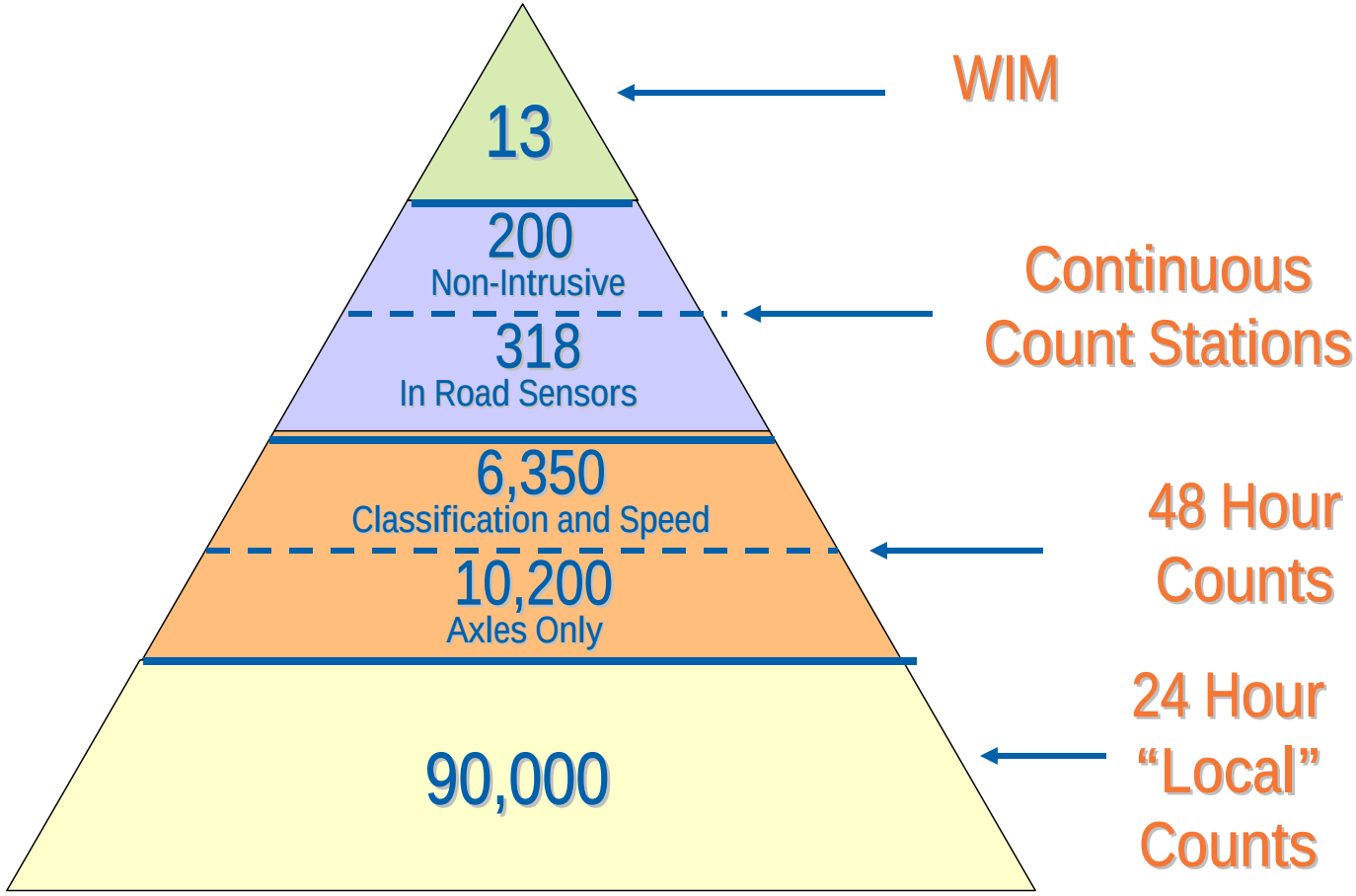
VDOT
Virginia Department of Transportation

Considering A National Speed Data Program: A Workshop

Richard Bush
Virginia Department of Transportation
June 21, 2010

Virginia's Traffic Data Program



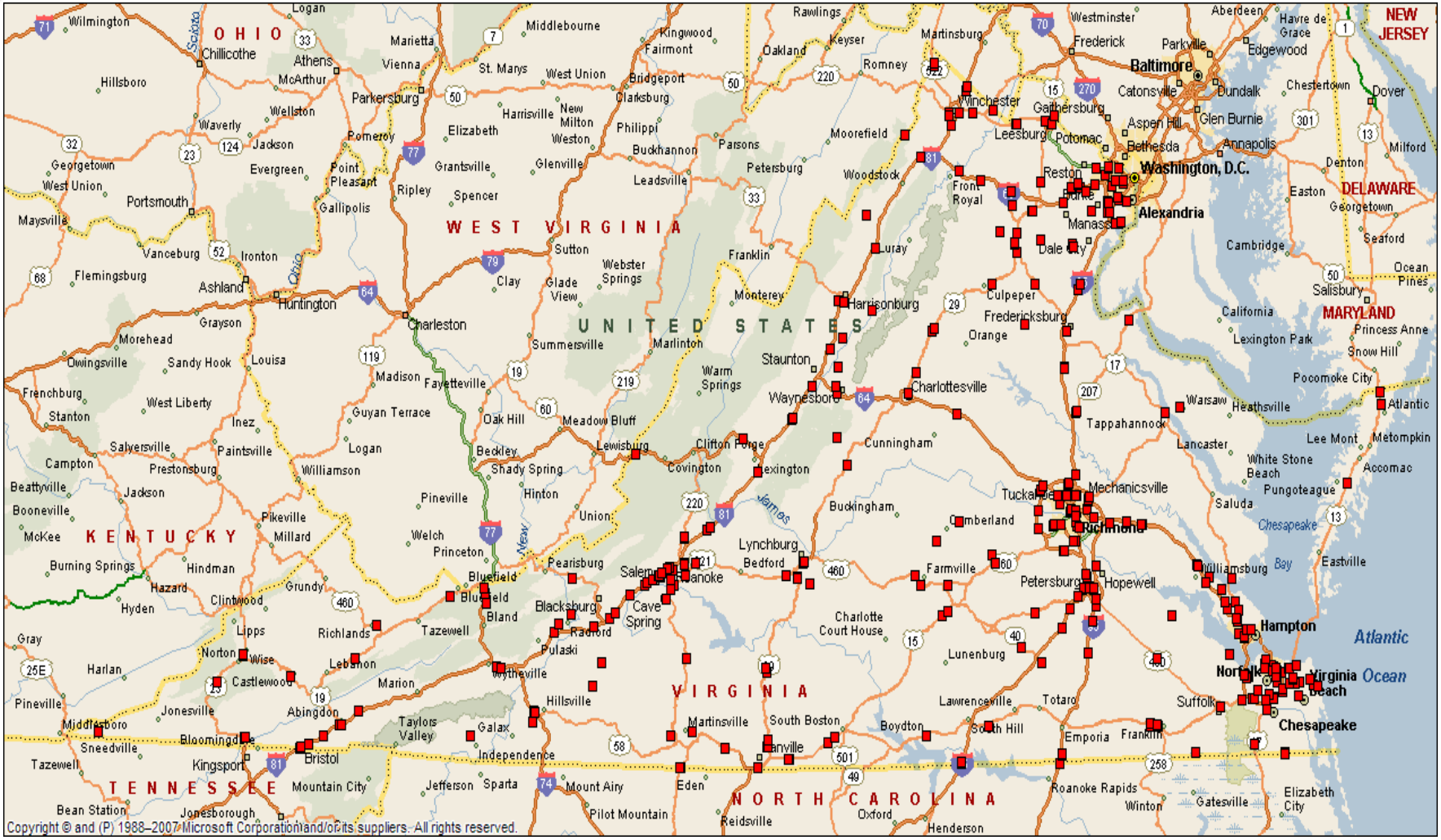
Virginia's Speed Data Program

- Started Saving Speed Data in 2003
- Collected at All Continuous Traffic Count Stations
  - 13 Weigh-In-Motion Stations (Piezo-Loop-Piezo)
  - 318 Classification Stations (Loop-Piezo-Loop)
  - 200 Volume / Speed Stations (Dual Radar)
- Coverage (48 Hour) Traffic Counts Including Classification and Speed Data
  - 6,350 Locations
  - Road Tube Sensors

Virginia's Speed Data Program

- **In-Road Sensor Stations**
  - Two Inductance Loops & One Piezo
  - By Lane Data
  - 15 Minute Intervals, Perhaps 5 in Future
  - Twenty-One Speed Bins
  - Three Length Based Class Bins
  - 21 Classification Bins
  - 5 Minute Real Time Data

In-Road Sensor Locations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Lynchburg
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Harrisonburg
Winchester
Martinsburg
Parkersburg
Beckley
Bluefield
Pikeville
Ashland
Portsmouth
Wheeling
Morgantown
Clarksburg
Fairmont
Weirton
Steubenville
Wheeling
Cumberland
Hagerstown
Frederick
Gaithersburg
Bethesda
Annapolis
Salisbury
Ocean City
Dover
Wilmington
Easton
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Georgetown
Lexington Park
Leonardtown
Waldorf
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Orange
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Zion Crossroads
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Stafford
Quantico
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Woodbridge
Manassas
Haymarket
Gainesville
Leesburg
Purcellville
Round Hill
Middleburg
Aldie
Chantilly
Centreville
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Vienna
Falls Church
Arlington
Alexandria
Springfield
Burke
Fairfax Station
Lorton
Occoquan
Woodbridge
Dale City
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Gainesville
Warrenton
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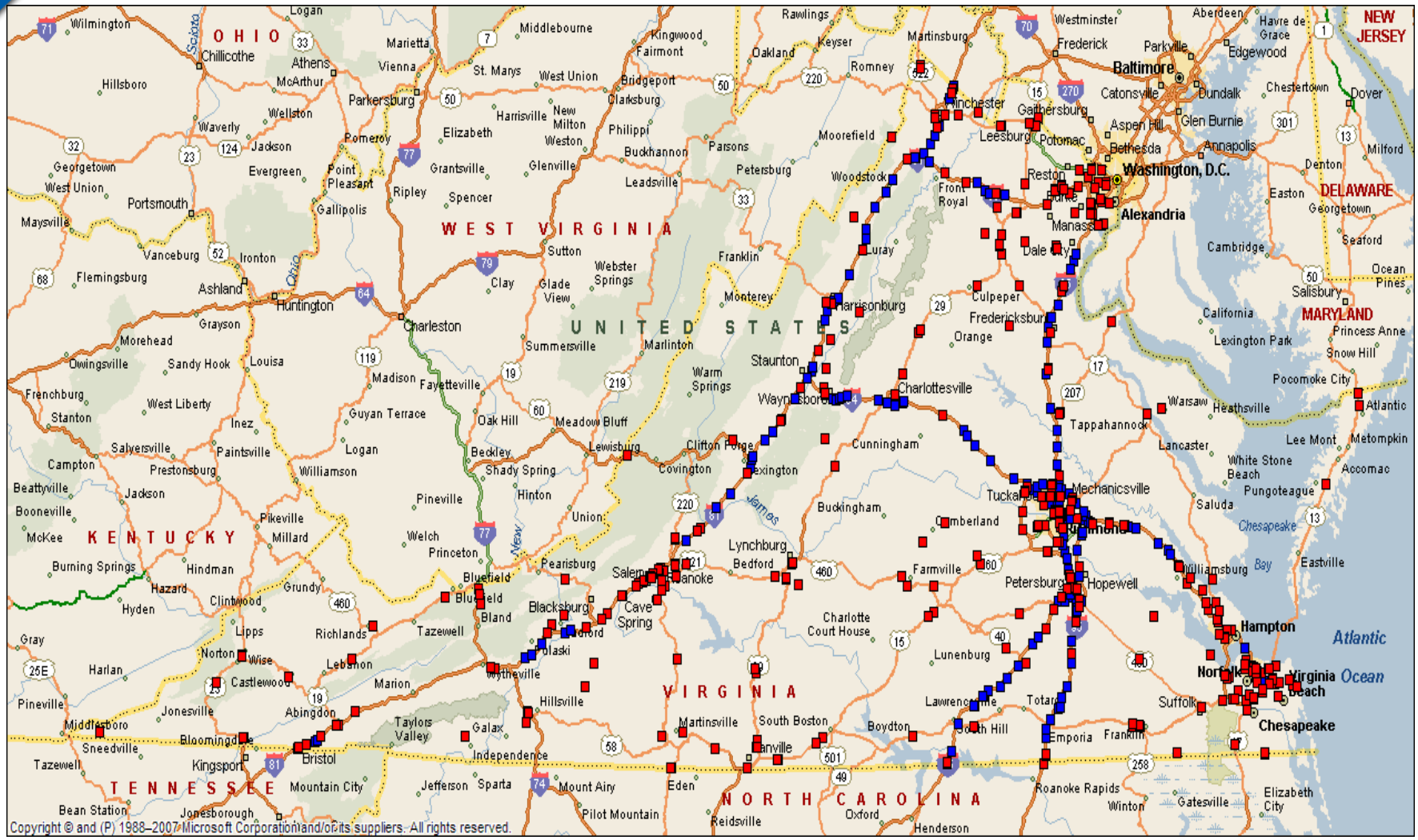
Madison
Orange
Gordonsville
Louisa

Virginia's Speed Data Program

- **Non-Intrusive Sensor Stations**
  - Wavetronix HD Sensors
  - By Lane Data
  - 5 Minute Intervals
  - Fifteen Speed Bins
  - Length Based Class Not Used
  - Easy Setup
  - Fine Tune Speed Calibration
  - Near Real Time Data

All Continuous Count Stations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Beckley
Princeton
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Harlan
Middlesboro
Bristol
Kingsport
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Abingdon
Wytheville
Pulaski
Radford
Christiansburg
Salem
Bedford
Lynchburg
Farmville
Petersburg
Richmond
Hopewell
Williamsburg
Tappahannock
Warsaw
Heathsville
Salisbury
Ocean City
Easton
Cambridge
Seaford
Dover
Milford
Princess Anne
Pocomoke City
Accomac
Eastville
Suffolk
Franklin
Emporia
South Hill
Boydton
Martinsville
Danville
South Boston
Eden
Reidsville
Oxford
Henderson
Roanoke Rapids
Winton
Gatesville
Elizabeth City
Mount Airy
Galax
Independence
Sparta
Jefferson
Mountain City
Bean Station
Jonesborough
Sneedville
Middlesboro
Jonesville
Pineville
Harlan
Hyden
Jackson
Beattyville
Campton
Stanton
Frenchburg
Owingsville
Morehead
Grayson
Flemingsburg
Vanceburg
Maysville
Portsmouth
West Union
Georgetown
Ripley
Gallipolis
Point Pleasant
Evergreen
Pomeroy
Middleport
Athens
Chillicothe
Hillsboro
Wilmington
Logan
Marietta
Vienna
St. Marys
Middlebourne
West Union
Clarksburg
Bridgeport
Kingwood
Oakland
Keyser
Romney
Rawlings
Parsons
Petersburg
Woodstock
Moorefield
Buckhannon
Philippi
Weston
New Milton
Harrisville
Elizabeth
Grantsville
Glenville
Leadsville
Spencer
Sutton
Webster Springs
Glade View
Clay
Summersville
Marlinton
Monterey
Franklin
Warm Springs
Meadow Bluff
Oak Hill
Fayetteville
Madison
Guyan Terrace
Inez
Louisa
Sandy Hook
Salyersville
Paintsville
Prestonsburg
Williamson
Logan
Pineville
Hinton
Union
Princeton
Welch
Millard
Pikeville
Grundy
Clintwood
Lipps
Richlands
Tazewell
Norton
Wise
Lebanon
Castlewood
Marion
Hillsville
Taylors Valley
Bloomingdale
Kingsport
Mountain City
Jefferson
Sparta
Mount Airy
Pilot Mountain
Jonesborough
Bean Station
Tazewell
Sneedville
Middlesboro
Jonesville
Pineville
Harlan
Hyden
Gray
Burning Springs
McKee
Booneville

Speed Bins

- **VDOT Uses Two Speed Bin Set-ups**
  - **Twenty-one Bins for In-Road Sensors**
  - **Fifteen Bins for Non-Intrusive**
- **FHWA Proposal is for Fifteen Bins**

Speed Bins

Bin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Va N-Int	0-15	15-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	>85						
FHWA	0-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	>85						
Va In-Road	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90	90-95	95-100	>100

Speed Bins

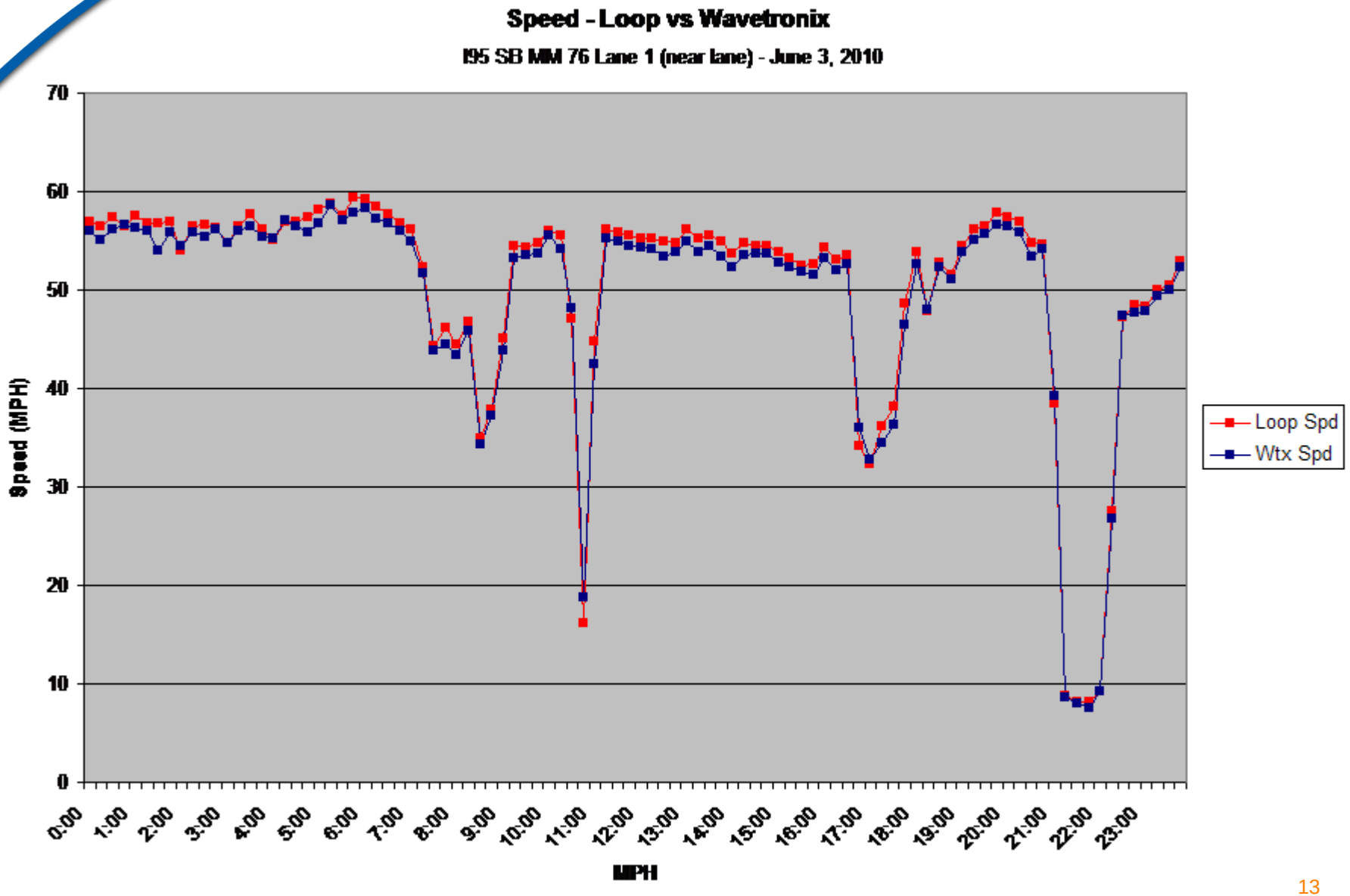
- **In-Road Sensors Exceed Proposal**
- **One Mismatch with FHWA Proposal**

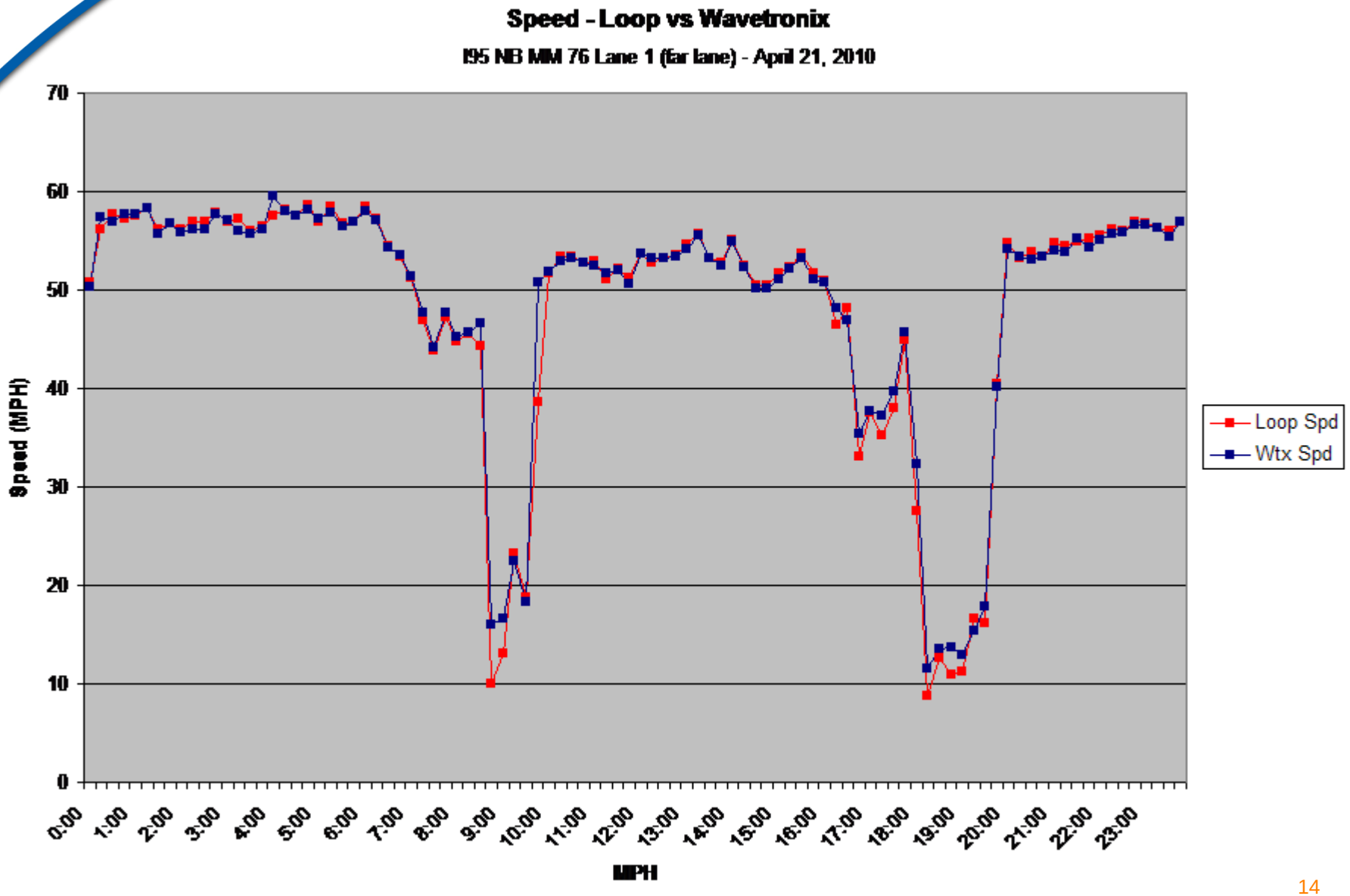
  VDOT Non-Intrusive Bin one is 0 to 15 MPH **and Bin two is** 15 to 25 MPH

  FHWA Bin one is 0 to 20 MPH **and Bin two is** 20 to 25 MPH
- **VDOT Database Stores Dynamic Speed Definitions for the Specific Data Available**

What's Missing ?

- Roadway Speed Limit
  - Add to Card 1 ?
- Roadway Geometrics
- Better Sensor Definition?
  - VDOT Experience Is Not All Non-Intrusive Sensors Are Alike, Performance Can Change With Firmware


Speed - Loop vs Wavetronix
I95 SB MM 76 Lane 1 (near lane) - June 3, 2010
Speed (MPH)
70
60
50
40
30
20
10
0
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
MPH
Loop Spd
Wtx Spd


Speed - Loop vs Wavetronix
I95 NB MM 76 Lane 1 (far lane) - April 21, 2010
Speed (MPH)
70
60
50
40
30
20
10
0
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
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15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
MPH
Loop Spd
Wtx Spd

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