



# Pavement Preservation Concepts

Alaska Asphalt Summit

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John Duval, PE  
Field Engineer

# From Rough Beginnings...



INDEX (County Road)

T. G. Pickett  
14-21

With a lot of Hard Work ...



and Investment...



Source: Asphalt Institute



...We now have a  
Highway System  
that is a:

Well Performing  
Dependable  
Critical  
Valuable

Infrastructure Asset





# A System Worth Preserving

*“With the construction of the Nation's Interstate highway system virtually complete, State and Federal highway agencies are shifting their attention to preserving and operating this \$1 trillion investment in highways and bridges.”*

--FHWA FOCUS Newsletter

May 2000

# Outline

- Background
- Pavement Preservation in a Nutshell
  - *“Right Treatment on the Right Pavement at the Right Time”*
- Benefits and Challenges in Implementing a Pavement Preservation Program
- New Directions

# Preventive Maintenance

- Planned Strategy
- Using Cost-Effective Treatments
- Contributes to long-term performance
  - Preserve System
  - Retard Deterioration
  - Maintain or Improve Functional Condition
- Example: Chip Seal





# Corrective Actions

- Reactive
- Localized
- Often serve as a Stop-Gap Solution
- Does not contribute to long-term performance
- Examples: Patching, Pothole Repair



# Rehabilitation

- Improves or restores functional performance and/or structural capacity of the pavement
- Extends the service life of a pavement
- Examples: HMA Overlay



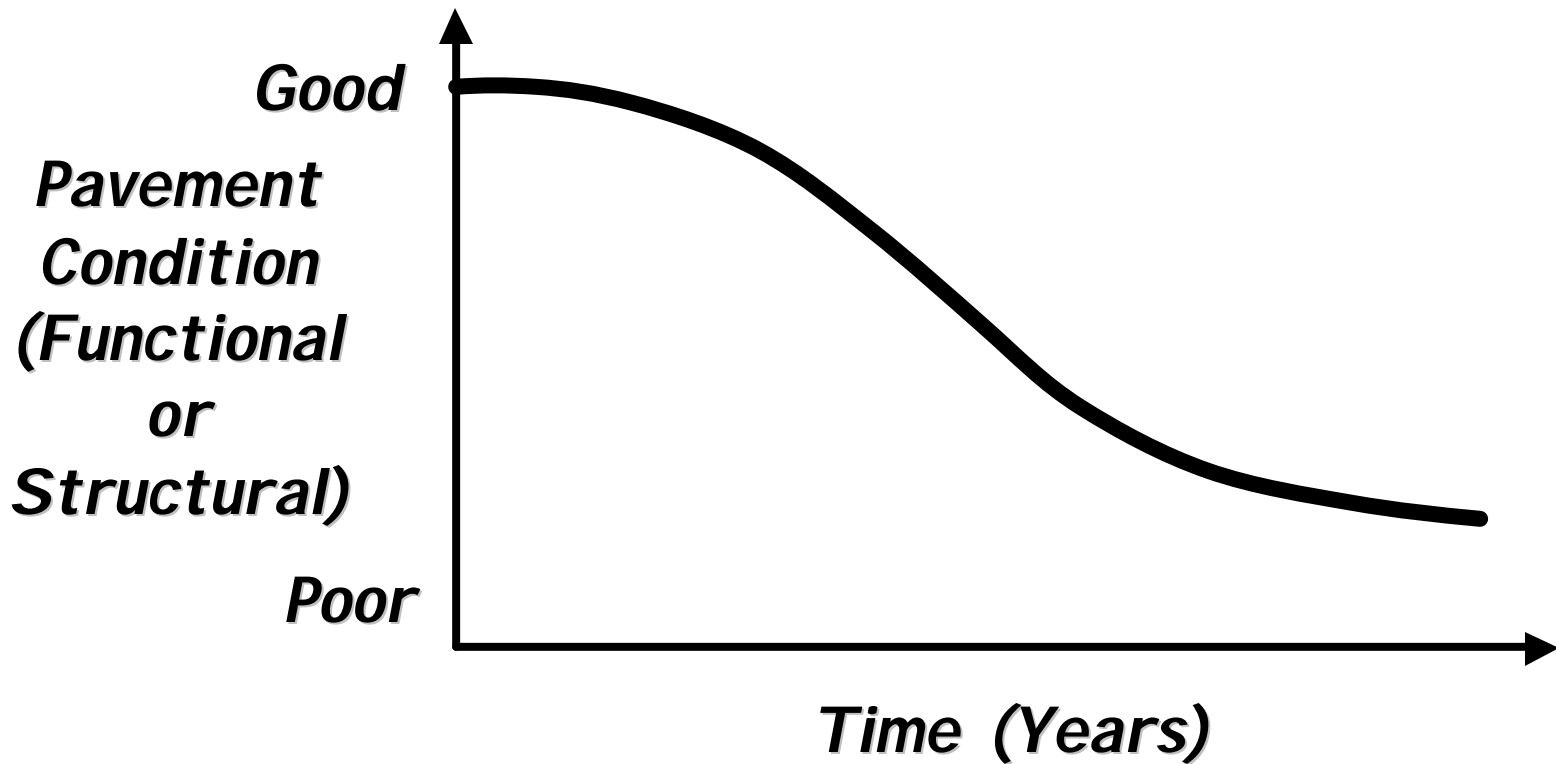


Pavement Preservation  
is the *sum of all activities undertaken to provide and maintain serviceable roadways; this includes corrective maintenance and preventive maintenance, as well as minor rehabilitation projects*

--National Highway Institute

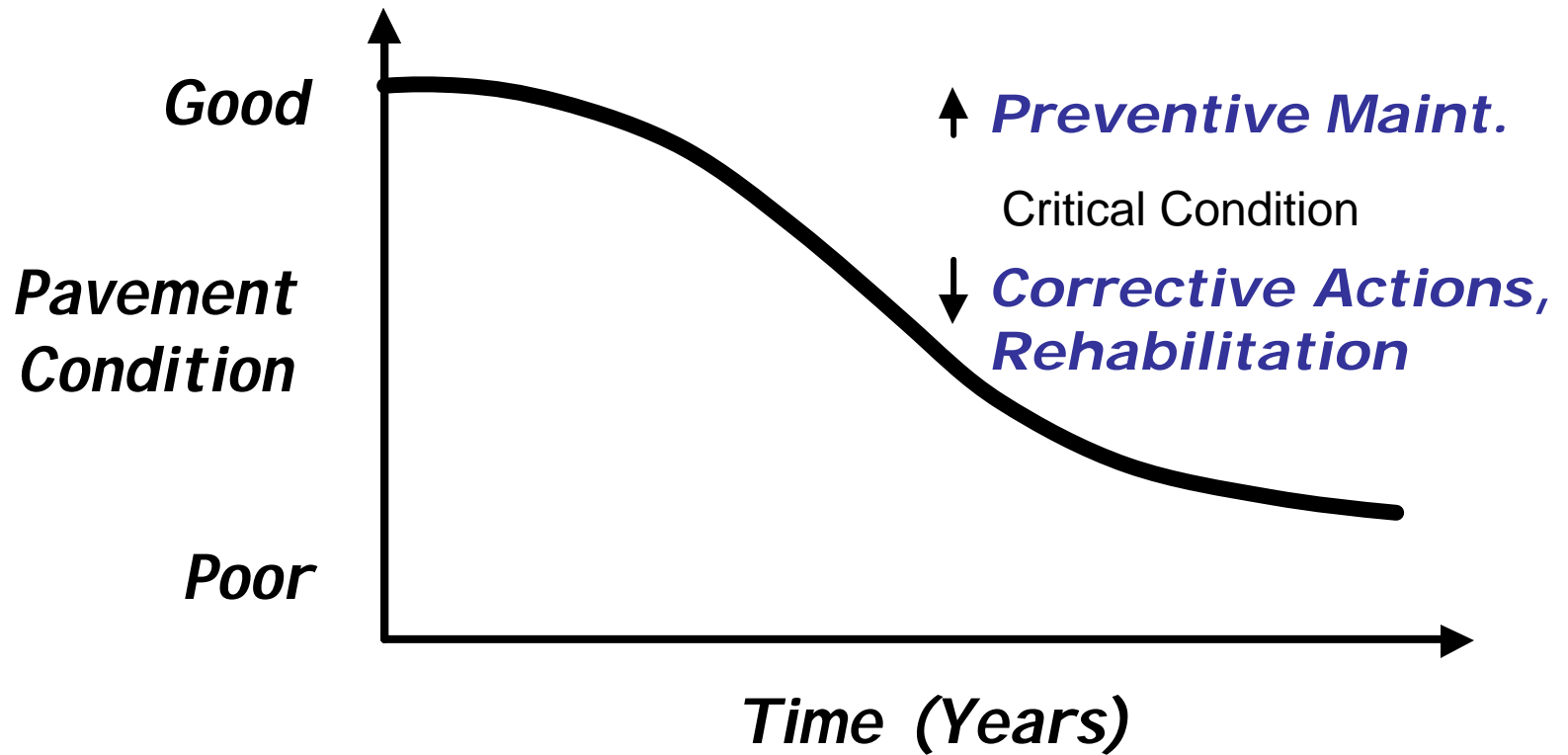


# Typical Pavement Performance Curve



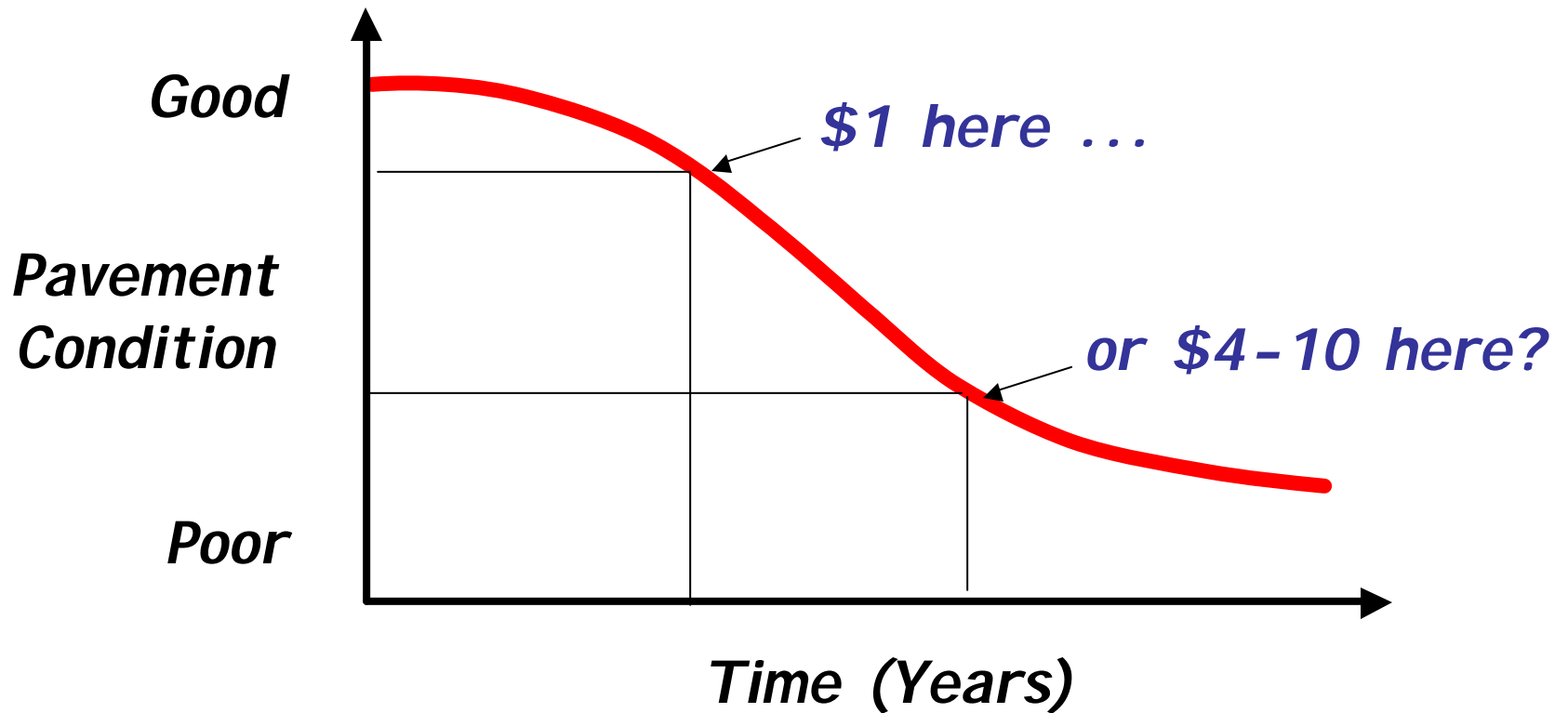


# Timing

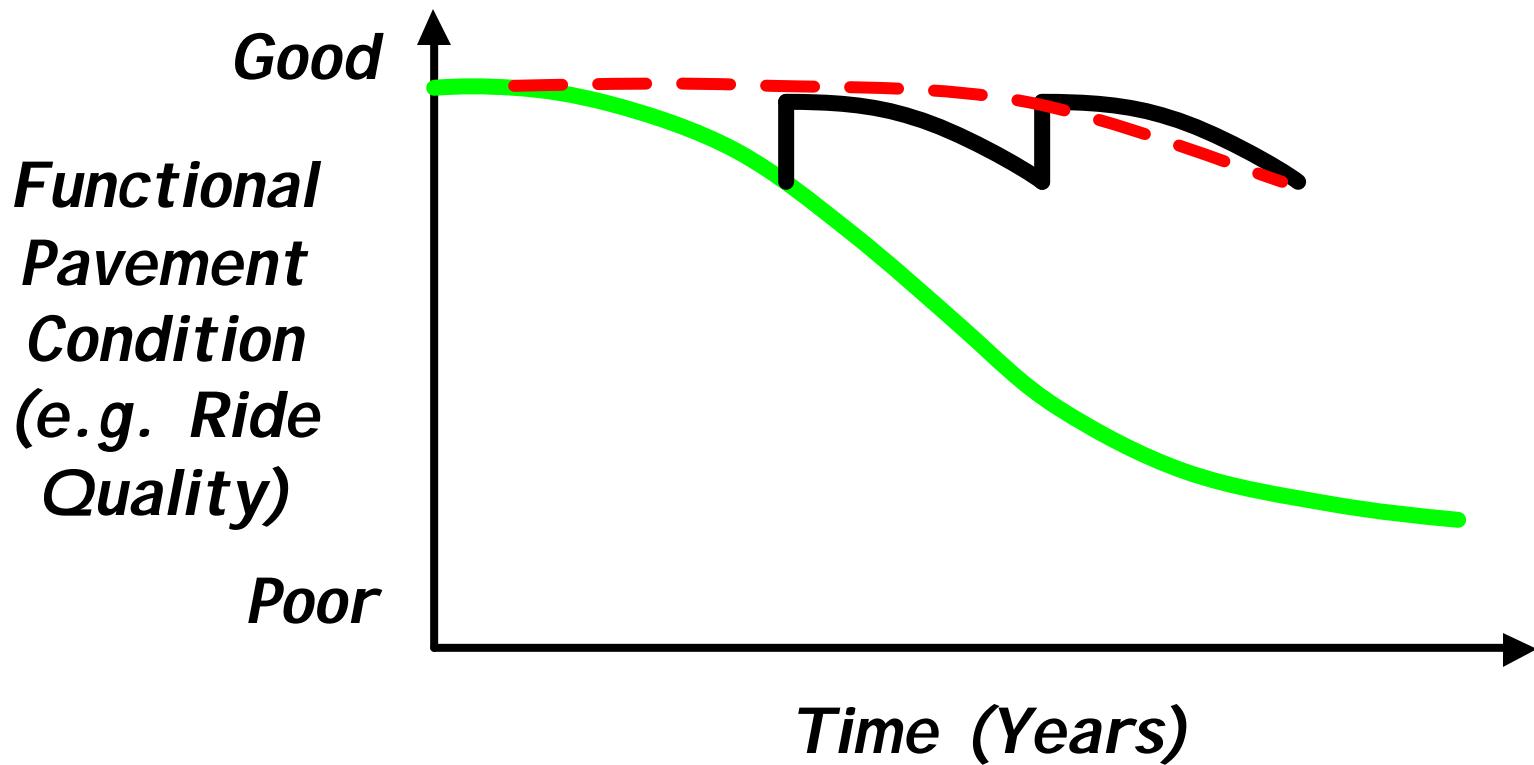




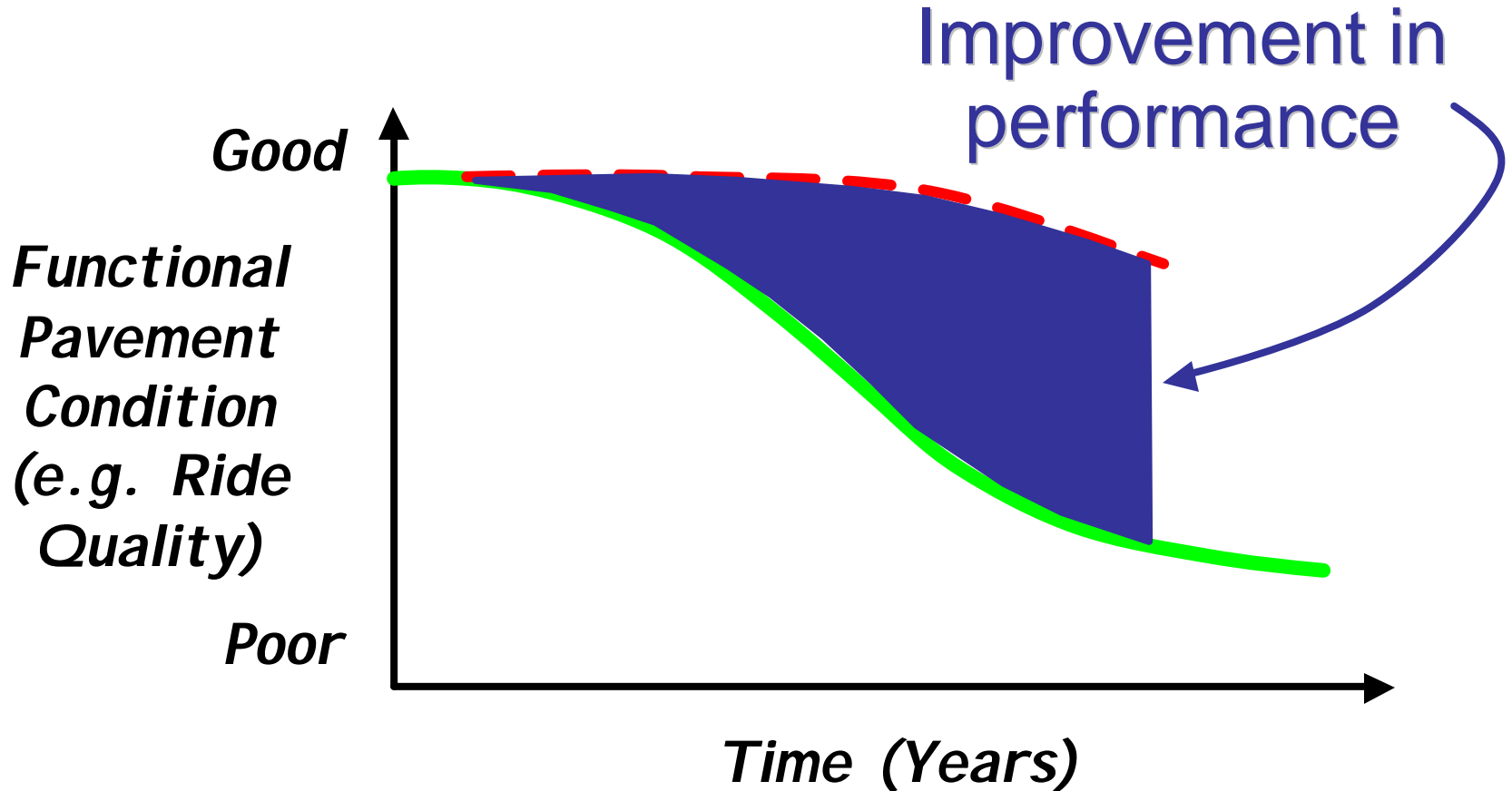
# Cost Effects of Timing



# Anticipated PM Benefits

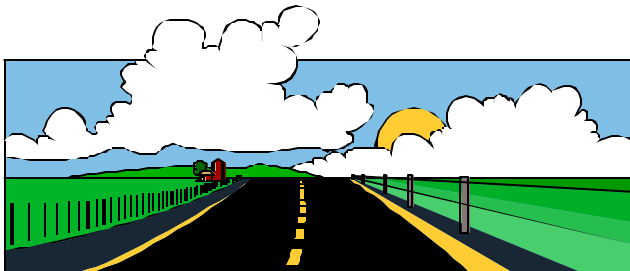


# Anticipated PM Benefits



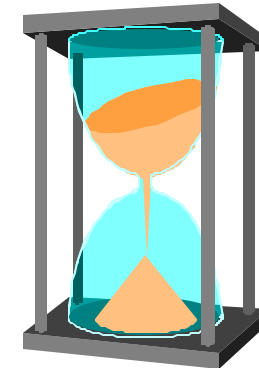
# Philosophy of Pavement Preservation

*Applying the right treatment*



*... To the right pavement*

*... At the right time*





# Benefits of a Pavement Preservation Program

- Higher customer satisfaction
- Better informed decisions
- Improved strategies and techniques
- Improved pavement condition
- Costs savings
- Increased safety



## NQI Survey of Users

- Moderate level of satisfaction with highway system
- Considerable opportunity to improve customer satisfaction
- Prefer permanent over temporary repairs
  - “**Get in, Stay in, Get out, Stay out.**”
- Complete construction in a timely fashion

## Washington State Survey

- Roadway surface maintenance is the highest priority maintenance activity
- Public is willing to pay more:
  - to achieve desired levels of maintenance
  - to reduce future costs

## Arizona Survey

- #1 priority: safety (85 %)
- #2 priority: preservation (74 %)
- Over 60 % would be willing to pay more taxes to improve maintenance service levels
- 90 % would be willing to spend more now to save money in the long term

## California Survey

- Ranking of public priorities
  - Maintenance response to accidents/disasters
  - Safety
  - Pavement conditions
  - Traffic flow



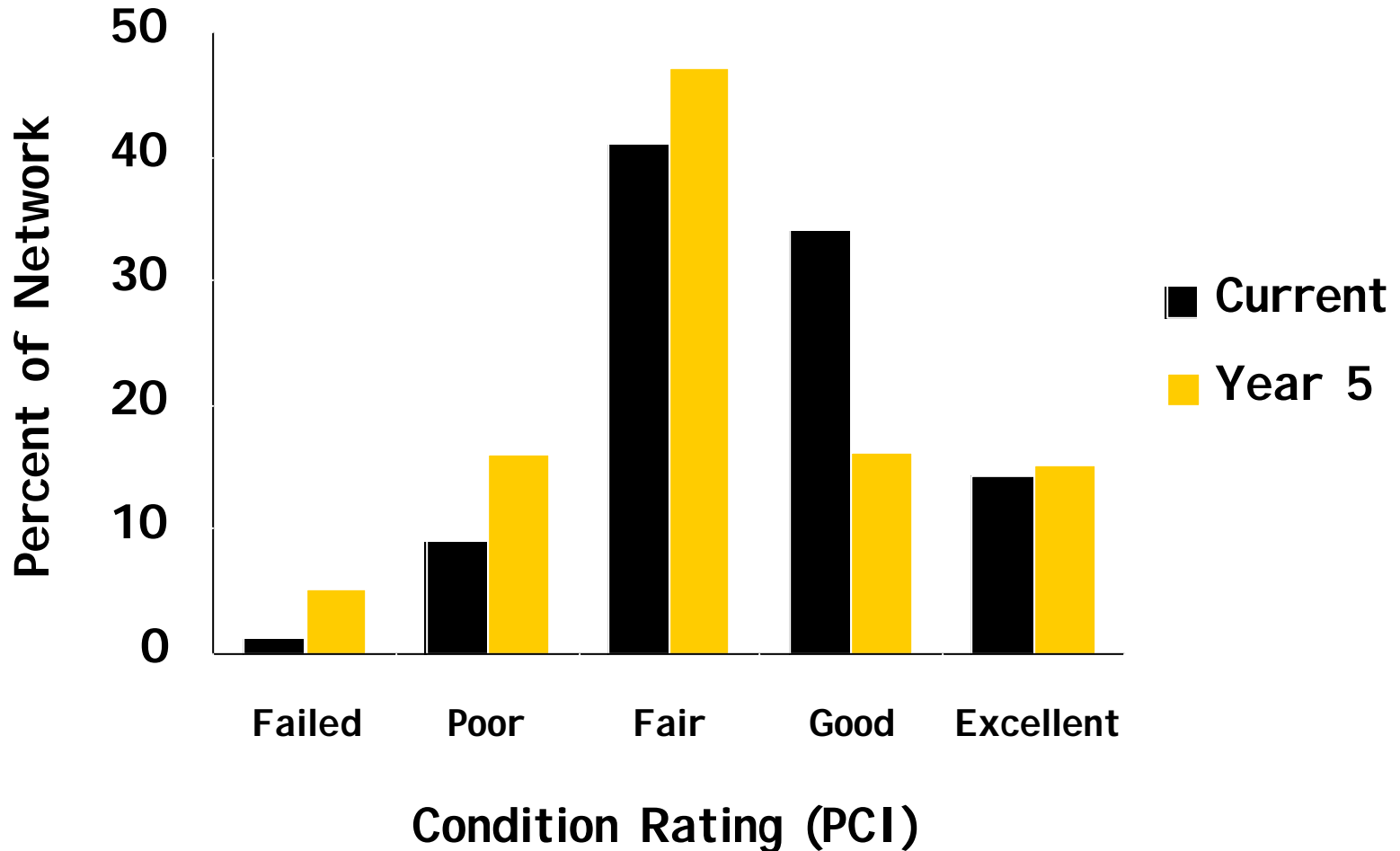
# Better Informed Decisions

- Program relies on proper treatment selection and treatment timing
- Need information to make decisions
- Successful programs have been integrated with Pavement Management Systems (PMS)

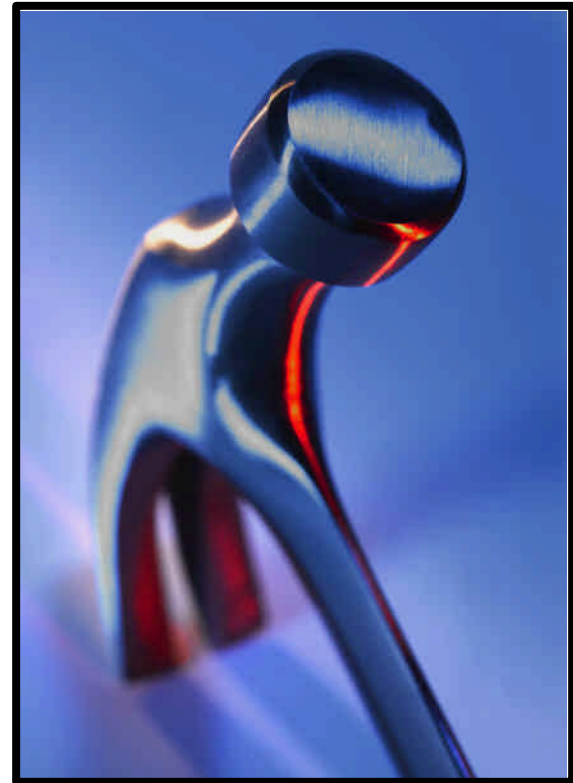


# Better Informed Decisions

## P<sup>2</sup> Encourages Use of PMS Data to Support Decisions



- One size cannot fit all
- Agencies benefit when they have multiple rehabilitation options





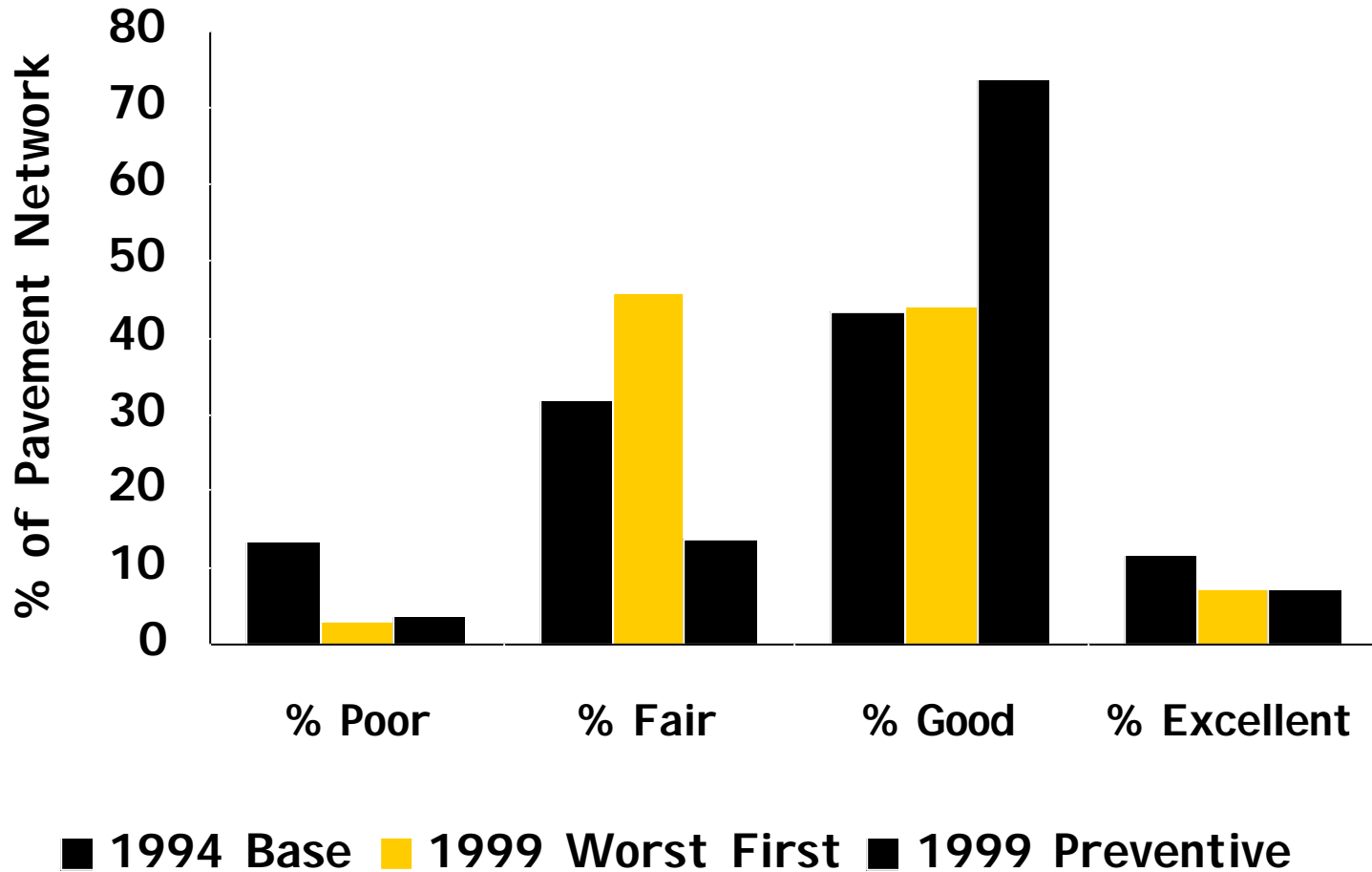
# Improved Pavement Condition

- Preventive maintenance helps to preserve a pavement and extend its performance
- Overall condition of network improves
  - Fair, Poor, and Failed Pavements are reconstructed and returned to a high pavement condition
  - Excellent and Good Pavements are kept in high condition



# Improved Pavement Condition

The Intent of P<sup>2</sup> is to Increase Overall Pavement Condition



# Cost Savings

- Most persuasive argument for shifting to preventive maintenance strategies
- Forms of cost savings
  - Less expensive treatments
  - Longer pavement life
  - Reduction of user delay costs

# Cost Savings

- Michigan
  - Initial preventive maintenance costs 14 times less than rehabilitation or reconstruction
  - \$700 million savings from 1992 to 1996
  - Overall LCCA appears to be 6:1
- California
  - 4:1 to 6:1 overall cost benefit with preventive maintenance treatments

# Increased Safety

- Safety is the #1 priority of users
- Explicit benefits
  - Improved surface friction
  - Fewer defects
- Implicit benefits
  - Better pavement condition
  - Fewer and less disruptive repairs

# Increased Safety

- Importance of Work Zone Safety
- Work Zone Opportunities
  - Shorten the zone
  - Consider future needs
  - Improve communication
  - Improve markings
  - Encourage innovation



# Additional Benefits

- Agencies have a stable budget
- Agencies have stable workforce
- Contractors have stable workforce
- Not affected by upswings and downswings

# Past Funding Practice

- In the past, eligibility for Federal funding required that the pavement be improved structurally
- Highway bills in the 1990s changed the way preventive maintenance is funded

# ISTEA

- First highway bill to allow Federal funds for preventive maintenance activities
- Restrictions
  - Demonstrate that treatments are a cost-effective means of extending pavement life
  - Projects must address safety deficiencies

Has not become a widespread practice

# TEA-21



- Barriers were removed
  - Greater flexibility to address safety concerns
  - More funding with fewer strings attached

The Federal Government Encourages  
Pavement Preservation



# Transportation Reauthorization

- Reauthorization expected in 2004
- Current Proposals
  - SAFETEA slightly increases level of funding over TEA-21
    - \$255B over 6 years
  - TEA-LU significantly increases funding by 72 percent over the TEA-21 levels
    - \$375B over 6 years
- Both Proposals Recognize the Importance of Preserving the Highway Infrastructure



# Challenges to Implementation

- Agencies that have implemented a preventive maintenance program report extremely positive results.
- Why isn't everyone doing it?
- Barriers, both real and perceived...

# Public Perceptions

- Public averse to steering maintenance dollars toward pavements in good condition
- Agencies more likely to receive complaints about specific defects than overall network
- Need to educate the public about new philosophy



# Management Perceptions

- Need commitment from management to succeed
- Maintenance not traditionally given a high priority
- Need to create awareness of benefits
- Personnel changes disrupt continuity

- Anticipated benefits
  - Higher customer satisfaction
  - Better informed decisions
  - Improved strategies and techniques
  - Improved pavement condition
  - Cost savings
  - Increased safety
  - Stability

# Summary (cont'd)

- Challenges are widespread
  - Public perception
  - Management perception



# New Directions for Pavement Preservation



# Foundation for Pavement Preservation

- Established in 1992
- Industry Partnership
  - President—Bill Ballou
- Mission

*“FP2 supports research to educate government and industry professionals in the economical, safety and performance advantages of pavement preservation.”*
- ***The Asphalt Institute is a Supporter of the Foundation***



# National Center for Pavement Preservation

- Established in November 2003
- Hosted at Michigan State University
  - Director—Larry Galehouse
- Mission

*“lead collaborative efforts among government, industry and academia in the advancement of pavement preservation”*



# Findings of FHWA Scanning Tour

- France, South Africa, and Australia
  - Recognized leaders in Pavement Preservation
- Key Findings:
  - Successful preservation begins by building initially high structural capacity pavements
  - Only high quality materials used:
    - 100% crushed aggregate
    - Polymer Modified Asphalt Binders





Thank You!