

# Performance Measure Summary - Very Large Area Sum (15 areas)

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 Very Large Area Sum (15 areas)

Inventory Measures	2017	2016	2015	2014	2013	2012
<b>Urban Area Information</b>						
Population (1000s)	95,280	94,755	94,225	93,785	93,195	92,510
Rank	--	--	--	--	--	--
Commuters (1000s)	39,942	38,871	38,572	38,356	38,586	38,500
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	860,186	851,958	831,569	800,561	787,843	778,175
Arterial Streets	790,203	782,341	765,672	763,224	758,376	755,365
<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)	2.52	2.33	2.51	3.37	3.66	3.64
Diesel (\$/gallon)	2.65	2.40	2.64	3.66	3.99	4.01
System Performance	2017	2016	2015	2014	2013	2012
<b>Congested Travel (% of peak VMT)</b>	36.1	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	21.7	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	5.1	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	1,650,109	1,635,955	1,622,946	1,608,270	1,592,866	1,570,023
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	32	31	30	29	29	29
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	4,641,724	4,533,491	4,443,530	4,330,574	4,232,126	4,112,309
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	83	81	79	76	74	72
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.35	1.34	1.34	1.33	1.33	1.33
<b>Commuter Stress Index</b>						
Rank	1.41	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	2.13	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	93,718	90,052	87,176	85,998	82,916	79,403
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	1,734	1,701	1,659	1,597	1,578	1,552
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	194,952	190,406	186,627	181,885	177,750	172,719
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	349,821	346,824	344,064	340,954	337,688	332,846
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	9,848	9,228	8,599	8,402	7,783	7,348
Rank	--	--	--	--	--	--

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

## Mobility Data for Very Large Area Sum (15 areas)

Inventory Measures	2011	2010	2009	2008	2007	2006
<b>Urban Area Information</b>						
Population (1000s)	91,770	91,093	90,284	89,410	88,620	87,820
Rank	--	--	--	--	--	--
Commuters (1000s)	38,365	38,215	37,815	37,411	37,199	36,803
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	805,223	790,181	780,587	776,485	790,635	787,790
Arterial Streets	770,635	764,807	764,692	762,470	774,690	774,190
<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)	3.45	2.82	2.37	3.55	3.10	2.73
Diesel (\$/gallon)	3.81	3.06	2.66	4.28	3.50	2.94
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)	1,538,980	1,511,178	1,492,062	1,538,812	1,550,416	1,534,822
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	28	27	26	26	27	27
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	3,963,409	3,838,844	3,721,849	3,660,899	3,682,177	3,650,647
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	70	68	66	65	65	65
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.32	1.31	1.31	1.32	1.33	1.32
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	75,728	70,263	66,489	67,589	64,872	62,047
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	1,542	1,539	1,519	1,483	1,549	1,580
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	166,463	161,231	156,317	153,759	154,651	153,329
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	326,266	320,370	316,319	326,228	328,689	325,381
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	7,766	7,001	6,586	6,903	6,490	6,057
Rank	--	--	--	--	--	--

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

## Mobility Data for Very Large Area Sum (15 areas)

Inventory Measures	2005	2004	2003	2002	2001	2000
<b>Urban Area Information</b>						
Population (1000s)	87,120	86,315	85,505	84,490	83,420	82,385
Rank	--	--	--	--	--	--
Commuters (1000s)	36,365	35,820	35,261	34,467	33,500	32,547
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	782,890	774,575	755,470	731,165	712,120	692,525
Arterial Streets	766,095	755,205	737,205	723,180	706,050	691,400
<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)	2.39	2.04	1.58	1.47	1.65	1.61
Diesel (\$/gallon)	2.64	2.07	1.63	1.45	1.64	1.58
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)	1,498,210	1,452,926	1,400,565	1,348,247	1,287,914	1,232,330
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	26	26	25	25	23	23
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	3,561,727	3,457,601	3,334,081	3,210,843	3,072,298	2,943,689
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	64	63	62	61	60	58
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.32	1.31	1.31	1.30	1.29	1.29
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	58,221	54,196	50,267	47,171	44,622	41,520
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	1,595	1,606	1,594	1,572	1,530	1,512
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	149,593	145,220	140,029	134,855	129,038	123,635
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	317,621	308,022	296,919	285,828	273,039	261,253
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	5,637	5,129	4,657	4,284	4,018	3,714
Rank	--	--	--	--	--	--

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

## Mobility Data for Very Large Area Sum (15 areas)

Inventory Measures	1999	1998	1997	1996	1995	1994
<b>Urban Area Information</b>						
Population (1000s)	81,120	80,140	78,780	77,795	76,620	75,860
Rank	--	--	--	--	--	--
Commuters (1000s)	31,560	30,679	29,672	28,818	27,949	27,186
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	674,140	654,553	634,115	619,275	602,115	583,230
Arterial Streets	676,210	659,330	650,030	636,250	621,235	605,285
<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)	1.25	1.13	1.25	1.28	1.22	1.10
Diesel (\$/gallon)	1.26	1.24	1.34	1.33	1.27	1.14
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)	1,177,258	1,123,296	1,069,986	1,015,943	963,028	913,246
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	22	21	20	19	18	17
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	2,816,849	2,691,986	2,567,702	2,443,773	2,316,748	2,199,298
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	57	56	55	54	53	51
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.28	1.28	1.27	1.26	1.26	1.25
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	38,072	35,560	33,538	31,258	28,793	26,541
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	1,502	1,479	1,439	1,409	1,384	1,360
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	118,308	113,064	107,844	102,639	97,304	92,370
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	249,578	238,139	226,835	215,380	204,160	193,610
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	3,356	3,165	3,005	2,818	2,627	2,439
Rank	--	--	--	--	--	--

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

## Mobility Data for Very Large Area Sum (15 areas)

Inventory Measures	1993	1992	1991	1990	1989	1988
<b>Urban Area Information</b>						
Population (1000s)	75,105	74,262	73,570	72,435	71,640	70,715
Rank	--	--	--	--	--	--
Commuters (1000s)	26,499	25,784	25,137	24,338	23,842	23,300
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	566,785	550,960	533,825	523,890	506,365	480,075
Arterial Streets	586,245	567,960	549,295	538,115	525,135	512,845
<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)	1.16	1.18	1.14	1.10	1.11	1.02
Diesel (\$/gallon)	1.20	1.19	1.27	1.14	1.07	0.99
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)	865,593	821,847	782,955	745,624	713,709	684,619
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	16	15	14	14	13	13
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	2,083,531	1,978,627	1,888,452	1,794,763	1,720,071	1,648,255
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	50	48	47	46	45	44
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.24	1.24	1.23	1.22	1.22	1.21
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	24,606	22,771	21,145	19,309	17,654	16,175
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	1,325	1,302	1,287	1,276	1,296	1,308
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	87,509	83,103	79,314	75,379	72,244	69,228
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	183,506	174,232	165,986	158,072	151,309	145,139
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	2,295	2,151	2,040	1,895	1,787	1,677
Rank	--	--	--	--	--	--

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

## Mobility Data for Very Large Area Sum (15 areas)

Inventory Measures	1987	1986	1985	1984	1983	1982
<b>Urban Area Information</b>						
Population (1000s)	69,610	68,665	67,585	66,300	65,760	65,280
Rank	--	--	--	--	--	--
Commuters (1000s)	22,717	22,187	21,624	20,981	20,603	20,215
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	455,705	428,240	402,570	382,370	362,930	344,100
Arterial Streets	496,075	484,815	469,610	456,210	445,630	435,725
<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)	1.03	1.00	1.31	1.32	1.35	1.42
Diesel (\$/gallon)	1.01	0.97	1.27	1.28	1.31	1.37
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)	650,249	615,487	587,098	552,264	519,709	489,559
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	13	12	11	11	10	10
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	1,562,116	1,478,158	1,411,671	1,323,286	1,246,333	1,170,008
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	43	41	40	39	37	36
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.21	1.20	1.20	1.19	1.18	1.17
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	14,791	13,537	12,892	11,720	10,658	9,765
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	1,293	1,271	1,237	1,194	1,181	1,152
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	65,609	62,082	59,290	55,580	52,346	49,140
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	137,852	130,483	124,464	117,080	110,179	103,786
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	1,576	1,467	1,421	1,317	1,230	1,147
Rank	--	--	--	--	--	--

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