Performance Measure Summary – Colorado Springs, CO

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 Colorado Springs CO

Inventory Measures	2007	2006	2005	2004	2003	2002
Urban Area Information						
Population (1000s)	510	505	490	480	480	475
Rank	73	73	73	71	71	71
Urban Area (square miles)	385	385	380	370	350	310
Population Density (persons/sq mile)	1,325	1,312	1,289	1,297	1,371	1,532
Peak Travelers (1000s)	281	276	266	259	258	252
Freeway						
Daily Vehicle-Miles of Travel (1000s)	4,065	4,060	4,125	3,705	3,435	3,300
Lane-Miles	330	325	325	325	290	275
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	5,200	5,410	5,415	5,200	4,970	4,720
Lane-Miles	1,310	1,310	1,305	1,280	1,175	1,055
Public Transportation						
Annual Psgr-Miles of Travel (millions)	26.7	24.9	16.9	10.5	12.3	14.2
Annual Unlinked Psgr Trips (millions)	3.7	3.5	2.7	2.8	3.4	3.8
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 ($/gallon)	3.20	2.60	2.32	1.94	1.51	1.39
System Performance	**2007**	**2006**	**2005**	**2004**	**2003**	**2002**
Congested Travel (% of peak VMT)	32	35	36	30	33	34
Congested System (% of lane-miles)	27	31	31	34	34	34
Congested Time (number of "Rush Hours")	4.4	4.8	4.8	4.0	4.4	4.6
Annual Increase Needed to Maintain Constant Congestion Level:						
Lane-miles	48	66	81	75	70	64
Transit Riders or Carpoolers (millions)	9	13	16	15	14	13
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	3,860	4,296	4,377	3,372	3,667	3,725
Rank	68	64	63	67	67	66
Fuel per Peak Traveler (gallons)	14	16	16	13	14	15
Rank	56	48	48	57	52	50
Annual Delay						
Total Delay (1000s of person-hours)	6,457	7,177	7,330	5,668	6,115	6,239
Rank	65	61	62	66	66	64
Delay per Peak Traveler (person-hours)	23	26	28	22	24	25
Rank	54	48	44	53	50	48
Delay due to Incidents (percent)	59	59	59	58	58	58
Travel Time Index	1.13	1.14	1.14	1.12	1.13	1.14
Rank	52	52	51	55	53	50
Congestion Cost						
Total Cost ($ millions)	129	137	135	99	103	103
Rank	67	64	62	66	66	64
Cost per Peak Traveler ($)	460	497	507	380	402	408
Rank	55	49	47	56	51	49

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 Colorado Springs CO, Continued

Inventory Measures	2001	2000	1999	1998	1997
Urban Area Information					
Population (1000s)	470	465	440	425	415
Rank	71	71	71	72	72
Urban Area (square miles)	280	265	245	240	235
Population Density (persons/sq mile)	1,679	1,755	1,796	1,771	1,766
Peak Travelers (1000s)	246	240	225	215	207
Freeway					
Daily Vehicle-Miles of Travel (1000s)	3,150	3,000	2,800	2,650	2,500
Lane-Miles	260	250	245	240	235
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	4,610	4,485	4,280	4,020	3,840
Lane-Miles	1,030	1,020	1,010	990	975
Public Transportation					
Annual Psgr-Miles of Travel (millions)	14.3	16.1	18.3	18.3	18.2
Annual Unlinked Psgr Trips (millions)	3.5	3.9	4.2	3.7	3.6
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 ($/gallon)	1.70	1.55	1.16	1.10	1.24
System Performance	**2001**	**2000**	**1999**	**1998**	**1997**
Congested Travel (% of peak VMT)	34	33	31	27	24
Congested System (% of lane-miles)	34	34	34	30	29
Congested Time (number of "Rush Hours")	4.8	4.6	4.2	3.8	3.4
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	73	71	68	63	60
Transit Riders or Carpoolers (millions)	15	14	14	12	11
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	3,686	3,492	2,926	2,359	1,950
Rank	66	66	66	68	69
Fuel per Peak Traveler (gallons)	15	15	13	11	9
Rank	47	48	57	62	66
Annual Delay					
Total Delay (1000s of person-hours)	6,198	5,901	4,858	3,917	3,219
Rank	64	64	65	65	69
Delay per Peak Traveler (person-hours)	25	25	22	18	16
Rank	47	46	53	62	64
Delay due to Incidents (percent)	59	59	59	59	58
Travel Time Index	1.15	1.14	1.13	1.11	1.09
Rank	45	49	49	57	62
Congestion Cost					
Total Cost ($ millions)	102	94	73	58	47
Rank	64	64	65	66	69
Cost per Peak Traveler ($)	415	393	325	269	227
Rank	47	48	57	62	64

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 Colorado Springs CO, Continued

Inventory Measures	1996	1995	1994	1993	1992
Urban Area Information					
Population (1000s)	400	385	370	355	340
Rank	71	72	72	73	73
Urban Area (square miles)	235	225	220	220	215
Population Density (persons/sq mile)	1,702	1,711	1,682	1,614	1,581
Peak Travelers (1000s)	197	187	178	168	159
Freeway					
Daily Vehicle-Miles of Travel (1000s)	2,260	2,185	2,000	1,890	1,815
Lane-Miles	230	230	230	230	230
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	3,650	3,530	3,420	3,310	3,170
Lane-Miles	965	945	930	915	905
Public Transportation					
Annual Psgr-Miles of Travel (millions)	18.2	15.2	15.2	15.2	17.5
Annual Unlinked Psgr Trips (millions)	3.6	4.1	4.1	4.1	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 ($/gallon)	1.36	1.22	1.16	1.21	1.23
System Performance	**1996**	**1995**	**1994**	**1993**	**1992**
Congested Travel (% of peak VMT)	21	20	19	16	14
Congested System (% of lane-miles)	25	25	25	20	20
Congested Time (number of "Rush Hours")	3.0	2.9	2.8	2.7	2.6
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	51	47	40	35	30
Transit Riders or Carpoolers (millions)	9	8	7	6	5
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	1,479	1,391	1,172	915	776
Rank	74	72	73	77	76
Fuel per Peak Traveler (gallons)	8	7	7	5	5
Rank	66	68	67	77	77
Annual Delay					
Total Delay (1000s of person-hours)	2,415	2,266	1,894	1,490	1,293
Rank	73	72	74	77	76
Delay per Peak Traveler (person-hours)	12	12	11	9	8
Rank	70	69	71	75	77
Delay due to Incidents (percent)	58	58	57	56	55
Travel Time Index	1.07	1.07	1.06	1.05	1.05
Rank	68	66	70	75	73
Congestion Cost					
Total Cost ($ millions)	35	32	26	20	17
Rank	73	72	73	77	76
Cost per Peak Traveler ($)	177	169	144	117	105
Rank	69	70	75	77	77

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 Colorado Springs CO, Continued

Inventory Measures	1991	1990	1989	1988	1987
Urban Area Information					
Population (1000s)	330	320	310	310	305
Rank	74	74	75	75	74
Urban Area (square miles)	210	205	200	200	195
Population Density (persons/sq mile)	1,571	1,561	1,550	1,550	1,564
Peak Travelers (1000s)	152	146	140	139	136
Freeway					
Daily Vehicle-Miles of Travel (1000s)	1,795	1,780	1,780	1,760	1,760
Lane-Miles	230	220	220	215	215
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	3,005	2,910	2,795	2,705	2,610
Lane-Miles	890	870	870	865	860
Public Transportation					
Annual Psgr-Miles of Travel (millions)	16.5	14.7	15.5	14.7	15.0
Annual Unlinked Psgr Trips (millions)	4.0	3.4	3.8	3.6	4.0
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 ($/gallon)	1.19	1.11	1.15	1.06	1.06
System Performance	**1991**	**1990**	**1989**	**1988**	**1987**
Congested Travel (% of peak VMT)	12	11	10	10	9
Congested System (% of lane-miles)	15	14	10	10	10
Congested Time (number of "Rush Hours")	2.6	2.6	2.6	2.5	2.5
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	28	29	46	59	68
Transit Riders or Carpoolers (millions)	4	4	7	8	10
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	581	526	430	416	401
Rank	79	79	82	81	80
Fuel per Peak Traveler (gallons)	4	4	3	3	3
Rank	77	74	80	75	75
Annual Delay					
Total Delay (1000s of person-hours)	959	869	705	684	659
Rank	80	80	82	81	80
Delay per Peak Traveler (person-hours)	6	6	5	5	5
Rank	81	78	81	77	75
Delay due to Incidents (percent)	55	54	54	54	54
Travel Time Index	1.04	1.03	1.03	1.03	1.03
Rank	73	80	79	75	72
Congestion Cost					
Total Cost ($ millions)	12	10	8	7	7
Rank	80	79	80	81	79
Cost per Peak Traveler ($)	79	71	57	53	50
Rank	82	84	84	81	77

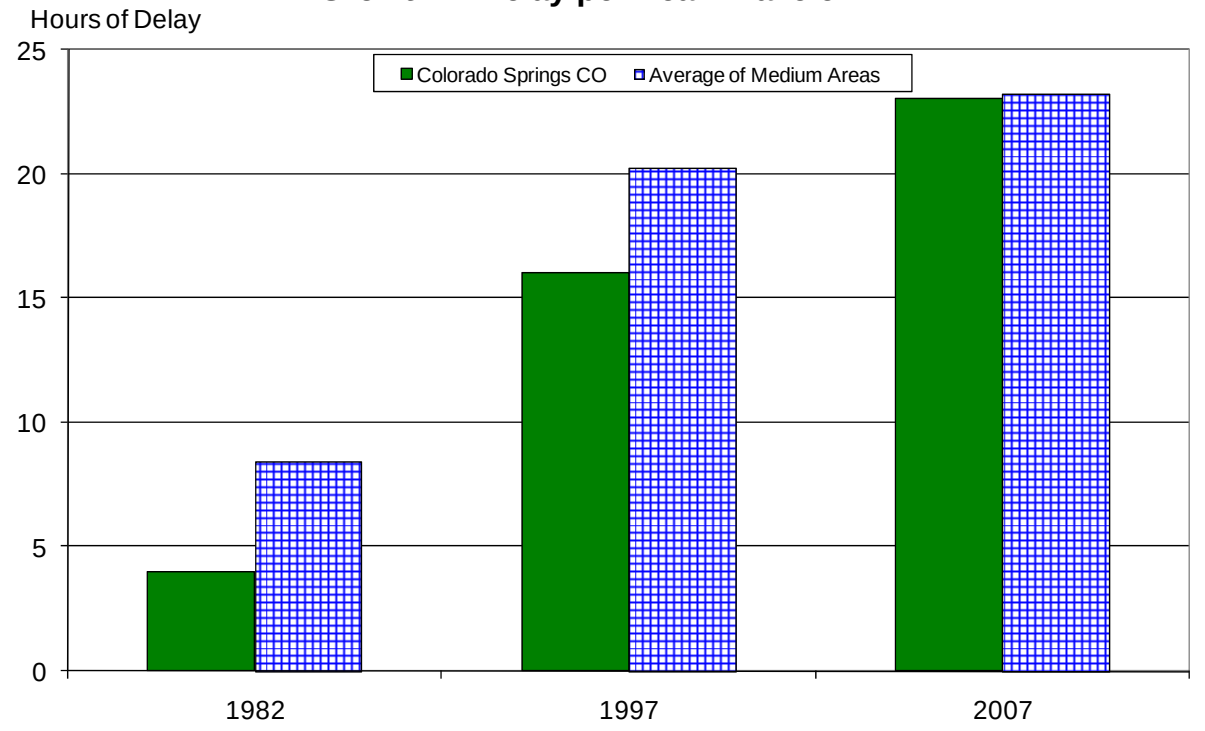
Note: System Performance statistics for 2000 through 2007 data reflect the effects of operational treatments.
Note: Zeroes in the table reflect values less than 0.5.

The Mobility Data for Colorado Springs CO, Continued

Inventory Measures	1986	1985	1984	1983	1982
Urban Area Information					
Population (1000s)	300	295	290	285	280
Rank	74	74	74	74	74
Urban Area (square miles)	190	185	180	180	175
Population Density (persons/sq mile)	1,579	1,595	1,611	1,583	1,600
Peak Travelers (1000s)	133	130	126	123	120
Freeway					
Daily Vehicle-Miles of Travel (1000s)	1,705	1,640	1,300	1,105	1,000
Lane-Miles	215	215	200	175	150
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	2,550	2,465	2,410	2,330	2,220
Lane-Miles	850	840	840	835	830
Public Transportation					
Annual Psgr-Miles of Travel (millions)	15.1	15.2	15.7	15.7	15.7
Annual Unlinked Psgr Trips (millions)	3.7	3.6	3.8	3.8	3.8
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 ($/gallon)	1.04	1.36	1.37	1.41	1.47
System Performance	**1986**	**1985**	**1984**	**1983**	**1982**
Congested Travel (% of peak VMT)	8	8	8	8	8
Congested System (% of lane-miles)	9	9	9	9	9
Congested Time (number of "Rush Hours")	2.5	2.4	2.2	2.2	2.2
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	- -	- -	- -	- -	- -
Transit Riders or Carpoolers (millions)	- -	- -	- -	- -	- -
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	365	339	304	284	273
Rank	81	79	79	78	78
Fuel per Peak Traveler (gallons)	3	3	2	2	2
Rank	72	71	73	73	72
Annual Delay					
Total Delay (1000s of person-hours)	615	578	534	493	475
Rank	81	79	79	78	79
Delay per Peak Traveler (person-hours)	5	4	4	4	4
Rank	75	76	72	71	69
Delay due to Incidents (percent)	54	53	53	53	53
Travel Time Index	1.02	1.02	1.02	1.02	1.02
Rank	80	80	76	74	74
Congestion Cost					
Total Cost ($ millions)	6	6	5	5	4
Rank	81	77	79	76	79
Cost per Peak Traveler ($)	46	45	42	38	37
Rank	76	77	74	73	74

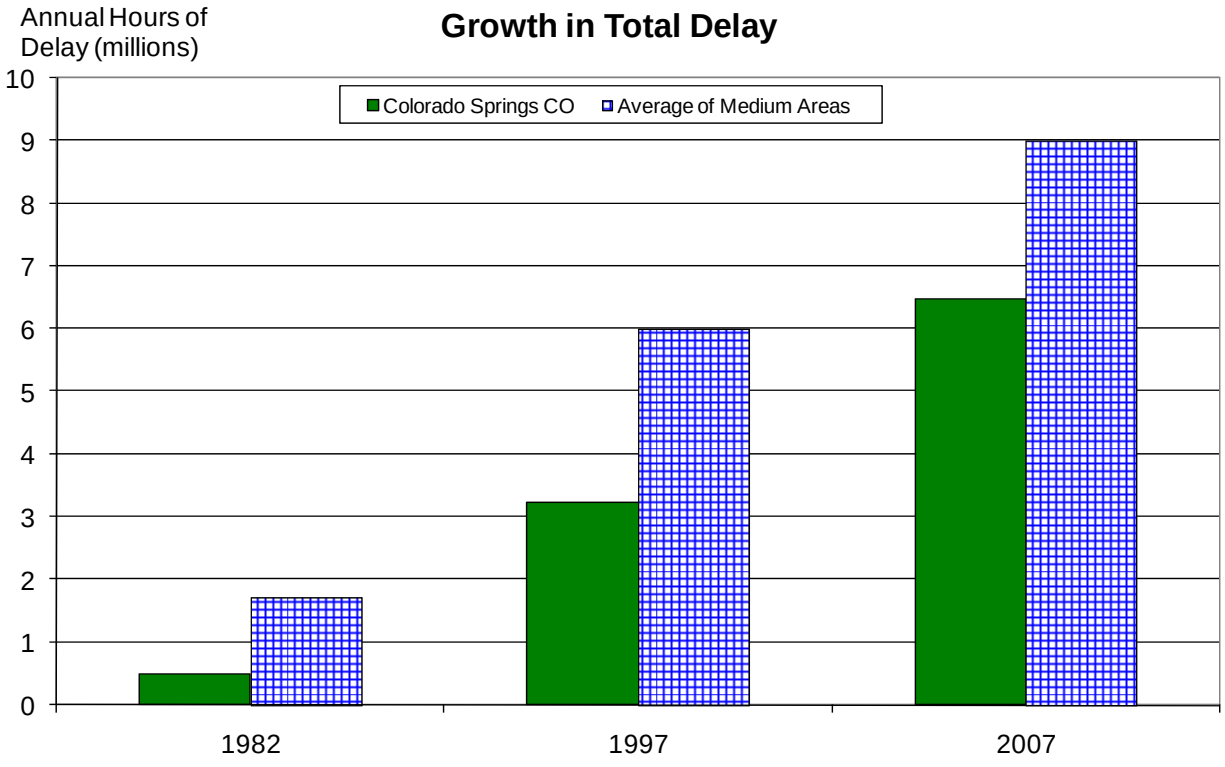
Note: System Performance statistics for 2000 through 2007 data reflect the effects of operational treatments.
Note: Zeroes in the table reflect values less than 0.5.

Growth in Delay per Peak Traveler



Note: Medium areas have populations between 0.5 and 1 million

Growth in Total Delay



Note: Medium areas have populations between 0.5 and 1 million

Benefits from Public Transportation Service and Operations Strategies in Colorado Springs CO

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	25	26	26	26
Service Patrols				
Percent of Roadway Miles	--	--	--	--
Annual Delay Reduction (1000 hours)	14	15	15	10
Arterial Signal Coordination				
Percent of Roadway Miles	53	53	54	53
Annual Delay Reduction (1000 hours)	60	71	71	49
Arterial Access Management				
Percent of Roadway Miles	31	31	31	31
Annual Delay Reduction (1000 hours)	123	169	159	171
HOV Lanes				
Daily Passenger-miles of travel (1000s)	--	--	--	--
HOV User Delay Savings	--	--	--	--
Total Effect of Operations Treatments				
Annual Delay Reduction (1000 hours)	197	255	245	229
Annual Delay Saved per Peak Traveler (hours)	1	1	1	1
Annual Congestion Cost Savings ($million)	3.8	4.7	4.4	3.9
Travel Time Index with Strategies	1.128	1.140	1.142	1.116
Travel Time Index (Base)	1.131	1.144	1.146	1.119
Public Transportation Service	**2007**	**2006**	**2005**	**2004**
Existing Service				
Annual Passenger-miles of travel (million)	26.7	24.9	16.9	10.5
Unlinked Passenger Trips (million)	3.7	3.5	2.7	2.8
Travel Time Index (combined road and transit)	1.130	1.143	1.145	1.119
Condition if Public Transportation Service were Discontinued				
Travel Time Index	1.134	1.148	1.149	1.121
Annual Increase				
Delay (1000 hours)	222	261	204	127
Delay per Peak Traveler (hours)	1	1	1	0
Congestion Cost ($million)	4.4	5.0	3.7	2.2

Benefits from Public Transportation Service and Operations Strategies in Colorado Springs CO, 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	30	30	--	--
Service Patrols				
Percent of Roadway Miles	--	--	--	--
Annual Delay Reduction (1000 hours)	13	15	--	--
Arterial Signal Coordination				
Percent of Roadway Miles	51	52	49	49
Annual Delay Reduction (1000 hours)	61	54	94	49
Arterial Access Management				
Percent of Roadway Miles	35	39	38	38
Annual Delay Reduction (1000 hours)	150	139	161	101
HOV Lanes				
Daily Passenger-miles of travel (1000s)	--	--	--	--
HOV User Delay Savings	--	--	--	--
Total Effect of Operations Treatments				
Annual Delay Reduction (1000 hours)	224	208	255	150
Annual Delay Saved per Peak Traveler (hours)	1	1	1	1
Annual Congestion Cost Savings ($million)	3.7	3.3	4.0	2.3
Travel Time Index with Strategies	1.135	1.144	1.147	1.144
Travel Time Index (Base)	1.138	1.147	1.152	1.147
Public Transportation Service	**2003**	**2002**	**2001**	**2000**
Existing Service				
Annual Passenger-miles of travel (million)	12.3	14.2	14.3	16.1
Unlinked Passenger Trips (million)	3.4	3.8	3.5	3.9
Travel Time Index (combined road and transit)	1.138	1.147	1.151	1.146
Condition if Public Transportation Service were Discontinued				
Travel Time Index	1.140	1.148	1.153	1.149
Annual Increase				
Delay (1000 hours)	109	67	126	139
Delay per Peak Traveler (hours)	0	0	1	1
Congestion Cost ($million)	1.8	1.1	2.1	2.2

Comparison of Several Key Mobility Performance Measures
Medium Group – 500,000 to 1 million population urban areas

Urban Area	Delay per Traveler	Travel Time Index	Total Delay	1982 to 2007	
				Delay per Traveler	Total Delay
Nashville-Davidson, TN	H+	0	H+	F	F+
Salt Lake City, UT	H	H+	H+	F	F+
Richmond ,VA	L	L-	H	0	F+
Louisville, KY-IN	H+	H+	H+	F+	F+
Hartford, CT	L	L	H	F	F+
Bridgeport-Stamford, CT-NY	H+	H+	H+	F+	F+
Oklahoma City, OK	H	L	H+	F+	F+
Tulsa, OK	0	L	0	0	F
Tucson, AZ	H+	H+	H+	F	F+
Dayton, OH	L-	L-	L-	S-	S-
Rochester, NY	L-	L-	L-	S-	S-
Birmingham, AL	H+	0	H+	F+	F+
Lancaster-Palmdale, CA	L-	L	L-	S-	S-
Honolulu, HI	H	H+	H	S	S
El Paso, TX-NM	L	L	L	0	S
Oxnard-Ventura, CA	H+	H+	H+	F+	F+
Sarasota-Bradenton ,FL	H	H+	0	S-	0
Springfield, MA-CT	L-	L-	L-	S-	S-
Omaha, NE-IA	H	H	0	F+	F
Fresno, CA	L	0	L	S-	S-
Allentown-Bethlehem, PA-NJ	0	0	L	S	S-
Akron, OH	L-	L-	L-	S-	S-
Grand Rapids, MI	0	L	L	0	S
Albany-Schenectady, NY	L	L	L	0	S-
Albuquerque, NM	H+	H	H	F+	F+
New Haven, CT	L	L	L-	0	S-
Indio-Cathedral City-Palm Springs, CA	L-	0	L-	S-	S-
Toledo, OH-MI	L-	L-	L-	S	S-
Poughkeepsie-Newburgh, NY	L-	L-	L-	S-	S-
Bakersfield, CA	L-	L-	L-	S-	S-
Colorado Springs, CO	0	0	L	F	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	
2007 Values	**Above 1M Population**	**Below 1M Population**
Delay per Traveler -	5 Hours	3 Hours
Travel Time Index -	5 Index Points	3 Index Points
Total Delay -	5 Hours x Average Population	3 Hours x Average Population
1982 to 2007 Trends		
Delay per Traveler -	5 Hours	3 Hours
Total Delay -	5 Hours x Average Population	3 Hours x Average Population