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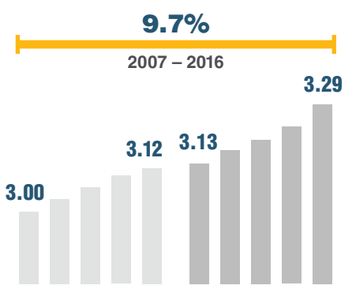
Executive Summary

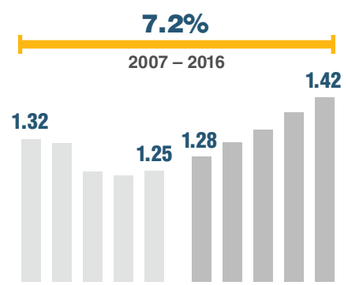
Traffic congestion is correlated with the state of the economy.

During the economic decline/ Great Recession (2008-2011), as job losses mounted, the region experienced declines in rush-hour traffic and vehicle miles traveled (VMT). Today, with the economy continuing to make gains while gas prices remain lower than in the past, traffic in the county has returned to pre-recession levels.

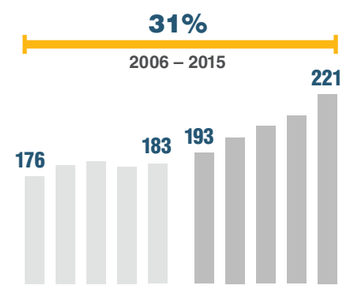
population
in millions



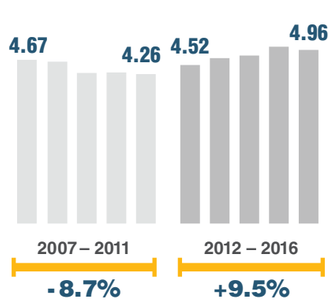
employment
in millions



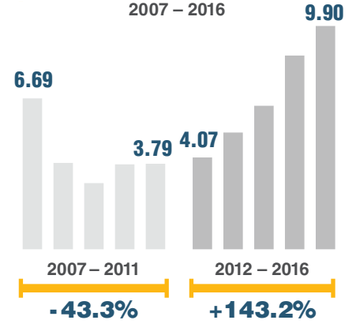
gross domestic product
in billions of dollars



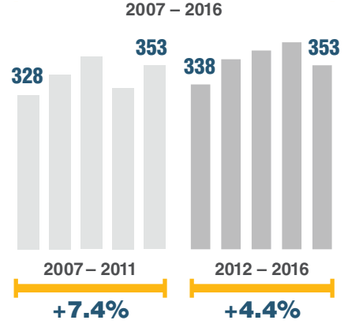
peak period freeway travel
in millions of vehicle miles



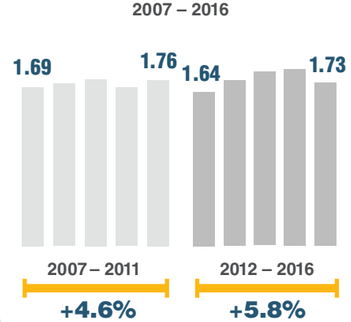
peak period freeway delay
in millions of vehicle hours



transit boardings
average weekday in thousands



transit travel
average weekday in millions of passenger miles



Introduction

2016 marked the fifth year of economic recovery in the San Diego region, following a five-year economic decline that started slowly in 2007 and then abruptly impacted the quality of life for many in the San Diego region and throughout the United States in 2008.

This 10-year cycle of economic decline and recovery has revealed much about how intrinsically linked our regional economy is to our journey to work and our overall travel patterns.

At the onset of the Great Recession in 2008, employment in the San Diego region decreased across many important sectors, particularly in construction and manufacturing. The regional economy showed itself to be relatively resilient to the economic downturn, as population continued to grow, albeit at a slower rate. In 2016, population in the region reached 3.29 million residents, a 9.7 percent increase from 2007 (See Figure 1.1).

Travel on the region's freeways dropped at the onset of the recession, with travel times on major freeway corridors falling as well. The Great Recession and the associated drop in personal incomes appeared to impact discretionary travel such as shopping and recreational trips. Since the economy hit bottom in 2008 and 2009, population, jobs, and gross domestic product have slowly and steadily rebounded.

The regional economy showed itself to be relatively resilient to the economic downturn...

As San Diego's regional economy has recovered, the employment base has reestablished itself and peak-period commute travel has surpassed pre-recession levels. In 2016, the region's employment base grew by 2.4 percent to almost 1.42 million jobs, outpacing the state's overall job growth for one year. The cumulative job growth over the past decade was 7.2 percent, with much of the increase occurring in the last five years.

The Great Recession and the associated drop in personal incomes appeared to impact discretionary travel such as shopping and recreational trips.

As more people return to work, more trips are made on our region's roadways. (See Figure 1.2)

In 2006, prior to the economic downturn, the unemployment rate in the region was 4.0 percent, lower than the state and national averages. At the height of the recession in 2010, unemployment reached 10.7 percent in the region, which was lower than the statewide average (12.2 percent) but higher than the national average (9.6 percent).

Correlated with the job growth is gross domestic product (GDP). At the height of the recession in 2009, the San Diego region's GDP fell by almost 2 percent to $174.6 billion, the only year the area experienced a loss in economic productivity. In 2015, the GDP in the San Diego region grew to nearly $221 billion, an increase of 6.7 percent. This annual growth in regional economic productivity outpaced both state and national trends. Over the last decade, the regional GDP grew by nearly 31 percent. (See Figure 1.3)

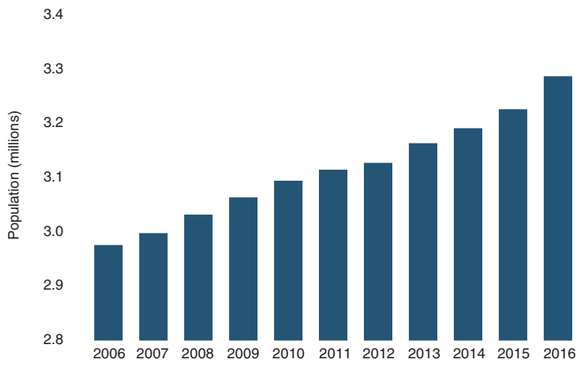
Gas prices in California were approaching $3 per gallon prior to the economic downturn, peaking at $3.51 per gallon in 2008. At the height of the recession in 2009, gas prices fell to $2.68 per gallon. Gas prices began to increase once again, reaching $4 per gallon in 2012. Since then, gas prices in California have seen a steady decline, averaging $3.17 per gallon in 2015 and $2.73 per gallon in 2016. Declines in gas prices historically have been correlated with reduced transit ridership and ridesharing and increased vehicle miles traveled. (See Figure 1.4)

About the 2015–2016 State of the Commute

This State of the Commute report examines how travel trends in the region have changed through the Great Recession from 2008 to 2011, and then through the economic recovery all the way up to 2016. Data for various modes of travel are presented through charts, graphs, and maps in order to provide readers with an easy-to-understand view of how our regional transportation system functions.

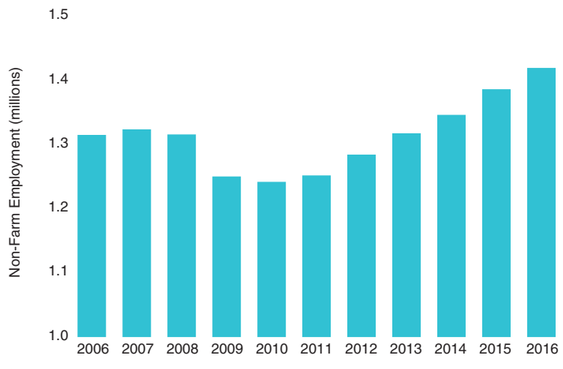
The report discusses performance trends for various modes in the region – freeway and transit in particular – using consistently available performance data. The report also provides a look at performance from an individual commuter's perspective. Commute patterns can be very complex in a large metropolitan area like San Diego, so commute routes have been organized by the sub-region in which the commute starts – North County Coastal, North County Inland, North City (northern part of the City of San Diego), South County, and East County – and a major employment center where the commute ends.

Figure 1.1
Regional Population



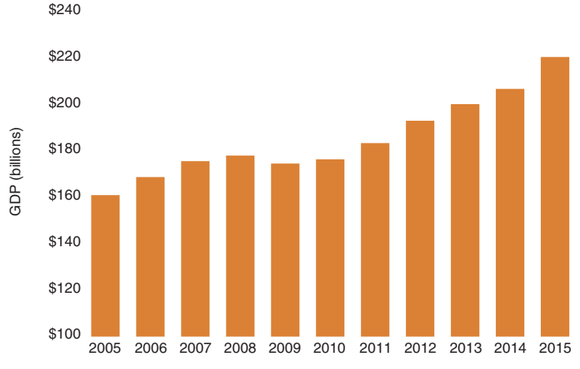
Source: California Department of Finance, SANDAG

Figure 1.2
Regional Employment



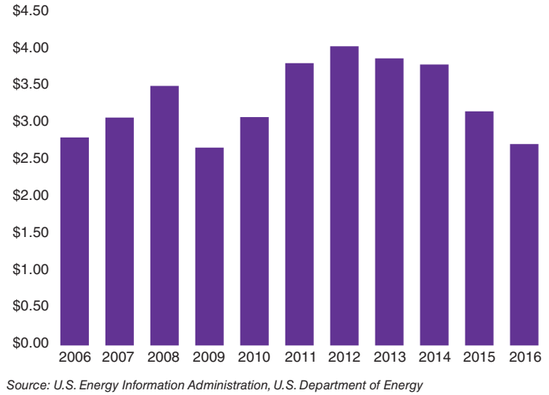
Source: California Employment Development Department

Figure 1.3
Regional Gross Domestic Product



Source: Bureau of Economic Analysis, U.S. Department of Commerce

Figure 1.4
California Gasoline Prices

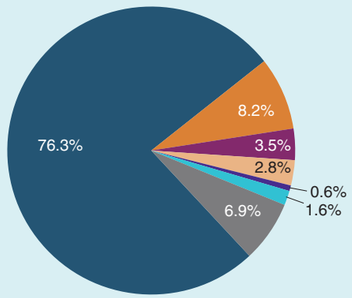


Source: U.S. Energy Information Administration, U.S. Department of Energy

Commute Basics

Figure 2.1

How we get to work (Commute Mode Share), 2015



Source: American Community Survey, 1-year estimates

2016: more cars and more drivers

There were more than **2,960,000 vehicles registered** in San Diego County in 2016, an **increase of almost 11% from the previous year.**

There were nearly **2,240,000 licensed drivers** in San Diego County in 2016, **up 7.6% from the previous year.**

In 2016, it is estimated that almost 78.5 million vehicle miles of travel (VMT) occurred every day in San Diego County, which adds up to more than 28 billion vehicle miles over the entire year. More than 50 percent of the daily travel occurs on the urban freeways and highways in the region. Another 40 percent occurs on the local streets and roads in the urbanized portion of the county.

How do we get to work?

Over the past decade, the mode of transportation to work for San Diego residents has remained fairly consistent. Nearly 85 percent of commute trips in the San Diego region are made by private automobile, with the vast majority of people traveling alone. Carpooling and vanpooling make up a portion of these trips, comprising 11 percent of commute trips prior to the economic downturn. This commute mode share dropped to 10 percent during the downturn, and has seen a continued drop during the recovery. By 2015, carpooling and vanpooling made up 8 percent of all commute trips. This recent downward trend in carpooling and vanpooling has been seen in other metropolitan areas throughout the country. Commuting by public transit makes up approximately 3 percent of all commute trips, with another 3 percent of commuters walking to work. Another 6 to 7 percent of workers choose to work from home, which covers a wide spectrum of employment choices including home-based employment, telework, and military-based residence.

Data on commute modes comes from the American Community Survey (ACS) conducted by the U.S. Census. The annual survey gathers data on a resident's primary means of transportation during his or her usual commute. While this survey provides

In 2015, the average commute time in the San Diego region was 26.1 minutes, which ranks 19th among major U.S. metropolitan areas...and lower compared to other metro areas in California and the national average.

a snapshot into general commute trends, it can oversimplify today's commuting behavior, which continues to grow in complexity. The ACS does not necessarily reflect a more multi-modal commute, where travelers require multiple modes (e.g., walk, bike, transit) at the beginning and/or end of their commute, or the "chaining" of the commute trip, where commuters, for example, may carpool at the beginning of their commute and continue to drive alone and/or drive to rail transit for the remainder of their commute.

How long does it take to get to work?

The ACS also collects information on general trends in travel times to work. Figure 2.2 shows the overall commute times over the past decade. In 2007, prior to the recession, commute times in the San Diego region were approaching 26 minutes. At the onset of the recession in 2008, commute times dropped to 24 minutes and remained at that level until 2011. Since 2012, the recovering economy has seen commute times slowly increase. In 2015, the average commute time in the San Diego region was 26.1 minutes, which ranks 19th among major U.S. metropolitan areas. Commute times in the San Diego region are lower compared to other metro areas in California and the national average. (See Figure 2.3)

As shown in Table 2.1, higher commute times are associated with higher economic productivity. Seventeen of the top 20 metro areas in terms of gross domestic product (GDP) are ranked in the Top 20 for commute times. The exceptions on this list are St. Louis, Tampa-St. Petersburg, and Riverside/San Bernardino Counties, where travel times are inherently longer due to longer commute distances to suburban employment centers or the downtown employment hub.

Table 2.1

Travel Time to Work Rank vs. Gross Domestic Product Rank, 2015

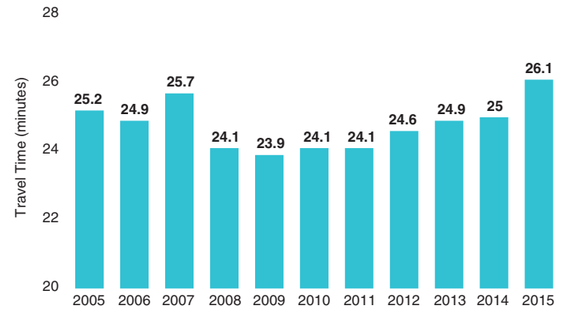
Rank	Metro Area	2015 Travel Time Minutes	Gross Domestic Product (billions)	GDP Rank
1	New York	36.3	$1,602.7	1
2	Washington DC	34.4	$491.0	5
3	San Francisco	33.2	$431.7	7
4	Riverside-San Bernardino	31.9	$140.6	23
5	Chicago	31.8	$640.7	3
6	Boston	31.4	$396.5	9
7	Atlanta	31.3	$339.2	10
8	Baltimore	30.6	$181.4	19
9	Houston	30.2	$503.3	4
9	Seattle	30.2	$313.7	12
11	Los Angeles	30	$930.8	2
12	Philadelphia	29.6	$411.2	8
13	Miami	29.1	$318.0	11
14	Dallas	28.1	$485.7	6
15	Denver	27.7	$193.2	18
16	Tampa-St. Petersburg	27	$133.8	26
17	Detroit	26.6	$245.6	14
18	Phoenix	26.2	$220.0	17
19	**San Diego**	**26.1**	**$220.6**	**16**
20	St. Louis	25.6	$155.1	21

Source: American Community Survey, 1-year estimates, Bureau of Economic Analysis, U.S. Department of Commerce

Note: Includes metropolitan areas with working age populations (ages 16+) exceeding two million residents

Figure 2.2

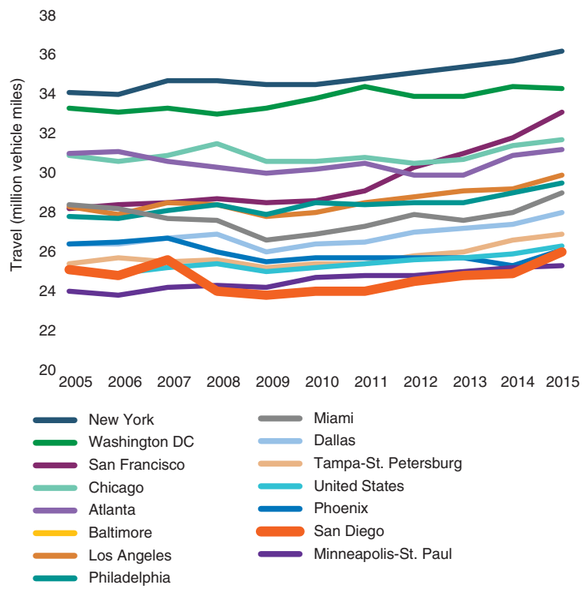
Travel Time to Work, San Diego Metro Area



Source: American Community Survey, 1-year estimates

Figure 2.3

Travel Time to Work, Selected U.S. Metro Areas



Source: American Community Survey, 1-year estimates

Regional Highway Performance: Freeway Travel (VMT)

How much do we travel on the region's freeways?

Figure 3.1 shows overall freeway travel in the San Diego region over the past 11 years. In 2007, prior to the recession, annual freeway travel in the region was approaching 13 billion vehicle-miles. During the Great Recession, freeway travel decreased gradually with employment losses, the drop in economic activity, and the associated decline in trips. In 2011, regional freeway travel dropped to 11.5 billion vehicle-miles. With economic recovery beginning in 2012, freeway travel also recovered, reaching 14 billion vehicle-miles in 2015, a 6.1 percent increase compared to the previous year. In 2016, overall freeway travel increased by 0.5 percent to 14.1 billion vehicle-miles. This slower growth in freeway travel was observed throughout the state in 2016. Figure 3.2 shows regional freeway travel by day of the week, where Friday has historically been the most traveled day on San Diego freeways.

Freeway travel during commute hours

In the San Diego region, freeway travel during the peak commute hours (6 to 10 a.m. and 3 to 7 p.m.) has made up approximately 37 percent of all freeway travel. Over the past 10 years, the proportion of peak period travel did not change, indicating that while travel levels did drop during the recession, commute trips during the traditional commute hours still held a considerable share of overall travel in the region. In fact, trips during the off-peak hours and during the weekend saw lower travel levels at the onset of the recession.

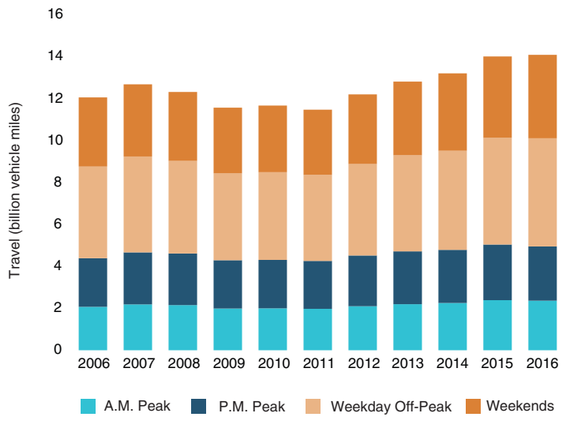
Peak-period travel in the region reached a high at 4.7 billion vehicle miles in 2007, then saw decreases during the recession. Peak-period travel dropped to less than 4.3 billion vehicle-miles in 2011 and once again began to ascend beginning in 2012. In 2015, peak-period travel surpassed 5 billion vehicle miles, a 5.3 percent increase from 2014. In 2016, peak-period travel dropped nearly 2 percent to 4.95 billion vehicle-miles. This recent drop reflects the flat or declining peak-period freeway travel seen throughout the state in 2016.

Figure 3.3 shows freeway travel by time of day, where the decline in freeway travel in 2016 is shown during the morning (-1.1 percent) and evening (-2.5 percent) peak periods. The drop in peak-period VMT in 2016 was not associated with a "spreading" of freeway travel to the "shoulder" periods before and after the traditional peak periods.

Peak-period travel on San Diego freeways does change during the course of the week. Figure 3.4 shows that peak-period freeway travel is highest in the middle of the week, with both Mondays and Fridays impacted by non-traditional work shifts (e.g., 9/80, 4/40) as well as non-work trips that occur throughout the day but during the evening peak period in particular.

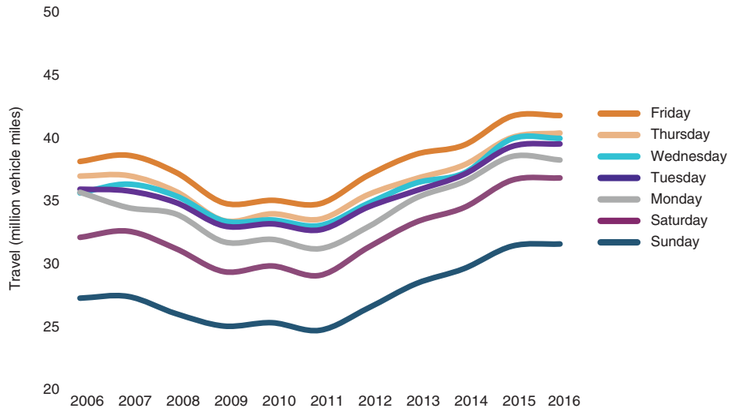
Mondays and Fridays saw declines in peak period freeway travel between 2008 and 2011, demonstrating the loss of work-based commute trips in the region during the economic downturn.

Figure 3.1
Total Freeway Travel



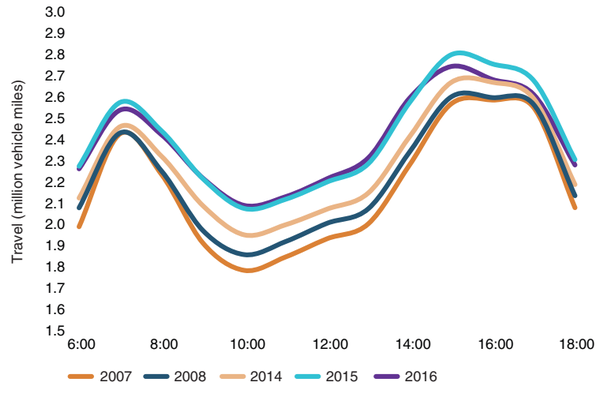
Source: Performance Measurement System (PeMS), Caltrans

Figure 3.2
Average Freeway Travel by Day of Week



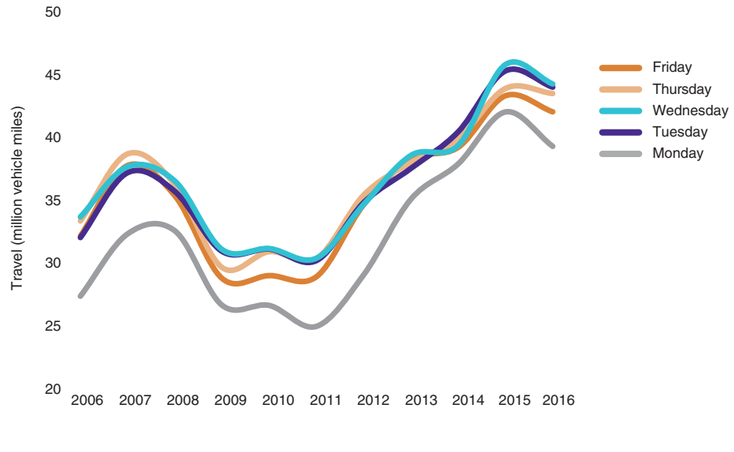
Source: Performance Measurement System (PeMS), Caltrans

Figure 3.3
Average Weekday Freeway Travel by Time of Day



Source: Performance Measurement System (PeMS), Caltrans

Figure 3.4
Average Peak Period Freeway Travel by Day of Week



Source: Performance Measurement System (PeMS), Caltrans

Regional Highway Performance: Freeway Delay

What is the quality of travel on the region's freeways?

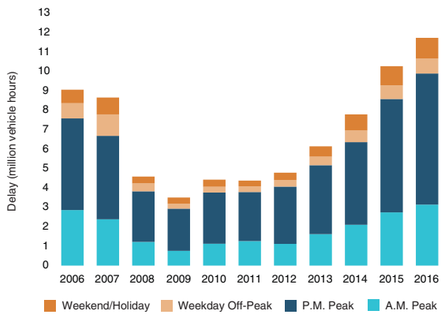
The performance of the region's freeway systems is typically measured in terms of delay, travel time, and travel time reliability. Freeway delay is measured in terms of the number of vehicle hours a particular freeway segment operates below a certain speed. In this report, "severe" delay reflects "stop-and-go" freeway congestion and is defined when a freeway segment operates below 35 miles per hour. Normal, or recurrent, delay typically occurs at specific freeway congested segments during the peak-commute periods. Anywhere from 20 to 60 percent of freeway delay is "non-recurrent," caused by accidents, special events, inclement weather, roadway construction, and other incidents.

Figure 4.1 shows total freeway delay in the region since 2006. More than 80 percent of freeway delay occurs during the traditional peak-period commutes. In 2006, prior to the recession, freeway delay in the region exceeded 9 million vehicle-hours. During the recession, peak-period freeway travel decreased, reducing delays, particularly at existing freeway congested segments. Peak-period delay dropped 43 percent in 2008 and another 23 percent in 2009. At the onset of the recession, freeway delay during the morning peak period dropped at a higher rate than the evening peak period, indicating its profound impact on many employment bases and the overall journey to work which dominates AM peak-period travel. As peak-period freeway travel increased along with the economic recovery, the resulting demands on the regional freeway system resulted in delays that have surpassed pre-recession levels. In 2015, daily freeway delay reached 8.6 million vehicle-hours, a 35 percent increase from 2014 and a 127 percent increase since 2011. With the declining peak-period travel observed in 2016, peak-period freeway delay increased at a slower rate – 15 percent.

In the last decade, the economic recession... provided a financial climate to aggressively advance the *TransNet* Early Action Program and other regional freeway projects.

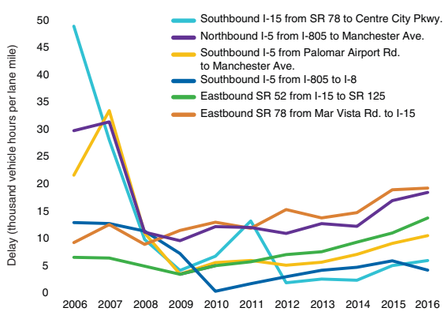
Nearly two-thirds of the delay on the regional freeway system is experienced on the major Interstate corridors: I-5, I-15, and I-805 (see Figure 4.2). I-8 also contributes to peak-period delay during the morning peak period, along with State Route 78 (SR 78) during the evening peak period.

Figure 4.1
Total Annual Freeway Delay



Source: Performance Measurement System (PeMS), Caltrans

Figure 4.3
2007 Congested Freeway Segments

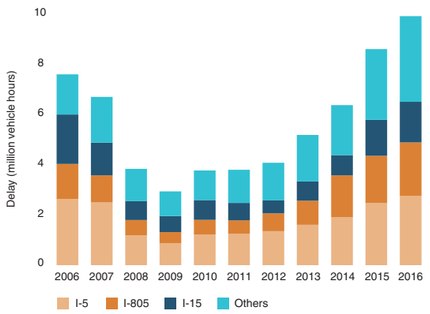


Source: Performance Measurement System (PeMS), Caltrans

Delay on these major freeway corridors has been impacted significantly not only by economic conditions, but also by the construction of freeway improvement projects, many funded by the *TransNet* program. In the last decade, the economic recession also provided a financial climate to aggressively advance freeway enhancements included in the *TransNet* Early Action Program and other regional freeway projects. Projects that were "shovel-ready" for construction were more likely to receive state and federal funding during this period, which led to faster project completion and earlier benefits to the traveling public. Completing HOV lane projects on I-5 and I-805, the I-15 Express Lanes project, and operational projects on I-805 and SR 78, not only provided immediate benefits, but have also minimized travel impacts during the region's strong economic recovery.

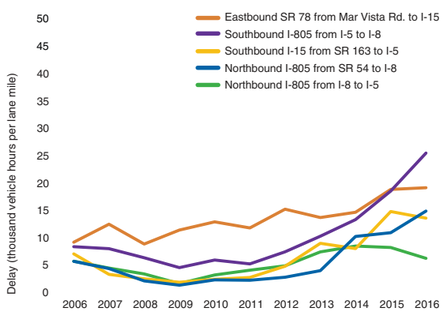
Figures 4.3 shows some of the most congested segments in 2007 prior to the recession. Three segments in particular – southbound I-15 at Lake Hodges, northbound I-5 into Encinitas, and southbound I-5 out of Carlsbad – had some of the highest congestion rates in the region, exceeding 25,000 vehicle-hours per lane-mile. Investments in HOV and Express Lanes on these corridors have kept congestion rates below 20,000 vehicles per lane-mile through the economic recovery. In 2016, only one of the top congested segments exceeded this congestion rate threshold, the southbound I-805 segment through the Golden Triangle and Kearny Mesa (See Figure 4.4). The one segment from 2007 that remained congested in 2016 was the eastbound segment of SR 78 through San Marcos. Local and freeway improvements completed in 2012 on SR 78 near Nordahl Road have kept peak-period delay at bay while long-range improvements are being planned.

Figure 4.2
Total Annual Peak Period Delay



Source: Performance Measurement System (PeMS), Caltrans

Figure 4.4
2016 Congested Freeway Segments



Source: Performance Measurement System (PeMS), Caltrans

What does freeway delay mean to commuters?

According to INRIX, the average commuter in the San Diego region spent a total of 46 hours in peak-hour congestion in 2016, which ranked 14th among U.S. cities. (See Table 4.1) A previous report from the Texas Transportation Institute estimated that drivers in the region experienced a total of 42 hours of delay in 2014, ranking 15th among metro areas with populations exceeding three million.

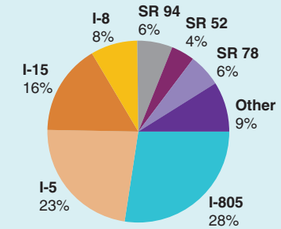
Table 4.1
Time Spent in Congestion U.S. Metro Areas

U.S. Rank	Metro Area	Peak Hours Spent in Congestion
1	Los Angeles, CA	104
2	New York, NY	89
3	San Francisco, CA	83
4	Atlanta, GA	71
5	Miami, FL	65
6	Washington, DC	61
7	Dallas, TX	59
8	Boston, MA	58
9	Chicago, IL	57
10	Seattle, WA	55
11	Houston, TX	52
12	Portland, OR	47
13	Austin, TX	47
14	**San Diego, CA**	**46**
15	Minneapolis, MN	40
16	Stamford, CT	39
17	Philadelphia, PA	38
18	Tacoma, WA	37
19	Phoenix, AZ	37
20	Baton Rouge, LA	36

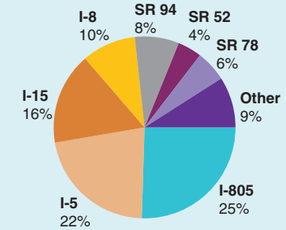
Source: INRIX Global Traffic Scorecard, February 2017

Figure 4.5
Peak Period Delay by Freeway

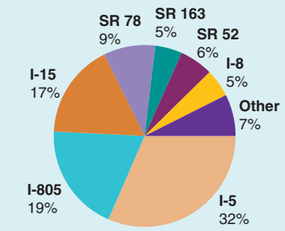
A.M. Commute: 2015



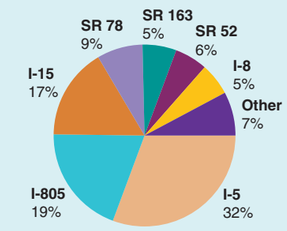
A.M. Commute: 2016



P.M. Commute: 2015



P.M. Commute: 2016



Source: Performance Measurement System (PeMS), Caltrans

Regional Transit Performance

Regional travel by transit, in terms of passenger miles traveled (PMT), is often used as a transit counterpart to vehicle miles traveled to illustrate the cumulative number of miles traveled by all transit passengers during a typical weekday on the region's buses, shuttles, trolleys, and commuter trains. As seen in Figure 5.1, average weekday transit travel in 2015 grew to 1.87 million passenger-miles, an increase of nearly 2 percent over 2014. That capped a three-year period of growing transit travel in the region, with new *Rapid* bus services and realigned Trolley services deployed during a time of economic recovery. Regional transit travel in 2015 was nearly 14 percent higher than in 2006 before the economic downtown. In 2016, however, regional travel by transit dropped nearly 7 percent to 1.73 million passenger-miles.

Average weekday transit ridership, in terms of boardings, has followed the same trend as transit travel over the last decade. Regional transit ridership in 2015 increased by nearly 2 percent to nearly 374,000 weekday boardings. That ridership growth reflects a 6 percent increase since 2011 and an 18 percent increase as compared to 2006 prior to the economic downturn. In 2016, transit ridership dropped nearly 5.5 percent to 353,000 weekday boardings. (See Figure 5.2)

Figure 5.3 shows ridership trends between bus and rail services. In 2015, average weekday bus ridership increased approximately 1 percent to nearly 232,000 passengers, while average weekday rail ridership increased by 3.8 percent to 142,000 passengers. In 2016, average weekday bus ridership decreased approximately 6 percent to 217,000 passengers, while average weekday rail ridership decreased approximately 4 percent to 136,000 passengers. While average weekday transit ridership declined in 2016, over the past five years ridership has increased 4.4 percent overall.

This recent drop in transit travel and ridership appears to be influenced by a number of factors, including relatively low and stable gasoline prices, and the relatively healthy state of the economy.

Transit revenue miles are an indication of the amount of transit service available to the public in the region. Transit revenue miles increased by 2.8 percent in 2015 to more than 94,000 revenue miles. In 2016, transit revenue miles increased to over 95,000 due to minor service changes made by transit operators. (See Figure 5.4)

The overall productivity of the regional transit system, measured in passengers per revenue mile, peaked in 2013. In 2016, transit productivity was 3.8 passengers per revenue mile, 10 percent higher than in 2007 prior to the economic downturn. (See Figure 5.5)

In response to declining ridership and productivity, both transit operators are planning system changes to realign current transit services to meet market needs.

Weekday ridership levels for the five rail transit routes in the San Diego region remain strong. The UC San Diego Blue Line Trolley, from San Ysidro to Downtown San Diego, continues to be the busiest transit route in the region, with more than 56,000 daily trips in 2016. The Green and Orange Trolley lines rank second and third overall in the region, with 35,000 and 30,000 daily trips, respectively. The SPRINTER light rail service from Escondido to Oceanside also served more than 10,000 trips each weekday along the SR 78 corridor in 2016. The COASTER rounds out the rail services with nearly 5,200 daily passengers. (See Table 5.1)

Table 5.2 shows the ten most heavily used bus routes in the region. The Route 7 bus service from La Mesa to Downtown San Diego continues to have the highest weekday bus ridership in the region, serving more than 9,200 daily trips. Notably, in 2016, the *SuperLoop* Rapid services in the University City area (Routes 201/202) rose to the number five spot on the list with over 7,500 daily passengers, while the I-15 *Rapid* (Route 235) rose to the number eight spot on the list, with nearly 5,700 passengers per weekday.

Figure 5.1
Average Weekday Transit Passenger Miles

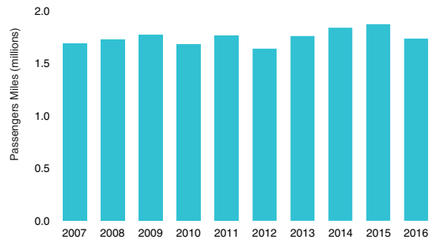


Figure 5.2
Average Weekday Transit Ridership

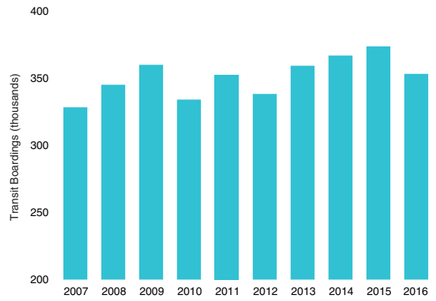


Figure 5.3
Average Weekday Bus and Rail Ridership

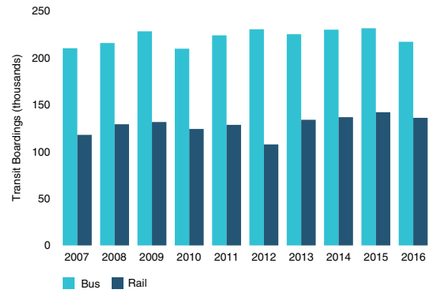


Figure 5.4
Average Weekday Transit Revenue Miles

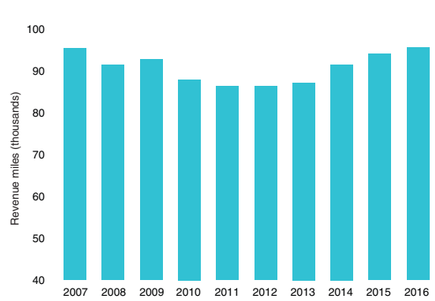


Table 5.1
Rail Routes by Ridership, 2015–2016

This table excludes the Silver Line, which provides limited off-peak service in downtown San Diego.

2016 Rank	2015 Rank	Route	Route Description	Transit Mode	Average Weekday Boardings
1	1	UC San Diego Blue Line Trolley	America Plaza to San Ysidro	Light Rail	56,230
2	2	Green Line Trolley	Santee to Downtown SD / 12th & Imperial via La Mesa / Mission Valley	Light Rail	34,837
3	3	Orange Line Trolley	El Cajon to Downtown SD / America Plaza via Southeastern Communities	Light Rail	29,562
4	4	SPRINTER	Oceanside to Escondido	Light Rail	10,282
5	5	COASTER	Oceanside to Downtown San Diego	Commuter Rail	5,196

Figure 5.5
Average Weekday Passengers Per Revenue Mile

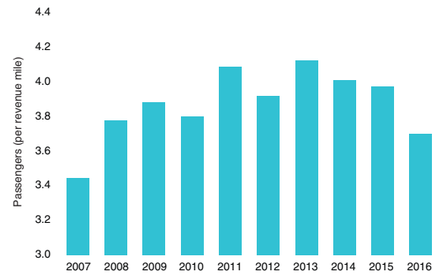


Table 5.2
Top 10 Bus Routes by Ridership, 2015–2016

2016 Rank	2015 Rank	Route	Route Description	Transit Mode	Average Weekday Boardings
1	1	7	La Mesa to Downtown	Local Bus	9,220
2	2	929	Downtown San Diego to Iris Avenue Trolley	Local Bus	8,200
3	3	11	Skyline Hills to San Diego State University	Local Bus	8,156
4	5	215	SDSU - Downtown	*Rapid* Bus	7,658
5	13	201/202	UTC Transit Center/ UC San Diego	*Rapid* Bus	7,522
6	4	13	Kaiser Hospital/Grantville Trolley to 24th Street Trolley	Local Bus	6,835
7	6	3	UC San Diego Medical Center/Hillcrest to Euclid Trolley	Local Bus	5,962
8	14	235	Downtown San Diego to Escondido Transit Center	*Rapid* Bus	5,673
9	7	30	UTC / VA Medical Center to Downtown	Local Bus	5,528
10	8	955	SDSU Transit Center to 8th Street Trolley	Local Bus	5,255
11	9	10	University & College to Old Town Transit Center	Local Bus	5,125
14	10	1	Hillcrest - Grossmont Trolley	Local Bus	4,786

Source for all figures and tables on this page: San Diego Metropolitan Transit System, North County Transit District, SANDAG Passenger Counting Program

Performance of *Rapid* and Rail Services Funded by *TransNet*

TransNet, the region's voter-approved, half-cent sales tax for transportation improvements, continues to play an important role in developing major transit services in the region. *TransNet* funds have been invested in building new transit projects, as well as paying for the operating expenses of those new services. *TransNet* capital investments include infrastructure for the SPRINTER, *SuperLoop*, and *Rapid* services, as well as vehicles, such as low-floor trolley cars and buses. *TransNet* investment in rail infrastructure has created a network that provided transportation to more than 136,000 passengers per weekday in 2016. (See Figure 6.1)

Under the program, 8.1 percent of net revenues are set aside to pay for continued operations of services built with *TransNet* funds. This funding covers the operating costs of *SuperLoop Rapid* services in the University City area (Routes 201/202 and 204), as well as recently deployed *Rapid* bus services from San Diego State University to Downtown San Diego (Route 215) and along the I-15 Corridor (Routes 235 and 237). Future transit services implemented by *TransNet*, including the Mid-Coast Trolley extension and South Bay *Rapid*, will be supported by the program's operational funding.

In 2015, *Rapid* services combined to carry approximately 18,700 passengers on an average weekday. In 2016, ridership across these services rose to 22,500 passengers, an increase of 20 percent. (See Figure 6.2)

Routes 201/202 and 215 have been highly productive, meeting or exceeding the MTS Bus average of 43.5 passengers per hour in 2015 and 31.1 passengers per hour in 2016. Route 204 (UTC East Loop) provides feeder services to Routes 201/202 and UTC Transit Center. Routes 235 and 237 (Rancho Bernardo to UC San Diego) provide a more commuter based service along the I-15 corridor, in which riders have longer trips than they would on a route operating frequently along an urban corridor. (See Figure 6.3) With the exception of Routes 201/202, the average weekday load factor (the percentage of seats occupied on a transit vehicle) of the *TransNet*-funded routes has been increasing in recent years. In 2016, Route 235, which provides service throughout the day, had a load factor of 38.2 percent, significantly above the MTS Bus average of 31.5 percent of seats being occupied. All-day load factors for the *SuperLoop* and Route 215 are just below the MTS bus average. (See Figure 6.4)

In 2015 and 2016, the *SuperLoop Rapid* and *Rapid* Route 237 arrived on schedule more than 85 percent of the time. On-time performance on *Rapid* Routes 215 and 235 were just below the Metropolitan Transit System standard of 85 percent for *Rapid* services. (See Figure 6.5)

Farebox recovery on all the *SuperLoop* routes has ranged between 28 and 35 percent since the inception of the service in 2009. *Rapid* 215 services have seen a steady farebox recovery of 30 percent over the last two years, while *Rapid* 235 farebox recovery increased from 20 to 23 percent between 2015 and 2016. Farebox recovery on the *Rapid* 237 service continues to grow (up to 16 percent in 2016) as the ridership base continues to form (see Figure 6.6).

Figure 6.1
Regional Transit Ridership: *TransNet* Supported Rail Services

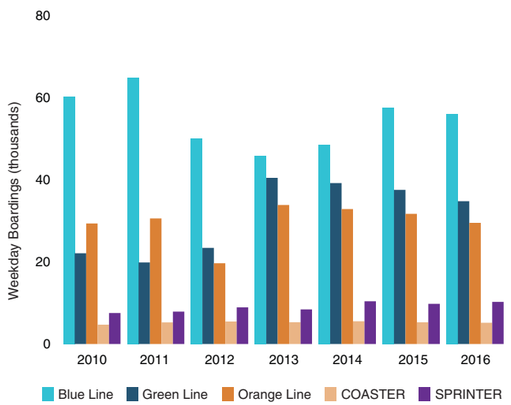


Figure 6.2
Regional Transit Ridership: *TransNet* Supported Bus Services

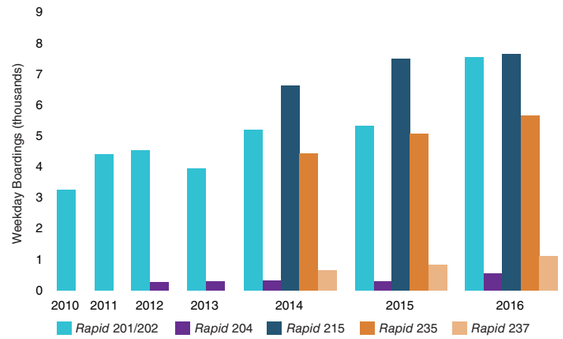


Figure 6.3
Regional Transit Productivity: *TransNet* Supported Bus Services

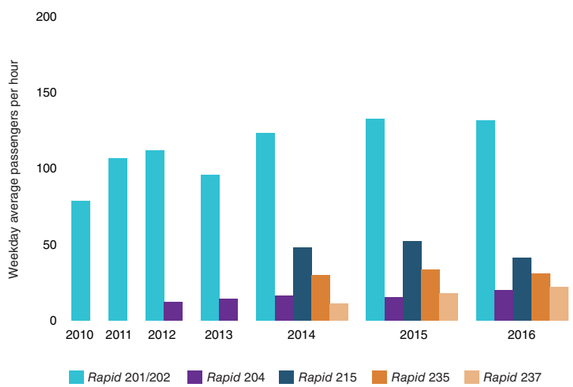


Figure 6.4
Regional Bus Transit Load Factor: *TransNet* Supported Bus Services

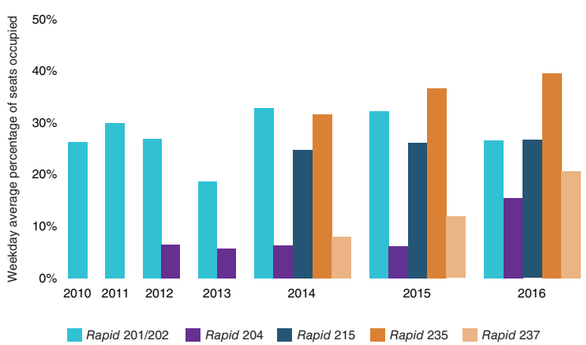
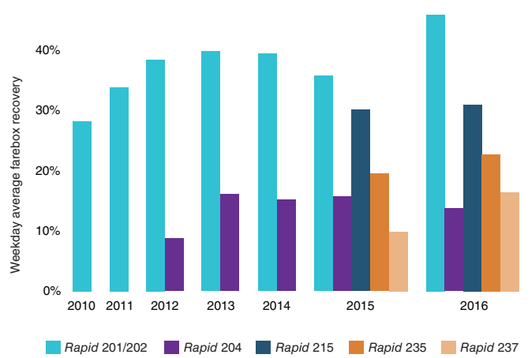


Figure 6.5
Transit On-Time Performance: *TransNet* Supported Bus Services

Figure 6.6
Regional Transit Farebox Recovery: *TransNet* Supported Bus Services



Source for all figures on this page: San Diego Metropolitan Transit System, North County Transit District, SANDAG Passenger Counting Program, Hastus

Commuter Route Performance: Overview

SANDAG continues its efforts to understand just how well our transportation system is performing from the traveler's perspective. The Commute Route Performance section provides a snapshot of data focusing on major commute routes throughout the region. Commute routes are organized here into groups having similar travel patterns. For example, commutes from both San Ysidro and Chula Vista to Downtown San Diego have been grouped together to give a more comprehensive view of the commute from the South County.

Each commute route section reports travel times during the morning and afternoon commutes. Travel times represent trip times only during the freeway portion of the trip, rather than door-to-door commute times.

Travel time data comes from the Caltrans Performance Measurement System (PeMS). PeMS uses information gathered by freeway detectors to estimate travel speeds for a given segment of freeway, and the system calculates the corresponding travel time and delay. Freeway travel times reflect travel on the general purpose lanes of the freeway, and do not reflect the use of HOV or Express Lanes during the trip. Morning and evening travel times in this section assume that one enters the freeway at 8 a.m. and 5 p.m., respectively.

Commute travel times are reported in two different ways: average and budget. The average travel time is average of all midweek travel times (Tuesdays, Wednesdays, and Thursdays) for a time period. The budget time, a measure of the trip reliability, is the extra time a commuter would need to add to an average trip to ensure on-time arrival 95 percent of the time. Higher budget times are related to less reliable travel caused by variables such as incidents, accidents, inclement weather, and special events.

Commute Route Performance: South County to Sorrento Valley

The major inland commute route from South County to major employment centers in Sorrento Valley and the Golden Triangle takes place primarily on Interstate 805. Commuters to Sorrento Valley generally experience delays in the morning when traveling southbound and in the evening when traveling northbound up to North County.

As shown in Figure 7.1, the majority of delay experienced on I-805 is in the northern portion of the corridor, where commuters directly access major employment centers, or connect to other freeways (i.e., I-8, SR 163, and SR 52) to get to and from work. This eight-lane freeway has had some of the most congested segments in the region due to heavy demand. The middle portion of I-805 has seen a considerable growth in delay during the recovery period, as segments in the Mid-City area, as well as near State Routes 15 and 94, have become more congested. The southern portion of the I-805 has experienced the least amount of freeway delay in the I-805 corridor.

Figure 7.1
Total Weekday Peak Period Delay by Freeway Segment, I-805

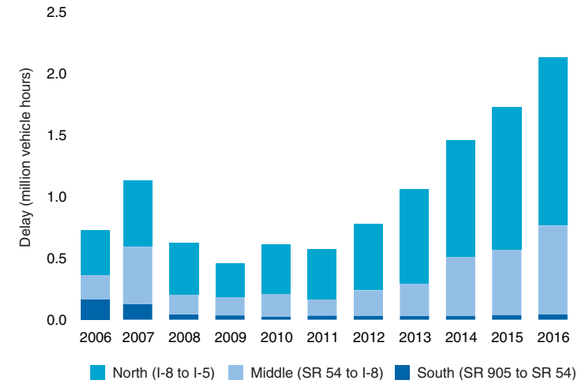
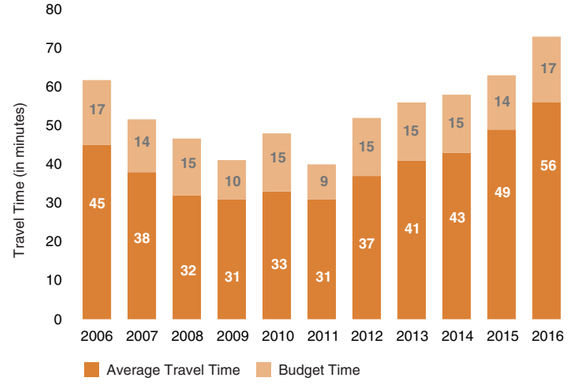


Figure 7.2
A.M. Travel Time and Reliability
Chula Vista to Sorrento Valley via I-805

Figure 7.3
P.M. Travel Time and Reliability
Sorrento Valley to Chula Vista via I-805



Source for all figures on this page: Performance Measurement System (PeMS), Caltrans

Commute Performance: North County Coastal to Sorrento Valley/Downtown

The major coastal commute route from North County to major employment centers in the Golden Triangle and Downtown San Diego takes place primarily on Interstate 5. Commuters to Sorrento Valley generally experience delays in the morning when traveling southbound and in the evening when traveling northbound up to North County. The southbound evening commute has grown considerably the past decade, with travel times becoming comparable to the major commutes in the I-5 Corridor.

For the commute from the north coastal portion of San Diego County to Downtown San Diego, commuters use the middle and northern portions of I-5, which carry a significant share of the peak period delay along the entire I-5. Prior to the recession, the northern segment from I-805 to SR 76 carried over 85 percent of all peak-period delay experience on I-5. This northern portion of the corridor is not only a commuter route, but also serves local and interregional needs. Delays in this segment dropped more than 60 percent in 2008 at the onset of the recession and continued to drop in 2009 with the completion of the I-5 HOV lane extension to Solana Beach. Since 2012, delay on this segment has grown by more than 90 percent as demands have increased due to economic recovery.

The middle portion of I-5 from I-805 to I-8 experiences approximately one-fifth of the total delay on I-5. This segment serves as the primary gateway into UC San Diego, the VA Hospital, and other major employment sites. After delay decreases in 2008 and 2009, congestion on this "Mid-Coast" segment has doubled since 2012 due to increasing demand and recent freeway construction work near I-8/Sea World Drive and Genesee Avenue. (See Figure 8.1)

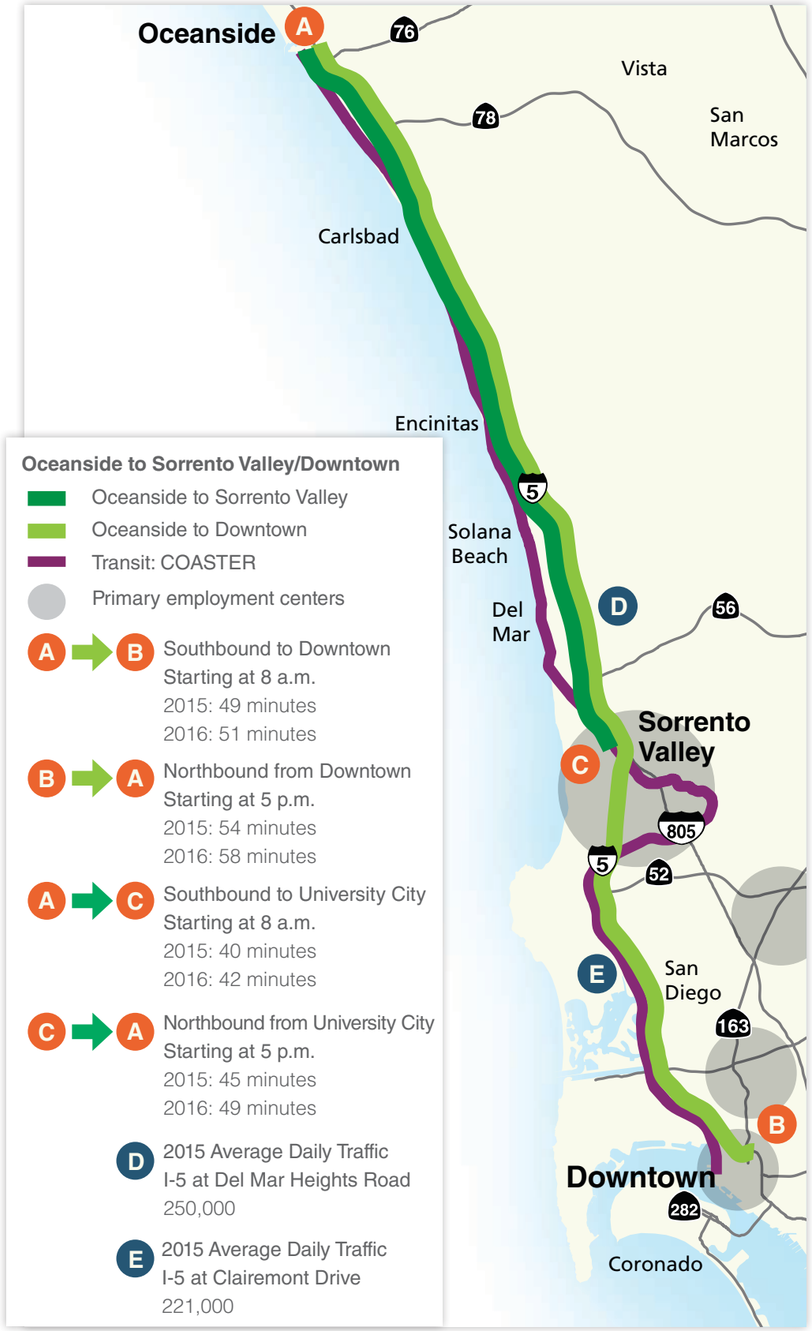
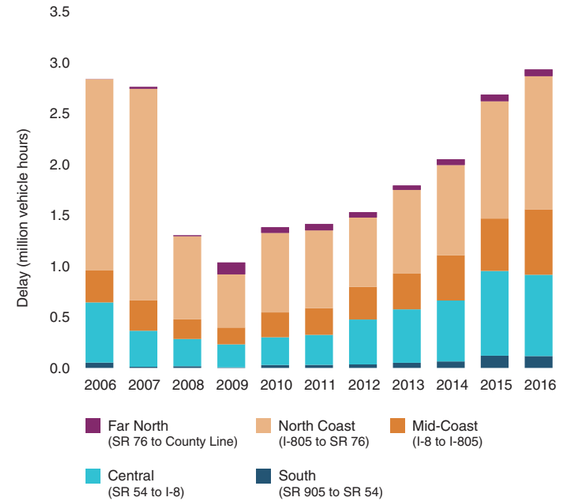


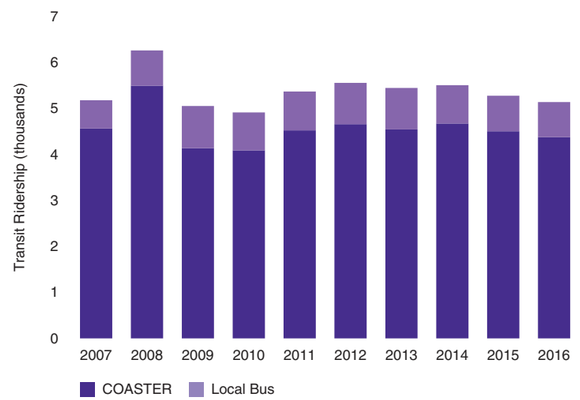
Figure 8.1
Total Weekday Peak Period Delay by Freeway Segment, I-5



Source: Performance Measurement System (PeMS), Caltrans

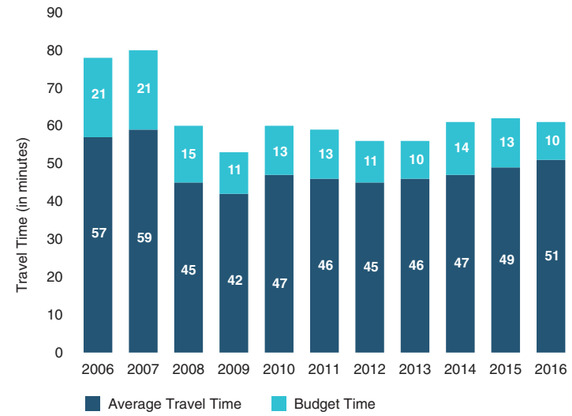
Figure 8.2
Average Weekday Transit Ridership

Ridership at Los Peñasquitos Lagoon for COASTER and Route 101 bus.



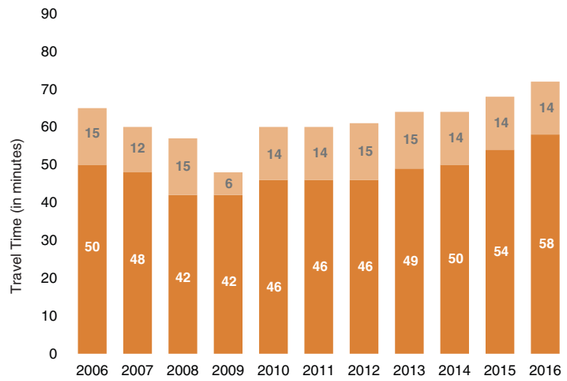
Source: San Diego Metropolitan Transit System, North County Transit District, SANDAG Passenger Counting Program

Figure 8.3
A.M. Travel Time and Reliability
Southbound I-5 from SR 76 to Front Street



Source: Performance Measurement System (PeMS), Caltrans

Figure 8.4
P.M. Travel Time and Reliability
Northbound I-5 from First Avenue to SR 76



Source: Performance Measurement System (PeMS), Caltrans

Commute Performance: North County Inland to Miramar/Downtown

The primary inland commute route from North County to major employment centers in Kearny Mesa and Downtown San Diego takes place primarily on I-15 and SR 163. Commuters generally experience delays traveling southbound in the morning and traveling northbound in the evening. Although, the southbound commute during the evening peak has recently developed into a major commute movement in the I-15 Corridor.

For the commute from the north inland portion of San Diego County to Downtown San Diego, commuters use the 20-mile portion of I-15 between SR 163 and SR 78, with the majority of commuters continuing into downtown via SR 163. This 20-mile segment of the I-15 is a critical local, commuter, and interregional route that received more than $1 billion in highway and transit investments from 2003 to 2011. Since 2012, delay on this segment has increased due to economic recovery; however, the level of delay is still 34 percent lower than pre-recession levels.

Delay on the portion of I-15 south of SR 163 has grown considerably. This segment now experiences almost half of the total delay on I-15. This segment serves as the primary gateway into Kearny Mesa, Mission Valley, and ultimately major activity and employment sites around San Diego Bay. (See Figure 9.1)

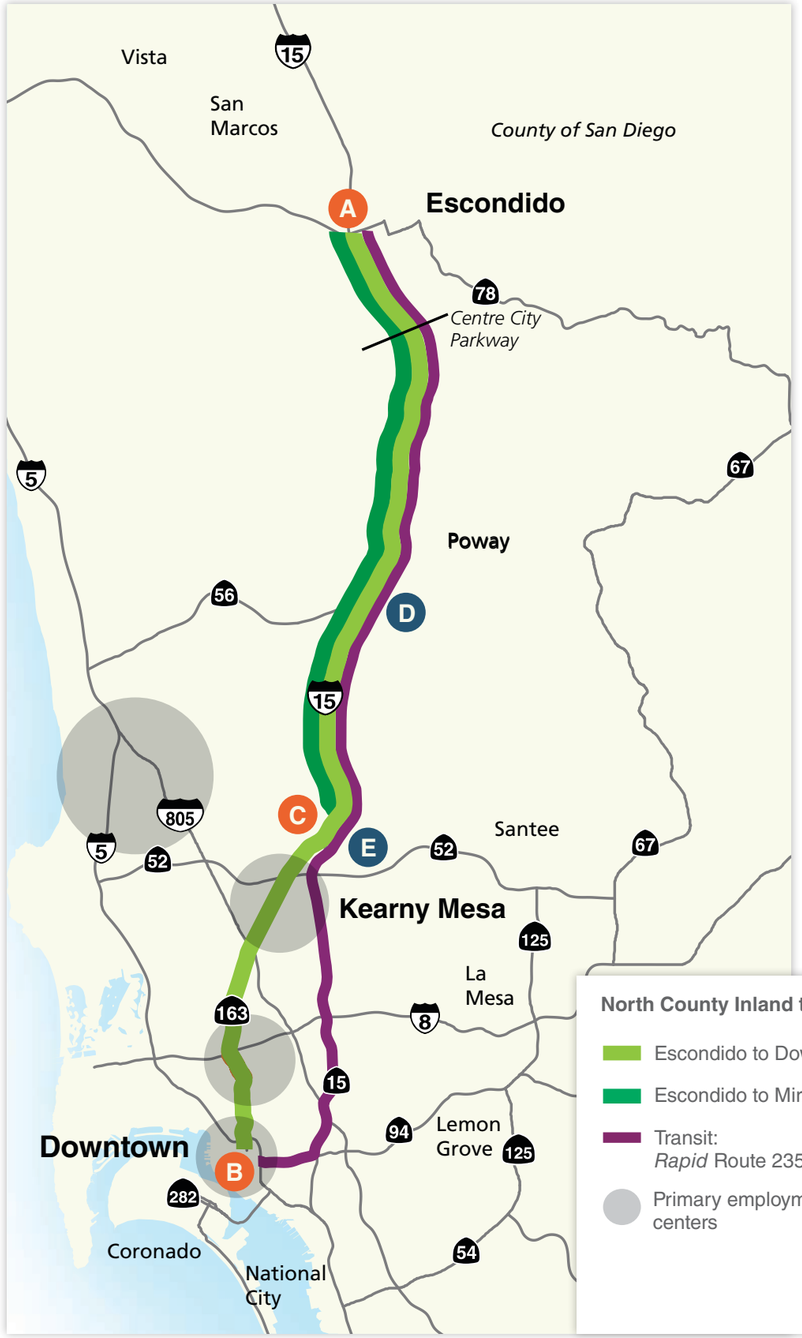
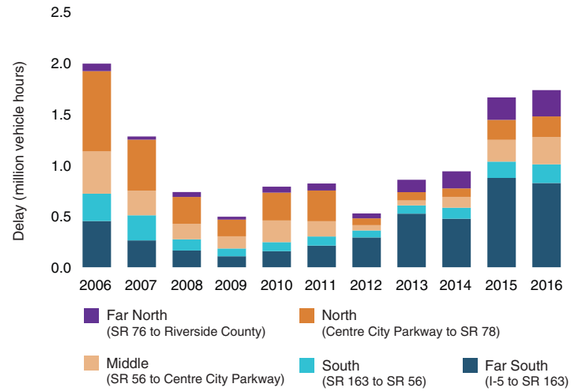


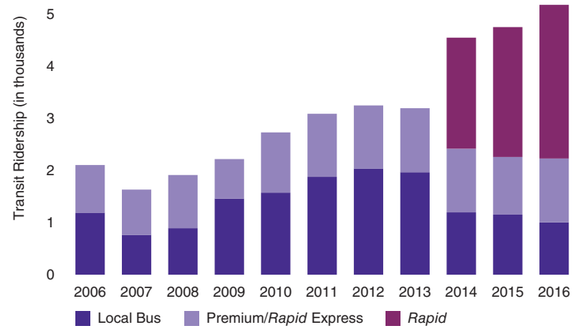
Figure 9.1
Total Weekday Peak Period Delay by Freeway Segment, I-15



Source: Performance Measurement System (PeMS), Caltrans

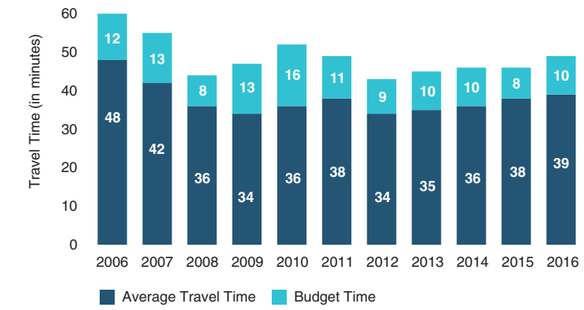
Figure 9.2
Average Weekday Transit Ridership

Note: Ridership at Miramar Way screenline for Route 20, 110, 210, 235, 280, 290 and Series 800 Express buses



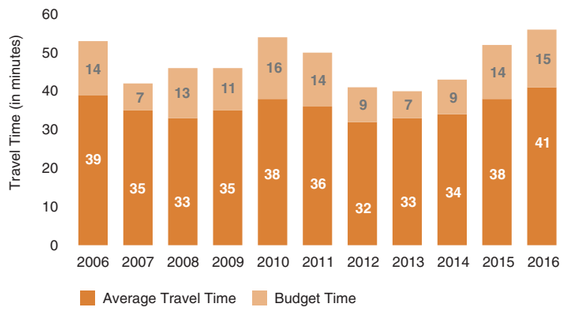
Source: San Diego Metropolitan Transit System, North County Transit District, SANDAG Passenger Counting Program

Figure 9.3
A.M. Travel Time and Reliability
I-15 from SR 78 to Downtown via SR 163



Source: Performance Measurement System (PeMS), Caltrans

Figure 9.4
P.M. Travel Time and Reliability
I-15 from Downtown to SR 78 via SR 163



Source: Performance Measurement System (PeMS), Caltrans

North County Inland to Miramar/Downtown

- Escondido to Downtown
- Escondido to Miramar
- Transit: *Rapid* Route 235
- Primary employment centers

A → B Southbound to Downtown
Starting at 8 a.m.
2015: 38 minutes
2016: 39 minutes

B → A Northbound from Downtown
Starting at 5 p.m.
2015: 38 minutes
2016: 41 minutes

D 2015 Average Daily Traffic
I-15 at Poway Road
244,000

A → C Southbound to Miramar
Starting at 8 a.m.
2015: 31 minutes
2016: 30 minutes

C → A Northbound from Miramar
Starting at 5 p.m.
2015: 28 minutes
2016: 31 minutes

E Average Weekday Ridership
I-15 Transit Services at Miramar Way
2015: 4,758
2016: 5,186

Commute Performance: South County to Downtown

South County to Downtown

- San Ysidro to Downtown
- Chula Vista to Downtown
- Primary employment centers
- SR 125 Toll Road
- Transit: UC San Diego Blue Line Trolley
- Transit: Route 929

A → B Northbound from San Ysidro starting at 8 a.m.
2015: 19 minutes
2016: 21 minutes

C → D Northbound from Chula Vista starting at 8 a.m.
2015: 20 minutes
2016: 23 minutes

B → A Southbound to San Ysidro starting at 5 p.m.
2015: 17 minutes
2016: 17 minutes

D → C Southbound to Chula Vista starting at 5 p.m.
2015: 14 minutes
2016: 14 minutes

E Average Weekday Transit Ridership at SR 54
2015: 24,397
2016: 23,928

F 2015 Average Daily Traffic I-5 at Division Street
200,000

G 2015 Average Daily Traffic I-805 at SR 54
238,000

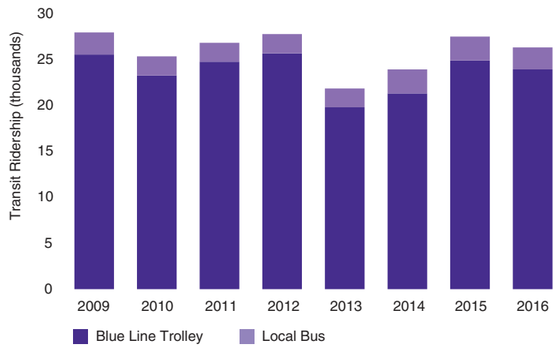
H Total Annual Trips SR 125/South Bay Expressway
FY 2015: 14.4 million
FY 2016: 15.8 million

The commute routes from South County communities to Downtown San Diego take place primarily on I-5 along San Diego Bay, and inland on I-805 and SR 94. Commuters generally experience delays traveling into downtown in the morning and out of downtown in the evening. While travel times in these corridors did drop slightly during the recession, in most areas they remained more stable than many other commuter routes and have since increased to pre-recession levels.

The UC San Diego Blue Line Trolley is the primary transit route serving commuters from San Ysidro, Otay Mesa, and the rest of South County into Downtown San Diego. Along with the Route 929 bus service, weekday transit ridership into and out of National City ranged between 23,000 and 25,000 through 2012. Blue Line ridership shifted in 2013 and 2014 as Trolley Renewal construction efforts impacted service, and downtown Trolley realignment shortened the route and redefined the ridership base.

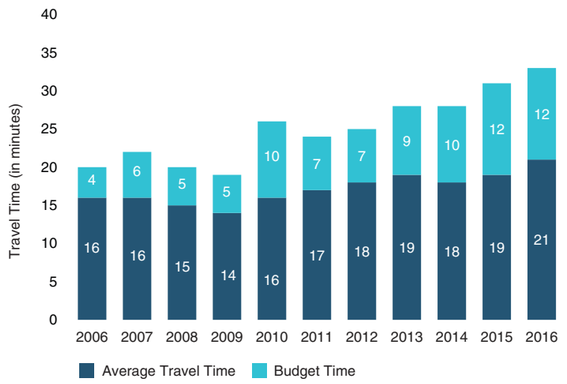
Figure 10.1
Average Weekday Transit Ridership

Ridership at the Sweetwater River for Blue Line Trolley and Route 929 bus



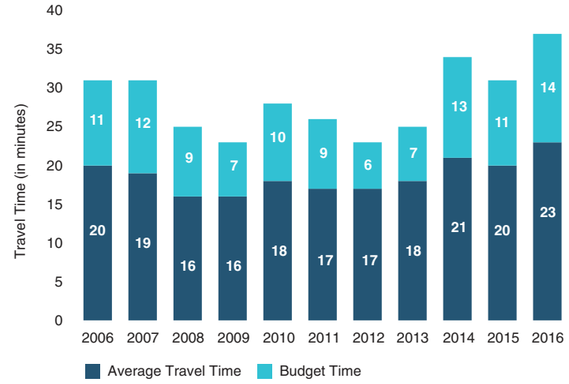
Source: San Diego Metropolitan Transit System, North County Transit District, SANDAG Passenger Counting Program

Figure 10.2
A.M. Travel Time and Reliability
San Ysidro to Downtown via I-5



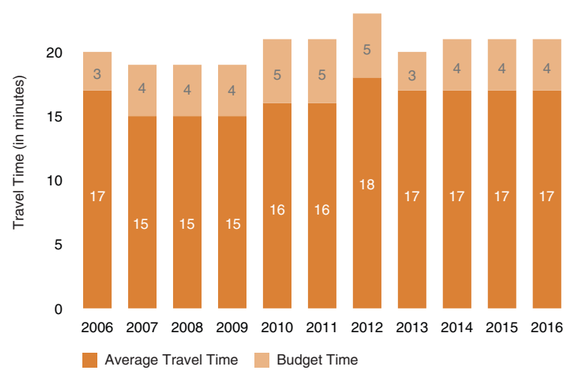
Source: Performance Measurement System (PeMS), Caltrans

Figure 10.3
A.M. Travel Time and Reliability
Chula Vista to Downtown via I-805/SR 94



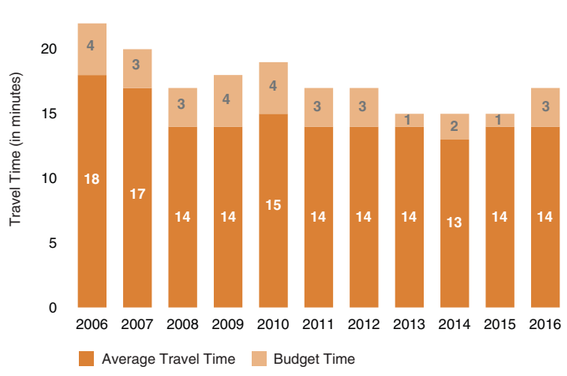
Source: Performance Measurement System (PeMS), Caltrans

Figure 10.4
P.M. Travel Time and Reliability
Downtown to San Ysidro via I-5



Source: Performance Measurement System (PeMS), Caltrans

Figure 10.5
P.M. Travel Time and Reliability
Downtown to Chula Vista via SR 94/I-805



Source: Performance Measurement System (PeMS), Caltrans

Commute Performance: East County to Downtown

East County to Downtown

- El Cajon to Downtown: via I-8/SR 163
- El Cajon to Downtown: via SR 94/125
- Primary employment centers
- Transit: Orange Line Trolley
- Transit: Green Line Trolley
- Transit: *Rapid* Route 215

A → B Westbound via I-8 starting at 8 a.m.
2015: 24 minutes
2016: 25 minutes

B → A Eastbound via I-8 starting at 5 p.m.
2015: 16 minutes
2016: 18 minutes

C → D Westbound via SR 94 starting at 8 a.m.
2015: 21 minutes
2016: 23 minutes

D → C Eastbound via SR 94 starting at 5 p.m.
2015: 14 minutes
2016: 16 minutes

E Average Weekday Transit Ridership Green Line Trolley at Waring Road
2015: 9,159
2016: 8,337

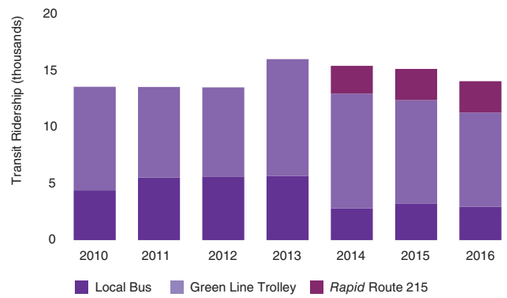
F Average Weekday Transit Ridership Orange Line Trolley at I-5
2015: 13,798
2016: 13,025

The commute routes from East County communities to Downtown San Diego take place primarily on I-8 and SR 163 through Mission Valley, and along SR 94 and SR 125. Commuters generally experience delays traveling into downtown in the morning and out of downtown in the evening. These commutes have followed a similar pattern as the rest of the region, with morning and evening travel times dropping during the economic downturn, and then increasing again in the last few years. Recent increases in inbound commute time are due to freeway congested segments on I-8 in Mission Valley, as well as known constraints on SR 163 through Balboa Park. Outbound travel times to El Cajon do not necessarily reflect actual travel experiences, as freeway detection is lacking where known congested segments exist on SR 163 through Balboa Park, as well as on I-8 near I-805 and I-15.

The accuracy of the eastbound travel and budget times included in this report for Year 2015 reflects a limited travel time dataset due to lack of field detection on SR 52, and higher than normal travel times reported for October through December 2015.

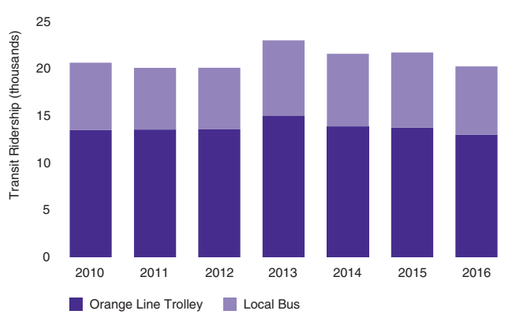
The Green and Orange Line Trolley routes serving commuters from East County communities into Downtown San Diego saw relatively flat ridership from 2010 to 2012. Trolley Renewal efforts impacted Orange Line ridership and Downtown Trolley realignment redefined both the Green and Orange Line routes. Transit ridership through the SR 94 corridor reached nearly 22,000 weekday passengers into and out of downtown in 2015, with a 7 percent drop in ridership in 2016. Transit ridership through the I-8 corridor reached nearly 12,400 weekday passengers into and out of San Diego State University in 2015, with a 9 percent drop in ridership in 2016.

Figure 11.1
Average Weekday Transit Ridership
Ridership at the Waring Road for Green Line Trolley, Rapid Route 215, and other local buses



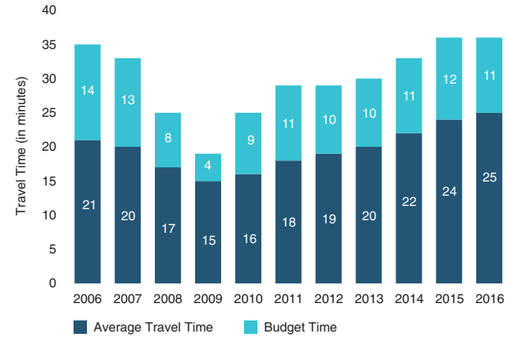
Source: San Diego Metropolitan Transit System, North County Transit District, SANDAG Passenger Counting Program

Figure 11.2
Average Weekday Transit Ridership
Ridership at I-5 for Orange Line Trolley, Route 11 and other local buses



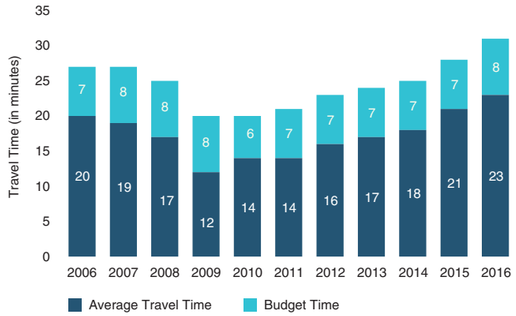
Source: San Diego Metropolitan Transit System, North County Transit District, SANDAG Passenger Counting Program

Figure 11.3
A.M. Travel Time and Reliability
El Cajon to Downtown via I-8/SR 163



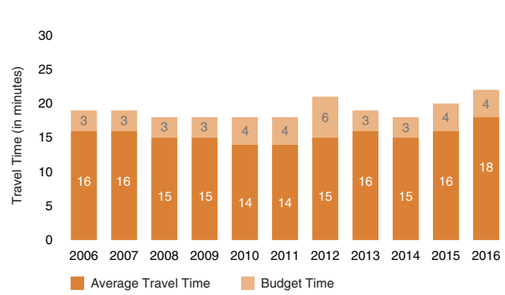
Source: Performance Measurement System (PeMS), Caltrans

Figure 11.4
A.M. Travel Time and Reliability
El Cajon to Downtown via SR 94/125



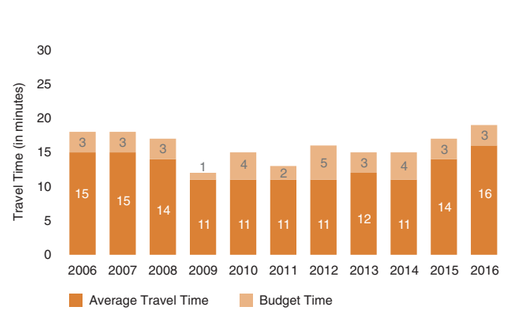
Source: Performance Measurement System (PeMS), Caltrans

Figure 11.5
P.M. Travel Time and Reliability
Downtown to El Cajon via I-8/SR 163



Source: Performance Measurement System (PeMS), Caltrans

Figure 11.6
P.M. Travel Time and Reliability
Downtown to El Cajon via SR 94/125



Source: Performance Measurement System (PeMS), Caltrans

Commute Performance: East County to Sorrento Valley and Kearny Mesa

Commuters from East County to employment centers in Kearny Mesa and Sorrento Valley can choose from a number of possible routes. In this report, the commute from Santee to Kearny Mesa on SR 52 is reported, as well as the commute from El Cajon to Sorrento Valley via I-8 and I-805. Commuters generally experience delays traveling westbound (and northbound) in the morning and eastbound (and southbound) in the evening.

Note: The accuracy of the eastbound travel and budget times included in this report for Year 2015 reflects a limited travel time dataset due to lack of field detection on SR 52, and higher than normal travel times reported for October through December 2015.

East County to Sorrento Valley and Kearny Mesa

- Santee to Kearny Mesa: via SR 52
- El Cajon to Sorrento Valley: via I-8/I-805
- Primary employment centers

A → B Westbound via SR 52 starting at 8 a.m.
2015: 15 minutes
2016: 16 minutes

C → D Westbound via I-8 starting at 8 a.m.
2015: 34 minutes
2016: 35 minutes

B → A Eastbound via SR 52 starting at 5 p.m.
2015: 29 minutes
2016: 23 minutes

D → C Eastbound via I-8 starting at 5 p.m.
2015: 40 minutes
2016: 46 minutes

E 2015 Average Daily Traffic SR 52 at Santo Road
99,000

F 2015 Average Daily Traffic I-8 at Waring Road
236,000

Figure 12.1
A.M. Travel Time and Reliability
Santee to Kearny Mesa via SR 52

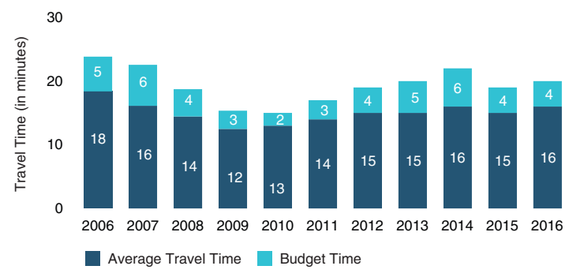


Figure 12.2
A.M. Travel Time and Reliability
El Cajon to Sorrento Valley via I-8/I-805

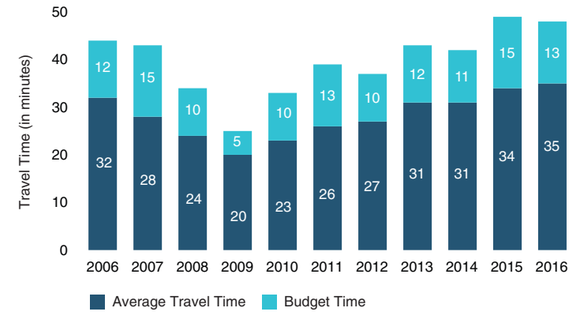
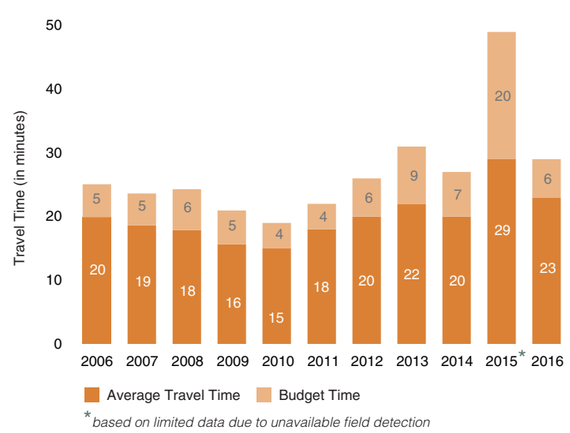
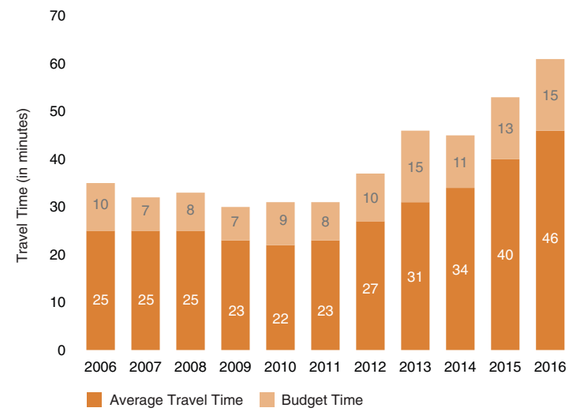


Figure 12.3
P.M. Travel Time and Reliability
Kearny Mesa to Santee via SR 52



*based on limited data due to unavailable field detection

Figure 12.4
P.M. Travel Time and Reliability
Sorrento Valley to El Cajon via I-8/I-805



Source for all figures on this page: Performance Measurement System (PeMS), Caltrans

Commute Performance: North County Inland to North County Coastal

The major commute route between coastal and inland North County takes place on SR 78. This critical east-west freeway provides commuters with the only major roadway connecting the coastal communities with inland employment centers and vice versa. Furthermore, SR 78 provides access to employment sites directly off the freeway, as well as along Palomar Airport Road/ San Marcos Boulevard in the western half of the corridor. Commuters generally experience delays traveling eastbound in the evening toward I-15. (See Figure 13.1) Though delays have been increasing in the corridor, travel times have remained stable.

The transit commute from coastal and inland North County occurs primarily on the SPRINTER rail line and supporting BREEZE buses, both operated by North County Transit District. Since the inception of SPRINTER service in 2008, weekday ridership now exceeds 4,000 weekday passengers between the Vista Transit Center and the Civic Center – Vista Station. (See Figure 13.2)

Escondido to Oceanside

- Oceanside to Escondido: SR 78
- Transit: SPRINTER
- Primary employment centers

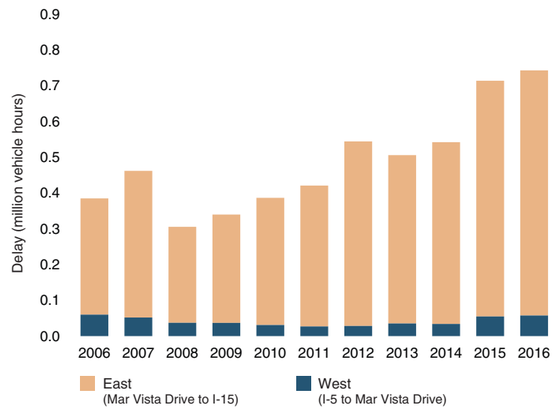
A → B Westbound starting at 8 a.m.
2015: 15 minutes
2016: 16 minutes

B → A Eastbound Starting at 5 p.m.
2015: 34 minutes
2016: 35 minutes

C Average Weekday Transit Ridership SPRINTER Rail at Vista Village Drive
2015: 4,493
2016: 4,753

D 2015 Average Daily Traffic SR 78 at Barham Road
171,000

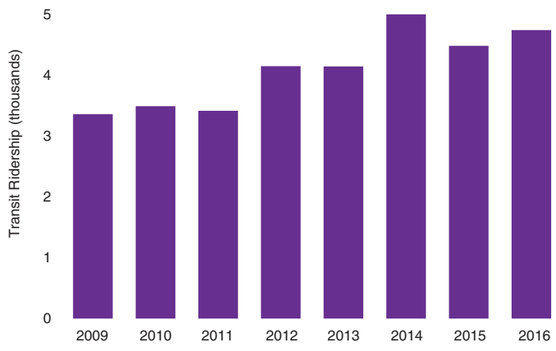
Figure 13.1
Total Weekday Peak Period Delay by Freeway Segment, SR 78



Source: Performance Measurement System (PeMS), Caltrans

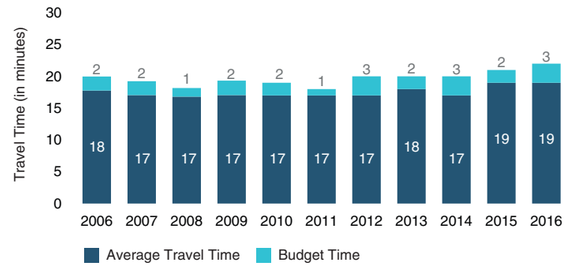
Figure 13.2
Average Weekday Transit Ridership

Ridership at Vista Village Drive for SPRINTER



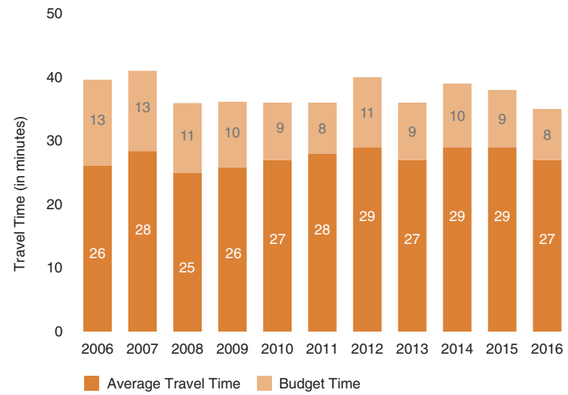
Source: San Diego Metropolitan Transit System, North County Transit District, SANDAG Passenger Counting Program

Figure 13.3
A.M. Travel Time and Reliability Escondido to Oceanside via SR 78



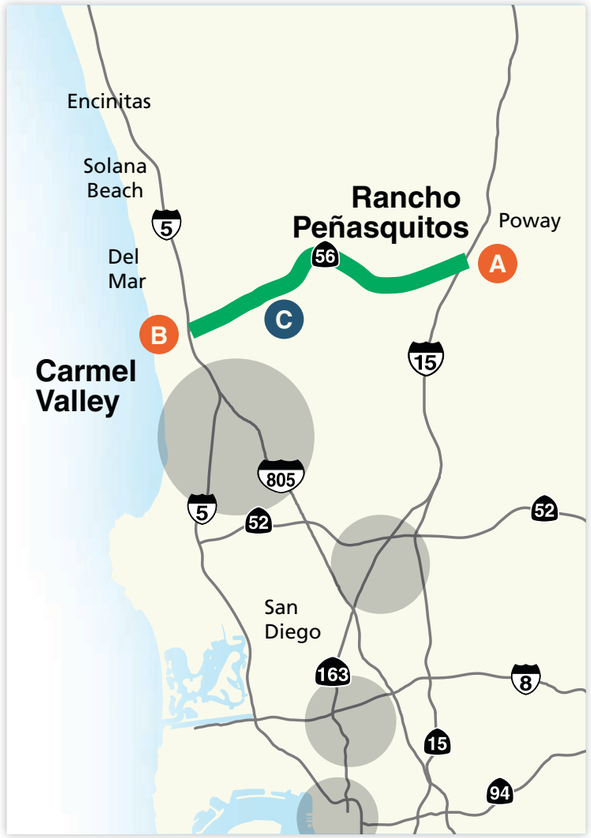
Source: Performance Measurement System (PeMS), Caltrans

Figure 13.4
P.M. Travel Time and Reliability Oceanside to Escondido via SR 78



Source: Performance Measurement System (PeMS), Caltrans

Commute Performance: North City Inland to North City Coastal



North City Inland to North City Coastal, SR 56

- Rancho Peñasquitos to Carmel Valley
- Primary employment centers
- A → B: Westbound starting at 8 a.m.
  2015: 18 minutes
  2016: 18 minutes
- B → A: Eastbound starting at 8 a.m.
  2015: 14 minutes
  2016: 14 minutes
- C: 2015 Average Daily Traffic
  SR 56 at Carmel Creek Road
  76,000

Another major east-west corridor for commuters is SR 56, which connects the coastal and inland communities in the northern portion of the City of San Diego. Like SR 78 to the north, this critical east-west freeway provides commuters with the only major roadway connecting I-15 and inland communities in Poway and Rancho Bernardo with I-5 and coastal employment centers in Sorrento Valley and the Golden Triangle. Commuters generally experience delays traveling westbound toward I-5 in the morning and eastbound toward I-15 in the evening.

Note: The accuracy of the eastbound travel times included in this report may be affected by the lack of detection at the both ends of the freeway corridor, particularly at the eastern terminus where the freeway transitions into Ted Williams Parkway at the interchange with I-15. (See Figure 14.2)

Figure 14.1
A.M. Travel Time and Reliability
Rancho Peñasquitos to Carmel Valley via SR 56

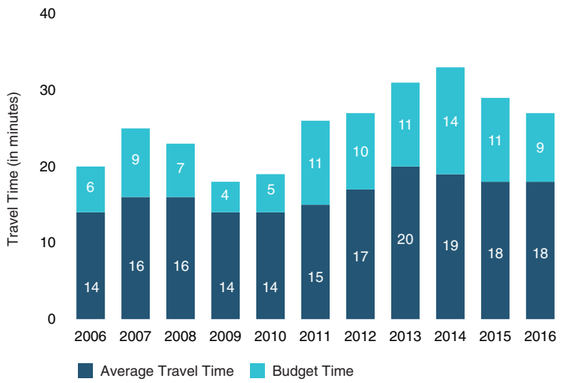
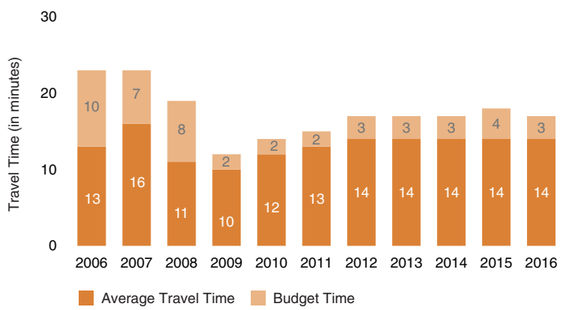


Figure 14.2
P.M. Travel Time and Reliability
Carmel Valley to Rancho Peñasquitos via SR 56



Source for all figures on this page: Performance Measurement System (PeMS), Caltrans

Future Efforts

Understanding freeway delay

Understanding freeway delay is critical in planning for future transportation improvements to address existing congestion and meet future needs. Future efforts will explore the different facets of freeway congestion, as studies have indicated that potentially half of all freeway delay is caused by accidents, weather, and other unplanned events.

Improved travel time data

SANDAG continues its efforts to provide more robust and accurate travel time data, including freeway and arterial roadways, as more data sources become available. These sources use vehicle probe data (such as information gathered from cell phone activity), instead of roadway detector stations, which may be more reliable and less susceptible to weather, roadway construction impacts, equipment failure, etc.

More arterial data and performance

With the use of vehicle probe data, more data for local streets and arterials can be incorporated into the reporting on the performance of commute routes.

Bicycle & Pedestrian Performance

SANDAG continues its efforts to provide a reliable source of bicycle and pedestrian data through previous efforts by the County of San Diego and San Diego State University. As consistent bicycle and pedestrian data sources become available, we can begin to report on the role this mode plays in the daily commute and in overall travel in the region.

More analytics

As more performance data becomes available, there will be more and better opportunities to study and analyze the information. As stated above, understanding how accidents and weather play a role in freeway delay is critical to deciding how to improve and operate the freeway system. SANDAG continues to explore the potential of “big data” analytics and how to incorporate these up-and-coming analytical tools into performance monitoring and reporting.