

Performance Measure Summary

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2005. There is no single performance measure that experts agree “says it all.” The best comparison of congestion levels and trends is done between regions of similar size, over several years, and with a few measures of congestion aspects. 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. A few key points should be recognized by users of the Urban Mobility Report data.

Use the Trends – The multi-year performance measures are better indicators, in most cases, than 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 the top of a few 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).*

Comparison of Several Key Mobility Performance Measures Small Group – less than 500,000 population urban areas

Urban Area	Delay per Traveler	Travel Time Index	Total Delay	1982 to 2005	
				Delay per Traveler	Total Delay
Colorado Springs, CO	H+	H+	H+	F+	F+
Charleston-North Charleston, SC	H+	H+	H+	F	F+
Bakersfield, CA	L	0	0	0	F+
Columbia, SC	0	L	H	0	F+
Cape Coral, FL	H+	H	H+	F	F+
Little Rock, AR	0	L	0	0	F
Spokane, WA	L-	L-	L-	S-	S-
Pensacola, FL-AL	H+	H	H+	F+	F+
Corpus Christi, TX	L-	L	L	S-	S-
Anchorage, AK	L-	L	L-	S-	S-
Eugene, OR	L	0	L	S-	S-
Beaumont, TX	L-	L	L-	S-	S-
Salem, OR	L	0	L	0	S-
Laredo, TX	L-	0	L-	S	S-
Brownsville, TX	L-	L	L-	S-	S-
Boulder, CO	0	0	L-	S	S-

0 – Average congestion levels or average congestion growth

H Higher congestion; H+ Much higher congestion; F Faster congestion growth; F+ Much faster growth

L Lower congestion; L- Much lower congestion; S Slower congestion growth; S- Much slower growth

Performance Measures and Definition of Terms

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

Peak Travelers – Number of travelers (using any travel mode) who begin a trip during the morning or evening peak travel periods (6 to 9 a.m. and 4 to 7 p.m.).

Annual Delay per Traveler – A yearly sum of all the per-trip delays. This measure illustrates the effect of the per-mile congestion as well as the length of each trip. The extra time required to travel in the peak period is divided by the number of travelers who begin a trip during the peak period (6 to 9 a.m. and 4 to 7 p.m.).

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 (60 mph on freeways and 35 mph on arterials) – These values are used as the national comparison thresholds. Other speed values may be appropriate for urban areas or sub-regions.

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

Public Transportation – Regular route service from all public transportation providers in an urban area.

Operations Treatments – Freeway incident management, freeway ramp metering, arterial street signal coordination and arterial street access management.

Congestion Cost – Value of travel delay for 2005 (estimated at \$14.60 per hour of person travel and \$77.10 per hour of truck time) and excess fuel consumption (estimated using state average cost per gallon).

Annual Increase Needed to Maintain Constant Congestion Level – Number of lane-miles that must be added to the road system each year – or – the number of new transit riders or carpoolers that must be added to keep congestion levels the same as the previous year.

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). The annual change in miles traveled, therefore, includes both new travel due to growth and travel that previously occurred in areas designated as rural.

Number of Rush Hours – Time when system might have congestion

Key Mobility Performance Measure Labels

Note: Designation of an urban area congestion problem as “Much higher”, “Much faster growth”, etc. is determined using a general indicator of the accuracy of the congestion estimates. For regions with the same indicator label, there may be no difference in congestion levels. Different values are used for the indicators in regions over 1 million population and below 1 million population.

Measures	Differences Within These Values May Not Indicate a Difference in Congestion Level	
	Above 1M Population	Below 1M Population
2005 Values Delay per Traveler - Travel Time Index - Total Delay -	5 Hours 5 Index Points 5 Hours x Average Population	3 Hours 3 Index Points 3 Hours x Average Population
1982 to 2005 Trends Delay per Traveler - Total Delay -	5 Hours 5 Hours x Average Population	3 Hours 3 Hours x Average Population

The Mobility Data for Pensacola, FL-AL

Inventory Measures	2005	2004	2003	2002	2001	2000
Urban Area Information						
Population (1000s)	345	340	330	325	315	305
Rank	77	77	77	77	78	77
Urban Area (square miles)	210	210	205	200	195	190
Popn Density (persons/sq mile)	1,643	1,619	1,610	1,625	1,615	1,605
Peak Travelers (1000s)	188	184	178	173	165	157
Freeway						
Daily Vehicle-Miles of Travel (1000s)	1,400	1,410	1,350	1,270	1,200	1,150
Lane Miles	140	140	135	130	125	120
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	5,800	5,600	5,230	4,920	4,600	4,455
Lane Miles	860	845	810	785	755	720
Public Transportation						
Annual Psgr-Miles of Travel (millions)	6	8	8	8	7	8
Annual Unlinked Psgr Trips (millions)	1	2	2	2	2	2
Cost Components						
Value of Time (\$/hour)	14.60	14.10	13.75	13.45	13.25	12.85
Commercial Cost (\$/hour)	77.10	74.60	72.65	71.05	69.95	68.00
Fuel Cost (\$/gallon)	2.34	1.99	1.53	1.41	1.51	1.54
System Performance						
Congested Travel (% of peak VMT)	31	30	29	28	27	27
Congested System (% of lane-miles)	27	26	26	26	26	26
Congested Time (number of "Rush Hours")	7.0	6.8	6.6	6.4	6.0	6.2
Annual Increase Needed To Maintain Constant Congestion Level:						
Lane-Miles	51	51	42	31	29	33
Transit Riders or Carpoolers (millions)	13	13	10	7	7	8
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	2,680	2,528	2,333	2,096	1,860	1,816
Rank	69	70	70	72	73	72
Fuel per Peak Traveler (gallons)	14	14	13	12	11	12
Rank	52	51	55	59	63	60
Annual Delay						
Total Delay (1000s of person-hours)	4,773	4,498	4,202	3,783	3,333	3,257
Rank	68	70	68	69	71	71
Delay per Peak Traveler (person-hrs)	25	24	24	22	20	21
Rank	48	49	49	52	57	54
Delay due to Incidents (percent)	53	53	53	53	53	53
Travel Time Index						
Rank	57	57	57	60	61	62
Congestion Cost						
Total Cost (\$ millions)	84	75	68	59	52	49
Rank	69	70	69	69	73	72
Cost per Peak Traveler (\$)	445	409	382	344	316	315
Rank	49	51	51	55	58	60

Note: System Performance statistics for 2000 through 2005 data reflect the effects of operational treatments.

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

The Mobility Data for Pensacola, FL-AL, Continued

Inventory Measures	1999	1998	1997	1996	1995	1994
Urban Area Information						
Population (1000s)	300	295	290	285	280	275
Rank	77	77	77	77	77	77
Urban Area (square miles)	185	185	185	180	180	180
Popn Density (persons/sq mile)	1,622	1,595	1,568	1,583	1,556	1,528
Peak Travelers (1000s)	152	148	143	138	134	129
Freeway						
Daily Vehicle-Miles of Travel (1000s)	1,120	1,080	1,030	975	930	890
Lane Miles	115	110	105	105	100	100
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	4,325	4,215	4,195	3,945	3,710	3,425
Lane Miles	705	700	670	645	625	605
Public Transportation						
Annual Psgr-Miles of Travel (millions)	8	9	8	8	7	7
Annual Unlinked Psgr Trips (millions)	2	2	2	2	1	1
Cost Components						
Value of Time (\$/hour)	12.40	12.15	12.00	11.70	11.40	11.05
Commercial Cost (\$/hour)	65.80	64.35	63.40	61.95	60.20	58.50
Fuel Cost (\$/gallon)	1.14	1.07	1.17	1.30	1.20	1.08
System Performance						
Congested Travel (% of peak VMT)	26	26	27	25	22	20
Congested System (% of lane-miles)	26	27	26	26	22	21
Congested Time (number of "Rush Hours")	6.2	6.0	6.4	6.0	5.8	5.4
Annual Increase Needed To Maintain Constant Congestion Level:						
Lane-Miles	39	39	42	43	33	26
Transit Riders or Carpoolers (millions)	9	9	10	10	7	6
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	1,760	1,665	1,739	1,502	1,204	1,020
Rank	71	71	70	71	72	75
Fuel per Peak Traveler (gallons)	12	11	12	11	9	8
Rank	64	63	58	60	63	63
Annual Delay						
Total Delay (1000s of person-hours)	3,160	2,972	3,145	2,676	2,173	1,830
Rank	71	71	69	70	72	74
Delay per Peak Traveler (person-hrs)	21	20	22	19	16	14
Rank	60	57	51	55	60	60
Delay due to Incidents (percent)	53	53	52	52	52	52
Travel Time Index						
Rank	67	62	58	61	63	65
Congestion Cost						
Total Cost (\$ millions)	46	42	44	37	29	24
Rank	71	71	70	70	72	75
Cost per Peak Traveler (\$)	302	286	311	269	219	185
Rank	60	58	51	58	60	59

Note: System Performance statistics for 2000 through 2005 data reflect the effects of operational treatments.

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

The Mobility Data for Pensacola, FL-AL, Continued

Inventory Measures	1993	1992	1991	1990	1989	1988
Urban Area Information						
Population (1000s)	270	270	265	265	260	255
Rank	77	77	77	77	77	77
Urban Area (square miles)	175	175	175	175	170	170
Popn Density (persons/sq mile)	1,543	1,543	1,514	1,514	1,529	1,500
Peak Travelers (1000s)	125	123	119	117	114	111
Freeway						
Daily Vehicle-Miles of Travel (1000s)	860	820	770	760	720	700
Lane Miles	95	95	95	90	90	90
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	3,305	3,205	2,960	2,955	2,880	2,795
Lane Miles	600	595	580	570	565	555
Public Transportation						
Annual Psgr-Miles of Travel (millions)	6	8	7	5	5	6
Annual Unlinked Psgr Trips (millions)	1	1	1	1	1	1
Cost Components						
Value of Time (\$/hour)	10.75	10.50	10.25	10.00	9.25	8.80
Commercial Cost (\$/hour)	57.05	55.40	53.80	51.60	48.95	46.70
Fuel Cost (\$/gallon)	1.13	1.12	1.10	1.05	1.08	1.00
System Performance						
Congested Travel (% of peak VMT)	20	19	17	18	17	17
Congested System (% of lane-miles)	22	22	21	22	22	22
Congested Time (number of "Rush Hours")	5.2	4.8	4.2	4.6	4.2	4.0
Annual Increase Needed To Maintain Constant Congestion Level:						
Lane-Miles	24	22	15	32	35	37
Transit Riders or Carpoolers (millions)	5	5	3	6	7	7
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	986	897	724	753	682	647
Rank	73	72	72	72	72	71
Fuel per Peak Traveler (gallons)	8	7	6	6	6	6
Rank	62	62	62	60	60	60
Annual Delay						
Total Delay (1000s of person-hours)	1,781	1,608	1,283	1,331	1,192	1,138
Rank	71	72	72	72	72	69
Delay per Peak Traveler (person-hrs)	14	13	11	11	10	10
Rank	59	60	60	58	60	58
Delay due to Incidents (percent)	52	52	52	52	52	52
Travel Time Index						
Rank	60	63	62	58	59	57
Congestion Cost						
Total Cost (\$ millions)	23	20	16	16	13	12
Rank	73	72	72	72	72	70
Cost per Peak Traveler (\$)	182	163	132	135	116	109
Rank	59	60	61	58	60	59

Note: System Performance statistics for 2000 through 2005 data reflect the effects of operational treatments.

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

The Mobility Data for Pensacola, FL-AL, Continued

Inventory Measures	1987	1986	1985	1984	1983	1982
Urban Area Information						
Population (1000s)	250	245	240	235	230	225
Rank	77	77	77	77	77	77
Urban Area (square miles)	170	165	165	165	160	160
Popn Density (persons/sq mile)	1,471	1,485	1,455	1,424	1,438	1,406
Peak Travelers (1000s)	108	105	102	99	96	93
Freeway						
Daily Vehicle-Miles of Travel (1000s)	650	620	600	550	530	500
Lane Miles	85	85	85	80	80	75
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	2,785	2,705	2,325	2,220	2,100	2,055
Lane Miles	540	530	515	495	495	475
Public Transportation						
Annual Psgr-Miles of Travel (millions)	6	6	6	6	6	6
Annual Unlinked Psgr Trips (millions)	1	1	1	1	1	1
Cost Components						
Value of Time (\$/hour)	8.50	8.20	8.00	7.75	7.45	7.20
Commercial Cost (\$/hour)	44.85	43.30	42.50	41.05	39.35	38.10
Fuel Cost (\$/gallon)	1.00	0.98	1.28	1.29	1.32	1.38
System Performance						
Congested Travel (% of peak VMT)	18	15	10	10	9	9
Congested System (% of lane-miles)	22	17	13	13	13	13
Congested Time (number of "Rush Hours")	4.2	4.2	3.0	3.0	2.9	2.9
Annual Increase Needed To Maintain Constant Congestion Level:						
Lane-Miles	38	--	--	--	--	--
Transit Riders or Carpoolers (millions)	7	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	677	535	310	308	261	260
Rank	66	70	77	75	77	77
Fuel per Peak Traveler (gallons)	6	5	3	3	3	3
Rank	54	58	69	67	67	65
Annual Delay						
Total Delay (1000s of person-hours)	1,192	943	551	565	461	457
Rank	65	70	77	75	77	76
Delay per Peak Traveler (person-hrs)	11	9	5	6	5	5
Rank	51	57	69	65	64	61
Delay due to Incidents (percent)	52	52	52	52	52	52
Travel Time Index						
Rank	53	58	67	65	66	63
Congestion Cost						
Total Cost (\$ millions)	12	9	5	5	4	4
Rank	66	71	77	75	77	76
Cost per Peak Traveler (\$)	113	89	53	55	44	44
Rank	53	57	69	65	65	62

Note: System Performance statistics for 2000 through 2005 data reflect the effects of operational treatments.

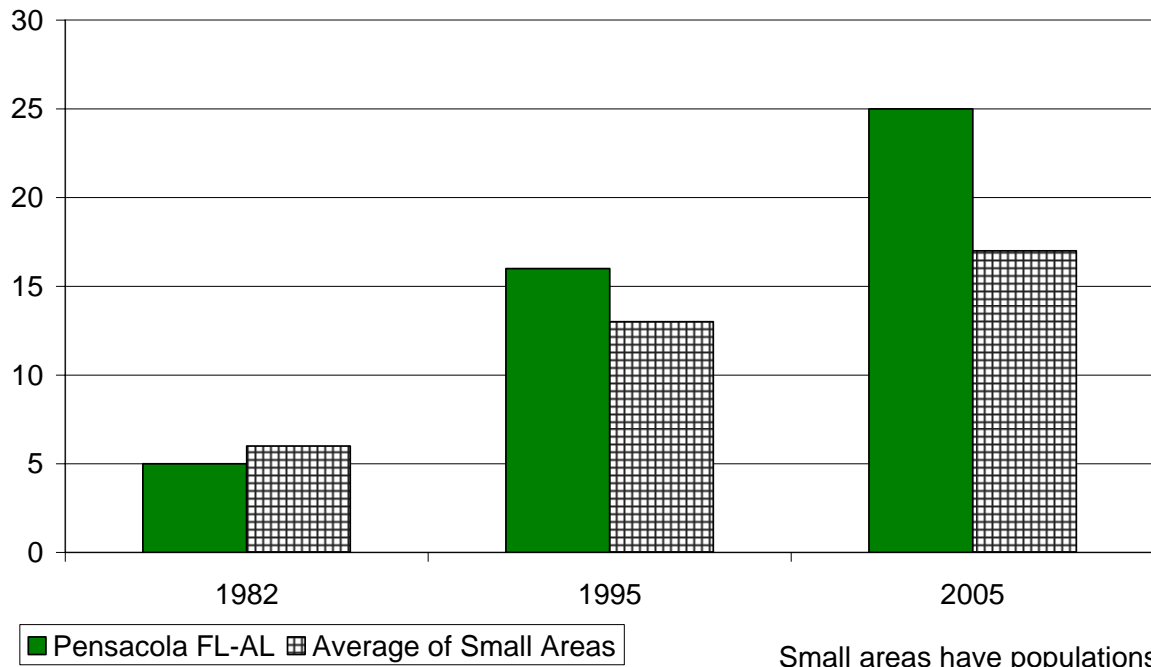
Note: Zeroes in the table reflect values less than 0.5.

Benefits From Public Transportation Service and Operations Strategies for Pensacola, FL-AL

Operations Strategies	2005	2004	2003	2002	2001	2000
Freeway Ramp Metering						
Percent of Roadway Miles	--	--	--	--	--	--
Annual Delay Reduction (1000 hours)	--	--	--	--	--	--
Freeway Incident Management						
Cameras						
Percent of Roadway Miles	--	--	--	--	--	--
Service Patrols						
Percent of Roadway Miles	--	--	--	--	--	--
Annual Delay Reduction (1000 hours)	--	--	--	--	--	--
Arterial Signal Coordination						
Percent of Roadway Miles	61	62	64	67	69	67
Annual Delay Reduction (1000 hours)	29	26	16	14	23	21
Arterial Access Management						
Percent of Roadway Miles	14	14	8	8	7	7
Annual Delay Reduction (1000 hours)	58	43	39	38	46	38
HOV Lanes						
Daily Passenger-miles of Travel (1000s)	--	--	--	--	--	--
HOV User Delay Savings	--	--	--	--	--	--
Total Effect of Operations Treatments						
Annual Delay Reduction (1000 hours)	87	69	55	52	69	59
Annual Delay Saved per Peak Traveler (hours)	0	0	0	0	0	0
Annual Congestion Cost Savings (\$million)	1.5	1.2	0.9	0.8	1.1	0.9
Travel Time Index with Strategies	1.112	1.109	1.107	1.102	1.096	1.097
Travel Time Index (Base)	1.114	1.110	1.108	1.103	1.098	1.099
Public Transportation Service						
Existing Service						
Annual Passenger-miles of Travel (million)	6	8	8	8	7	8
Unlinked Passenger Trips (million)	1	2	2	2	2	2
Travel Time Index (combined road and transit)	1.112	1.108	1.106	1.101	1.095	1.096
Condition if Public Transportation Service were Discontinued						
Travel Time Index	1.115	1.111	1.108	1.103	1.098	1.099
Annual Delay Increase (1000 hours)	56	49	26	21	47	40
Annual Delay Increase per Peak Traveler (hours)	0	0	0	0	0	0
Annual Congestion Cost Increase (\$million)	1.0	0.8	0.4	0.3	0.7	0.6

Growth in Delay per Peak Traveler

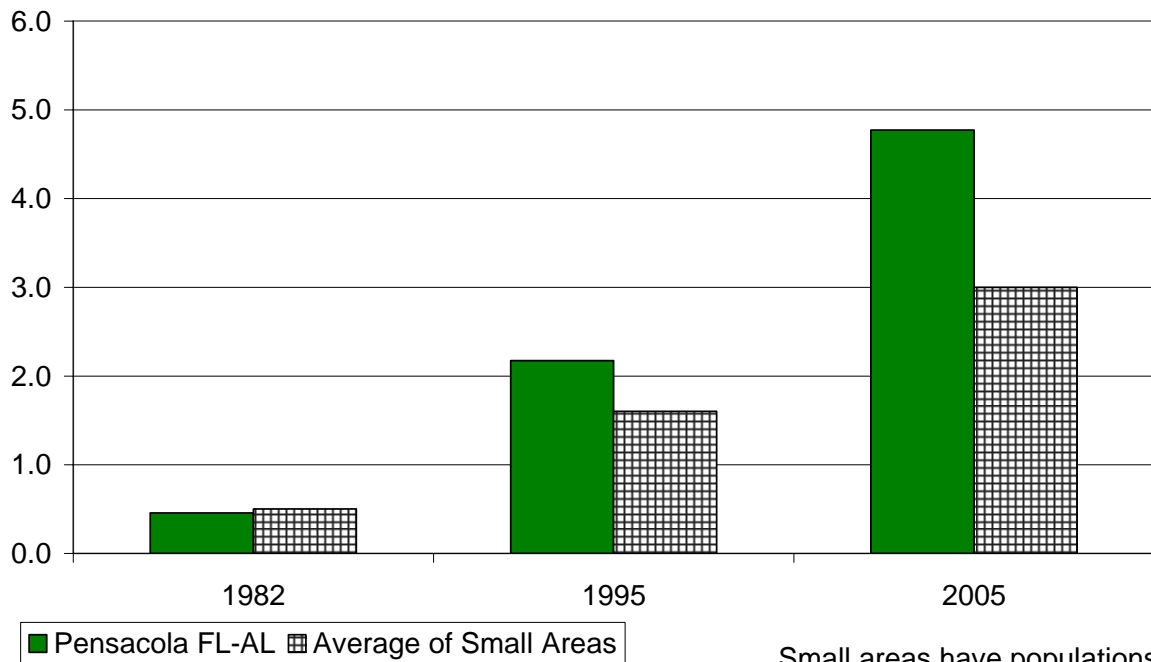
Hours of Delay



Small areas have populations under 0.5 million

Annual Hours of Delay (million)

Growth in Total Delay



Small areas have populations under 0.5 million