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	
2005 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 2005 Trends		
Delay per Traveler -	5 Hours	3 Hours
Total Delay -	5 Hours x Average Population	3 Hours x Average Population

The Mobility Data for Anchorage, AK

Inventory Measures	2005	2004	2003	2002	2001	2000
Urban Area Information						
Population (1000s)	280	280	275	270	265	260
Rank	79	79	79	79	79	79
Urban Area (square miles)	200	200	200	195	190	190
Popn Density (persons/sq mile)	1,400	1,400	1,375	1,385	1,395	1,368
Peak Travelers (1000s)	153	152	148	143	139	134
Freeway						
Daily Vehicle-Miles of Travel (1000s)	1,535	1,505	1,520	1,495	1,455	1,430
Lane Miles	195	195	195	195	195	195
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	2,240	2,250	2,240	2,220	2,190	2,125
Lane Miles	395	390	390	380	380	380
Public Transportation						
Annual Psgr-Miles of Travel (millions)	26	24	22	20	22	19
Annual Unlinked Psgr Trips (millions)	4	4	4	3	4	4
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 ($/gallon)	2.37	2.08	1.75	1.56	1.73	1.65
System Performance						
Congested Travel (% of peak VMT)	19	20	19	20	19	18
Congested System (% of lane-miles)	28	28	28	28	28	28
Congested Time (number of "Rush Hours")	3.2	3.2	3.2	3.2	3.0	3.0
Annual Increase Needed To Maintain Constant Congestion Level:						
Lane-Miles	7	9	11	13	12	9
Transit Riders or Carpoolers (millions)	2	2	3	3	3	2
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	838	865	856	869	827	742
Rank	81	81	81	80	80	81
Fuel per Peak Traveler (gallons)	5	6	6	6	6	6
Rank	83	79	77	76	76	78
Annual Delay						
Total Delay (1000s of person-hours)	1,496	1,560	1,532	1,580	1,505	1,313
Rank	81	81	81	79	80	80
Delay per Peak Traveler (person-hrs)	10	10	10	11	11	10
Rank	80	80	77	75	75	78
Delay due to Incidents (percent)	53	53	53	53	53	53
Travel Time Index	1.07	1.07	1.07	1.07	1.07	1.06
Rank	76	77	74	74	74	75
Congestion Cost						
Total Cost ($ millions)	27	27	25	26	24	20
Rank	81	80	81	79	80	80
Cost per Peak Traveler ($)	176	176	171	179	174	153
Rank	82	80	79	76	76	79

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 Anchorage, AK, Continued

Inventory Measures	1999	1998	1997	1996	1995	1994
Urban Area Information						
Population (1000s)	255	255	255	250	250	245
Rank	79	79	79	79	79	79
Urban Area (square miles)	185	185	180	180	175	175
Popn Density (persons/sq mile)	1,378	1,378	1,417	1,389	1,429	1,400
Peak Travelers (1000s)	129	128	125	121	119	115
Freeway						
Daily Vehicle-Miles of Travel (1000s)	1,400	1,370	1,315	1,300	1,295	1,255
Lane Miles	195	190	190	190	185	180
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	2,090	2,050	2,000	1,985	1,975	1,960
Lane Miles	380	380	375	365	360	350
Public Transportation						
Annual Psgr-Miles of Travel (millions)	18	17	17	16	15	15
Annual Unlinked Psgr Trips (millions)	4	3	3	3	3	3
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 ($/gallon)	1.22	1.22	1.33	1.32	1.29	1.25
System Performance						
Congested Travel (% of peak VMT)	18	18	17	17	16	16
Congested System (% of lane-miles)	28	28	27	26	23	23
Congested Time (number of "Rush Hours")	2.9	2.9	2.9	2.9	2.9	3.0
Annual Increase Needed To Maintain Constant Congestion Level:						
Lane-Miles	9	12	10	11	12	10
Transit Riders or Carpoolers (millions)	2	3	2	2	2	2
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	742	740	658	663	622	632
Rank	81	78	79	78	78	78
Fuel per Peak Traveler (gallons)	6	6	5	5	5	5
Rank	78	76	78	76	76	76
Annual Delay						
Total Delay (1000s of person-hours)	1,320	1,339	1,176	1,188	1,124	1,148
Rank	81	78	78	78	78	77
Delay per Peak Traveler (person-hrs)	10	10	9	10	9	10
Rank	78	76	76	74	75	74
Delay due to Incidents (percent)	53	53	52	52	52	52
Travel Time Index	1.06	1.06	1.06	1.06	1.06	1.06
Rank	74	73	73	73	73	71
Congestion Cost						
Total Cost ($ millions)	20	19	17	17	15	15
Rank	81	78	78	78	78	78
Cost per Peak Traveler ($)	152	152	135	138	129	132
Rank	78	76	77	74	76	73

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 Anchorage, AK, Continued

Inventory Measures	1993	1992	1991	1990	1989	1988
Urban Area Information						
Population (1000s)	240	240	235	235	235	235
Rank	79	79	79	79	79	78
Urban Area (square miles)	170	170	165	165	160	160
Popn Density (persons/sq mile)	1,412	1,412	1,424	1,424	1,469	1,469
Peak Travelers (1000s)	111	109	106	104	103	102
Freeway						
Daily Vehicle-Miles of Travel (1000s)	1,170	1,120	1,075	1,045	1,030	1,000
Lane Miles	175	170	165	160	155	150
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	1,905	1,920	1,920	1,900	1,890	1,885
Lane Miles	350	345	345	340	335	335
Public Transportation						
Annual Psgr-Miles of Travel (millions)	15	15	17	16	16	16
Annual Unlinked Psgr Trips (millions)	3	3	3	3	3	3
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 ($/gallon)	1.31	1.29	1.30	1.18	1.18	1.09
System Performance						
Congested Travel (% of peak VMT)	16	17	15	16	16	16
Congested System (% of lane-miles)	23	23	20	20	21	21
Congested Time (number of "Rush Hours")	2.9	2.9	2.9	3.0	3.0	3.0
Annual Increase Needed To Maintain Constant Congestion Level:						
Lane-Miles	6	8	9	7	8	7
Transit Riders or Carpoolers (millions)	1	2	2	2	2	2
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	595	628	564	568	562	568
Rank	78	77	76	73	73	73
Fuel per Peak Traveler (gallons)	5	6	5	5	5	6
Rank	75	71	68	66	65	61
Annual Delay						
Total Delay (1000s of person-hours)	1,078	1,156	1,037	1,050	1,028	1,043
Rank	78	76	74	73	73	73
Delay per Peak Traveler (person-hrs)	10	11	10	10	10	10
Rank	71	67	63	61	61	59
Delay due to Incidents (percent)	52	52	52	52	52	52
Travel Time Index	1.06	1.06	1.06	1.06	1.06	1.06
Rank	69	64	65	61	57	55
Congestion Cost						
Total Cost ($ millions)	14	15	13	13	12	11
Rank	78	75	74	73	73	72
Cost per Peak Traveler ($)	126	134	122	122	112	110
Rank	71	66	64	62	61	58

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 Anchorage, AK, Continued

Inventory Measures	1987	1986	1985	1984	1983	1982
Urban Area Information						
Population (1000s)	230	230	230	225	225	220
Rank	78	78	78	78	78	78
Urban Area (square miles)	160	160	155	155	150	150
Popn Density (persons/sq mile)	1,438	1,438	1,484	1,452	1,500	1,467
Peak Travelers (1000s)	99	98	98	95	94	91
Freeway						
Daily Vehicle-Miles of Travel (1000s)	960	925	900	875	855	800
Lane Miles	145	140	135	130	125	125
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	1,860	1,840	1,830	1,820	1,805	1,700
Lane Miles	330	325	325	320	315	300
Public Transportation						
Annual Psgr-Miles of Travel (millions)	16	18	19	20	20	20
Annual Unlinked Psgr Trips (millions)	3	3	4	4	4	4
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 ($/gallon)	1.09	1.07	1.40	1.41	1.44	1.51
System Performance						
Congested Travel (% of peak VMT)	16	17	17	17	18	17
Congested System (% of lane-miles)	21	21	21	21	21	21
Congested Time (number of "Rush Hours")	3.0	3.0	3.0	3.2	3.4	3.0
Annual Increase Needed To Maintain Constant Congestion Level:						
Lane-Miles	12	- -	- -	- -	- -	- -
Transit Riders or Carpoolers (millions)	2	- -	- -	- -	- -	- -
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	578	595	579	582	571	506
Rank	70	68	66	66	64	66
Fuel per Peak Traveler (gallons)	6	6	6	6	6	6
Rank	57	53	49	45	42	41
Annual Delay						
Total Delay (1000s of person-hours)	1,079	1,127	1,080	1,075	1,027	913
Rank	69	66	66	65	63	64
Delay per Peak Traveler (person-hrs)	11	11	11	11	11	10
Rank	54	49	46	42	40	40
Delay due to Incidents (percent)	52	52	52	52	52	52
Travel Time Index	1.06	1.06	1.06	1.06	1.06	1.06
Rank	51	48	45	43	38	41
Congestion Cost						
Total Cost ($ millions)	11	11	11	11	10	8
Rank	69	66	66	65	64	64
Cost per Peak Traveler ($)	113	115	110	111	103	92
Rank	52	48	45	42	38	39

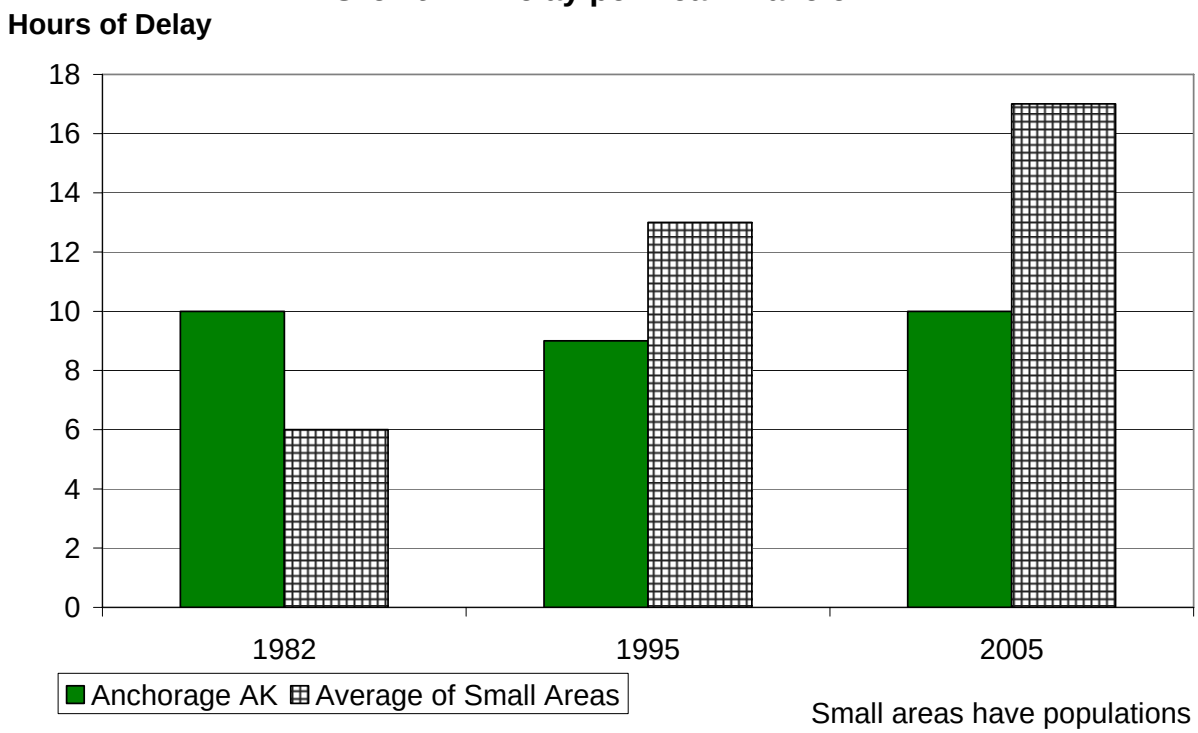
Note: System Performance statistics for 2000 through 2005 data reflect the effects of operational treatments.

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

Benefits From Public Transportation Service and Operations Strategies for Anchorage, AK

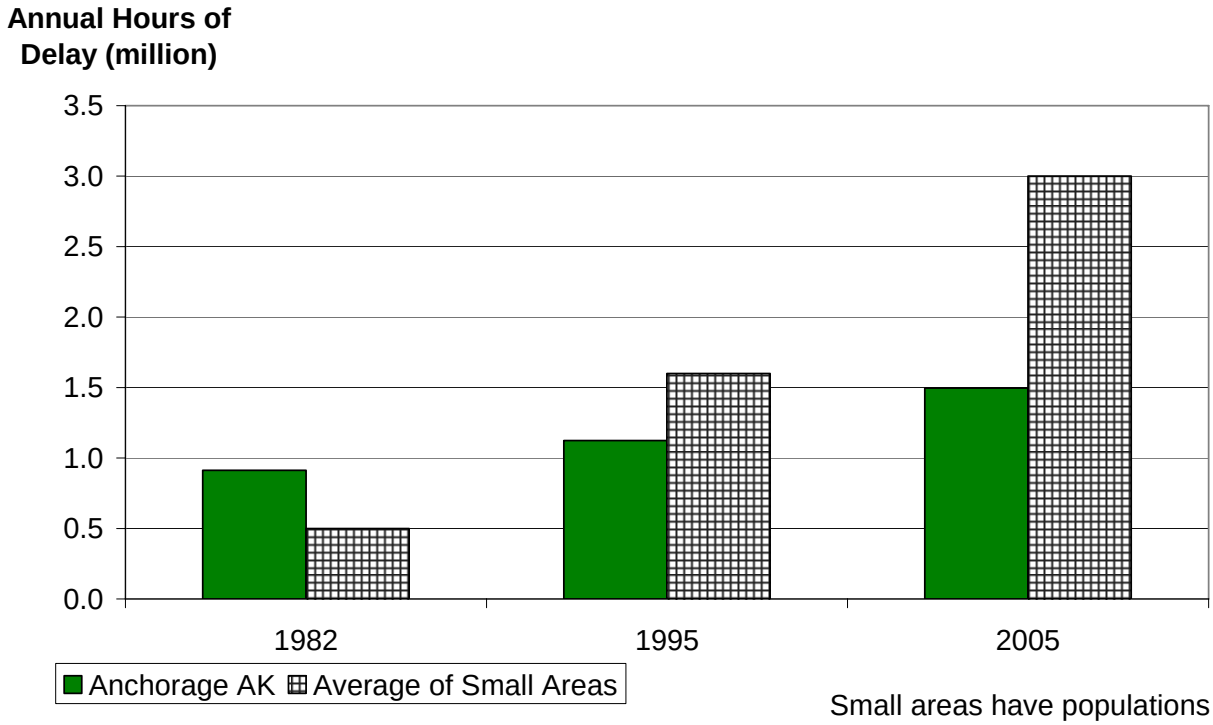
Operations Strategies	2005	2004	2003	2002	2001	2000
Freeway Ramp Metering						
Percent of Roadway Miles	--	--	--	--	--	--
Annual Delay Reduction (1000 hours)	--	--	--	--	--	--
Freeway Incident Management						
Cameras						
Percent of Roadway Miles	--	--	--	--	--	--
Service Patrols						
Percent of Roadway Miles	--	--	--	--	--	--
Annual Delay Reduction (1000 hours)	--	--	--	--	--	--
Arterial Signal Coordination						
Percent of Roadway Miles	58	59	59	58	58	58
Annual Delay Reduction (1000 hours)	16	15	15	14	14	12
Arterial Access Management						
Percent of Roadway Miles	38	38	38	37	33	33
Annual Delay Reduction (1000 hours)	45	36	36	38	42	37
HOV Lanes						
Daily Passenger-miles of Travel (1000s)	--	--	--	--	--	--
HOV User Delay Savings	--	--	--	--	--	--
Total Effect of Operations Treatments						
Annual Delay Reduction (1000 hours)	60	51	51	53	56	49
Annual Delay Saved per Peak Traveler (hours)	0	0	0	0	0	0
Annual Congestion Cost Savings ($million)	1.1	0.9	0.8	0.9	0.9	0.8
Travel Time Index with Strategies	1.066	1.069	1.068	1.070	1.068	1.062
Travel Time Index (Base)	1.068	1.071	1.070	1.072	1.070	1.064
Public Transportation Service						
Existing Service						
Annual Passenger-miles of Travel (million)	26	24	22	20	22	19
Unlinked Passenger Trips (million)	4	4	4	3	4	4
Travel Time Index (combined road and transit)	1.064	1.067	1.066	1.068	1.066	1.061
Condition if Public Transportation Service were Discontinued						
Travel Time Index	1.070	1.072	1.071	1.073	1.072	1.065
Annual Delay Increase (1000 hours)	77	65	65	54	67	42
Annual Delay Increase per Peak Traveler (hours)	1	0	0	0	0	0
Annual Congestion Cost Increase ($million)	1.4	1.1	1.1	0.9	1.1	0.6

Growth in Delay per Peak Traveler



Small areas have populations under 0.5 million

Growth in Total Delay



Small areas have populations under 0.5 million