

Performance Measure Summary - San Diego CA

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2017. There is no single performance measure that experts agree "says it all". A few key points should be recognized by users of the Urban Mobility Scorecard data.

Use the trends - The multi-year performance measures are better indicators, in most cases, than any single year. Examining a few measures over many years reduces the chance that data variations or the estimating procedures may have caused a "spike" in any single year. (5 years is 5 times better than 1 year.)

Use several measures - Each performance measure illustrates a different element of congestion. (The view is more interesting from atop several measures.)

Compare to similar regions - Congestion analyses that compare areas with similar characteristics (for example, population, growth rate, road and public transportation system design) are usually more insightful than comparisons of different regions. (Los Angeles is not Peoria.)

Compare ranking changes and performance measure values - In some performance measures, a small change in the value may cause a significant change in rank from one year to the next. This is the case when there are several regions with nearly the same value. (15 hours is only 1 hour more than 14 hours.)

Consider the scope of improvement options - Any improvement project in a corridor within most of the regions will only have a modest effect on the regional congestion level. (To have an effect on areawide congestion, there must be significant change in the system or service.)

Performance Measures and Definition of Terms

Travel Time Index - A measure of congestion that focuses on each trip and each mile of travel. It is calculated as the ratio of travel time in the peak period to travel time in free-flow. A value of 1.30 indicates that a 20-minute free-flow trip takes 26 minutes in the peak.

Planning Time Index - A travel time reliability measure that represents the total travel time that should be planned for a trip. Computed with the 95th percentile travel time it represents the amount of time that should be planned for a commute trip to be late for only 1 day a month. If it is computed with the 80th percentile travel time it represents the amount of time that should be planned for a trip to be late for only 1 day a week. A PTI of 2.00 means that for a 20-minute trip in light traffic, 40 minutes should be planned.

Peak Commuters - Number of travelers who begin a trip during the morning or evening peak travel periods (6 to 10 a.m. and 3 to 7 p.m.). "Commuters" are private vehicle users unless specifically noted.

Annual Delay per Commuter - A yearly sum of all the per-trip delays for those persons who travel in the peak period (6 to 10 a.m. and 3 to 7 p.m.). This measure illustrates the effect of traffic slowdowns as well as the length of each trip.

Total Delay - The overall size of the congestion problem. Measured by the total travel time above that needed to complete a trip at free-flow speeds. The ranking of total delay usually follows the population ranking (larger regions usually have more delay).

Free-Flow Speeds - These values are derived from time periods with lighter traffic volumes in the INRIX speed database. They are used as the national comparison thresholds. Other speed thresholds may be appropriate for urban project evaluations or sub-region studies.

Excess Fuel Consumed - Increased fuel consumption due to travel in congested conditions rather than free-flow conditions.

Congestion Cost - Value of travel delay for 2017 (estimated at \$18.29 per hour of person travel and \$59.94 per hour of truck time) and excess fuel consumption estimated using state average cost per gallon.

Urban Area - The developed area (population density more than 1,000 persons per square mile) within a metropolitan region. The urban area boundaries change frequently (every year for most growing areas), so increases include both new growth and development that was previously in areas designated as rural.

Number of Rush Hours - Time when the road system might have congestion.

Mobility Data for San Diego CA

Inventory Measures	2017	2016	2015	2014	2013	2012
Urban Area Information						
Population (1000s)	3,195	3,160	3,125	3,090	3,060	3,035
Rank	15	15	15	15	15	15
Commuters (1000s)	1,452	1,435	1,416	1,398	1,451	1,439
Daily Vehicle-Miles of Travel (1000s)						
Freeway	41,237	41,218	40,060	39,315	39,540	36,485
Arterial Streets	21,102	20,688	19,867	22,109	21,718	21,860
Cost Components						
Value of Time (\$/hour)	18.12	17.91	17.69	17.67	17.39	17.14
Commercial Cost (\$/hour)	52.14	50.20	46.87	44.82	41.23	39.66
Gasoline (\$/gallon)	2.96	2.78	3.18	3.63	3.89	3.89
Diesel (\$/gallon)	2.95	2.68	2.86	3.85	4.12	4.20
System Performance	2017	2016	2015	2014	2013	2012
Congested Travel (% of peak VMT)	41.3	--	--	--	--	--
Congested System (% of lane-miles)	28.4	--	--	--	--	--
Congested Time (number of "Rush Hours")	6.5	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	32,686	32,183	31,544	30,738	30,414	30,006
Rank	21	21	21	22	22	22
Fuel per Peak Auto Commuter (gallons)	24	23	22	20	19	18
Rank	27	27	29	38	45	52
Annual Delay						
Total Delay (1000s of person-hours)	148,503	145,376	140,073	134,143	130,398	126,354
Rank	15	15	15	15	15	15
Delay per Auto Commuter (pers-hrs)	64	64	63	62	58	57
Rank	16	14	13	12	14	13
Travel Time Index						
Rank	1.35	1.35	1.34	1.34	1.33	1.32
Rank	7	6	9	7	10	11
Commuter Stress Index						
Rank	1.48	--	--	--	--	--
Rank	5	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	2.28	--	--	--	--	--
Rank	7	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	2,960	2,852	2,714	2,605	2,490	2,378
Rank	15	15	15	15	15	15
Cost per Auto Commuter (\$)	1,584	1,561	1,495	1,425	1,399	1,373
Rank	7	7	9	9	9	9
Truck Congestion						
Annual Person-Hours of Delay (000)	6,237	6,106	5,883	5,634	5,477	5,307
Rank	15	15	15	15	15	15
Annual Gallons of Wasted Fuel (000)	6,929	6,823	6,687	6,516	6,448	6,361
Rank	21	21	21	22	22	22
Annual Congestion Cost (\$ million)	306	287	261	247	225	211
Rank	15	15	15	15	15	15

* Note: Zeroes in the table reflect values less than 0.5.

Mobility Data for San Diego CA

Inventory Measures	2011	2010	2009	2008	2007	2006
Urban Area Information						
Population (1000s)	3,010	2,985	2,955	2,930	2,910	2,890
Rank	15	15	15	15	15	15
Commuters (1000s)	1,425	1,408	1,388	1,371	1,352	1,333
Daily Vehicle-Miles of Travel (1000s)						
Freeway	37,243	36,837	37,196	37,610	38,400	39,170
Arterial Streets	22,240	21,998	22,193	22,440	22,280	22,240
Cost Components						
Value of Time (\$/hour)	16.79	16.28	16.01	16.07	15.47	15.06
Commercial Cost (\$/hour)	44.62	42.50	41.83	40.77	39.30	37.88
Gasoline (\$/gallon)	3.51	3.05	2.61	3.84	3.24	2.88
Diesel (\$/gallon)	4.02	3.20	2.71	4.39	3.60	3.17
System Performance	2011	2010	2009	2008	2007	2006
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	29,368	28,518	28,349	29,233	29,083	28,656
Rank	22	22	22	22	22	22
Fuel per Peak Auto Commuter (gallons)	18	17	16	16	15	15
Rank	49	61	54	68	73	73
Annual Delay						
Total Delay (1000s of person-hours)	121,418	116,813	113,949	111,907	111,335	109,699
Rank	15	15	15	15	15	15
Delay per Auto Commuter (pers-hrs)	55	54	51	48	48	48
Rank	13	14	14	20	19	20
Travel Time Index						
Rank	1.31	1.30	1.28	1.28	1.29	1.28
Rank	11	12	15	18	15	18
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	2,259	2,093	1,998	2,007	1,908	1,820
Rank	15	15	15	15	15	15
Cost per Auto Commuter (\$)	1,363	1,352	1,341	1,305	1,350	1,366
Rank	9	8	6	6	8	8
Truck Congestion						
Annual Person-Hours of Delay (000)	5,100	4,906	4,786	4,700	4,676	4,607
Rank	15	15	15	15	15	15
Annual Gallons of Wasted Fuel (000)	6,226	6,046	6,010	6,197	6,166	6,075
Rank	22	22	22	22	22	22
Annual Congestion Cost (\$ million)	225	202	192	195	183	172
Rank	15	15	15	15	15	15

* Note: Zeroes in the table reflect values less than 0.5.

Mobility Data for San Diego CA

Inventory Measures	2005	2004	2003	2002	2001	2000
Urban Area Information						
Population (1000s)	2,870	2,855	2,840	2,825	2,780	2,740
Rank	15	15	15	14	14	14
Commuters (1000s)	1,313	1,297	1,280	1,251	1,212	1,175
Daily Vehicle-Miles of Travel (1000s)						
Freeway	39,395	38,805	36,195	35,000	34,590	33,745
Arterial Streets	22,155	22,125	21,245	22,605	21,520	20,065
Cost Components						
Value of Time (\$/hour)	14.58	14.10	13.73	13.43	13.22	12.85
Commercial Cost (\$/hour)	36.51	35.19	33.92	32.69	31.51	30.38
Gasoline (\$/gallon)	2.62	2.28	1.78	1.66	1.93	1.72
Diesel (\$/gallon)	2.93	2.27	1.79	1.58	1.78	1.68
System Performance	2005	2004	2003	2002	2001	2000
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	28,018	27,482	26,554	25,547	23,957	22,554
Rank	22	22	21	21	21	23
Fuel per Peak Auto Commuter (gallons)	15	14	15	14	14	13
Rank	64	71	58	61	54	56
Annual Delay						
Total Delay (1000s of person-hours)	107,257	105,206	101,651	97,799	91,710	86,340
Rank	15	15	15	15	14	15
Delay per Auto Commuter (pers-hrs)	47	46	44	44	42	41
Rank	22	25	26	24	26	24
Travel Time Index						
Rank	21	21	21	23	24	24
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	1,718	1,620	1,511	1,418	1,313	1,198
Rank	15	15	15	15	15	15
Cost per Auto Commuter (\$)	1,379	1,400	1,389	1,365	1,298	1,255
Rank	8	8	7	7	8	9
Truck Congestion						
Annual Person-Hours of Delay (000)	4,505	4,419	4,269	4,108	3,852	3,626
Rank	15	15	15	15	14	15
Annual Gallons of Wasted Fuel (000)	5,940	5,826	5,629	5,416	5,079	4,781
Rank	22	22	21	21	21	23
Annual Congestion Cost (\$ million)	162	150	137	126	116	105
Rank	15	15	15	15	15	15

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Mobility Data for San Diego CA

Inventory Measures	1999	1998	1997	1996	1995	1994
Urban Area Information						
Population (1000s)	2,700	2,660	2,620	2,565	2,555	2,550
Rank	13	13	13	14	13	13
Commuters (1000s)	1,139	1,104	1,069	1,031	1,009	992
Daily Vehicle-Miles of Travel (1000s)						
Freeway	31,775	30,000	29,515	29,150	28,490	28,000
Arterial Streets	19,345	18,985	19,340	19,695	19,190	18,520
Cost Components						
Value of Time (\$/hour)	12.43	12.17	11.98	11.71	11.37	11.06
Commercial Cost (\$/hour)	29.28	28.89	28.50	28.12	27.75	27.38
Gasoline (\$/gallon)	1.59	1.27	1.40	1.21	1.27	1.16
Diesel (\$/gallon)	1.50	1.39	1.51	1.24	1.31	1.19
System Performance	1999	1998	1997	1996	1995	1994
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	21,376	19,276	18,379	17,098	15,945	14,997
Rank	22	23	22	24	24	23
Fuel per Peak Auto Commuter (gallons)	13	12	12	11	11	10
Rank	51	53	47	49	41	45
Annual Delay						
Total Delay (1000s of person-hours)	81,830	73,793	70,359	65,452	61,039	57,409
Rank	14	14	14	14	14	14
Delay per Auto Commuter (pers-hrs)	40	38	37	35	34	32
Rank	25	26	22	25	24	27
Travel Time Index						
Rank	26	27	28	30	32	30
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	1,096	964	908	823	748	684
Rank	15	14	14	14	14	14
Cost per Auto Commuter (\$)	1,230	1,135	1,099	1,046	1,005	974
Rank	9	9	9	11	11	11
Truck Congestion						
Annual Person-Hours of Delay (000)	3,437	3,099	2,955	2,749	2,564	2,411
Rank	14	14	14	14	14	14
Annual Gallons of Wasted Fuel (000)	4,532	4,087	3,896	3,625	3,380	3,179
Rank	22	23	22	24	24	23
Annual Congestion Cost (\$ million)	95	84	80	72	67	62
Rank	15	15	14	15	14	14

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Mobility Data for San Diego CA

Inventory Measures	1993	1992	1991	1990	1989	1988
Urban Area Information						
Population (1000s)	2,530	2,480	2,445	2,295	2,230	2,150
Rank	13	13	13	13	13	13
Commuters (1000s)	968	934	906	837	807	773
Daily Vehicle-Miles of Travel (1000s)						
Freeway	27,470	27,510	27,150	27,390	26,760	25,055
Arterial Streets	17,965	17,985	17,290	17,515	17,290	16,805
Cost Components						
Value of Time (\$/hour)	10.78	10.47	10.17	9.75	9.25	8.83
Commercial Cost (\$/hour)	27.02	26.66	26.30	25.95	25.60	25.26
Gasoline (\$/gallon)	1.23	1.28	1.11	1.14	1.14	1.05
Diesel (\$/gallon)	1.26	1.25	1.25	1.19	1.09	1.01
System Performance	1993	1992	1991	1990	1989	1988
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	14,094	13,020	12,165	11,055	10,131	9,470
Rank	22	22	22	22	23	23
Fuel per Peak Auto Commuter (gallons)	10	10	9	9	7	7
Rank	38	24	27	23	39	27
Annual Delay						
Total Delay (1000s of person-hours)	53,953	49,840	46,568	42,321	38,783	36,253
Rank	14	14	14	15	15	15
Delay per Auto Commuter (pers-hrs)	31	30	29	29	26	26
Rank	26	25	24	20	23	20
Travel Time Index						
Rank	1.15	1.14	1.14	1.14	1.13	1.13
Rank	30	34	28	25	27	23
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	628	565	513	448	392	350
Rank	14	14	14	15	15	15
Cost per Auto Commuter (\$)	940	895	862	819	794	779
Rank	11	11	11	11	14	16
Truck Congestion						
Annual Person-Hours of Delay (000)	2,266	2,093	1,956	1,777	1,629	1,523
Rank	14	14	14	15	15	15
Annual Gallons of Wasted Fuel (000)	2,988	2,760	2,579	2,344	2,148	2,008
Rank	22	22	22	22	23	23
Annual Congestion Cost (\$ million)	57	52	48	43	39	36
Rank	14	15	14	15	15	15

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Mobility Data for San Diego CA

Inventory Measures	1987	1986	1985	1984	1983	1982
Urban Area Information						
Population (1000s)	2,070	2,000	1,890	1,830	1,800	1,780
Rank	14	14	15	15	15	16
Commuters (1000s)	737	706	663	637	622	609
Daily Vehicle-Miles of Travel (1000s)						
Freeway	23,170	21,500	19,650	18,480	16,675	15,070
Arterial Streets	15,570	14,340	13,200	12,125	11,995	11,905
Cost Components						
Value of Time (\$/hour)	8.48	8.18	8.03	7.75	7.43	7.20
Commercial Cost (\$/hour)	24.93	24.60	24.27	23.94	23.63	23.31
Gasoline (\$/gallon)	1.05	1.03	1.35	1.36	1.39	1.46
Diesel (\$/gallon)	1.01	0.99	1.29	1.31	1.34	1.40
System Performance	1987	1986	1985	1984	1983	1982
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	8,574	7,801	6,744	5,992	5,584	4,944
Rank	24	24	24	23	23	24
Fuel per Peak Auto Commuter (gallons)	7	7	5	4	5	6
Rank	22	21	32	41	22	10
Annual Delay						
Total Delay (1000s of person-hours)	32,821	29,862	25,818	22,936	21,375	18,925
Rank	15	15	15	15	15	15
Delay per Auto Commuter (pers-hrs)	24	23	22	20	19	18
Rank	20	21	20	23	21	21
Travel Time Index						
Rank	1.12	1.11	1.10	1.10	1.09	1.08
Rank	26	26	26	26	27	28
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	306	269	231	199	178	154
Rank	15	15	15	15	15	15
Cost per Auto Commuter (\$)	737	697	613	567	551	504
Rank	17	17	17	17	17	16
Truck Congestion						
Annual Person-Hours of Delay (000)	1,378	1,254	1,084	963	898	795
Rank	15	15	15	15	15	15
Annual Gallons of Wasted Fuel (000)	1,818	1,654	1,430	1,270	1,184	1,048
Rank	24	24	24	23	23	24
Annual Congestion Cost (\$ million)	32	29	25	22	20	18
Rank	15	15	15	15	15	15

* Note: Zeroes in the table reflect values less than 0.5.