

# Performance Measure Summary - Large Area Average (32 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 Large Area Average (32 areas)

Inventory Measures	2017	2016	2015	2014	2013	2012
<b>Urban Area Information</b>						
Population (1000s)	1,699	1,686	1,674	1,663	1,645	1,626
Rank	--	--	--	--	--	--
Commuters (1000s)	854	847	840	833	833	825
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	17,481	17,170	16,474	15,903	15,459	15,154
Arterial Streets	15,103	14,948	14,683	14,441	14,268	14,095
<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)	2.38	2.21	2.36	3.33	3.56	3.53
Diesel (\$/gallon)	2.57	2.35	2.57	3.67	3.92	3.93
System Performance	2017	2016	2015	2014	2013	2012
<b>Congested Travel (% of peak VMT)</b>	25.2	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	14.9	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	3.6	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	24,030	23,762	23,436	23,137	22,881	22,417
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	22	22	21	21	21	20
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	61,540	60,036	58,288	56,673	55,242	53,253
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	54	53	51	50	48	47
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.24	1.23	1.23	1.23	1.23	1.23
<b>Commuter Stress Index</b>						
Rank	1.26	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	1.71	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	1,246	1,195	1,146	1,132	1,088	1,034
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	1,031	1,010	975	942	927	905
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	2,585	2,522	2,448	2,380	2,320	2,237
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	5,094	5,037	4,968	4,905	4,851	4,752
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	132	123	114	112	103	97
Rank	--	--	--	--	--	--

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

## Mobility Data for Large Area Average (32 areas)

Inventory Measures	2011	2010	2009	2008	2007	2006
<b>Urban Area Information</b>						
Population (1000s)	1,608	1,592	1,571	1,552	1,534	1,513
Rank	--	--	--	--	--	--
Commuters (1000s)	818	808	795	783	769	755
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	15,679	15,496	15,209	15,011	15,295	15,027
Arterial Streets	14,292	14,116	13,951	13,968	14,106	14,025
<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)	3.36	2.75	2.30	3.47	3.02	2.67
Diesel (\$/gallon)	3.71	3.01	2.61	4.17	3.43	2.90
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)	21,843	21,329	20,661	21,409	21,279	20,836
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	20	20	18	19	19	19
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	50,891	49,062	46,646	46,112	45,820	44,843
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	46	44	43	43	43	43
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.22	1.22	1.22	1.22	1.23	1.23
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	977	902	836	857	812	766
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	892	887	858	840	868	873
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	2,137	2,061	1,959	1,937	1,924	1,883
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	4,631	4,522	4,380	4,539	4,511	4,417
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	101	90	83	88	82	75
Rank	--	--	--	--	--	--

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

## Mobility Data for Large Area Average (32 areas)

Inventory Measures	2005	2004	2003	2002	2001	2000
<b>Urban Area Information</b>						
Population (1000s)	1,492	1,475	1,451	1,427	1,401	1,374
Rank	--	--	--	--	--	--
Commuters (1000s)	739	727	711	690	667	643
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	14,750	14,417	13,927	13,418	13,028	12,645
Arterial Streets	13,887	13,664	13,359	12,963	12,621	12,285
<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)	2.34	1.97	1.56	1.42	1.55	1.57
Diesel (\$/gallon)	2.56	2.01	1.53	1.41	1.59	1.55
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)	20,240	19,617	18,724	17,894	17,009	15,981
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	19	18	18	17	16	16
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	43,505	42,102	40,151	38,328	36,386	34,165
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	43	42	41	41	40	39
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.22	1.22	1.21	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)	715	662	608	565	530	484
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	876	878	860	840	811	784
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	1,827	1,768	1,686	1,610	1,528	1,435
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	4,291	4,159	3,969	3,793	3,606	3,388
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	70	63	56	51	48	43
Rank	--	--	--	--	--	--

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

## Mobility Data for Large Area Average (32 areas)

Inventory Measures	1999	1998	1997	1996	1995	1994
<b>Urban Area Information</b>						
Population (1000s)	1,349	1,328	1,310	1,287	1,264	1,242
Rank	--	--	--	--	--	--
Commuters (1000s)	621	602	585	566	547	529
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	12,315	11,953	11,587	11,222	10,805	10,356
Arterial Streets	11,994	11,690	11,448	11,150	10,813	10,420
<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)	1.21	1.12	1.22	1.29	1.19	1.10
Diesel (\$/gallon)	1.22	1.21	1.31	1.38	1.27	1.17
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)	15,020	14,062	13,269	12,474	11,629	10,756
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	15	14	13	12	12	11
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	32,092	30,006	28,290	26,571	24,766	22,918
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	37	36	35	34	32	31
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)	435	398	371	342	309	278
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	764	732	702	678	654	626
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	1,348	1,260	1,188	1,116	1,040	963
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	3,184	2,981	2,813	2,645	2,465	2,280
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	38	36	33	31	28	26
Rank	--	--	--	--	--	--

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

## Mobility Data for Large Area Average (32 areas)

Inventory Measures	1993	1992	1991	1990	1989	1988
<b>Urban Area Information</b>						
Population (1000s)	1,220	1,199	1,179	1,154	1,132	1,115
Rank	--	--	--	--	--	--
Commuters (1000s)	512	495	479	461	449	439
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	9,877	9,362	8,883	8,578	8,180	7,816
Arterial Streets	10,016	9,670	9,328	9,000	8,687	8,489
<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)	1.14	1.15	1.14	1.10	1.13	1.04
Diesel (\$/gallon)	1.22	1.22	1.25	1.13	1.10	1.01
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)	9,878	9,104	8,423	7,693	7,031	6,378
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	10	9	9	8	7	7
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	21,065	19,431	17,983	16,392	14,977	13,600
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	29	28	26	25	23	22
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.15	1.14	1.13	1.13	1.12	1.11
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	250	225	203	177	155	134
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	591	563	539	514	496	473
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	885	816	755	688	629	571
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	2,094	1,930	1,786	1,631	1,491	1,352
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	24	21	20	18	16	14
Rank	--	--	--	--	--	--

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

## Mobility Data for Large Area Average (32 areas)

Inventory Measures	1987	1986	1985	1984	1983	1982
<b>Urban Area Information</b>						
Population (1000s)	1,093	1,075	1,058	1,041	1,027	963
Rank	--	--	--	--	--	--
Commuters (1000s)	426	415	406	396	388	361
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	7,395	6,972	6,573	6,260	5,890	5,296
Arterial Streets	8,154	7,928	7,611	7,354	7,079	6,805
<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	1.02	1.33	1.35	1.38	1.44
Diesel (\$/gallon)	1.02	0.99	1.30	1.31	1.34	1.40
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)	5,763	5,270	4,811	4,357	3,958	3,375
Rank	--	--	--	--	--	--
Fuel per Peak Auto Commuter (gallons)	6	5	5	5	4	3
Rank	--	--	--	--	--	--
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	12,286	11,236	10,253	9,292	8,435	7,193
Rank	--	--	--	--	--	--
Delay per Auto Commuter (pers-hrs)	20	19	17	16	15	14
Rank	--	--	--	--	--	--
<b>Travel Time Index</b>						
Rank	1.10	1.09	1.09	1.08	1.08	1.07
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	117	104	94	83	73	61
Rank	--	--	--	--	--	--
Cost per Auto Commuter (\$)	445	423	394	370	352	327
Rank	--	--	--	--	--	--
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	516	472	431	390	354	302
Rank	--	--	--	--	--	--
Annual Gallons of Wasted Fuel (000)	1,222	1,117	1,020	924	839	715
Rank	--	--	--	--	--	--
Annual Congestion Cost (\$ million)	12	11	11	9	9	7
Rank	--	--	--	--	--	--

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