

# Performance Measure Summary - 101 Area Sum

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 101 Area Sum

Inventory Measures	2017	2016	2015	2014	2013	2012
<b>Urban Area Information</b>						
Population (1000s)	179,980	178,840	177,685	176,745	175,310	173,725
Rank	--	--	--	--	--	--
Commuters (1000s)	82,600	81,175	80,504	79,990	80,175	79,699
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	1,690,363	1,667,998	1,617,353	1,558,649	1,521,521	1,500,870
Arterial Streets	1,564,026	1,549,206	1,518,349	1,502,737	1,487,185	1,478,555
<b>Cost Components</b>						
Value of Time (\$/hour)	18.29	17.91	17.69	17.67	17.39	17.14
Commercial Cost (\$/hour)	54.94	50.20	46.87	44.82	41.23	39.66
Gasoline (\$/gallon)	2.42	2.24	2.41	3.35	3.61	3.58
Diesel (\$/gallon)	2.59	2.36	2.60	3.67	3.96	3.97
System Performance	2017	2016	2015	2014	2013	2012
<b>Congested Travel (% of peak VMT)</b>	29.2	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	17.2	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	4.5	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	2,788,654	2,760,000	2,729,856	2,699,385	2,670,628	2,626,693
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	26	25	25	24	24	24
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	7,504,652	7,323,150	7,149,146	6,958,788	6,790,587	6,582,017
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	66	64	62	61	59	57
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.28	1.28	1.27	1.27	1.27	1.26
<b>Commuter Stress Index</b>						
Rank	1.32	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	1.86	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	151,718	145,631	140,417	138,566	133,369	127,398
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	1,324	1,295	1,257	1,212	1,197	1,175
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	315,194	307,575	300,263	292,267	285,207	276,448
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	591,190	585,123	578,724	572,271	566,173	556,861
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	15,977	14,960	13,888	13,600	12,568	11,842
Rank	--	--	--	--	--	--

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

## Mobility Data for 101 Area Sum

Inventory Measures	2011	2010	2009	2008	2007	2006
<b>Urban Area Information</b>						
Population (1000s)	172,150	170,680	168,835	167,035	165,350	163,490
Rank	--	--	--	--	--	--
Commuters (1000s)	79,179	78,521	77,470	76,446	75,572	74,434
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	1,554,213	1,530,443	1,505,252	1,590,575	1,518,870	1,505,695
Arterial Streets	1,503,485	1,489,922	1,485,012	1,484,245	1,504,725	1,499,045
<b>Cost Components</b>						
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)	3.40	2.79	2.34	3.51	3.07	2.70
Diesel (\$/gallon)	3.76	3.04	2.64	4.23	3.47	2.92
System Performance	2011	2010	2009	2008	2007	2006
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	2,571,141	2,521,630	2,473,315	2,554,103	2,554,497	2,512,177
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	23	23	21	22	22	22
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	6,331,612	6,126,307	5,902,205	5,812,226	5,809,752	5,721,150
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	56	54	53	52	52	52
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.26	1.25	1.25	1.26	1.27	1.26
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	121,277	112,373	105,627	107,620	102,625	97,480
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	1,167	1,166	1,145	1,118	1,165	1,183
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	265,926	257,302	247,897	244,112	244,008	240,293
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	545,081	534,589	524,347	541,473	541,551	532,581
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	12,479	11,232	10,494	11,037	10,310	9,548
Rank	--	--	--	--	--	--

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## Mobility Data for 101 Area Sum

Inventory Measures	2005	2004	2003	2002	2001	2000
<b>Urban Area Information</b>						
Population (1000s)	161,840	160,140	158,150	155,920	153,680	151,370
Rank	--	--	--	--	--	--
Commuters (1000s)	73,266	72,077	70,751	68,895	66,844	64,803
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	1,487,340	1,462,425	1,419,170	1,371,715	1,333,200	1,295,215
Arterial Streets	1,481,125	1,456,125	1,420,460	1,387,085	1,352,410	1,322,170
<b>Cost Components</b>						
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)	2.36	2.01	1.57	1.45	1.61	1.59
Diesel (\$/gallon)	2.60	2.04	1.58	1.43	1.61	1.56
System Performance	2005	2004	2003	2002	2001	2000
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	2,445,436	2,369,482	2,277,435	2,185,237	2,085,323	1,986,075
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	22	22	21	20	19	19
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	5,566,414	5,394,921	5,185,705	4,976,576	4,752,316	4,530,246
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	52	51	50	49	48	47
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.26	1.25	1.25	1.24	1.24	1.23
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	91,188	84,699	78,308	73,208	69,102	64,004
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	1,192	1,198	1,186	1,167	1,134	1,116
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	233,794	226,585	217,799	209,014	199,594	190,269
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	518,435	502,333	482,812	463,271	442,089	421,048
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	8,848	8,035	7,257	6,659	6,238	5,734
Rank	--	--	--	--	--	--

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

## Mobility Data for 101 Area Sum

Inventory Measures	1999	1998	1997	1996	1995	1994
<b>Urban Area Information</b>						
Population (1000s)	148,925	146,950	144,655	142,610	140,455	138,515
Rank	--	--	--	--	--	--
Commuters (1000s)	62,782	61,004	59,127	57,385	55,623	54,007
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	1,259,935	1,222,428	1,183,160	1,150,380	1,114,585	1,075,665
Arterial Streets	1,292,795	1,260,135	1,236,925	1,207,500	1,175,950	1,141,895
<b>Cost Components</b>						
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)	1.23	1.13	1.24	1.28	1.21	1.10
Diesel (\$/gallon)	1.23	1.22	1.33	1.35	1.27	1.15
System Performance	1999	1998	1997	1996	1995	1994
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	1,888,364	1,789,251	1,697,103	1,604,571	1,512,325	1,423,228
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	18	17	16	15	14	14
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	4,312,440	4,091,338	3,884,515	3,678,962	3,468,991	3,269,212
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	46	45	44	42	41	40
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.23	1.22	1.22	1.21	1.20	1.20
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	58,351	54,129	50,817	47,169	43,189	39,531
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	1,103	1,077	1,042	1,016	993	970
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	181,121	171,837	163,153	154,516	145,702	137,305
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	400,332	379,322	359,782	340,166	320,612	301,727
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	5,151	4,823	4,563	4,275	3,949	3,644
Rank	--	--	--	--	--	--

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

## Mobility Data for 101 Area Sum

Inventory Measures	1993	1992	1991	1990	1989	1988
<b>Urban Area Information</b>						
Population (1000s)	136,715	134,872	133,230	130,960	129,185	127,415
Rank	--	--	--	--	--	--
Commuters (1000s)	52,475	50,973	49,550	47,927	46,859	45,789
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	1,039,035	1,000,565	961,160	937,600	902,271	859,520
Arterial Streets	1,104,515	1,069,593	1,033,305	1,006,700	979,170	955,695
<b>Cost Components</b>						
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)	1.15	1.17	1.14	1.10	1.12	1.03
Diesel (\$/gallon)	1.20	1.20	1.26	1.13	1.08	1.00
System Performance	1993	1992	1991	1990	1989	1988
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	1,334,943	1,255,221	1,183,610	1,112,161	1,048,235	989,785
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	13	12	11	11	10	10
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	3,068,687	2,888,603	2,729,956	2,563,585	2,421,597	2,288,601
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	38	37	36	34	33	32
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.19	1.18	1.18	1.17	1.16	1.16
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	36,306	33,299	30,628	27,634	24,911	22,504
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	939	915	898	882	885	882
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	128,887	121,322	114,657	107,667	101,711	96,124
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	283,011	266,112	250,924	235,775	222,229	209,832
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	3,395	3,158	2,963	2,714	2,525	2,338
Rank	--	--	--	--	--	--

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

# Mobility Data for 101 Area Sum

Inventory Measures	1987	1986	1985	1984	1983	1982
<b>Urban Area Information</b>						
Population (1000s)	125,265	123,430	121,495	119,410	118,220	117,220
Rank	--	--	--	--	--	--
Commuters (1000s)	44,617	43,548	42,497	41,378	40,602	39,791
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	816,340	769,170	726,066	689,385	651,865	618,060
Arterial Streets	921,225	902,270	872,620	843,565	821,625	808,275
<b>Cost Components</b>						
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)	1.04	1.01	1.32	1.33	1.36	1.43
Diesel (\$/gallon)	1.01	0.98	1.28	1.29	1.32	1.38
System Performance	1987	1986	1985	1984	1983	1982
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	927,824	870,707	820,141	764,933	711,964	664,319
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	9	8	8	8	7	7
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	2,144,598	2,013,708	1,900,537	1,769,405	1,649,442	1,536,318
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	31	29	28	27	26	25
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.15	1.15	1.14	1.13	1.13	1.12
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	20,347	18,478	17,402	15,708	14,140	12,861
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	863	844	812	779	764	740
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	90,072	84,572	79,826	74,313	69,276	64,528
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	196,697	184,586	173,876	162,164	150,941	140,834
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	2,171	2,003	1,925	1,769	1,636	1,509
Rank	--	--	--	--	--	--

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