

Performance Measure Summary - San Juan PR

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 San Juan PR

Inventory Measures	2017	2016	2015	2014	2013	2012
Urban Area Information						
Population (1000s)	2,010	2,030	2,040	2,055	2,075	2,110
Rank	24	22	21	21	21	21
Commuters (1000s)	1,016	1,025	1,031	1,038	1,069	1,087
Daily Vehicle-Miles of Travel (1000s)						
Freeway	10,054	10,100	10,200	10,224	11,160	11,110
Arterial Streets	11,086	11,100	11,100	11,139	12,830	12,770
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)	3.07	2.73	2.90	4.21	4.35	4.11
Diesel (\$/gallon)	4.04	4.06	4.25	4.86	4.91	4.79
System Performance	2017	2016	2015	2014	2013	2012
Congested Travel (% of peak VMT)	34.6	--	--	--	--	--
Congested System (% of lane-miles)	25.7	--	--	--	--	--
Congested Time (number of "Rush Hours")	4.4	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	36,188	35,880	35,469	35,226	34,786	34,518
Rank	19	19	19	19	19	18
Fuel per Peak Auto Commuter (gallons)	28	28	27	27	26	26
Rank	14	14	14	12	13	12
Annual Delay						
Total Delay (1000s of person-hours)	86,079	82,883	78,732	76,922	74,705	69,770
Rank	22	23	23	23	23	23
Delay per Auto Commuter (pers-hrs)	58	56	55	54	52	48
Rank	24	27	24	23	23	29
Travel Time Index						
Rank	1.33	1.33	1.33	1.34	1.33	1.32
Rank	15	15	12	7	10	11
Commuter Stress Index						
Rank	1.56	--	--	--	--	--
Rank	4	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	2.50	--	--	--	--	--
Rank	4	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	1,778	1,683	1,583	1,582	1,513	1,394
Rank	22	22	23	23	23	23
Cost per Auto Commuter (\$)	1,274	1,235	1,166	1,133	1,110	1,050
Rank	17	18	18	18	19	22
Truck Congestion						
Annual Person-Hours of Delay (000)	3,615	3,481	3,307	3,231	3,138	2,930
Rank	22	23	23	23	23	23
Annual Gallons of Wasted Fuel (000)	7,672	7,607	7,519	7,468	7,375	7,318
Rank	19	19	19	19	19	18
Annual Congestion Cost (\$ million)	196	184	168	163	150	137
Rank	21	21	21	22	22	22

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

Mobility Data for San Juan PR

Inventory Measures	2011	2010	2009	2008	2007	2006
Urban Area Information						
Population (1000s)	2,140	2,130	2,125	2,120	2,115	2,110
Rank	21	21	21	21	21	21
Commuters (1000s)	1,100	1,091	1,085	1,079	1,068	1,058
Daily Vehicle-Miles of Travel (1000s)						
Freeway	12,549	12,426	12,300	12,200	12,135	12,000
Arterial Streets	13,120	12,891	12,372	12,755	12,810	13,310
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)	3.75	3.47	2.87	3.74	3.41	3.09
Diesel (\$/gallon)	4.10	4.04	3.86	4.34	4.00	3.51
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)	33,937	33,332	32,275	30,960	32,064	32,480
Rank	18	18	17	20	18	17
Fuel per Peak Auto Commuter (gallons)	25	26	25	23	24	25
Rank	12	9	7	13	10	9
Annual Delay						
Total Delay (1000s of person-hours)	66,756	64,364	61,158	55,873	57,866	58,616
Rank	23	23	23	25	24	23
Delay per Auto Commuter (pers-hrs)	46	43	41	39	40	41
Rank	30	34	38	43	41	34
Travel Time Index						
Rank	13	13	15	21	20	18
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	1,313	1,224	1,132	1,064	1,055	1,031
Rank	23	23	22	25	23	22
Cost per Auto Commuter (\$)	1,037	1,030	996	902	972	1,011
Rank	21	20	21	29	25	19
Truck Congestion						
Annual Person-Hours of Delay (000)	2,804	2,703	2,569	2,347	2,430	2,462
Rank	23	23	23	25	24	23
Annual Gallons of Wasted Fuel (000)	7,195	7,066	6,842	6,564	6,798	6,886
Rank	18	18	17	20	18	17
Annual Congestion Cost (\$ million)	139	129	121	112	111	106
Rank	23	21	21	25	22	22

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

Mobility Data for San Juan PR

Inventory Measures	2005	2004	2003	2002	2001	2000
Urban Area Information						
Population (1000s)	2,100	2,095	2,090	2,085	2,080	2,075
Rank	20	20	19	19	18	18
Commuters (1000s)	1,046	1,037	1,029	1,012	992	975
Daily Vehicle-Miles of Travel (1000s)						
Freeway	11,845	11,750	11,100	10,200	9,500	9,000
Arterial Streets	13,250	13,430	13,000	12,300	11,850	11,400
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)	2.63	2.38	2.03	1.72	2.00	1.86
Diesel (\$/gallon)	2.93	2.50	1.22	2.00	2.12	2.02
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)	32,456	31,698	30,089	27,317	25,351	23,465
Rank	17	17	17	19	20	20
Fuel per Peak Auto Commuter (gallons)	25	24	24	22	19	19
Rank	8	10	9	10	13	11
Annual Delay						
Total Delay (1000s of person-hours)	58,572	57,204	54,301	49,298	45,750	42,347
Rank	22	22	22	24	24	24
Delay per Auto Commuter (pers-hrs)	41	41	39	36	34	31
Rank	34	32	37	45	51	65
Travel Time Index						
Rank	16	16	20	23	24	27
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	984	923	838	742	684	613
Rank	22	22	22	23	24	24
Cost per Auto Commuter (\$)	1,044	1,056	1,028	954	897	854
Rank	18	17	18	22	23	26
Truck Congestion						
Annual Person-Hours of Delay (000)	2,460	2,403	2,281	2,070	1,921	1,779
Rank	22	22	22	24	24	24
Annual Gallons of Wasted Fuel (000)	6,881	6,720	6,379	5,791	5,374	4,975
Rank	17	17	17	19	20	20
Annual Congestion Cost (\$ million)	99	91	76	71	64	57
Rank	22	22	22	22	23	24

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Mobility Data for San Juan PR

Inventory Measures	1999	1998	1997	1996	1995	1994
Urban Area Information						
Population (1000s)	2,065	2,055	2,050	2,040	2,030	2,010
Rank	18	18	18	18	18	18
Commuters (1000s)	954	934	917	898	879	858
Daily Vehicle-Miles of Travel (1000s)						
Freeway	8,600	8,300	7,700	7,400	7,050	6,800
Arterial Streets	10,900	10,500	10,000	9,750	9,300	8,850
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)	1.53	1.63	1.67	1.68	1.57	1.52
Diesel (\$/gallon)	1.88	1.83	1.83	1.88	1.75	1.70
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)	20,962	18,475	17,822	17,675	17,062	15,652
Rank	23	24	25	22	21	21
Fuel per Peak Auto Commuter (gallons)	17	13	12	12	13	13
Rank	17	42	47	38	19	15
Annual Delay						
Total Delay (1000s of person-hours)	37,829	33,341	32,163	31,897	30,791	28,246
Rank	26	29	28	27	25	26
Delay per Auto Commuter (pers-hrs)	28	26	25	25	24	22
Rank	72	72	73	70	70	72
Travel Time Index						
Rank	1.19	1.17	1.17	1.17	1.17	1.16
Rank	30	35	32	30	29	30
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	525	455	433	421	394	352
Rank	26	27	27	25	24	25
Cost per Auto Commuter (\$)	790	710	695	708	703	664
Rank	30	35	32	29	26	29
Truck Congestion						
Annual Person-Hours of Delay (000)	1,589	1,400	1,351	1,340	1,293	1,186
Rank	26	29	28	27	25	26
Annual Gallons of Wasted Fuel (000)	4,444	3,917	3,778	3,747	3,617	3,318
Rank	23	24	25	22	21	21
Annual Congestion Cost (\$ million)	49	43	41	40	38	34
Rank	25	26	26	24	24	23

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Mobility Data for San Juan PR

Inventory Measures	1993	1992	1991	1990	1989	1988
Urban Area Information						
Population (1000s)	1,940	1,900	1,860	1,810	1,750	1,700
Rank	19	19	19	19	21	21
Commuters (1000s)	814	785	755	723	695	669
Daily Vehicle-Miles of Travel (1000s)						
Freeway	6,450	6,250	6,000	5,850	5,620	5,425
Arterial Streets	8,200	7,750	7,100	6,800	6,300	5,900
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)	1.50	1.47	1.46	1.36	1.36	1.26
Diesel (\$/gallon)	1.68	1.69	1.68	1.57	1.57	1.45
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)	13,175	12,196	11,024	10,186	9,088	7,451
Rank	25	25	26	26	28	28
Fuel per Peak Auto Commuter (gallons)	10	9	9	8	7	6
Rank	38	45	27	35	39	45
Annual Delay						
Total Delay (1000s of person-hours)	23,777	22,009	19,894	18,382	16,400	13,446
Rank	28	29	30	30	29	32
Delay per Auto Commuter (pers-hrs)	19	19	17	17	15	13
Rank	78	74	78	70	77	80
Travel Time Index						
Rank	1.14	1.13	1.12	1.12	1.11	1.09
Rank	35	37	38	34	36	43
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	289	261	230	204	174	136
Rank	28	28	28	29	29	30
Cost per Auto Commuter (\$)	574	549	512	493	466	402
Rank	33	33	42	38	40	52
Truck Congestion						
Annual Person-Hours of Delay (000)	999	924	836	772	689	565
Rank	28	29	30	30	29	32
Annual Gallons of Wasted Fuel (000)	2,793	2,585	2,337	2,159	1,927	1,580
Rank	25	25	26	26	28	28
Annual Congestion Cost (\$ million)	28	26	23	21	18	15
Rank	27	25	27	26	28	27

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Mobility Data for San Juan PR

Inventory Measures	1987	1986	1985	1984	1983	1982
Urban Area Information						
Population (1000s)	1,660	1,615	1,580	1,550	1,510	1,490
Rank	21	21	21	21	21	20
Commuters (1000s)	648	625	607	591	572	558
Daily Vehicle-Miles of Travel (1000s)						
Freeway	5,200	5,000	4,800	4,500	4,300	4,100
Arterial Streets	5,400	5,000	4,500	4,100	3,800	3,500
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)	1.26	1.23	1.61	1.62	1.66	1.74
Diesel (\$/gallon)	1.45	1.42	1.85	1.87	1.92	2.00
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)	6,576	5,845	5,607	4,852	4,591	3,645
Rank	26	26	26	26	26	30
Fuel per Peak Auto Commuter (gallons)	5	4	5	3	4	2
Rank	48	54	32	61	35	55
Annual Delay						
Total Delay (1000s of person-hours)	11,868	10,548	10,119	8,756	8,286	6,577
Rank	31	29	29	30	30	33
Delay per Auto Commuter (pers-hrs)	12	11	11	10	9	8
Rank	79	78	72	70	70	73
Travel Time Index						
Rank	1.09	1.08	1.08	1.07	1.07	1.05
Rank	40	42	39	42	39	51
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	116	100	96	81	74	58
Rank	30	29	29	30	30	32
Cost per Auto Commuter (\$)	370	342	333	299	295	241
Rank	56	57	53	53	51	60
Truck Congestion						
Annual Person-Hours of Delay (000)	498	443	425	368	348	276
Rank	31	29	29	30	30	33
Annual Gallons of Wasted Fuel (000)	1,394	1,239	1,189	1,029	973	773
Rank	26	26	26	26	26	30
Annual Congestion Cost (\$ million)	13	11	11	10	9	7
Rank	27	29	28	27	28	30

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