U.S. Department of Transportation
Federal Highway Administration

Managing Pavement Performance at a National Level
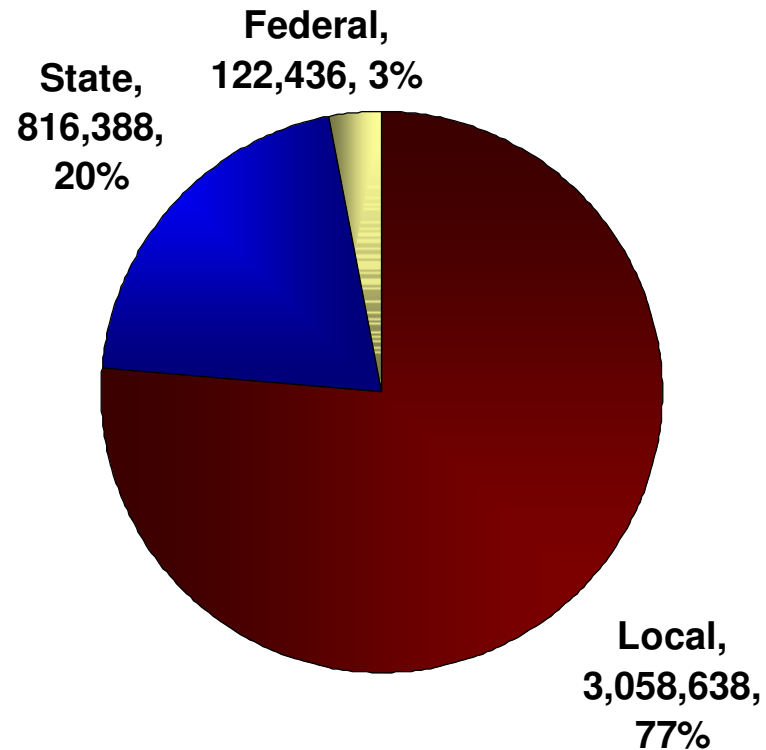
Status, Challenges, Needs

Pavement Evaluation 2010

Roanoke, VA

October 25, 2010

Public Road Network

- ## System Role
  - Personal Trips
  - Freight Movement
  - Deliveries
  - Intermodal Connection
  - Rapid Deployment
- ## Facts
  - 4 million miles
  - 76.5% local roads
  - 3 trillion VMT

Federal, 122,436, 3%

State, 816,388, 20%

Local, 3,058,638, 77%

Keeping America Moving

To improve mobility on our nation's highways through national leadership, innovation and project delivery

- ## National Highway System
  - 1991 ISTEA
  - Interstate System
  - Key Corridors
  - Principal Routes
- ## Facts
  - 164,000 miles
  - 574,000 lane-miles
  - 95% State owned
  - 4.1% US mileage
  - 44.8% total travel

National Highway System (NHS)
— Eisenhower Interstate System
— Other NHS
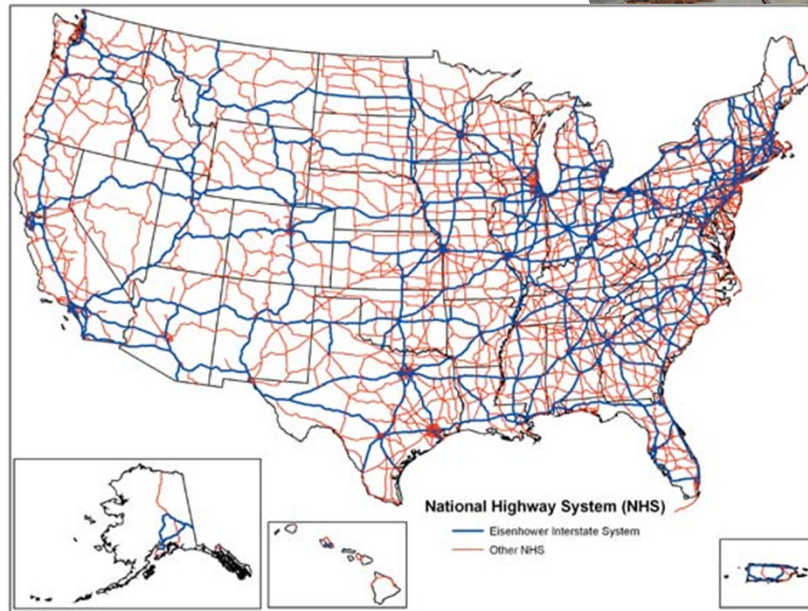
System Performance

- Safer Travel

- Reduced Travel Time (congestion)

- Improved Freight Mobility

- Healthy Bridges and Pavements

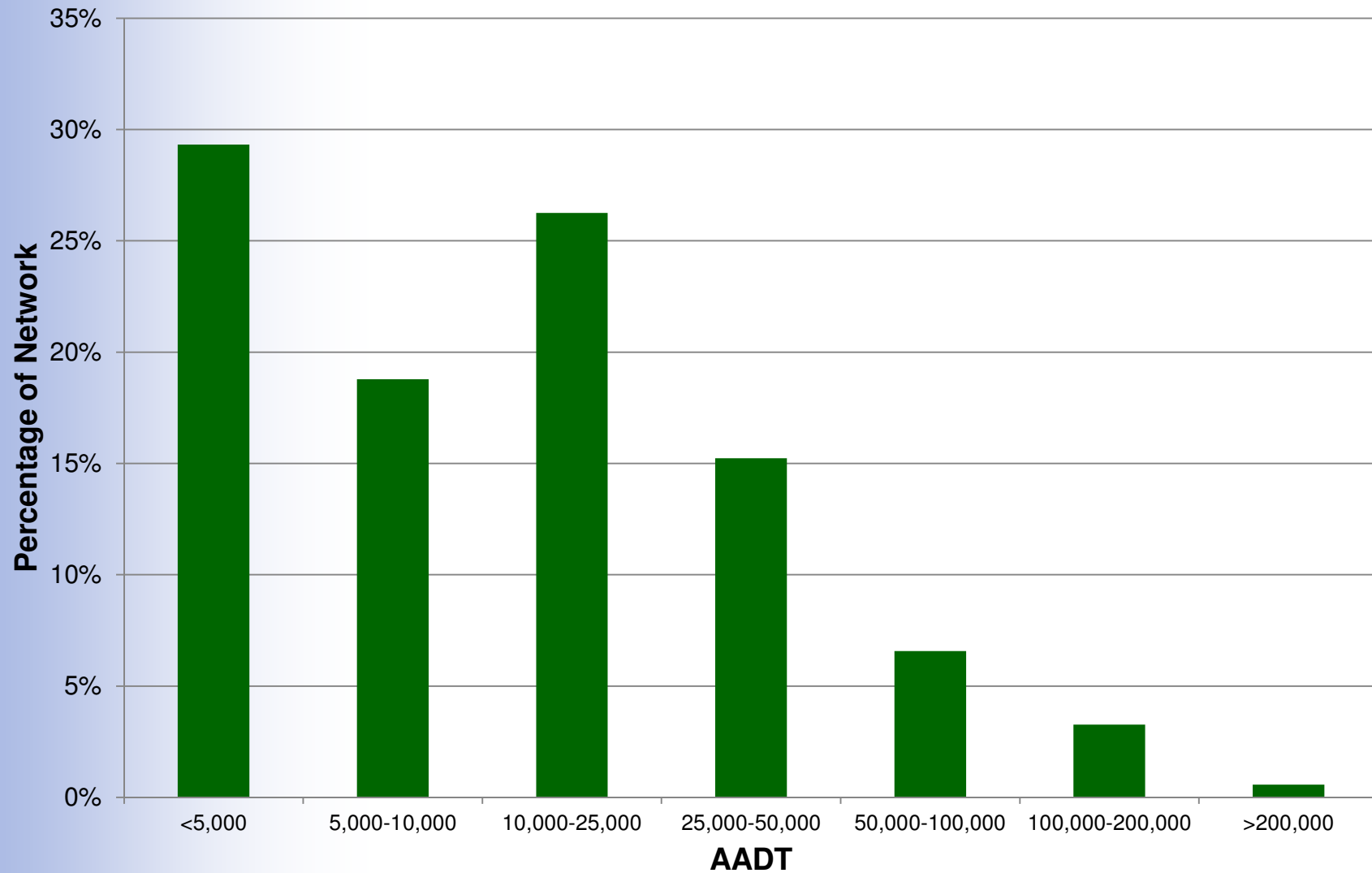- Sustainable Network

System Performance

- 33,963 fatalities
- 1.16 fatality rate
- 27% congested travel
- 26% deficient bridge area
- 8% structurally deficient bridge area
- 62% of pavements with good ride
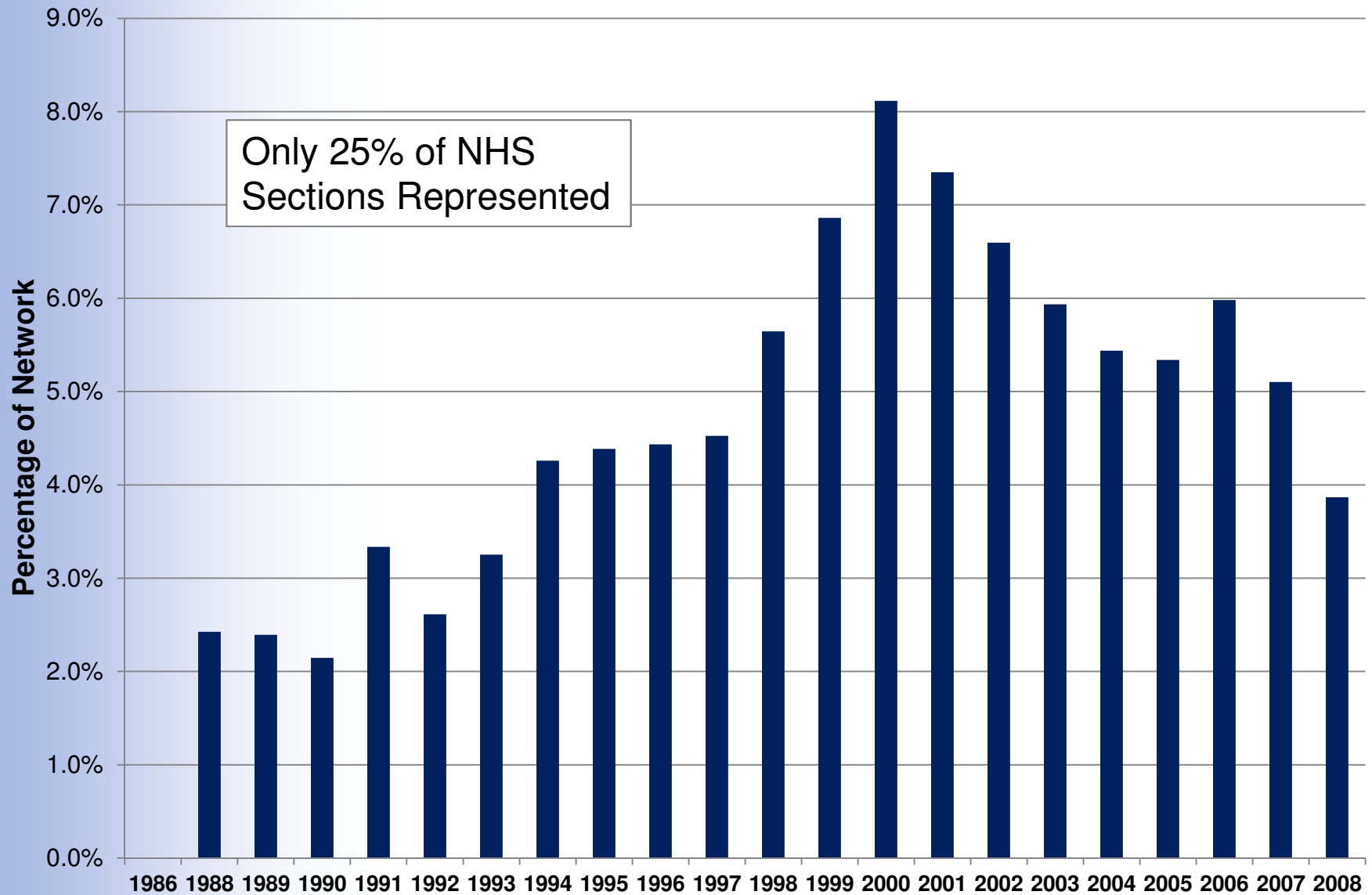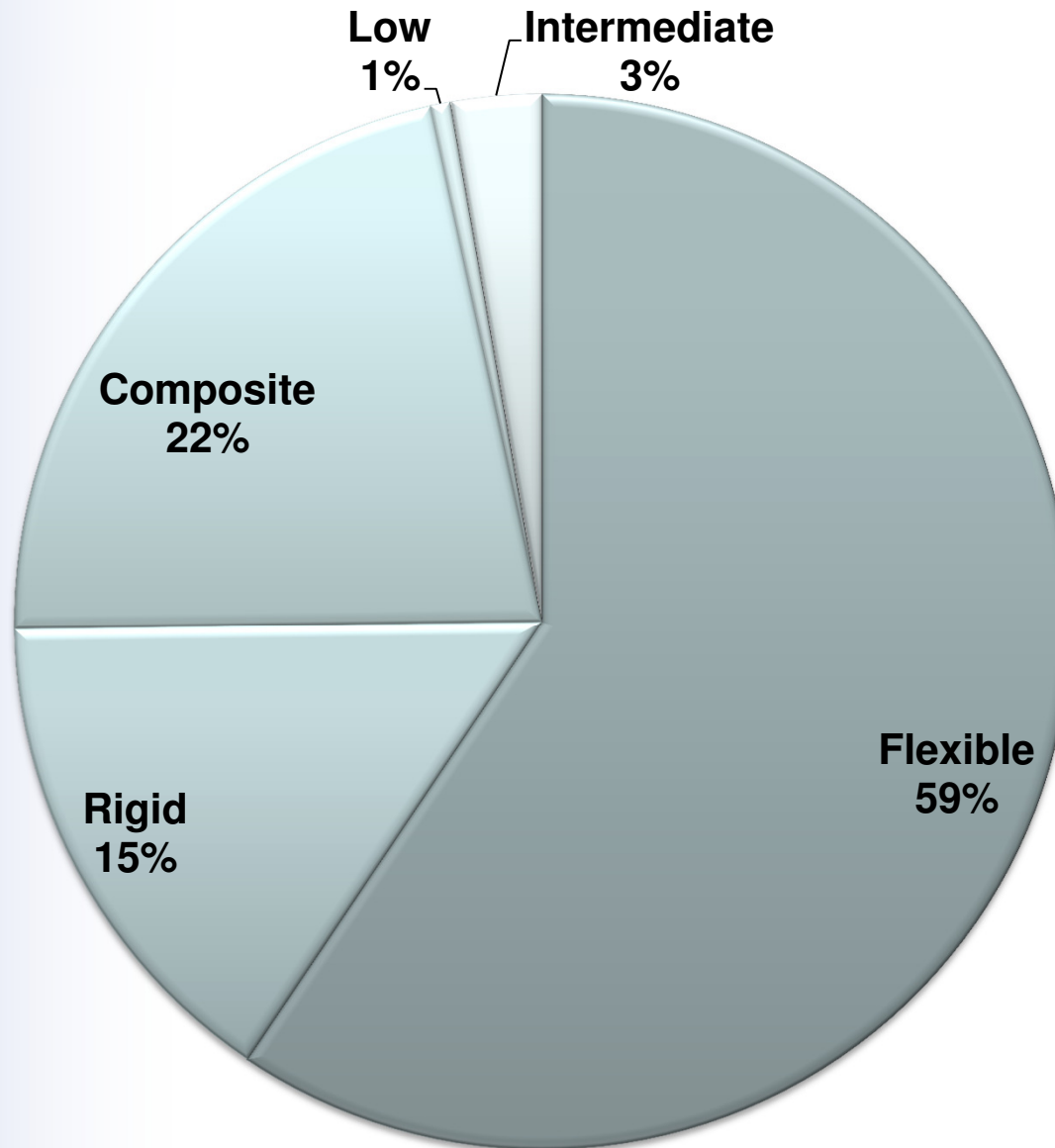- 6% of pavements with poor ride

NHS Composition
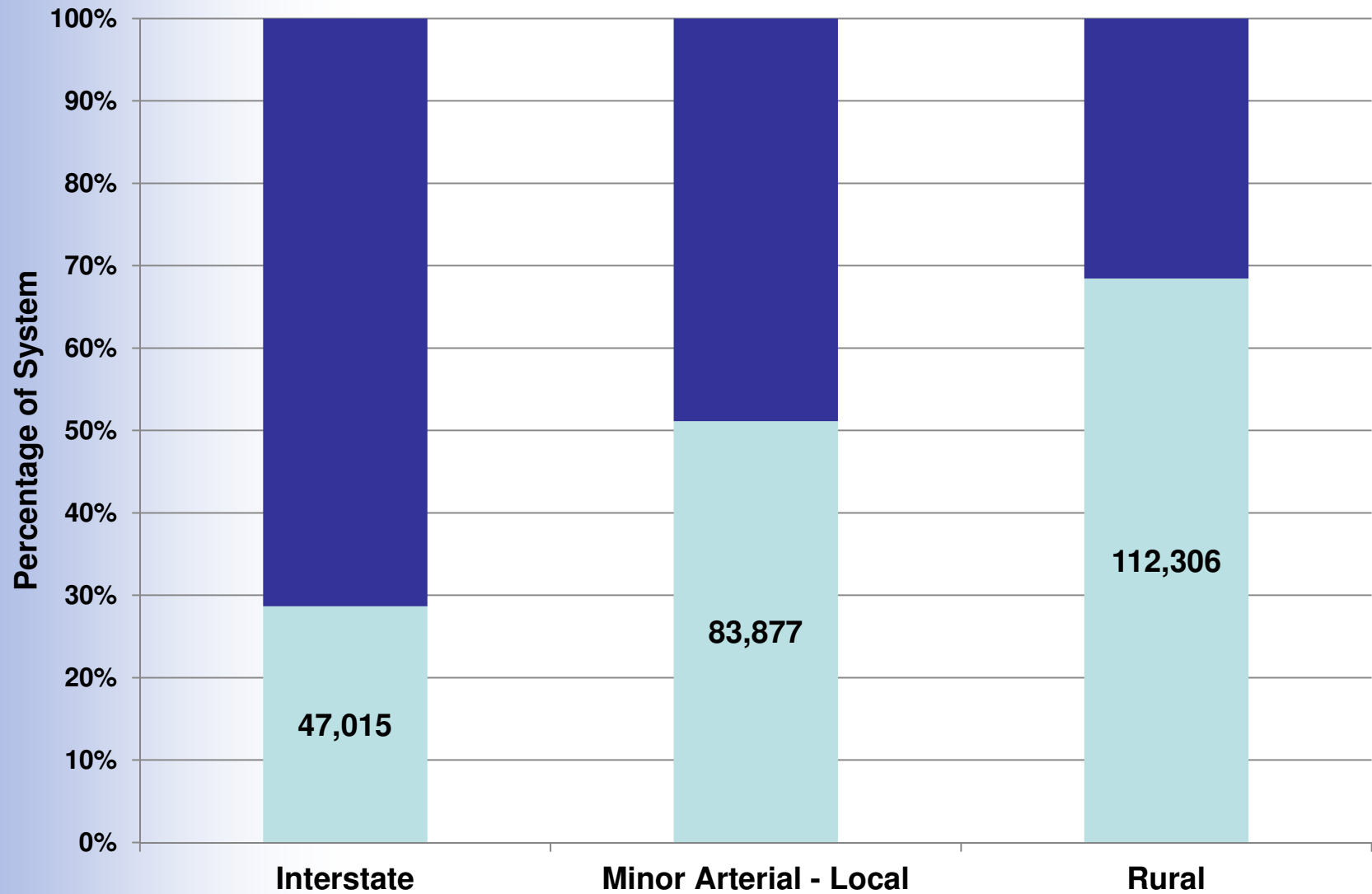
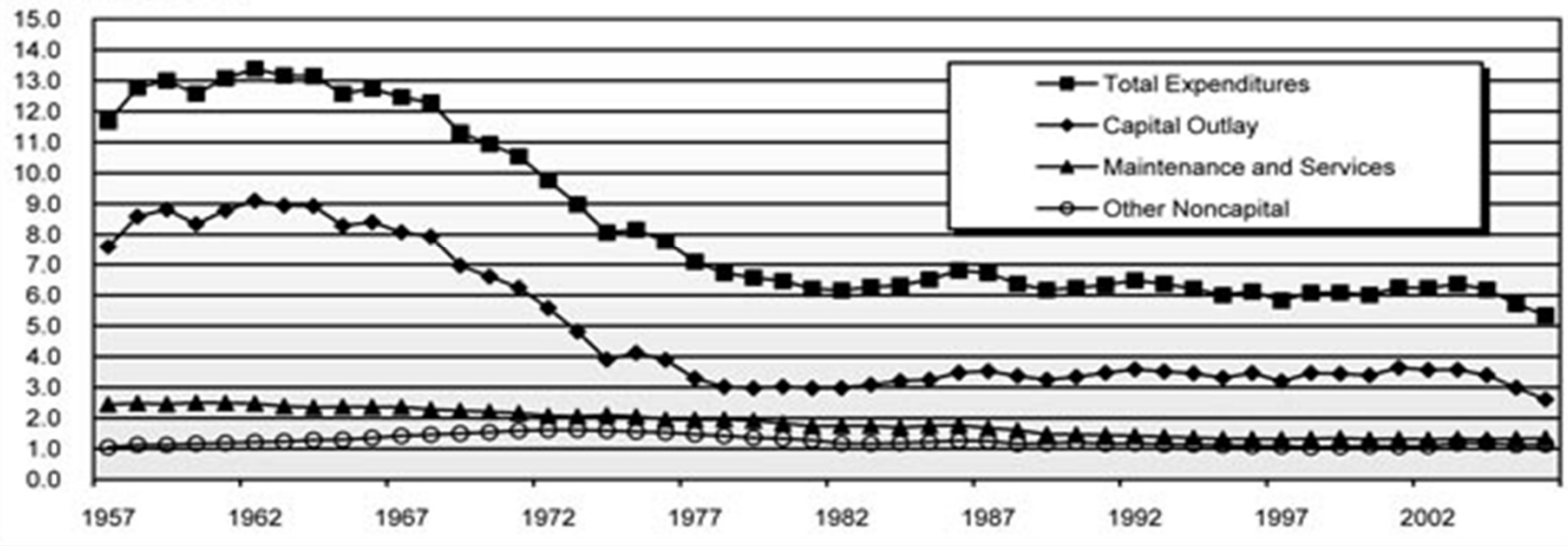# Traffic Levels on the NHS

Last Year Resurfaced

NHS Pavement Types

Highway Funding

Exhibit 6-10

Highway Expenditures per Vehicle Mile Traveled, All Units of Government, 1957–2006

Constant 2006 Cents

Legend:
- Total Expenditures
- Capital Outlay
- Maintenance and Services
- Other Noncapital

Sources: Highway Statistics Summary to 1995, Tables HF-210 and VM-203; Highway Statistics, various years, Tables HF-10A, HF-10 and VM-3.
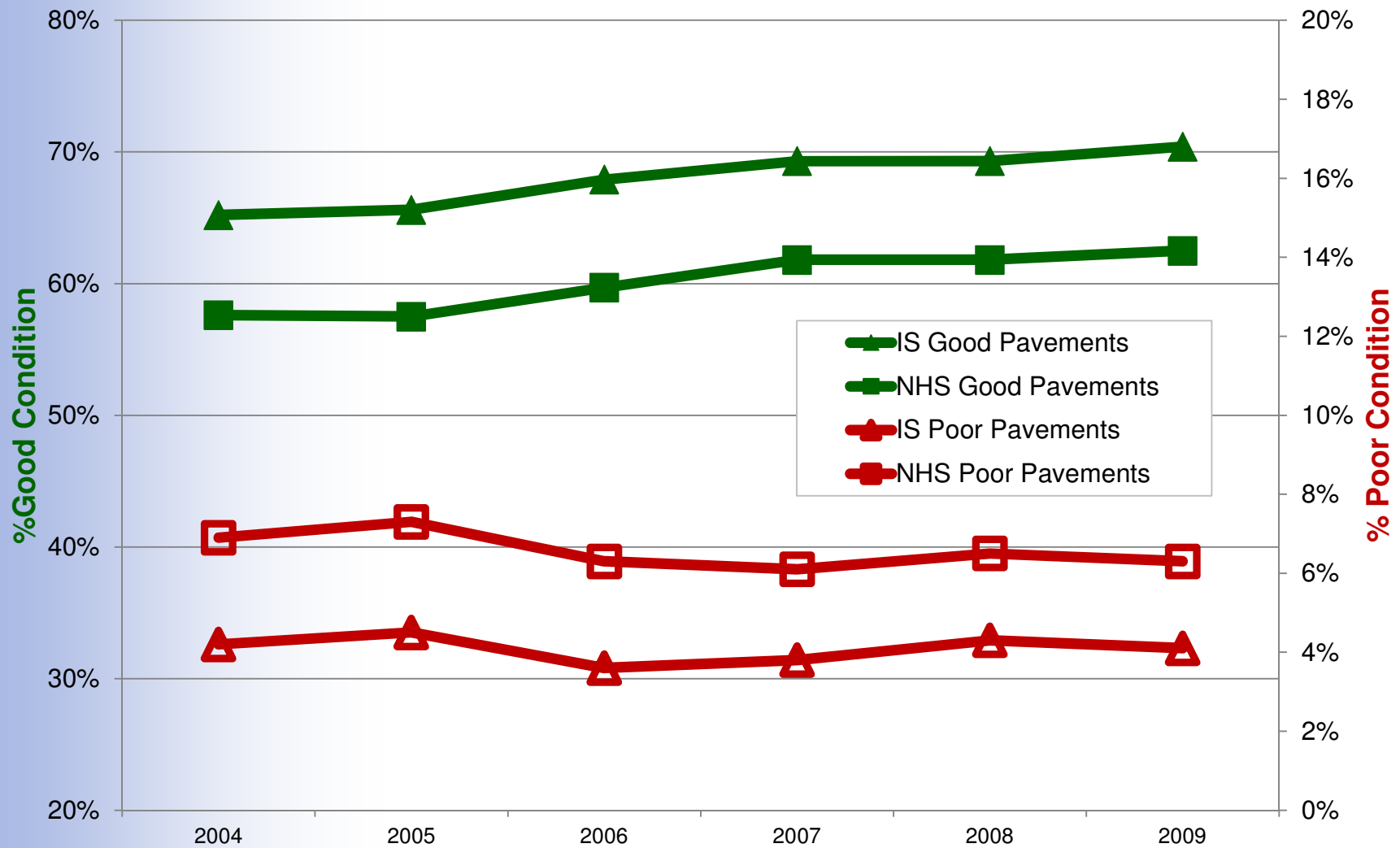
Allocation of Federal Funds on NHS
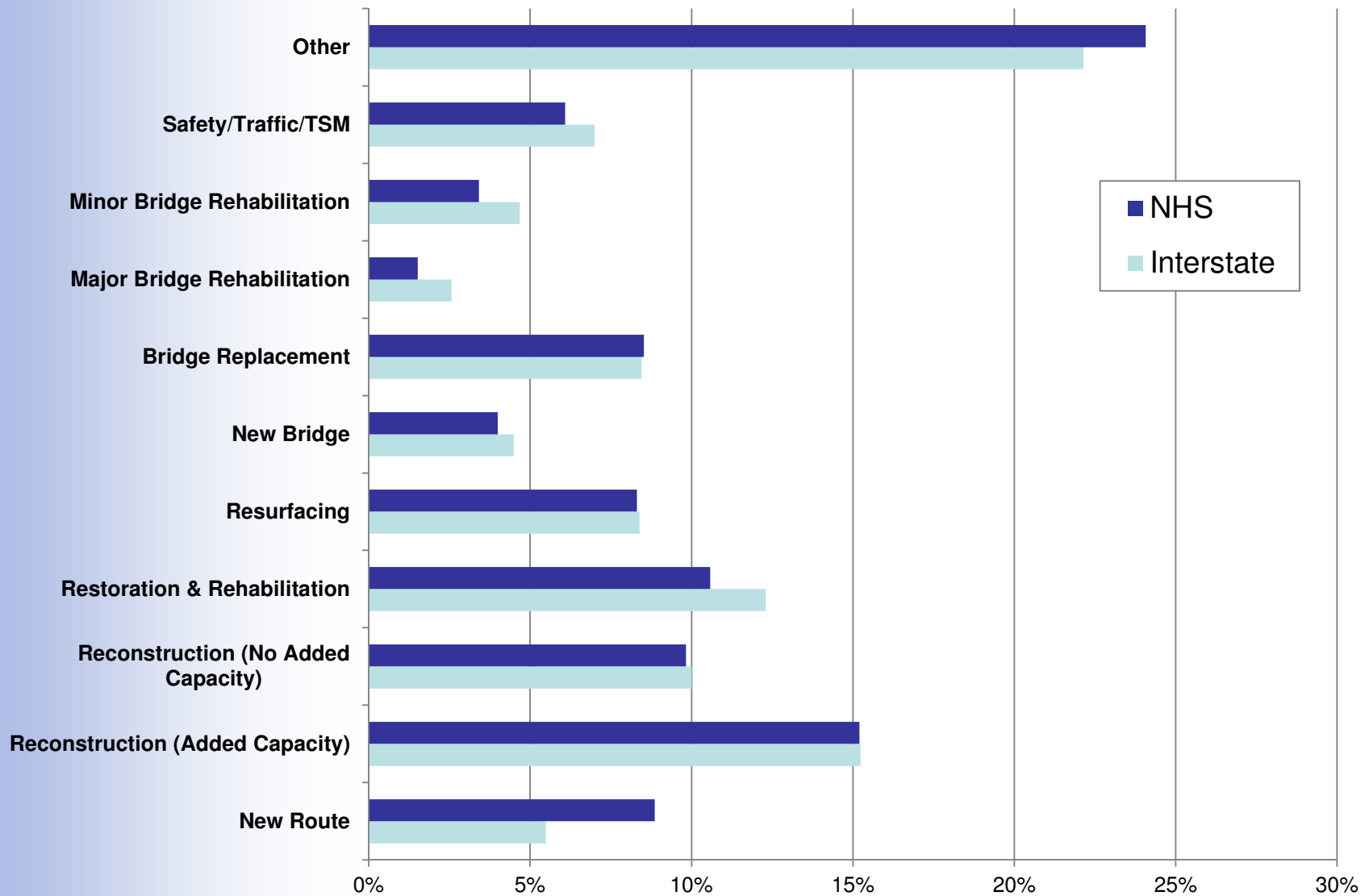
Source: Highway Statistics 2008 – Financial Management Information System – FY2008

NHS and IS Performance Trends

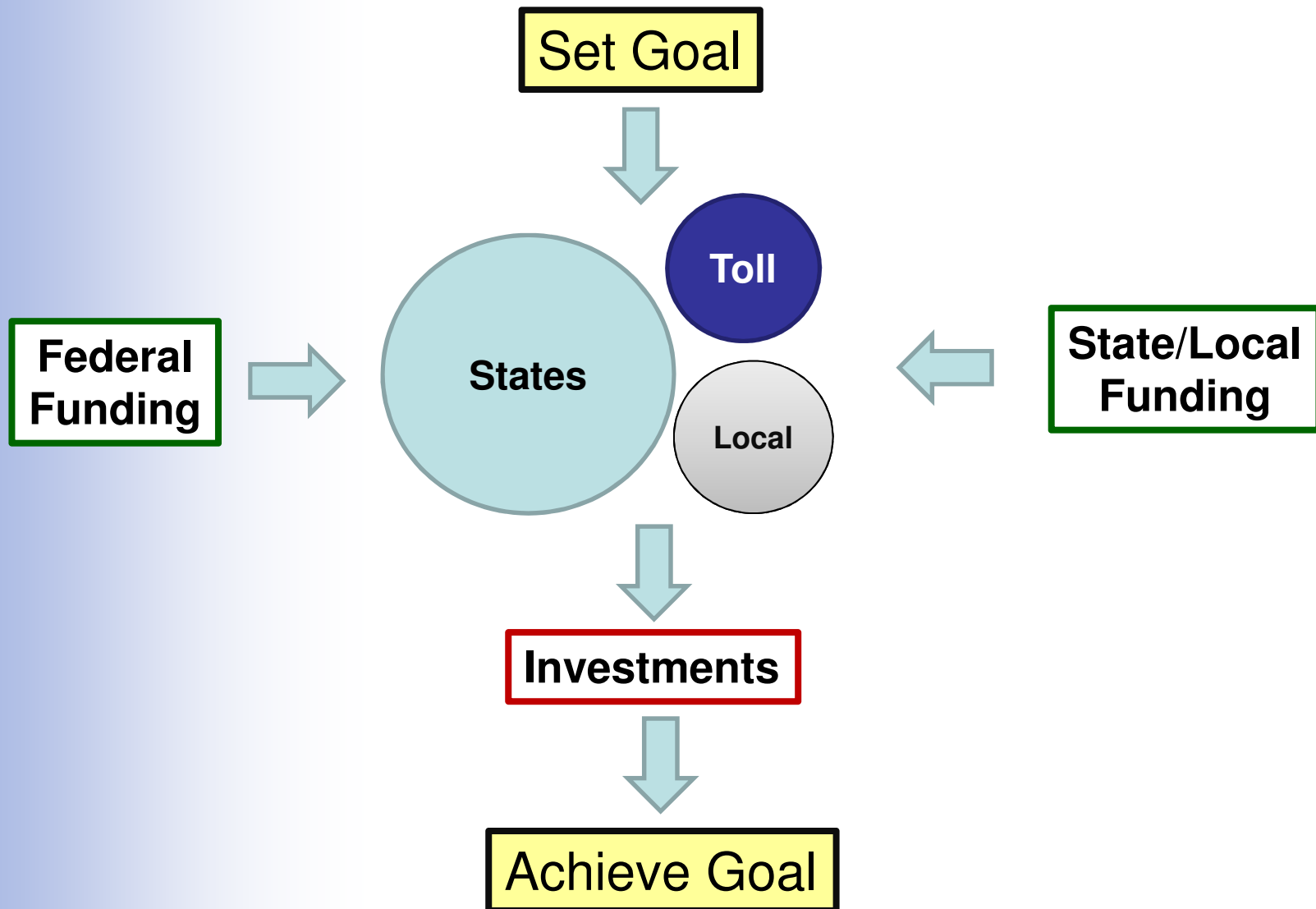National Pavement Performance
Actual 2004-2009

Limitations – System Evaluation

- *Limited condition data*
- *Minimal information on key attributes*
- *Section based*
- Use of accounting codes generalized
- Lack accomplishment information
- Construction cost information limited

Performance Management

Preparing for a National Approach

- How is performance defined?

- How is performance monitored?

- Where is the source of data?
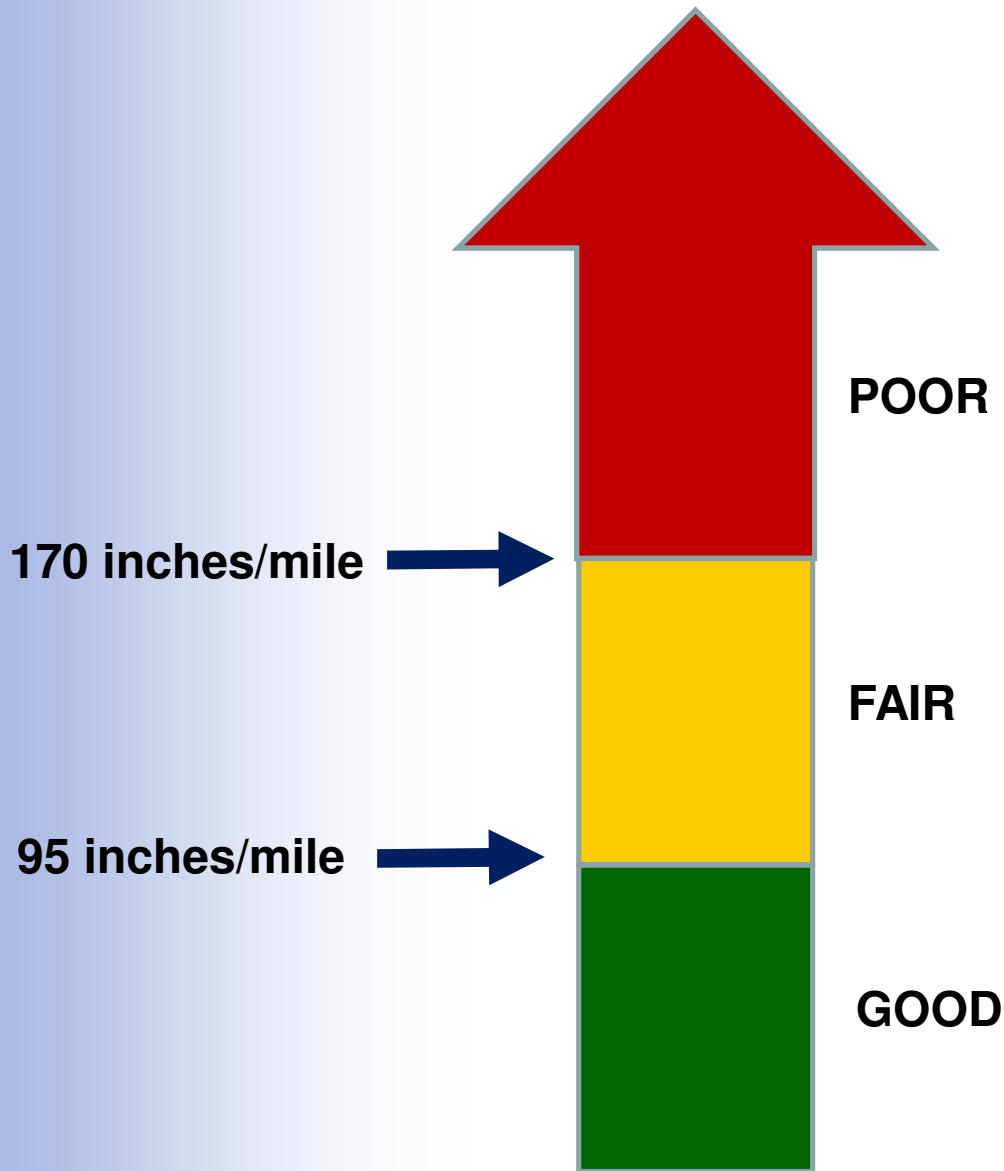
- How can we manage performance?

Preparing for a National Approach

- **How is performance defined?**

- How is performance monitored?

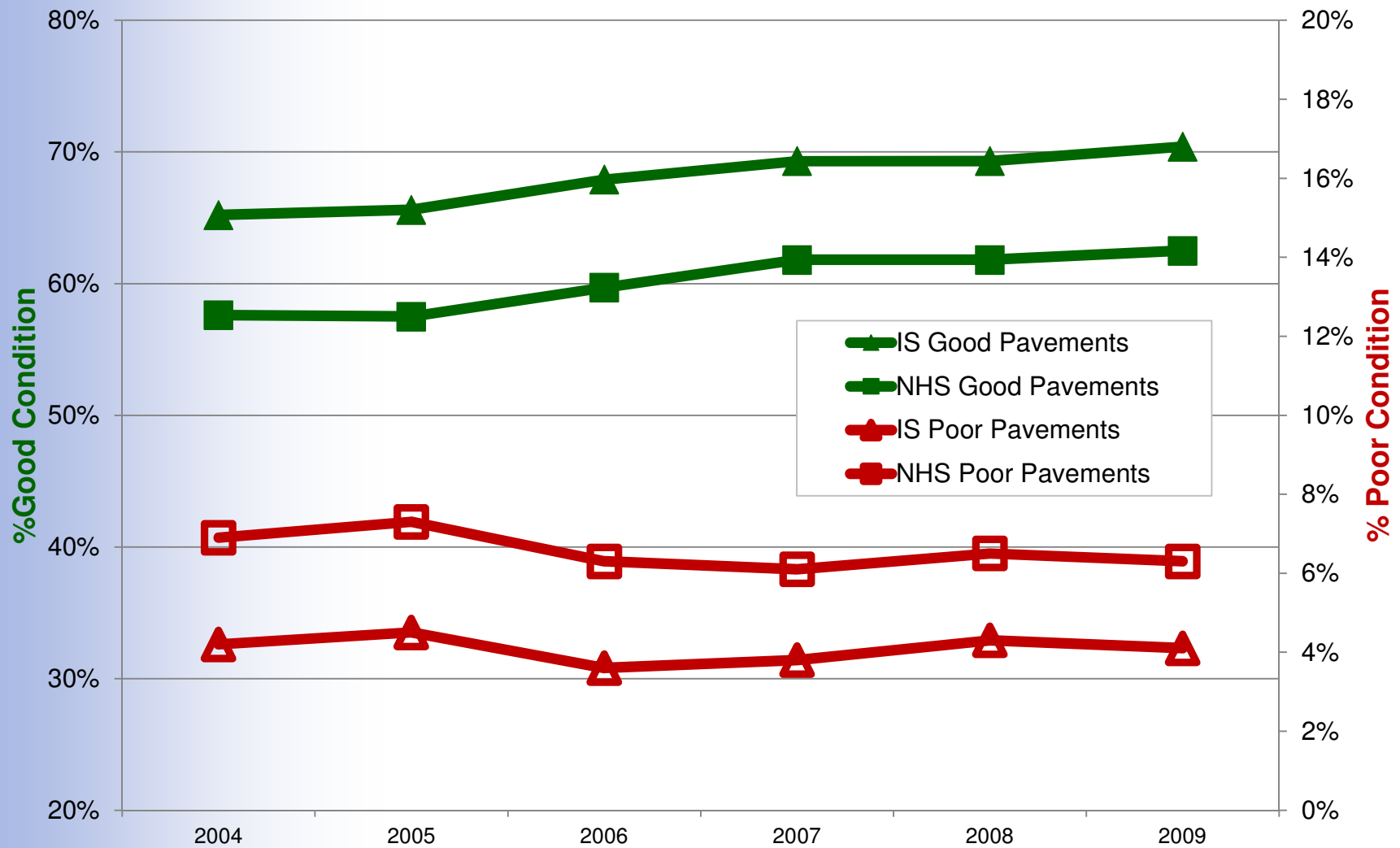- Where is the source of data?

- How can we manage performance?

FHWA Approach

170 inches/mile

95 inches/mile

POOR

FAIR

GOOD

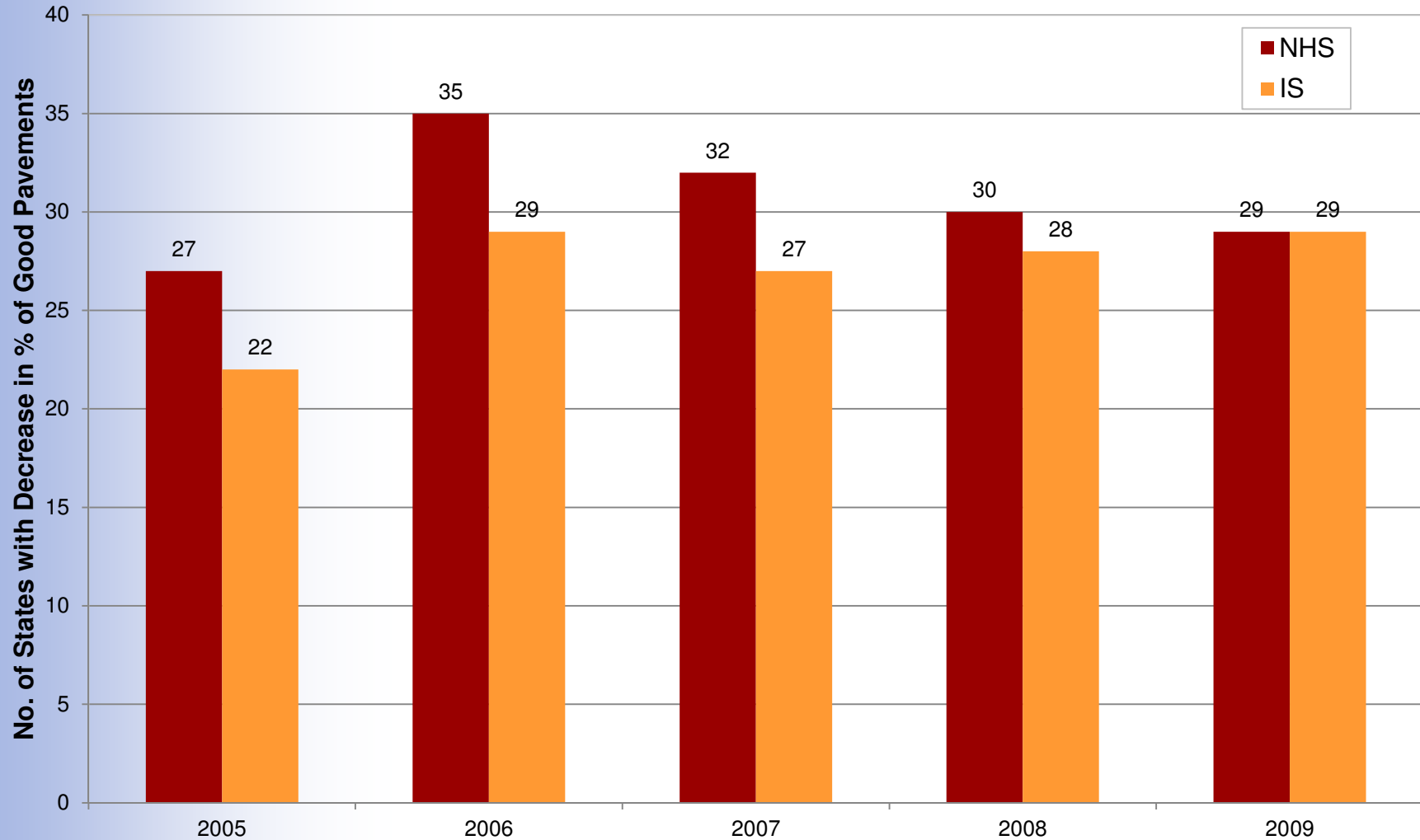Percentage of NHS vehicle miles travelled In Good condition

NHS and IS Performance Trends
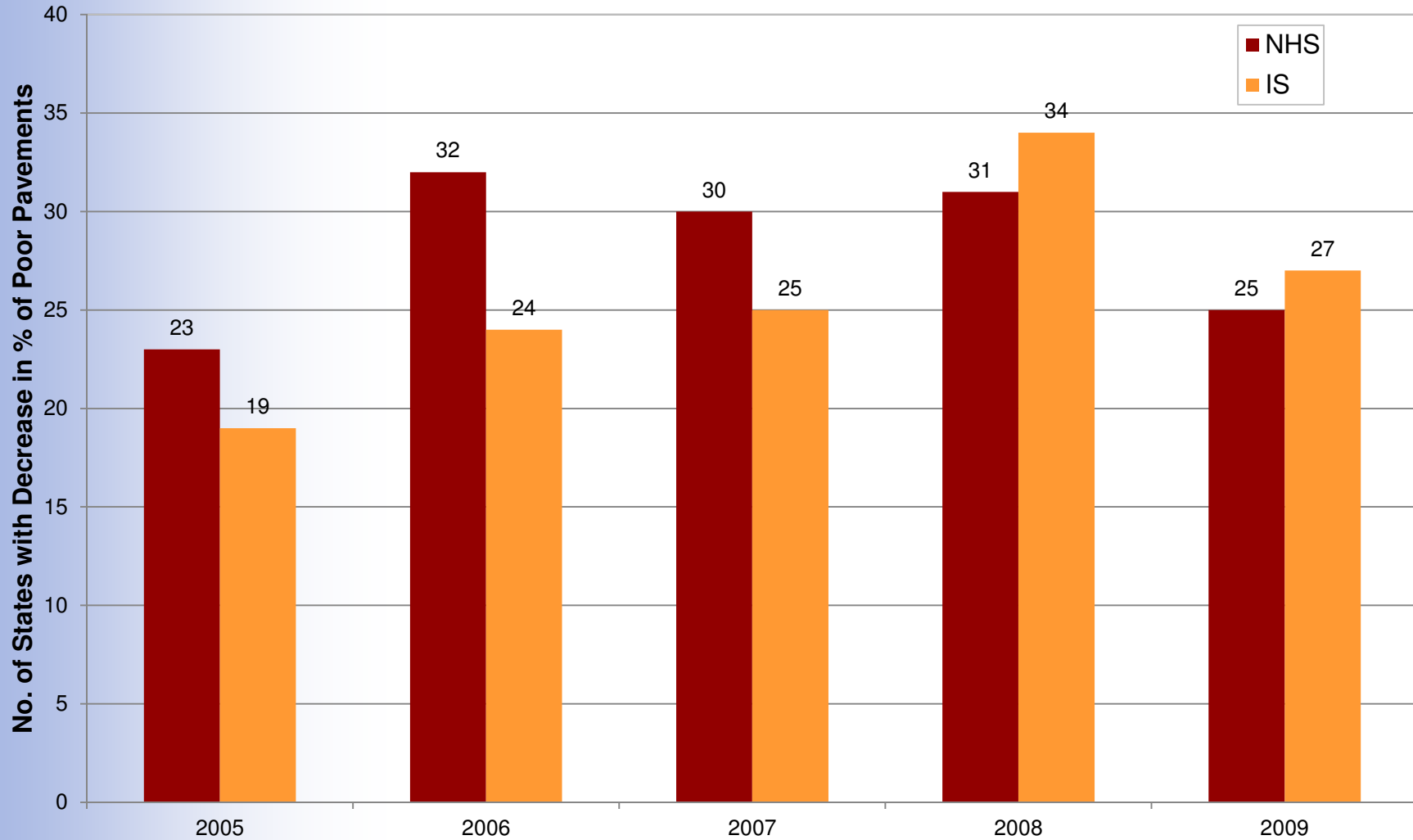

National Pavement Performance
Actual 2004-2009

Annual Improvement – Good Pavements

**States with Annual Improvement in Pavement Condition
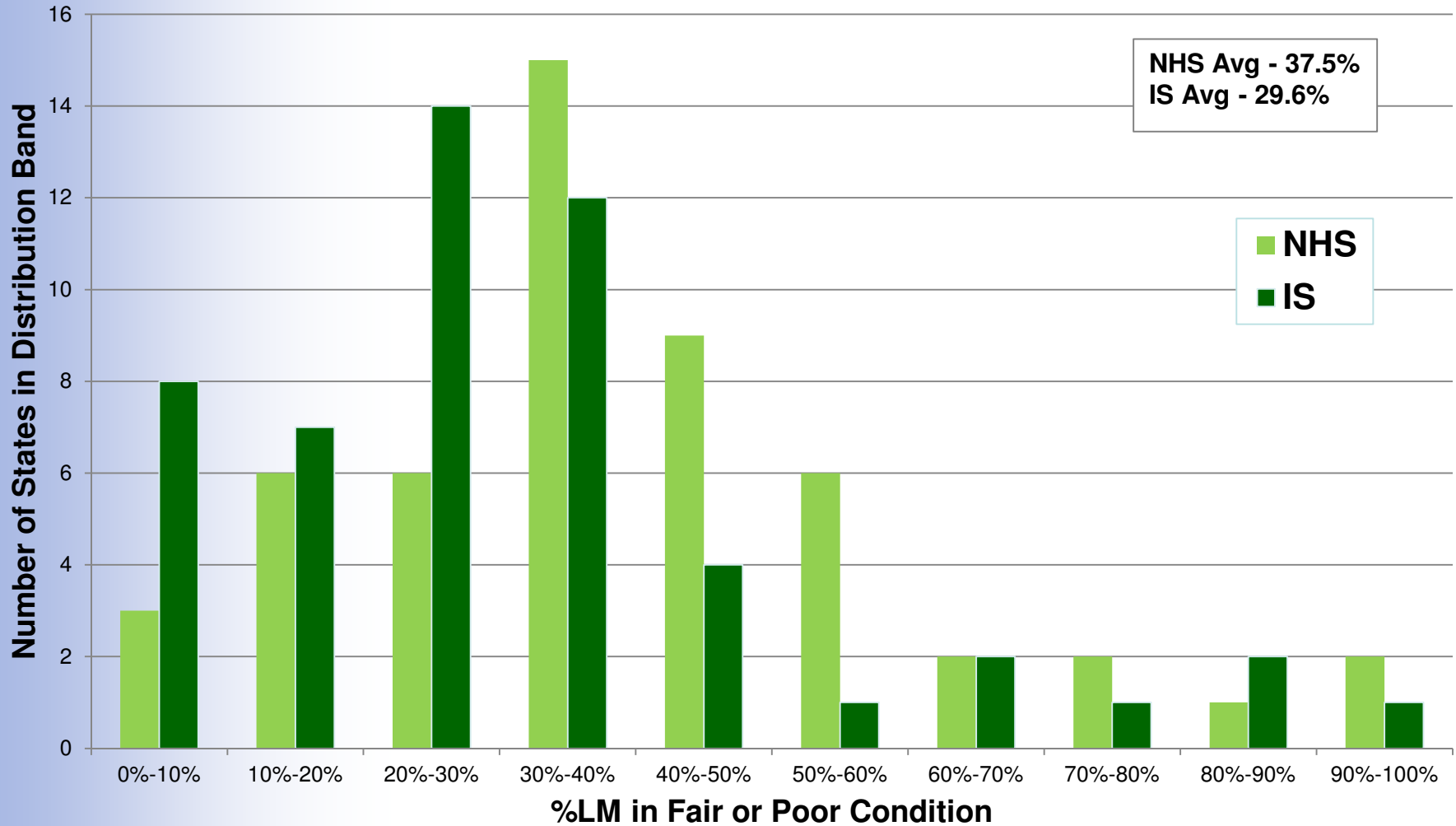Percentage of System in Good Condition**

Annual Decrease in Poor Condition

States with Annual Improvement in Pavement Condition
Percentage of System in Poor Condition

Distribution of Fair/Poor Condition

Distribution of Pavement Performance by State
2009 %LM in Fair or Poor Condition

NHS Avg - 37.5%
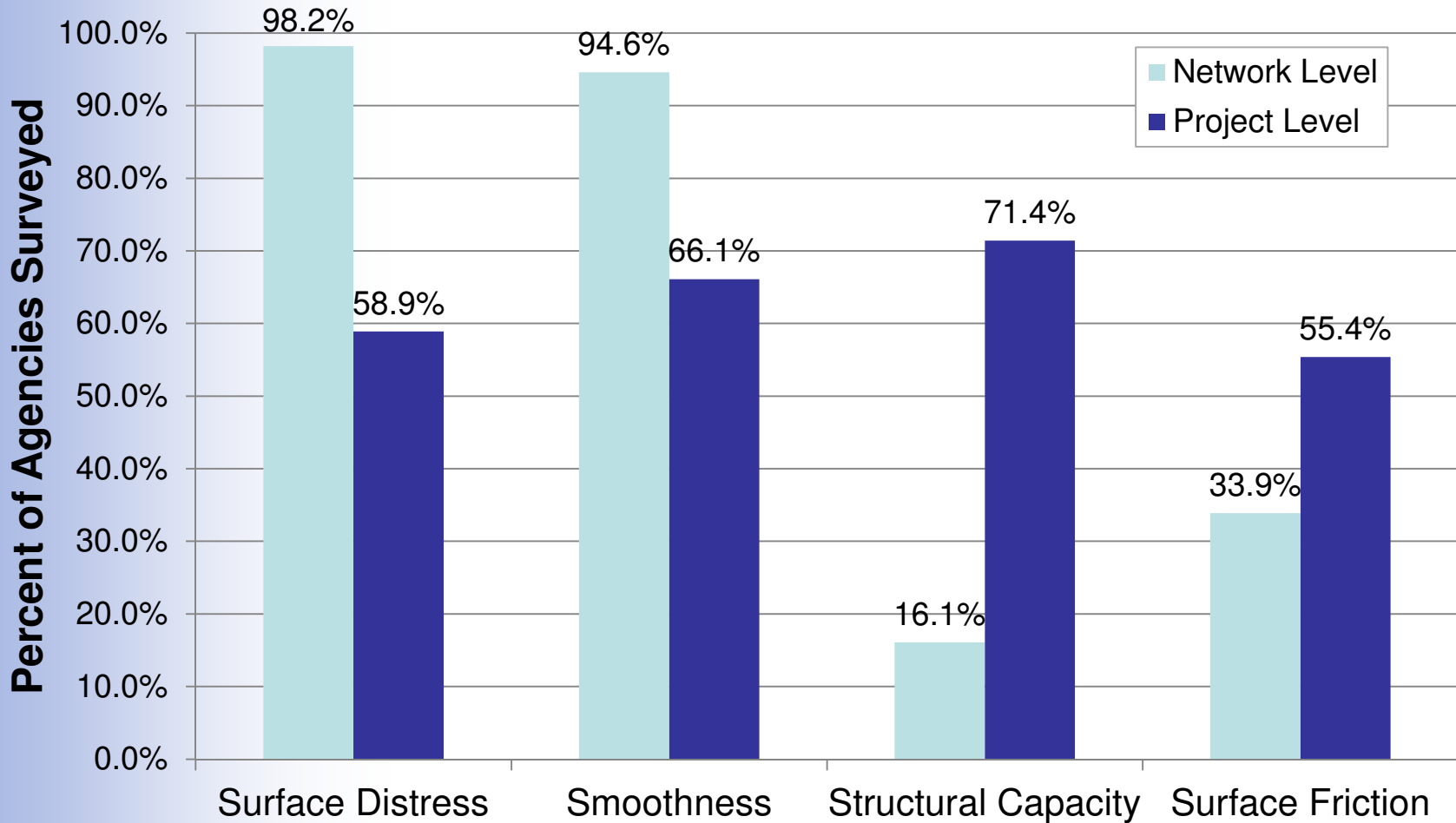IS Avg - 29.6%

I-95 in Virginia

VDOT Criteria
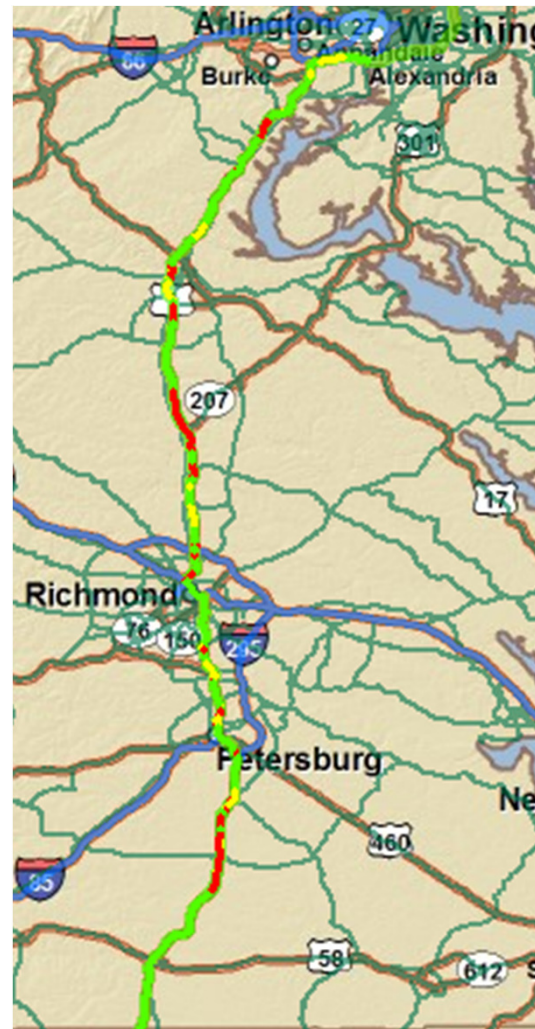
DelDOT Criteria

Preparing for a National Approach

- How is performance defined?

- **How is performance monitored?**

- Where is the source of data?

- How can we manage performance?

State Performance Monitoring

Source: NCHRP Synthesis Report 401

Surface Distress Types

Distress Type	Percentage
Rutting	100%
Transverse Cracking	93%
Fatigue Cracking	89%
Longitudinal Cracking	89%
Map/Block Cracking	77%
Ravelling	64%
Faulting	64%
Spalling	54%
Ravelling/Flushing	54%
Edge Cracking	46%
Other	36%
Punch Outs	32%
Shattered Slab	30%
Durability Cracking	27%
Pumping	21%

Source: NCHRP Synthesis Report 401

Condition Indices

Rut Index

PCR

Crack Index

PCI

PCI

PDI

Condition Rating

PSR

Critical Index

- Excellent
- Good
- Fair
- Mediocre
- Poor
- Very Poor

Acceptable Level?

Preparing for a National Approach

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- **Where is the source of data?**
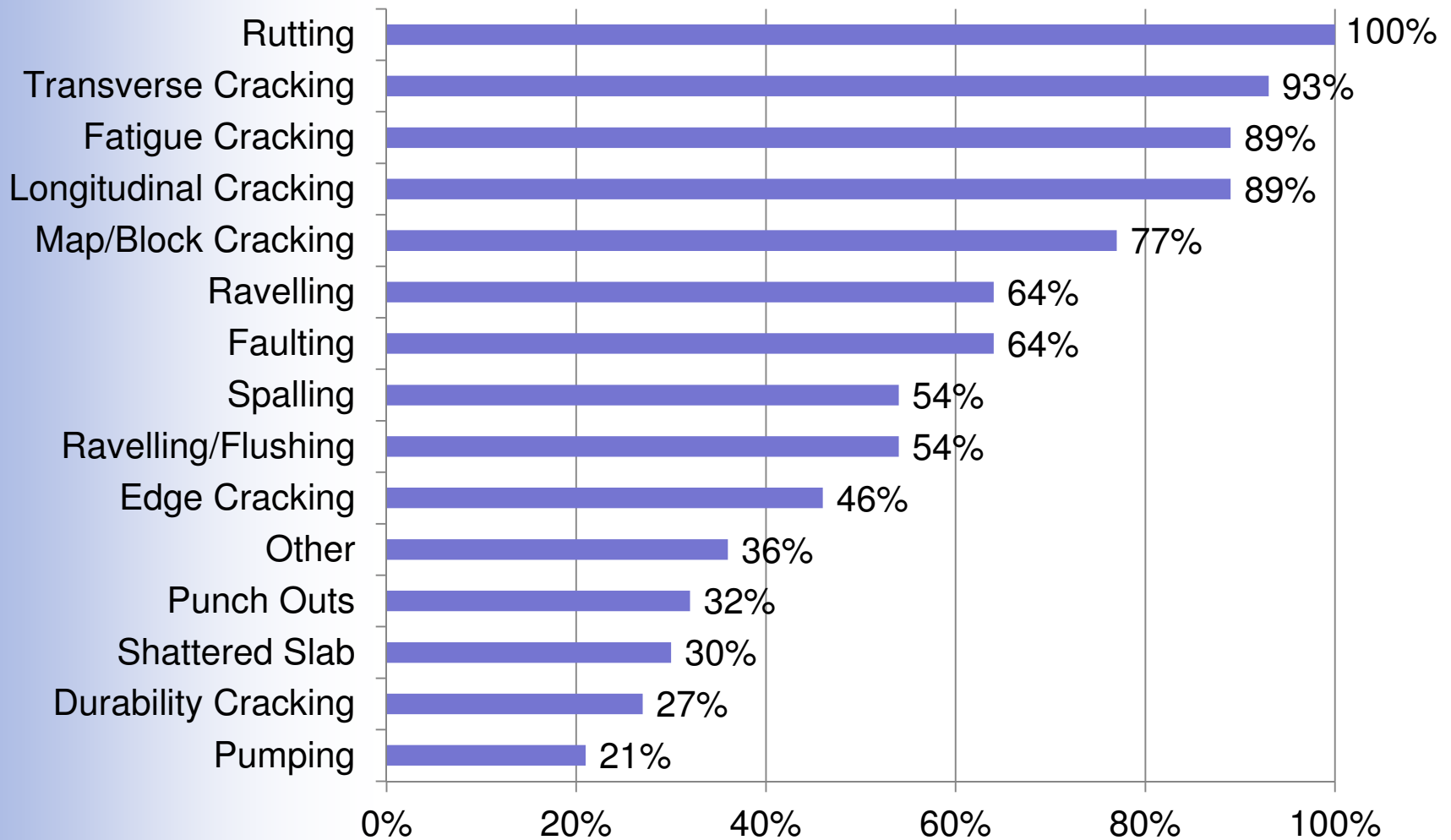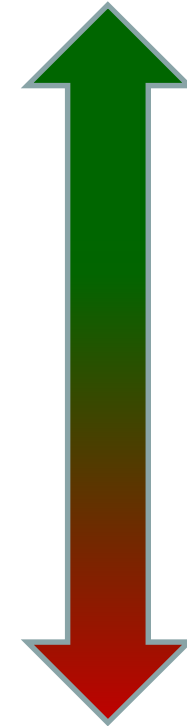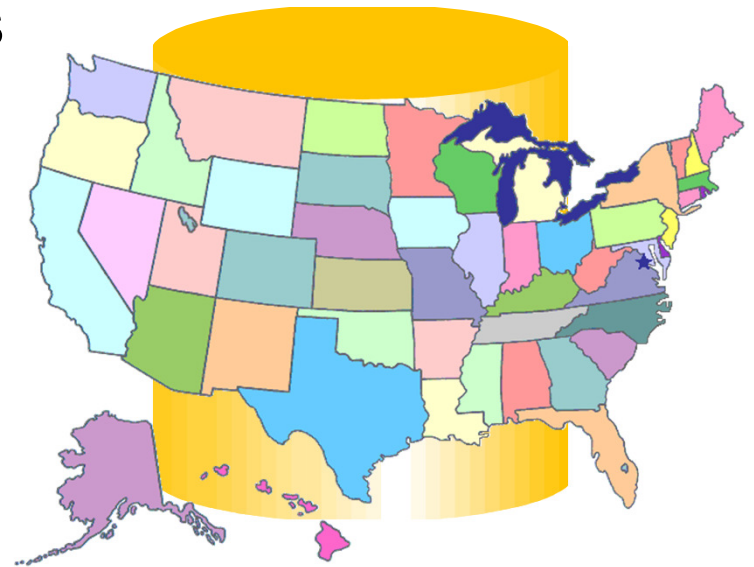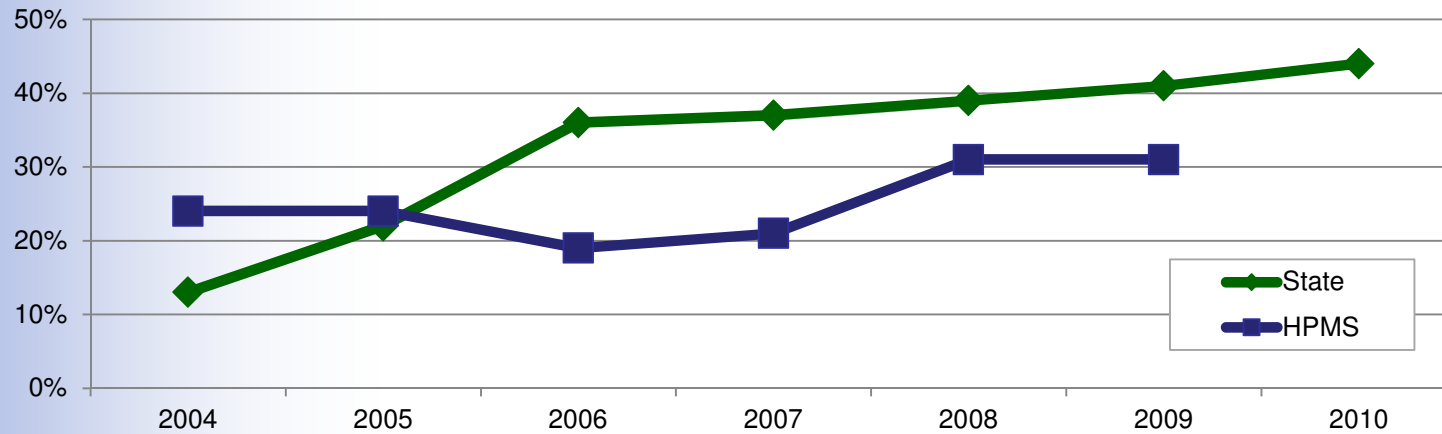
- How can we manage performance?

What Source of Data Should be Used?

- HPMS
  - Outside lane only
  - One direction of travel
  - One value for each section
  - Reported annually
  - Represents all NHS roadways
- State PMS Data
  - Various lanes
  - Both directions
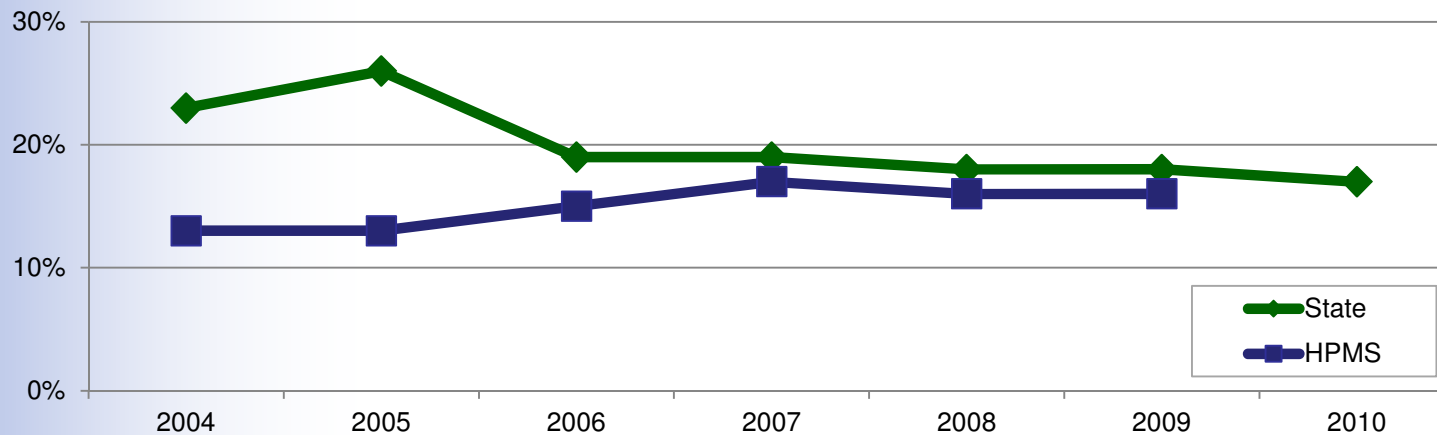 - Shorter sections
  - Updated frequently

Difference in Outcome - Example

Percent NHS VMT on Good Pavement

Percent NHS VMT on Poor Pavement

Preparing for a National Approach

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- Where is the source of data?
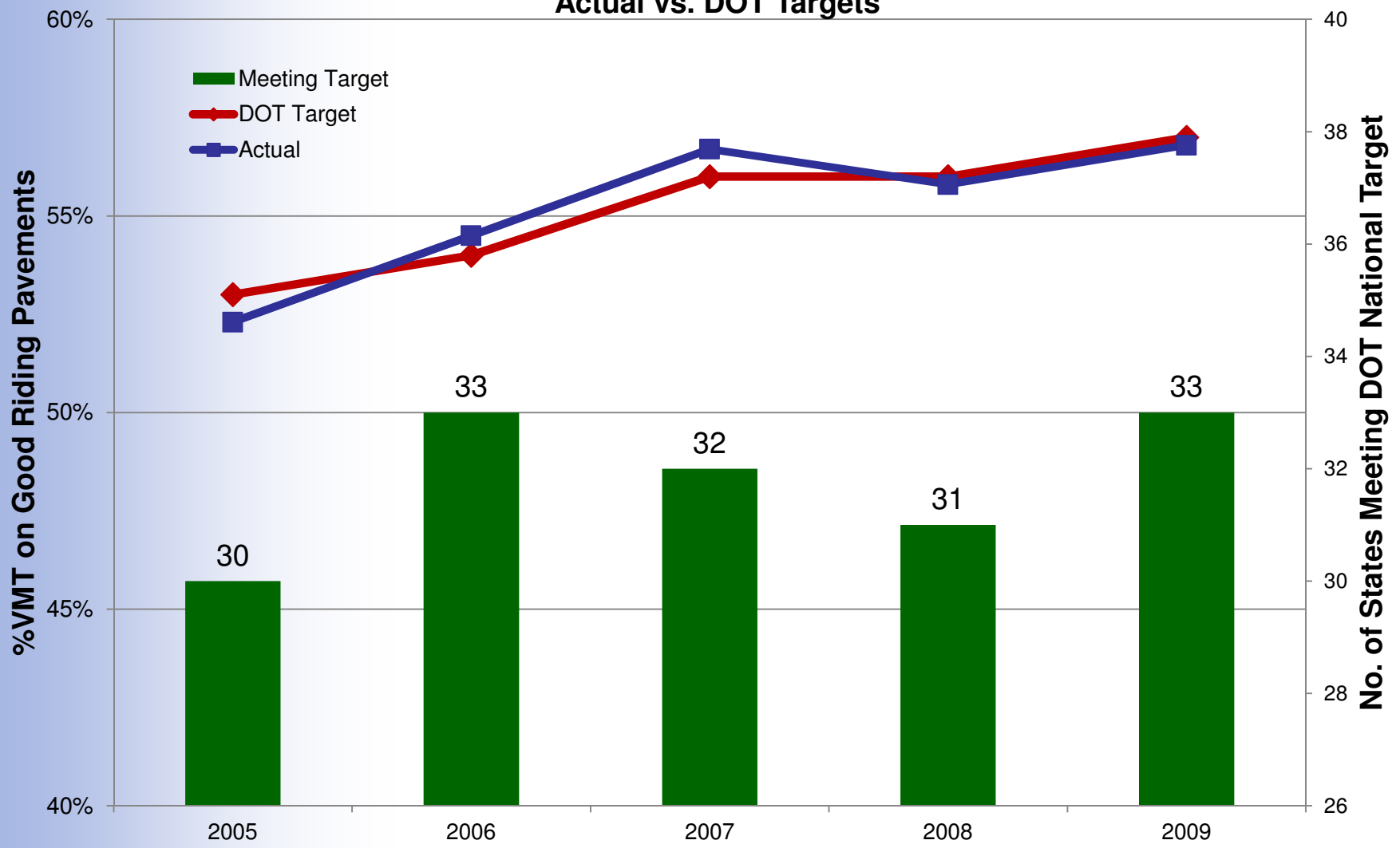
- **How can we manage performance?**

Managing Performance

- Collective Effort

- National Goal

- Individual State Targets

- Program Design

- Linking Accomplishments to Performance

National Performance Trends

NHS Pavement Performance
Actual vs. DOT Targets

Six Year State Performance Trend

Six Year Performance Change in NHS Lane-Miles of Pavement in Good Condition
2004-2009 Change in Condition

Preparing for a National Approach

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- Where is the source of data?
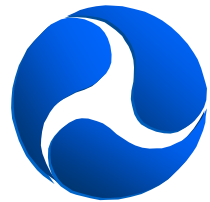
- How can we manage performance?

Infrastructure Health Project

- Form Technical Working Group
- Identify Methods to qualify Good, Fair, Poor
- Select 3 State Interstate Corridor
- Gather data to qualify Good, Fair, Poor
- Report Performance of Corridor
- Hold National Meeting to Review Findings
- Recommend Preferred Method
- Goal:
  - 2 States Agree with Assessment of Condition of the Same Roadway

Project Objectives

- Partner with AASHTO

- Come to consensus on Tier 2 measure to qualify Good, Fair, Poor

- Evaluate differences in data collection

- Evaluate differences in data sources

- Complete project in 17 months

- Funding for 1 participant to attend from each State

Thank You

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