

# Vehicle Classification

## FHWA Perspective



- **Pavement design / management**
- **Commodity flows**
- **Highway capacity**
- **Weight enforcement**
- **Accident analysis**
- **Environmental impact analysis**
- **Analysis of highway policies**

**Constant Uses  
BUT  
Greater Expectations**

1985 → 13

# HPMS

# LTPP

- **3 Years**
- **Statewide**
- **%3S2s**
- **10%**
- **95%**

# State Level **vs** Samples

# New TMG Challenges

- **Class for Volume**
- **Use of Generic Vehicle Types**

**30 % of Volume  
to Class**

# Short Duration Class:

- **Classify at existing HPMS sample sections**
- **1 road / 1 year / 1 class count**

# Continuous Classification



# Adjustment Factors

# Generic Categories:

- **Passenger vehicles**
- **Single-unit trucks**
- **Single trailer combinations**
- **Multi-trailer combinations**

# Crosswalk:

- 13  $\longrightarrow$  4
- Tests of schema
- Appropriate Use
- 4  $\longrightarrow$  13

# Needs & Opportunities

## The Interim

- 13 types will remain in use
- Tactical changes



## Data Available from HPMS Samples

### TRAVEL ACTIVITY BY VEHICLE TYPE

Functional System	Motor Cycles	Passenger Cars 2 axle, 4 tires	Light Trucks Other 2 axle 4 tire	Buses	Single Unit Trucks			Single Trailer Trucks			Multi-Trailer Trucks			
					2 Axle, 6 Tire	3 Axle	4 Axle or Less	4 Axle or More	5 Axle	6 Axle or More	5 Axle or Less	6 Axle	7 Axle or More	
RURAL	Residual Vehicles			Single Unit Truck or Vehicle				Combination Truck or Vehicle						
Interstate														
Other Principal Arterial														
Minor Arterial														
Major Collector														
Minor Collector														
Local														
URBAN														
Interstate														
Other Freeways & Expressways														
Other Principal Arterials														
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Local														

**ANNUAL VEHICLE DISTANCE TRAVELED IN MILES AND RELATED DATA - 1998 1/  
BY HIGHWAY CATEGORY AND VEHICLE TYPE**

OCTOBER 1999

TABLE VM-1

YEAR	ITEM	PASSENGER CARS	MOTOR- CYCLES	BUSES	OTHER 2-AXLE 4-TIRE VEHICLES □ 2/	SINGLE-UNIT 2-AXLE 6-TIRE OR MORE TRUCKS □ 3/	COMBINATION TRUCKS	SUBTOTALS		ALL MOTOR VEHICLES
								PASSENGER CARS AND OTHER 2-AXLE 4-TIRE VEHICLES	SINGLE-UNIT 2-AXLE 6-TIRE OR MORE AND COMBINATION TRUCKS	
	Motor-Vehicle Travel: (millions of vehicle-miles)									
1998	Interstate Rural	127,104	1,110	832	72,211	7,718	42,087	199,315	49,805	251,062
1997		120,045	1,050	794	69,030	7,671	41,665	189,075	49,336	240,255
1998	Other Arterial Rural	228,905	1,588	1,282	132,075	13,589	26,144	360,980	39,733	403,583
1997		220,180	1,552	1,243	129,890	13,688	25,505	350,070	39,193	392,058
1998	Other Rural	218,919	1,580	2,136	130,493	13,465	12,072	349,412	25,537	378,665
1997		210,855	1,545	2,072	128,396	13,698	12,471	339,251	26,169	369,037
1998	All Rural	574,928	4,278	4,250	334,779	34,772	80,303	909,707	115,075	1,033,310
1997		551,080	4,147	4,109	327,316	35,057	79,641	878,396	114,698	1,001,350
1998	Interstate Urban	220,361	1,578	663	121,630	8,105	22,070	341,991	30,175	374,407
1997		214,016	1,509	647	116,680	7,906	20,643	330,696	28,549	361,401
1998	Other Urban	750,541	4,404	2,083	409,819	25,017	25,786	1,160,360	50,803	1,217,650
1997		737,460	4,425	2,086	406,743	23,930	24,300	1,144,203	48,230	1,198,944
1998	All Urban □ 4/	970,902	5,982	2,746	531,449	33,122	47,856	1,502,351	80,978	1,592,057
1997		951,476	5,934	2,733	523,423	31,836	44,943	1,474,899	76,779	1,560,345
1998	Total Rural and Urban	1,545,830	10,260	6,996	866,228	67,894	128,159	2,412,058	196,053	2,625,367
1997		1,502,556	10,081	6,842	850,739	66,893	124,584	2,353,295	191,477	2,561,695
1998	Number of motor vehicles registered □ 5/	131,838,538	3,879,450	715,540	71,818,340	5,413,530	1,830,605	203,656,878	7,244,135	215,496,003
1997		129,748,704	3,826,373	697,548	70,224,082	5,293,358	1,789,968	199,972,786	7,083,326	211,580,033
1998	Average miles traveled per vehicle	11,725	2,645	9,777	12,061	12,542	70,009	11,844	27,064	12,183
1997		11,581	2,635	9,809	12,115	12,637	69,601	11,768	27,032	12,107
1998	Person-miles of travel □ 6/ (millions)	2,457,871	11,286	148,325	1,377,303	67,894	128,159	3,835,173	196,053	4,190,837
1997		2,389,065	11,089	145,060	1,352,675	66,893	124,584	3,741,740	191,477	4,089,366
1998	Fuel consumed □ 7/ (thousand gallons)	72,209,143	205,200	1,048,682	50,579,285	9,740,971	21,100,279	122,788,428	30,841,250	154,883,560
1997		69,892,366	201,620	1,026,578	49,387,705	9,576,059	20,301,693	119,280,071	29,877,752	150,386,021
1998	Average fuel consumption per vehicle (gallons) □ 7/	548	53	1,466	704	1,799	11,526	603	4,257	719
1997		539	53	1,472	703	1,809	11,342	596	4,218	711
1998	Average miles traveled per gallon of fuel consumed □ 7/	21.4	50.0	6.7	17.1	7.0	6.1	19.6	6.4	17.0
1997		21.5	50.0	6.7	17.2	7.0	6.1	19.7	6.4	17.0

1/ The 50 states and the District of Columbia report travel by highway category, number of motor vehicles registered, and total fuel consumed. The travel and fuel data by vehicle type and stratification of trucks, as well as related data, are calculated by the Federal Highway Administration (FHWA). Entries for 1996 may have been revised based on the availability of more current data.

Estimation procedures include use of the 1992 Census of Transportation Truck Inventory and Use Survey (TIUS) and independent analysis of light truck travel.

2/ Other 2-Axle 4-Tire Vehicles which are not passenger cars. These include vans, pickup trucks, and sport/utility vehicles.

3/ Single-Unit 2-Axle 6-Tire or More Trucks on a single frame with at least two axles and six tires.

4/ Urban consists of travel on all roads and streets in urban places with 5,000 or greater population.

5/ Stratification of the truck figures is made by the FHWA based on State-supplied data and the 1992 TIUS. Combination trucks represent approximately the number of tractors with semi-trailer(s) and a majority of heavy single-unit trucks used regularly in combination with trailer(s).

6/ As estimated by the FHWA using the 1995 Nationwide Personal Transportation Survey (NPTS).

7/ Total fuel consumption figures are derived from state fuel tax records and reflect latest available data. Distribution by vehicle type is estimated by the FHWA based on miles per gallon for both diesel and gasoline powered vehicles using State-supplied data, the 1992 TIUS, and other sources as a baseline.

**The Vehicle and Highway Groups Used in Table VM-1 "Annual Distance Traveled and Related Data by Highway Category and Vehicle Type"**

**TRAVEL ACTIVITY BY VEHICLE TYPE**

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# Data Need Not Met by HPMS Sample Alone

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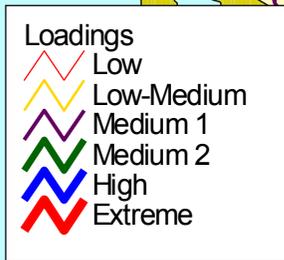
# Needs & Opportunities

## The Longer Term

- **Class / Volume**
- **60 Years / 1600+ / TVT+**
- **TMG Factors**
- **A Tactical Network**

# August 2003 ESALs

Produced with data available as of September 15, 2003



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- The HPMS will continue to require estimates of truck percentages on every sample.
- Use of generic classes will require rigorous documentation
- There will be continuing need for a 13-class detail
- **CAVC will prove vital to highway management and operations.**