

Performance Measure Summary - San Francisco-Oakland CA

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2014. 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 overnight speeds 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 2014 (estimated at \$17.67 per hour of person travel and \$94.04 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.

The Mobility Data for San Francisco-Oakland CA

Inventory Measures	2014	2013	2012	2011	2010
Urban Area Information					
Population (1000s)	3,480	3,470	3,440	3,410	3,400
Rank	13	13	13	13	13
Commuters (1000s)	1,264	1,278	1,267	1,253	1,245
Daily Vehicle-Miles of Travel (1000s)					
Freeway	28,137	27,612	52,510	51,843	51,299
Arterial Streets	24,086	23,637	30,860	30,467	30,148
Cost Components					
Value of Time (\$/hour)	17.67	17.39	17.14	16.79	16.30
Commercial Cost (\$/hour)	94.04	89.60	89.56	86.81	88.12
Gasoline (\$/gallon)	3.63	3.89	3.89	3.51	3.05
Diesel (\$/gallon)	3.85	4.12	4.20	4.02	3.20
System Performance	2014	2013	2012	2011	2010
Congested Travel (% of peak VMT)	52	--	--	--	--
Congested System (% of lane-miles)	41	--	--	--	--
Congested Time (number of "Rush Hours")	6.60	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	62,320	61,918	60,861	57,841	57,298
Rank	12	12	12	13	12
Fuel per Peak Auto Commuter (gallons)	33	33	32	31	31
Rank	3	3	3	3	3
Annual Delay					
Total Delay (1000s of person-hours)	146,013	145,072	142,596	135,520	134,248
Rank	13	13	13	13	13
Delay per Peak Auto Commuter (pers-hrs)	78	77	76	73	73
Rank	3	3	3	3	3
Travel Time Index					
	1.41	1.40	1.40	1.38	1.38
Rank	2	2	2	2	2
Commuter Stress Index					
	1.57	1.56	1.56	1.54	1.54
Rank	2	2	2	2	2
Freeway Planning Time Index (95th Pctile)					
	3.30	--	--	--	--
Rank	6	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	3,143	3,174	3,165	3,070	3,137
Rank	14	14	14	14	14
Cost per Peak Auto Commuter (\$)	1,675	1,691	1,686	1,636	1,671
Rank	4	4	4	4	4

* Note: Cells containing "--" indicate no available data.

The Mobility Data for San Francisco-Oakland CA

Inventory Measures	2009	2008	2007	2006	2005
Urban Area Information					
Population (1000s)	3,375	3,360	3,330	3,300	3,320
Rank	13	13	13	13	12
Commuters (1000s)	1,233	1,223	1,210	1,197	1,202
Daily Vehicle-Miles of Travel (1000s)					
Freeway	49,000	48,500	49,850	50,155	49,900
Arterial Streets	30,461	30,800	30,725	31,060	31,130
Cost Components					
Value of Time (\$/hour)	16.01	16.10	15.47	15.06	14.58
Commercial Cost (\$/hour)	89.75	81.52	82.56	80.43	78.05
Gasoline (\$/gallon)	2.61	3.84	3.24	2.88	2.62
Diesel (\$/gallon)	2.71	4.39	3.60	3.17	2.93
System Performance	2009	2008	2007	2006	2005
Congested Travel (% of peak VMT)	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	57,016	59,417	59,984	59,641	58,792
Rank	12	12	12	12	12
Fuel per Peak Auto Commuter (gallons)	30	32	32	32	31
Rank	3	3	2	2	2
Annual Delay					
Total Delay (1000s of person-hours)	133,586	139,212	140,540	139,737	137,748
Rank	13	13	13	13	12
Delay per Peak Auto Commuter (pers-hrs)	73	77	78	79	77
Rank	3	3	3	3	3
Travel Time Index					
	1.38	1.40	1.41	1.41	1.40
Rank	2	2	2	2	2
Commuter Stress Index					
	1.54	1.56	1.57	1.57	1.56
Rank	2	2	2	2	2
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	3,174	3,295	3,455	3,529	3,595
Rank	14	13	13	13	13
Cost per Peak Auto Commuter (\$)	1,691	1,756	1,841	1,880	1,915
Rank	4	4	4	4	3

* Note: Cells containing "--" indicate no available data.

The Mobility Data for San Francisco-Oakland CA

Inventory Measures	2004	2003	2002	2001	2000
Urban Area Information					
Population (1000s)	3,330	3,350	3,370	3,380	3,350
Rank	12	12	12	12	12
Commuters (1000s)	1,201	1,203	1,194	1,179	1,149
Daily Vehicle-Miles of Travel (1000s)					
Freeway	49,300	48,985	48,585	47,000	46,500
Arterial Streets	30,900	30,420	30,245	28,690	29,855
Cost Components					
Value of Time (\$/hour)	14.10	13.73	13.43	13.22	12.85
Commercial Cost (\$/hour)	74.17	72.23	70.86	71.38	70.47
Gasoline (\$/gallon)	2.28	1.78	1.66	1.93	1.72
Diesel (\$/gallon)	2.27	1.79	1.58	1.78	1.68
System Performance	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)	57,376	56,224	55,151	54,745	53,831
Rank	12	12	11	11	10
Fuel per Peak Auto Commuter (gallons)	31	30	29	29	29
Rank	1	1	1	1	1
Annual Delay					
Total Delay (1000s of person-hours)	134,430	131,730	129,218	128,264	126,125
Rank	12	12	12	10	9
Delay per Peak Auto Commuter (pers-hrs)	75	74	72	73	73
Rank	3	3	3	2	2
Travel Time Index					
	1.39	1.38	1.38	1.38	1.38
Rank	2	2	2	2	2
Commuter Stress Index					
	1.55	1.54	1.54	1.54	1.54
Rank	2	2	2	2	2
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	3,627	3,649	3,661	3,691	3,733
Rank	13	12	12	11	10
Cost per Peak Auto Commuter (\$)	1,932	1,944	1,950	1,966	1,989
Rank	2	2	2	2	2

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The Mobility Data for San Francisco-Oakland CA

Inventory Measures	1999	1998	1997	1996	1995
Urban Area Information					
Population (1000s)	3,340	3,320	3,310	3,300	3,290
Rank	12	12	12	11	10
Commuters (1000s)	1,130	1,107	1,087	1,066	1,046
Daily Vehicle-Miles of Travel (1000s)					
Freeway	45,710	45,145	43,800	42,795	42,330
Arterial Streets	29,125	28,260	28,000	28,685	28,295
Cost Components					
Value of Time (\$/hour)	12.43	12.17	11.98	11.71	11.37
Commercial Cost (\$/hour)	66.76	65.76	66.83	66.20	64.27
Gasoline (\$/gallon)	1.59	1.27	1.40	1.21	1.27
Diesel (\$/gallon)	1.50	1.39	1.51	1.24	1.31
System Performance	1999	1998	1997	1996	1995
Congested Travel (% of peak VMT)	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	52,569	51,436	49,905	48,910	47,091
Rank	10	9	9	7	6
Fuel per Peak Auto Commuter (gallons)	28	27	27	26	25
Rank	1	1	1	1	1
Annual Delay					
Total Delay (1000s of person-hours)	123,168	120,514	116,925	114,594	110,333
Rank	8	7	7	6	6
Delay per Peak Auto Commuter (pers-hrs)	72	72	71	70	69
Rank	2	2	2	2	2
Travel Time Index					
	1.38	1.37	1.37	1.37	1.36
Rank	2	2	2	2	2
Commuter Stress Index					
	1.54	1.53	1.53	1.52	1.52
Rank	2	2	2	2	2
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	3,768	3,768	3,713	3,722	3,690
Rank	9	9	7	7	6
Cost per Peak Auto Commuter (\$)	2,007	2,007	1,978	1,983	1,966
Rank	2	2	2	2	2

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The Mobility Data for San Francisco-Oakland CA

Inventory Measures	1994	1993	1992	1991	1990
Urban Area Information					
Population (1000s)	3,280	3,270	3,270	3,220	3,180
Rank	10	10	10	10	9
Commuters (1000s)	1,030	1,011	995	964	938
Daily Vehicle-Miles of Travel (1000s)					
Freeway	40,550	41,500	40,695	40,600	40,600
Arterial Streets	28,445	27,775	27,955	27,400	27,310
Cost Components					
Value of Time (\$/hour)	11.06	10.78	10.47	10.17	9.75
Commercial Cost (\$/hour)	62.23	60.84	59.01	57.31	55.03
Gasoline (\$/gallon)	1.16	1.23	1.28	1.11	1.14
Diesel (\$/gallon)	1.19	1.26	1.25	1.25	1.19
System Performance	1994	1993	1992	1991	1990
Congested Travel (% of peak VMT)	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	45,288	43,339	41,721	39,747	38,604
Rank	6	6	6	5	6
Fuel per Peak Auto Commuter (gallons)	24	23	22	21	21
Rank	1	1	1	1	1
Annual Delay					
Total Delay (1000s of person-hours)	106,108	101,542	97,751	93,126	90,448
Rank	6	6	6	5	5
Delay per Peak Auto Commuter (pers-hrs)	67	65	63	62	62
Rank	2	2	2	2	2
Travel Time Index					
	1.35	1.34	1.33	1.32	1.32
Rank	2	2	2	2	2
Commuter Stress Index					
	1.51	1.49	1.48	1.48	1.48
Rank	2	2	2	2	2
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	3,649	3,581	3,551	3,485	3,527
Rank	6	6	6	6	5
Cost per Peak Auto Commuter (\$)	1,944	1,908	1,892	1,856	1,879
Rank	2	1	1	2	1

* Note: Cells containing "--" indicate no available data.

The Mobility Data for San Francisco-Oakland CA

Inventory Measures	1989	1988	1987	1986	1985
Urban Area Information					
Population (1000s)	3,150	3,140	3,080	3,020	2,960
Rank	9	8	8	8	8
Commuters (1000s)	921	909	885	860	834
Daily Vehicle-Miles of Travel (1000s)					
Freeway	41,015	40,460	38,675	36,905	34,575
Arterial Streets	26,910	26,400	24,620	22,765	20,460
Cost Components					
Value of Time (\$/hour)	9.25	8.83	8.48	8.18	8.03
Commercial Cost (\$/hour)	52.81	50.04	48.53	46.57	47.83
Gasoline (\$/gallon)	1.14	1.05	1.05	1.03	1.35
Diesel (\$/gallon)	1.09	1.01	1.01	0.99	1.29
System Performance	1989	1988	1987	1986	1985
Congested Travel (% of peak VMT)	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	37,470	36,351	35,482	33,646	31,953
Rank	5	5	5	5	6
Fuel per Peak Auto Commuter (gallons)	20	19	19	18	17
Rank	1	1	1	1	1
Annual Delay					
Total Delay (1000s of person-hours)	87,792	85,169	83,134	78,832	74,864
Rank	5	5	5	5	5
Delay per Peak Auto Commuter (pers-hrs)	61	60	60	58	57
Rank	2	2	1	1	2
Travel Time Index					
	1.32	1.31	1.31	1.30	1.30
Rank	2	2	2	2	2
Commuter Stress Index					
	1.47	1.46	1.46	1.46	1.45
Rank	2	2	2	2	2
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	3,608	3,669	3,730	3,666	3,546
Rank	5	5	5	6	6
Cost per Peak Auto Commuter (\$)	1,922	1,955	1,987	1,953	1,889
Rank	2	1	1	1	1

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The Mobility Data for San Francisco-Oakland CA

Inventory Measures	1984	1983	1982
Urban Area Information			
Population (1000s)	2,940	2,920	2,900
Rank	8	8	8
Commuters (1000s)	823	809	795
Daily Vehicle-Miles of Travel (1000s)			
Freeway	32,215	30,500	29,790
Arterial Streets	19,225	19,065	18,895
Cost Components			
Value of Time (\$/hour)	7.75	7.43	7.20
Commercial Cost (\$/hour)	46.47	44.23	43.08
Gasoline (\$/gallon)	1.36	1.39	1.46
Diesel (\$/gallon)	1.31	1.34	1.40
System Performance	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)	29,621	27,635	26,796
Rank	6	6	6
Fuel per Peak Auto Commuter (gallons)	16	15	14
Rank	1	1	2
Annual Delay			
Total Delay (1000s of person-hours)	69,401	64,748	62,781
Rank	6	6	5
Delay per Peak Auto Commuter (pers-hrs)	54	51	50
Rank	2	2	1
Travel Time Index			
	1.28	1.26	1.26
Rank	2	2	2
Commuter Stress Index			
	1.43	1.41	1.41
Rank	2	2	2
Freeway Planning Time Index (95th Pctile)			
	--	--	--
Rank	--	--	--
Congestion Cost (constant 2014 \$)			
Total Cost (\$ millions)	3,404	3,313	3,316
Rank	6	6	6
Cost per Peak Auto Commuter (\$)	1,814	1,765	1,766
Rank	1	1	2

* Note: Cells containing "--" indicate no available data.