ctre
Center for Transportation Research and Education

IOWA STATE UNIVERSITY

SHRP2
STRATEGIC HIGHWAY RESEARCH PROGRAM

RIMOS
roadway infrastructure management & operations systems

Roadway Data: Lessons from SHRP 2

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Transportation Research Board
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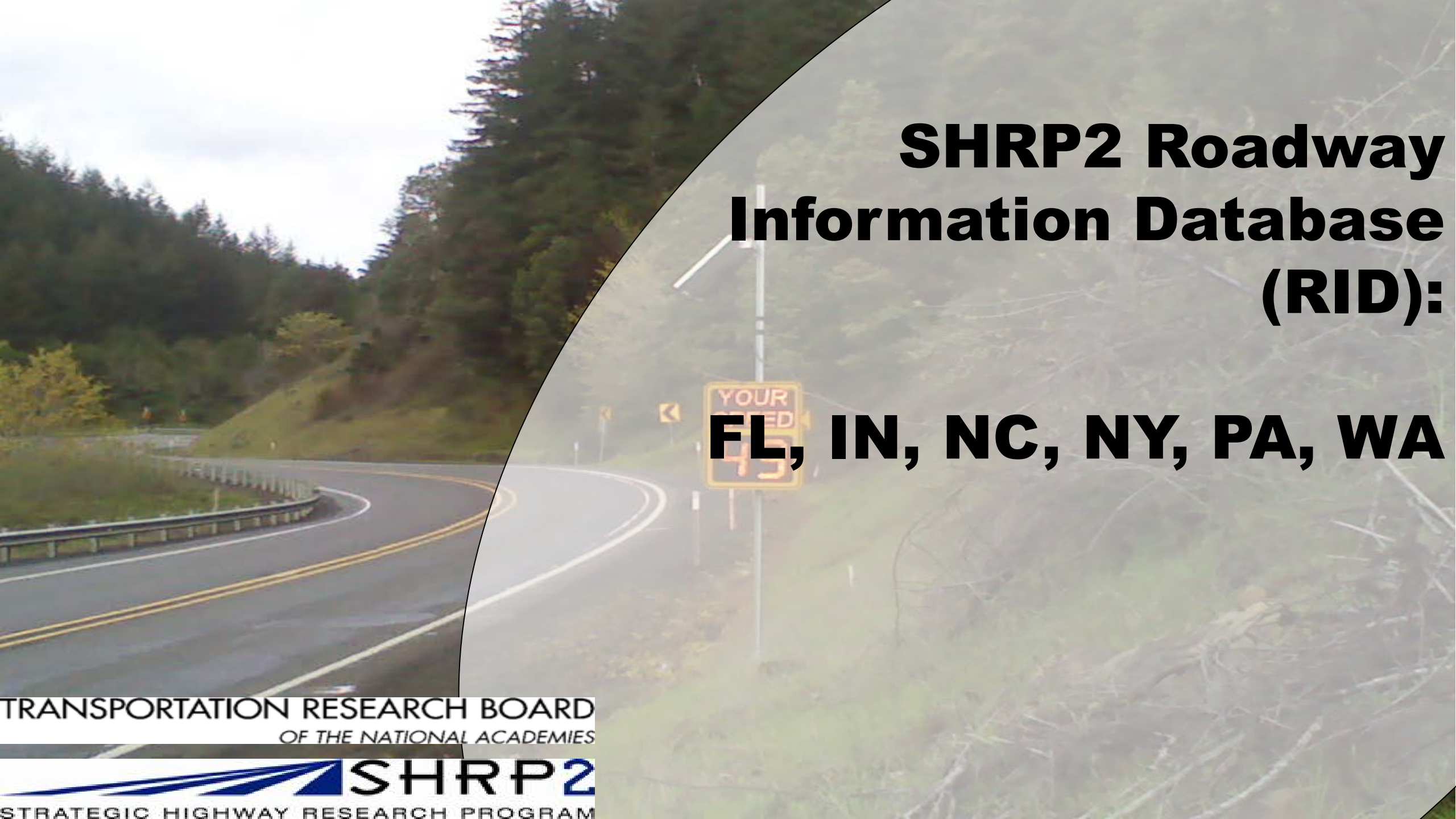

SHRP2 Roadway Information Database (RID):

FL, IN, NC, NY, PA, WA

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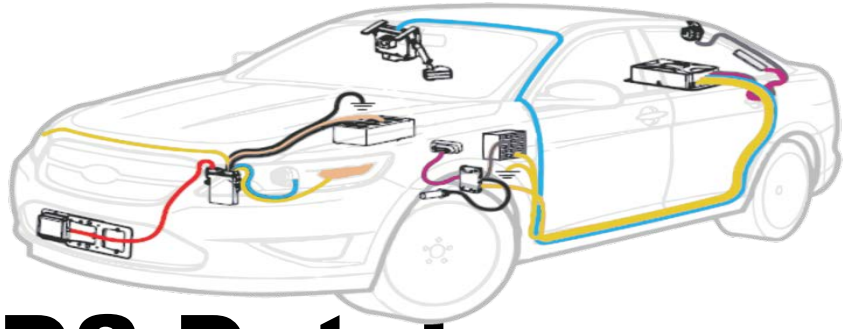
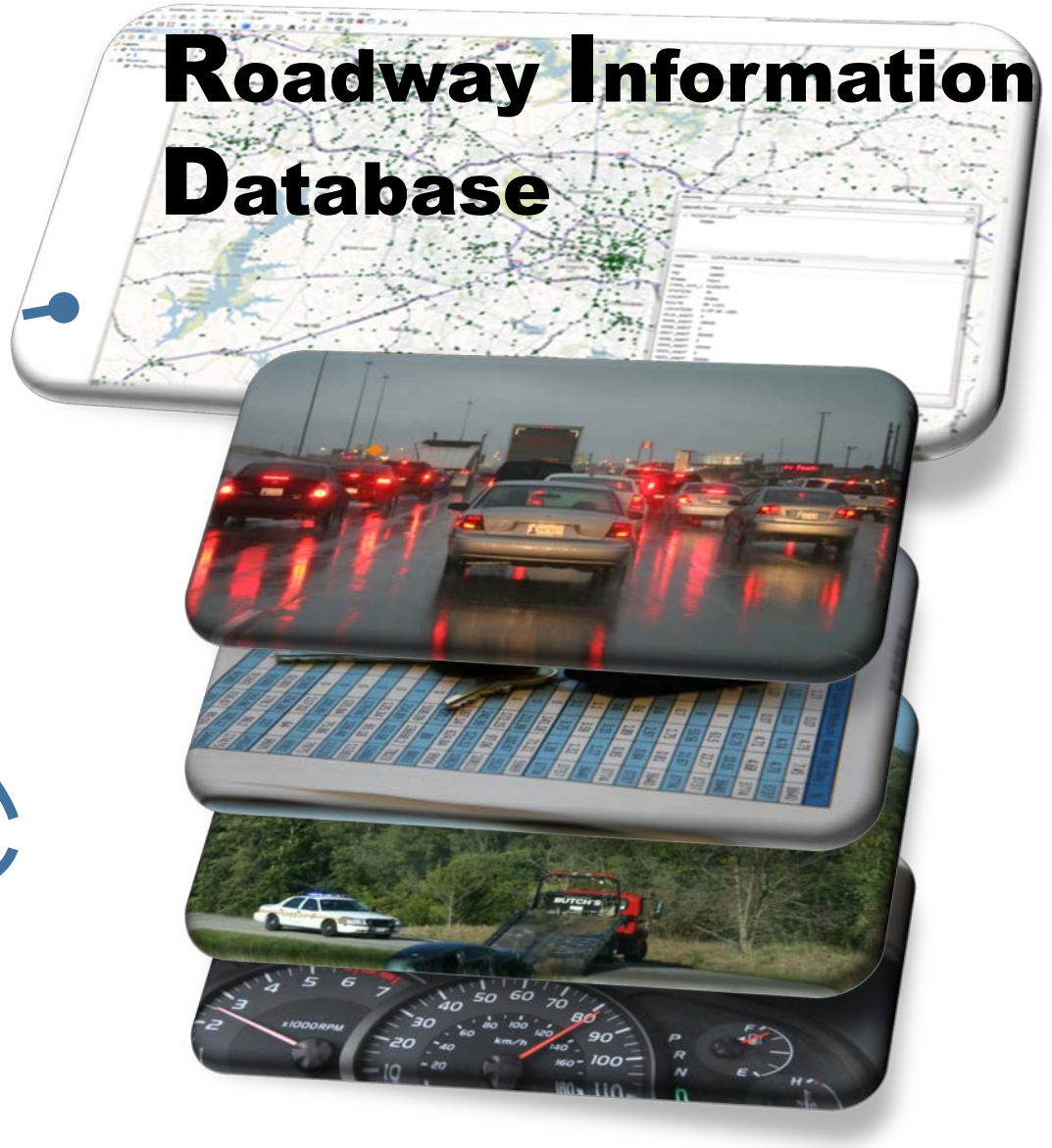
SHRP2
STRATEGIC HIGHWAY RESEARCH PROGRAM

Roadway Data

Design, Build, and Populate



NDS Database



RID Data Sources (6 Sites)

Existing

(readily available DOT information)

Supplemental Information

Critical in further characterizing or analyzing operations of a roadway segment

Mobile Van Data

(~ 25,000 collection miles)

Existing Data

1. Acquire a consistent base center line network (6 NDS sites and beyond) – NAVTEQ/ESRI

2. Work with the DOT in each area to:
   - Acquire readily available data and work through associated sharing requirements
   - Develop a list of resources (contacts, data) for local governments within the study areas

Acquired DOT Data (to date)

State	Curvature	Grade/cross slope	Inventory				Intersection
			Lanes	Shoulders	Median	Speed limit	
Indiana							
Florida							
New York							
North Carolina							
Pennsylvania							
Washington*		Grade					

* Generally state system

State	Other/Additional Data
Indiana	State, county, city centerline
	Reference posts
	Bridges
Florida	Roadway Characteristics Inventory (RCI)
	Sign inventory (Pasco County)
New York	Roadway Inventory System
	Structures
North Carolina	Roadway characteristics database
	Signals
	Electrical service points
	Pavement condition
Pennsylvania	Roadway management system
	Bridges
	Sign inventory
	Guardrail
Washington*	Roadway data - extensive
	Roadside inventory

* Generally state system

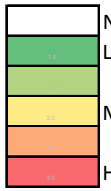
Note: Data content and extent may vary over the public road system.

Supplemental Data

- Crash data (5 years before NDS and during)
- Traffic information
- Weather data
- State laws:
  - ✓ Cell phone use
  - ✓ Texting
  - ✓ GDL
  - ✓ Seat belt
- Aerial imagery
- Changes to infrastructure
- Work zone

#	Item	Category	Anticipated NDS Site Coverage	Cost to acquire/integrate					
				NY	FL	PA	IN	NC	WA
1	Crash Data	Common	All						
2	Traffic Information - AADT	Safety	All						
3	Work Zone	Common	Partial						
4	Winter Road Conditions (DOT)	Common	Partial						
5	Local Climatological Data (LCD) NOAA	Common	All						
6	Nonrecurring Congestion	Reliability	Partial						
7	Travel Time Data	Reliability	Partial						
8	Aerial Imagery	Common	All						
9	Speed Limit Data	Safety	All						
10	Speed Limit Laws	Policy	All						
11	Cell phone and text messaging laws	Policy	All						
12	Automated enforcement laws	Policy	All						
13	Alcohol-Impaired and Drugged Drivers laws	Policy	All						

KEY: Anticipated costs/effort to acquire and integrate:



A blank does not mean that an item will not be acquired.

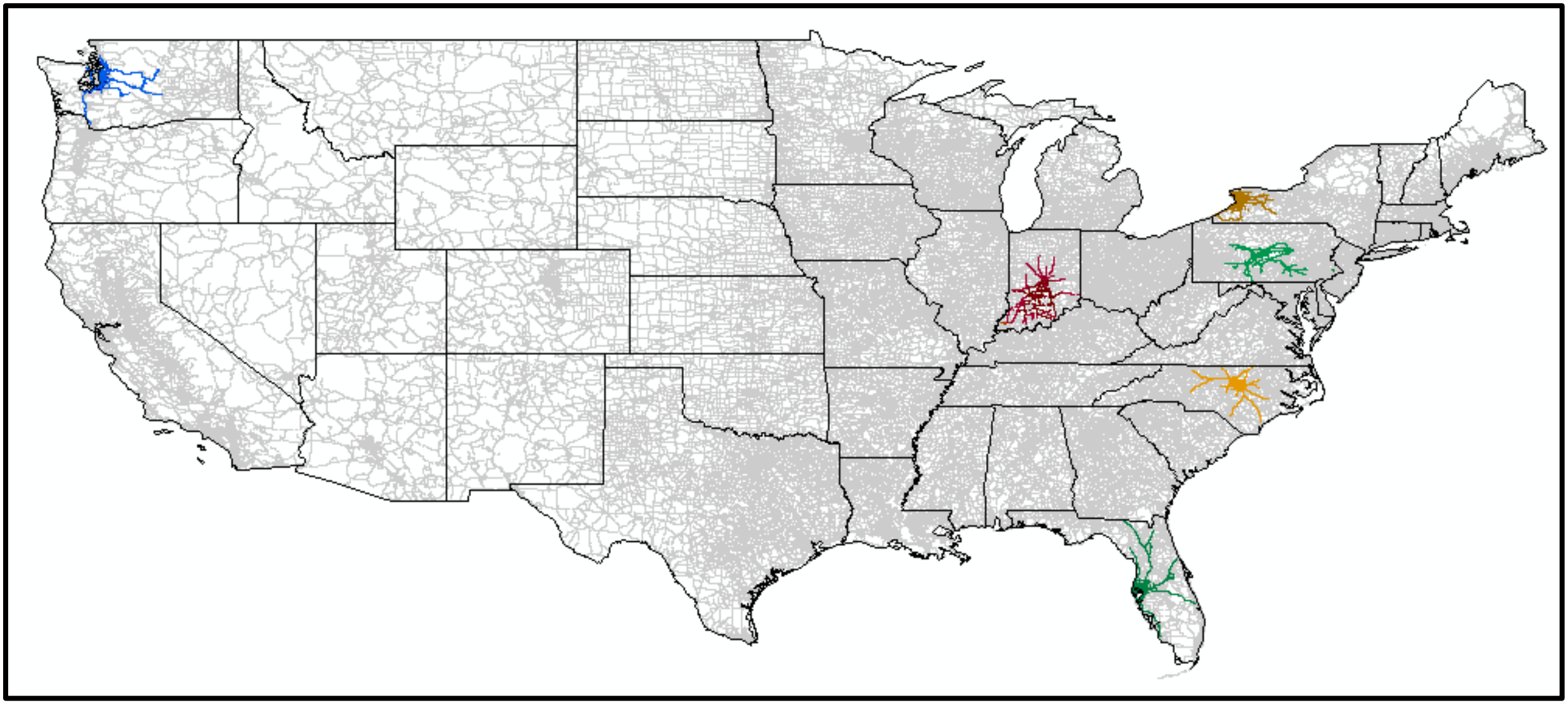
#	Item	Category	Anticipated NDS Site Coverage	Cost to acquire/integrate					
				NY	FL	PA	IN	NC	WA
14	Graduated driver licensing (GDL) laws	Policy	All						
15	State motor cycle helmet use laws	Policy	All						
16	Seat Belt Use laws	Policy	All						
17	Cooperative Weather Observer/Other Sources	Common	All						
18	Traffic Data - Continuous Counts (ATR)	Safety	Partial						
19	Traffic Data -Short Duration Counts	Safety	Partial						
20	Automated Enforcement	Safety	Partial						
21	Changes to existing infrastructure condition	Safety	Partial						
22	Roadway Capacity Improvements	Common	Partial						
23	Innovative Treatments	Safety	Partial						
24	511 Information	Common	Partial						
25	Recurring Congestion	Reliability	Partial						

KEY: Anticipated costs/effort to acquire and integrate:

No information
Low
Medium
High

Mobile Data

Data Element
Curvature Length
Curvature Radius
Begin point and end point of curvature
Grade (+ or -) and Cross Slope/Super Elevation
Lane Width/Type
Paved Shoulder Width/Type
All MUTCD signs and Barriers
Intersection Information
Presence of Lighting/Medians/Rumble Strips
Front ROW Video Log



Lanes	Thru Lane: 1 (12’) Left Turn Lane: 1	Thru Lane: 1 (14’) Deccel. Lane: 1	Thru Lane: 2 (11’) Deccel. Lane: 1	Thru Lane: 1 (12’) Accel. Lane: 1	Thru Lane: 1 (21’)

Lanes	Thru Lane: 1 (12’) Left Turn Lane: 1	Thru Lane: 1 (14’) Deccel. Lane: 1	Thru Lane: 2 (11’) Deccel. Lane: 1	Thru Lane: 1 (12’) Accel. Lane: 1	Thru Lane: 1 (21’)	
Median	N/A	Flush (Painted)	N/A	Flush (Painted)	N/A	Flush Paint.
Flush Paint.						

Lanes	Thru Lane: 1 (12’) Left Turn Lane: 1	Thru Lane: 1 (14’) Deccel. Lane: 1	Thru Lane: 2 (11’) Deccel. Lane: 1	Thru Lane: 1 (12’) Accel. Lane: 1	Thru Lane: 1 (21’)
Median	N/A	Flush (Painted)	N/A	Flush (Painted)	N/A	Flush Paint.
Paved Shoulder	2’ Mix/Combo	0’ Mix/Combo	3’ Mix/Combo	2’ Mix/Combo

Flush Paint.

Lanes

Thru Lane: 1 (12’)
Left Turn Lane: 1

Thru Lane: 1 (14’)
Deccel. Lane: 1

Thru Lane: 2 (11’)
Deccel. Lane: 1

Thru Lane: 1 (12’)
Accel. Lane: 1

Thru Lane: 1 (21’)

Median

Flush Paint.

N/A

Flush (Painted)

N/A

Flush (Painted)

N/A

Flush Paint.

Paved Shoulder

2’ Mix/Combo

0’ Mix/Combo

3’ Mix/Combo

2’ Mix/Combo

Grade, Cross Slope

Unpaved Shoulder: N/A

Rumble Strips: N/A

Lighting: N/A

Unpaved Shoulder: N/A

Rumble Strips: N/A

Lighting: N/A

Grade, Cross Slope

Paved Shoulder

3’ Mix/Combo | N/A | 3’ Mix/Combo | 4’ Mix/Combo

Median

Flush Paint. | N/A | Flush (Painted) | N/A | Flush (Painted) | N/A | Flush Paint.

Lanes

Thru Lane: 1 (12’) | Thru Lane: 1 (11’) Right Turn: 1 | Thru Lane: 1 (12’)

Lanes

Thru Lane: 1 (12’) Left Turn Lane: 1 | Thru Lane: 1 (14’) Deccel. Lane: 1 | Thru Lane: 2 (11’) Deccel. Lane: 1 | Thru Lane: 1 (12’) Accel. Lane: 1 | Thru Lane: 1 (21’)

Median

Flush Paint. | N/A | Flush (Painted) | N/A | Flush (Painted) | N/A | Flush Paint.

Paved Shoulder

2’ Mix/Combo | 0’ Mix/Combo | 3’ Mix/Combo | 2’ Mix/Combo

Grade, Cross Slope

Unpaved Shoulder: N/A

Rumble Strips: N/A

Lighting: N/A


SR 52 5 24.791 50.0 FL 11/19/2011
Identify
Identify from: intersections
intersections
Controlled T Intersection
Location: -82.302200 28.326676 Decimal Degrees
Field Value
IDINTERSECTIONS 3796
ROUTE SR 52
DIRECTION 5
NUMBEROFAPPROACHES 3
CONTROLTYPE Controlled T Intersection
LATITUDE 28.326667
LONGITUDE -82.3022
ELEVATION 29.9
COMMENTS
Identified 1 feature
Identify
Identify from: PC Alignment Events
PC Alignment Events
862
Location: -82.304561 28.325512 Decimal Degrees
Field Value
Fkey 904
Route SR 52
Direction 5
Tangent N
Radius 862
Length 530
PC_Lat 28.325514
PC_Long -82.304571
PT_Lat 28.32609
PT_Long -82.303066
Direction_curve L
SuperElevation -8.4
Identified 1 feature
Identify
Identify from: speed_signs
speed_signs
ADVISORY SPEED MPH
Location: -82.301401 28.327331 Decimal Degrees
Field Value
OBJECTID 349
IDSPEEDSIGNS 3952
ROUTE SR 52
DIRECTION 6
MUTCDSIGNNAME ADVISORY SPEED MPH
MUTCDCODE W13-1P
SPEEDTEXT 45
NUMBEROFSIGNSONPOST 2
LATITUDE 28.327334
LONGITUDE -82.301405
ELEVATION 33
COMMENTS
Identified 1 feature
SR 52 6 24.845 47.6 FL 11/19/2011
45

Front ROW Images

Route Name	Direction	Chainage	State	Collection Date
US 70	6	17.215	NC	11/03/2011

Mobile Data QA - Values

Data Element	Accuracy Requirement
Curvature Length	100 feet (curves less than 1500 ft radius)
Curvature Radius	100 feet (curves less than 1500 ft radius)
PC	50 feet
PT	50 feet
Grade (+ or -)	1.0%
Cross Slope/Super Elevation	1.0%
Lane Width	1 foot
Paved Shoulder Width	1 foot
Inventory Features (signs) Location	7 feet

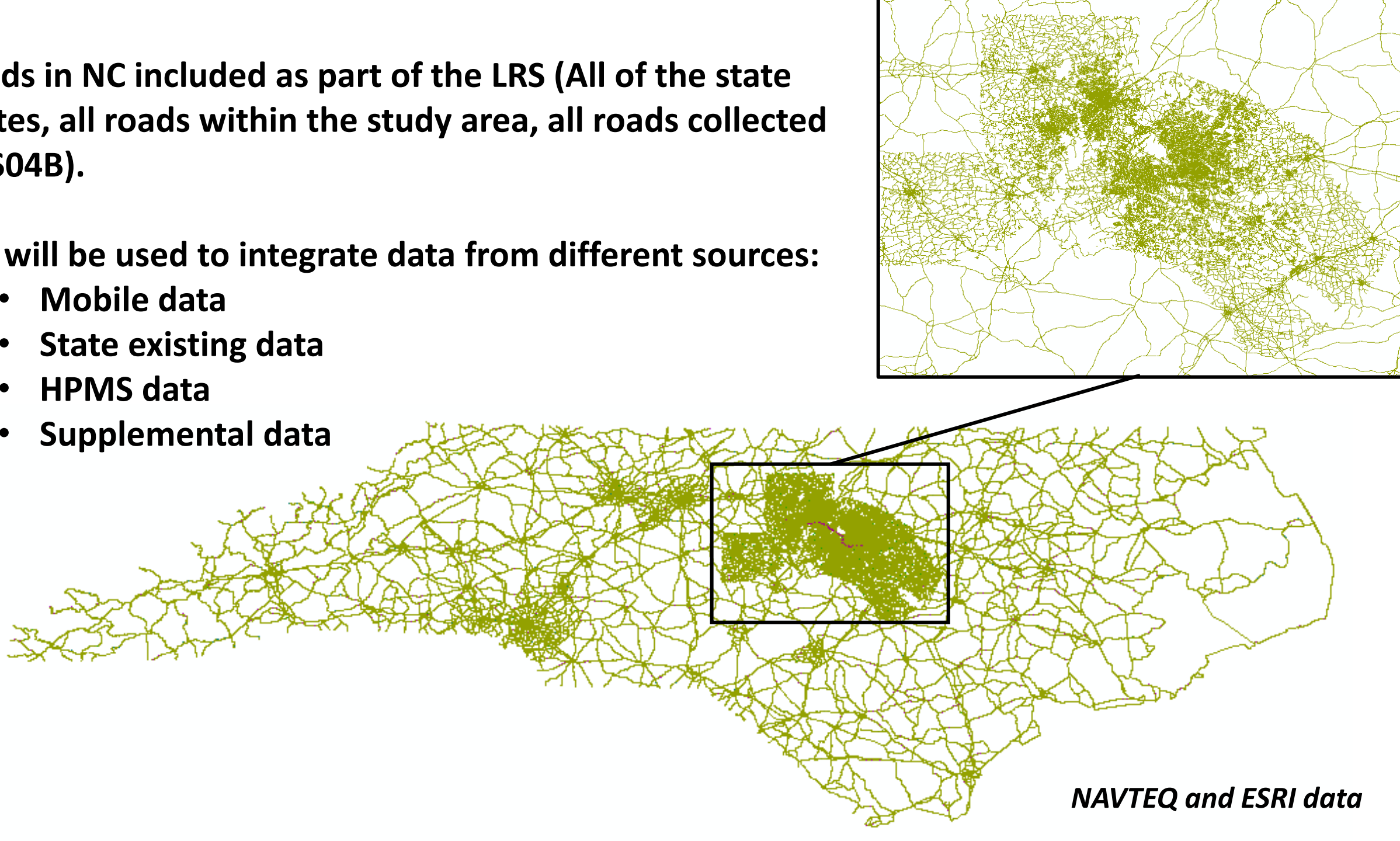
- ✓ **Control sites (2 per location-urban and rural)**
- ✓ **Random checks**

Example of Data from SHRP 2 RID

Roads in NC included as part of the LRS (All of the state routes, all roads within the study area, all roads collected by S04B).

LRS will be used to integrate data from different sources:

- **Mobile data**
- **State existing data**
- **HPMS data**
- **Supplemental data**

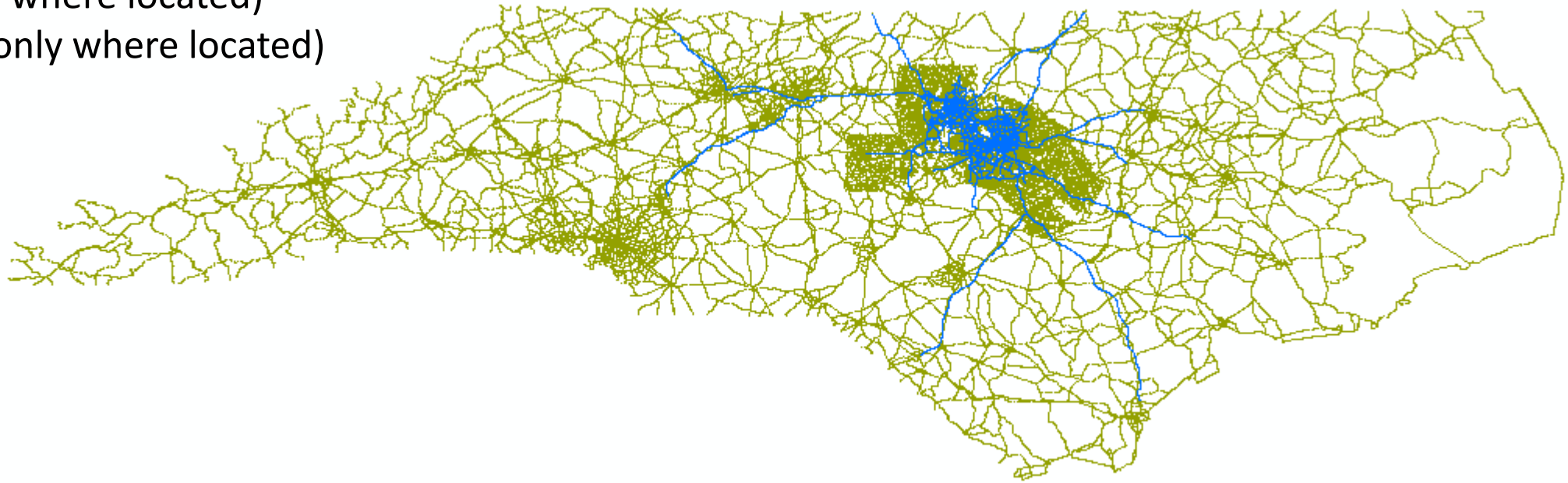


NAVTEQ and ESRI data

Selected roads where mobile data has been collected within the state.

Mobile data includes:

- Alignment (all roads)
- Location (all roads)
- Median (only where located)
- Lighting (only where located)
- Lane (all roads)
- Shoulder (only where located)
- Signs (only where located)
- Guardrail (only where located)
- Rumble Strip (only where located)



Lessons Learned

- ✓ **Location/Location/Location**
- ✓ **Data quality**
- ✓ **No one reliable source of data (Data integration is critical)**
- ✓ **Coordination/Communication (multiple stakeholders)**
- ✓ **Technology:**
  - **Cost**
  - **Storage**
  - **Access**

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