

Supplemental Material For HPMS Vehicle Summary Data Preparation

Office of Highway Policy Information

May 2013

Updated August 2013



Objective

The objective is to provide approaches and detailed procedures on the computation of the HPMS Vehicle Summary Data.



Part 1

Understand What the Vehicle Summary Data Is



HPMS Vehicle Summary Data

The Vehicle Summary is a set of statewide average percentage data on vehicle miles traveled by six vehicle types on each of the six roadway functional group system roadways.



HPMS Vehicle Summary Data

Table 3.12 describes the dataset which contains Travel Activity data summarized by Functional System Group and Vehicle Type.

VEHICLE SUMMARIES TABLE																		
Constraint	Field Name	Data Type	Description	Valid Values														
PK	Year_Record	Numeric(4)	Calendar year for the data	The four digits of the year the data represents.														
PK	State_Code	Numeric(2)	State FIPS code	Up to two digits for the FIPS code. See Appendix C for a complete list.														
PK	FS_Group	Numeric(1)	Functional system group	<table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Rural Interstate</td> </tr> <tr> <td>2</td> <td>Rural Other Arterial (includes Other Freeways & Expressways, Other Principal Arterials, and Minor Arterials)</td> </tr> <tr> <td>3</td> <td>Rural Other (includes Major Collectors, Minor Collectors, and Locals)</td> </tr> <tr> <td>4</td> <td>Urban Interstate</td> </tr> <tr> <td>5</td> <td>Urban Other Arterial (includes Other Freeways & Expressways, Other Principal Arterials, and Minor Arterials)</td> </tr> <tr> <td>6</td> <td>Urban Other (includes Major Collectors, Minor Collectors, and Locals)</td> </tr> </tbody> </table>	Code	Description	1	Rural Interstate	2	Rural Other Arterial (includes Other Freeways & Expressways, Other Principal Arterials, and Minor Arterials)	3	Rural Other (includes Major Collectors, Minor Collectors, and Locals)	4	Urban Interstate	5	Urban Other Arterial (includes Other Freeways & Expressways, Other Principal Arterials, and Minor Arterials)	6	Urban Other (includes Major Collectors, Minor Collectors, and Locals)
				Code	Description													
				1	Rural Interstate													
				2	Rural Other Arterial (includes Other Freeways & Expressways, Other Principal Arterials, and Minor Arterials)													
				3	Rural Other (includes Major Collectors, Minor Collectors, and Locals)													
				4	Urban Interstate													
5	Urban Other Arterial (includes Other Freeways & Expressways, Other Principal Arterials, and Minor Arterials)																	
6	Urban Other (includes Major Collectors, Minor Collectors, and Locals)																	
Pct_MC	Decimal(5,2)	Percent of motorcycle VMT	Code percentage as 0.00 to 100.00.															
Pct_Cars	Decimal(5,2)	Percent of passenger car VMT	Code percentage as 0.00 to 100.00.															
Pct_Lgt_Trucks	Decimal(5,2)	Percent of light truck VMT	Code percentage as 0.00 to 100.00.															
Pct_Buses	Decimal(5,2)	Percent of bus VMT	Code percentage as 0.00 to 100.00.															
Pct_SU_Trucks	Decimal(5,2)	Percent of single-unit truck VMT	Code percentage as 0.00 to 100.00.															
Pct_CU_Trucks	Decimal(5,2)	Percent of combination-unit truck VMT	Code percentage as 0.00 to 100.00.															



HPMS Vehicle Summary Data

HPMS Vehicle Summary Data

Year_Record	State_Code	FS_Group	Pct_MC	Pct_Cars	Pct_Lgt_Trucks	Pct_Buses	Pct_SU_Trucks	Pct_CU_Trucks



HPMS Vehicle Summary Data

HPMS Vehicle Summary Data

Year_Record	State_Code	FS_Group	Pct_MC	Pct_Cars	Pct_Lgt_Trucks	Pct_Buses	Pct_SU_Trucks	Pct_CU_Trucks

Year of Data

State FIPS Code

Roadway Functional Groups (6)



HPMS Vehicle Summary Data

HPMS Vehicle Summary Data

Year_Record	State_Code	FS_Group	Pct_MC	Pct_Cars	Pct_Lgt_Trucks	Pct_Buses	Pct_SU_Trucks	Pct_CU_Trucks

Motorcycle VMT %

Car VMT %

Light Truck VMT %



FHWA Roadway Functional Classification

Functional Classification Code (FC)	Functional Classification Name
1	Interstate (R1+U1)
2	Other Freeways and Expressways (R2+U2)
3	Other Principal Arterial (R3+U3)
4	Minor Arterial (R4+U4)
5	Major Collector (R5+U5)
6	Minor Collector (R6+U6)
7	Local (R7+U7)



HPMS *FS_Group*

FS_Group	Description	FC
A (1)	Rural Interstate	R1
B(2)	Rural Other Arterial (other rural freeways and expressways, other principal arterials, and minor arterial)	R2 + R3+ R4
C(3)	Rural other (Includes major collectors, minor collectors, and local)	R5+R6+R7
D(4)	Urban Interstate	U1
E(5)	Urban Other Arterial (other urban expressways and freeways, other principal arterials and minor arterials)	U2 + U3+u4
F(6)	Urban Other (includes major collectors, minor collectors, and locals)	U5+U6+U7



HPMS Vehicle Types

Vehicle Groups	HPMS Abbre.	FHWA 13 Vehicle Classes
Motorcycle	MC	1
Cars	Cars	2
Light Truck	Lgt_Trucks	3
Buses	Buses	4
Single Unit Truck	SU_Trucks	5, 6, and 7
Combination Truck	CU_Trucks	8, 9, 10, 11, 12, and 13



HPMS Vehicle Summary Data Example

HPMS Vehicle Summary Data Example

Year_Record	State_Code	FS_Group	Pct_MC	Pct_Cars	Pct_Lgt_Trucks	Pct_Buses	Pct_SU_Trucks	Pct_CU_Trucks
2011	19	A						
2011	19	B						
2011	19	C						
2011	19	D						
2011	19	E						
2011	19	F						



HPMS Vehicle Summary Data Example

HPMS Vehicle Summary Data Example

Year_Record	State_Code	FS_Group	Pct_MC	Pct_Cars	Pct_Lgt_Trucks	Pct_Buses	Pct_SU_Trucks	Pct_CU_Trucks
2011	19	A	0.70	51.30	17.90	0.40	6.10	23.60
2011	19	B	0.80	54.50	28.10	2.40	5.70	8.50
2011	19	C	1.50	67.20	21.20	2.00	4.10	4.00
2011	19	D	0.20	74.00	13.10	0.30	3.00	9.40
2011	19	E	0.90	71.90	19.40	0.20	2.90	4.70
2011	19	F	1.10	67.30	22.10	0.30	3.20	6.00



HPMS Vehicle Summary Data Example

HPMS Vehicle Summary Data Example

Year_Record	State_Code	FS_Group	Pct_MC	Pct_Cars	Pct_Lgt_Trucks	Pct_Buses	Pct_SU_Trucks	Pct_CU_Trucks	Summation
2011	19	A	0.70	51.30	17.90	0.40	6.10	23.60	100.00
2011	19	B	0.80	54.50	28.10	2.40	5.70	8.50	
2011	19	C	1.50	67.20	21.20	2.00	4.10	4.00	
2011	19	D	0.20	74.00	13.10	0.30	3.00	9.40	
2011	19	E	0.90	71.90	19.40	0.20	2.90	4.70	
2011	19	F	1.10	67.30	22.10	0.30	3.20	6.00	



HPMS Vehicle Summary Data Example

HPMS Vehicle Summary Data Example

Year_Record	State_Code	FS_Group	Pct_MC	Pct_Cars	Pct_Lgt_Trucks	Pct_Buses	Pct_SU_Trucks	Pct_CU_Trucks	Summation
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2011	19	B	0.80	54.50	28.10	2.40	5.70	8.50	100.00
2011	19	C	1.50	67.20	21.20	2.00	4.10	4.00	100.00
2011	19	D	0.20	74.00	13.10	0.30	3.00	9.40	100.00
2011	19	E	0.90	71.90	19.40	0.20	2.90	4.70	100.00
2011	19	F	1.10	67.30	22.10	0.30	3.20	6.00	100.00



HPMS Vehicle Summary Data

The HPMS Vehicle Summary Data is a set of **State-wide average percentage** data on **vehicle miles traveled (VMT)** by **six vehicle groups** for **a given roadway functional group**.

For a given State, **36** numerical values are needed on an annual basis.



Summary

HPMS Vehicle Summary Data Characteristics

1: State wide average

2: Percentage

3: VMT weighted

3: six vehicle groups

4: six roadway functional groups

6: Roadway functional group specific

7: A total of $6 \times 6 = 36$ entries



Part 2

Understand Some HPMS Data Items and Other Related Concepts



Some Basic HPMS Concepts

Full Extent Data: Full Extent Data refers to a set of data item that are reported for an entire road system by functional class.

For example, [AADT](#) includes a set of Full Extent Data covering *each and every segment* of I-95 (functional class 1).



Some Basic HPMS Concepts

Sample Panel Data: Sample Panel Data is a set of data that is reported for a selected portion of a given roadway system.

For example, State Road 180 (US Highway 18) is functional classified as 2 with a total length of **214** miles and a total of **92** segments.

The **AADT_Combination_Truck** data only covers 24 of the 92 segments, and 36 miles of the **214** miles (*some segments, and limited length*).

The AADT_Combination_Truck data is called Sample Panel Data for FC 2 roadway here.



HPMS - Urban or Rural Identification Data – Urban Code

Function al System		1	2	3	4	5	6	7
	NHS	Int	OFE	OPA	MiA	MaC	MiC	Local
Rural	FE+R	FE+R	FE+R	FE+R	FE+R	FE+R		
Urban	FE+R							

FE = Full Extent

R = Ramp



HPMS - AADT

Functional System		1	2	3	4	5	6	7
	NHS	Int	OFE	OPA	MiA	MaC	MiC	Local
<i>Rural</i>	<i>FE+R</i>	<i>FE+R</i>	<i>FE+R</i>	<i>FE+R</i>	<i>FE+R</i>	<i>FE+R</i>		
<i>Urban</i>	<i>FE+R</i>							

FE = Full Extent
R = Ramp



HPMS - AADT_SUV (Single Unit Vehicle)

Function al System		1	2	3	4	5	6	7
	NHS	Int	OFE	OPA	MiA	MaC	MiC	Local
<u>Rural</u>	<u>FE</u>	<u>FE</u>	<u>SP</u>	<u>SP</u>	<u>SP</u>	<u>SP</u>		
<u>Urban</u>	<u>FE</u>	<u>FE</u>	<u>SP</u>	<u>SP</u>	<u>SP</u>	<u>SP</u>	<u>SP</u>	

FE = Full Extent

R = Ramp

SP= Sample Panel



HPMS - AADT_CU (Combination Vehicle)

Functional System		1	2	3	4	5	6	7
	NHS	Int	OFE	OPA	MiA	MaC	MiC	Local
<i>Rural</i>	<i>FE</i>	<i>FE</i>	<i>SP</i>	<i>SP</i>	<i>SP</i>	<i>SP</i>		
<i>Urban</i>	<i>FE</i>	<i>FE</i>	<i>SP</i>	<i>SP</i>	<i>SP</i>	<i>SP</i>	<i>SP</i>	

FE = Full Extent

R = Ramp

SP= Sample Panel



Spatial Intersecting Concept

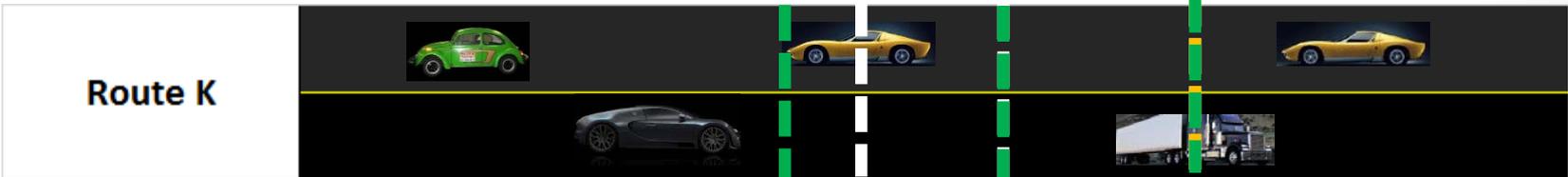
.2



Through Lane	4	6	8
Urban Code	Rural = 99999		Urban = 37156
County	Leon=17	Castle=23	
AADT	180,684	210,124	260,766
			260826

Route K is divided into 5 segments

Spatial Intersecting Concept



124 miles

Through Lane	4	6	8
Urban Code	Rural = 99999		Urban = 37156
County	Leon=17		Castle=23
AADT	180,684	210,124	260,766

ID=K
 FC=1
 TL=4
 UC=R
 L=52.5 miles
 County=17
 AADT=180,684

ID=K
 FC=1
 TL=4
 UC=R
 L=0.2 miles
 County=17
 AADT=210,124

ID=K
 FC=1
 TL=4
 UC=R
 L=5.1 miles
 County=23
 AADT=210,124

ID=K
 FC=1
 TL=6
 UC=R
 L=10.1 miles
 County=23
 AADT=260,766

ID=K
 FC=1
 TL=8
 UC=R
 L=49.3 miles
 County=23
 AADT=260,826

HPMS Spatial Intersector Tool

HPMS v8 - Home - Windows Internet Explorer

https://proxy-p.fhwa.dot.gov/hpmsp/#/ReviewMain

File Edit View Favorites Tools Help

Convert Select

Favorites Suggested Sites Home DOT Intranet (2) Home DOT Intranet Microsoft Word Template... StaffNet Home Page Surveys of Consumers Lo... User Authentication Dialog

HPMS v8 - Home

U.S. Department of Transportation
Federal Highway Administration

Highway Performance Monitoring System v8.0

Review National

DATA EDITORS DATA VALIDATION SAMPLE MANAGEMENT **REPORTS & ANALYSIS** ARCHIVE ADMIN HELP EXIT

Home

Reports
Spatial Intersector
Ad Hoc SQL

Year: 2012 State: 11 - District of Columbia



HPMS Spatial Intersector – Output Data

An ArcGIS dataset including all line work data (shp files) and associated characteristics data in a dbf file.



HPMS Spatial Intersector – Output Data – ArcGIS Dataset

Table

OBJECTID*	Year_Record	State_Code	Route_ID	Begin_Point	End_Point	AADT	SINGLE_UNIT_AADT	COME
1	2011	37	1000004043	6.662	6.7	20000	760	
2	2011	37	1000004030	10	10.1	22000	640	
3	2011	37	1000004017	10.8	10.9	50000	1700	
4	2011	37	1000004017	0	0.1	44000	1600	
5	2011	37	1000004040	17	17.1	56000	2100	
6	2011	37	1000004050	8.178	8.2	45000	1900	
7	2011	37	1000004067	5.6	5.7	91000	2800	
8	2011	37	1000004000	8.5	8.586	10600	2500	

(0 out of 195002 Selected)



HPMS Spatial Intersector – Output Data – .dbf File

OBJECT_ID	YEAR_RECORS	STATE_CODE	COUNTY_CODE	ROUTE_ID	F_SYSTEM	URBAN_CODE	NHS	BEGIN_POIN	END_POINT	AADT	SINGLE_UNI	COMBINATIO	FACILIT
13255	2011	37	37	2000000118	3	99999	1	0	0.1	21000	1100	1100	
15295	2011	37	37	2000000118	3	99999	1	0.1	0.2	21000	1100	1100	
12276	2011	37	37	2000000118	3	99999	1	0.2	0.255	21000	1100	1100	
14311	2011	37	37	2000000118	3	99999	1	0.255	0.3	21000	1100	1100	
11283	2011	37	37	2000000118	3	99999	1	0.3	0.4	21000	1100	1100	
13326	2011	37	37	2000000118	3	99999	1	0.4	0.482	21000	1100	1100	
10296	2011	37	37	2000000118	3	99999	1	0.482	0.5	20000	1000	1000	
12040	2011	37	37	2000000118	3	99999	1	0.5	0.6	20000	1000	1000	
14073	2011	37	37	2000000118	3	99999	1	0.6	0.7	20000	1000	1000	
11052	2011	37	37	2000000118	3	99999	1	0.7	0.767	20000	1000	1000	
13087	2011	37	37	2000000118	3	99999	1	0.767	0.8	20000	1000	1000	
15125	2011	37	37	2000000118	3	99999	1	0.8	0.9	20000	1000	1000	
12109	2011	37	37	2000000118	3	99999	1	0.9	1	20000	1000	1000	
13838	2011	37	37	2000000118	3	99999	1	1	1.097	20000	1000	1000	
10809	2011	37	37	2000000118	3	99999	1	1.097	1.1	20000	1000	1000	
12851	2011	37	37	2000000118	3	99999	1	1.1	1.2	20000	1000	1000	
14894	2011	37	37	2000000118	3	99999	1	1.2	1.3	20000	1000	1000	
11867	2011	37	37	2000000118	3	99999	1	1.3	1.4	20000	1000	1000	
13902	2011	37	37	2000000118	3	99999	1	1.4	1.5	20000	1000	1000	
10584	2011	37	37	2000000118	3	99999	1	1.5	1.6	20000	1000	1000	
12618	2011	37	37	2000000118	3	99999	1	1.6	1.7	20000	1000	1000	
14655	2011	37	37	2000000118	3	99999	1	1.7	1.8	20000	1000	1000	
11636	2011	37	37	2000000118	3	99999	1	1.8	1.9	20000	1000	1000	
13669	2011	37	37	2000000118	3	99999	1	1.9	2	20000	1000	1000	
10641	2011	37	37	2000000118	3	99999	1	2	2.1	20000	1000	1000	
12682	2011	37	37	2000000118	3	99999	1	2.1	2.2	20000	1000	1000	



HPMS Spatial Intersector – Output Data – .dbf file

OBJECTID	YEAR_RECORDED	STATE_CODE	COUNTY_CODE	ROUTE_ID	F_SYSTEM	URBAN_CODE	NHS	BEGIN_POIN	END_POINT	AADT	SINGLE_UNI	COMBINATIO	FACILIT
13259	2011	37	37	2000000118	3	99999	1	0	0.1	21000	1100	1100	
15295	2011	37	37	2000000118	3	99999	1	0.1	0.2	21000	1100	1100	
12276	2011	37	37	2000000118	3	99999	1	0.2	0.255	21000	1100	1100	
14311	2011	37	37	2000000118	3	99999	1	0.255	0.3	21000	1100	1100	
11283	2011	37	37	2000000118	3	99999	1	0.3	0.4	21000	1100	1100	
13326	2011	37	37	2000000118	3	99999	1	0.4	0.482	21000	1100	1100	
10296	2011	37	37	2000000118	3	99999	1	0.482	0.5	20000	1000	1000	
12040	2011	37	37	2000000118	3	99999	1	0.5	0.6	20000	1000	1000	
14073	2011	37	37	2000000118	3	99999	1	0.6	0.7	20000	1000	1000	
11052	2011	37	37	2000000118	3	99999	1	0.7	0.767	20000	1000	1000	
13087	2011	37	37	2000000118	3	99999	1	0.767	0.8	20000	1000	1000	
15125	2011	37	37	2000000118	3	99999	1	0.8	0.9	20000	1000	1000	
12109	2011	37	37	2000000118	3	99999	1	0.9	1	20000	1000	1000	
13838	2011	37	37	2000000118	3	99999	1	1	1.097	20000	1000	1000	
10809	2011	37	37	2000000118	3	99999	1	1.097	1.1	20000	1000	1000	
12851	2011	37	37	2000000118	3	99999	1	1.1	1.2	20000	1000	1000	
14894	2011	37	37	2000000118	3	99999	1	1.2	1.3	20000	1000	1000	
11867	2011	37	37	2000000118	3	99999	1	1.3	1.4	20000	1000	1000	
13902	2011	37	37	2000000118	3	99999	1	1.4	1.5	20000	1000	1000	
10584	2011	37	37	2000000118	3	99999	1	1.5	1.6	20000	1000	1000	
12618	2011	37	37	2000000118	3	99999	1	1.6	1.7	20000	1000	1000	
14655	2011	37	37	2000000118	3	99999	1	1.7	1.8	20000	1000	1000	
11636	2011	37	37	2000000118	3	99999	1	1.8	1.9	20000	1000	1000	
13669	2011	37	37	2000000118	3	99999	1	1.9	2	20000	1000	1000	
10641	2011	37	37	2000000118	3	99999	1	2	2.1	20000	1000	1000	
12682	2011	37	37	2000000118	3	99999	1	2.1	2.2	20000	1000	1000	



HPMS Spatial Intersector – Output Data – .dbf file

OBJECTID	YEAR_RECOR	STATE_CD	COUNTY_COD	ROUTE_ID	F_SYSTEM	URBAN_CODE	NHS	BEGIN_POIN	END_POINT	AADT	SINGLE_UNI	COMBINATIO	FACILI
13259	2011	37	37	2000000118	3	99999	1	0	0.1	21000	1100	1100	
15295	2011	37	37	2000000118	3	99999	1	0.1	0.2	21000	1100	1100	
12276	2011	37	37	2000000118	3	99999	1	0.2	0.255	21000	1100	1100	
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13087	2011	37	37	2000000118	3	99999	1	0.767	0.8	20000	1000	1000	
15125	2011	37	37	2000000118	3	99999	1	0.8	0.9	20000	1000	1000	
12109	2011	37	37	2000000118	3	99999	1	0.9	1	20000	1000	1000	
13838	2011	37	37	2000000118	3	99999	1	1	1.097	20000	1000	1000	
10809	2011										1000	1000	
12851	2011										1000	1000	
14894	2011										1000	1000	
11867	2011										1000	1000	
13902	2011										1000	1000	
10584	2011										1000	1000	
12618	2011										1000	1000	
14655	2011										1000	1000	
11636	2011										1000	1000	
13669	2011	37	37	2000000118	3	99999	1	1.9	2	20000	1000	1000	
10641	2011	37	37	2000000118	3	99999	1	2	2.1	20000	1000	1000	
12682	2011	37	37	2000000118	3	99999	1	2.1	2.2	20000	1000	1000	

Data can be analyzed
by individual county



HPMS Spatial Intersector – Output Data – .dbf file

OBJECTID	YEAR_RECOR	STATE_CODE	COUNTY_CODE	ROUTE_ID	F_SYSTEM	URBAN_CODE	NHS	BEGIN_POIN	END_POINT	AADT	SINGLE_UNI	COMBINATIO	FACILI
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12276	2011	37	37	2000000118	3	99999	1	0.2	0.255	21000	1100	1100	
14311	2011	37	37	2000000118	3	99999	1	0.255	0.3	21000	1100	1100	
11283	2011	37	37	2000000118	3	99999	1	0.3	0.4	21000	1100	1100	
13326	2011										1100	1100	
10296	2011										1000	1000	
12040	2011										1000	1000	
14073	2011										1000	1000	
11052	2011										1000	1000	
13087	2011										1000	1000	
15125	2011										1000	1000	
12109	2011										1000	1000	
13838	2011										1000	1000	
10809	2011										1000	1000	
12851	2011										1000	1000	
14894	2011										1000	1000	
11867	2011										1000	1000	
13902	2011										1000	1000	
10584	2011										1000	1000	
12618	2011										1000	1000	
14655	2011										1000	1000	
11636	2011										1000	1000	
13669	2011										1000	1000	
10641	2011										1000	1000	
12682	2011	37	37	2000000118	3	99999	1	2.1	2.2	20000	1000	1000	

Data can be analyzed
by individual route,
FC and area type
(99999=rural,
all others =urban)



HPMS Spatial Intersector – Output Data – .dbf file

OBJECTID	YEAR_RECOR	STATE_CODE	COUNTY_COD	ROUTE_ID	F_SYSTEM	URBAN_CODE	NH	BEGIN_POIN	END_POINT	AADT	SINGLE_UNI	COMBINATIO	FACILI
13259	2011	37	37	2000000118	3	99999	1	0	0.1	21000	1100	1100	
15295	2011	37	37	2000000118	3	99999	1	0.1	0.2	21000	1100	1100	
12276	2011	37	37	2000000118	3	99999	1	0.2	0.255	21000	1100	1100	
14311	2011	37	37	2000000118	3	99999	1	0.255	0.3	21000	1100	1100	
11283	2011	37	37	2000000118	3	99999	1	0.3	0.4	21000	1100	1100	
13326	2011	37	37	2000000118	3	99999	1	0.4	0.482	21000	1100	1100	
10296	2011	37	37	2000000118	3	99999	1	0.482	0.5	20000	1000	1000	
12040	2011	37	37	2000000118	3	99999	1	0.5	0.6	20000	1000	1000	
14073	2011	37	37	2000000118	3	99999	1	0.6	0.7	20000	1000	1000	
11052	2011	37	37	2000000118	3	99999	1	0.7	0.767	20000	1000	1000	
13087	2011	37	37	2000000118	3	99999	1	0.767	0.8	20000	1000	1000	
15125	2011	37	37	2000000118	3	99999	1	0.8	0.9	20000	1000	1000	
12109	2011	37	37	2000000118	3	99999	1	0.9	1	20000	1000	1000	
13838											1000	1000	
10809											1000	1000	
12851											1000	1000	
14894											1000	1000	
11867											1000	1000	
13902											1000	1000	
10584											1000	1000	
12618											1000	1000	
14655	2011	37	37	2000000118	3	99999	1	1.7	1.8	20000	1000	1000	
11636	2011	37	37	2000000118	3	99999	1	1.8	1.9	20000	1000	1000	
13669	2011	37	37	2000000118	3	99999	1	1.9	2	20000	1000	1000	
10641	2011	37	37	2000000118	3	99999	1	2	2.1	20000	1000	1000	
12682	2011	37	37	2000000118	3	99999	1	2.1	2.2	20000	1000	1000	

A segment's length
= End_point - Begin_point



HPMS Spatial Intersector – Output Data – .dbf file

OBJECTID	YEAR_RECOR	STATE_CODE	COUNTY_COD	ROUTE_ID	F_SYSTEM	URBAN_CODE	NHS	BEGIN_POIN	END_POINT	AADT	SINGLE_UNI	COMBINATIO	F_CILIT
13259	2011	37	37	2000000118	3	99999	1	0	0.1	21000	1100	1100	
15295	2011	37	37	2000000118	3	99999	1	0.1	0.2	21000	1100	1100	
12276	2011	37	37	2000000118	3	99999	1	0.2	0.255	21000	1100	1100	
14311	2011	37	37	2000000118	3	99999	1	0.255	0.3	21000	1100	1100	
11283	2011	37	37	2000000118	3	99999	1	0.3	0.4	21000	1100	1100	
13326	2011	37	37	2000000118	3	99999	1	0.4	0.482	21000	1100	1100	
10296	2011	37	37	2000000118	3	99999	1	0.482	0.5	20000	1000	1000	
12040	2011	37	37	2000000118	3	99999	1	0.5	0.6	20000	1000	1000	
14073	2011	37	37	2000000118	3	99999	1	0.6	0.7	20000	1000	1000	
11052	2011	37	37	2000000118	3	99999	1	0.7	0.767	20000	1000	1000	
13087	2011	37	37	2000000118	3	99999	1	0.767	0.8	20000	1000	1000	
15125	2011	37	37	2000000118	3	99999	1	0.8	0.9	20000	1000	1000	
12109	2011	37	37	2000000118	3	99999	1	0.9	1	20000	1000	1000	

A segment's VMT= segment length
x Flow Rate

14655	2011	37	37	2000000118	3	99999	1	1.7	1.8	20000	1000	1000	
11636	2011	37	37	2000000118	3	99999	1	1.8	1.9	20000	1000	1000	
13669	2011	37	37	2000000118	3	99999	1	1.9	2	20000	1000	1000	
10641	2011	37	37	2000000118	3	99999	1	2	2.1	20000	1000	1000	
12682	2011	37	37	2000000118	3	99999	1	2.1	2.2	20000	1000	1000	



Re-organized Output Data Table

OBJECTID	YEAR_RECOI	STATE_CODE	COUNTY_COD	F_SYSTEM	Area_Type	VMT	SUVMT	CUVMT	NHS
10296	2011	37	37	3	R	360.00	18.00	18.00	
10378	2011	37	37	3	R	1800.00	91.00	95.00	
10416	2011	37	37	3	R	2000.00	100.00	100.00	
10542	2011	37	37	3	R	1799.00	91.00	95.00	
10584	2011	37	37	3	R	2000.00	100.00	100.00	
10601	2011	37	37	3	R	1799.00	91.00	95.00	
10641	2011	37	37	3	R	2000.00	100.00	100.00	
10765	2011	37	37	3	R	1799.00	91.00	95.00	
10809	2011	37	37	3	R	60.00	3.00	3.00	
10962	2011	37	37	3	R	1899.00	95.00	99.00	
11004	2011	37	37	3	R	1800.00	91.00	95.00	
11052	2011	37	37	3	R	1340.00	67.00	67.00	
11133	2011	37	37	3	R	37.00	1.90	1.98	
11173	2011	37	37	3	R	1457.00	73.71	76.95	
11194	2011	37	37	3	R	1899.00	95.00	99.00	
11236	2011	37	37	3	R	1800.00	91.00	95.00	
11283	2011	37	37	3	R	2100.00	110.00	110.00	
11359	2011	37	37	3	R	306.00	15.47	16.15	
11397	2011	37	37	3	R	1980.00	99.00	99.00	
11597	2011	37	37	3	R	1728.00	87.36	91.20	
11636	2011	37	37	3	R	1999.00	100.00	100.00	
11760	2011	37	37	3	R	1800.00	91.00	95.00	
11825	2011	37	37	3	R	1800.00	91.00	95.00	
11867	2011	37	37	3	R	1999.00	100.00	100.00	
11950	2011	37	37	3	R	1899.00	95.00	99.00	
11992	2011	37	37	3	R	1800.00	91.00	95.00	
12040	2011	37	37	3	R	1999.00	100.00	100.00	



Re-organized Output Data Table

OBJECTID	YEAR_RECOI	STATE_CODE	COUNTY_COD	F_SYSTEM	Area_Type	VMT	SUVMT	CUVMT	NHS
10296	2011	37	37	3 R		360.00	18.00	18.00	
10378	2011	37	37	3 R		1800.00	91.00	95.00	
10416	2011	37	37	3 R		2000.00	100.00	100.00	
10542	2011	37	37	3 R		1799.00	91.00	95.00	
10584	2011	37	37	3 R		2000.00	100.00	100.00	
10601	2011	37	37	3 R		1799.00	91.00	95.00	
10641	2011	37	37	3 R		2000.00	100.00	100.00	
10765	2011	37	37	3 R		1799.00	91.00	95.00	
10809	2011	37	37	3 R		60.00	3.00	3.00	
10962	2011	37	37	3 R		1899.00	95.00	99.00	
11004	2011	37	37	3 R		1800.00	91.00	95.00	
11052	2011	37	37	3 R		1340.00	67.00	67.00	
11133	2011	37	37	3 R		37.00	1.90	1.98	
11173	2011	37	37	3 R		1457.00	73.71	76.95	
11194	2011	37	37	3 R		1899.00	95.00	99.00	
11236	2011	37	37	3 R		1800.00	91.00	95.00	
11283	2011	37	37	3 R		2100.00	110.00	110.00	
11359	2011	37	37	3 R		306.00	15.47	16.15	
11397	2011	37	37	3 R		1980.00	99.00	99.00	
11597	2011	37	37	3 R		1728.00	87.36	91.20	
11636	2011	37	37	3 R		1999.00	100.00	100.00	
11760	2011	37	37	3 R		1800.00	91.00	95.00	
11825	2011	37	37	3 R		1800.00	91.00	95.00	
11867	2011	37	37	3 R		1999.00	100.00	100.00	
11950	2011	37	37	3 R		1899.00	95.00	99.00	
11992	2011	37	37	3 R		1800.00	91.00	95.00	
12040	2011	37	37	3 R		1999.00	100.00	100.00	



Summary

1. Full Extent vs. Sample Data
2. AADT, AADT_SUV, AADT_CU
3. Spatial Intersecting –tool and outputs
4. VMT by county, roadway functional class and by vehicle types (all, SUV, CU)



Part 3

HPMS Vehicle Summary Data Computation



Our Ultimate Goal

HPMS Vehicle Summary Data

Year_Record	State_Code	FS_Group	Pct_MC	Pct_Cars	Pct_Lgt_Trucks	Pct_Buses	Pct_SU_Trucks	Pct_CU_Trucks



Approach and Thought Process

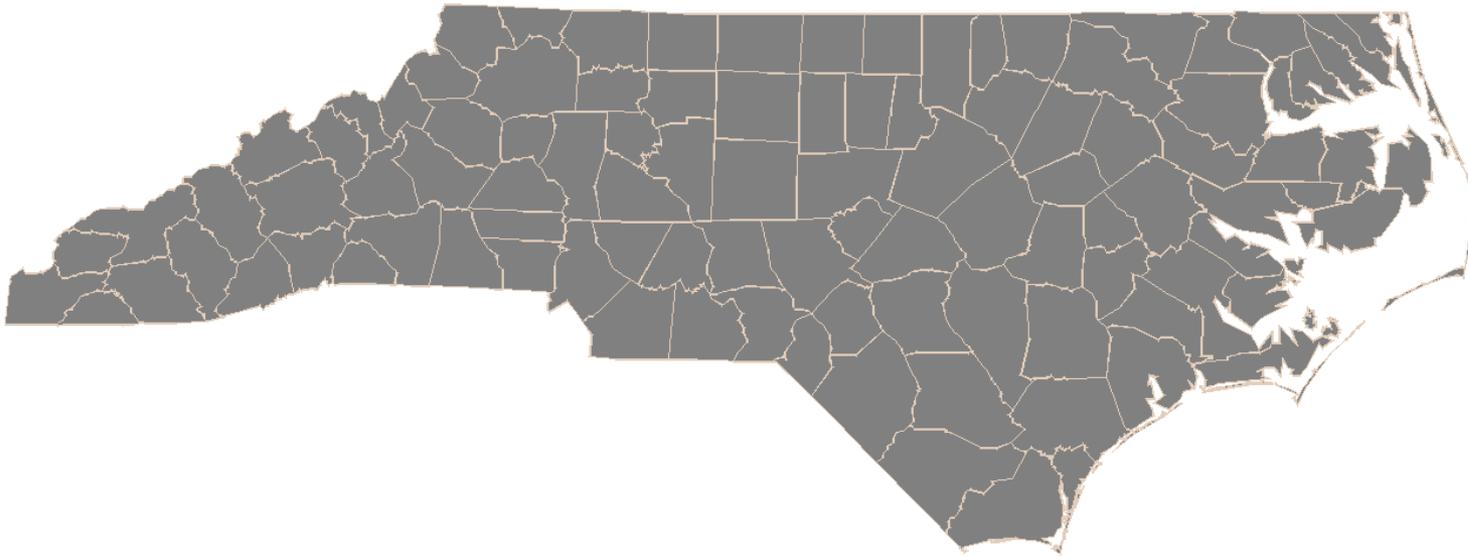
The approach is to 1) obtain VMT by vehicle types for each given roadway functional group within the *smallest geography area* possible 2) summarize the appropriate VMTs of **all the areas** accordingly to obtain state level VMT by vehicle types for each given roadway functional group.



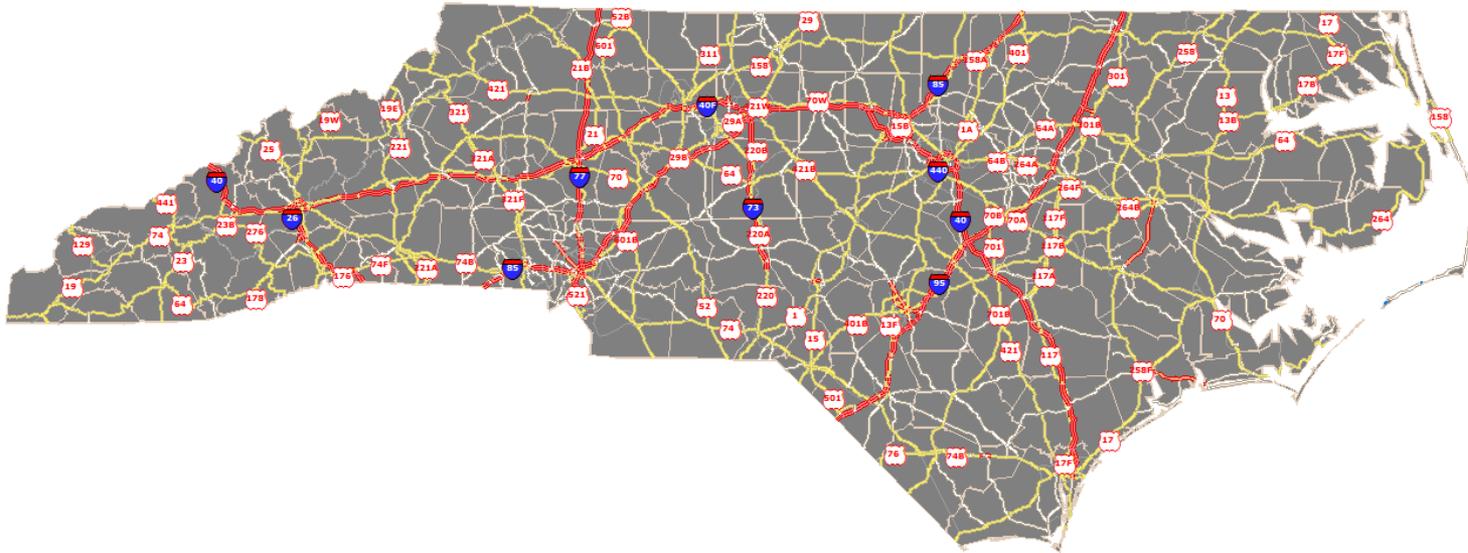
Approach Illustration – Entire State



Approach Illustration – All Counties



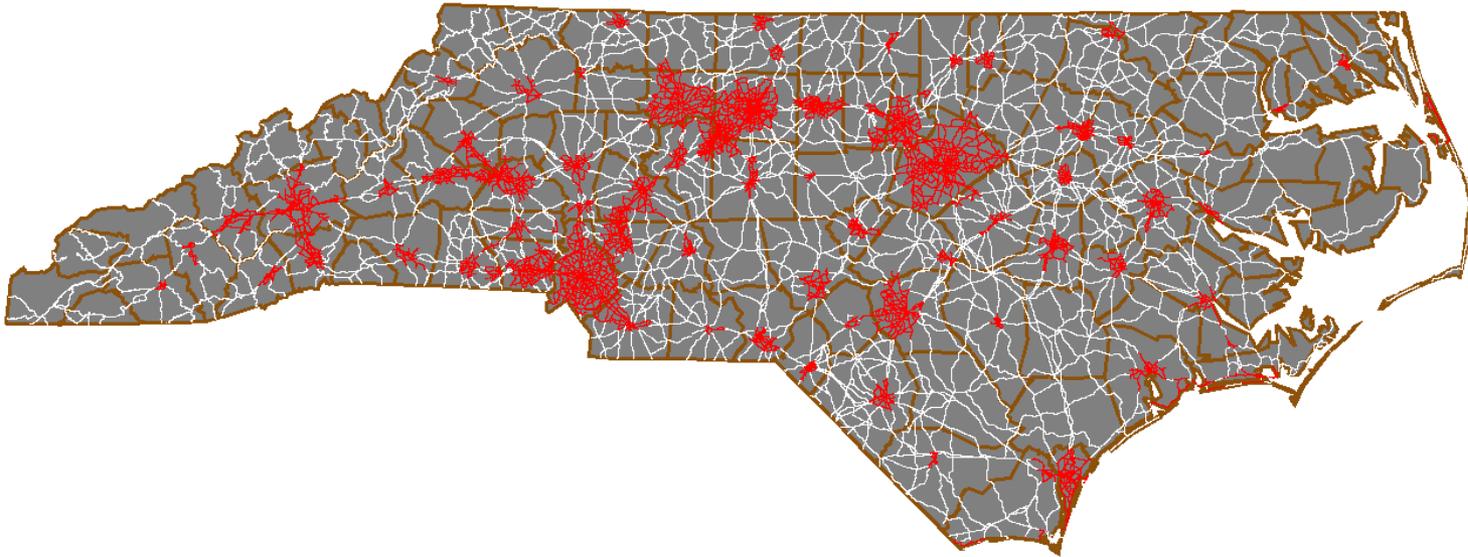
Approach Illustration – Roadways



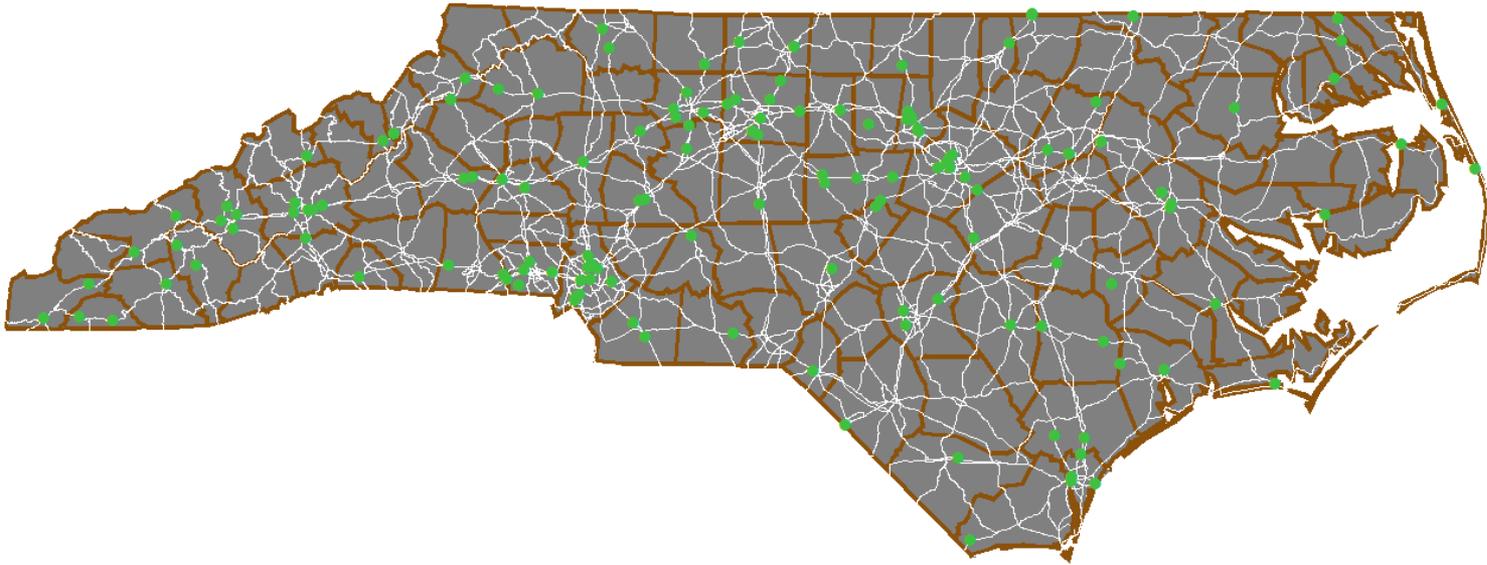
Other than local and rural minor collectors, HPMS 's segment length and AADT data can be used to compute VMT at the county level geography



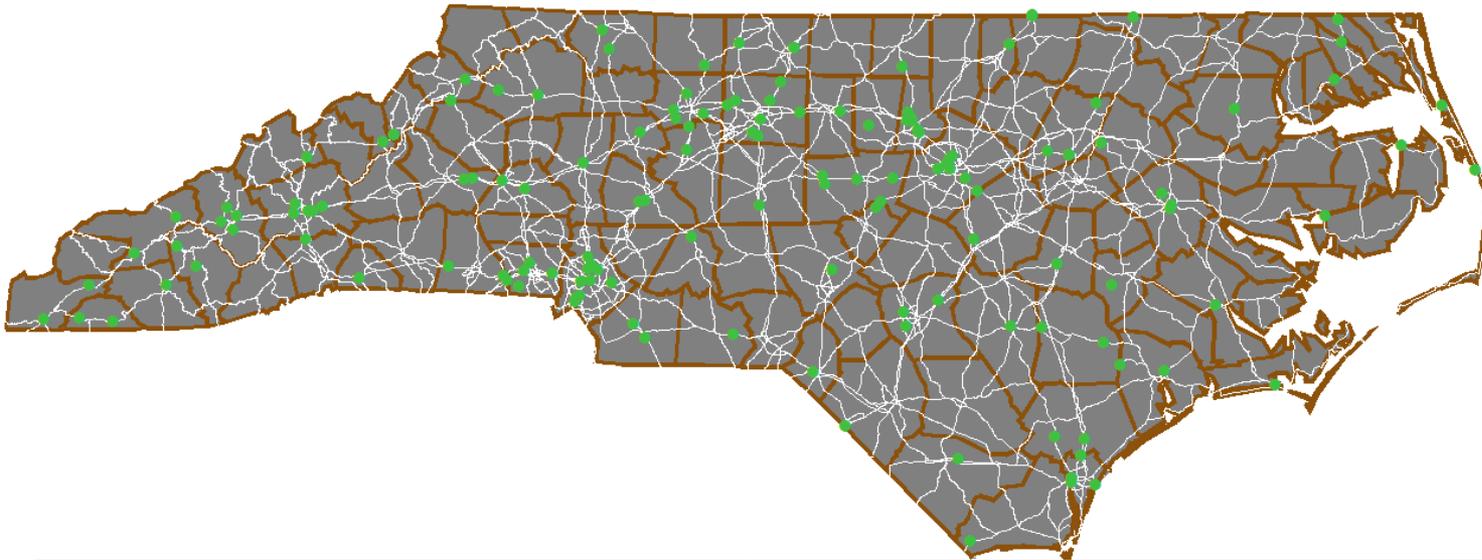
Approach Illustration – Urban and Rural Roadways



Approach Illustration – Monitoring Sites



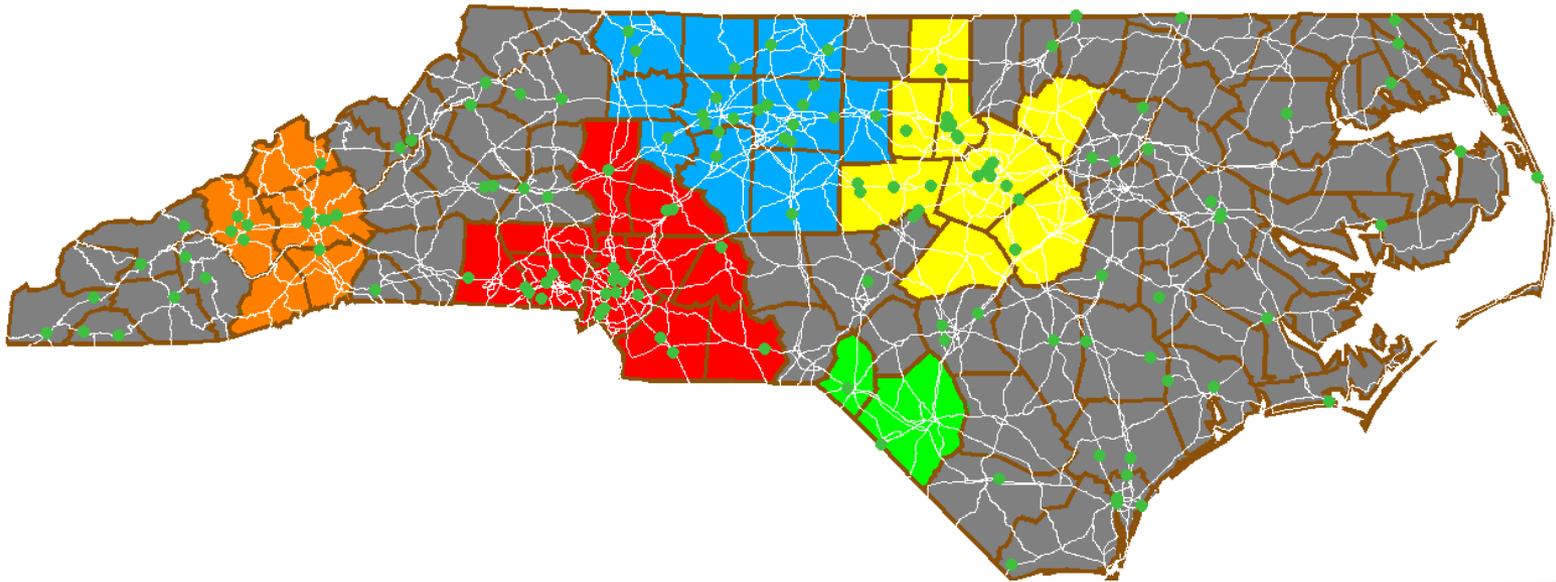
Approach Illustration – Monitoring Sites



Vehicle Group	Counts (seasonally adjusted and annualized count)
Motorcycle - FHWA 1	25
Cars - FHWA 2	12569
Light Truck - FHWA 3	6542
Buses - FHWA 4	124
Single Unit truck - FHWA 5, 6, and 7	894
Combination Truck - FHWA, 8, 9, 10, 11, 12, and 13	507



Approach Illustration – MSA Areas



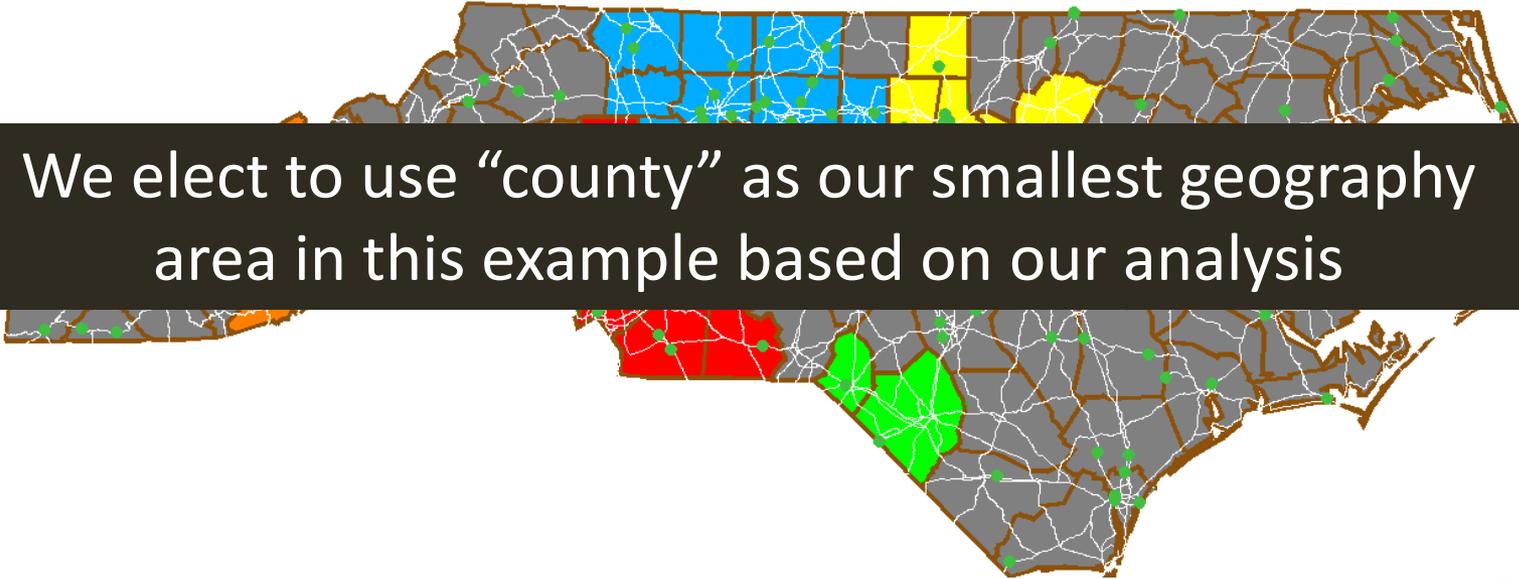
Approach and Thought Process

First, we must have complete VMT data for each roadway FC for the “smallest” area we choose to use because VMT data are our weights.

Second, we must have the supporting vehicle classification data to enable the split of the above VMT data for the “smallest” area we choose at the first place.



Approach Illustration – All Features



We elect to use “county” as our smallest geography area in this example based on our analysis

1: VMT can be obtained for a) each MSA areas, b) each county, 3) group of counties, and 4) entire State.

2: Traffic classification data are available for most counties and all roadway FCs



Approach Illustration – County data

A: Within each county, compute VMT for a given roadway functional class.

B: Within each county, compute % of vehicles based *solely on vehicle classification count data* for a given roadway functional class.

C: For a given zone, compute total VMT for a given functional class roadway and a given vehicle type *by multiplying A with B*



County Level Data Illustration

Year_Record	County	FC	Area_type	MC	Cars	Light Truck	Bus	SUT	CUT
		1	U						
		2	U						
		3	U						
		4	U						
		5	U						
		6	U						
		7	U						
		1	R						
		2	R						
		3	R						
		4	R						
		5	R						
		6	R						
		7	R						



Remember the Spatial Intersector Tool and Output Data

OBJECTID	YEAR_RECOI	STATE_CODE	COUNTY_COD	F_SYSTEM	Area_Type	VMT	SUVMT	CUVMT	NHS
10296	2011	37	37	3	R	360.00	18.00	18.00	
10378	2011	37	37	3	R	1800.00	91.00	95.00	
10416	2011	37	37	3	R	2000.00	100.00	100.00	
10542	2011	37	37	3	R	1799.00	91.00	95.00	
10584	2011	37	37	3	R	2000.00	100.00	100.00	
10601	2011	37	37	3	R	1799.00	91.00	95.00	
10641	2011	37	37	3	R	2000.00	100.00	100.00	
10765	2011	37	37	3	R	1799.00	91.00	95.00	
10809	2011	37	37	3	R	60.00	3.00	3.00	
10962	2011	37	37	3	R	1899.00	95.00	99.00	
11004	2011	37	37	3	R	1800.00	91.00	95.00	
11052	2011	37	37	3	R	1340.00	67.00	67.00	
11133	2011	37	37	3	R	37.00	1.90	1.98	
11173	2011	37	37	3	R	1457.00	73.71	76.95	
11194	2011	37	37	3	R	1899.00	95.00	99.00	
11236	2011	37	37	3	R	1800.00	91.00	95.00	
11283	2011	37	37	3	R	2100.00	110.00	110.00	
11359	2011	37	37	3	R	306.00	15.47	16.15	
11397	2011	37	37	3	R	1980.00	99.00	99.00	
11597	2011	37	37	3	R	1728.00	87.36	91.20	
11636	2011	37	37	3	R	1999.00	100.00	100.00	
11760	2011	37	37	3	R	1800.00	91.00	95.00	
11825	2011	37	37	3	R	1800.00	91.00	95.00	
11867	2011	37	37	3	R	1999.00	100.00	100.00	
11950	2011	37	37	3	R	1899.00	95.00	99.00	
11992	2011	37	37	3	R	1800.00	91.00	95.00	
12040	2011	37	37	3	R	1999.00	100.00	100.00	



Summarize VMT Data by County, FC, and Area Type

AAnew_nc_six_c.xls [Compatibility Mode] - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat SecureZIP

Normal Page Layout Page Break Preview Custom Views Full Screen

Ruler Formula Bar Gridlines Headings

Zoom 100% Zoom to Selection

New Window Arrange All Freeze Panes

Split View Side by Side Synchronous Reset Window

K20

	A	B	C	D	E	F	G	H	
1					Data				
2		COUNTY_COD	F_SYSTEM	Area_Type2	Sum of VMT	Sum of SUVMT	Sum of CUVMT		
3		37	3	R	910289.70	41166.51	48087.17		
4				U	97635.00	5737.92	4021.79		
5				3 Total		1007924.70	46904.43	52108.96	
6				4	R	97091.90	8.60	5.00	
7					U	14486.50	0.00	0.00	
8				4 Total		111578.40	8.60	5.00	
9			5	R	349891.72	0.00	0.00		
10				U	30814.40	0.00	0.00		
11			5 Total		380706.12	0.00	0.00		
12		37 Total			1500209.22	46913.03	52113.96		
13		39	3	R	302994.40	12698.68	8077.56		
14				3 Total		302994.40	12698.68	8077.56	
15				4	R	40705.90	0.00	0.00	
16				4 Total		40705.90	0.00	0.00	
17				5	R	205993.61	2058.96	1887.36	
18				5 Total		205993.61	2058.96	1887.36	
19		39 Total			549693.91	14757.64	9964.92		
20		43	4	R	155416.90	0.00	0.00		
21				4 Total		155416.90	0.00	0.00	
22				5	R	35189.42	0.00	0.00	
23				5 Total		35189.42	0.00	0.00	
24		43 Total			190606.32	0.00	0.00		

Summarize VMT Data by County, FC, and Area Type

COUNTY_COD	F_SYSTEM	Area_Type	Sum of VMT	Sum of SUVMT	Sum of CUVMT
21	1	U	2,767,295	85,400	178,984
21	2	U	605,841	15,630	13,092
21	3	U	1,145,496	0	0
21	4	R	71,609	0	0
21	4	U	896,790	0	0
21	5	R	142,946	0	0
21	5	U	429,555	0	0
37	3	R	910,290	41,167	48,087
37	3	U	97,635	5,738	4,022
37	4	R	97,092	9	5

For County 21, we have U1,
U2, U3, U4, U5,
and R4 and R5 VMT

33	3	R	400,343	21,041	10,300
99	3	U	253,463	4,706	4,797
99	4	R	340,300	1,938	446
99	4	U	36,163	0	0
99	5	R	29,918	196	20
99	5	U	39,405	0	0
113	3	R	203,186	8,126	6,318
113	3	U	117,842	4,170	3,061
113	4	R	140,606	0	0



From HPMS's Spatial Intersector, We Have VMT by County (21), Area Type, and FC

COUNTY_COD	FC	Area_Type	VMT	SUVVMT	CUVMT
21	1	U	2,767,295	85,400	178,984
21	2	U	605,841	15,630	13,092
21	3	U	1,145,496	0	0
21	4	R	71,609	0	0
21	4	U	896,790	0	0
21	5	R	142,946	0	0
21	5	U	429,555	0	0

Data A



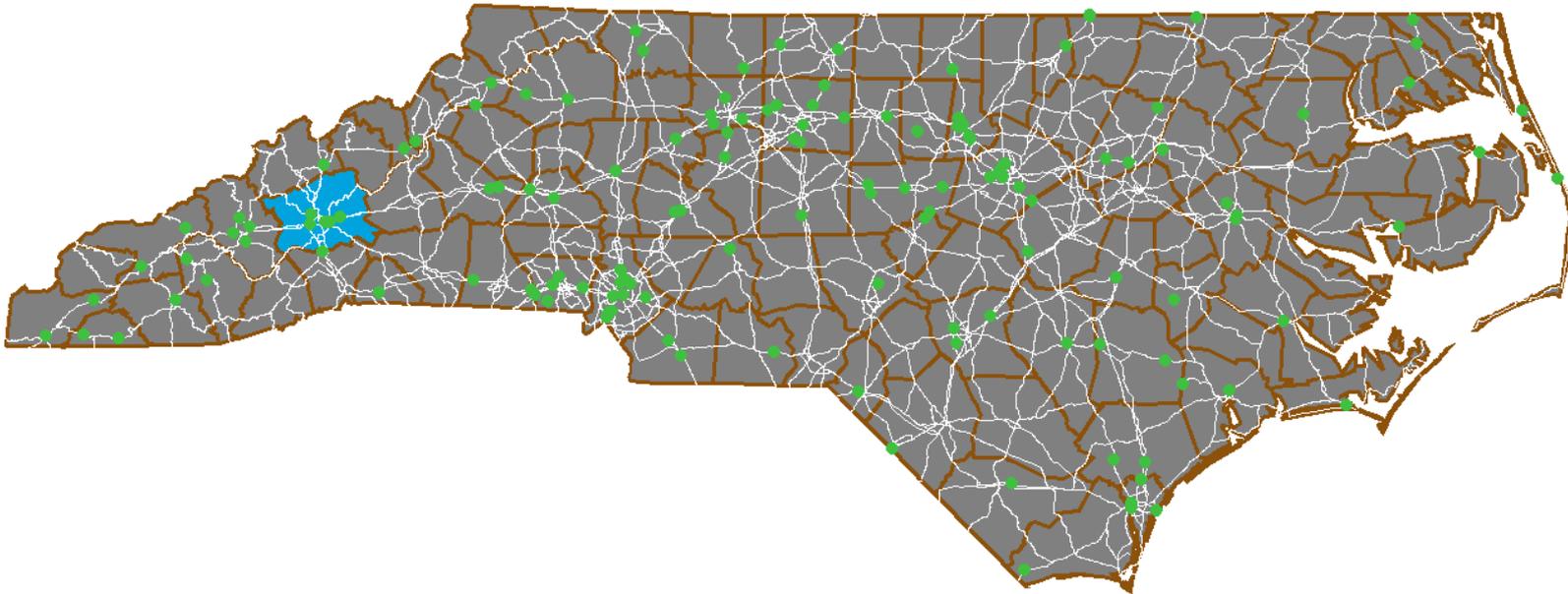
From HPMS's Spatial Intersector, We Have VMT by County (21), Area Type, and FC

COUNTY_COD	FC	Area_Type	VMT	SUVVMT	CUVMT
21	1	U	2,767,295	85,400	178,984
21	2	U	605,841	15,630	13,092
21	3	U	1,145,496	0	0
21	4	R	71,609	0	0
21	4	U	896,790	0	0
21	5	R	142,946	0	0
21	5	U	429,555	0	0

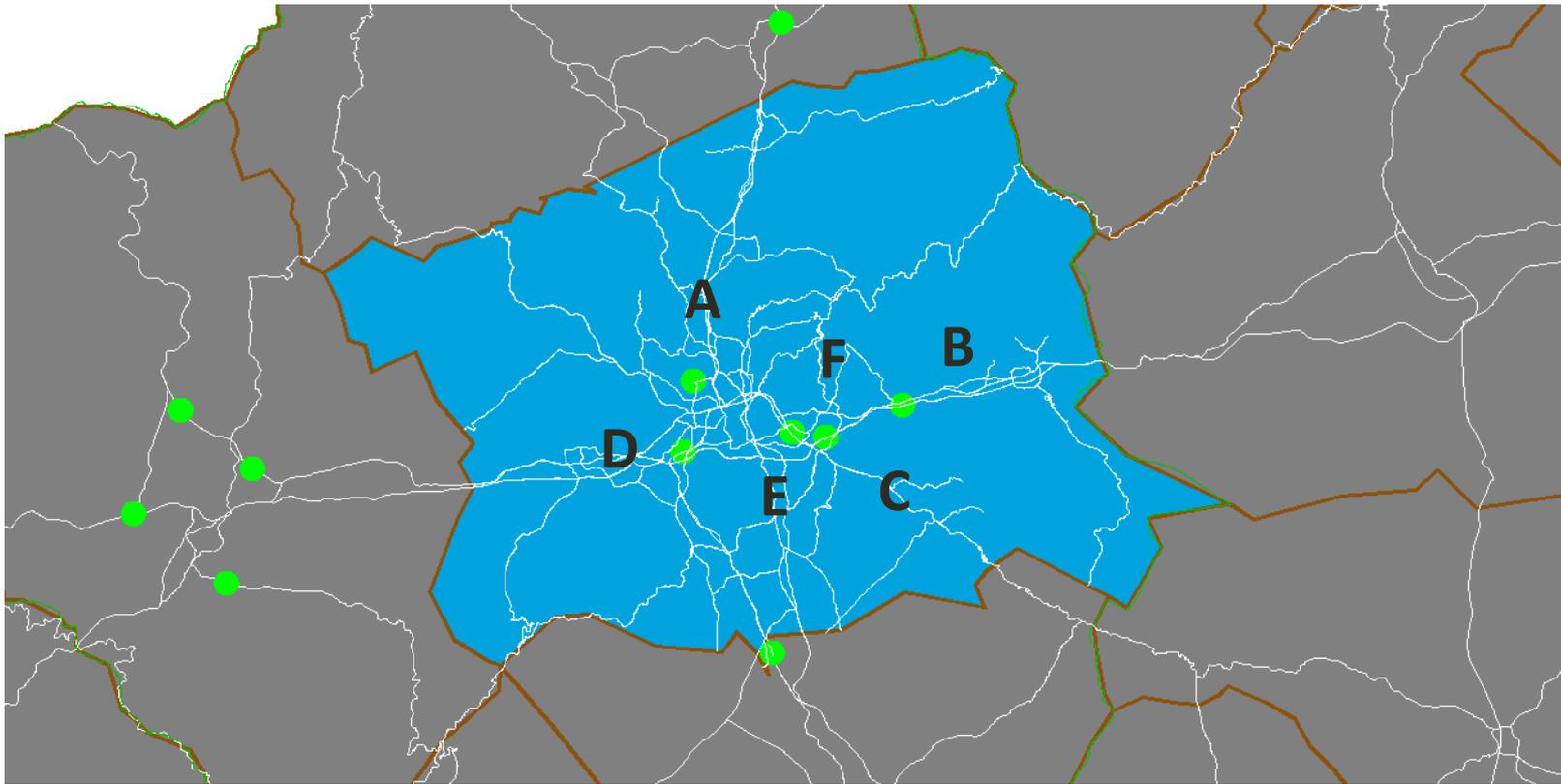
For County 21, we need classification data
for U1,
U2, U3, U4, U5,
and R4 and R5 VMT



Approach Illustration – County 21 Classification data



Approach Illustration – County 21 Monitoring Site Data



From Traffic Monitoring Sites in County 21, We Have Count Data ...

Counts (seasonally adjusted and annualized count)

Monitoring Site ID	A	B	C	D	E	F		
Roadway FC	U1	U2	U3	U4	U4	R4	R5	U5
Vehicle Group								
Motorcycle - FHWA 1	25	18	45	42	26	12		
Cars - FHWA 2	12,569	11,687	7,890	6,246	4,251	1,276		
Light Truck - FHWA 3	6,542	3,452	1,421	1,222	720	230		
Buses - FHWA 4	124	256	266	221	124	62		
Single Unit truck - FHWA 5, 6, and 7	894	452	123	121	164	84		
Combination Truck - FHWA, 8, 9, 10, 11, 12, and 13	507	324	66	43	65	32		

**Not all FC roadways have classification data.
Consider to use “surrogate” data based on
local knowledge and experience**



From Traffic Monitoring Sites in County 21, We Have Count Data ...

Counts (seasonally adjusted and annualized count)

Monitoring Site ID	A	B	C	D	E	F	Surrogates	
Roadway FC	U1	U2	U3	U4	U4	R4	R5	U5
Vehicle Group								
Motorcycle - FHWA Δ 1	25	18	45	42	26	12	12	39
						276	4,678	2,122
						30	895	610
						32	34	240
Sin						34	182	120
Car								
8, 9, 10, 11, 12, and 13	507	324	66	43	65	32	161	112

No monitored class data for R5 and U5. Develop Surrogate Data.

From Traffic Monitoring Sites in County 21, We Have Count Data ...

Counts (seasonally adjusted and annualized count)

Monitoring Site ID	A	B	C	D	E	F	Surrogates	
Roadway FC	U1	U2	U3	U4	U4	R4	R5	U5
Vehicle Group								
Motorcycle - FHWA 1	25	18	45	42	26	12	12	39
Cars - FHWA 2	12,569	11,687	7,890	6,246	4,251	1,276	4,678	2,122
Light Truck - FHWA 3	6,542	3,452	1,421	1,222	720	230	895	610
Buses - FHWA 4	124	256	266	221	124	62	34	240
Single Unit truck - FHWA 5, 6, and 7	894	452	123	121	164	84	182	120
Combinatorial FHWA 8, 9, 10, 11								

Combine Sites D and E.

U4 are covered by both

From Traffic Monitoring Sites in County 21, We Have Count Data ...

Counts (seasonally adjusted and annualized count)								
Monitoring Site ID	A	B	C	D	E	F	Surrogates	
Roadway FC	U1	U2	U3	U4	U4	R4	R5	U5
Vehicle Group								
Motorcycle - FHWA 1	25	18	45	68		12	12	39
Cars - FHWA 2	12,569	11,687	7,890	10,497		1,276	4,678	2,122
Light Truck - FHWA 3	6,542	3,452	1,421	1,942		230	895	610
Buses - FHWA 4	124	256	266	345		62	34	240
Single Unit truck - FHWA 5, 6, and 7	894	452	123	285		84	182	120
Combination Truck - FHWA, 8, 9, 10, 11, 12, and 13	507	324	66	108		32	161	112



112
64

From Traffic Monitoring Sites in County 21, Compute % Counts ...

		J	K	L	M	N	O	P	Q
		% of Counts (seasonally adjusted and annualized count)							
Monitoring Site ID		A	B	C	D	E	F	Surrogates	
Roadway FC		U1	U2	U3	U4	U4	R4	R5	U5
Vehicle Group									
1	Motorcycle - FHWA 1	$\frac{j1}{sum(j1..j3)}$	$\frac{k1}{sum(k1..k6)}$	$\frac{L1}{sum(L1..L6)}$					
2	Cars - FHWA 2	$\frac{j2}{sum(j1..j3)}$	$\frac{k2}{sum(k1..k6)}$	$\frac{L2}{sum(L1..L6)}$					
3	Light Truck - FHWA 3	$\frac{j3}{sum(j1..j3)}$	$\frac{k3}{sum(k1..k6)}$	$\frac{L3}{sum(L1..L6)}$					
4	Buses - FHWA 4	J4/(J4+J5)	$\frac{k4}{sum(k1..k6)}$	$\frac{L4}{sum(L1..L6)}$					
5	Single Unit truck - FHWA 5, 6, and 7	J5/(J4+J5)	$\frac{k5}{sum(k1..k6)}$	$\frac{L5}{sum(L1..L6)}$					
6	Combination Truck - FHWA, 8, 9, 10, 11, 12, and 13		$\frac{k6}{sum(k1..k6)}$	$\frac{L6}{sum(L1..L6)}$					



From Traffic Monitoring Sites in County 21, Compute % Counts ...

% of Counts (seasonally adjusted and annualized count)

Monitoring Site ID	A	B	C	D	E	F	Surrogates	
Roadway FC	U1	U2	U3	U4	U4	R4	R5	U5
Vehicle Group								
Motorcycle - FHWA 1	0.13%	0.11%	0.46%	0.51%		0.71%	0.20%	1.20%
Cars - FHWA 2	65.68%	72.19%	80.42%	79.25%		75.24%	78.46%	65.43%
Light Truck - FHWA 3	34.19%	21.32%	14.48%	14.66%		13.56%	15.01%	18.81%
Buses - FHWA 4	12.18%	1.58%	2.71%	2.60%		3.66%	0.57%	7.40%
Single Unit truck - FHWA 5, 6, and 7	87.82%	2.79%	1.25%	2.15%		4.95%	3.05%	3.70%
Combination Truck - FHWA, 8, 9, 10, 11, 12, and 13	X	2.00%	0.67%	0.82%		1.89%	2.70%	3.45%
Total %	200.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%



From Traffic Monitoring Sites in County 21, Compute % Counts ...

% of Counts (seasonally adjusted and annualized count)

Monitoring Site ID	A	B	C	D	E	F	Surrogates	
Roadway FC	U1	U2	U3	U4	U4	R4	R5	U5
Vehicle Group								
Motorcycle - FHWA 1	0.13%	0.11%	0.46%	0.51%	0.51%	0.71%	0.20%	1.20%
Cars - FHWA 2	65.68%	72.19%	80.42%	79.25%	79.25%	75.24%	78.46%	65.43%
Light Truck - FHWA 3	34.19%	21.32%	14.48%	14.66%	14.66%	13.56%	15.01%	18.81%
Buses - FHWA 4	12.1%							7.40%
Single Unit truck - FHWA 5, 6, and 7	87.8%							3.70%
Combination Truck - FHWA, 8, 9, 10, 11, 12, and 13								3.45%
Total %	200.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Data B



Surrogate

Traffic Classification Data Development

- Geography – where other data may be available: within the area/outside the area
- Roadway FC - other similar roadway functional classes
- Travel pattern
- Growth trend



The Ultimate VMT Data for County 21

Year_Record	County	FC	Area_type	MC	Cars	Light Truck	SUV		CUT
							Bus	SUT	
2011	21	1	U						
2011	21	2	U						
2011	21	3	U						
2011	21	4	U						
2011	21	5	U						
2011	21	6	U						
2011	21	7	U						
2011	21	1	R						
2011	21	2	R						
2011	21	3	R						
2011	21	4	R						
2011	21	5	R						
2011	21	6	R						
2011	21	7	R						



The Ultimate VMT Data for County 21

Year_Record	County	FC	Area_type	MC	Cars	Light Truck	SUV	Bus	SUT	CUT
2011	21	1	U							

Data A

X

Data B

2011	21	2	R							
2011	21	3	R							

Except in dealing with U1 or R1

2011	21	7	R							
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The Ultimate VMT Data for County 21

Year_Record	County	FC	Area_type	MC	Cars	Light Truck	SUV		CUT
							Bus	SUT	
2011	21	1	U						
2011	21	2	U	674	487,217	129,184	9,580	16,915	12,125
2011	21	3	U	5,254	921,207	165,911	31,057	14,361	7,706
2011	21	4	U	4,604	710,728	131,488	23,360	19,297	7,312
2011	21	5	U	5,166	281,072	80,798	31,789	15,895	14,835
2011	21	6	U						
2011	21	7	U						
2011	21	1	R						
2011	21	2	R						
2011	21	3	R						
2011	21	4	R	507	53,875	9,711	2,618	3,547	1,351
2011	21	5	R	288	93,534	26,888	10,579	5,289	4,937
2011	21	6	R						
2011	21	7	R						



The Ultimate VMT Data for County 21 – How to Fill U1 and R1 Data

Year_Record	County	FC	Area_type	MC	Cars	Light Truck	SUV		
							Bus	SUT	CUT
2011	21	1	U						
2011	21	2	U	674	487,217	129,184	9,580	16,915	12,125
2011	21	3	U						
dealing with U1 or R1									
2011	21	7	U						
2011	21	1	R						
2011	21	2	R						
2011	21	3	R						
2011	21	4	R	507	53,875	9,711	2,618	3,547	1,351
2011	21	5	R	288	93,534	26,888	10,579	5,289	4,937
2011	21	6	R						
2011	21	7	R						



The Ultimate VMT Data for County 21 – How to Fill U1 and R1 Data

Year_Record	County	FC	Area_type	MC	Cars	Light Truck	Bus	SUV	SUT	CUT
2011	21	1	U							
2011	21	2	U	674	487,217	129,184	9,580	16,915	12,125	
2011	21	3	U	5,254	921,207	165,911	31,057	14,361	7,706	
2011	21	4	U	4,604	710,728	131,488	23,360	19,297	7,312	
2011	21	5	U	5,166	281,072	80,798	31,789	15,895	14,835	
2011	21	6	U							
2011	21	7	U							
2011	21	1	R							
2011	21	2	R							

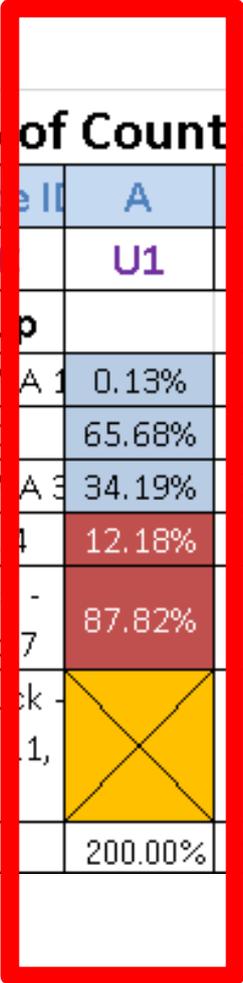
COUNTY_COD	FC	Area_Type	VMT	SUVVMT	CUVMT
21	1	U	2,767,295	85,400	178,984
21	2	U	605,841	15,630	13,092
21	3	U	1,145,496	0	0
21	4	R	71,609	0	0
21	5	U	896,790	0	0
21	6	R	142,946	0	0
21	7	U	429,555	0	0

Data A



Remember Data B

% of Counts (seasonally adjusted and annualized count)								
Monitoring Site ID	A	B	C	D	E	F	Surrogates	
Roadway Function	U1	U2	U3	U4	U4	R4	R5	U5
Vehicle Group								
Motorcycle - FHWA 1	0.13%	0.11%	0.46%	0.51%	0.51%	0.71%	0.20%	1.20%
Cars - FHWA 2	65.68%	72.19%	80.42%	79.25%	79.25%	75.24%	78.46%	65.43%
Light Truck - FHWA 3	34.19%	21.32%	14.48%	14.66%	14.66%	13.56%	15.01%	18.81%
Buses - FHWA 4	12.18%	1.58%	2.71%	2.60%	2.60%	3.66%	0.57%	7.40%
Single Unit truck - FHWA 5, 6, and 7	87.82%	2.79%	1.25%	2.15%	2.15%	4.95%	3.05%	3.70%
Combination Truck - FHWA 8, 9, 10, 11, 12, and 13		2.00%	0.67%				2.70%	3.45%
Total %	200.00%	100.00%	100.00%			100.00%	100.00%	100.00%



Data B

How to Fill U1 and R1 Data

Data B

% of Count		d and annualized count)					
Monitoring Site	A				E	F	Surrogates
Roadway FC	U1	U2	U3	U4	U4	R4	R5 U5
Vehicle Group							
Motorcycle - FHWA 1	0.13%	0.11%					
Cars - FHWA 2	65.68%	72.19%					
Light Truck - FHWA 3	34.19%	21.32%					
Buses - FHWA 4	12.18%	1.58%					
Single Unit truck FHWA 5, 6, and 7	87.82%	2.79%					
Combination Truck 8							

U1 MC = 0.13% x (2,767,295 – 85,400- 178,984)
U1 Car = 65.68% x (2,767,295 – 85,400- 178,984)
U1 Light Truck = 34.19% x (2,767,295 – 85,400- 178,984)
U1 Bus = 12.18% x 85,400
U1 SUT = 87.82 % x 85,400
U1 CT = 178,894

Year_Record	County	FC	Area_type	MC	Cars	Light Truck	Bus	SUT	CUT
2011	21	1	U						
2011	21	2	U	674	487,217	129,184	9,580	16,915	12,125
2011	21	3	U	5,254	921,207	165,911	31,057	14,361	7,706

COUNTY_COD	FC	Area_Type	VMT	SUVVMT	CUVMT
21	1	U	2,767,295	85,400	178,984
21			605,841	15,630	13,092
21			1,145,496	0	0
21			71,609	0	0

Data A

How to Fill U1 and R1 Data

% of Counts (seasonally adjusted and annualized count)

Monitoring Site ID	A	B	C	D	E	F	Surrogates
Roadway FC	U1	U2	U3	U4	U4	R4	R5, U5
Vehicle Group							
Motorcycle - FHWA 1	0.13%	0.11%					0%
Cars - FHWA 2	65.68%	72.19%					3%
Light Truck - FHWA 3	34.19%	21.32%					1%
Buses - FHWA 4	12.18%	1.58%					0%
Single Unit truck - FHWA 5, 6, and 7	87.82%	2.79%					0%
Combination Truck							

Data B

$U1\ MC = 0.13\% \times (2,767,295 - 85,400 - 178,984)$
 $U1\ Car = 65.68\% \times (2,767,295 - 85,400 - 178,984)$
 $U1\ Light\ Truck = 34.19\% \times (2,767,295 - 85,400 - 178,984)$
 $U1\ Bus = 12.18\% \times 85,400$
 $U1\ SUT = 87.82\% \times 85,400$
 $U1\ CUT = 178,984$

Year_Record	County	FC	Area_type	MC	Cars	Light Truck	Bus	SUT	CUT
2011	21	1	U						
2011	21	2	U	674	487,217	129,184	9,580	16,915	12,125
2011	21	3	U	5,254	921,207	165,911	31,057	14,361	7,706
2011	21	4	R	71,609	0	0	0	0	0

Year_Record	COUNTY_COD	FC	Area_Type	VMT	SUVVMT	CUVMT
2011	21	1	U	2,767,295	85,400	178,984
2011	21	2	U	605,841	15,630	13,092
2011	21	3	U	1,145,496	0	0
2011	21	4	R	71,609	0	0

Data A

County 21 Total VMT by FC, Area Type, and Vehicle Type

Year_Record	County	FC	Area_type	MC	Cars	Light Truck	SUV		CUT
							Bus	SUT	
2011	21	1	U	3,270	1,643,975	855,667	10,402	74,997	178,984
2011	21	2	U	674	487,217	129,184	9,580	16,915	12,125
2011	21	3	U	5,254	921,207	165,911	31,057	14,361	7,706
2011	21	4	U	4,604	710,728	131,488	23,360	19,297	7,312
2011	21	5	U	5,166	281,072	80,798	31,789	15,895	14,835
2011	21	6	U						
2011	21	7	U						
2011	21	1	R						
2011	21	2	R						
2011	21	3	R						
2011	21	4	R	507	53,875	9,711	2,618	3,547	1,351
2011	21	5	R	288	93,534	26,888	10,579	5,289	4,937
2011	21	6	R						
2011	21	7	R						



Process all other counties in a similar approach and sum them up accordingly to State total



State Total VMT by FC, Area Type, and Vehicle Type

FC	Area_type	MC	Cars	Light Truck	Bus	SUT	CUT				
1	U	395,658	198,920,918	103,535,734	1,258,681	9,074,683	21,657,022				
2	U	81,507	58,953,251	15,631,289	1,159,215	2,046,739	1,467,131				
3	U	635,738	111,466,047	20,075,190	3,757,917	1,737,684	932,416				
4	U	557,098	85,998,126	15,910,074	2,826,509	2,334,952	884,803				
5	U	Data C					,264	1,795,046			
6	U						,121	1,166,780			
7	U										
1	R								049	1,754,219	
2	R								786	118,838	
3	R					51,495	9,028,750	1,626,090	304,391	140,752	75,526
4	R					61,307	6,518,934	1,175,043	316,751	429,146	163,484
5	R	34,813	11,317,660	3,253,427	1,280,037	640,018	597,351				
6	R										
7	R										

Summary

- County level VMT data
- County level traffic classification data
- Surrogate traffic classification data
- Split County level VMT by roadway functional class and vehicle types
- Obtain appropriate VMT for entire State except U7, R6 and R7



State Total VMT by FC, Area Type, and Vehicle Type

FC	Area_type	MC	Cars	Light Truck	Bus	SUT	CUT
1	U	395,658	198,920,918	103,535,734	1,258,681	9,074,683	21,657,022
2	U	81,507	58,953,251	15,631,289	1,159,215	2,046,739	1,467,131
3	U	635,738	111,466,047	20,075,190	3,757,917	1,737,684	932,416
4	U	557,098	85,998,126	15,910,074	2,826,509	2,334,952	884,803
5	U	625,061	34,009,710	9,776,589	3,846,527	1,923,264	1,795,046
6	U	406,280	22,106,311	6,354,783	2,500,243	1,250,121	1,166,780
7	U						
1	R	32,048	16,112,594	8,386,394	101,953	735,049	1,754,219
2	R	6,602	4,775,213	1,266,134	93,896	165,786	118,838
3	R	51,495	9,028,750	1,626,090	304,391	140,752	75,526
4	R	61,307	6,518,934	1,175,043	316,751	429,146	163,484
5	R	34,813	11,317,660	3,253,427	1,280,037	640,018	597,351
6	R						
7	R						

Data For U7, R6, and R7 – HPMS State Summary Data

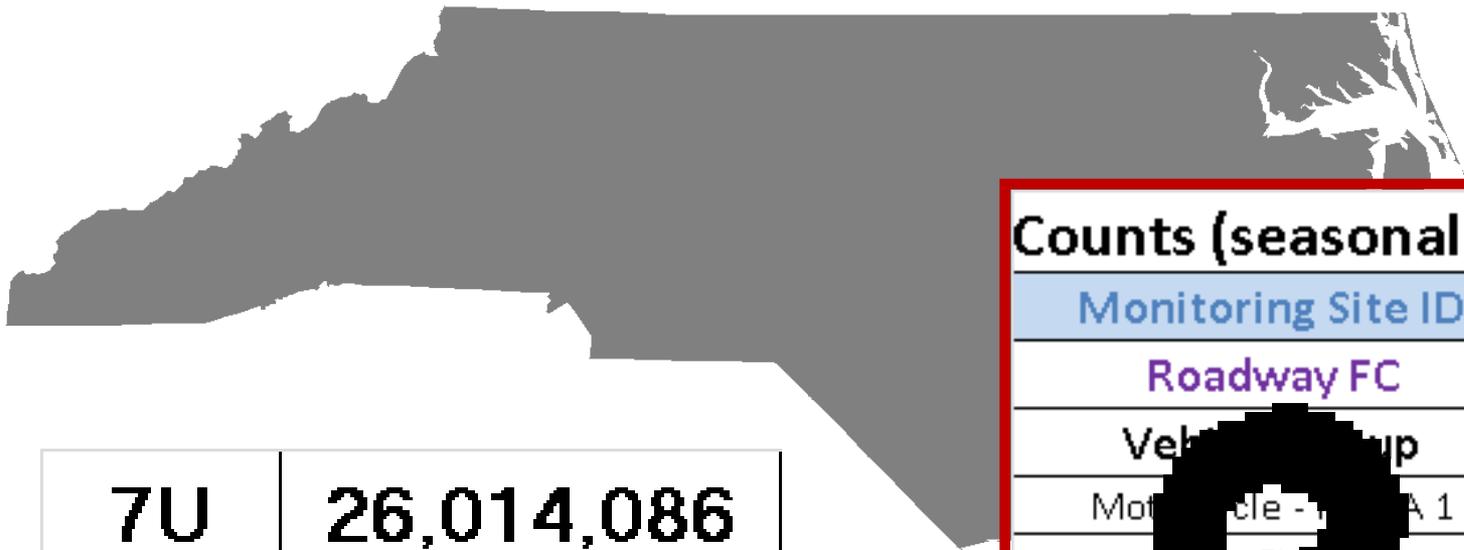
Table 3.11 Statewide Summaries

Table 3.11 describes the dataset which contains demographic and system length estimates for all Urban and Rural public roads, functionally classified as minor collector in rural areas or local in any area, summarized by State. In addition, this dataset contains daily vehicle-miles traveled (VMT) estimates for all public roads located in Small Urban areas, functionally classified as minor collector or local. This includes NHS roads located on these functional systems.

STATEWIDE SUMMARIES TABLE				
Constraint	Field Name	Data Type	Description	Valid Values
PK	Year_Record	Numeric (4)	Calendar year for the data	The four digits of the year the data represents.
PK	State_Code	Numeric (2)	State FIPS code	Up to two digits for the FIPS code. See Appendix C for a complete list.
	RMC_VMT	Numeric (8)	Daily Travel for Rural Minor Collectors	Report total daily vehicle-miles of travel as a whole number (round to the nearest 1,000 if preferred).
	RL_VMT	Numeric (8)	Daily Travel for Rural Locals	Report total daily vehicle-miles of travel as a whole number (round to the nearest 1,000 if preferred).
	SU_VMT	Numeric (8)	Daily Travel for Small Urban Locals	Report total daily vehicle-miles of travel as a whole number (round to the nearest 1,000 if preferred).
	Rural_Pop	Numeric (8)	Rural Population (> 5 000)	Estimate/report rural population as a whole number (in thousands)



How to Split U7, R6, and R7 VMT by vehicle types



7U	26,014,086
6R	10,273,984
7R	6,164,391

Counts (seasonally a

Monitoring Site ID
Roadway FC
Vehicle Type
Motorcycle - FHWA 1
Cars - FHWA 2
Light Truck - FHWA 3
Buses - FHWA 4
Single Unit truck - FHWA 5, 6, and 7
Combination Truck - FHWA, 8, 9, 10, 11, 12, and 13



Vehicle Classification Data for U6, R6 and R7

Traffic Monitoring Program needs to develop statewide data for each of the three roadway functional groups. Unless a state has U6, R6, and R7 VMT coverage on *a smaller than entire State geography* (e.g., county), statewide annualized classification data can be used to split the VMT accordingly.



Data For U7, R6, and R7 – HPMS State Summary Data

Cumulative Counts (Summation of All Sites Under the Same FC)

Roadway FC	U7	R6	R7
# of monitored sites	18	22	16
Vehicle Group			
Motorcycle - FHWA 1	162	44	64
Cars - FHWA 2	8,208	7,590	4,624
Light Truck - FHWA 3	2,160	880	336
Buses - FHWA 4	756	44	32
Single Unit truck - FHWA 5, 6, and 7	414	396	352
Combination Truck - FHWA, 8, 9, 10, 11, 12, and 13	18	66	32

7U	26,014,086
6R	10,273,984
7R	6,164,391



Data For U7, R6, and R7 – HPMS State Summary Data

% Cumulative Counts (Summation of All Sites Under the Same FC)

Roadway FC	U7	R6	R7
# of monitored sites	18	22	16
Vehicle Group			
Motorcycle - FHWA 1	1.38%	0.49%	1.18%
Cars - FHWA 2	70.05%	84.15%	85.00%
Light Truck - FHWA 3	18.43%	9.76%	6.18%
Buses - FHWA 4	6.45%	0.49%	0.59%
Single Unit truck - FHWA 5, 6, and 7	3.53%	4.39%	6.47%
Combination Truck - FHWA, 8, 9, 10, 11, 12, and 13	0.15%	0.73%	0.59%
Summation	100.00%	100.00%	100.00%

7U	26,014,086
6R	10,273,984
7R	6,164,391



VMT for U7, R6, and R7 by 6 Vehicle Types

FC	Area_type	MC	Cars	Light Truck	Bus	SUT	CUT	Summation
1	U	395,658	198,920,918	103,535,734	1,258,681	9,074,683	21,657,022	334,842,695
2	U	81,507	58,953,251	15,631,289	1,159,215	2,046,739	1,467,131	79,339,133
3	U	635,738	111,466,047	20,075,190	3,757,917	1,737,684	932,416	138,604,992
4	U	557,098	85,998,126	15,910,074	2,826,509	2,334,952	884,803	108,511,562
5	U	625,061	34,009,710	9,776,589	3,846,527	1,923,264	1,795,046	51,976,196
6	U	406,289	22,106,311	6,354,783	2,500,243	1,250,121	1,166,780	33,784,527
7	U	359,642	18,221,848	4,795,223	1,678,328	919,084	39,960	26,014,086
1	R	32,048	16,112,594	8,386,394	101,953	735,049	1,754,219	27,122,258
2	R	6,602	4,775,213	1,266,134	93,896	165,786	118,838	6,426,470
3	R	51,495	9,028,750	1,626,090	304,391	140,752	75,526	11,227,004
4	R	61,307	6,518,934	1,175,043	316,751	429,146	163,484	8,664,665
5	R	34,813	11,317,660	3,253,427	1,280,037	640,018	597,351	17,123,307
6	R	50117	8645182	1002340	50117	451053	75175	10273984
7	R	72522	5239732	380742	36261	398872	36261	6164391





Now, smooth sail ahead!



Remember this *FS_Group* and FHWA *Functional Classification* *(FC)* Crosswalk...

FS_Group	Description	FC
1	Rural Interstate	R1
2	Rural Other Arterial (other rural freeways and expressways, other principal arterials, and minor arterial)	R2 + R3 + R4
3	Rural other (Includes major collectors, minor collectors, and local)	R5 + R6 + R7
4	Urban Interstate	U1
5	Urban Other Arterial (other urban expressways and freeways, other principal arterials and minor arterials)	U2 + U3 + U4
6	Urban Other (includes major collectors, minor collectors, and locals)	U5 + U6 + U7



Re-group FC to FS_Group

FC	Area_type	MC	Cars	Light Truck	Bus	SUT	CUT	Summation
FS_Group =D		395,658	198,920,918	103,535,734	1,258,681	9,074,683	21,657,022	334,842,695
2	U	81,507	58,953,251	15,631,289	1,159,215	2,046,739	1,467,131	79,339,133
FS_Group =E		635,738	111,466,047	20,075,190	3,757,917	1,737,684	932,416	138,604,992
4	U	557,098	85,998,126	15,910,074	2,826,509	2,334,952	884,803	108,511,562
5	U	625,061	34,009,710	9,776,589	3,846,527	1,923,264	1,795,046	51,976,196
FS_Group =F		406,289	22,106,311	6,354,783	2,500,243	1,250,121	1,166,780	33,784,527
7	U	359,642	18,221,848	4,795,223	1,678,328	919,084	39,960	26,014,086
FS_Group =A		32,048	16,112,594	8,386,394	101,953	735,049	1,754,219	27,122,258
2	R	6,602	4,775,213	1,266,134	93,896	165,786	118,838	6,426,470
FS_Group =B		51,495	9,028,750	1,626,090	304,391	140,752	75,526	11,227,004
4	R	61,307	6,518,934	1,175,043	316,751	429,146	163,484	8,664,665
5	R	34,813	11,317,660	3,253,427	1,280,037	640,018	597,351	17,123,307
FS_Group =C		50117	8645182	1002340	50117	451053	75175	10273984
7	R	72522	5239732	380742	36261	398872	36261	6164391



2012 VMT based on FS-Group and Vehicle Types

2012 FS Group	MC	Cars	Light Truck	Bus	SUT	CUT	Summation
1	32,048	16,112,594	8,386,394	101,953	735,049	1,754,219	27,122,258
2	58,097	13,803,963	2,892,225	398,288	306,538	194,363	17,653,474
3	218,759	31,721,509	5,811,552	1,683,166	1,919,090	872,271	42,226,347
4	395,658	198,920,918	103,535,734	1,258,681	9,074,683	21,657,022	334,842,695
5	717,245	170,419,298	35,706,480	4,917,132	3,784,423	2,399,547	217,944,124
6	1,948,090	160,335,995	36,836,670	10,851,607	6,427,421	3,886,589	220,286,372



2012 VMT based on FS-Group and Vehicle Types

2012 FS Group	MC	Cars	Light Truck	Bus	SUT	CUT	Summation
1	32,048	16,112,594	8,386,394	101,953	735,049	1,754,219	27,122,258
2	58,097	13,803,963	2,892,225	398,288	206,538	194,363	17,653,474
3	218,759	31,721,509	5,811,552	1,683,166	1,919,090	872,271	42,226,347
4	395,658	198,920,918	103,535,734	1,258,691	9,074,683	21,657,022	334,842,695
5	717,245	170,419,298	35,706,480	4,917,132	3,784,423	2,399,547	217,944,124
6	1,948,090	160,335,995	36,836,670	10,851,607	6,427,421	3,886,589	220,286,372

**Keep close eyes on these six numbers.
We will need them later**



2012 % VMT based on FS-Group and Vehicle Types

Slide WWW

2012 FS Group	MC	Cars	Light Truck	Bus	SUT	CUT	Summation
1	0.12%	59.41%	30.92%	0.38%	2.71%	6.47%	100.00%
2	0.33%	78.19%	16.38%	2.26%	1.74%	1.10%	100.00%
3	0.52%	75.12%	13.76%	3.99%	4.54%	2.07%	100.00%
4	0.12%	59.41%	30.92%	0.38%	2.71%	6.47%	100.00%
5	0.33%	78.19%	16.38%	2.26%	1.74%	1.10%	100.00%
6	0.88%	72.79%	16.72%	4.93%	2.92%	1.76%	100.00%

**Keep close eyes on these six numbers.
We will need them later**

Summary

- VMT for U7, R6 and R7
- Traffic Classification for U7, R6 and R7
- Draft vehicle summary data for the State for all roadway functional classes and vehicle types



It is not done yet!



To Obtain What Your State Has Submitted on Vehicle Summary Data Last Year - Here, in the example is to obtain the 2011 State submitted data.



2011 State Submitted Vehicle Summary Data

2011 FS Group	MC	Cars	Light Truck	Bus	SUT	CUT
1	0.11%	64.98%	25.62%	0.22%	2.65%	6.42%
2	0.34%	80.53%	14.25%	2.12%	1.75%	1.01%
3	0.45%	76.35%	12.35%	4.56%	4.44%	1.85%
4	0.13%	64.54%	25.65%	0.35%	2.65%	6.68%
5	0.29%	80.61%	14.23%	2.21%	1.65%	1.01%
6	0.88%	75.01%	15.21%	4.82%	2.52%	1.56%



Now We Have both 2012 and 2012

These six numbers are final for 2012

2012		MC	Cars	Light Truck	Bus	SUT	CUT	Summation
FS Group								
1		0.12%	59.41%	30.92%	0.38%	2.71%	6.47%	100.00%
2		0.33%	78.19%	16.38%	2.26%	1.74%	1.10%	100.00%
3		0.52%	75.12%	13.76%	3.99%	4.54%	2.07%	100.00%
4		0.12%	59.41%	30.92%	0.38%	2.71%	6.47%	100.00%
5		0.33%	78.19%	16.38%	2.26%	1.74%	1.10%	100.00%
6		0.88%	72.79%	16.72%	4.93%	2.92%	1.76%	100.00%

2011		MC	Cars	Light Truck	Bus	SUT	CUT
FS Group							
1		0.11%	64.98%	25.62%	0.22%	2.65%	6.42%
2		0.34%	80.53%	14.25%	2.12%	1.75%	1.01%
3		0.45%	76.35%	12.35%	4.56%	4.44%	1.85%
4		0.13%	64.54%	25.65%	0.35%	2.65%	6.68%
5		0.29%	80.61%	14.23%	2.21%	1.65%	1.01%
6		0.88%	75.01%	15.21%	4.82%	2.52%	1.56%



Now We Have both 2012 and 2012

2012		MC	Cars	Light Truck	Bus	SUT	CUT	Summation
FS Group								
1		0.12%	59.41%	30.92%	0.38%	2.71%	6.47%	100.00%
2		0.33%	78.19%	16.38%	2.26%	1.74%	1.10%	100.00%
3		0.52%	75.12%	13.76%	3.99%	4.54%	2.07%	100.00%
4		0.12%	59.41%	30.92%	0.38%	2.71%	6.47%	100.00%
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2011		MC	Cars	Light Truck	Bus	SUT	CUT
FS Group							
1		0.11%	64.98%	25.62%	0.22%	2.65%	6.42%
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3		0.45%	76.35%	12.35%	4.56%	4.44%	1.85%
4		0.13%	64.54%	25.65%	0.35%	2.65%	6.68%
5		0.29%	80.61%	14.23%	2.21%	1.65%	1.01%
6		0.88%	75.01%	15.21%	4.82%	2.52%	1.56%



Now We Have both 2012 and 2012

2012							
FS Group	MC	Cars	Light Truck	Bus	SUT	CUT	Summation
1	0.12%	59.41%	30.92%	0.38%	2.71%	6.47%	100.00%
2	0.33%						
3	0.52%						
4	0.12%						
5	0.33%						
6	0.88%						

Considering coverage cycle impacts

2011							
FS Group	MC	Cars	Light Truck	Bus	SUT	CUT	
1	0.11%	64.98%	25.62%	0.22%	2.65%	6.42%	
2	0.34%	80.53%	14.25%	2.12%	1.75%	1.01%	
3	0.45%	76.35%	12.35%	4.56%	4.44%	1.85%	
4	0.13%	64.54%	25.65%	0.35%	2.65%	6.68%	
5	0.29%	80.61%	14.23%	2.21%	1.65%	1.01%	
6	0.88%	75.01%	15.21%	4.82%	2.52%	1.56%	



2012 Vehicle Summary Data

2012 FS Group	MC	Cars	Light Truck	Bus	SUT	CUT
1				0.38%	2.71%	6.47%
2		25% 2012 +75%2011				
3		25% 2012 +75%2011				
4				0.38%	2.71%	6.47%
5		25% 2012 +75%2011				
6		25% 2012 +75%2011				



2012 Vehicle Summary Data

2012 MC% for Functional Group 1 and 4 Computation Method

$$2012MC\% = (25\% * 2012MC\% + 75\%2011MC\%)$$

2012 Cars% for Functional Group 1 and 4 Computation Method

$$2012Car\% = 100\% - 2012MC\% - 2012LT\% - 2012Bus\% \\ - 2012SU\% - 2012CT$$

2012 LT% for Functional Group 1 and 4 Computation Method

$$2012LT\% = (25\% * 2012LT\% + 75\%2011LT\%)$$



2013 Vehicle Summary Data

2013 FS Group	MC	Cars	Light Truck	Bus	SUT	CUT
1				0.38%	2.71%	6.47%
2		2013 * 50% + 2012 * 50%				
3		2013 * 50% + 2012 * 50%				
4				0.38%	2.71%	6.47%
5		2013 * 50% + 2012 * 50%				
6		2013 * 50% + 2012 * 50%				



2013 Vehicle Summary Data

2013MC% for Functional Group 1 and 4 Computation Method

$$2013MC\% = (50\% * 2013MC\% + 50\% 2012MC\%):$$

2013 Cars% for Functional Group 1 and 4 Computation Method

$$2013Car\% = 100\% - 2013MC\% - 2013LT\% - 2013Bus\% \\ - 2013SU\% - 2013CT$$

2013 LT% for Functional Group 1 and 4 Computation Method

$$2013LT\% = (50\% * 2013LT\% + 50\% 2013LT\%):$$



2014 Vehicle Summary Data

2014 FS Group	MC	Cars	Light Truck	Bus	SUT	CUT
1				0.38%	2.71%	6.47%
2		2014 * 75% + 2013 * 25%				
3		2014 * 75% + 2013 * 25%				
4				0.38%	2.71%	6.47%
5		2014 * 75% + 2013 * 25%				
6		2014 * 75% + 2013 * 25%				



2014 Vehicle Summary Data

2014 MC% for Functional Group 1 and 4 Computation Method

$$2014MC\% = (75\% * 2014MC\% + 25\% 2013MC\%)$$

2014 Cars% for Functional Group 1 and 4 Computation Method

$$2014Car\% = 100\% - 2014MC\% - 2014LT\% - 2014Bus\% \\ - 2014SU\% - 2014CT$$

2014 LT% for Functional Group 1 and 4 Computation Method

$$2014LT\% = (75\% * 2014LT\% + 25\% 2013LT\%)*$$



2015 Vehicle Summary Data

2016 FS Group	MC	Cars	Light Truck	Bus	SUT	CUT
1			2015 * 100%			
2			2015 * 100%			
3			2015 * 100%			
4			2015 * 100%			
5			2015 * 100%			
6			2015 * 100%			



2016 Vehicle Summary Data

All results shall be based on procedures illustrated in obtaining results for slide WWW(last slide of the last section)



Summary

Year N data

Year N -1 Data

Monitoring Coverage data: Final Year N data = A %
of Year N data + B% of year (N-1) data



Method Summary

- 1: HPMS VMT by Roadway Functional Class Data
- 2: Traffic Monitoring Data- Classification Data
- 3: Geography - Data Resolution and Surrogate Data
- 4: Traffic Monitoring Cycle
- 6: Data Weighting from Year N and Year (N-1)



Overview

1. Identify the smallest geography a State is going to use.
2. Obtain the appropriate VMT for that geography based on functional classes and/or other criteria.
3. Obtain the traffic classification data for the elements associated with the smallest geography . If there is none, develop surrogate data by using local data, local knowledge and experience.
4. Group the VMT data obtained in step 2 by using step 3 information accordingly.



Thank You!
Office of Highway Policy Information
FHWA
1200 New Jersey Avenue, SE, Washington, DC
20590

