Performance Measure Summary - Birmingham AL

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2017. There is no single performance measure that experts agree "says it all". A few key points should be recognized by users of the Urban Mobility Scorecard data.

Use the trends - The multi-year performance measures are better indicators, in most cases, than any single year. 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. (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 atop several 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. It is calculated as the ratio of travel time in the peak period to travel time in free-flow. A value of 1.30 indicates that a 20-minute free-flow trip takes 26 minutes in the peak.

Planning Time Index - A travel time reliability measure that represents the total travel time that should be planned for a trip. Computed with the 95th percentile travel time it represents the amount of time that should be planned for a commute trip to be late for only 1 day a month. If it is computed with the 80th percentile travel time it represents the amount of time that should be planned for a trip to be late for only 1 day a week. A PTI of 2.00 means that for a 20-minute trip in light traffic, 40 minutes should be planned.

Peak Commuters - Number of travelers who begin a trip during the morning or evening peak travel periods (6 to 10 a.m. and 3 to 7 p.m.). "Commuters" are private vehicle users unless specifically noted.

Annual Delay per Commuter - A yearly sum of all the per-trip delays for those persons who travel in the peak period (6 to 10 a.m. and 3 to 7 p.m.). This measure illustrates the effect of traffic slowdowns as well as the length of each trip.

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 - These values are derived from time periods with lighter traffic volumes in the INRIX speed database. They are used as the national comparison thresholds. Other speed thresholds may be appropriate for urban project evaluations or sub-region studies.

Excess Fuel Consumed - Increased fuel consumption due to travel in congested conditions rather than free-flow conditions.

Congestion Cost - Value of travel delay for 2017 (estimated at $18.29 per hour of person travel and $59.94 per hour of truck time) and excess fuel consumption estimated using state average cost per gallon.

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), so increases include both new growth and development that was previously in areas designated as rural.

Number of Rush Hours -Time when the road system might have congestion.

Mobility Data for Birmingham AL

Inventory Measures	2017	2016	2015	2014	2013	2012
Urban Area Information						
Population (1000s)	800	800	795	795	790	785
Rank	55	55	55	55	55	55
Commuters (1000s)	420	420	415	415	419	417
Daily Vehicle-Miles of Travel (1000s)						
Freeway	12,334	12,057	12,024	11,396	9,833	9,595
Arterial Streets	9,132	9,126	8,769	8,803	7,571	7,865
Cost Components						
Value of Time ($/hour)	18.12	17.91	17.69	17.67	17.39	17.14
Commercial Cost ($/hour)	52.14	50.20	46.87	44.82	41.23	39.66
Gasoline ($/gallon)	2.10	1.97	2.04	3.06	3.28	3.33
Diesel ($/gallon)	2.37	2.18	2.40	3.48	3.78	3.78
System Performance	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**
Congested Travel (% of peak VMT)	15.8	--	--	--	--	--
Congested System (% of lane-miles)	9.9	--	--	--	--	--
Congested Time (number of "Rush Hours")	1.2	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	9,090	9,026	8,990	8,955	8,900	8,760
Rank	56	56	56	56	56	56
Fuel per Peak Auto Commuter (gallons)	16	16	16	16	16	17
Rank	77	76	73	70	71	61
Annual Delay						
Total Delay (1000s of person-hours)	22,877	22,292	22,011	21,543	21,033	20,329
Rank	57	57	57	57	56	57
Delay per Auto Commuter (pers-hrs)	40	39	39	38	38	37
Rank	75	78	71	71	68	69
Travel Time Index	1.13	1.13	1.13	1.14	1.14	1.13
Rank	83	83	83	80	78	85
Commuter Stress Index	1.15	--	--	--	--	--
Rank	78	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)	1.38	--	--	--	--	--
Rank	57	--	--	--	--	--
Congestion Cost						
Total Cost ($ millions)	461	442	430	428	412	394
Rank	57	57	57	57	57	57
Cost per Auto Commuter ($)	819	803	790	768	757	741
Rank	55	55	51	51	50	51
Truck Congestion						
Annual Person-Hours of Delay (000)	961	936	924	905	883	854
Rank	57	57	57	57	56	57
Annual Gallons of Wasted Fuel (000)	1,927	1,914	1,906	1,898	1,887	1,857
Rank	56	56	56	56	56	56
Annual Congestion Cost ($ million)	49	45	43	42	39	37
Rank	57	57	57	57	57	56

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

Mobility Data for Birmingham AL

Inventory Measures	2011	2010	2009	2008	2007	2006
Urban Area Information						
Population (1000s)	780	775	765	760	750	740
Rank	54	54	53	53	53	53
Commuters (1000s)	413	409	402	398	391	384
Daily Vehicle-Miles of Travel (1000s)						
Freeway	10,184	10,160	9,700	9,395	9,715	9,580
Arterial Streets	7,969	7,900	7,700	7,435	7,630	7,605
Cost Components						
Value of Time ($/hour)	16.79	16.28	16.01	16.07	15.47	15.06
Commercial Cost ($/hour)	44.62	42.50	41.83	40.77	39.30	37.88
Gasoline ($/gallon)	3.12	2.60	2.17	3.35	2.90	2.55
Diesel ($/gallon)	3.59	2.86	2.48	4.06	3.27	2.73
System Performance	**2011**	**2010**	**2009**	**2008**	**2007**	**2006**
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	8,482	8,277	8,067	8,647	8,280	8,093
Rank	56	56	56	55	57	57
Fuel per Peak Auto Commuter (gallons)	15	15	14	17	15	16
Rank	74	73	71	61	73	64
Annual Delay						
Total Delay (1000s of person-hours)	19,502	18,855	18,032	18,409	17,628	17,230
Rank	57	57	58	57	57	57
Delay per Auto Commuter (pers-hrs)	36	35	34	35	34	34
Rank	69	71	74	66	72	69
Travel Time Index	1.13	1.13	1.13	1.14	1.13	1.13
Rank	84	83	84	79	85	82
Commuter Stress Index	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost ($ millions)	373	346	322	341	311	294
Rank	57	57	58	57	57	56
Cost per Auto Commuter ($)	734	732	711	719	717	719
Rank	50	50	53	48	52	54
Truck Congestion						
Annual Person-Hours of Delay (000)	819	792	757	773	740	724
Rank	57	57	58	57	57	57
Annual Gallons of Wasted Fuel (000)	1,798	1,755	1,710	1,833	1,755	1,716
Rank	56	56	56	55	57	57
Annual Congestion Cost ($ million)	39	35	32	35	31	29
Rank	57	57	57	56	57	56

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

Mobility Data for Birmingham AL

Inventory Measures	2005	2004	2003	2002	2001	2000
Urban Area Information						
Population (1000s)	730	720	715	710	690	670
Rank	53	53	53	53	54	54
Commuters (1000s)	376	369	364	357	343	328
Daily Vehicle-Miles of Travel (1000s)						
Freeway	9,550	9,270	9,020	8,760	8,685	8,685
Arterial Streets	7,600	7,435	7,535	7,590	7,415	7,295
Cost Components						
Value of Time ($/hour)	14.58	14.10	13.73	13.43	13.22	12.85
Commercial Cost ($/hour)	36.51	35.19	33.92	32.69	31.51	30.38
Gasoline ($/gallon)	2.24	1.87	1.46	1.32	1.43	1.49
Diesel ($/gallon)	2.41	1.88	1.45	1.31	1.44	1.43
System Performance	**2005**	**2004**	**2003**	**2002**	**2001**	**2000**
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	7,830	7,653	7,476	7,319	6,919	6,838
Rank	56	55	56	56	56	54
Fuel per Peak Auto Commuter (gallons)	14	14	14	14	13	12
Rank	75	71	69	61	63	68
Annual Delay						
Total Delay (1000s of person-hours)	16,670	16,293	15,917	15,582	14,730	14,558
Rank	55	56	56	54	54	54
Delay per Auto Commuter (pers-hrs)	33	33	33	32	32	33
Rank	71	69	65	67	65	56
Travel Time Index	1.13	1.13	1.13	1.13	1.13	1.13
Rank	82	81	76	75	73	72
Commuter Stress Index	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost ($ millions)	273	256	240	229	214	206
Rank	56	56	56	54	54	54
Cost per Auto Commuter ($)	719	728	730	731	701	711
Rank	53	51	50	48	47	44
Truck Congestion						
Annual Person-Hours of Delay (000)	700	684	669	654	619	611
Rank	55	56	56	54	54	54
Annual Gallons of Wasted Fuel (000)	1,660	1,622	1,585	1,552	1,467	1,450
Rank	56	55	56	56	56	54
Annual Congestion Cost ($ million)	26	24	22	21	19	18
Rank	56	55	55	53	54	54

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

Mobility Data for Birmingham AL

Inventory Measures	1999	1998	1997	1996	1995	1994
Urban Area Information						
Population (1000s)	665	660	660	655	650	645
Rank	54	54	53	53	52	50
Commuters (1000s)	322	316	312	306	299	294
Daily Vehicle-Miles of Travel (1000s)						
Freeway	8,595	8,325	8,025	7,710	7,310	7,095
Arterial Streets	7,140	7,165	6,995	6,820	6,805	6,710
Cost Components						
Value of Time ($/hour)	12.43	12.17	11.98	11.71	11.37	11.06
Commercial Cost ($/hour)	29.28	28.89	28.50	28.12	27.75	27.38
Gasoline ($/gallon)	1.08	1.06	1.15	1.21	1.14	1.02
Diesel ($/gallon)	1.08	1.12	1.21	1.24	1.17	1.05
System Performance	**1999**	**1998**	**1997**	**1996**	**1995**	**1994**
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	6,691	6,060	5,437	4,880	4,468	3,987
Rank	54	56	58	60	60	61
Fuel per Peak Auto Commuter (gallons)	13	12	11	10	9	8
Rank	51	53	54	57	59	65
Annual Delay						
Total Delay (1000s of person-hours)	14,244	12,902	11,575	10,389	9,513	8,488
Rank	52	54	55	58	58	59
Delay per Auto Commuter (pers-hrs)	32	30	27	25	23	21
Rank	57	61	66	70	73	75
Travel Time Index	1.13	1.12	1.11	1.10	1.09	1.08
Rank	70	72	72	76	77	80
Commuter Stress Index	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost ($ millions)	192	171	151	133	118	103
Rank	52	54	55	58	59	59
Cost per Auto Commuter ($)	718	666	607	559	525	483
Rank	40	46	49	53	57	58
Truck Congestion						
Annual Person-Hours of Delay (000)	598	542	486	436	400	356
Rank	52	54	55	58	58	59
Annual Gallons of Wasted Fuel (000)	1,418	1,285	1,153	1,035	947	845
Rank	54	56	58	60	60	61
Annual Congestion Cost ($ million)	17	15	14	12	11	9
Rank	52	53	54	57	55	60

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Mobility Data for Birmingham AL

Inventory Measures	1993	1992	1991	1990	1989	1988
Urban Area Information						
Population (1000s)	645	640	635	630	630	625
Rank	50	50	50	50	49	48
Commuters (1000s)	290	284	278	272	270	266
Daily Vehicle-Miles of Travel (1000s)						
Freeway	6,750	6,360	6,100	5,900	5,400	5,170
Arterial Streets	6,505	6,375	6,095	5,800	5,580	5,505
Cost Components						
Value of Time ($/hour)	10.78	10.47	10.17	9.75	9.25	8.83
Commercial Cost ($/hour)	27.02	26.66	26.30	25.95	25.60	25.26
Gasoline ($/gallon)	1.08	1.20	1.07	1.06	1.10	1.02
Diesel ($/gallon)	1.11	1.21	1.19	1.07	1.01	0.93
System Performance	**1993**	**1992**	**1991**	**1990**	**1989**	**1988**
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	3,437	2,871	2,601	2,462	2,275	2,241
Rank	62	67	69	64	64	63
Fuel per Peak Auto Commuter (gallons)	7	6	5	4	4	4
Rank	67	69	79	81	76	71
Annual Delay						
Total Delay (1000s of person-hours)	7,317	6,112	5,537	5,241	4,843	4,772
Rank	62	65	67	65	65	62
Delay per Auto Commuter (pers-hrs)	18	15	14	14	13	13
Rank	82	88	88	86	84	80
Travel Time Index	1.07	1.06	1.06	1.05	1.05	1.05
Rank	83	89	89	90	87	84
Commuter Stress Index	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost ($ millions)	87	71	62	57	50	47
Rank	61	65	67	65	63	62
Cost per Auto Commuter ($)	430	367	342	337	335	341
Rank	64	73	73	70	67	62
Truck Congestion						
Annual Person-Hours of Delay (000)	307	257	233	220	203	200
Rank	62	65	67	65	65	62
Annual Gallons of Wasted Fuel (000)	729	609	551	522	482	475
Rank	62	67	69	64	64	63
Annual Congestion Cost ($ million)	8	7	6	6	5	5
Rank	61	63	64	59	60	58

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Mobility Data for Birmingham AL

Inventory Measures	1987	1986	1985	1984	1983	1982
Urban Area Information						
Population (1000s)	620	615	615	610	605	600
Rank	47	47	47	47	48	47
Commuters (1000s)	262	258	256	252	248	243
Daily Vehicle-Miles of Travel (1000s)						
Freeway	4,950	4,675	4,350	3,750	3,350	3,000
Arterial Streets	5,400	5,295	5,170	4,845	4,805	4,720
Cost Components						
Value of Time ($/hour)	8.48	8.18	8.03	7.75	7.43	7.20
Commercial Cost ($/hour)	24.93	24.60	24.27	23.94	23.63	23.31
Gasoline ($/gallon)	1.02	0.99	1.30	1.31	1.34	1.41
Diesel ($/gallon)	0.94	0.91	1.20	1.21	1.24	1.29
System Performance	**1987**	**1986**	**1985**	**1984**	**1983**	**1982**
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	2,193	2,114	1,935	1,445	1,391	1,330
Rank	62	61	59	64	64	64
Fuel per Peak Auto Commuter (gallons)	4	4	5	3	3	2
Rank	61	54	32	61	46	55
Annual Delay						
Total Delay (1000s of person-hours)	4,670	4,501	4,120	3,076	2,962	2,831
Rank	59	58	56	64	62	63
Delay per Auto Commuter (pers-hrs)	13	12	11	9	8	8
Rank	75	74	72	78	76	73
Travel Time Index	1.05	1.05	1.04	1.03	1.03	1.03
Rank	79	74	81	85	80	76
Commuter Stress Index	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost ($ millions)	44	41	38	27	25	24
Rank	59	58	56	64	62	61
Cost per Auto Commuter ($)	353	356	330	251	255	257
Rank	58	56	54	67	59	56
Truck Congestion						
Annual Person-Hours of Delay (000)	196	189	173	129	124	119
Rank	59	58	56	64	62	63
Annual Gallons of Wasted Fuel (000)	465	448	410	306	295	282
Rank	62	61	59	64	64	64
Annual Congestion Cost ($ million)	5	4	4	3	3	3
Rank	56	58	55	61	55	52

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