent with a decrease in traffic counts over the same period. The South Shore transit services are now consolidated under the Tahoe Transportation District (TTD) services, formerly called BlueGO.

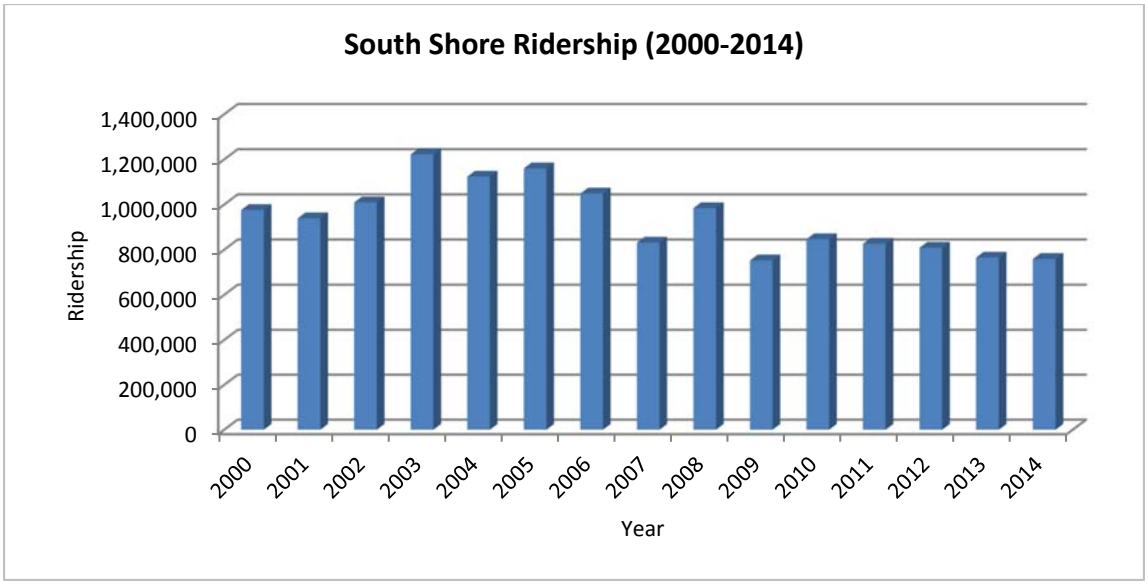


Figure 26. Source: Tahoe Transportation District (TTD)

Historical transit ridership provided by the Tahoe Area Regional Transit (TART) is shown in Figure 27. As indicated, ridership on TART has seen relative ridership increases over the reporting period, with a slight decrease in 2013-2014.

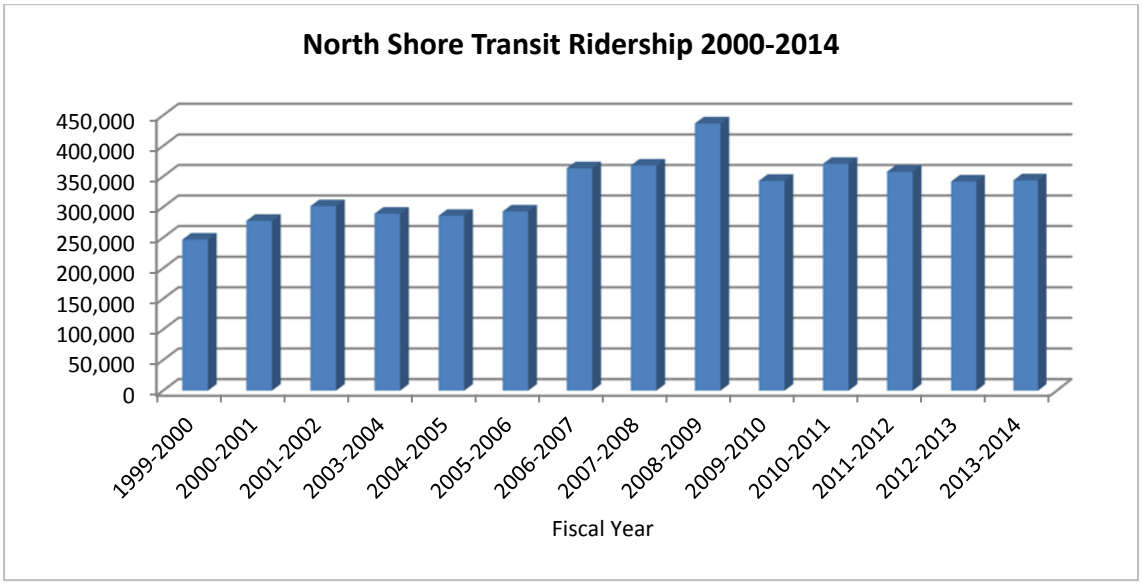


Figure 27. Source: Tahoe Area Regional Transit (TART)

Tahoe Transportation District (TTD) offers free rides on South Tahoe Transit, routes 50 and 53 on up to 88 days per year. The free rides are offered as part of a "Spare the Air" campaign in order to promote ways to improve air quality and reduce congestion along Highway 50 in South Lake Tahoe. Spare the Air days were designated in 2013 and 2014 to coincide with those times of year when visitation and traffic congestion is at its highest. Routes 50 and 53 were designated as Spare the Air day routes, as depicted in Figure 28.

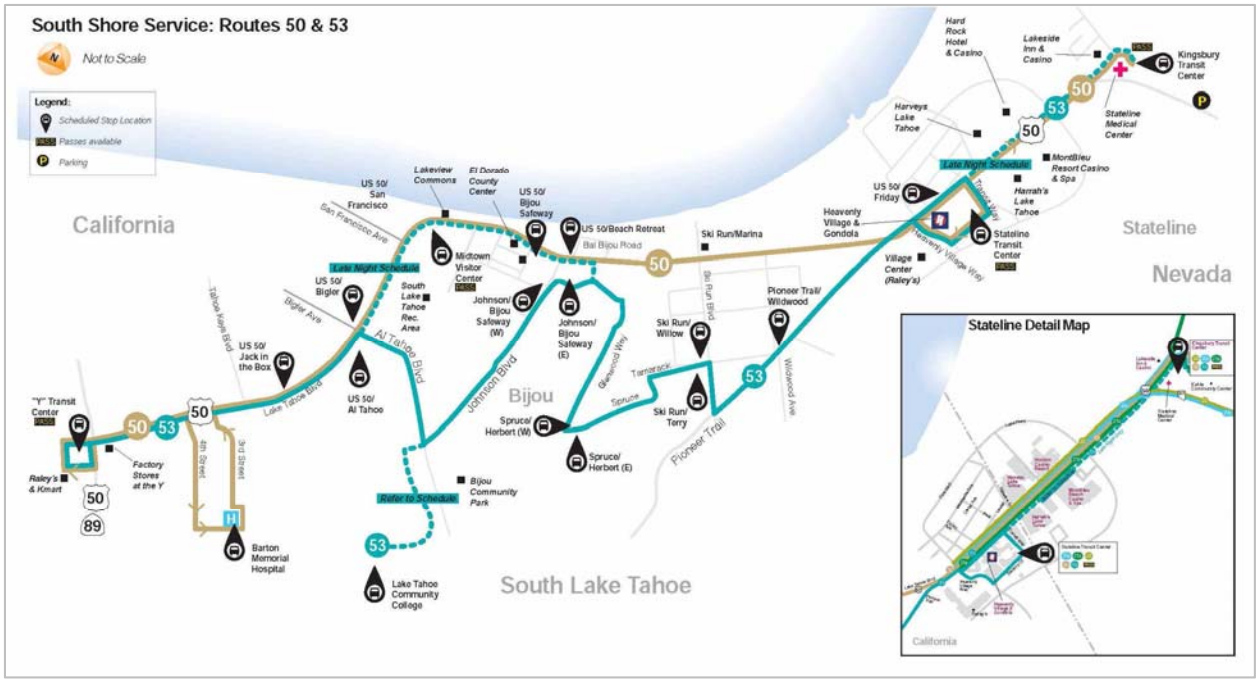
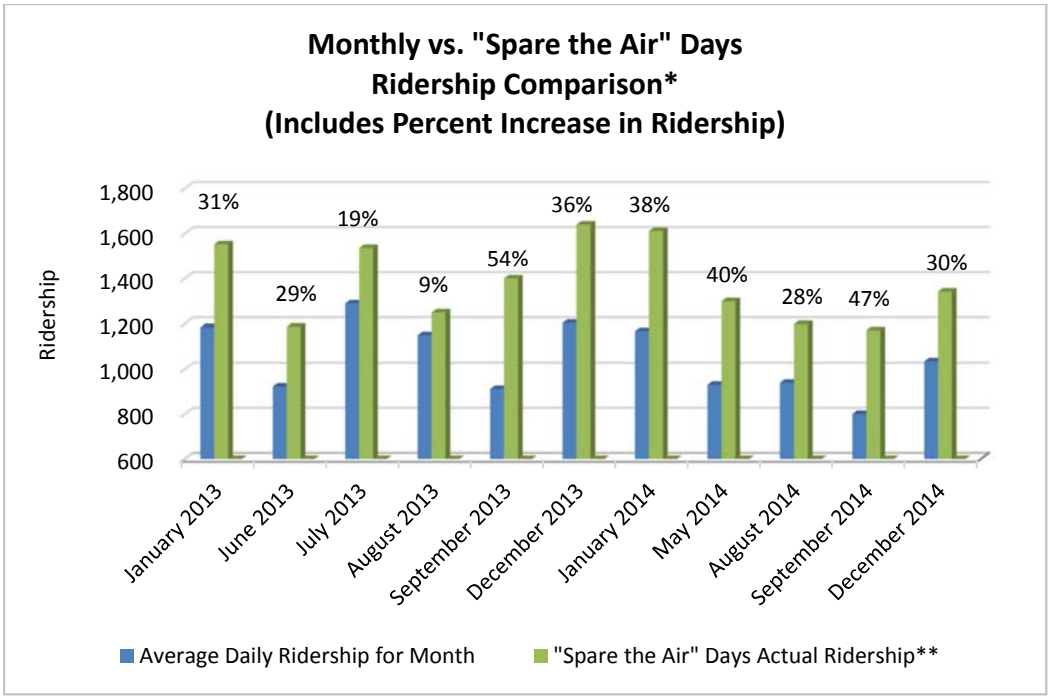


Figure 28. Source: Tahoe Transportation District, http://www.tahoetransportation.org/bluego-free-ride

As part of the long term monitoring and planning for future transit operations, TRPA monitors the efficacy of TTD's Spare the Air days and compares ridership of those days to the average daily ridership on non-Spare the Air days of the same month. As depicted in Figure 29, Spare the Air days saw significant increases in ridership over the average daily ridership for each month's non-free ride days. While it is not possible to make a correlation between free fares and increases in ridership from this data, because the increases could simply be due to the fact that Spare the Air Days, held at peak times, are busier days than non-Spare the Air Days, the data can serve as a rough comparison of ridership differences. Average daily ridership differences ranged from 9 percent more passengers per day (August 2013) up to 47 percent more passengers per day (September 2014).



*Total Ridership for Routes 50 and 53 Combined
**Average Daily Ridership of all Spare the Air Days during the month
Figure 29. Source: Tahoe Transportation District

East Shore Parking Counts

In 1996, the Federal Highway Administration (FHWA) designated the major travel route around the east side of Lake Tahoe (from South Stateline to North Stateline) as the East Shore Drive National Scenic Byway. Part of the action/implementation section of the designation included annual parking counts to measure the amount of parking demand for the east shore corridor, and to monitor the effects of any changes in parking policies or other transportation improvements over time.

Parking counts are taken annually the first Saturday and following Wednesday of August. Counts are collected hourly beginning 10 a.m. and ending after 5 p.m. The east shore corridor, from Incline Village to the intersection of State Route 28 and US Highway 50, is split into 12 segments and parking lots, each of which receives an individual count of parked cars and motorcycles each hour. The data reported in Figures 30 and 31 illustrate the maximum number of parked cars reported in any one hour (Maximum) and the average of all the hourly counts across the day (Average).

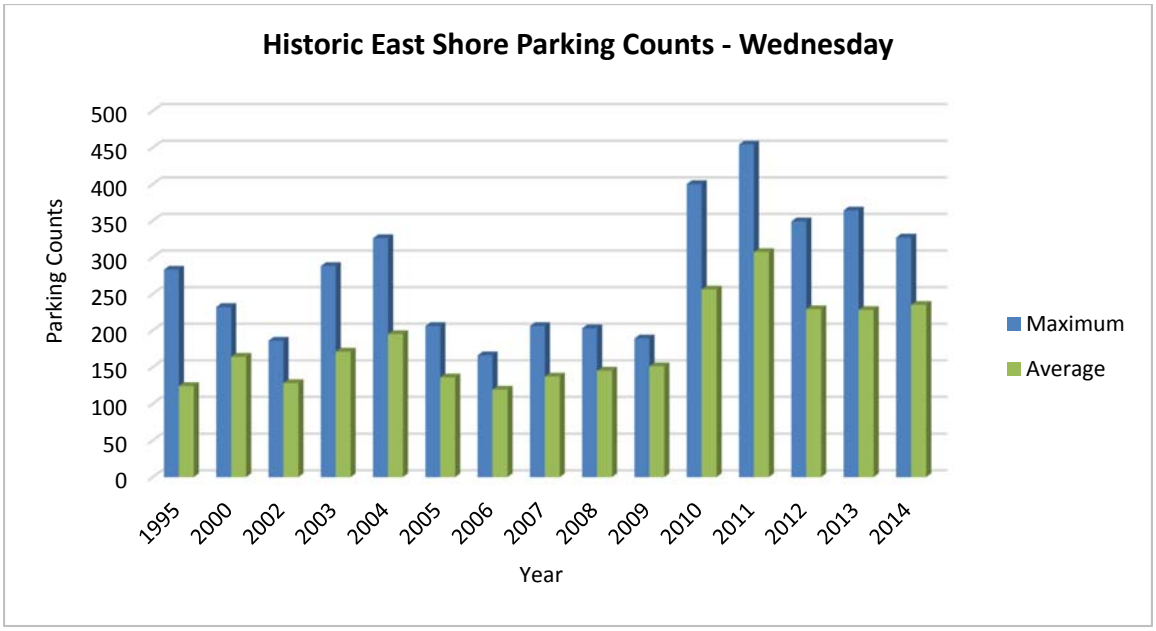
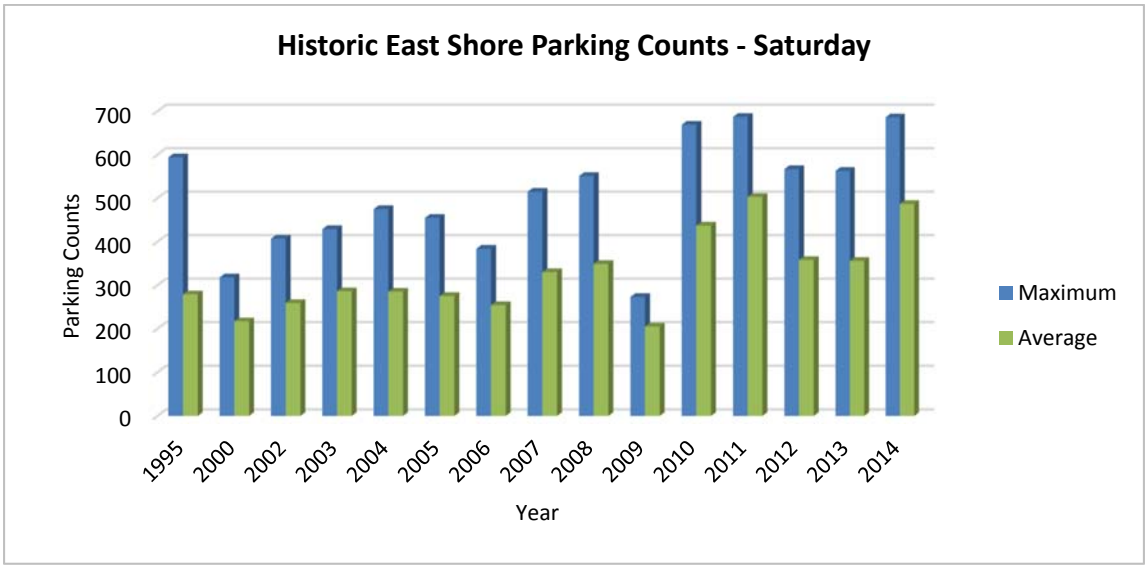


Figure 30. Source: TMPO



Figures 31. Source: TMPO

Bicycle-Pedestrian

Tahoe City PUD (TCPUD) collected screenline count volumes at four key locations in 2014: Lakeside Trail, Truckee River Trail, North Shore Trail, and West Shore Trail. Figure 32, below, shows the four screenline volumes over the course of a 12-hour mid-week day (Tuesday – Thursday from 7 a.m. to 7 p.m.). The high afternoon/evening peak on the Lakeside Trail indicates that the path is used for evening commuting or a special event occurring during data collection that increased the period's volumes, while the other three locations show typical recreational patterns with peaks occurring in the early afternoon.

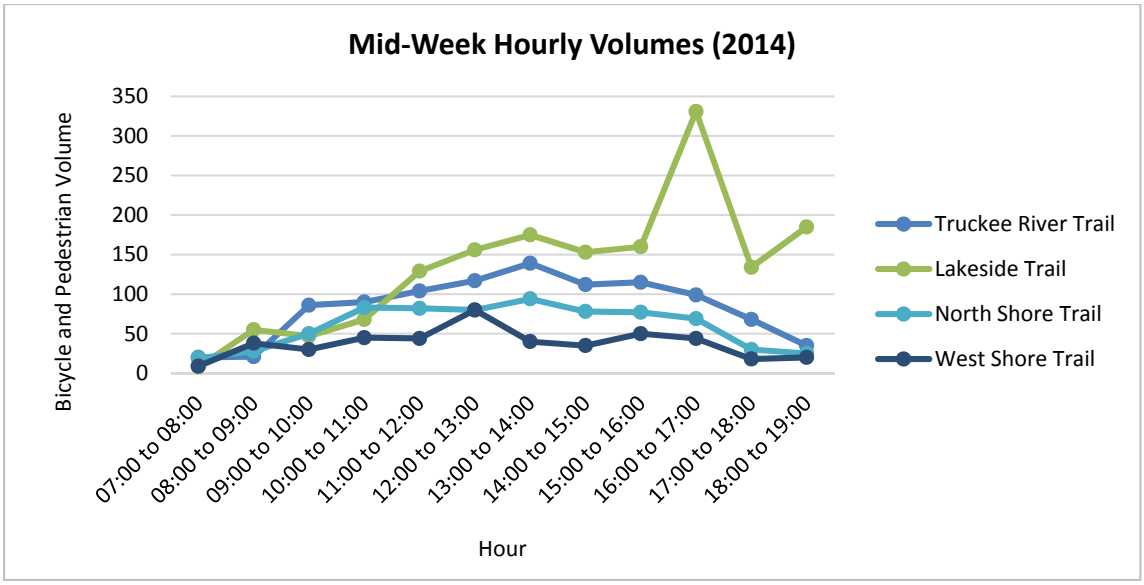


Figure 32. Source: TCPUD

Figure 33 provides the average hourly bicycle and pedestrian volumes at each of the four locations collected by TCPUD in 2014.

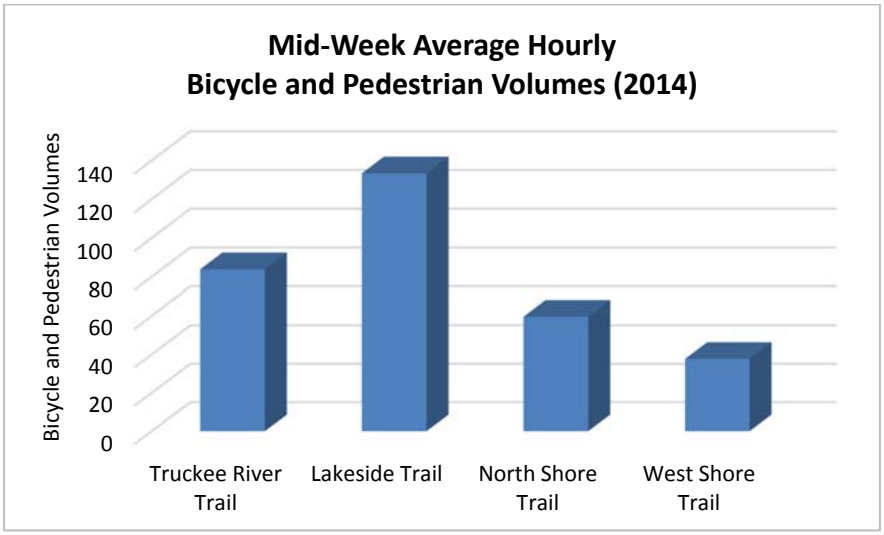


Figure 33. Source: TCPUD

In addition to the counts collected in 2014, TCPUD maintains historic count volumes for each of three locations: Truckee River Trail, North Shore Trail, and West Shore Trail. Figure 34 contains historic average hourly bicycle and pedestrian volumes at these locations between 1994 and 2014. These data indicate that average volumes have remained relatively stable, with 2006 and 2008 having higher mid-day average hourly volumes than other years.

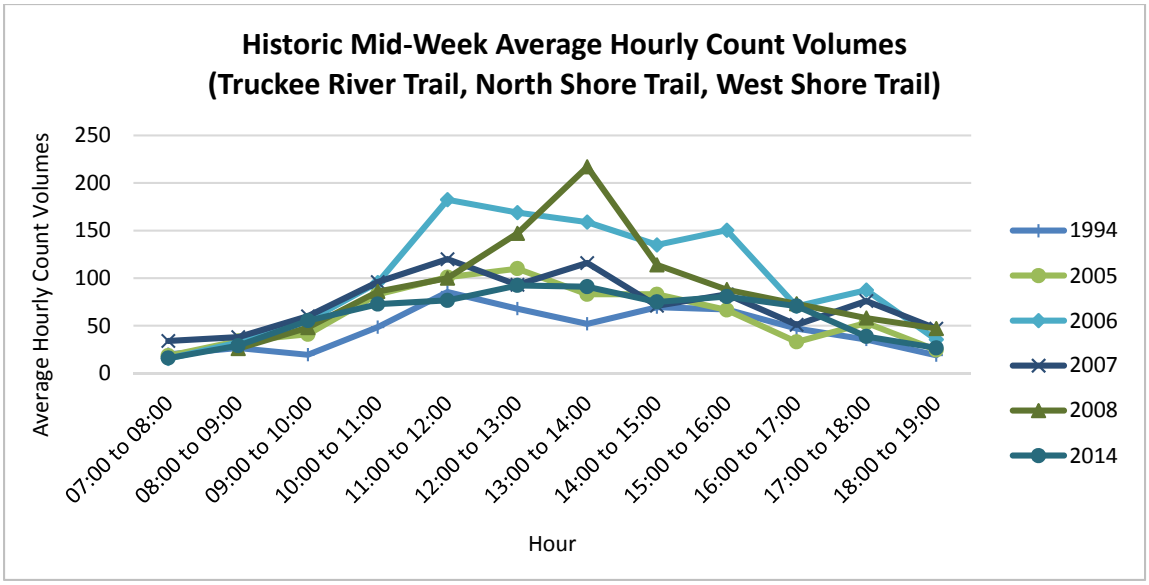


Figure 34. Source: TCPUD

In addition to count volumes collected by TCPUD, TRPA/TMPO and its partner jurisdictions have collected counts at a number of locations. Trail counts have been collected at a selection of bicycle and pedestrian facilities back to July 1997 with more recent data collection occuring in July 2013 and August 2014. Note that not all sites were observed for each year. See Figure 35, below, for additional detail. TRPA has recently developed an annual monitoring protocol to capture more consistent data on trail usage over time. The monitoring protocol began implementation in 2015. Data from that effort will be reported in future Monitoring Reports.

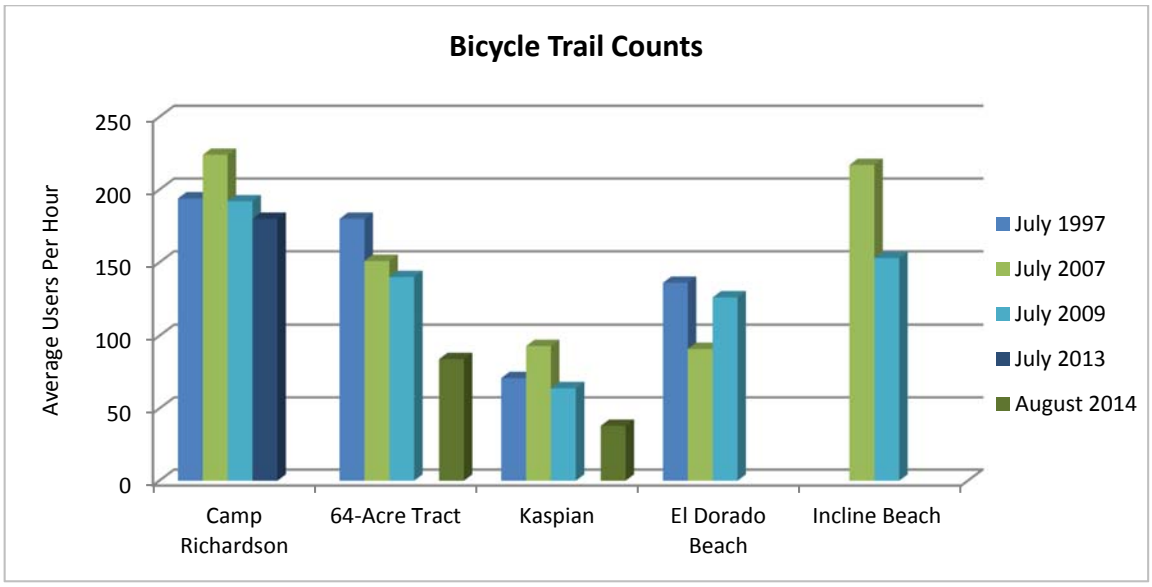


Figure 35. Source: TMPO

Vehicle-Related Crashes

The TRPA has recently begun tracking collisions as an indicator for safety.The Federal Highway Administration has also recently released its final rule-making on safety performance metrics, requiring MPOs to measure over a five-year rolling average: 1) the number of motor vehicle crash-related serious injuries and fatalities; 2) the number of serious injuries and fatalities of non-motorized users; and 3) serious injuries and fatalities per vehicle miles traveled (VMT). The sections below contain traditional measures that the TRPA has historically tracked, as well as the data for the FHWA performance measures.

Number of Serious Injuries and Fatalities

The most recent data set evaluated for crashes, injuries, and fatalities is a five-year period between 2009 to 2013. Data collected from the California Statewide Integrated Traffic Records System is maintained by the California Highway Patrol and was available from January 2009 to December 2013. Data from the Nevada side is collected by NDOT, and was available from July 2009 through June 2014. Table 4, below, catalogues total and average injuries and fatalities, and bicycle and pedestrian injuries and fatalities.

Table 4. Total and Average Injuries and Fatalities by Crash Type

Crash Type	Total Injuries	Total Fatalities	Total Injuries & Fatalities	Annual Average Injuries	Annual Average Fatalities	Annual Average Injuries & Fatalities
All	956	13	969	191.2	2.6	193.8
Bicycle & Pedestrian	126	8	134	25.2	1.6	26.8

Source: California Highway Patrol Statewide Integrated Traffic Records System (SWITRS), Nevada Department of Transportation, as cited in the LSC Transportation Consultants Memo entitled "Technical Memorandum, Summary of Existing Transportation Conditions, March 2015." Note: SWITRS crash data listed from January 2009 to December 2013. NDOT crash data listed from July 2009 to June 2014

Serious Injuries and Fatalities per Vehicle Mile Traveled

The SWITRS and NDOT data cited above was also used to calculate the rate of injuries and fatalities. This is calculated as the number of injuries and fatalities divided by overall vehicle miles traveled. Using data from the March 2015 LSC Transportation Consultants Memo, "Technical Memorandum, Summary of Existing Transportation Conditions," this rate would be 0.46 (assuming an overall VMT of 1,483,898,305, and a total injury and fatality figure of 675).

In future years, this performance metric will be provided for the TRPA by NDOT and Caltrans, so the baseline assumptions may vary.

Non-Motorized Injuries and Fatalities by Corridor

Pedestrian and bicycle injuries for 2009-2013/2014 are depicted in Figure 36 by transportation corridor (see Figure 38 for corridors map). In the past five years, the Tahoe Basin has seen 48 pedestrian injuries and 78 cyclist injuries. The SR 89/SR 28 corridor and the US 50 South Shore corridor had higher numbers of injuries than other corridors.

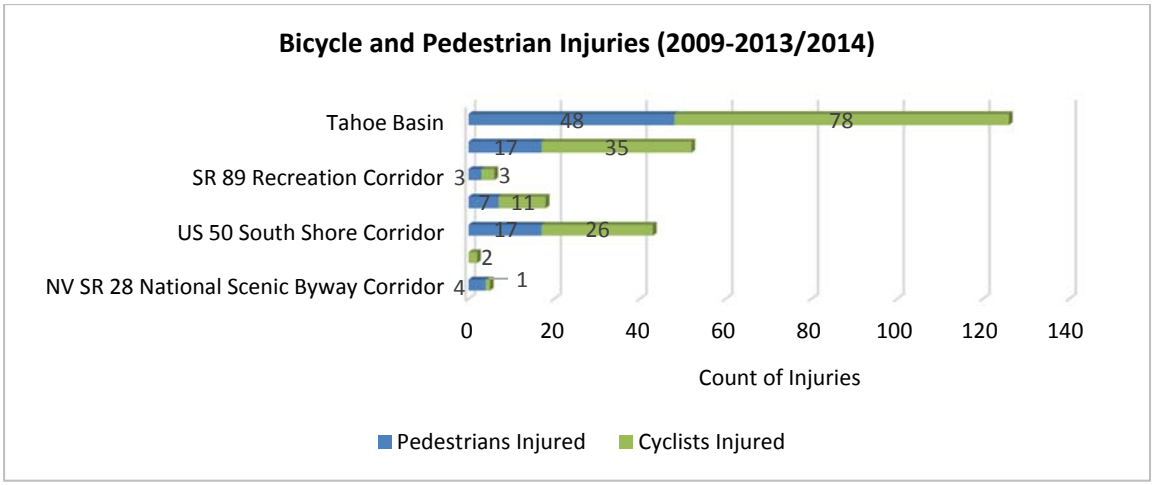


Figure 36. Source: California Highway Patrol Statewide Integrated Traffic Records System (SWITRS), Nevada Department of Transportation, as cited in the LSC Transportation Consultants Memo entitled "Technical Memorandum, Summary of Existing Transportation Conditions, March 2015." Note: SWITRS crash data listed from January 2009 to December 2013. NDOT crash data listed from July 2009 to June 2014.

Figure 37 depicts bicycle and pedestrian fatalities from 2009-2013/2014 along Tahoe Basin transportation corridors. Since 2009, there has been 1 cyclist fatality along the SR 89/SR 28 corridor, and 7 pedestrian fatalities.

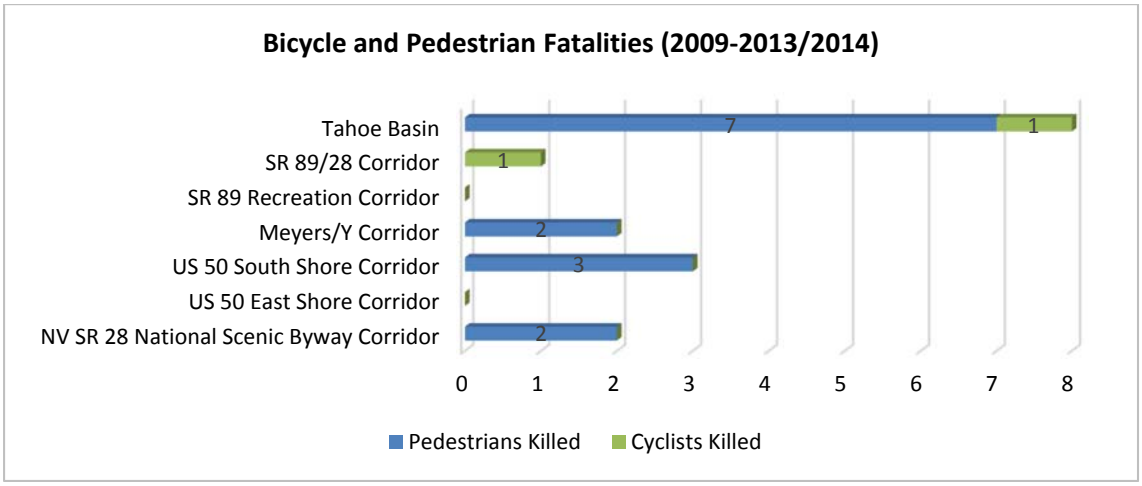


Figure 37. Source: California Highway Patrol Statewide Integrated Traffic Records System (SWITRS), Nevada Department of Transportation, as cited in the LSC Transportation Consultants Memo entitled "Technical Memorandum, Summary of Existing Transportation Conditions, March 2015." Note: SWITRS crash data listed from January 2009 to December 2013. NDOT crash data listed from July 2009 to June 2014.

Figure 38. Source: Tahoe Transportation District (TTD)

Air Quality

Since mobile source emissions are one of the largest contributors to the estimated annual average of air polluntant levels, it is important to monitor and track their trends in relation to our transportation trends. TRPA's thresholds, National Ambient Air Quality Standards (NAAQS) and California and Nevada state standards establish multiple air quality standards including carbon monoxide, ozone and particulate matter**.** Following is a historic evaluation of those trends**.**

Carbon monoxide (CO)

In 2012, the Nevada Department of Environmental Protection (NDEP) stopped monitoring carbon monoxide due to the low concentrations values being collected at the Stateline, Nevada monitoring site. The decrease in concentrations can be primarily attributed to the cleaner vehicle fleet and decrease in traffic volumes in the Stateline area.

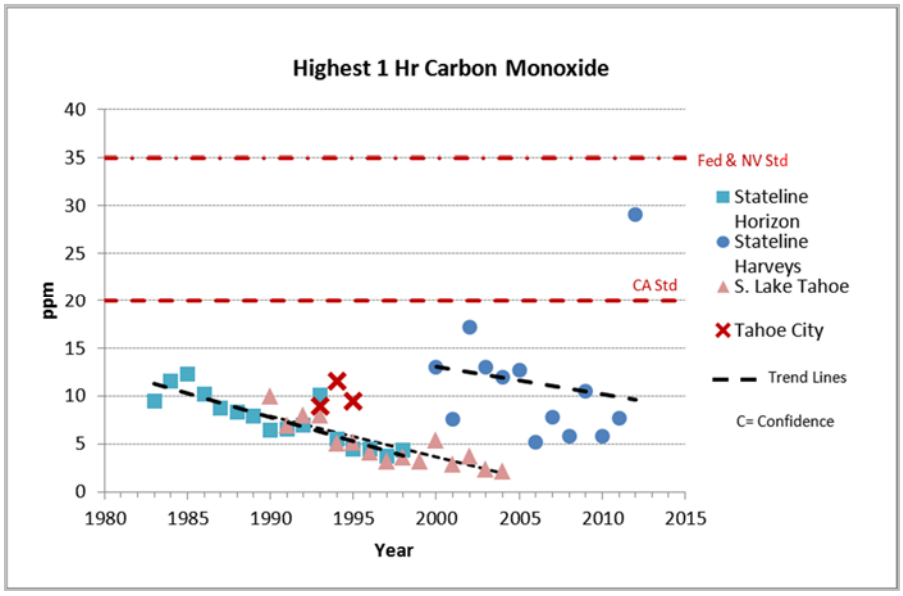


Figure 39. Source: TRPA Ambient Air Monitoring Program, 2014 Annual Report.

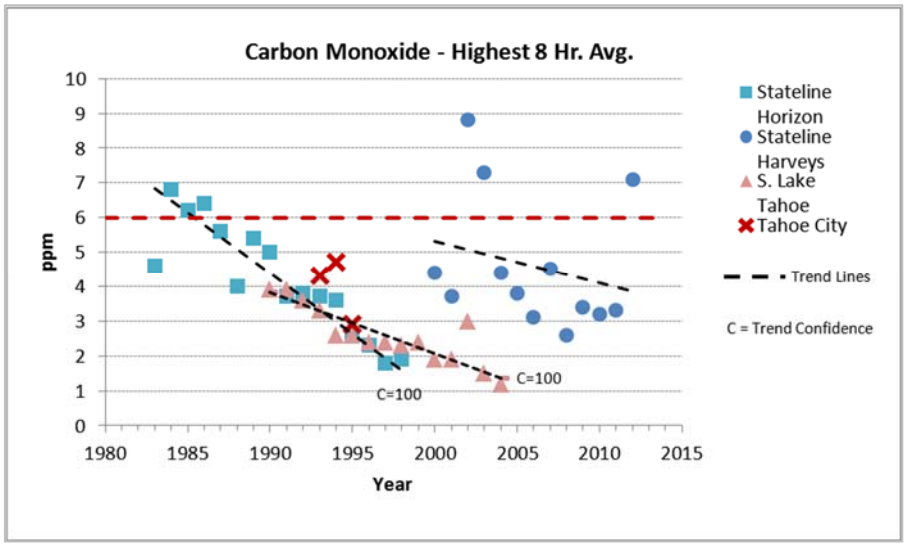


Figure 40. Source: TRPA Ambient Air Monitoring Program, 2014 Annual Report.

Ozone (O_3)

Ozone is considered a secondary pollutant that can be transported miles from populated areas. As shown in the following Figures, the one–hour and eight-hour ozone concentrations, which have been monitored at several locations around the Lake, show a downward trend. The eight-hour average for ozone is still considered out of attainment with the TRPA's threshold standard for 2014.

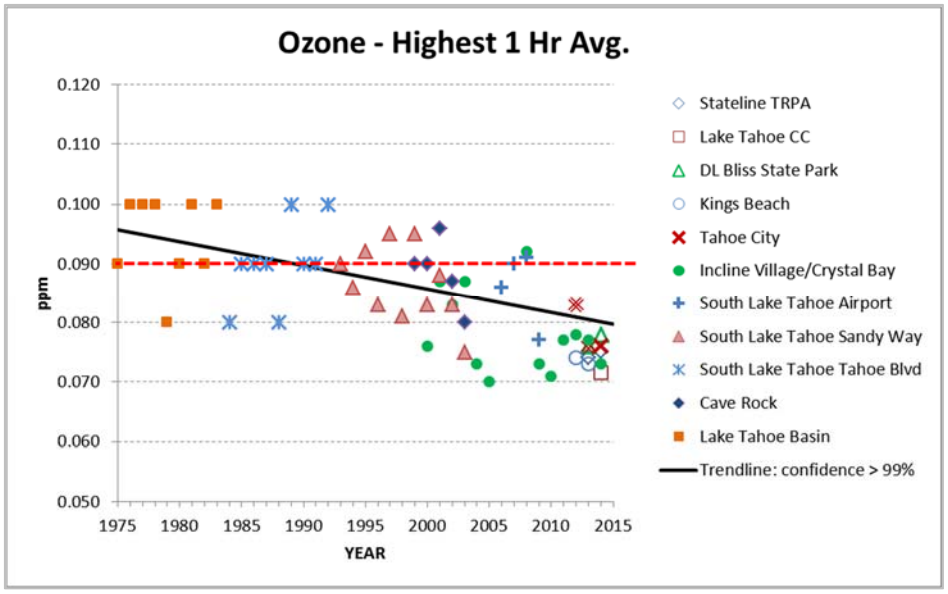


Figure 41. Source: TRPA Ambient Air Monitoring Program, 2014 Annual Report/

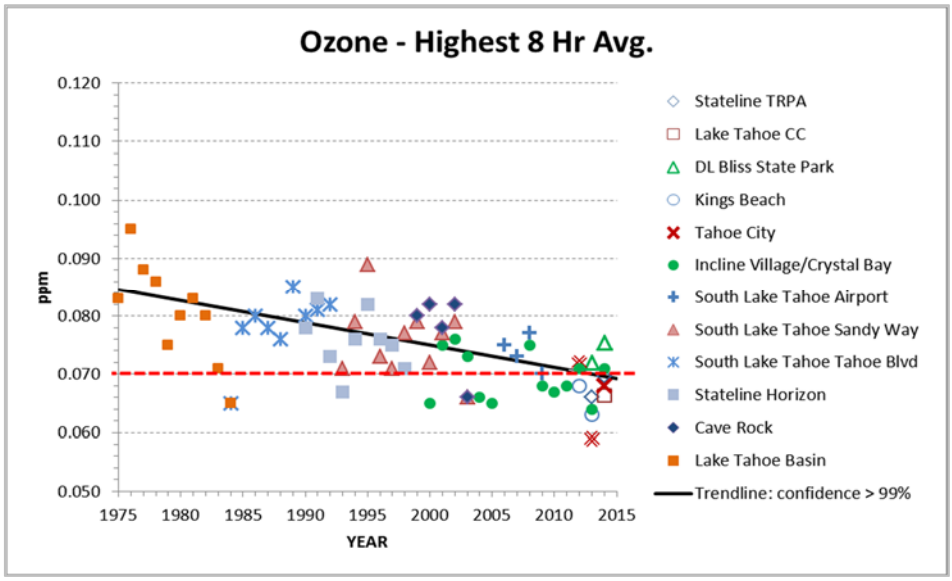


Figure 42. Source: TRPA Ambient Air Monitoring Program, 2014 Annual Report

Particulate Matter (PM_{10})

TRPA utilizes Particulate Matter as a proxy to measure visibility trends and to track progress towards wood smoke and suspended soil particles standards. As shown in the following figures, the overall trend in Particulate Matter has been positive with the exception of the Highest 24-Hour Standard which consistently violates the California Standard primarily due to wildfire and re-entrained dust from roadways.

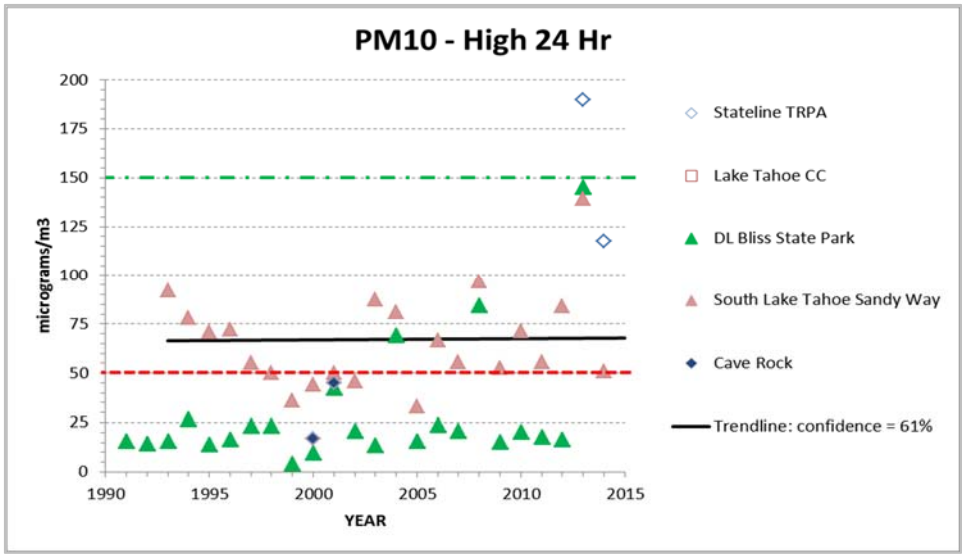


Figure 43. Source: TRPA Ambient Air Monitoring Program, 2014 Annual Report. Note: 2014 data for SLT Sandy Way site is preliminary and subject to revision

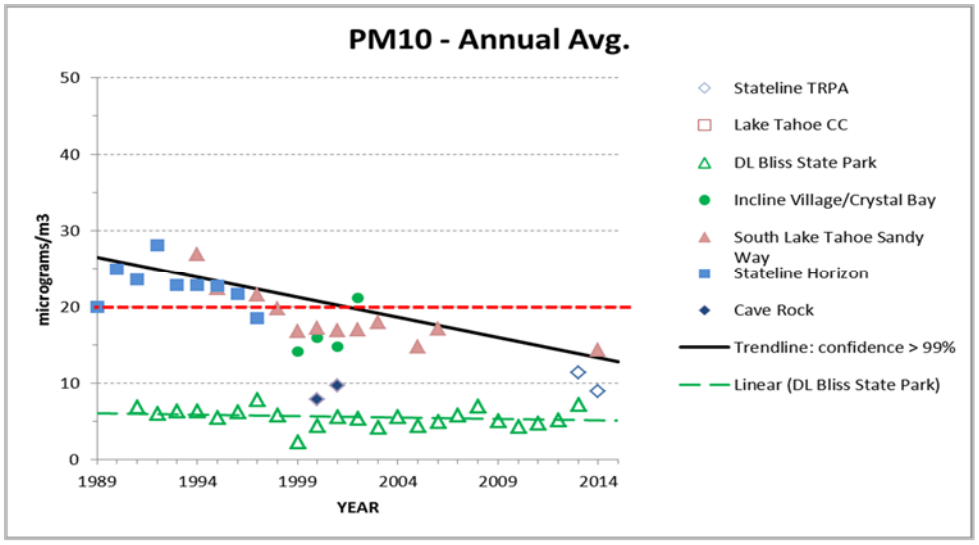


Figure 44. Source: TRPA Ambient Air Monitoring Program, 2014 Annual Report. Note: 2014 data for SLT Sandy Way site is preliminary and subject to revision

California Legislation SB-375 – Greenhouse Gases (GHG)

On September 23, 2010, the California Air Resources Board approved a 7 and 5 percent reduction target in mobile greenhouse gas emissions from 2005 for the years 2020 and 2035 for the California portion of the Lake Tahoe Basin. The targets are intended to comply with California Senate Bill (SB) 375 and are designed to help coordinate land use and transportation planning through the development of a Sustainable Communities Strategy (SCS). Based on future investments in sustainable transportation systems and land use patterns, it is estimated that mobile sources GHG would be reduced from 2005 values by 12.1 percent by the year 2020 and 7.2 percent by 2035.