

Performance Measure Summary – Laredo, TX

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2007. 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. 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*).

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 2007 (estimated at \$15.47 per hour of person travel and \$102.12 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.

The Mobility Data for Laredo TX

Inventory Measures	2007	2006	2005	2004	2003	2002
Urban Area Information						
Population (1000s)	220	215	210	205	200	190
Rank	88	88	88	88	88	88
Urban Area (square miles)	55	55	55	55	55	50
Population Density (persons/sq mile)	4,000	3,909	3,818	3,727	3,636	3,800
Peak Travelers (1000s)	121	118	114	111	108	101
Freeway						
Daily Vehicle-Miles of Travel (1000s)	630	535	485	470	450	470
Lane-Miles	80	75	75	75	75	75
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	2,010	1,870	1,780	1,725	1,680	1,570
Lane-Miles	385	375	360	355	345	340
Public Transportation						
Annual Psgr-Miles of Travel (millions)	13.6	13.1	12.2	16.1	21.7	21.7
Annual Unlinked Psgr Trips (millions)	4.4	4.2	4.0	3.7	5.0	4.6
Cost Components						
Value of Time (\$/hour)	15.47	15.06	14.58	14.10	13.73	13.43
Commercial Cost (\$/hour)	102.12	98.77	94.06	86.24	82.38	79.96
Fuel Cost (\$/gallon)	2.92	2.55	2.23	1.83	1.45	1.32
System Performance	2007	2006	2005	2004	2003	2002
Congested Travel (% of peak VMT)	31	29	25	24	26	23
Congested System (% of lane-miles)	34	34	30	30	34	34
Congested Time (number of "Rush Hours")	4.0	3.6	3.2	3.0	3.0	2.9
Annual Increase Needed to Maintain Constant Congestion Level:						
Lane-miles	24	17	17	14	19	24
Transit Riders or Carpoolers (millions)	5	3	3	2	3	4
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	1,006	803	693	653	687	537
Rank	83	87	87	87	87	89
Fuel per Peak Traveler (gallons)	8	7	6	6	6	5
Rank	74	81	83	81	80	85
Annual Delay						
Total Delay (1000s of person-hours)	1,806	1,416	1,262	1,199	1,257	957
Rank	82	87	87	87	86	88
Delay per Peak Traveler (person-hours)	15	12	11	11	12	9
Rank	70	78	80	79	77	84
Delay due to Incidents (percent)	53	53	53	53	53	53
Travel Time Index	1.12	1.10	1.09	1.09	1.10	1.08
Rank	57	63	66	67	62	72
Congestion Cost						
Total Cost (\$ millions)	37	28	24	22	22	16
Rank	82	86	87	87	86	88
Cost per Peak Traveler (\$)	306	239	211	196	204	162
Rank	71	79	80	81	78	83

Note: System Performance statistics for 2000 through 2007 data reflect the effects of operational treatments.

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

The Mobility Data for Laredo TX, Continued

Inventory Measures	2001	2000	1999	1998	1997
Urban Area Information					
Population (1000s)	190	185	180	175	165
Rank	88	88	88	88	88
Urban Area (square miles)	50	50	50	50	50
Population Density (persons/sq mile)	3,800	3,700	3,600	3,500	3,300
Peak Travelers (1000s)	99	95	91	88	81
Freeway					
Daily Vehicle-Miles of Travel (1000s)	430	415	430	405	360
Lane-Miles	75	75	75	70	60
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	1,575	1,445	1,440	1,300	1,180
Lane-Miles	335	330	325	315	295
Public Transportation					
Annual Psgr-Miles of Travel (millions)	21.7	21.2	20.3	16.8	16.8
Annual Unlinked Psgr Trips (millions)	4.9	4.8	4.6	4.3	4.3
Cost Components					
Value of Time (\$/hour)	13.22	12.85	12.43	12.17	11.98
Commercial Cost (\$/hour)	80.88	80.75	74.23	72.61	74.32
Fuel Cost (\$/gallon)	1.46	1.47	1.07	1.01	1.12
System Performance	2001	2000	1999	1998	1997
Congested Travel (% of peak VMT)	23	22	22	20	22
Congested System (% of lane-miles)	34	34	33	34	30
Congested Time (number of "Rush Hours")	2.9	2.8	2.8	2.7	2.6
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	28	32	41	43	43
Transit Riders or Carpoolers (millions)	5	5	7	7	7
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	559	485	466	409	391
Rank	89	89	89	89	89
Fuel per Peak Traveler (gallons)	6	5	5	5	5
Rank	78	83	83	82	79
Annual Delay					
Total Delay (1000s of person-hours)	1,011	889	824	737	698
Rank	88	89	89	89	88
Delay per Peak Traveler (person-hours)	10	9	9	8	9
Rank	80	83	82	82	79
Delay due to Incidents (percent)	53	53	53	53	53
Travel Time Index					
	1.08	1.08	1.07	1.07	1.07
Rank	72	73	75	74	72
Congestion Cost					
Total Cost (\$ millions)	17	15	13	11	11
Rank	86	88	88	89	88
Cost per Peak Traveler (\$)	173	156	143	130	133
Rank	80	83	82	82	81

Note: System Performance statistics for 2000 through 2007 data reflect the effects of operational treatments.
 Note: Zeroes in the table reflect values less than 0.5.

The Mobility Data for Laredo TX, Continued

Inventory Measures	1996	1995	1994	1993	1992
Urban Area Information					
Population (1000s)	150	145	140	130	125
Rank	88	88	88	88	88
Urban Area (square miles)	45	45	45	40	35
Population Density (persons/sq mile)	3,333	3,222	3,111	3,250	3,571
Peak Travelers (1000s)	73	69	66	60	57
Freeway					
Daily Vehicle-Miles of Travel (1000s)	370	340	335	300	250
Lane-Miles	60	60	55	45	35
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	1,060	940	820	700	615
Lane-Miles	255	250	245	245	240
Public Transportation					
Annual Psgr-Miles of Travel (millions)	18.7	18.6	17.7	18.4	17.2
Annual Unlinked Psgr Trips (millions)	4.8	4.8	4.7	4.6	4.3
Cost Components					
Value of Time (\$/hour)	11.71	11.37	11.06	10.78	10.47
Commercial Cost (\$/hour)	74.17	71.54	69.53	67.77	66.19
Fuel Cost (\$/gallon)	1.21	1.14	1.03	1.10	1.09
System Performance	1996	1995	1994	1993	1992
Congested Travel (% of peak VMT)	20	17	13	12	12
Congested System (% of lane-miles)	29	25	21	22	22
Congested Time (number of "Rush Hours")	2.7	2.5	2.4	2.3	2.3
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	38	39	36	24	18
Transit Riders or Carpoolers (millions)	6	6	5	3	2
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	318	247	164	135	110
Rank	89	89	89	89	89
Fuel per Peak Traveler (gallons)	4	4	2	2	2
Rank	82	82	89	89	88
Annual Delay					
Total Delay (1000s of person-hours)	556	452	295	243	192
Rank	89	89	89	89	89
Delay per Peak Traveler (person-hours)	8	7	4	4	3
Rank	81	81	89	88	89
Delay due to Incidents (percent)	53	53	53	53	53
Travel Time Index	1.07	1.06	1.04	1.04	1.04
Rank	68	73	80	78	77
Congestion Cost					
Total Cost (\$ millions)	8	7	4	3	3
Rank	89	89	89	89	89
Cost per Peak Traveler (\$)	117	96	64	57	47
Rank	81	83	88	88	88

Note: System Performance statistics for 2000 through 2007 data reflect the effects of operational treatments.
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The Mobility Data for Laredo TX, Continued

Inventory Measures	1991	1990	1989	1988	1987
Urban Area Information					
Population (1000s)	125	120	120	120	110
Rank	88	89	88	88	89
Urban Area (square miles)	35	30	30	30	30
Population Density (persons/sq mile)	3,571	4,000	4,000	4,000	3,667
Peak Travelers (1000s)	56	53	53	52	48
Freeway					
Daily Vehicle-Miles of Travel (1000s)	205	165	135	125	125
Lane-Miles	30	25	20	20	20
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	600	545	525	555	500
Lane-Miles	235	230	225	220	220
Public Transportation					
Annual Psgr-Miles of Travel (millions)	8.3	8.3	8.0	8.0	8.0
Annual Unlinked Psgr Trips (millions)	3.7	3.7	3.0	3.0	2.0
Cost Components					
Value of Time (\$/hour)	10.17	9.75	9.25	8.83	8.48
Commercial Cost (\$/hour)	64.55	62.47	59.16	56.03	54.62
Fuel Cost (\$/gallon)	1.12	1.04	1.07	0.99	0.99
System Performance	1991	1990	1989	1988	1987
Congested Travel (% of peak VMT)	12	10	9	9	9
Congested System (% of lane-miles)	23	19	19	14	14
Congested Time (number of "Rush Hours")	2.2	2.1	2.1	2.2	2.1
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	15	7	5	7	7
Transit Riders or Carpoolers (millions)	2	1	1	1	1
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	106	80	66	72	59
Rank	89	90	90	90	90
Fuel per Peak Traveler (gallons)	2	2	1	1	1
Rank	87	86	89	90	89
Annual Delay					
Total Delay (1000s of person-hours)	192	143	118	128	105
Rank	89	90	90	90	90
Delay per Peak Traveler (person-hours)	3	3	2	2	2
Rank	88	88	89	90	89
Delay due to Incidents (percent)	53	53	53	53	53
Travel Time Index	1.04	1.03	1.03	1.03	1.03
Rank	73	80	79	75	72
Congestion Cost					
Total Cost (\$ millions)	3	2	1	1	1
Rank	89	89	90	90	89
Cost per Peak Traveler (\$)	45	34	27	29	25
Rank	88	90	89	90	90

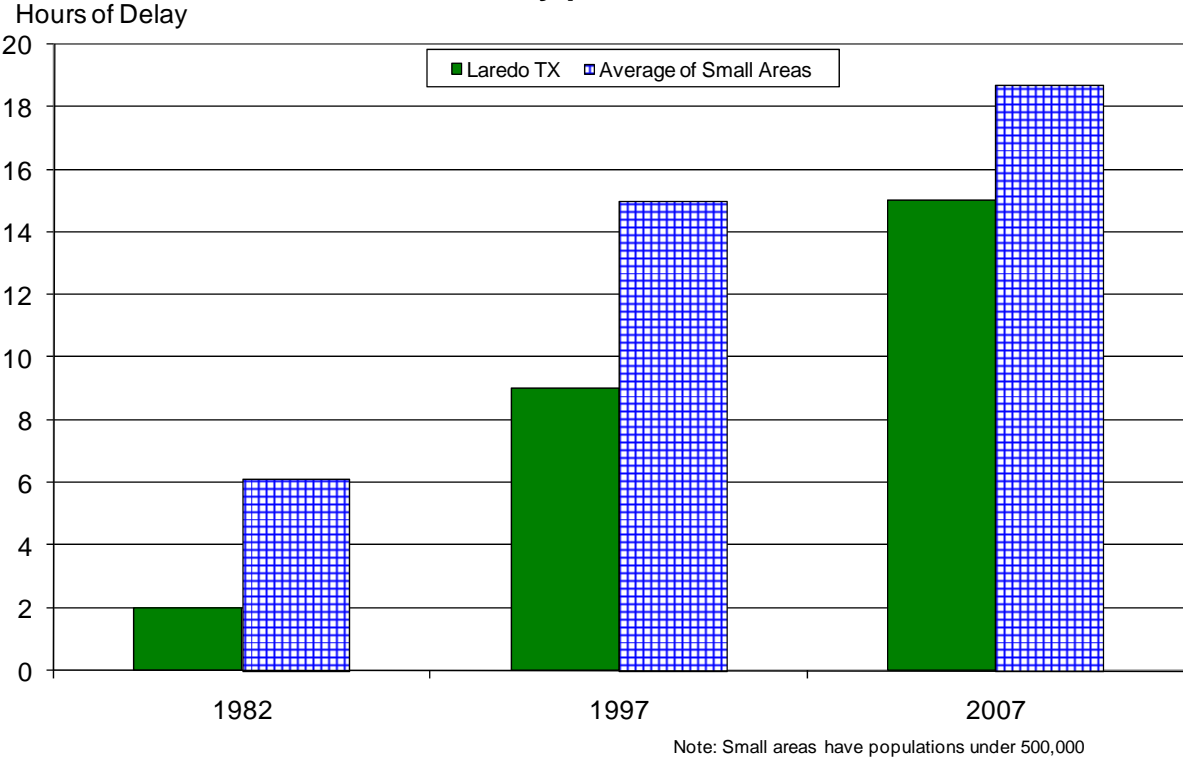
Note: System Performance statistics for 2000 through 2007 data reflect the effects of operational treatments.
 Note: Zeroes in the table reflect values less than 0.5.

The Mobility Data for Laredo TX, Continued

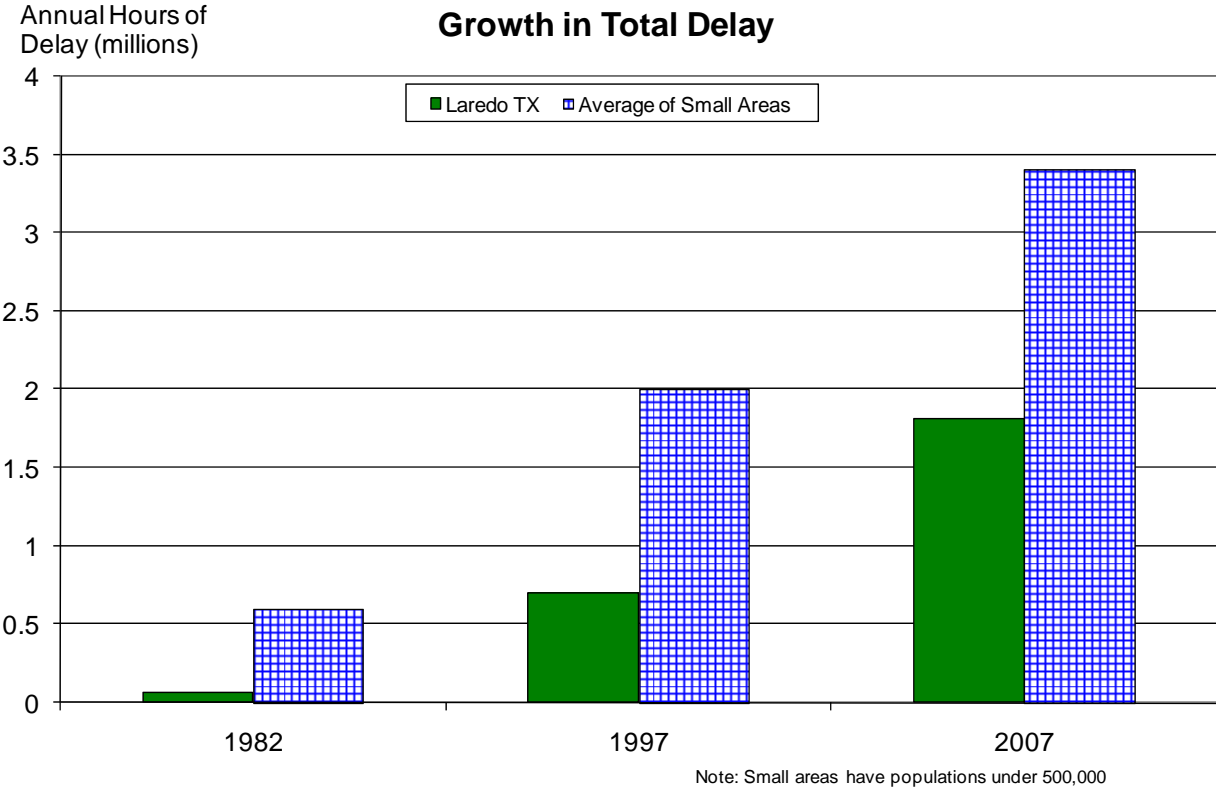
Inventory Measures	1986	1985	1984	1983	1982
Urban Area Information					
Population (1000s)	105	100	95	95	95
Rank	89	90	90	90	90
Urban Area (square miles)	30	30	25	25	25
Population Density (persons/sq mile)	3,500	3,333	3,800	3,800	3,800
Peak Travelers (1000s)	45	43	40	40	39
Freeway					
Daily Vehicle-Miles of Travel (1000s)	125	120	120	120	115
Lane-Miles	20	20	20	20	20
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	485	505	470	475	435
Lane-Miles	220	215	215	215	215
Public Transportation					
Annual Psgr-Miles of Travel (millions)	8.0	7.9	8.5	8.5	8.5
Annual Unlinked Psgr Trips (millions)	2.0	3.0	3.4	3.4	3.4
Cost Components					
Value of Time (\$/hour)	8.18	8.03	7.75	7.43	7.20
Commercial Cost (\$/hour)	52.63	55.80	54.65	52.70	52.13
Fuel Cost (\$/gallon)	0.97	1.27	1.28	1.31	1.37
System Performance	1986	1985	1984	1983	1982
Congested Travel (% of peak VMT)	9	9	7	7	7
Congested System (% of lane-miles)	14	14	14	14	14
Congested Time (number of "Rush Hours")	2.0	2.1	2.0	2.0	2.0
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	--	--	--	--	--
Transit Riders or Carpoolers (millions)	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	55	55	45	44	38
Rank	90	89	89	90	89
Fuel per Peak Traveler (gallons)	1	1	1	1	1
Rank	87	87	85	84	84
Annual Delay					
Total Delay (1000s of person-hours)	97	93	78	76	66
Rank	90	89	89	90	89
Delay per Peak Traveler (person-hours)	2	2	2	2	2
Rank	88	87	85	85	85
Delay due to Incidents (percent)	53	53	53	53	53
Travel Time Index	1.03	1.02	1.02	1.02	1.02
Rank	71	80	76	74	74
Congestion Cost					
Total Cost (\$ millions)	1	1	1	1	1
Rank	89	89	89	89	89
Cost per Peak Traveler (\$)	23	24	21	20	17
Rank	89	88	87	86	88

Note: System Performance statistics for 2000 through 2007 data reflect the effects of operational treatments.
 Note: Zeroes in the table reflect values less than 0.5.

Growth in Delay per Peak Traveler



Growth in Total Delay



**Benefits from Public Transportation Service and Operations Strategies in
Laredo TX**

Operations Strategies	2007	2006	2005	2004
Freeway Ramp Metering				
Percent of Roadway Miles	--	--	--	--
Annual Delay Reduction (1000 hours)	--	--	--	--
Freeway Incident Management				
Cameras				
Percent of Roadway Miles	30	30	30	31
Service Patrols				
Percent of Roadway Miles	--	--	--	--
Annual Delay Reduction (1000 hours)	0	0	0	0
Arterial Signal Coordination				
Percent of Roadway Miles	49	51	53	51
Annual Delay Reduction (1000 hours)	10	14	13	15
Arterial Access Management				
Percent of Roadway Miles	25	25	19	17
Annual Delay Reduction (1000 hours)	26	18	13	11
HOV Lanes				
Daily Passenger-miles of travel (1000s)	--	--	--	--
HOV User Delay Savings	--	--	--	--
Total Effect of Operations Treatments				
Annual Delay Reduction (1000 hours)	36	32	26	26
Annual Delay Saved per Peak Traveler (hours)	0	0	0	0
Annual Congestion Cost Savings (\$million)	0.8	0.6	0.5	0.5
Travel Time Index with Strategies	1.116	1.101	1.092	1.089
Travel Time Index (Base)	1.118	1.103	1.094	1.091
Public Transportation Service	2007	2006	2005	2004
Existing Service				
Annual Passenger-miles of travel (million)	13.6	13.1	12.2	16.1
Unlinked Passenger Trips (million)	4.4	4.2	4.0	3.7
Travel Time Index (combined road and transit)	1.117	1.101	1.092	1.089
Condition if Public Transportation Service were Discontinued				
Travel Time Index	1.122	1.106	1.097	1.095
Annual Increase				
Delay (1000 hours)	94	74	63	82
Delay per Peak Traveler (hours)	1	1	1	1
Congestion Cost (\$million)	1.9	1.5	1.2	1.5

**Benefits from Public Transportation Service and Operations Strategies in
Laredo TX, Continued**

Operations Strategies	2003	2002	2001	2000
Freeway Ramp Metering				
Percent of Roadway Miles	--	--	--	--
Annual Delay Reduction (1000 hours)	--	--	--	--
Freeway Incident Management				
Cameras				
Percent of Roadway Miles	31	--	--	--
Service Patrols				
Percent of Roadway Miles	--	--	--	--
Annual Delay Reduction (1000 hours)	0	--	--	--
Arterial Signal Coordination				
Percent of Roadway Miles	43	44	33	33
Annual Delay Reduction (1000 hours)	9	20	12	15
Arterial Access Management				
Percent of Roadway Miles	16	15	12	12
Annual Delay Reduction (1000 hours)	13	2	--	--
HOV Lanes				
Daily Passenger-miles of travel (1000s)	--	--	--	--
HOV User Delay Savings	--	--	--	--
Total Effect of Operations Treatments				
Annual Delay Reduction (1000 hours)	21	22	12	15
Annual Delay Saved per Peak Traveler (hours)	0	0	0	0
Annual Congestion Cost Savings (\$million)	0.4	0.4	0.2	0.3
Travel Time Index with Strategies	1.097	1.078	1.083	1.077
Travel Time Index (Base)	1.099	1.080	1.084	1.079
Public Transportation Service	2003	2002	2001	2000
Existing Service				
Annual Passenger-miles of travel (million)	21.7	21.7	21.7	21.2
Unlinked Passenger Trips (million)	5.0	4.6	4.9	4.8
Travel Time Index (combined road and transit)	1.096	1.077	1.081	1.076
Condition if Public Transportation Service were Discontinued				
Travel Time Index	1.104	1.084	1.087	1.082
Annual Increase				
Delay (1000 hours)	110	84	82	73
Delay per Peak Traveler (hours)	1	1	1	1
Congestion Cost (\$million)	1.9	1.4	1.4	1.2

**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 2007	
				Delay per Traveler	Total Delay
Knoxville, TN	H+	H	H+	F	F+
Charleston-North Charleston, SC	H+	H+	H+	F+	F+
Cape Coral, FL	H+	H+	H+	F+	F+
Columbia, SC	H	0	H+	F+	F+
Wichita, KS	L-	L-	L-	S-	S-
Little Rock, AR	H	0	H	F+	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-	L	L-	S-	S-
Salem, OR	L	0	L	0	S-
Beaumont, TX	L-	L-	L-	S-	S-
Laredo, TX	L	H	L-	0	S-
Brownsville, TX	L-	L	L-	S-	S-
Boulder, CO	L-	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

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
2007 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 2007 Trends Delay per Traveler - Total Delay -	5 Hours 5 Hours x Average Population	3 Hours 3 Hours x Average Population