

# Why should DOT's have a Pavement Management System?

**Because they cannot afford  
not to...**



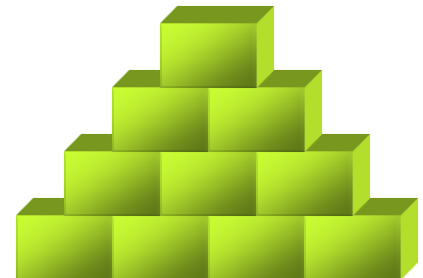
# Facts

- ❖ Highways represent 62% of all government transportation expenditures (including Transit, Rail, Air, Water and Pipeline)

Source: **Pocket Guide to Transportation 2007, Bureau of Transportation Statistics, US Department of Transportation**

- ❖ It has been estimated that we have invested \$1.75 trillion in our highways

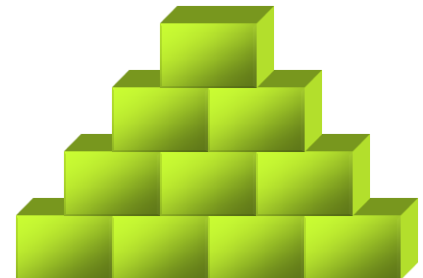
Source: **FHWA Office of Asset Mgt**



# Summary

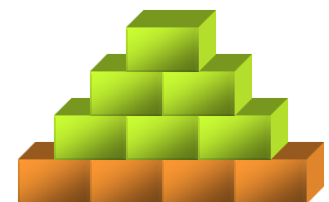
## ❖ A Pavement Management System can provide:

- Better information about the past
- Better information about the present
- Better prediction of future strategies
- Better identification of efficient/optimum future strategies
- Better comparison with competing transportation infrastructure assets



# Managing Historical Information

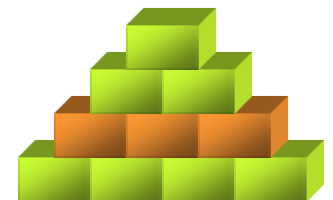
- ❖ Better information about the past and present
  - Field personnel (at project level and local system level) and Management (at system level) can make better decisions through
    - Knowledge of layerworks and historical projects (what's there, when it was constructed)
    - Knowledge of current condition (especially compared with other projects)
    - Information regarding trends in general and in particular situations (particular types of treatment or specific combinations of soil types/environmental factors/traffic etc.)
  - At field level – typically interested in regional/local/project level statistics
  - At management level – may be interested in system-wide statistics and historical trends



# Predicting Performance

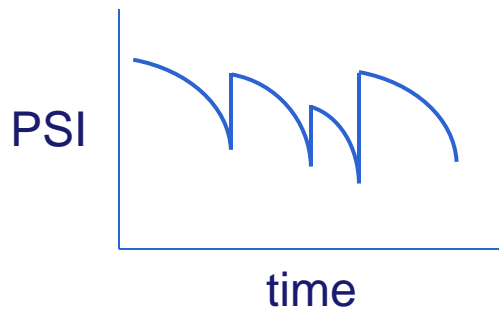
## ❖ Better prediction of future strategies

- With good historical and current information can generate prediction models about future trends/conditions/needs
- At field level – this should influence design decisions:
  - ‘How will this treatment perform?’
  - ‘How will this long term strategy on this road compare to this one?’
- At management level – can answer:
  - ‘What will this general strategy do for my network?’
  - ‘If I follow this general strategy, what will be my funding needs to maintain specific condition levels?’
  - ‘My models predict this outcome for next year from this Division to whom I allocated this funding level – did they perform?’

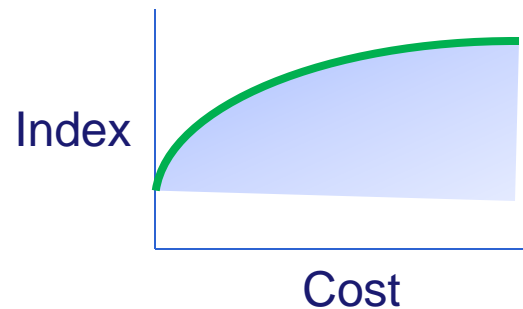


# Finding Optimum Strategies

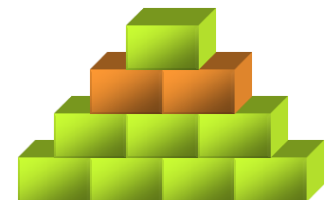
- ❖ Better identification of efficient/optimum future strategies
  - With good prediction models, can evaluate multiple 'what if?' scenarios and ultimately perform prioritization/optimization
  - You can prove: **“Good Roads Cost Less”** – Dale Peterson, Utah Dept. of Transportation, 1977
  - Generation of efficient frontiers giving optimum strategies and their LOS for various levels of funding



**STRATEGIES**

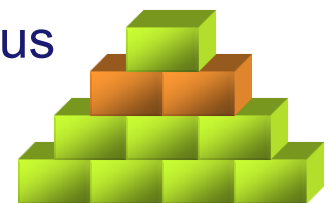


**EFFICIENT FRONTIERS**



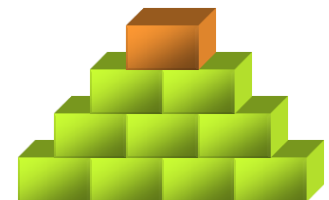
# Finding Optimum Strategies

- ❖ Better identification of efficient/optimum future strategies (cont.)
  - At field level – can answer local questions:
    - ‘What is the best thing to do now on the pavement?’
    - ‘What is a good long term strategy for this road/local network?’
    - ‘Is it best to patch potholes or put on a chip seal?; ‘What is the best mix of patching vs seals?’
    - ‘How best can I spend my specific allocations?’
  - At management level – can answer internal and legislative questions:
    - ‘Given certain constraints, what is the best long term strategy for my network?’;
    - ‘What will my long term funding needs be for various optimum/efficient strategies?’;
    - ‘Given that I can identify an optimum strategy, what will be the effects of less/more funding?’



# Competing for Funding

- ❖ Better comparison with competing transportation infrastructure assets
  - With good efficient frontiers, can perform trade-off analysis with other competing transportation infrastructure assets
  - At field level – can answer:
    - ‘Is it better to spend maintenance money on pavement preservation or signs or striping or ditching?’;
    - ‘Why is management designating where I should spend my money?’
  - At management level – can answer internal and legislative questions at an even higher level and compete for funding:
    - ‘Pavement vs Bridges vs typical traditional maintenance items?’







# PMS Now vs Future

- ❖ Pavement Management continues to evolve...
- ❖ Becoming more integrated with MMS, BMS.
- ❖ Modeling continues to improve with better preservation treatment modeling
- ❖ Other important factors such as Traffic Capacity and Safety are being included
- ❖ PMS should be an integral part of our Asset Management strategy



# PMS Now vs Future

- ❖ How many additional projects you could do if you were able to save just 1% of your total pavement maintenance, resurfacing and rehabilitation budget?
- ❖ Could better information and decision making tools for your field and management staff get you this savings?
- ❖ Can DOT's afford *not* to have a PMS?



# Quotable Quote...

“Managing a highway system is like playing chess. You have to look at the whole board, the whole system, not just the next move. Sure we do reactive things, but our best strategy is when we look down the road eight years or more, look at every section of road, and budget to keep those roads in good condition.”

- Gary Ridley, Director, Oklahoma Department of Transportation. (Quoted in the 2009 AASHTO Publication “Rough Roads Ahead”)