#### Performance Measure Summary - Miami FL

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2020. 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 2020 (estimated at \$20.17 per hour of person travel and \$55.24 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.

Annual Greenhouse Gases (CO2) Produced -Tons of CO2 produced from all vehicle travel.

Excess Greenhouse Gases (CO2) Produced due to Congestion-Tons of CO2 produced due to congested portion of travel. The excess CO2 is a subset of the total CO2 produced.

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	2,827	2,817	2,808	2,786	2,753
Į.					
39,716	49,276	47,391	46,868	46,596	44,769
43,472	53,935	53,153	53,296	52,974	51,322
20.17	19.14	18.71	18.12	17.91	17.69
55.24	49.49	54.71	52.14	50.20	46.87
2.26	2.48	2.77	2.28	2.12	2.23
2.71	2.85	3.15	2.48	2.31	2.55
2020	2019	2018	2017	2016	2015
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3.956	11.577	11,265	11,170	10,828	10,548
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11	6	6	6	6	6
209	563	616	586	546	504
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70,377	205,959				
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12 1,320,551	7 3,864,623				
	20.17 55.24 2.26 2.71 2020   44,167 8 13 28 112,879 7 27 42 1.11 20 1.12 24   2,491 8 608 35 3,956 11 6,429 11 209 11 440,216 8 7,532,614 11	20.17	20.17       19.14       18.71         55.24       49.49       54.71         2.26       2.48       2.77         2.71       2.85       3.15         2020       2019       2018   44,167       120,912       116,196         8       5       5         13       37       35         28       4       4         112,879       309,019       295,121         7       4       4         27       74       71         42       10       11         1.11       1.34       1.33         20       10       14         1.12       1.46       1.43         24       6       8 </td <td>20.17         19.14         18.71         18.12           55.24         49.49         54.71         52.14           2.26         2.48         2.77         2.28           2.71         2.85         3.15         2.48           2020         2019         2018         2017              1.6              1.3              4.5           44,167         120,912         116,196         111,003           8         5         5         5           13         37         35         34           28         4         4         5           112,879         309,019         295,121         285,947           7         4         4         4           27         74         71         69           42         10         11         12           1.11         1.34         1.33         1.32           20         10         14         15           1.12         1.46         1.43         1.39           24         6         8</td> <td>20.17         19.14         18.71         18.12         17.91           55.24         49.49         54.71         52.14         50.20           2.26         2.48         2.77         2.28         2.12           2.71         2.85         3.15         2.48         2.31           2020         2019         2018         2017         2016          </td>	20.17         19.14         18.71         18.12           55.24         49.49         54.71         52.14           2.26         2.48         2.77         2.28           2.71         2.85         3.15         2.48           2020         2019         2018         2017              1.6              1.3              4.5           44,167         120,912         116,196         111,003           8         5         5         5           13         37         35         34           28         4         4         5           112,879         309,019         295,121         285,947           7         4         4         4           27         74         71         69           42         10         11         12           1.11         1.34         1.33         1.32           20         10         14         15           1.12         1.46         1.43         1.39           24         6         8	20.17         19.14         18.71         18.12         17.91           55.24         49.49         54.71         52.14         50.20           2.26         2.48         2.77         2.28         2.12           2.71         2.85         3.15         2.48         2.31           2020         2019         2018         2017         2016

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	2014	2013	2012	2011	2010	2009	
Urban Area Information							
Population (1000s)	5,860	5,800	5,720	5,620	5,550	5,500	
Rank	4	4	4	4	4	4	
Commuters (1000s)	2,724	2,748	2,751	2,718	2,739	2,734	
Daily Vehicle-Miles of Travel (1000s)							
Freeway	43,683	41,175	41,775	43,452	42,731	41,000	
Arterial Streets	50,168	49,181	49,680	50,848	52,000	52,068	
Cost Components							
Value of Time (\$/hour)	17.67	17.39	17.14	16.79	16.28	16.01	
Commercial Cost (\$/hour)	44.82	41.23	39.66	44.62	42.50	41.83	
Gasoline (\$/gallon)	3.27	3.47	3.50	3.24	2.74	2.33	
Diesel (\$/gallon)	3.60	3.90	3.87	3.65	2.96	2.59	
System Performance	2014	2013	2012	2011	2010	2009	
Congested Travel (% of peak VMT)							
Congested System (% of lane-miles)							
Congested Time (number of "Rush Hours")							
Annual Excess Fuel Consumed							
Total Fuel (1000 gallons)	105,174	103,476	101,416	100,358	100,731	100,148	
Rank	5	5	5	5	5	5	
Fuel per Peak Auto Commuter (gallons)	30	30	29	27	26	24	
Rank	5	4	5	8	9	8	
Annual Delay							
Total Delay (1000s of person-hours)	260,112	251,420	242,018	232,795	226,862	221,293	
Rank	4	4	4	4	4	4	
Delay per Auto Commuter (pers-hrs)	63	60	58	56	55	54	
Rank	11	11	12	12	11	11	
Travel Time Index	1.30	1.29	1.29	1.29	1.28	1.28	
Rank	16	17	17	15	16	15	
Commuter Stress Index							
Rank							
Freeway Planning Time Index (95th Pctile)							
Rank							
Congestion Cost							
Total Cost (\$ millions)	5,448	5,192	4,932	4,687	4,386	4,176	
Rank	4	4	4	4	4	4	
Cost per Auto Commuter (\$)	1,345	1,313	1,281	1,271	1,277	1,268	
Rank	12	12	12	12	11	10	
Truck Congestion							
Annual Person-Hours of Delay (000)	10,138	9,799	9,433	9,073	8,842	8,625	
Rank	5	5	5	5	5	5	
Annual Gallons of Wasted Fuel (000)	16,910	16,637	16,306	15,975	15,713	15,620	
Rank	6	6	6	6	6	6	
Annual Congestion Cost (\$ million)	485	442	413	436	397	377	
Rank	5	5	5	5	5	5	
Annual Greenhouse Gases (CO2) Produced							
Excess Due to Congestion (tons)							
Rank							
Due to All Travel (tons)							
Rank			-	<u> </u>			
Truck Annual Greenhouse Gases (CO2) Produced							
Truck Annual Greenhouse Gases (CO2) Produced Excess Due to Truck Congestion (tons)							
Truck Annual Greenhouse Gases (CO2) Produced  Excess Due to Truck Congestion (tons)  Rank		 	 	 	 	 	
Truck Annual Greenhouse Gases (CO2) Produced Excess Due to Truck Congestion (tons)		  		   	   	  	

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	2008	2007	2006	2005	2004	2003
Urban Area Information						
Population (1000s)	5,400	5,370	5,340	5,330	5,240	5,150
Rank	4	4	4	4	5	5
Commuters (1000s)	2,713	2,732	2,721	2,702	2,642	2,583
Daily Vehicle-Miles of Travel (1000s)						
Freeway	40,000	41,035	40,360	39,470	38,320	37,000
Arterial Streets	52,330	52,160	52,585	52,455	52,240	49,045
Cost Components						
Value of Time (\$/hour)	16.07	15.47	15.06	14.58	14.10	13.73
Commercial Cost (\$/hour)	40.77	39.30	37.88	36.51	35.19	33.92
Gasoline (\$/gallon)	3.47	2.98	2.66	2.34	1.99	1.53
Diesel (\$/gallon)	4.15	3.36	2.85	2.53	2.01	1.61
System Performance	2008	2007	2006	2005	2004	2003
Congested Travel (% of peak VMT)						
Congested System (% of lane-miles)						
Congested Time (number of "Rush Hours")						
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	103,730	103,006	102,250	101,393	99,477	96,283
Rank	5	5	5	5	5	5
Fuel per Peak Auto Commuter (gallons)	25	24	23	23	24	22
Rank	7	10	14	13	10	11
Annual Delay						
Total Delay (1000s of person-hours)	227,204	223,464	221,825	219,963	215,808	208,878
Rank	4	4	4	4	4	4
Delay per Auto Commuter (pers-hrs)	53	52	52	52	52	51
Rank	11	14	14	12	12	12
Travel Time Index	1.30	1.29	1.29	1.29	1.29	1.29
Rank	12	14	13	13	13	11
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	4,427	4,152	3,980	3,794	3,568	3,319
Rank	4	4	4	4	4	4
Cost per Auto Commuter (\$)	1,290	1,319	1,345	1,379	1,399	1,390
Rank	10	10	10	10	10	10
Truck Congestion						
Annual Person-Hours of Delay (000)	8,856	8,710	8,646	8,573	8,411	8,141
Rank	5	5	5	5	5	5
Annual Gallons of Wasted Fuel (000)	16,838	16,561	16,440	16,302	15,994	15,480
Rank	5	5	5	5	5	5
Annual Congestion Cost (\$ million)	408	375	352	333	308	282
Rank	5	5	5	5	5	5
Annual Greenhouse Gases (CO2) Produced					ı	
Excess Due to Congestion (tons)						
Rank						
Due to All Travel (tons)						
Rank						
Truck Annual Greenhouse Gases (CO2) Produced					ı	
Excess Due to Truck Congestion (tons)						
Rank						
Due to Truck Travel (tons)						
Rank						

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	2002	2001	2000	1999	1998	1997	
Urban Area Information							
Population (1000s)	5,100	5,035	4,970	4,820	4,725	4,560	
Rank	5	5	5	5	5	5	
Commuters (1000s)	2,517	2,440	2,368	2,254	2,171	2,059	
Daily Vehicle-Miles of Travel (1000s)					İ		
Freeway	35,695	35,065	34,700	32,815	31,475	30,900	
Arterial Streets	45,580	44,055	42,735	40,040	38,065	36,050	
Cost Components							
Value of Time (\$/hour)	13.43	13.22	12.85	12.43	12.17	11.98	
Commercial Cost (\$/hour)	32.69	31.51	30.38	29.28	28.89	28.50	
Gasoline (\$/gallon)	1.41	1.51	1.54	1.14	1.07	1.17	
Diesel (\$/gallon)	1.41	1.58	1.55	1.19	1.20	1.27	
System Performance	2002	2001	2000	1999	1998	1997	
Congested Travel (% of peak VMT)							
Congested System (% of lane-miles)							
Congested Time (number of "Rush Hours")							
Annual Excess Fuel Consumed							
Total Fuel (1000 gallons)	95,368	89,690	85,017	76,835	72,454	65,535	
Rank	5	5	5	5	5	6	
Fuel per Peak Auto Commuter (gallons)	23	21	21	19	19	17	
Rank	9	9	8	9	8	9	
Annual Delay							
Total Delay (1000s of person-hours)	206,894	194,576	184,437	166,688	157,183	142,174	
Rank	4	4	4	5	5	5	
Delay per Auto Commuter (pers-hrs)	52	50	49	46	45	43	
Rank	10	11	10	11	11	12	
Travel Time Index	1.29	1.28	1.27	1.26	1.25	1.24	
Rank	10	10	10	9	9	9	
Commuter Stress Index							
Rank							
Freeway Planning Time Index (95th Pctile)							
Rank							
Congestion Cost	2 202	2 072	2.742	2.260	2.196	1.055	
Total Cost (\$ millions)  Rank	3,202	2,973	2,743	2,369	2,186	1,955 5	
Cost per Auto Commuter (\$)	1,407	1,341	1,307	1,221	1,178	1,081	
Rank	9	10	1,307	10	1,176	12	
Truck Congestion	,	10	10	10	11	1,2	
Annual Person-Hours of Delay (000)	8,064	7,584	7,189	6,497	6,126	5,541	
Rank	5	7,364	7,109	5	5	5,541	
Annual Gallons of Wasted Fuel (000)	15,333	14,420	13,669	12,353	11,649	10,537	
Rank	5	5	6	7	7	7	
Annual Congestion Cost (\$ million)	267	245	224	192	179	160	
Rank	5	5	5	5	5	5	
Annual Greenhouse Gases (CO2) Produced							
Excess Due to Congestion (tons)							
Rank							
Due to All Travel (tons)							
- · · · · · · · · · · · · · · · · · · ·							
Rank							
Rank Truck Annual Greenhouse Gases (CO2) Produced							
Truck Annual Greenhouse Gases (CO2) Produced	 	 	 	 			
Truck Annual Greenhouse Gases (CO2) Produced Excess Due to Truck Congestion (tons)		  		  	  	  	

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	1996	1995	1994	1993	1992	1991
Urban Area Information						
Population (1000s)	4,435	4,280	4,120	4,080	4,030	3,965
Rank	5	5	5	5	5	6
Commuters (1000s)	1,971	1,867	1,764	1,718	1,668	1,613
Daily Vehicle-Miles of Travel (1000s)						
Freeway	29,800	29,460	27,660	25,815	24,875	22,675
Arterial Streets	34,000	32,995	31,600	30,925	30,110	29,500
Cost Components						
Value of Time (\$/hour)	11.71	11.37	11.06	10.78	10.47	10.17
Commercial Cost (\$/hour)	28.12	27.75	27.38	27.02	26.66	26.30
Gasoline (\$/gallon)	1.30	1.20	1.08	1.13	1.12	1.10
Diesel (\$/gallon)	1.40	1.30	1.17	1.22	1.20	1.24
System Performance	1996	1995	1994	1993	1992	1991
Congested Travel (% of peak VMT)						
Congested System (% of lane-miles)						
Congested Time (number of "Rush Hours")						
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	58,371	53,750	49,415	46,185	44,159	40,403
Rank	7	7	7	8	7	7
Fuel per Peak Auto Commuter (gallons)	14	13	12	12	11	9
Rank	18	19	21	16	16	27
Annual Delay						
Total Delay (1000s of person-hours)	126,633	116,605	107,201	100,194	95,799	87,651
Rank	5	6	7	7	7	7
Delay per Auto Commuter (pers-hrs)	39	38	37	35	34	32
Rank	15	14	14	14	14	14
Travel Time Index	1.22	1.21	1.21	1.20	1.19	1.18
Rank	15	16	15	15	15	16
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	1,713	1,530	1,365	1,248	1,162	1,035
Rank	5	6	7	7	7	7
Cost per Auto Commuter (\$)	986	936	886	849	840	791
Rank	14	14	16	17	16	17
Truck Congestion					2 == .	<b>A</b>
Annual Person-Hours of Delay (000)	4,936	4,545	4,178	3,905	3,734	3,416
Rank	7	8 (42	7 045	7 425	7 100	6 406
Annual Gallons of Wasted Fuel (000)	9,385	8,642	7,945	7,425	7,100	6,496
Rank	8	120	9	10	9	9
Annual Congestion Cost (\$ million) Rank	142	129 8	116 8	107 8	101 7	92 7
	/	8	8	8	/	/
Annual Greenhouse Gases (CO2) Produced				1	I	
Excess Due to Congestion (tons)  Rank						
Nank Due to All Travel (tons)						
Rank			 			
Truck Annual Greenhouse Gases (CO2) Produced				1	I	
Excess Due to Truck Congestion (tons)						
Rank Due to Truck Travel (tons)						
Due to Truck Travel (tons)						
Rank						

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	1990	1989	1988	1987	1986	1985
Urban Area Information						
Population (1000s)	3,910	3,860	3,755	3,670	3,635	3,580
Rank	6	6	6	6	6	6
Commuters (1000s)	1,563	1,529	1,474	1,427	1,401	1,367
Daily Vehicle-Miles of Travel (1000s)						
Freeway	21,670	21,020	19,360	17,425	15,770	14,605
Arterial Streets	29,210	28,895	28,415	27,790	27,025	26,010
Cost Components						
Value of Time (\$/hour)	9.75	9.25	8.83	8.48	8.18	8.03
Commercial Cost (\$/hour)	25.95	25.60	25.26	24.93	24.60	24.27
Gasoline (\$/gallon)	1.05	1.08	1.00	1.00	0.98	1.28
Diesel (\$/gallon)	1.11	1.07	0.99	0.99	0.97	1.27
System Performance	1990	1989	1988	1987	1986	1985
Congested Travel (% of peak VMT)						
Congested System (% of lane-miles)						
Congested Time (number of "Rush Hours")						
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	38,957	36,803	35,442	34,052	32,080	30,804
Rank	7	8	6	6	7	7
Fuel per Peak Auto Commuter (gallons)	10	8	8	8	7	7
Rank	14	26	20	18	21	15
Annual Delay						
Total Delay (1000s of person-hours)	84,515	79,841	76,887	73,872	69,593	66,827
Rank	6	7	6	6	8	7
Delay per Auto Commuter (pers-hrs)	32	31	31	31	29	29
Rank	14	14	13	13	12	12
Travel Time Index	1.18	1.17	1.17	1.17	1.16	1.16
Rank	15	15	15	14	14	10
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	958	864	796	737	672	644
Rank	6	7	6	6	8	7
Cost per Auto Commuter (\$)	796	797	807	808	791	773
Rank	17	17	17	16	12	12
Truck Congestion						
Annual Person-Hours of Delay (000)	3,294	3,112	2,997	2,879	2,712	2,605
Rank	7	7	7	7	8	7
Annual Gallons of Wasted Fuel (000)	6,263	5,918	5,699	5,475	5,158	4,952
Rank	9	9	9	9	9	8
Annual Congestion Cost (\$ million)	86	80	76	72	67	65
Rank	8	7	7	8	8	7
Annual Greenhouse Gases (CO2) Produced					1	
Excess Due to Congestion (tons)						
Rank						
Due to All Travel (tons)						
Rank						
Truck Annual Greenhouse Gases (CO2) Produced					1	
Excess Due to Truck Congestion (tons)						
Rank						
Due to Truck Travel (tons) Rank						

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	1984	1983	1982
Urban Area Information			
Population (1000s)	3,495	3,415	3,370
Rank	6	7	7
Commuters (1000s)	1,322	1,282	1,253
Daily Vehicle-Miles of Travel (1000s)			
Freeway	13,375	12,405	11,960
Arterial Streets	25,320	24,910	24,500
Cost Components			
Value of Time (\$/hour)	7.75	7.43	7.20
Commercial Cost (\$/hour)	23.94	23.63	23.31
Gasoline (\$/gallon)	1.29	1.32	1.38
Diesel (\$/gallon)	1.28	1.31	1.37
System Performance	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)	28,934	27,152	25,650
Rank	7	7	25,050
Fuel per Peak Auto Commuter (gallons)	7	6	6
Rank	12	13	10
Annual Delay			
Total Delay (1000s of person-hours)	62,771	58,903	55,645
Rank	8	7	7
Delay per Auto Commuter (pers-hrs)	28	27	26
Rank	12	12	12
Travel Time Index	1.15	1.15	1.14
Rank	13	10	13
Commuter Stress Index			
Rank			
Freeway Planning Time Index (95th Pctile)			
Rank			
Congestion Cost			
Total Cost (\$ millions)	587	532	490
Rank	7	7	7
Cost per Auto Commuter (\$)	753	738	722
Rank	12	12	12
Truck Congestion			
Annual Person-Hours of Delay (000)	2,447	2,296	2,169
Rank	8	8	7
Annual Gallons of Wasted Fuel (000)	4,652	4,366	4,124
Rank	8	8	8
Annual Congestion Cost (\$ million)	60	56	53
Rank	8	8	7
Annual Greenhouse Gases (CO2) Produced			
Excess Due to Congestion (tons)			
Rank			
Nank Due to All Travel (tons)			
Due to All Travel (tons)			
Due to All Travel (tons) Rank			
Due to All Travel (tons) Rank  Truck Annual Greenhouse Gases (CO2) Produced		  	  
Due to All Travel (tons) Rank  Truck Annual Greenhouse Gases (CO2) Produced Excess Due to Truck Congestion (tons)	   	  	   

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.