

Performance Measure Summary – Atlanta, GA

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 Atlanta GA

Inventory Measures	2007	2006	2005	2004	2003	2002
Urban Area Information						
Population (1000s)	4,440	4,300	4,200	4,120	4,050	3,975
Rank	8	8	9	9	9	10
Urban Area (square miles)	3,075	3,060	3,045	3,025	2,960	2,850
Population Density (persons/sq mile)	1,444	1,405	1,379	1,362	1,368	1,395
Peak Travelers (1000s)	2,371	2,279	2,209	2,151	2,098	2,023
Freeway						
Daily Vehicle-Miles of Travel (1000s)	47,830	48,055	49,200	49,000	48,500	47,390
Lane-Miles	2,525	2,525	2,530	2,530	2,510	2,470
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	44,825	44,630	45,000	44,850	44,000	42,500
Lane-Miles	7,570	7,520	7,500	7,200	6,900	6,600
Public Transportation						
Annual Psgr-Miles of Travel (millions)	911	889	811	803	780	856
Annual Unlinked Psgr Trips (millions)	159	150	150	148	149	166
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	2.59	2.23	1.83	1.14	1.24
System Performance	2007	2006	2005	2004	2003	2002
Congested Travel (% of peak VMT)	75	76	76	77	77	79
Congested System (% of lane-miles)	58	58	58	58	58	62
Congested Time (number of "Rush Hours")	7.8	7.8	8.0	8.0	8.0	8.0
Annual Increase Needed to Maintain Constant Congestion Level:						
Lane-miles	61	124	195	237	301	320
Transit Riders or Carpoolers (millions)	20	40	64	79	103	110
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	95,936	95,033	96,767	92,307	91,353	88,096
Rank	6	7	5	5	5	5
Fuel per Peak Traveler (gallons)	40	42	44	43	44	44
Rank	3	3	2	2	2	2
Annual Delay						
Total Delay (1000s of person-hours)	135,335	133,712	134,907	128,302	126,259	122,672
Rank	6	7	6	7	6	5
Delay per Peak Traveler (person-hours)	57	59	61	60	60	61
Rank	3	2	2	3	2	2
Delay due to Incidents (percent)	53	53	53	53	53	52
Travel Time Index	1.35	1.34	1.35	1.33	1.33	1.33
Rank	10	10	8	8	8	7
Congestion Cost						
Total Cost (\$ millions)	2,981	2,841	2,743	2,460	2,295	2,170
Rank	4	5	5	5	5	4
Cost per Peak Traveler (\$)	1,257	1,247	1,242	1,144	1,094	1,072
Rank	3	2	2	2	2	2

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 Atlanta GA, Continued

Inventory Measures	2001	2000	1999	1998	1997
Urban Area Information					
Population (1000s)	3,850	3,775	3,690	3,575	3,450
Rank	11	11	11	11	11
Urban Area (square miles)	2,750	2,660	2,550	2,430	2,350
Population Density (persons/sq mile)	1,400	1,419	1,447	1,471	1,468
Peak Travelers (1000s)	1,929	1,861	1,790	1,705	1,618
Freeway					
Daily Vehicle-Miles of Travel (1000s)	46,150	45,800	44,630	42,000	39,650
Lane-Miles	2,425	2,400	2,350	2,300	2,240
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	41,000	39,750	38,600	37,000	35,900
Lane-Miles	6,250	6,030	5,800	5,500	5,200
Public Transportation					
Annual Psgr-Miles of Travel (millions)	874	803	808	765	835
Annual Unlinked Psgr Trips (millions)	167	170	166	161	173
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)	1.39	1.41	0.98	0.93	1.03
System Performance	2001	2000	1999	1998	1997
Congested Travel (% of peak VMT)	76	76	74	70	67
Congested System (% of lane-miles)	61	59	58	56	53
Congested Time (number of "Rush Hours")	8.0	8.0	8.0	7.8	7.8
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	359	399	417	464	516
Transit Riders or Carpoolers (millions)	125	141	148	163	182
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	82,504	79,329	72,647	69,718	62,704
Rank	5	4	4	5	6
Fuel per Peak Traveler (gallons)	43	43	41	41	39
Rank	2	2	2	2	2
Annual Delay					
Total Delay (1000s of person-hours)	116,610	111,890	102,983	100,348	90,695
Rank	5	5	4	4	6
Delay per Peak Traveler (person-hours)	60	60	58	59	56
Rank	3	3	3	3	3
Delay due to Incidents (percent)	52	52	52	52	53
Travel Time Index					
	1.31	1.31	1.29	1.29	1.27
Rank	10	8	9	7	7
Congestion Cost					
Total Cost (\$ millions)	2,050	1,923	1,657	1,586	1,430
Rank	4	4	4	4	5
Cost per Peak Traveler (\$)	1,063	1,033	926	930	884
Rank	2	2	3	2	3

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 Atlanta GA, Continued

Inventory Measures	1996	1995	1994	1993	1992
Urban Area Information					
Population (1000s)	3,330	3,250	3,150	3,060	2,970
Rank	11	11	11	11	11
Urban Area (square miles)	2,260	2,150	2,080	2,000	1,950
Population Density (persons/sq mile)	1,473	1,512	1,514	1,530	1,523
Peak Travelers (1000s)	1,538	1,476	1,408	1,346	1,286
Freeway					
Daily Vehicle-Miles of Travel (1000s)	36,750	35,395	33,840	30,675	27,510
Lane-Miles	2,200	2,190	2,155	2,120	2,040
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	34,400	32,500	31,000	28,500	26,510
Lane-Miles	4,900	4,750	4,500	4,250	4,000
Public Transportation					
Annual Psgr-Miles of Travel (millions)	688	644	617	582	596
Annual Unlinked Psgr Trips (millions)	148	147	146	141	144
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)	1.13	1.05	0.94	0.97	0.99
System Performance	1996	1995	1994	1993	1992
Congested Travel (% of peak VMT)	64	63	60	56	51
Congested System (% of lane-miles)	52	52	50	48	45
Congested Time (number of "Rush Hours")	7.6	7.4	7.4	7.2	6.6
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	490	491	453	398	286
Transit Riders or Carpoolers (millions)	170	167	153	128	89
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	56,036	51,459	46,328	38,863	32,625
Rank	7	7	7	9	9
Fuel per Peak Traveler (gallons)	36	35	33	29	25
Rank	4	3	5	8	9
Annual Delay					
Total Delay (1000s of person-hours)	83,103	75,635	68,234	59,562	50,552
Rank	7	7	7	8	10
Delay per Peak Traveler (person-hours)	54	51	48	44	39
Rank	3	4	7	8	8
Delay due to Incidents (percent)	53	53	53	54	54
Travel Time Index	1.25	1.24	1.23	1.21	1.19
Rank	9	10	11	12	14
Congestion Cost					
Total Cost (\$ millions)	1,290	1,131	985	829	689
Rank	7	7	7	7	10
Cost per Peak Traveler (\$)	838	767	700	616	536
Rank	3	3	6	8	9

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The Mobility Data for Atlanta GA, Continued

Inventory Measures	1991	1990	1989	1988	1987
Urban Area Information					
Population (1000s)	2,900	2,840	2,795	2,740	2,680
Rank	12	12	12	12	12
Urban Area (square miles)	1,910	1,880	1,850	1,815	1,800
Population Density (persons/sq mile)	1,518	1,511	1,511	1,510	1,489
Peak Travelers (1000s)	1,235	1,190	1,163	1,132	1,096
Freeway					
Daily Vehicle-Miles of Travel (1000s)	25,970	25,260	24,755	23,105	22,965
Lane-Miles	1,945	1,880	1,800	1,700	1,645
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	25,000	23,000	21,900	20,600	19,900
Lane-Miles	3,900	3,840	3,750	3,680	3,560
Public Transportation					
Annual Psgr-Miles of Travel (millions)	642	647	632	563	557
Annual Unlinked Psgr Trips (millions)	146	150	145	148	150
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)	1.00	1.01	1.07	0.99	0.99
System Performance	1991	1990	1989	1988	1987
Congested Travel (% of peak VMT)	48	47	45	44	43
Congested System (% of lane-miles)	43	43	42	42	42
Congested Time (number of "Rush Hours")	6.4	6.2	6.4	6.2	6.4
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	262	293	305	278	357
Transit Riders or Carpoolers (millions)	79	86	89	78	102
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	27,770	24,324	23,288	22,827	21,036
Rank	14	14	14	12	10
Fuel per Peak Traveler (gallons)	22	20	20	20	19
Rank	11	13	12	13	8
Annual Delay					
Total Delay (1000s of person-hours)	43,398	36,934	35,704	35,619	32,522
Rank	11	14	13	11	10
Delay per Peak Traveler (person-hours)	35	31	31	31	30
Rank	10	15	13	12	11
Delay due to Incidents (percent)	54	54	54	54	55
Travel Time Index	1.17	1.16	1.16	1.16	1.15
Rank	18	19	19	16	13
Congestion Cost					
Total Cost (\$ millions)	572	468	432	412	361
Rank	11	13	12	11	11
Cost per Peak Traveler (\$)	463	393	372	364	329
Rank	10	13	13	12	10

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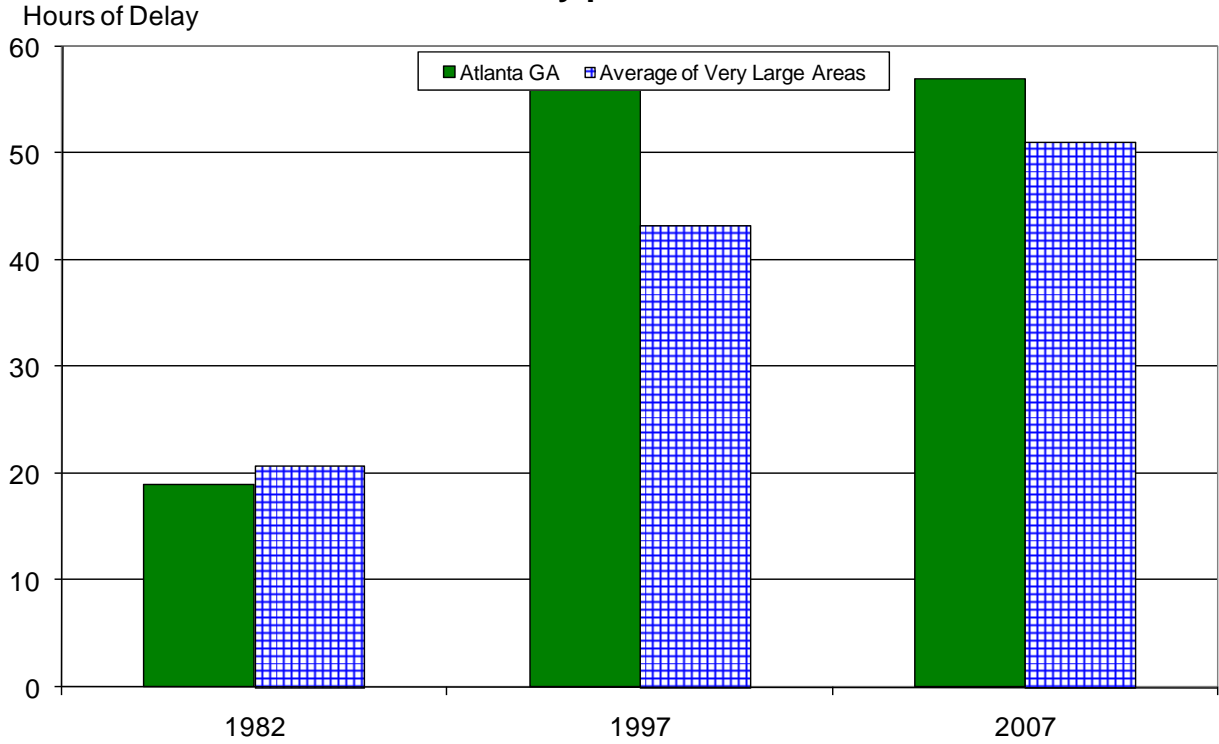
The Mobility Data for Atlanta GA, Continued

Inventory Measures	1986	1985	1984	1983	1982
Urban Area Information					
Population (1000s)	2,600	2,510	2,430	2,330	2,200
Rank	12	11	11	12	12
Urban Area (square miles)	1,780	1,750	1,725	1,705	1,685
Population Density (persons/sq mile)	1,461	1,434	1,409	1,367	1,306
Peak Travelers (1000s)	1,056	1,012	972	925	865
Freeway					
Daily Vehicle-Miles of Travel (1000s)	21,650	19,555	18,230	16,995	14,270
Lane-Miles	1,605	1,565	1,535	1,505	1,400
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	19,280	18,020	17,500	17,000	16,500
Lane-Miles	3,475	3,400	3,290	3,200	3,100
Public Transportation					
Annual Psgr-Miles of Travel (millions)	551	538	487	487	487
Annual Unlinked Psgr Trips (millions)	151	156	141	141	141
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)	39	34	33	30	29
Congested System (% of lane-miles)	37	35	35	32	33
Congested Time (number of "Rush Hours")	6.0	5.4	5.2	4.8	4.2
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	--	--	--	--	--
Transit Riders or Carpoolers (millions)	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	17,671	14,896	12,834	11,315	9,951
Rank	10	12	11	11	12
Fuel per Peak Traveler (gallons)	17	15	13	12	12
Rank	8	10	12	9	9
Annual Delay					
Total Delay (1000s of person-hours)	28,231	24,127	20,615	17,966	16,232
Rank	10	11	11	12	12
Delay per Peak Traveler (person-hours)	27	24	21	19	19
Rank	10	11	13	15	11
Delay due to Incidents (percent)	54	54	54	55	55
Travel Time Index	1.13	1.12	1.11	1.10	1.10
Rank	15	15	16	17	15
Congestion Cost					
Total Cost (\$ millions)	300	261	215	182	160
Rank	10	12	12	12	12
Cost per Peak Traveler (\$)	284	259	221	197	185
Rank	10	11	14	13	12

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.

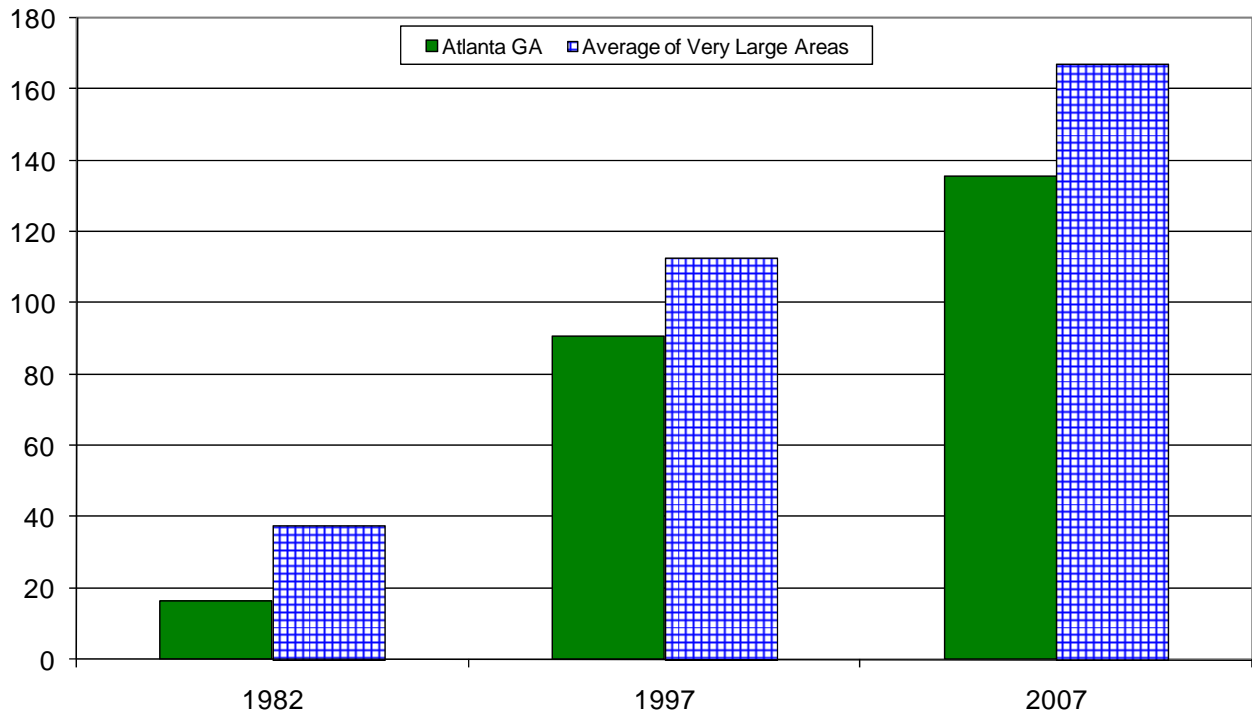
Growth in Delay per Peak Traveler



Note: Very Large areas have populations over 3 million

Annual Hours of Delay (millions)

Growth in Total Delay



Note: Very Large areas have populations over 3 million

**Benefits from Public Transportation Service and Operations Strategies in
Atlanta GA**

Operations Strategies	2007	2006	2005	2004
Freeway Ramp Metering				
Percent of Roadway Miles	2	2	2	2
Annual Delay Reduction (1000 hours)	57	55	54	40
Freeway Incident Management				
Cameras				
Percent of Roadway Miles	55	55	55	55
Service Patrols				
Percent of Roadway Miles	91	91	91	91
Annual Delay Reduction (1000 hours)	6,900	6,779	5,409	4,909
Arterial Signal Coordination				
Percent of Roadway Miles	56	41	36	38
Annual Delay Reduction (1000 hours)	704	570	458	478
Arterial Access Management				
Percent of Roadway Miles	21	21	20	20
Annual Delay Reduction (1000 hours)	840	1,118	1,341	1,227
HOV Lanes				
Daily Passenger-miles of travel (1000s)	760	700	650	598
HOV User Delay Savings	925	825	752	633
Total Effect of Operations Treatments				
Annual Delay Reduction (1000 hours)	9,426	9,347	8,014	7,286
Annual Delay Saved per Peak Traveler (hours)	4	4	4	3
Annual Congestion Cost Savings (\$million)	215.0	204.5	166.8	143.1
Travel Time Index with Strategies	1.348	1.344	1.345	1.328
Travel Time Index (Base)	1.373	1.368	1.365	1.347
Public Transportation Service	2007	2006	2005	2004
Existing Service				
Annual Passenger-miles of travel (million)	911	889	811	803
Unlinked Passenger Trips (million)	158	150	150	148
Travel Time Index (combined road and transit)	1.362	1.358	1.356	1.338
Condition if Public Transportation Service were Discontinued				
Travel Time Index	1.390	1.384	1.381	1.363
Annual Increase				
Delay (1000 hours)	10,474	9,949	9,470	9,716
Delay per Peak Traveler (hours)	4	4	4	5
Congestion Cost (\$million)	224.8	205.9	187.6	182.8

**Benefits from Public Transportation Service and Operations Strategies in
Atlanta GA, Continued**

Operations Strategies	2003	2002	2001	2000
Freeway Ramp Metering				
Percent of Roadway Miles	2	2	2	2
Annual Delay Reduction (1000 hours)	11	10	9	9
Freeway Incident Management				
Cameras				
Percent of Roadway Miles	40	36	33	20
Service Patrols				
Percent of Roadway Miles	91	93	89	82
Annual Delay Reduction (1000 hours)	4,781	3,749	3,254	2,718
Arterial Signal Coordination				
Percent of Roadway Miles	40	42	44	46
Annual Delay Reduction (1000 hours)	811	967	793	776
Arterial Access Management				
Percent of Roadway Miles	21	18	16	17
Annual Delay Reduction (1000 hours)	1,378	1,329	1,333	858
HOV Lanes				
Daily Passenger-miles of travel (1000s)	665	488	360	357
HOV User Delay Savings	748	507	330	300
Total Effect of Operations Treatments				
Annual Delay Reduction (1000 hours)	7,728	6,562	5,719	4,661
Annual Delay Saved per Peak Traveler (hours)	4	3	3	3
Annual Congestion Cost Savings (\$million)	143.0	118.2	102.5	82.2
Travel Time Index with Strategies	1.330	1.327	1.315	1.307
Travel Time Index (Base)	1.350	1.345	1.330	1.321
Public Transportation Service	2003	2002	2001	2000
Existing Service				
Annual Passenger-miles of travel (million)	780	856	874	803
Unlinked Passenger Trips (million)	149	166	167	170
Travel Time Index (combined road and transit)	1.341	1.335	1.320	1.312
Condition if Public Transportation Service were Discontinued				
Travel Time Index	1.365	1.360	1.345	1.336
Annual Increase				
Delay (1000 hours)	9,303	9,423	9,344	8,701
Delay per Peak Traveler (hours)	4	5	5	5
Congestion Cost (\$million)	165.2	165.3	163.9	149.3

**Comparison of Several Key Mobility Performance Measures
Very Large Group – over 3 million population urban areas**

Urban Area	Delay per Traveler	Travel Time Index	Total Delay	1982 to 2007	
				Delay per Traveler	Total Delay
New York-Newark, NY-NJ-CT	L	0	H+	0	F+
Los Angeles-Long Beach-Santa Ana, CA	H+	H+	H+	S	F+
Chicago, IL-IN	L-	H	H	S	F+
Miami, FL	L	0	L	0	S
Philadelphia, PA-NJ-DE-MD	L-	L-	L-	S-	S-
San Francisco-Oakland, CA	H	H	L	0	S-
Dallas-Fort Worth-Arlington, TX	0	L	L	F+	0
Atlanta, GA	H	0	L	F+	S
Washington, DC-VA-MD	H+	0	L	F+	S-
Boston, MA-NH-RI	L-	L-	L-	0	S-
Detroit, MI	0	L-	L-	0	S-
Houston, TX	H	L	L	S	S-
Phoenix, AZ	L	L	L-	S-	S-
Seattle, WA	L-	L-	L-	0	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