

Performance Measure Summary – Bridgeport-Stamford, CT-NY

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 Bridgeport-Stamford CT-NY

Inventory Measures	2007	2006	2005	2004	2003	2002
Urban Area Information						
Population (1000s)	875	875	870	865	860	850
Rank	49	49	49	49	49	48
Urban Area (square miles)	475	475	475	475	470	470
Population Density (persons/sq mile)	1,842	1,842	1,832	1,821	1,830	1,809
Peak Travelers (1000s)	481	479	472	467	462	451
Freeway						
Daily Vehicle-Miles of Travel (1000s)	10,550	10,490	10,380	10,200	10,000	10,170
Lane-Miles	605	605	605	600	600	600
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	6,230	6,190	6,180	6,185	6,200	6,090
Lane-Miles	1,375	1,375	1,375	1,375	1,375	1,375
Public Transportation						
Annual Psgr-Miles of Travel (millions)	27.0	29.0	28.4	31.5	32.7	33.5
Annual Unlinked Psgr Trips (millions)	10.4	10.1	9.8	9.9	10.2	11.1
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)	3.23	2.83	2.35	2.08	1.60	1.46
System Performance	2007	2006	2005	2004	2003	2002
Congested Travel (% of peak VMT)	64	64	61	60	60	60
Congested System (% of lane-miles)	42	42	41	41	39	39
Congested Time (number of "Rush Hours")	7.4	7.4	7.4	7.2	7.2	7.2
Annual Increase Needed to Maintain Constant Congestion Level:						
Lane-miles	13	27	42	50	62	78
Transit Riders or Carpoolers (millions)	4	8	12	15	17	22
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	12,760	12,554	11,728	10,990	11,313	11,308
Rank	36	37	38	39	39	37
Fuel per Peak Traveler (gallons)	27	26	25	24	24	25
Rank	23	29	33	32	32	24
Annual Delay						
Total Delay (1000s of person-hours)	16,077	15,784	14,836	13,805	14,417	14,281
Rank	40	40	43	45	45	42
Delay per Peak Traveler (person-hours)	33	33	31	30	31	32
Rank	38	36	41	40	38	37
Delay due to Incidents (percent)	57	57	57	57	57	56
Travel Time Index	1.25	1.25	1.23	1.22	1.23	1.22
Rank	26	26	29	30	29	29
Congestion Cost						
Total Cost (\$ millions)	350	332	296	259	259	250
Rank	40	40	40	44	45	42
Cost per Peak Traveler (\$)	727	693	627	555	560	553
Rank	38	36	39	41	36	36

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 Bridgeport-Stamford CT-NY, Continued

Inventory Measures	2001	2000	1999	1998	1997
Urban Area Information					
Population (1000s)	820	800	785	775	760
Rank	48	48	46	46	46
Urban Area (square miles)	455	440	425	415	410
Population Density (persons/sq mile)	1,802	1,818	1,847	1,867	1,854
Peak Travelers (1000s)	430	414	401	391	378
Freeway					
Daily Vehicle-Miles of Travel (1000s)	9,700	9,300	9,000	8,700	8,400
Lane-Miles	590	580	570	560	555
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	5,860	5,620	5,430	5,210	5,005
Lane-Miles	1,350	1,325	1,310	1,295	1,260
Public Transportation					
Annual Psgr-Miles of Travel (millions)	28.0	26.0	25.4	24.6	22.0
Annual Unlinked Psgr Trips (millions)	10.0	9.5	9.1	8.8	9.2
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)	1.77	1.70	1.24	1.22	1.39
System Performance	2001	2000	1999	1998	1997
Congested Travel (% of peak VMT)	57	56	55	55	54
Congested System (% of lane-miles)	38	38	38	41	41
Congested Time (number of "Rush Hours")	7.2	7.0	6.8	6.6	6.4
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	72	62	60	56	45
Transit Riders or Carpoolers (millions)	20	17	16	15	11
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	10,090	9,707	9,048	8,214	7,256
Rank	38	37	39	39	41
Fuel per Peak Traveler (gallons)	23	23	23	21	19
Rank	28	25	23	28	36
Annual Delay					
Total Delay (1000s of person-hours)	13,104	12,424	11,528	10,402	9,222
Rank	45	44	43	45	46
Delay per Peak Traveler (person-hours)	30	30	29	27	24
Rank	39	37	40	43	44
Delay due to Incidents (percent)	56	56	56	56	55
Travel Time Index	1.21	1.21	1.20	1.19	1.17
Rank	30	29	28	27	36
Congestion Cost					
Total Cost (\$ millions)	227	209	183	161	143
Rank	42	43	44	45	46
Cost per Peak Traveler (\$)	528	506	457	411	377
Rank	36	37	41	42	43

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 Bridgeport-Stamford CT-NY, Continued

Inventory Measures	1996	1995	1994	1993	1992
Urban Area Information					
Population (1000s)	750	735	725	720	715
Rank	46	46	46	45	45
Urban Area (square miles)	390	370	350	330	310
Population Density (persons/sq mile)	1,923	1,986	2,071	2,182	2,306
Peak Travelers (1000s)	369	357	348	341	335
Freeway					
Daily Vehicle-Miles of Travel (1000s)	8,100	7,985	7,700	7,480	7,455
Lane-Miles	550	540	535	525	520
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	4,860	4,750	4,610	4,505	4,430
Lane-Miles	1,230	1,205	1,180	1,145	1,110
Public Transportation					
Annual Psgr-Miles of Travel (millions)	22.3	19.4	20.6	20.3	22.9
Annual Unlinked Psgr Trips (millions)	9.3	8.4	8.4	8.8	9.9
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)	1.47	1.34	1.18	1.23	1.26
System Performance	1996	1995	1994	1993	1992
Congested Travel (% of peak VMT)	50	51	49	47	48
Congested System (% of lane-miles)	38	38	38	38	38
Congested Time (number of "Rush Hours")	6.2	6.2	6.0	5.8	6.0
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	43	33	19	12	16
Transit Riders or Carpoolers (millions)	11	8	5	3	4
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	6,199	6,314	5,658	5,079	5,063
Rank	43	42	40	40	39
Fuel per Peak Traveler (gallons)	17	18	16	15	15
Rank	37	31	35	35	31
Annual Delay					
Total Delay (1000s of person-hours)	7,777	7,907	7,093	6,438	6,599
Rank	48	44	44	45	41
Delay per Peak Traveler (person-hours)	21	22	20	19	20
Rank	50	42	46	48	38
Delay due to Incidents (percent)	55	55	54	54	54
Travel Time Index	1.15	1.16	1.14	1.13	1.13
Rank	38	31	37	34	34
Congestion Cost					
Total Cost (\$ millions)	119	117	101	89	88
Rank	46	44	44	44	41
Cost per Peak Traveler (\$)	322	327	290	262	264
Rank	49	43	45	48	40

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 Bridgeport-Stamford CT-NY, Continued

Inventory Measures	1991	1990	1989	1988	1987
Urban Area Information					
Population (1000s)	715	715	715	715	715
Rank	44	43	42	42	42
Urban Area (square miles)	310	310	305	305	305
Population Density (persons/sq mile)	2,306	2,306	2,344	2,344	2,344
Peak Travelers (1000s)	330	326	323	321	318
Freeway					
Daily Vehicle-Miles of Travel (1000s)	7,150	7,300	7,400	7,370	7,125
Lane-Miles	520	515	515	510	510
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	4,345	4,300	4,255	4,210	4,195
Lane-Miles	1,085	1,060	1,040	1,010	995
Public Transportation					
Annual Psgr-Miles of Travel (millions)	21.9	15.1	14.3	19.7	14.2
Annual Unlinked Psgr Trips (millions)	9.5	7.5	7.8	8.8	8.6
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)	1.23	1.12	1.21	1.12	1.12
System Performance	1991	1990	1989	1988	1987
Congested Travel (% of peak VMT)	43	45	44	45	43
Congested System (% of lane-miles)	33	33	33	30	30
Congested Time (number of "Rush Hours")	5.6	5.8	6.0	6.0	5.8
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	18	28	46	59	56
Transit Riders or Carpoolers (millions)	5	7	12	16	15
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	4,376	4,385	4,473	4,549	4,350
Rank	40	37	35	33	32
Fuel per Peak Traveler (gallons)	13	13	14	14	14
Rank	36	34	24	23	19
Annual Delay					
Total Delay (1000s of person-hours)	5,710	5,587	5,489	5,616	5,572
Rank	44	43	40	36	35
Delay per Peak Traveler (person-hours)	17	17	17	17	18
Rank	46	44	40	37	30
Delay due to Incidents (percent)	54	54	56	55	55
Travel Time Index	1.12	1.12	1.12	1.12	1.12
Rank	35	34	25	24	22
Congestion Cost					
Total Cost (\$ millions)	74	70	67	65	62
Rank	43	42	37	35	35
Cost per Peak Traveler (\$)	224	213	206	202	194
Rank	46	44	40	35	31

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

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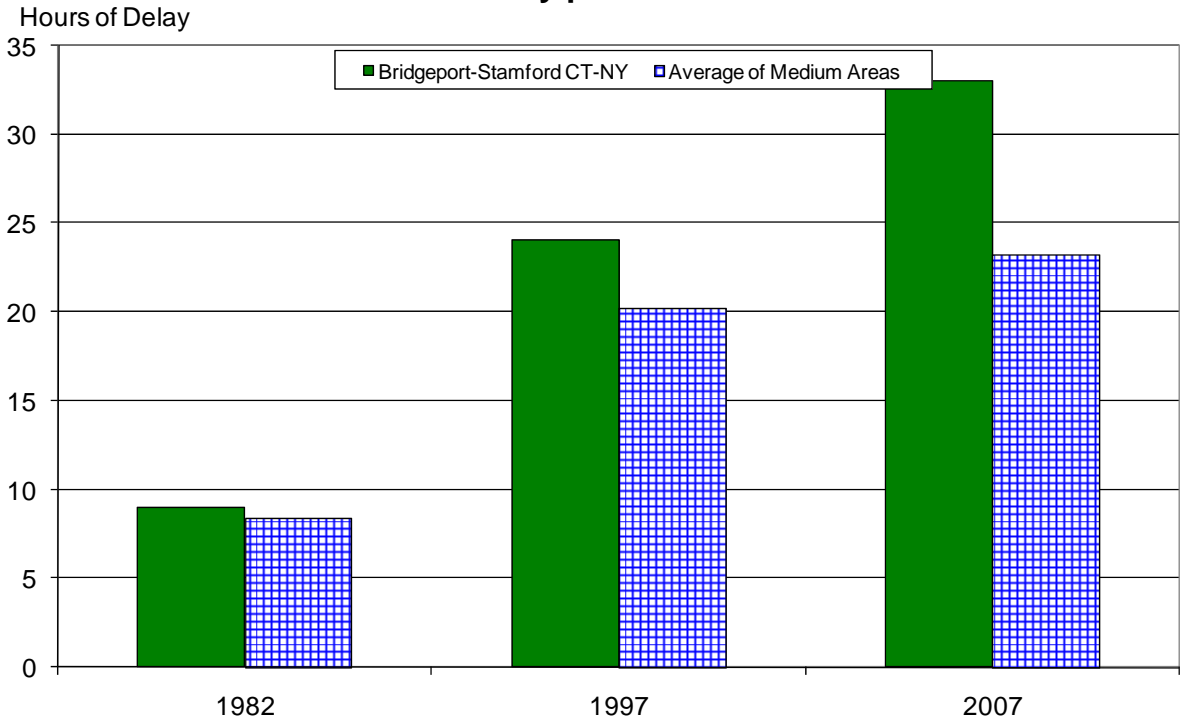
The Mobility Data for Bridgeport-Stamford CT-NY, Continued

Inventory Measures	1986	1985	1984	1983	1982
Urban Area Information					
Population (1000s)	710	710	710	705	705
Rank	41	41	41	40	40
Urban Area (square miles)	300	300	300	300	295
Population Density (persons/sq mile)	2,367	2,367	2,367	2,350	2,390
Peak Travelers (1000s)	314	312	309	305	301
Freeway					
Daily Vehicle-Miles of Travel (1000s)	6,700	6,500	6,040	5,575	5,470
Lane-Miles	510	505	505	500	500
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	4,160	4,100	4,040	4,010	3,975
Lane-Miles	980	970	950	935	925
Public Transportation					
Annual Psgr-Miles of Travel (millions)	1.4	1.8	1.6	1.6	1.6
Annual Unlinked Psgr Trips (millions)	8.5	8.2	6.7	6.7	6.7
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)	1.09	1.43	1.44	1.48	1.55
System Performance	1986	1985	1984	1983	1982
Congested Travel (% of peak VMT)	38	36	32	27	26
Congested System (% of lane-miles)	29	29	29	27	27
Congested Time (number of "Rush Hours")	5.4	5.2	4.4	3.8	3.8
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	--	--	--	--	--
Transit Riders or Carpoolers (millions)	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	3,662	3,034	2,464	2,009	1,939
Rank	34	33	35	36	35
Fuel per Peak Traveler (gallons)	12	10	8	7	6
Rank	22	30	34	33	36
Annual Delay					
Total Delay (1000s of person-hours)	4,913	3,984	3,259	2,727	2,634
Rank	35	36	37	40	35
Delay per Peak Traveler (person-hours)	16	13	11	9	9
Rank	34	37	42	47	46
Delay due to Incidents (percent)	56	56	55	56	56
Travel Time Index	1.10	1.09	1.07	1.06	1.06
Rank	24	30	34	39	37
Congestion Cost					
Total Cost (\$ millions)	52	43	34	27	26
Rank	35	36	37	37	35
Cost per Peak Traveler (\$)	166	138	110	90	86
Rank	33	39	45	48	46

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.

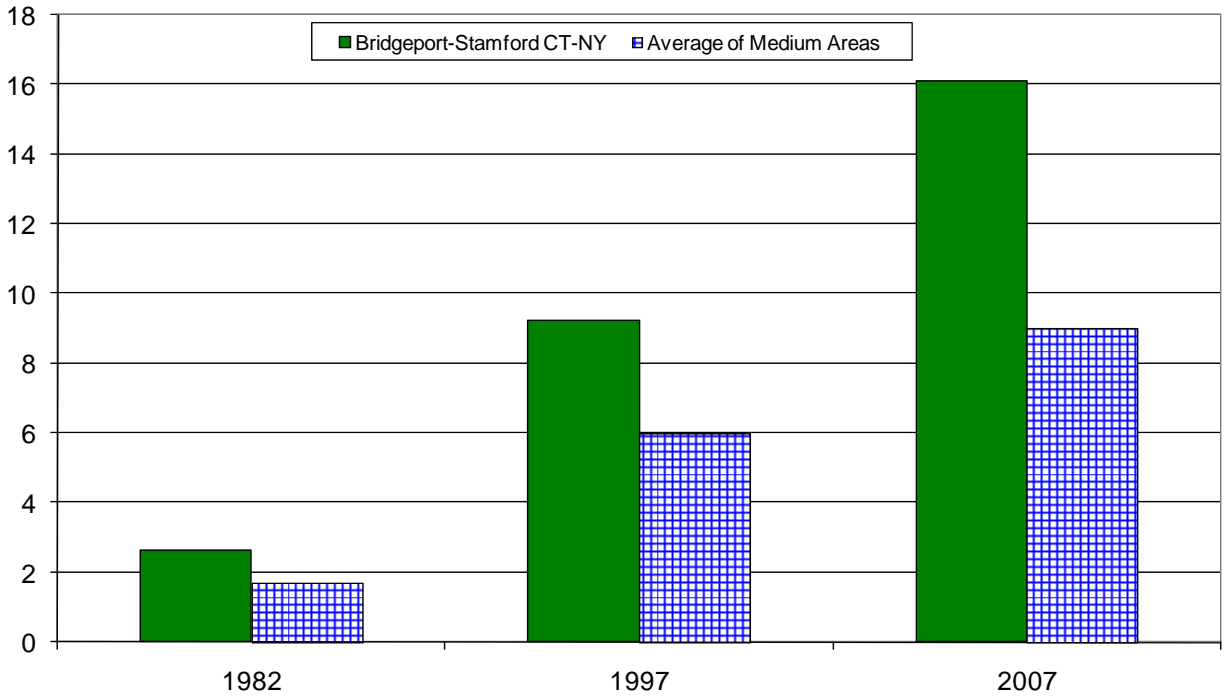
Growth in Delay per Peak Traveler



Note: Medium areas have populations between 0.5 and 1 million

Annual Hours of Delay (millions)

Growth in Total Delay



Note: Medium areas have populations between 0.5 and 1 million

**Benefits from Public Transportation Service and Operations Strategies in
Bridgeport-Stamford CT-NY**

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	42	42	42	42
Service Patrols				
Percent of Roadway Miles	47	47	47	47
Annual Delay Reduction (1000 hours)	605	589	522	433
Arterial Signal Coordination				
Percent of Roadway Miles	47	46	45	45
Annual Delay Reduction (1000 hours)	90	87	89	90
Arterial Access Management				
Percent of Roadway Miles	7	7	7	7
Annual Delay Reduction (1000 hours)	49	49	51	59
HOV Lanes				
Daily Passenger-miles of travel (1000s)	--	--	--	--
HOV User Delay Savings	--	--	--	--
Total Effect of Operations Treatments				
Annual Delay Reduction (1000 hours)	744	725	661	582
Annual Delay Saved per Peak Traveler (hours)	2	2	1	1
Annual Congestion Cost Savings (\$million)	16.4	15.5	13.4	11.2
Travel Time Index with Strategies	1.248	1.246	1.229	1.216
Travel Time Index (Base)	1.259	1.256	1.239	1.224
Public Transportation Service	2007	2006	2005	2004
Existing Service				
Annual Passenger-miles of travel (million)	27.0	29.0	28.4	31.5
Unlinked Passenger Trips (million)	10.4	10.1	9.8	9.9
Travel Time Index (combined road and transit)	1.258	1.255	1.238	1.223
Condition if Public Transportation Service were Discontinued				
Travel Time Index	1.261	1.259	1.241	1.226
Annual Increase				
Delay (1000 hours)	248	306	228	231
Delay per Peak Traveler (hours)	1	1	0	0
Congestion Cost (\$million)	5.4	6.5	4.6	4.4

**Benefits from Public Transportation Service and Operations Strategies in
Bridgeport-Stamford CT-NY, 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	42	42	42	43
Service Patrols				
Percent of Roadway Miles	47	42	42	43
Annual Delay Reduction (1000 hours)	475	409	360	338
Arterial Signal Coordination				
Percent of Roadway Miles	44	29	24	25
Annual Delay Reduction (1000 hours)	88	80	84	80
Arterial Access Management				
Percent of Roadway Miles	7	7	6	6
Annual Delay Reduction (1000 hours)	50	46	80	82
HOV Lanes				
Daily Passenger-miles of travel (1000s)	--	--	--	--
HOV User Delay Savings	--	--	--	--
Total Effect of Operations Treatments				
Annual Delay Reduction (1000 hours)	613	535	524	500
Annual Delay Saved per Peak Traveler (hours)	1	1	1	1
Annual Congestion Cost Savings (\$million)	11.2	9.5	9.1	8.5
Travel Time Index with Strategies	1.226	1.225	1.208	1.209
Travel Time Index (Base)	1.235	1.233	1.215	1.216
Public Transportation Service	2003	2002	2001	2000
Existing Service				
Annual Passenger-miles of travel (million)	32.7	33.5	28.0	26.0
Unlinked Passenger Trips (million)	10.2	11.1	10.0	9.5
Travel Time Index (combined road and transit)	1.233	1.231	1.214	1.215
Condition if Public Transportation Service were Discontinued				
Travel Time Index	1.237	1.235	1.218	1.220
Annual Increase				
Delay (1000 hours)	258	293	250	279
Delay per Peak Traveler (hours)	1	1	1	1
Congestion Cost (\$million)	4.7	5.2	4.4	4.7

**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	
	Above 1M Population	Below 1M Population
2007 Values Delay per Traveler - Travel Time Index - Total Delay -	Above 1M Population 5 Hours 5 Index Points 5 Hours x Average Population	Below 1M 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