Congested Vehicle Miles Traveled per Capita, An Important Indicator for Traveler Satisfaction and Transportation Cost-Effectiveness

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What is Congested VMT per Capita?

- SACOG has always focused more on the presence of congestion on roadways rather than an amount of delay. Specifically, SACOG estimates and tracks how much of the total VMT occurs on roadways that are at or above their reasonable capacities. SACOG defines a congested VMT (CVMT) as a VMT that occurs on roadways with volume-to-capacity ratios of 1.0 or greater.
- The per capita measure allows for comparison of present and future conditions and is a relevant metric to the region's residents. No one experiences all the congestion, only their own.

Total Congested Travel in the SACOG Region, Historic Trends and Projected MTP/SCS

The improvement in roadway congestion per capita traces back to the 2002 MTP, where we projected a 58 percent increase from 2002 to 2025. The 2008 MTP, with a longer planning period from 2005 to 2035, projected a 22 percent increase. With a 7 percent decrease from 2008 to 2035, the MTP/SCS projects further reduction in one of the most troublesome aspects of regional travel.

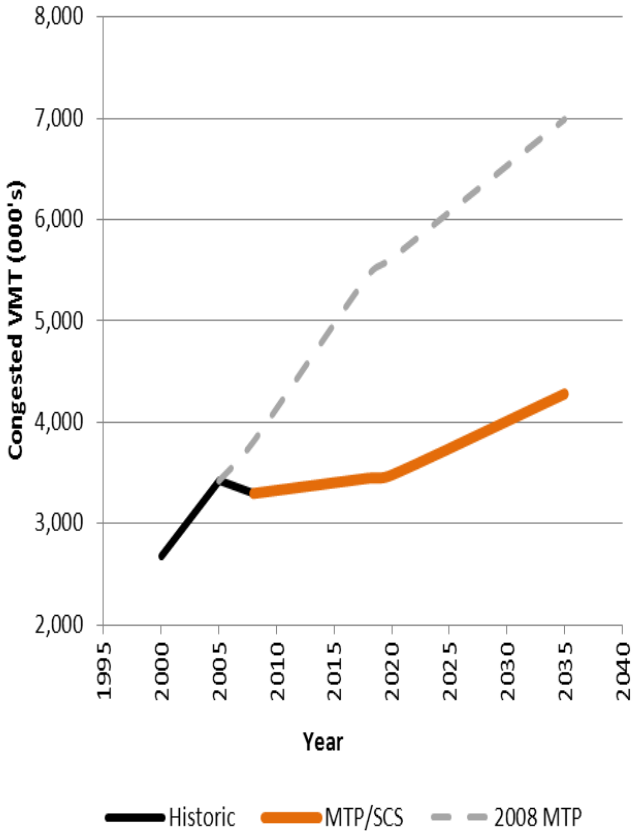


Table 5B.6, Congested Travel in the SACOG Region

	2008	2035 MTP/SCS	2035 (2008 MTP [2])
Total Congested VMT [1]	3,297,500	4,278,700	6,990,000
Population	2,215,000	3,086,200	3,348,000
Congested VMT per Capita	1.49	1.39	2.09
% Change from Base Year of Plan	n/a	-6.9%	+22%
% Change from 2008 MTP	n/a	-33.6%	n/a

Congested Travel in the SACOG Region, 2008 and MTP/SCS

Source: SACOG, September 2011.

[1] SACOG estimates made using SACSIM regional travel demand model. Congested VMT are VMT occurring on roadways at or near generalized hourly capacity.

[2] SACOG, 2008 MTP *A Creative New Vision for Transportation in the Sacramento Region*, April 2008.

Table 5B.7, Congested Vehicle Miles Traveled by Source in the SACOG Region 2008, 2020, 2035 MTP/SCS

	2008	2020 MTP/SCS	2035 MTP/SCS
Region Total			
Household Generated CVMT [1]	2,632,600	2,745,300	3,287,800
Commercial Vehicle CVMT [2]	489,100	525,300	682,900
Externally Generated CVMT [3]	175,800	208,000	308,000
Total CVMT	3,297,500	3,478,600	4,278,700
Population	2,215,000	2,519,900	3,086,200
Jobs	969,800	1,072,200	1,330,000
Per Capita Rates			
HH-Gen CVMT per Capita	1.19	1.09	1.07
Commercial Vehicle + External CVMT per Job	0.69	0.68	0.75
Total CVMT per Capita	1.49	1.38	1.39
Percent Changes in Congested VMT Per Capita or Per Job, compared to 2008			
HH-Generated CVMT per Capita	n/a	-8.3%	-10.4%
Commercial Vehicle + External CVMT per Job	n/a	-0.2%	+8.7%
Total CVMT per Capita	n/a	-7.3%	-6.9%

CVMT Calculation Method

- A standard regional travel demand model with traffic assignments by time period and TAZ-based trip tables are required for these calculations.
- The model validation should include volume and travel time comparison to observed data.

Roadway Utilization & Investment Efficiency

- The concept of optimal levels of use of roadways is a new one in transportation planning.
- Optimal use is not based solely on the level of service to individual travelers in motorized vehicles only, but on some level of system efficiency and on balance of benefit across travel modes.
- Analysis assumptions:
  - Travel demand is always subject to peaks and valleys.
  - Achieving better levels of service during peak demand periods requires progressively higher infrastructure investments, which may only really be used for one or two hours during the day—the rest of the time, those investments essentially sit idle.
  - Optimal use recognizes that in addition to the infrastructure costs of providing higher levels of service during peak demand periods, those investments impose other costs, such as spreading out land uses and making travel by transit, bicycle and walking more costly.

Roadway Utilization Analysis

- Based on roadway segment volume-to-capacity (V/C) ratios
  - Segment capacities are set to represent the number of vehicles which can pass through a segment based on normal operating conditions.
- Volume-to-capacity ratios by roadway type
  - General purpose freeways, 0.95 - 1.05
  - HOV freeway lanes, 0.50 - 0.85
  - Arterial and expressways, 0.85 - 1.15
  - Local and collector streets, <0.75

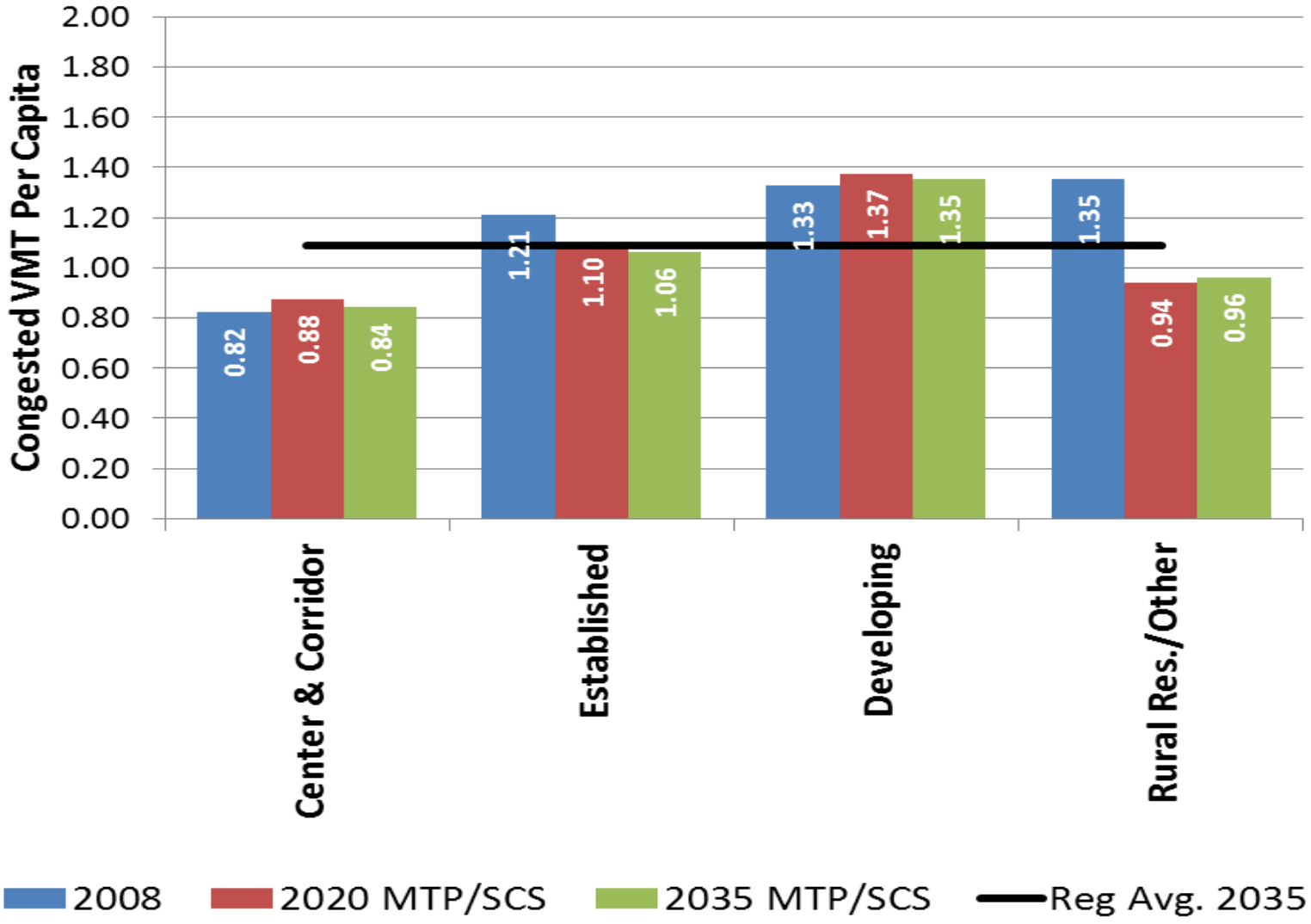
Table 5B.8 Roadway Utilization in the SACOG Region, 2008 and 2035 MTP/SCS

	Utilization Level			
Roadway Type / Year	Under-Utilized	Optimally Utilized	Over-Utilized	Total VMT
2008 Weekday VMT by Road Class				
General Purpose Freeways	90%	6%	4%	23,499,600
HOV Lanes	36%	61%	2%	1,140,700
Auxiliary Lanes/Ramps	49%	33%	18%	1,516,500
Arterials/Expressways	83%	15%	2%	19,261,200
Collectors/Local Streets	0%	93%	7%	11,770,700
Total	67%	29%	4%	57,188,700
2035 MTP/SCS Weekday VMT by Road Class				
General Purpose Freeways	89%	8%	3%	27,252,500
HOV Lanes	27%	69%	4%	3,399,500
Auxiliary Lanes/Ramps	46%	38%	17%	2,193,300
Arterials/Expressways	81%	17%	2%	28,180,000
Collectors/Local Streets	0%	94%	6%	13,404,500
Total	66%	30%	4%	74,429,800

A Tour-Based Travel Demand Model Allows a Sub-Market Analysis of Household Travel

- A tour-based model calculates total travel for each person/household throughout the day.
- CVMT was tabulated for households in 4 types of areas.
  - Center and Corridor Communities
  - Established Communities
  - Developing Communities
  - Rural Residential Communities

Figure 5B.7, Congested Vehicle Miles Traveled by Community Type in SACOG Region



For more information on the SACOG Metropolitan Transportation Plan/ Sustainable Communities Strategy 2035: http://www.sacog.org/2035/mtpscs/

Chapter 5B, Vehicle Miles Traveled and Roadway Congestion

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