



Performance Management Reporting PEER EXCHANGE

FINAL REPORT

Prepared for
National Cooperative Highway Research Program
Transportation Research Board of

The National Academies of Sciences, Engineering, and Medicine

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Task 124, National Cooperative Highway Research Program.

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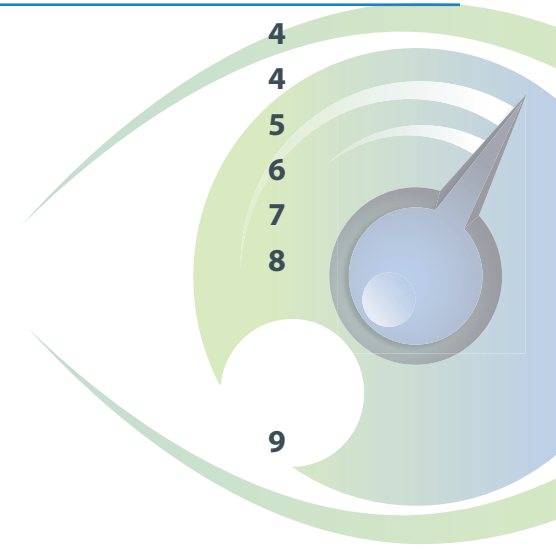
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DISCLAIMER

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ABSTRACT

Effective May 20, 2017, the National Performance Management Measures; Assessing Pavement Condition for the National Highway Performance Program and Bridge Condition of the National Highway Performance Program Final Rule established performance measures for State Departments of Transportation (DOTs) to use in managing pavement and bridge performance on the National Highway System (NHS). On Tuesday October 16th and Wednesday October 17th, 2018 a Performance Management Reporting Peer Exchange was held at the Hall of States in Washington D.C. The goal of the Peer Exchange was to help state DOTs explain their measures and how they relate to the Federal measures. Participants included state DOT and Federal Highway Administration (FHWA) staff members, representing expertise in pavement performance measures, performance management in general, and communications. The research and Peer Exchange revealed that states have long used state-specific pavement performance measures and have been developing excellent communication material. The outcome of this effort is a toolkit of communication ideas to help explain the difference between state and Federal pavement performance measures along with a set a talking points to help establish a consistent narrative around the topic.

INTRODUCTION

The NCHRP 20-24 Task 124 Performance Management Reporting Peer Exchange was held on Tuesday October 16th and Wednesday October 17th at the Hall of States in Washington D.C. Representatives from 18 state DOTs, the Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO) and the Transportation Research Board (TRB) attended. Participants were subject matter experts in performance management, pavement management and communications.

The goal of the Peer Exchange was to help DOTs develop a toolkit and strategies for communicating the difference between state and Federal pavement performance in a consistent narrative. While this Peer Exchange focused on pavement performance, the process can be used as a framework to develop strategies to help states communicate other performance measures.

PARTICIPANTS

The following DOTs and FHWA staff members, representing expertise in pavement performance measures, performance management in general, and communications participated in the Peer Exchange:

- **Meadow Bailey**, Alaska Department of Transportation & Public Utilities
- **Jessie Jones**, Arkansas Department of Transportation
- **William Johnson**, Colorado Department of Transportation
- **Michael Cohen**, Connecticut Department of Transportation
- **Edward Carpenter**, District Department of Transportation
- **Ting Ma**, District Department of Transportation
- **Susanna Reck**, Federal Highway Administration
- **Melanie Rigney**, Federal Highway Administration
- **LaToya Johnson**, Federal Highway Administration
- **Chapman Munn**, Idaho Department of Transportation
- **William Morgan**, Illinois Department of Transportation
- **John Selmer**, Iowa Department of Transportation
- **Valerie Burnette Edgar**, Maryland Department of Transportation
- **Craig Newell**, Michigan Department of Transportation
- **Deanna Belden**, Minnesota Department of Transportation
- **Tamara Haas**, New Mexico Department of Transportation
- **Larissa Newton**, Pennsylvania Department of Transportation
- **Chad Rawls**, South Carolina Department of Transportation
- **BJ Doughty**, Tennessee Department of Transportation
- **Monte Aldridge**, Utah Department of Transportation
- **Jay Styles**, Virginia Department of Transportation

In addition the following representatives from AASHTO and TRB also attended and participated in the peer exchange:

- **Andrew Lemer**, Transportation Research Board
- **Matthew Hardy**, American Association of State Highway and Transportation Officials
- **Lloyd Brown**, American Association of State Highway and Transportation Officials



UNDERSTANDING THE PROBLEM

Effective May 20, 2017, the National Performance Management Measures; Assessing Pavement Condition for the National Highway Performance Program and Bridge Condition of the National Highway Performance Program Final Rule established performance measures for State DOTs to use in managing pavement and bridge performance on the NHS. The final rule requires DOTs to calculate and report four pavement and two bridge performance measures (i.e., the PM2 measures).

For years State DOTs have been collecting data and calculating state-specific performance measures of highway pavement and bridge condition. Their assessments have been used to help communicate needs and overall system condition to legislators, Governors, Chief Executive Officers (CEOs), Metropolitan Planning Organizations (MPOs), local governments, the media and the general public. Many states have different ways of calculating their statewide measures, setting different thresholds for what is considered to be good, fair and poor condition. These performance measures are sometimes set in state statute, and may include state-owned facilities in addition to Federal facilities.

With the new Federal measures, many state DOTs have found that the FHWA assessment of pavement performance do not match their historical assessments. Factors that contribute to the different metrics and measures being used across the country may include: how often pavement data is collected, how many lanes/directions of pavement data is collected, on what networks, or what ride quality metrics are used to calculate pavement performance and the formula used to create a pavement index. In some cases the difference simply stems from the mathematics of how condition levels are defined. Given the addition of new measures, states are in need of a concise and consistent way to explain their measure, its crosswalk to the Federal measure, and a reason why they use different measures for different purposes.

RESEARCH APPROACH

The objective of the research and Peer Exchange is to develop an effective approach to presenting and explaining differences between state and FHWA reports of pavement and other asset condition information. The first step was to develop and distribute an electronic survey to all state DOT asset management, performance management, bridge, pavement and communication leads. The goal of this survey was to develop an understanding of the range of performance measures and metrics used by the state DOTs along with the communication strategies and techniques being deployed and the challenges arising. Based on the survey results, four states, Minnesota, South Carolina, Tennessee and Virginia, were interviewed to help provide more detailed and nuanced account of the context and conversation within the state regarding the Federal measure. The results were synthesized and used to inform the structure and content of the in-person Peer Exchange.

The Peer Exchange workshop was designed to utilize a wide range of creative engagement techniques to maximize engagement and hands-on problem solving. The agenda called on a process of generating solutions, storyboarding and testing solutions. The Peer Exchange began by helping participants learn and define the problem. An overview of relevant issues and results from the pre-workshop survey were shared. Participants

then broke into three groups to refine their understanding of the problem and sketch solutions for communicating the different measures. All participants reviewed the sketched solutions and voted for ideas that resonated. Using the feedback collected, the breakout groups developed a more fleshed out version of one of the solutions that integrated the most compelling components of their earlier work. Completed storyboards were presented to the group and collected as an output of the Peer Exchange.

The second day of the Peer Exchange focused on building upon the themes and outputs of the first day and gathering additional thoughts on three key issues:

- The common purposes of the Federal and state pavement performance measures
- Why the measures are different, and
- The implications of the Federal and state measures

The results of the discussion were used to frame a unified message for both the state DOTs and FHWA regarding why the measures are different and the value of both for communicating the condition and need of our pavement and our bridge assets.

KEY THEMES

After reviewing the survey results, follow-up phone calls and the content discussed by the participants at the Peer Exchange, a number of key themes began to emerge. These key themes illustrate a common set of challenges facing the state DOTs and also highlight critical elements that must be addressed when crafting an effective communication strategy.

State pavement measures are important and Institutional

The state pavement performance measures...

- Represent performance of what often is the largest program
- Have been around for a long time (decades)
- Have been used to plan and make investment decisions

States don't yet have confidence in the Federal measure

States...

- Often see different performance using the Federal measure compared to the state's own measure
- Do not have a history using the Federal measure
- Do not yet have predictive models for the Federal measure
- Cannot yet use the Federal measure to make investment decisions

Communication Is Key

States worry that stakeholders will...

- Believe the pavement has physically changed
- Believe that states misled the public and Legislature
- Question whether the states need the extra funds they say
- Perceive that state effectiveness has diminished

LESSONS LEARNED

Using the content of the Peer Exchange discussions as a guide, the following three areas have been identified as “Lessons Learned” and are notable and significant components of a successful communication approach. These three areas complement each other and draw upon the previously presented key themes. While each lesson learned is significant in its own right, used together these messages are stronger and more cohesively address the range of challenges facing a state DOTs.

What are the common purposes of Federal and state performance measures?

The common purposes of Federal and state performance measures include...

- To enable transparency
- To enable an agency to monitor and report condition
- To support performance based planning and programming
- To promote the effective use of funds
- To make effective investment strategies
 - Federal: Broad programmatic strategies
 - State: Detailed investment strategies
- To enhance quality of life (provide the best outcome given limited resources)
- To create dialogue and engagement on pavement performance
- To ensure accountability

Why are Federal and state measures different?

The Federal and state performance measures are different because...

- FHWA needs to collect consistent Federal measures across all states while states need to collect measures tailored to state needs
- States need more detailed data to make more tactical decisions and to program specific projects
- FHWA needs to collect data on the NHS and states need to collect data on state owned roads
- States sometimes have statutory requirements for data collection and reporting

What are the implications of having different Federal and state measures?

The implications of having different Federal and state measures include...

- The need to explain the differences between the two sets of measures
- Possibility of confusion or distrust with stakeholders
- The need for FHWA and states to acknowledge and accept the difference
- The impact on credibility and the perception of what is needed
- The opportunity for engagement

COMMUNICATIONS NARRATIVE

Throughout the Peer Exchange it was discussed that a consistent narrative for how best to discuss pavement performance measures should be developed and agreed upon by all partners. In response, a communications narrative, including some specific talking points, has been drafted and can be found in the insert, "State DOT and Federal Communications Narrative". If used by all partners this tool will help minimize confusion and improve credibility with outside stakeholders and the general public.

STATE DOT COMMUNICATIONS MESSAGING PAVEMENT CONDITIONS EXAMPLE

Our Shared Goal

Transportation departments at the federal, state and local levels all share the same goal: We work every day to deliver an efficient, effective, and safe transportation system for you.

Power in Data:

To assess our progress toward that shared goal, we measure our roadways and bridges. We identify where the pavement is cracked, or potholes are emerging. We monitor the steel on bridges and the roadbed under our highways. Our state has been collecting data on our streets, highways and interstates for years. It has helped us to make better decisions on where to invest your tax dollars to keep our transportation system working safely and efficiently for everyone. Recently, the Federal government established a standard to evaluate our national highway system's pavement conditions across the country.

The common measures contribute to a view of the overall health of the nation's transportation system. These new measures are different, in some ways, to how our state has assessed the system in the past, but they have the same goal.

● Indicates key word/phrase

- ◀ These message points are deceptively simple. They could be augmented to add more state specific information and graphics. However, part of the tactic deployed here is to limit conflict and promote an approach that decreases that chances of a negative news story or public perception.
- ◀ In many cases, state DOT data is far more extensive and often represents decades of collection work which has improved decision making. This frame helps to align US DOT's data goals with the work the states are already doing. National and state agencies working together is what the public expects.

State specific data could be used here to illustrate the differences. The public should not be expected to be pavement condition or data collection experts. The general outlines of what is being collected and why they may be different are enough.

The intent is to frame the new measures as a common-sense approach. Of course, states are different and would need to be standardized for a national apples-to-apples comparison.

Delivering a better system is a team effort. Remember, this is all about serving the tax-payers in a way that respects their expectations for a well-functioning system. Making these talking points about tax-payers rather than the nuance of policy, increase the likelihood they will be well received.

In some places, the new measures may report better condition --- in others worse. These differences are not a function of our road conditions changing overnight, but rather reflect the differences in how the data is being collected and analyzed. We will work to combine the new federal measures with our local understanding of our system to continue to deliver a high-quality transportation system for our state.

State Flexibility:

We understand from a national perspective, getting pavement data collected in the same way from each state is the only way to get a complete picture of the condition of the national transportation system. But we also know each state has different weather, traffic patterns, and maintenance plans and we have been measuring pavement performance for years. This is a way for the national system assessment to learn from the decades of work conducted at the state level.

The Federal government is interested in making progress toward a national goal—each state is responsible for contributing to that progress in a way that serves our citizens.

Even though the national goal is the same, the means and funding decisions may differ state-to-state. The impact these new national measures will have on our state's Federal transportation funding allocation is still unfolding.

Delivering on the Promise:

We know better data will lead to better decisions. As we have for decades, we will continue to collect data across our system to help make the right investments for the future of our state.

Along with our local partners, we will work with Federal authorities to provide the information they need, while delivering on our promise to the citizens to use tax dollars in a wise and effective way, now and in the future.

Federal DOT COMMUNICATIONS MESSAGING

PAVEMENT CONDITIONS

EXAMPLE

Our Shared Goal

Transportation departments at the Federal, state and local levels all share the same goal: We work every day to deliver an efficient, effective, and safe transportation system for the American people.

Power in Data:

To assess our progress toward that shared goal, state DOTs measure the condition of our roadways and bridges. They work hard to identify where the pavement is cracked, or potholes are emerging. They monitor the steel on bridges and the roadbed under our highways. In many cases, states have worked with their Federal counterparts to collect data on our streets, highways, and interstates for years. Condition trends have helped make better decisions on where to invest your tax dollars to keep our transportation system working for everyone. To get a better picture of our national transportation network, Federal agencies established a standard to evaluate our national highway system's pavement conditions.

The national measures contribute to a view of the overall health of the nation's transportation system. These new measures are different, in some ways, from how states have assessed their own system in the past, but they have the same goal.

It's somewhat like measuring something in English and metric units; the distance is not changing but the numbers are different. These differences are not a function of our roads changing overnight, but rather reflect the differences in how the data is being collected and analyzed. We will work to meld the new Federal measures with the state DOT's local understanding of our system to continue to deliver a high-quality transportation system for our nation.

◀ While many of the state data collecting requirements were born out of US DOT policies, messaging that gives the states credit for their hard work will reduce the natural tension in this story, and decrease the perception of conflict.

◀ A side-by-side comparison graphic could be used here to illustrate the differences. The public should not be expected to be pavement condition or data collection experts. The general outlines of what is being collected and why they may be different are enough.

● Indicates key word/phrase

Delivering a better system is a team effort. Remember, this is all about serving the tax-payers in a way that respects their expectations for a well-functioning system. Making these talking points about tax-payers rather than the nuance of policy, increase the likelihood they will be well received.

From a national perspective, getting pavement data collected in the same way from each state is the only way to get a complete picture of the condition of the national transportation system. But we also know each state has different weather, traffic patterns, and maintenance plans and they have been measuring pavement performance for years. This is a way for the national system assessment to learn from the decades of work conducted at the state level.

The Federal government is interested in making progress toward a national goal—each state is responsible for contributing to that progress in a way that serves their citizens and the entire nation.

Even though the national goal is the same, the means and funding decisions may differ state-to-state. It is unclear, at this point, what impact these new national measures will have on each state's Federal transportation funding allocation. Congress and Federal transportation agencies are working together to make funding decisions in the years to come.

Delivering on the Promise:

We know better data will lead to better decisions. As we have for decades, we will work alongside our transportation partners to improve our transportation system. These new data collection efforts will assist in making the right investments for the future of America's transportation needs.

Along with our local and state partners, we will work use the data we collect to improve the system's performance while delivering on our promise to the citizens to use tax dollars in a wise and effective way, now and in the future.

EXAMPLES

To complement the messaging provided in the State DOT and Federal Communications Narrative, it was decided that each state DOT may need to develop state specific materials to help convey their unique challenges. As it has been suggested, simplicity is key, and will help limit conflict and reduce the change of a negative news story or public perception. With that in mind the following Federal and state DOT communication examples have been collected and are being offered here as a range of best practices that could be adopted or modified to fit an agency's unique perspective.

FEDERAL HIGHWAY ADMINISTRATION

FHWA described how to rate the condition of pavements using the Federal pavement measure.

	PAVEMENT TYPE		Measures
	Asphalt and Jointed Concrete	Continuous Concrete	
Overall Section Condition Rating	3 metric ratings (IRI, cracking and rutting/faulting)	2 metric ratings (IRI and cracking)	
Good	All three metrics rated "good"	Both metrics rated "good"	Percentage of lane-miles in "good" condition
Poor	≥ 2 metrics rated "poor"	Both metrics rated "poor"	Percentage of lane-miles in "poor" condition
Fair	All other combinations	All other combinations	



ARIZONA

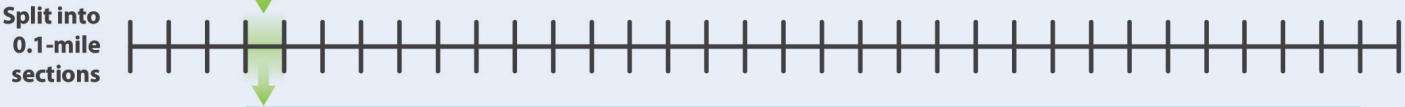
Arizona described how to relate the project sections they have been using to predict pavement condition and how that relates to the Federal sections.

1) Apply prediction on weighted average distress value per project section.

2) Select treatment for project sections based on current and predicted condition.
Decision Tree: select treatment based on weighted average? or select treatment based on good/fair/poor rating?



3) Apply selected treatment to 0.1-mile sections



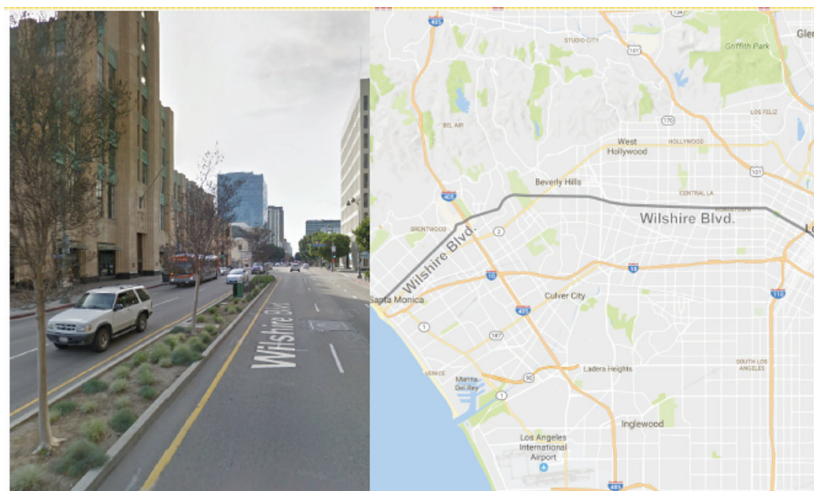
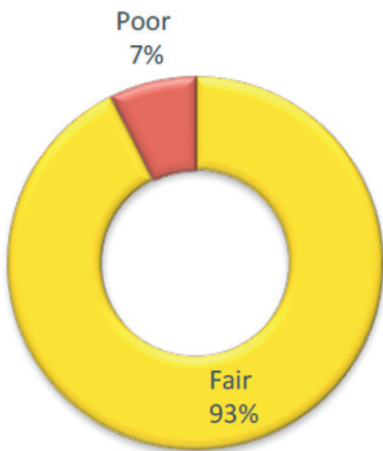
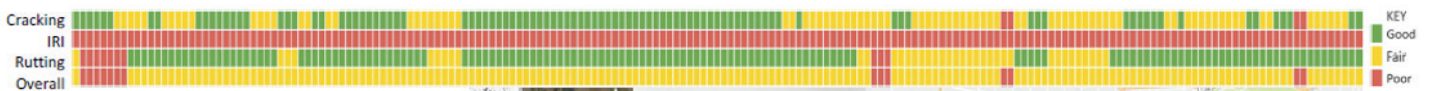
4) Apply prediction on treatment for each 0.1-mile section and report this, even if the condition is a different rating for the 0.1-mile section compared to the project section (e.g., the project section rating is fair; however, one 0.1-mile section with that project is poor).

CALIFORNIA

California described how the state considers more assets than the Federal rules require. It also described how the state considers only state-owned roads while the Federal rule requires it to consider local roads on the NHS.

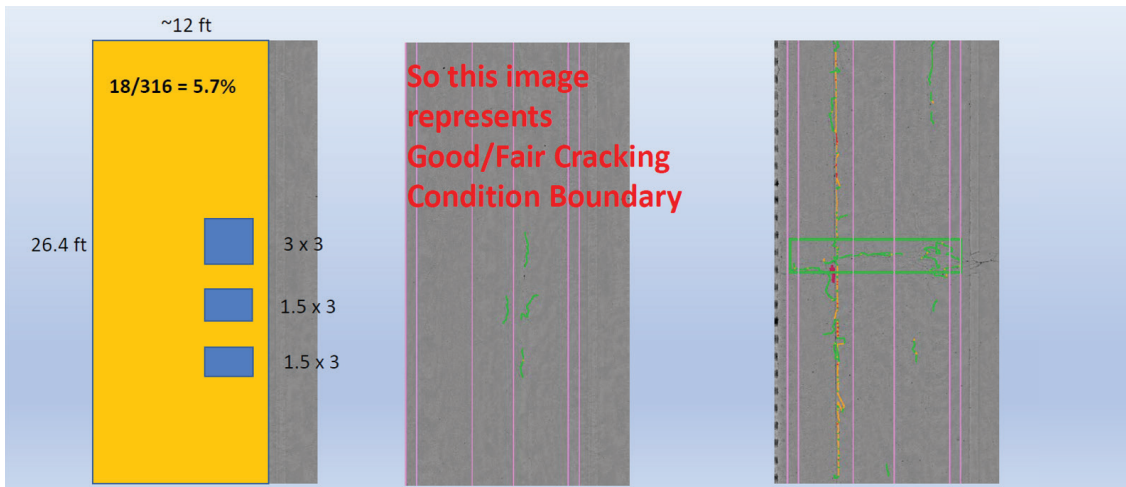
Owner	System	Asset Classes				
		Pavement	Bridges	Culverts	ITS	Supplemental Assets
Local	NHS	Federal Requirements				
State	NHS					
State	Non-NHS	State Requirements				

California described how the IRI threshold on arterials (e.g. Wilshire Blvd.) can essentially limit the condition of the facility to poor or fair condition.



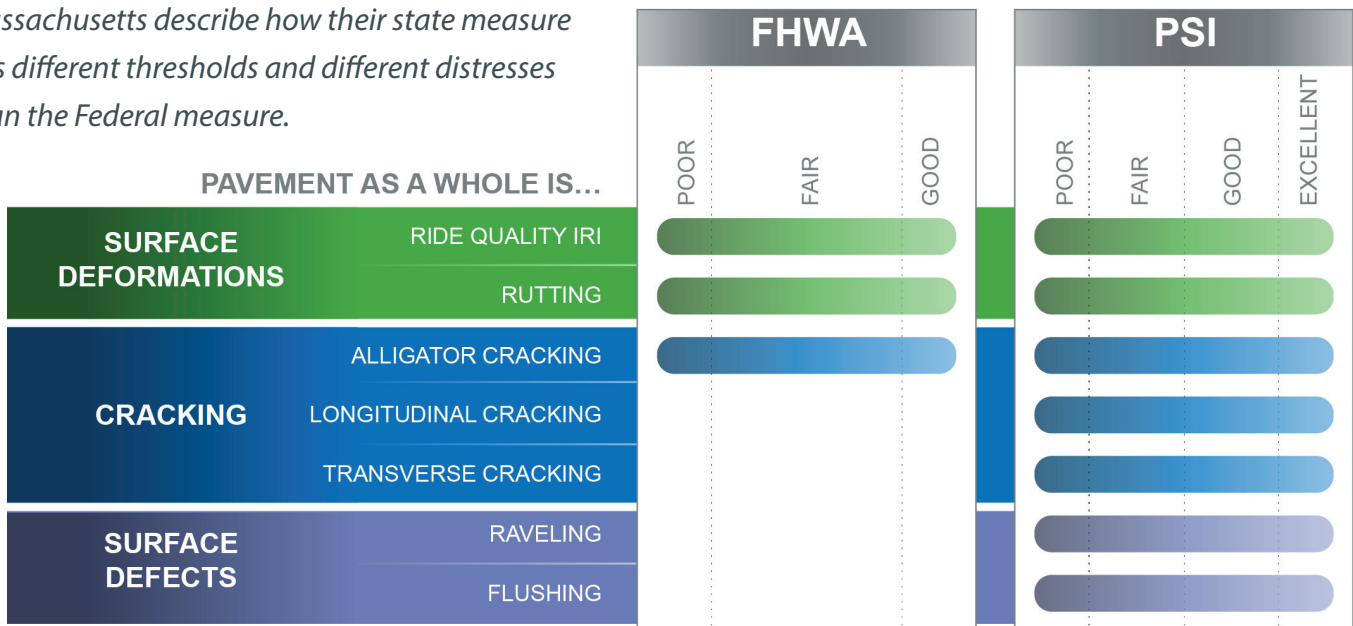
KANSAS

Kansas described how it considers the severity of cracks while the Federal measure does not. It also described how different types of cracking (e.g. longitudinal and transverse) are represented differently in the state and Federal measure.



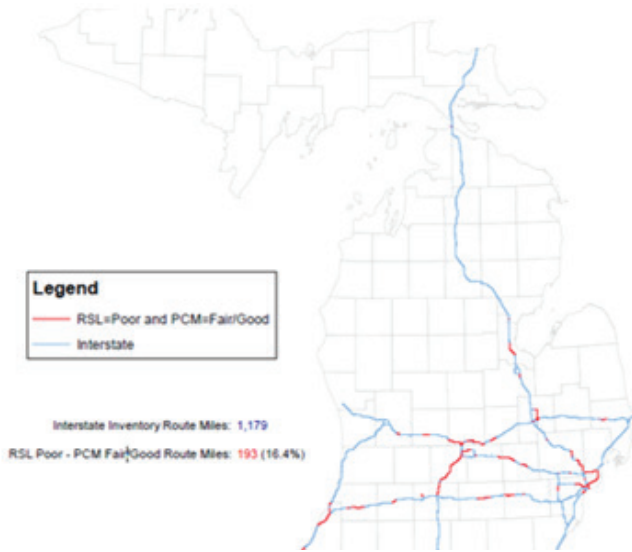
MASSACHUSETTS

Massachusetts describe how their state measure has different thresholds and different distresses than the Federal measure.



MICHIGAN

Michigan described how the Federal and state measures are different by geography.

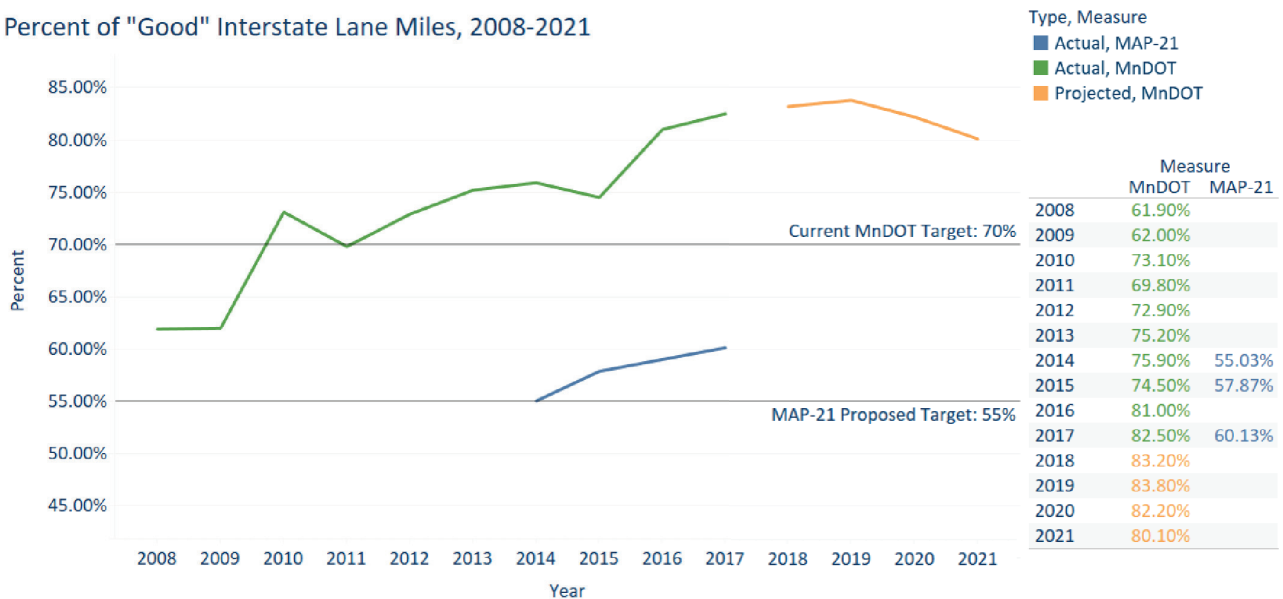


- RSL is the Michigan measure
- PCM is the Federal measure
- The segments in red are those where RSL is poor and PCM is Fair/Good

MINNESOTA

Minnesota described how the Federal and state measures are different over time.

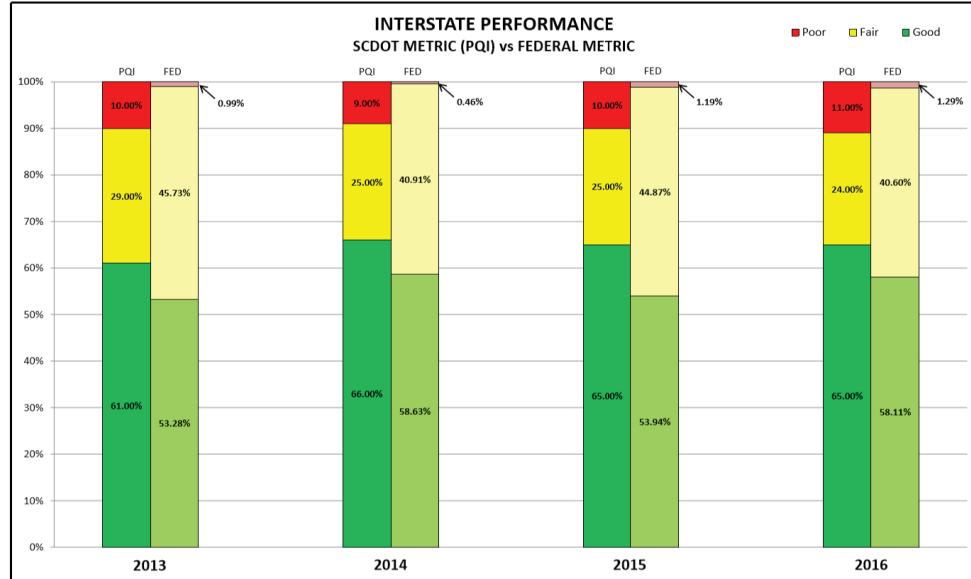
Percent of "Good" Interstate Lane Miles, 2008-2021



SOUTH CAROLINA

South Carolina described how the Federal and state measures are different over time and included detail on the breakdown of good/fair/poor conditions.

Year	Mileage	PQI	Federal
2013	Good	906.34	61.00%
	Fair	777.94	29.00%
	Poor	16.90	10.00%
2014	Good	997.32	66.00%
	Fair	695.96	25.00%
	Poor	7.90	9.00%
2015	Good	917.66	65.00%
	Fair	763.24	25.00%
	Poor	20.28	10.00%
2016	Good	988.63	65.00%
	Fair	690.67	24.00%
	Poor	21.88	11.00%



RHODE ISLAND

Rhode Island described how the Federal and state measures are different using a sampling technique. For example, the green line represents measures in good condition in the Federal measure; the points along the x-axis that make up the green line represent the states pavement condition index.

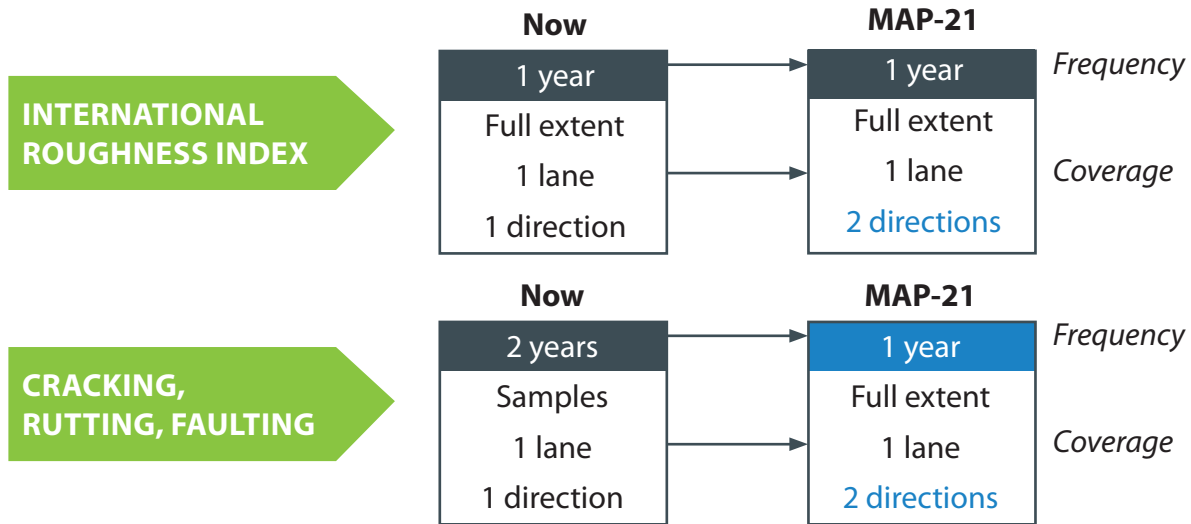


WASHINGTON

Washington described how it would change its data collection efforts to meet Federal requirements.

REPORTING REQUIREMENTS

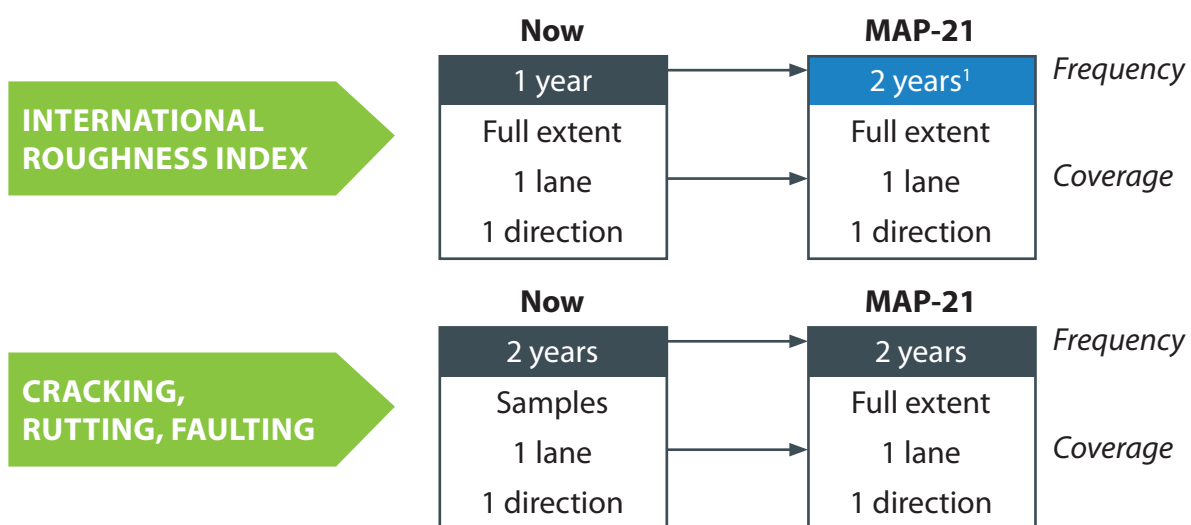
INTERSTATE PAVEMENTS



Source: Federal Highway Administration.

REPORTING REQUIREMENTS

NON-INTERSTATE NHS PAVEMENTS



Source: Federal Highway Administration.

¹ Beginning collection in 2020/2021 and reported in 2022.

NEXT STEPS/ROADMAP

In order to build upon the success of the Performance Management Reporting Peer Exchange, there are a number of next steps that can be taken to help all partners address this unique challenge. The steps indicate the recommended action and suggest what agency might be in the best position to lead the effort. Each of the recommendation can be advanced independently or through a larger more comprehensive effort.

1

Step 1: Gather Consensus on Common Messaging Strategy

Using the talking points presented in the State DOT and Federal Communications Narrative, gather consensus from FHWA and AASHTO (on behalf of the state DOTs) that the approach is consistent with their point of view and needs. Ensuring and collecting buy-in from all parties will be critical to promoting a strong and consistent message to the outside public, and therefore help to limit any confusion.

2

Step 2: Distribute the Message to all Partners

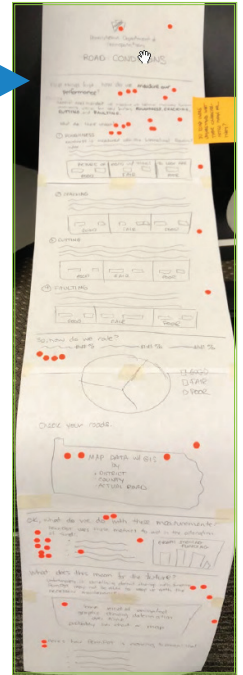
Once all parties have agreed to a common narrative. AASHTO should send the material to all states to help them engage and educate stakeholders. Distributing the material to all parties will help to strengthen the message of how the measures support a common purpose.

NEXT STEPS/ROADMAP (CONTINUED)

3

Step 3: Develop a National Performance Measures Website

Develop a website, or web content to communicate and expand upon the performance measures talking points. Using the AASHTO TAM Portal as a successful example of this approach, a website should be created and to function as a shared resource and valuable repository of effective communication messages. In a similar manner to the TAM Portal, the new website should have the means to expand and grow as needs evolve. Ultimately serving as an easy to access resource, a web-based portal is critical to the effective dissemination and on-going sharing of resources beyond the Peer Exchange.



4

Step 4: Develop Communication Templates

Expanding upon the idea of making relevant and useful resources more accessible to all partners, the development of customizable communication templates would further assist and aid state DOTs in effectively delivering and sharing a consistent and clear message. An easily customized template would be an incredibly helpful tool as resource limited state DOTs strive to find messages that connect with the public while remaining respectful to FHWA partners and their shared goals.

Potential website storyboard created by Peer Exchange participants.

5

Step 5: Create Videos to Help Explain Pavement Condition

Central to all effective messaging is a simple yet accurate understanding of pavement and the work that state DOTs do to preserve, maintain and rehabilitate the roads across the country. While performance measures remain an effective tool for telling part of the story, the reality is that most stakeholders are not engineers and therefore don't know the ins and outs of pavement, road conditions or how decisions at a state DOT are made. Developing standard and effective videos to help educate the public and promote a greater understanding of pavement condition tools could further promote a consistent and clear understanding of the good work being performed at the state and Federal level.



CONCLUSION

The Performance Management Reporting Peer Exchange was a successful first step in helping states DOTs and FHWA develop tools and strategies for communicating the national-level performance measures in conjunction with state and local performance measures. (Review the Peer Exchange presentation and pre-exchange survey in Appendix A and Appendix B). Looking forward it would help to secure an agreement from all parties regarding the talking points presented. There also remains a significant amount of uncertainty from the state and local perspective regarding what the performance measures may do to the Federal conversation and how resources may be allocated differently in the future. While it is not possible to predict what may happen in the future, the Performance Management Peer Exchange did set a successful example of state DOTs and the FHWA coming together to understand each other's point of view and develop solutions and approaches that are mutually beneficial. Using this experience as a foundation for future conversations and dialogue will go a long way in maintaining a positive and productive partnership between all parties.

The examples and process followed as part of this Peer Exchange provide insights on how to understand and manage other complicated communication issues for state and federal agencies. It also provides a template for how state DOTs and FHWA could work together to communicate other performance measures.



Performance Management Reporting
PEER EXCHANGE

APPENDIX A: Peer Exchange PowerPoint Slides



Performance Management Reporting

PEER EXCHANGE

Day 1

NCHRP 20-24(124)

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Julie Lorenz, Burns & McDonnell

Welcome and Introductions

Matt Hardy, AASHTO

Andrew Lemer, TRB

Susanna Hughes-Reck, FHWA

The Day

Lance Neumann, Cambridge Systematics

October 16, 2018

Why Are You Here?

- 👁️ To craft a customizable toolkit of communication ideas to help explain the difference between your state pavement performance measure and the Federal pavement performance measure
- 👁️ To apply your expertise as communication, pavement, and performance management experts

Agenda

- 👁️ Welcome and Introductions
- 👁️ The Day
- 👁️ Understanding the Problem
- 👁️ Key Issues
- 👁️ Sketch Communication Ideas
- 👁️ Improve Communication Ideas
- 👁️ Storyboard
- 👁️ Present Storyboard

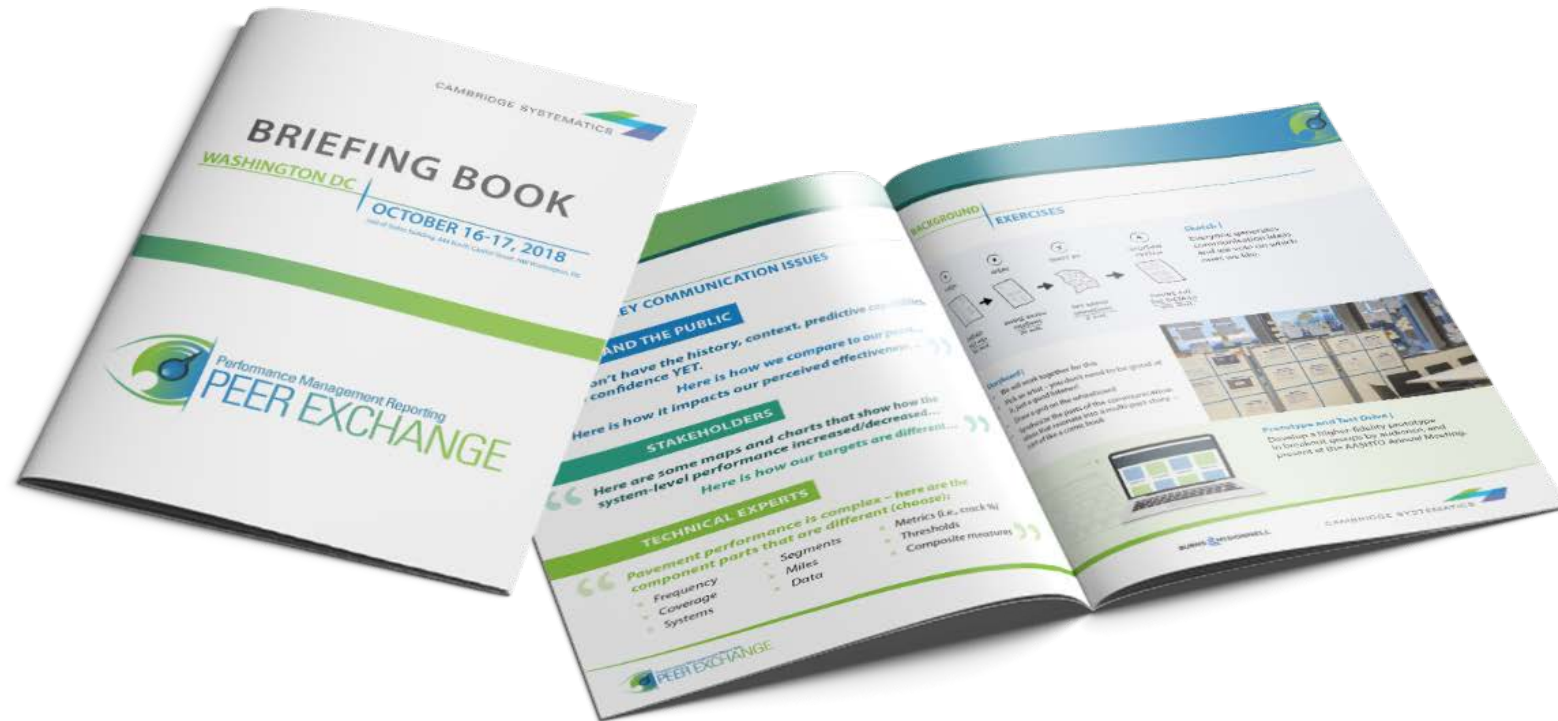
Ground Rules

We are here to **COLLABORATE**

We are here to **PRODUCE**

We are **NOT** here to revise the Federal measure

Briefing Book



Understanding The Problem

Thomas Van, FHWA

Nathan Higgins, Cambridge Systematics

Background: Why...

MAP-21 / FAST Act

- 🌐 "...efficient investment of Federal transportation funds..."
- 🌐 "...refocusing on national transportation goals..."
- 🌐 "...increasing the accountability and transparency..."
- 🌐 "...improving project decisionmaking through performance-based planning and programming." Source: 23 U.S.C. §150(a)







Background: Why...

MAP-21 / FAST Act

- 🌐 National Goal (2):
- 🌐 “INFRASTRUCTURE CONDITION. – To maintain the highway infrastructure asset system in a **state of good repair**”

Source: 23 U.S.C §150(b)(2)

§ 23 CFR 490 Subpart C

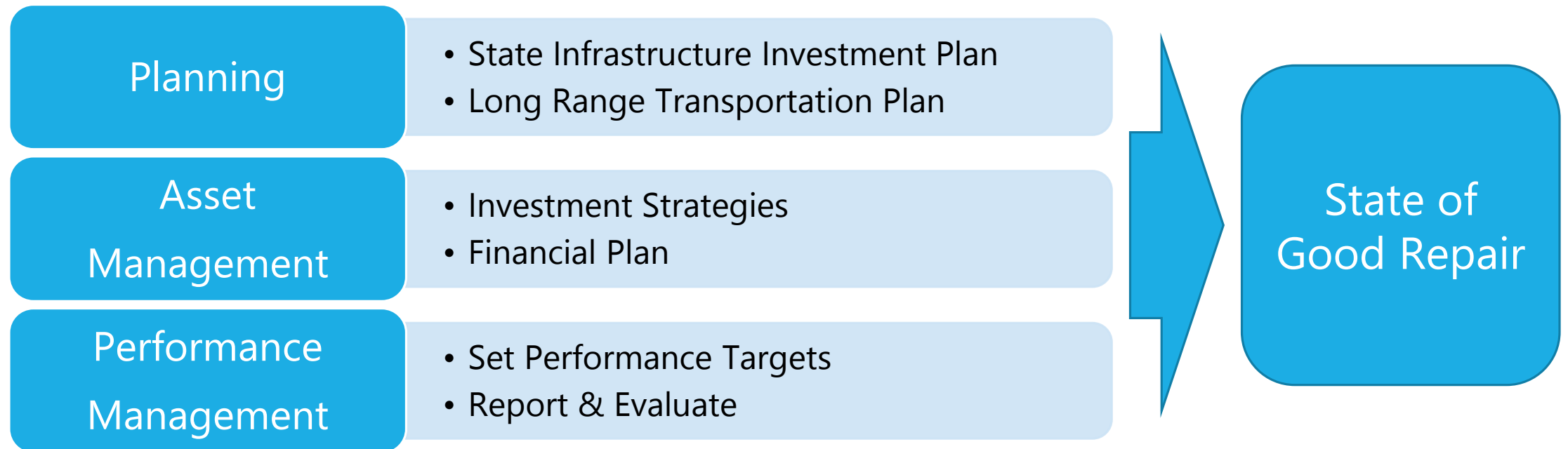
-  Performance Measures 23 U.S.C. 150(c)(3)(A)(ii)
-  Data Requirements 23 U.S.C. 150(c)(3)(A)(iv)
-  Minimum Standard for Interstate Pavements 23 U.S.C. 150(c)(3)(A)(iii)
-  Data Quality Management Plan 23 U.S.C. 150(c)(3)(A)(iv)
-  Reporting Mid-Period and End-of-Period Progress toward Targets 23 U.S.C. 150(e)(1)&(3)



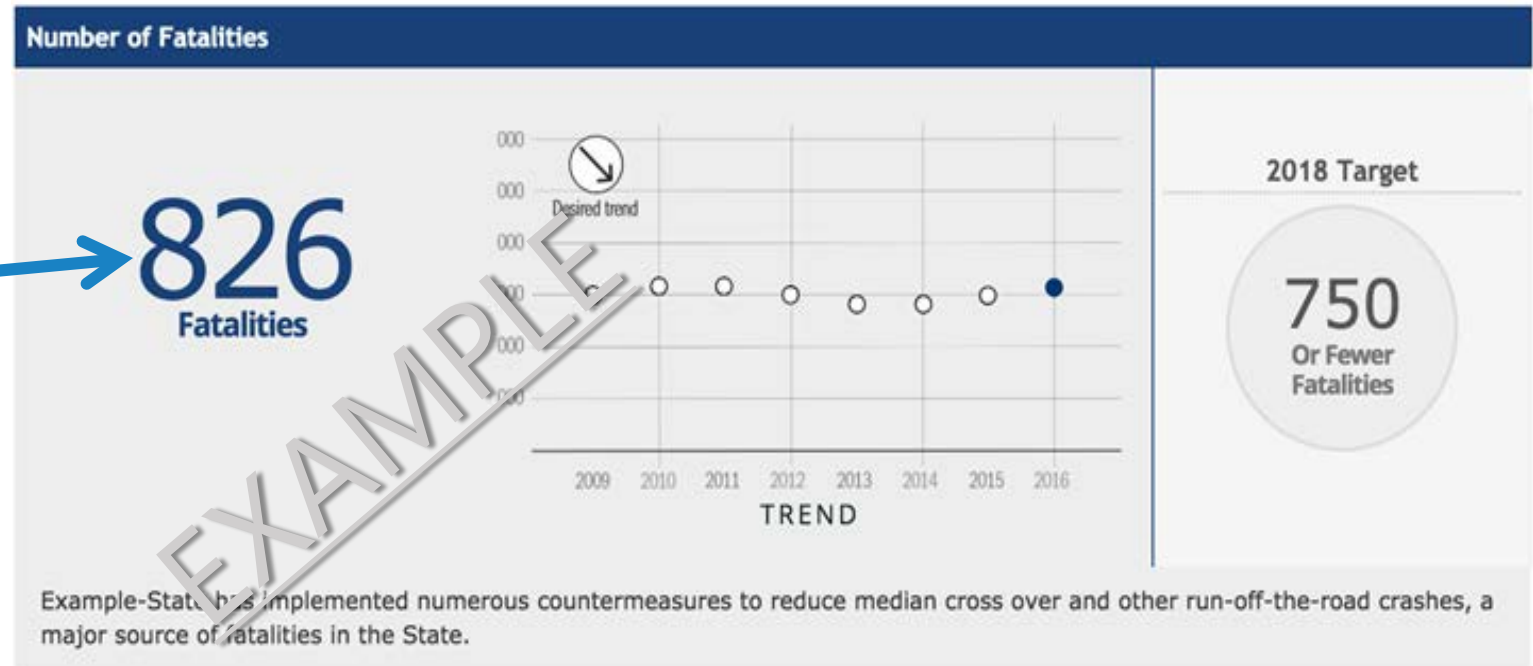
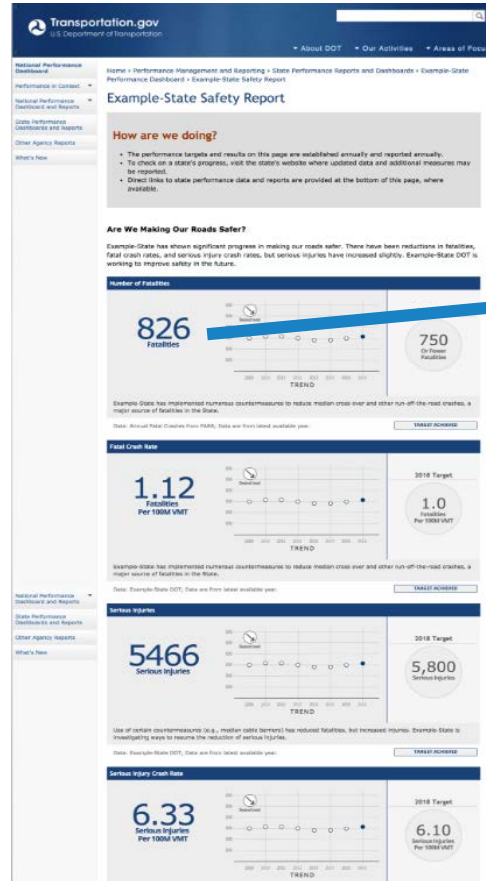
MAP-21/FAST Act Changes

-  Size of National Highway System (NHS) (23 CFR § 470.107(b))
-  Data Requirements (23 CFR § 490.309)
-  Pavement Management Requirements (23 CFR § 515.17)
-  Metropolitan Planning Involvement (23 CFR § 450.300)
-  Asset Management Requirements (23 CFR § 515.70)
-  Target Setting/Reporting (23 CFR § 490.105)

Process



State Performance Report



Data: Annual Fatal Crashes from FARS; Data are from latest available year.



Challenges

-  Documentation
-  Non-State-owned NHS
-  Analysis Capabilities
-  Minimum Standards for Interstate
-  Uniform Reporting *
-  Data Quality

* Source: 23 CFR 490.315

What Did We Learn?

 Reviewed Initial TAMPs

 Surveyed DOTs

- Arizona, Florida, Kansas, Kentucky, Michigan, Minnesota, Missouri, New Hampshire, Pennsylvania, South Carolina, South Dakota, Tennessee, Vermont, Virginia, and Wisconsin

 Interviewed DOTs

- Minnesota, South Carolina, Tennessee, and Virginia

Findings and Themes

State pavement measures are important and institutional

The state pavement performance measures...

- 👁️ ...represent performance of what often is the largest program
- 👁️ ...have been around for a long time (decades)
- 👁️ ...have been used to plan and make investment decisions

Findings and Themes

States don't yet have confidence in the Federal measure

States...

- ...often see different performance using the Federal measure compared to the state's own measure
- ...do not have a history using the Federal measure
- ...don't yet have predictive models for the Federal measure
- ...can't yet use the Federal measure to make investment decisions

Findings and Themes

There are some things that really matter

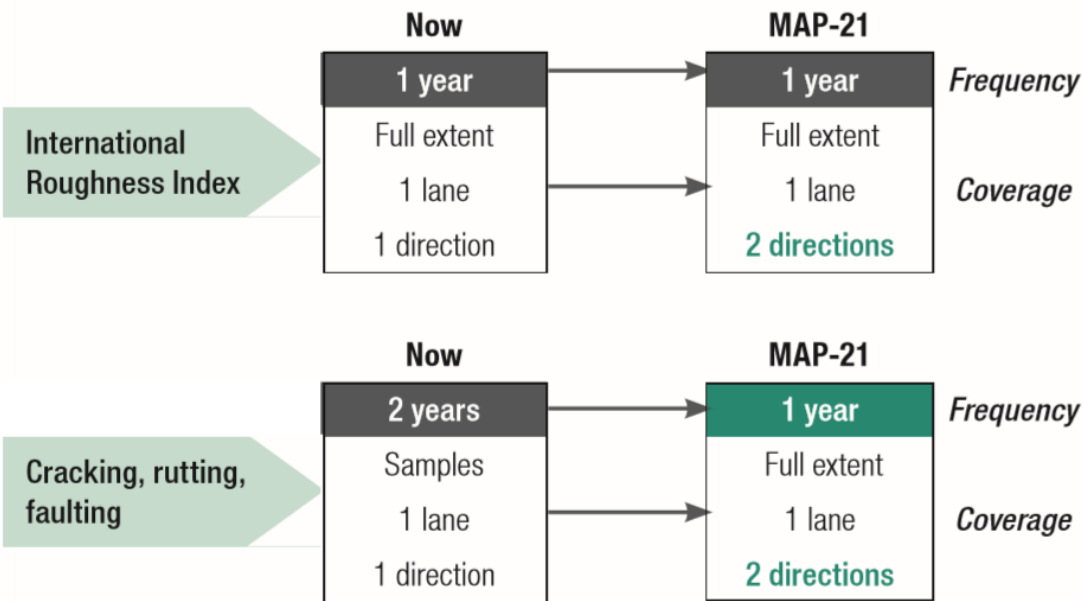
States worry that stakeholders will...

- 👁️ ...believe the pavement has physically changed
- 👁️ ...believe that states misled the public and Legislature
- 👁️ ...question whether the states need the extra funds they say
- 👁️ ...perceive that state effectiveness has diminished

Washington

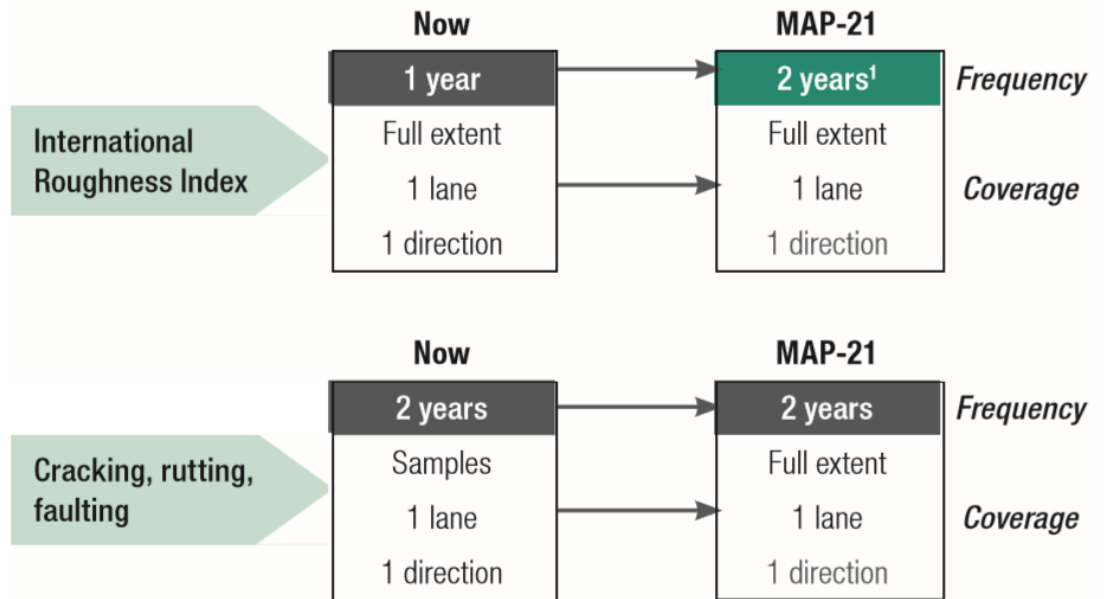
Frequency and Coverage

Reporting requirements – Interstate pavements



Data source: Federal Highway Administration.

Reporting requirements – non-Interstate NHS pavements



Data source: Federal Highway Administration.

Note: 1 Beginning collection in 2020/2021 and reported in 2022.

California

Asset and System

Owner	System	Asset Classes				
		Pavement	Bridges	Culverts	ITS	Supplemental Assets
Local	NHS	Federal Requirements				
State	NHS			State Requirements		
State	Non-NHS					

Arizona

Segments

1) Apply prediction on weighted average distress value per project section.

2) Select treatment for project sections based on current and predicted condition.

Decision Tree: select treatment based on weighted average? or select treatment based on good/fair/poor rating?

Project sections

Average distressive value

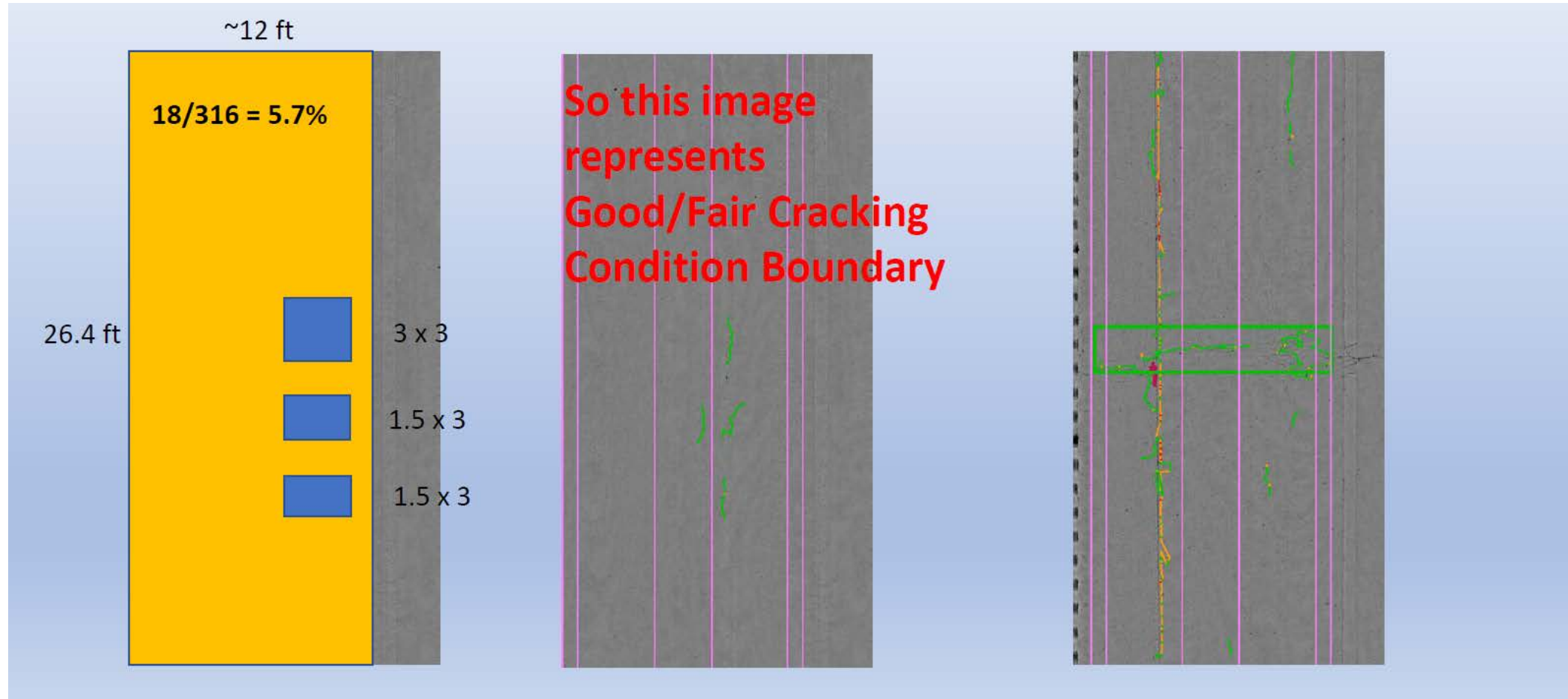
3) Apply selected treatment to 0.1-mile sections

Split into 0.1-mile sections

4) Apply prediction on treatment for each 0.1-mile section and report this, even if the condition is a different rating for the 0.1-mile section compared to the project section (e.g., the project section rating is fair; however, one 0.1-mile section with that project is poor).

Kansas

Crack Severity



Other Examples

MILES

(centerline
miles vs. lane
miles)

BRIDGE

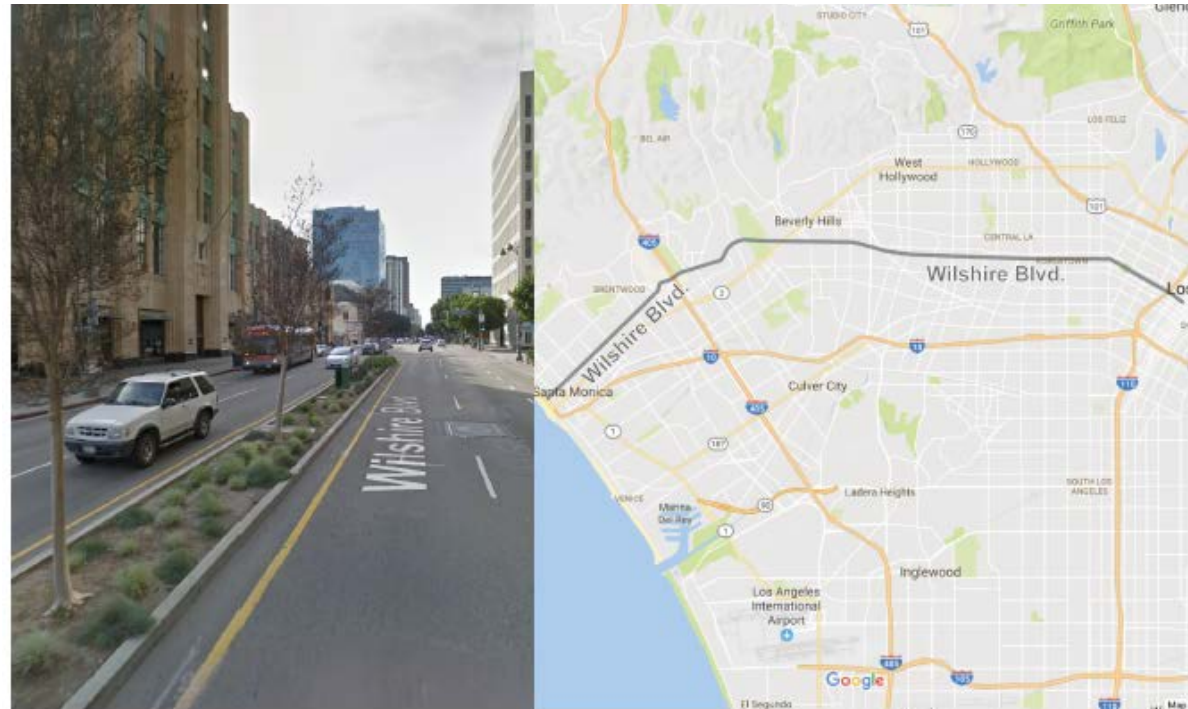
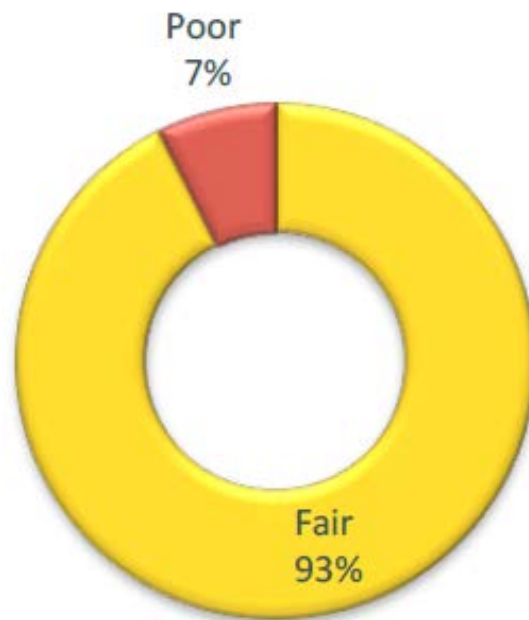
vs. no bridge

DATA

(some haven't
collected it
before)

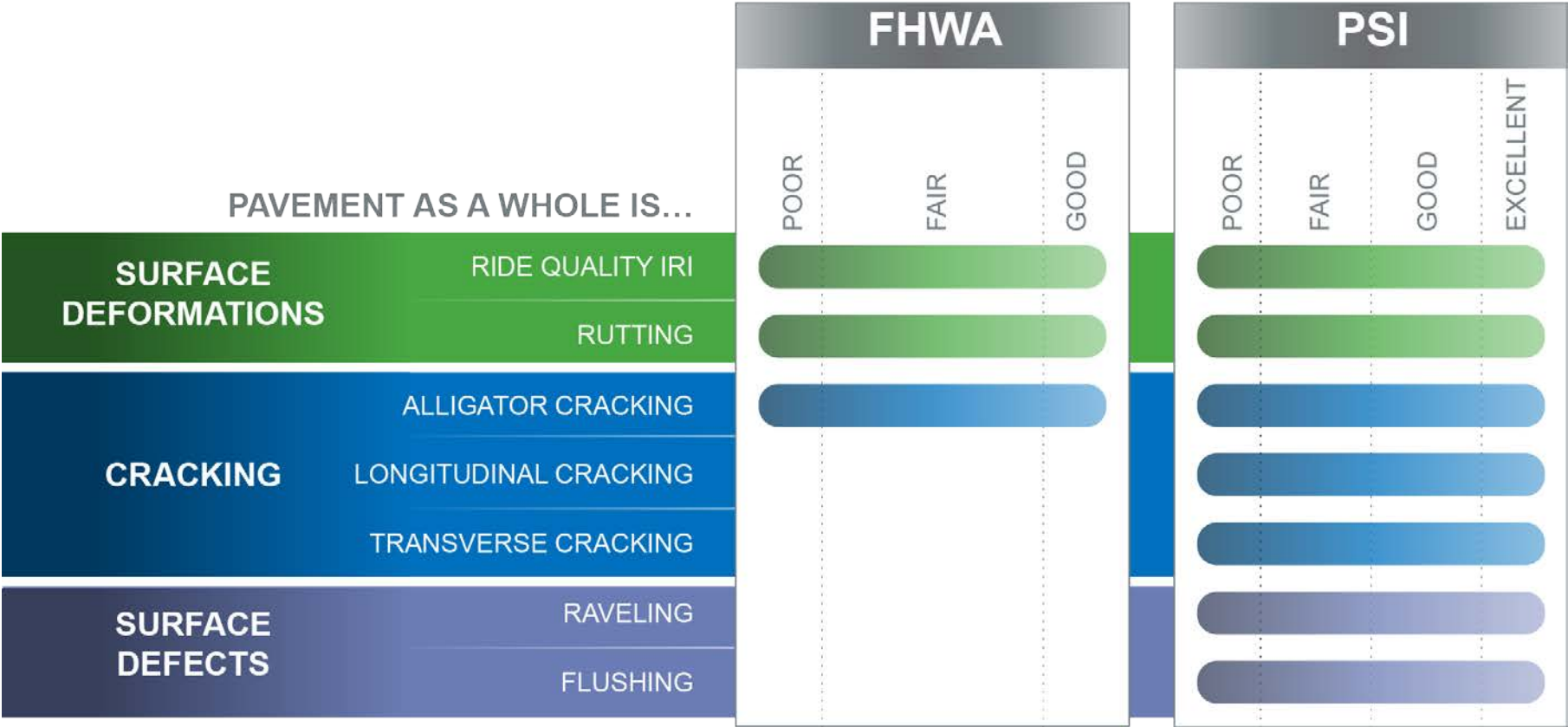
California

International Roughness Index (IRI) on 45 MPH Roads






Massachusetts

Thresholds and Distresses



Rollup of Distresses

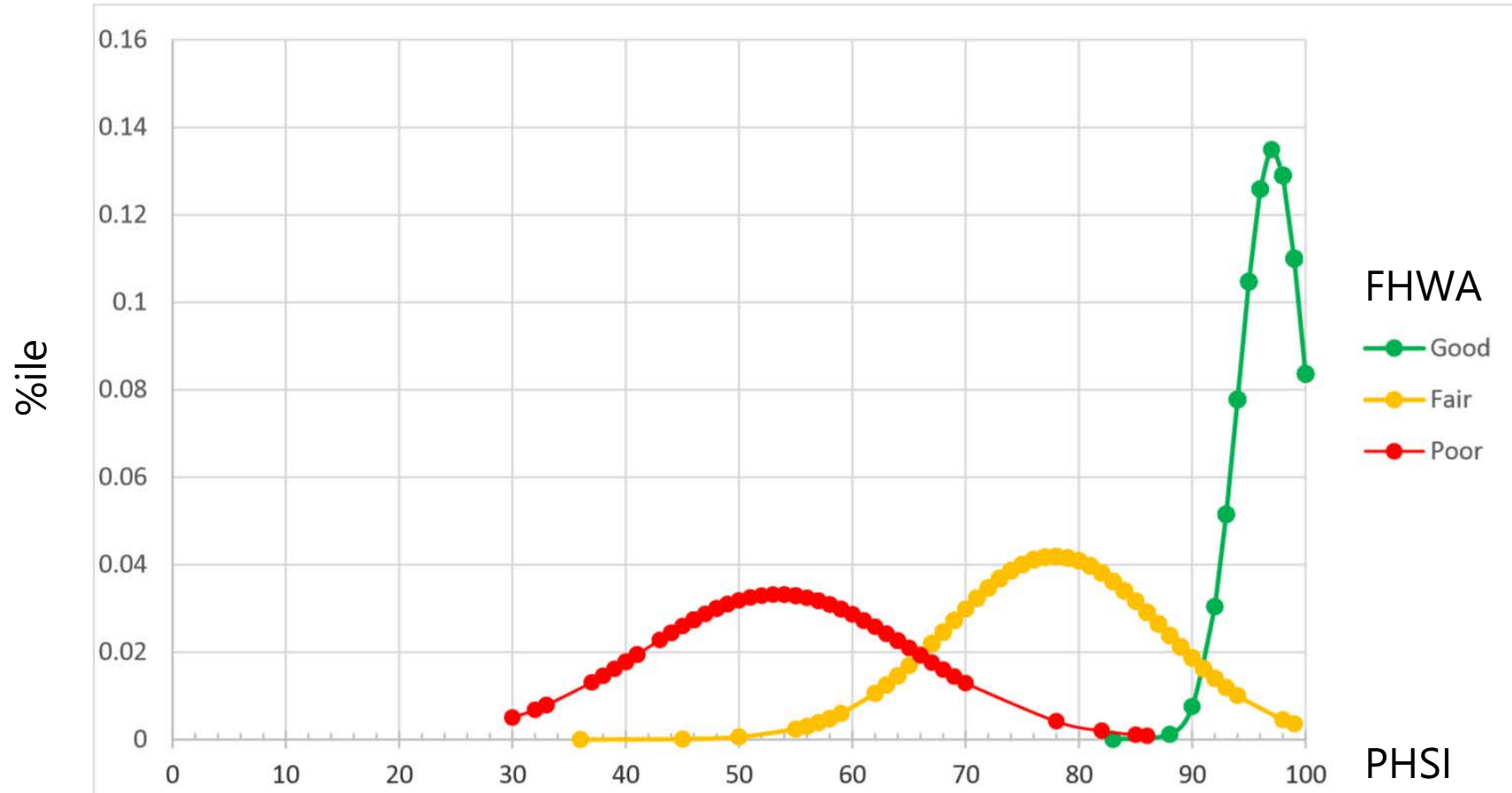
- 
Minnesota: $PQI = \text{SQRT}(\text{Roughness Index} \times \text{Cracking Index})$
- 
Tennessee: $PQI = PDI \cdot 0.7 * PSI \cdot 0.3$
- 
Vermont: Composite Index = Average(Ride, Rut, Structural Cracks, Transverse Cracks) - (1.25 x Standard Deviation(Ride, Rut, Structural Cracks, Transverse Cracks))

Federal Rollup

	PAVEMENT TYPE		Measures
	Asphalt and Jointed Concrete	Continuous Concrete	
Overall Section Condition Rating	3 metric ratings (IRI, cracking and rutting/faulting)	2 metric ratings (IRI and cracking)	
Good	All three metrics rated "good"	Both metrics rated "good"	Percentage of lane-miles in "good" condition
Poor	≥ 2 metrics rated "poor"	Both metrics rated "poor"	Percentage of lane-miles in "poor" condition
Fair	All other combinations	All other combinations	

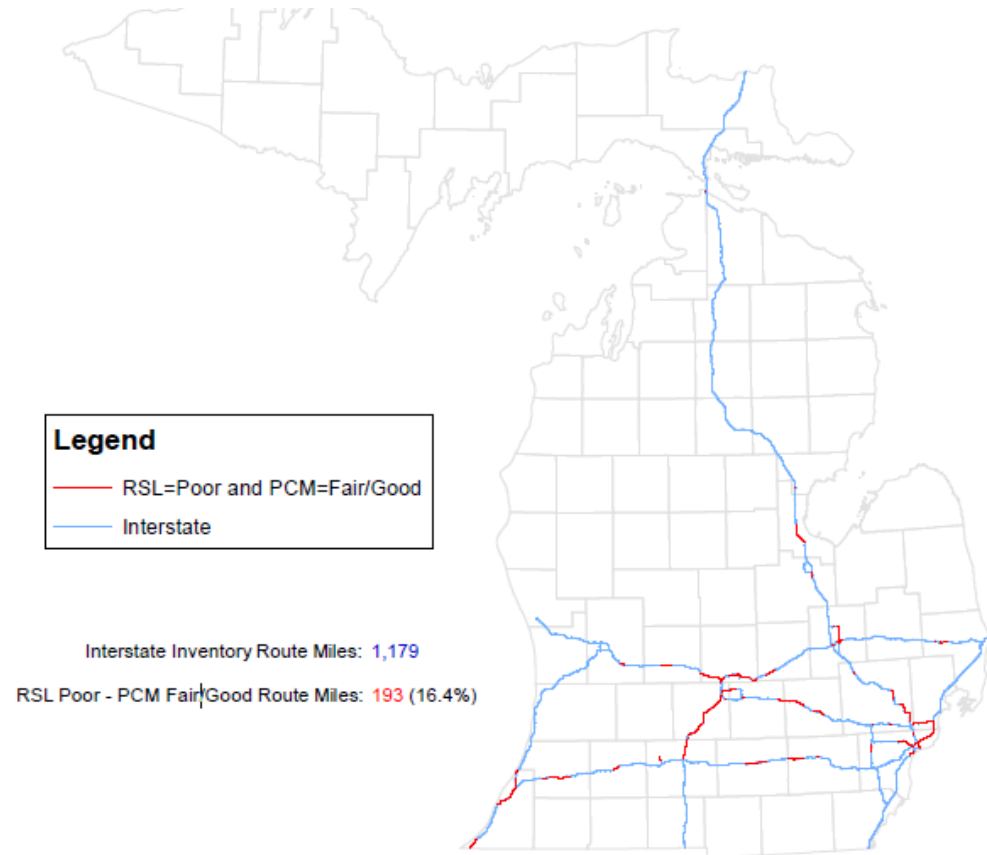
Rhode Island

Sampling Comparison



Michigan

Geographic Comparison

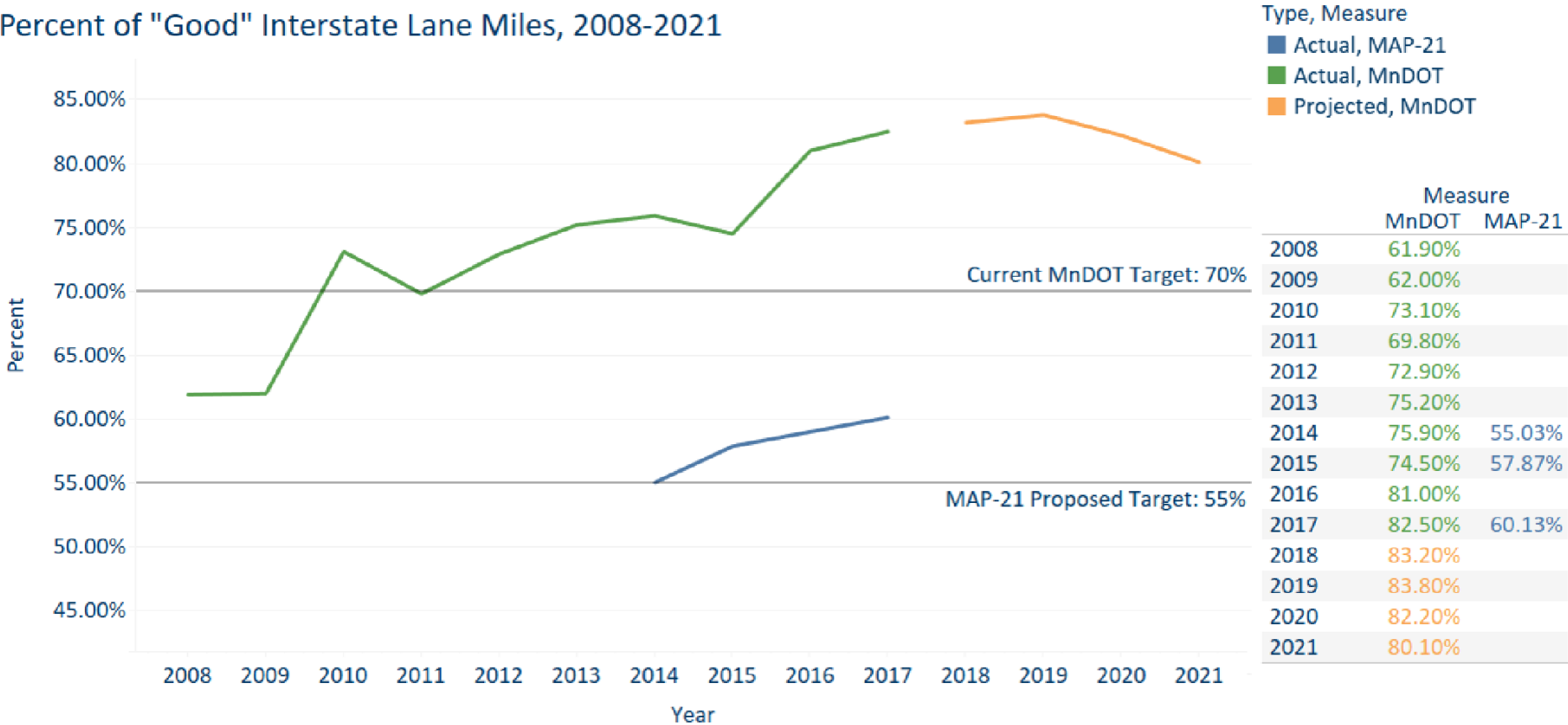


- RSL is the Michigan measure
- PCM is the Federal measure
- The segments in red are those where RSL is poor and PCM is Fair/Good

Minnesota

Trend Comparison

Percent of "Good" Interstate Lane Miles, 2008-2021



South Carolina

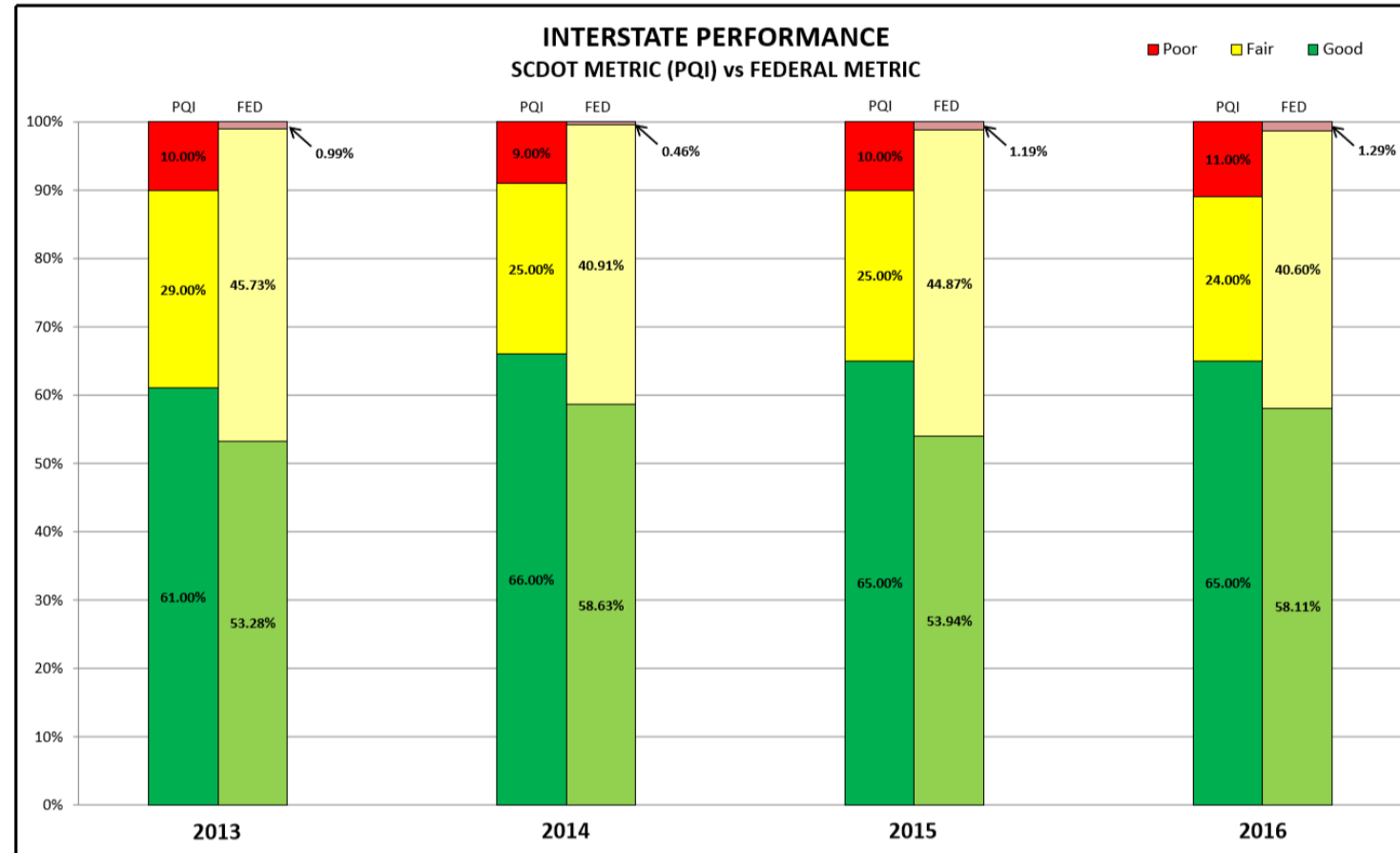
Stacked Bar Comparison

2013	Mileage	PQI	Federal
Good	906.34	61.00%	53.28%
Fair	777.94	29.00%	45.73%
Poor	16.90	10.00%	0.99%

2014	Mileage	PQI	Federal
Good	997.32	66.00%	58.63%
Fair	695.96	25.00%	40.91%
Poor	7.90	9.00%	0.46%

2015	Mileage	PQI	Federal
Good	917.66	65.00%	53.94%
Fair	763.24	25.00%	44.87%
Poor	20.28	10.00%	1.19%

2016	Mileage	PQI	Federal
Good	988.63	65.00%	58.11%
Fair	690.67	24.00%	40.60%
Poor	21.88	11.00%	1.29%



System Level

Perspectives Matter

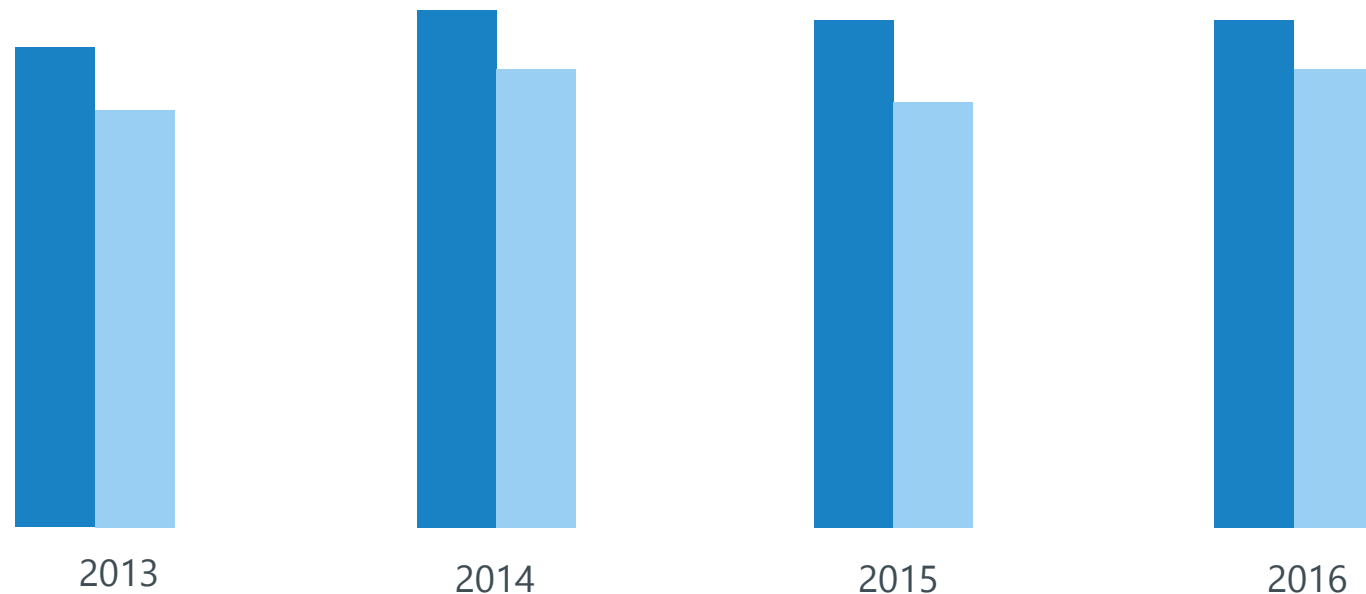
DOT FHWA

DOT FHWA

DOT FHWA

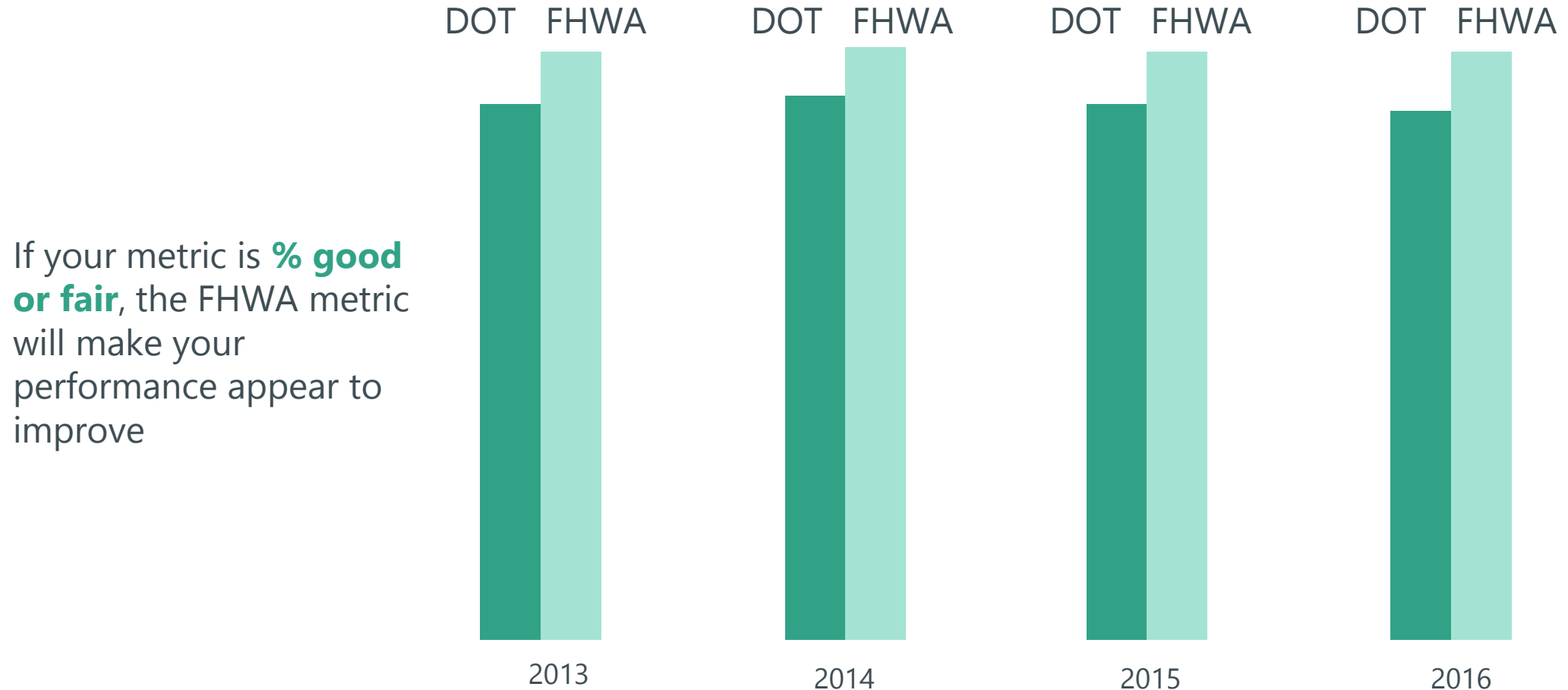
DOT FHWA

If your metric is **% good**,
the FHWA metric will
make your performance
appear worse



System Level

Perspectives Matter



System Level

Perspectives Matter



If your metric is **% poor**,
the FHWA metric will
make your performance
appear to improve
significantly

2013

2014

2015

2016

Key Issues

Julie Lorenz, Burns & McDonnell

Key Communication Issues

Legislators and the public

"We don't have the history, context, predictive capabilities, and confidence yet."

"Here is how we compare to our peers..."

"Here is how it impacts our perceived effectiveness..."

Stakeholders

"Here are some maps and charts that show how the system-level performance increased/decreased..."

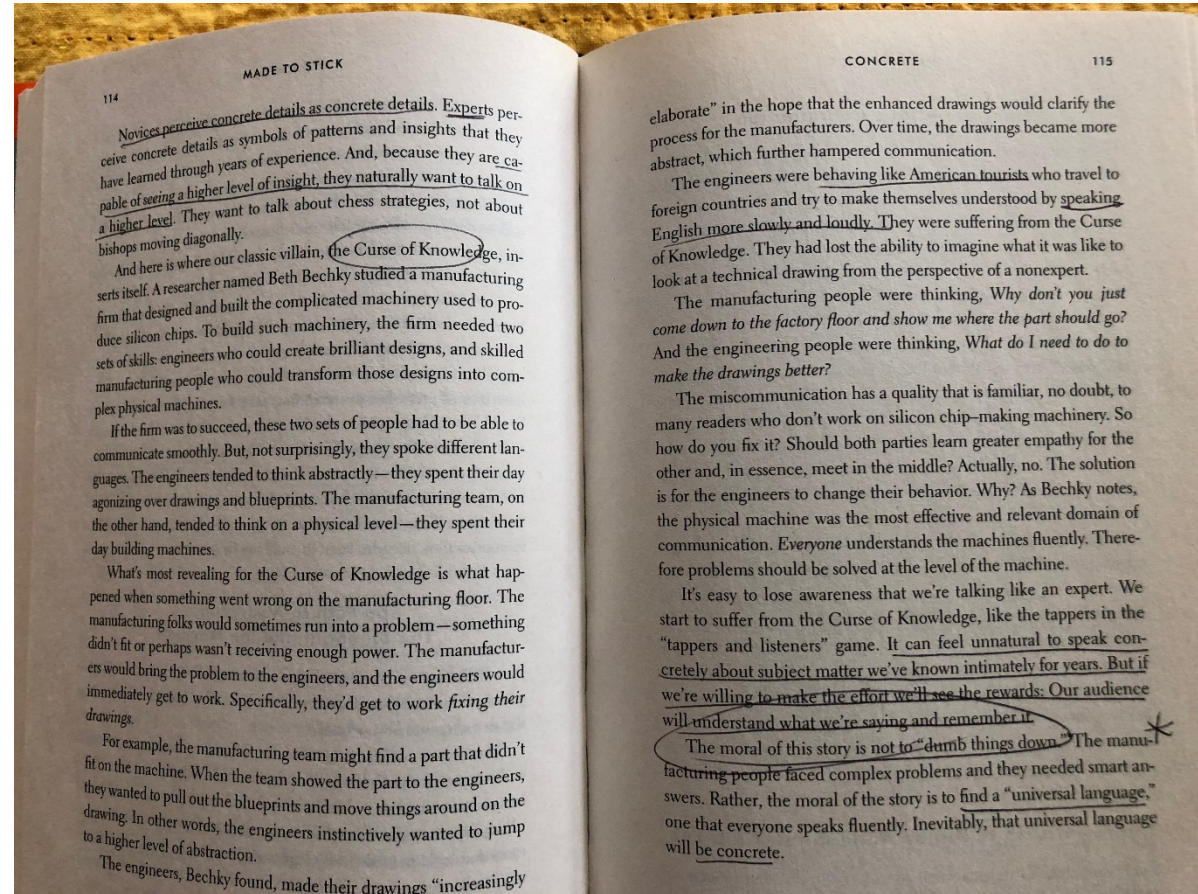
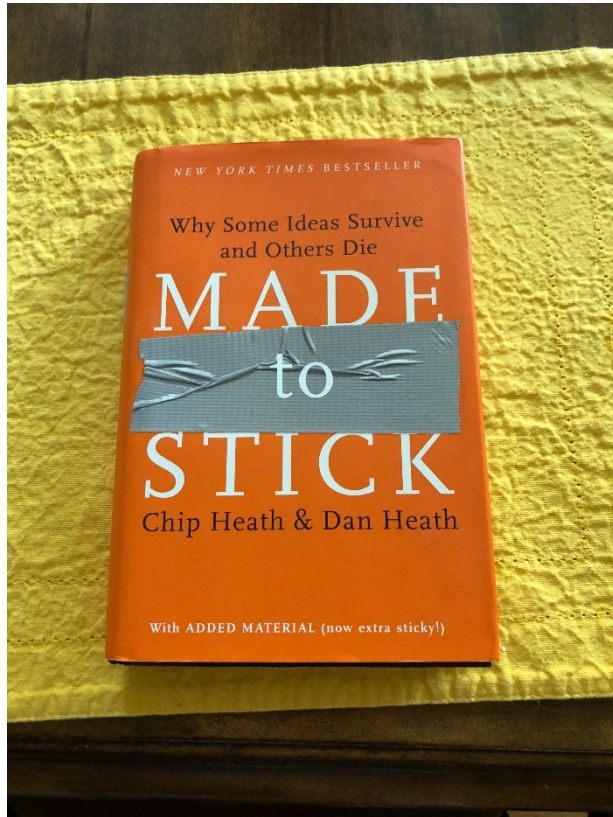
"Here is how our targets are different..."

Technical experts

"Pavement performance is complex – here are the component parts that are different (choose):

- » Frequency
- » Coverage
- » Systems
- » Segments
- » Miles
- » Data
- » Metrics (i.e., crack %)
- » Thresholds
- » Composite measures

Ideas That Stick and The Curse of Knowledge



15 Minute Break

Join Your Breakout Group When You Return

Room 285

Room 385

Room 231

Sketch

Lance Neumann, Cambridge Systematics

Julie Lorenz, Burns & McDonnell

Nathan Higgins, Cambridge Systematics

Four Part Sketching

1 Notes

- Grab a stack of paper and a marker
- Write down notes from the morning's discussion – the problem, your understanding, examples you like, etc.

20

IDEAS



PODDLE ROUGH
SOLUTIONS
20 MIN.

3

(CRAZY BS



TRY RAPID
VARIATIONS
8 MIN.

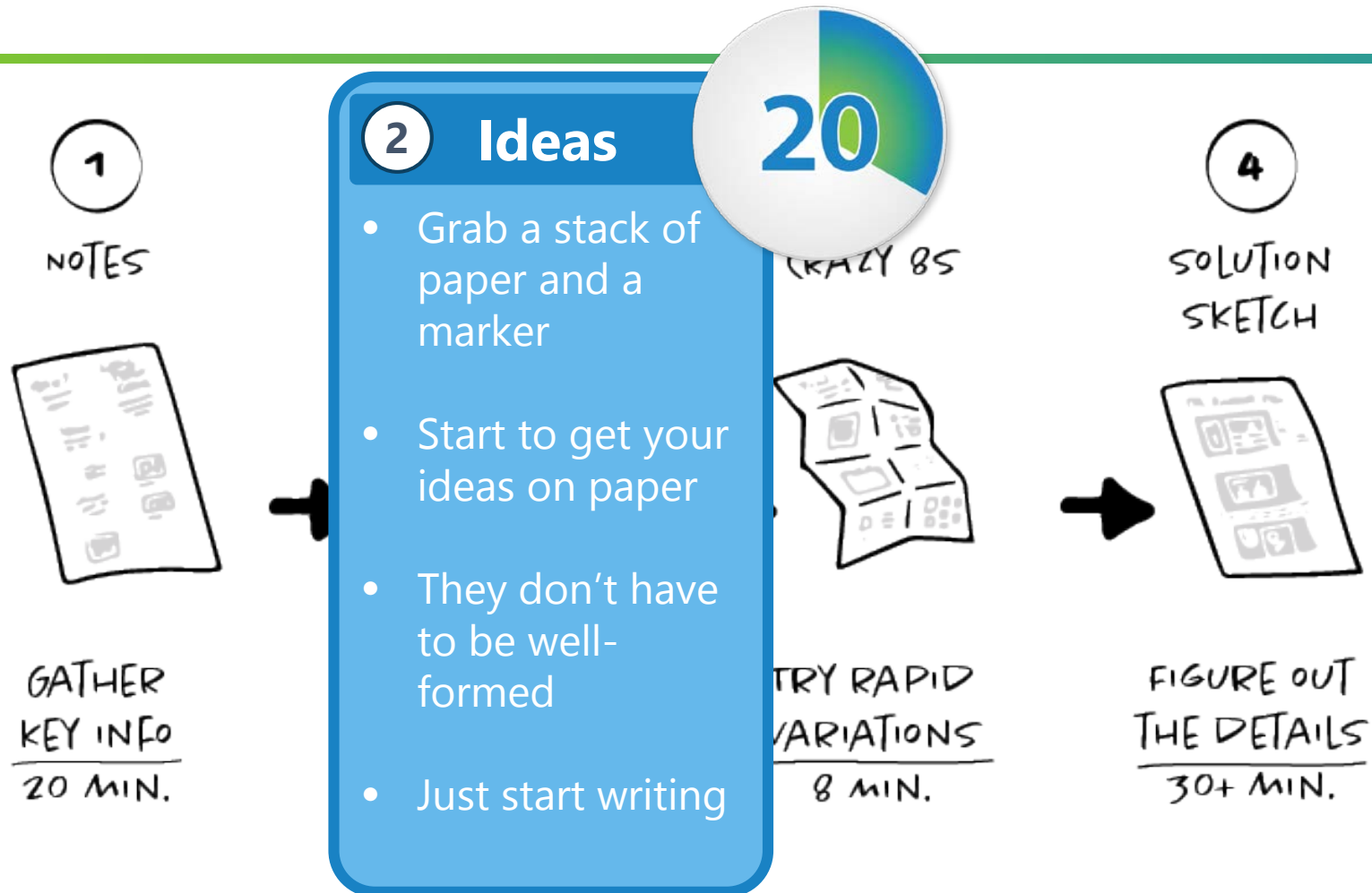
4

SOLUTION
SKETCH



FIGURE OUT
THE DETAILS
30+ MIN.

Four Part Sketching



Four Part Sketching



GATHER
KEY INFO
20 MIN.



DOODLE ROUGH
SOLUTIONS
20 MIN.

③ Crazy 8s

- Grab one piece of paper
- Fold it into 8 cells
- Draw one communication idea per cell
- Draw different versions of the same or totally different ideas

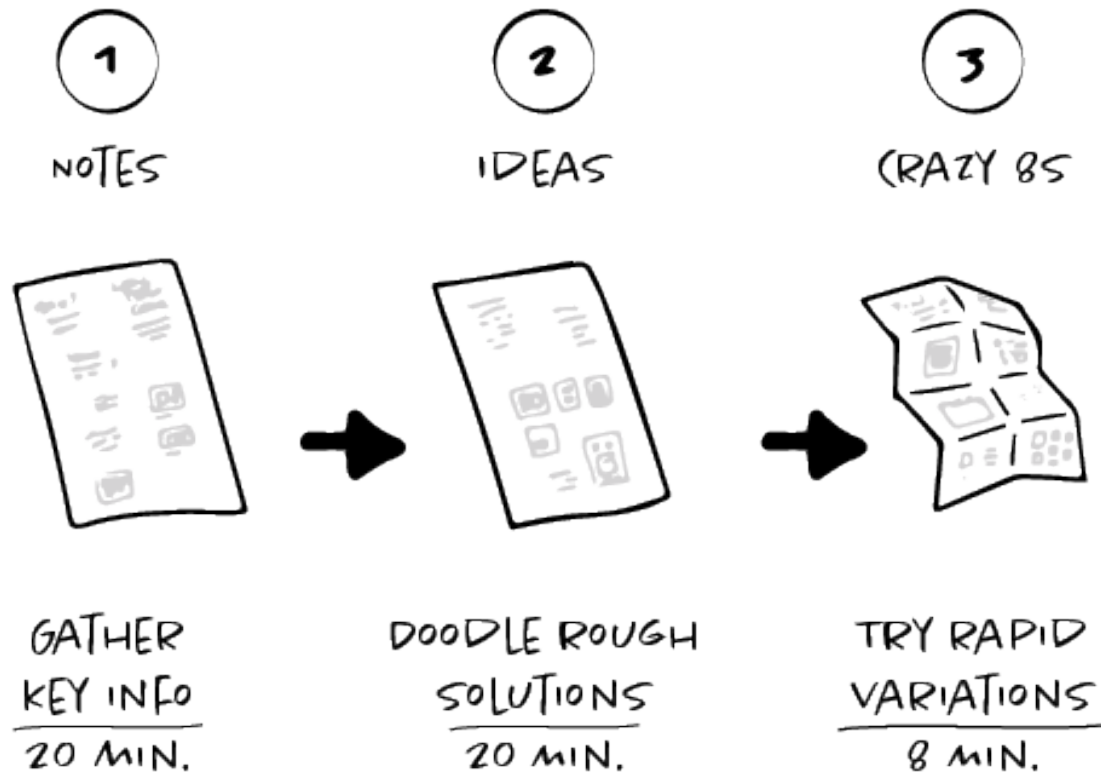


SOLUTION
SKETCH



FIGURE OUT
THE DETAILS
30+ MIN.

Four Part Sketching



4

Sketch

30

- You will share these
- They should be stand alone communication ideas
- Grab three pieces of paper
- Flesh out your communication idea
- Write real words

Before We Start

- 👁️ Grab a partner (or work alone if you prefer)
- 👁️ Grab a stack of paper, a marker, and a stack of sticky notes
- 👁️ We are going to keep time, and keep moving

Four Part Sketching

1 Notes

- Grab a stack of paper and a marker
- Write down notes from the morning's discussion – the problem, your understanding, examples you like, etc.

20

IDEAS



PODDLE ROUGH
SOLUTIONS
20 MIN.

3

(CRAZY BS



TRY RAPID
VARIATIONS
8 MIN.

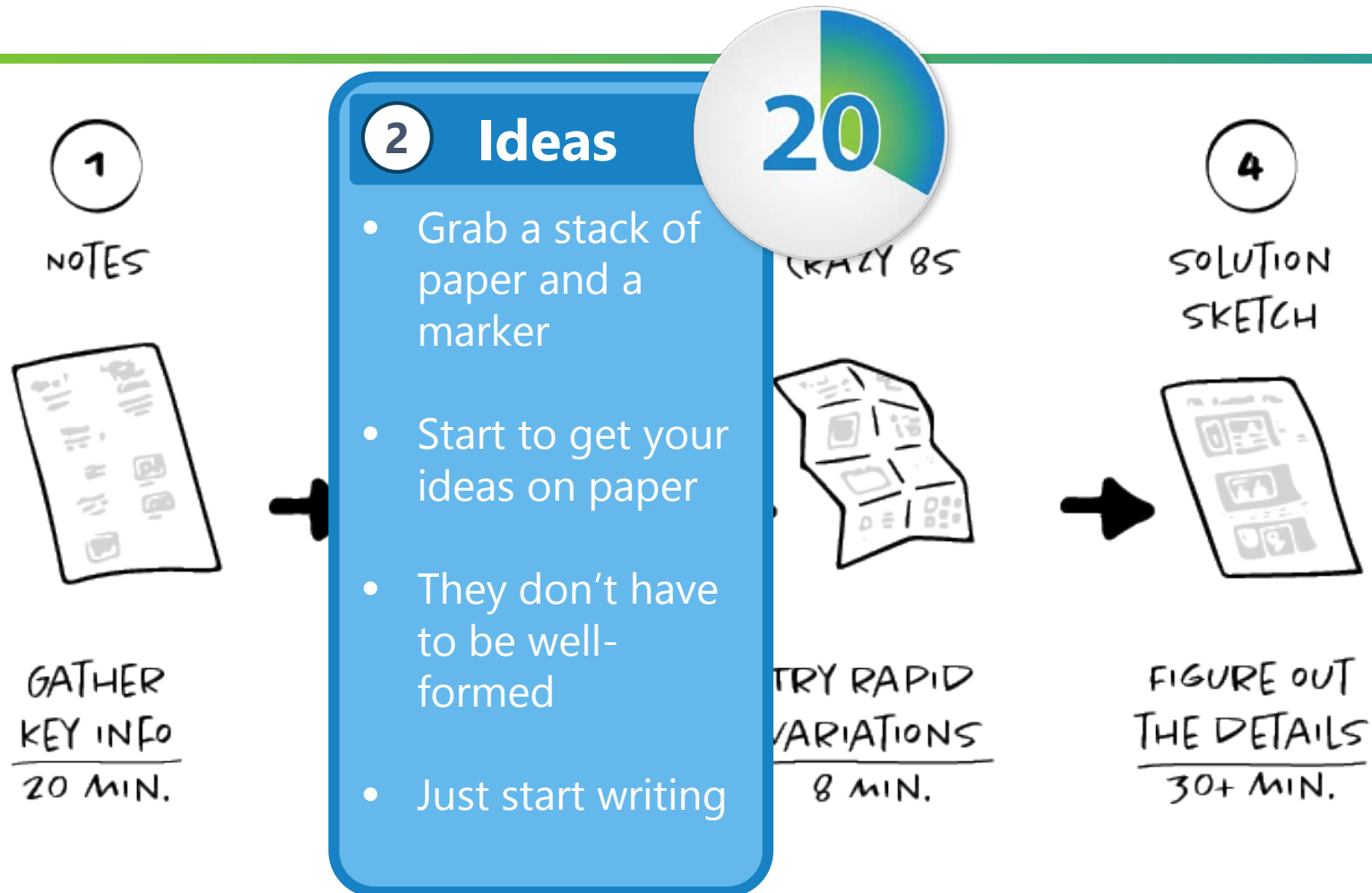
4

SOLUTION
SKETCH



FIGURE OUT
THE DETAILS
30+ MIN.

Four Part Sketching



Four Part Sketching



GATHER
KEY INFO
20 MIN.



DOODLE ROUGH
SOLUTIONS
20 MIN.

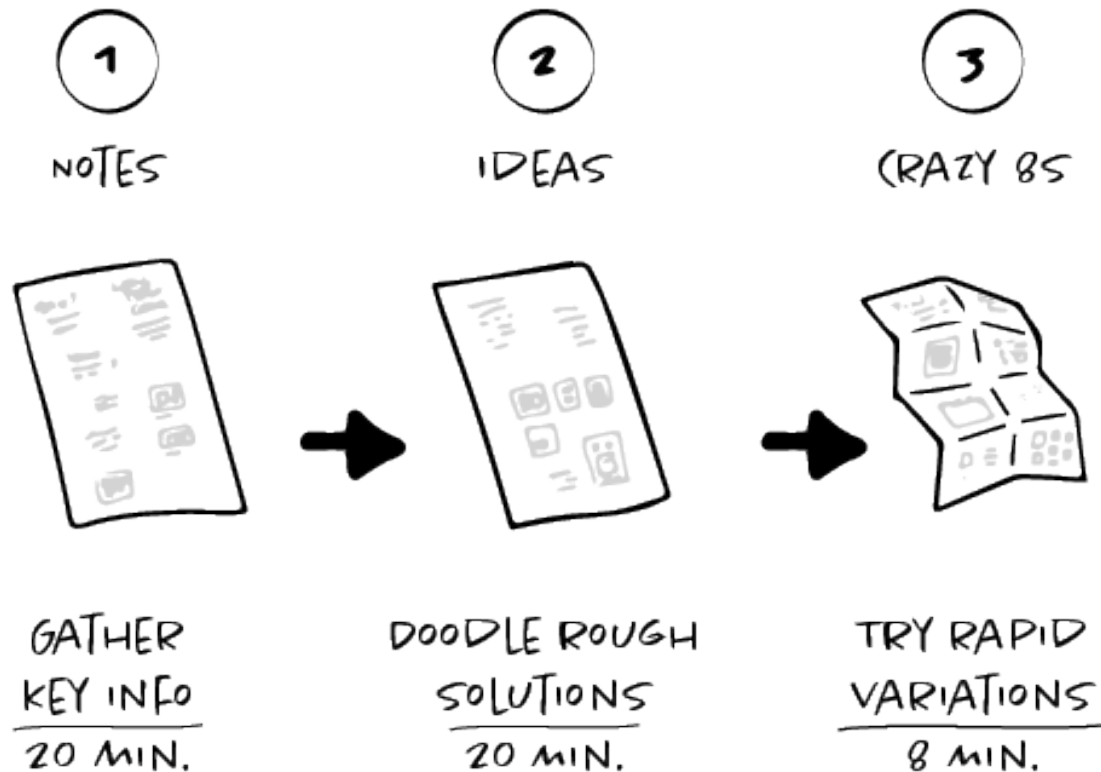
③ Crazy 8s

- Grab one piece of paper
- Fold it into 8 cells
- Draw one communication idea per cell
- Draw different versions of the same or totally different ideas



FIGURE OUT
THE DETAILS
30+ MIN.

Four Part Sketching



4

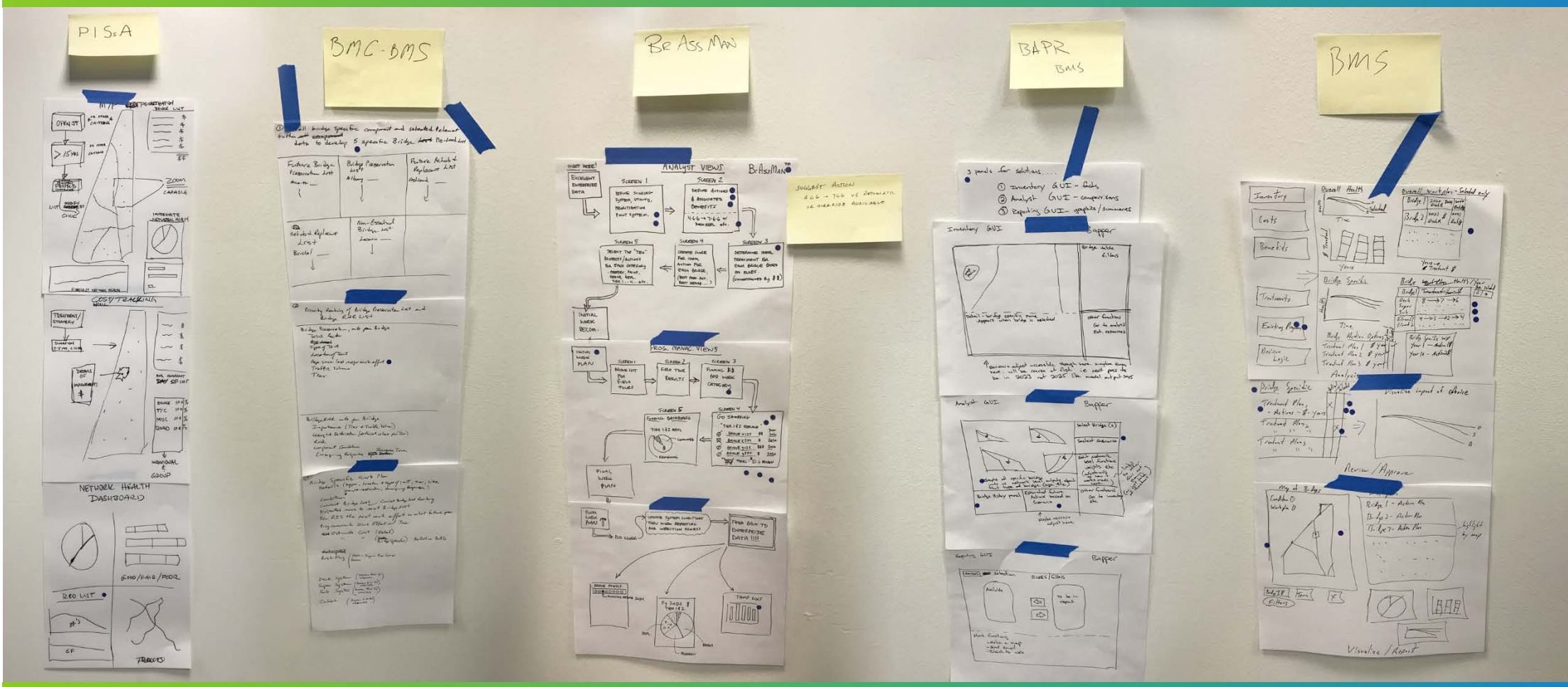
Sketch

30

- You will share these
- They should be stand alone communication ideas
- Grab three pieces of paper
- Flesh out your communication idea
- Write real words

Before Lunch

Tape sketch to the wall (or use pushpins)



Join Your
Breakout Group
When You
Return

1 Hour Lunch

Room 285

Room 385

Room 231

Highlight and Improve Ideas that Resonate

Lance Neumann, Cambridge Systematics

Julie Lorenz, Burns & McDonnell

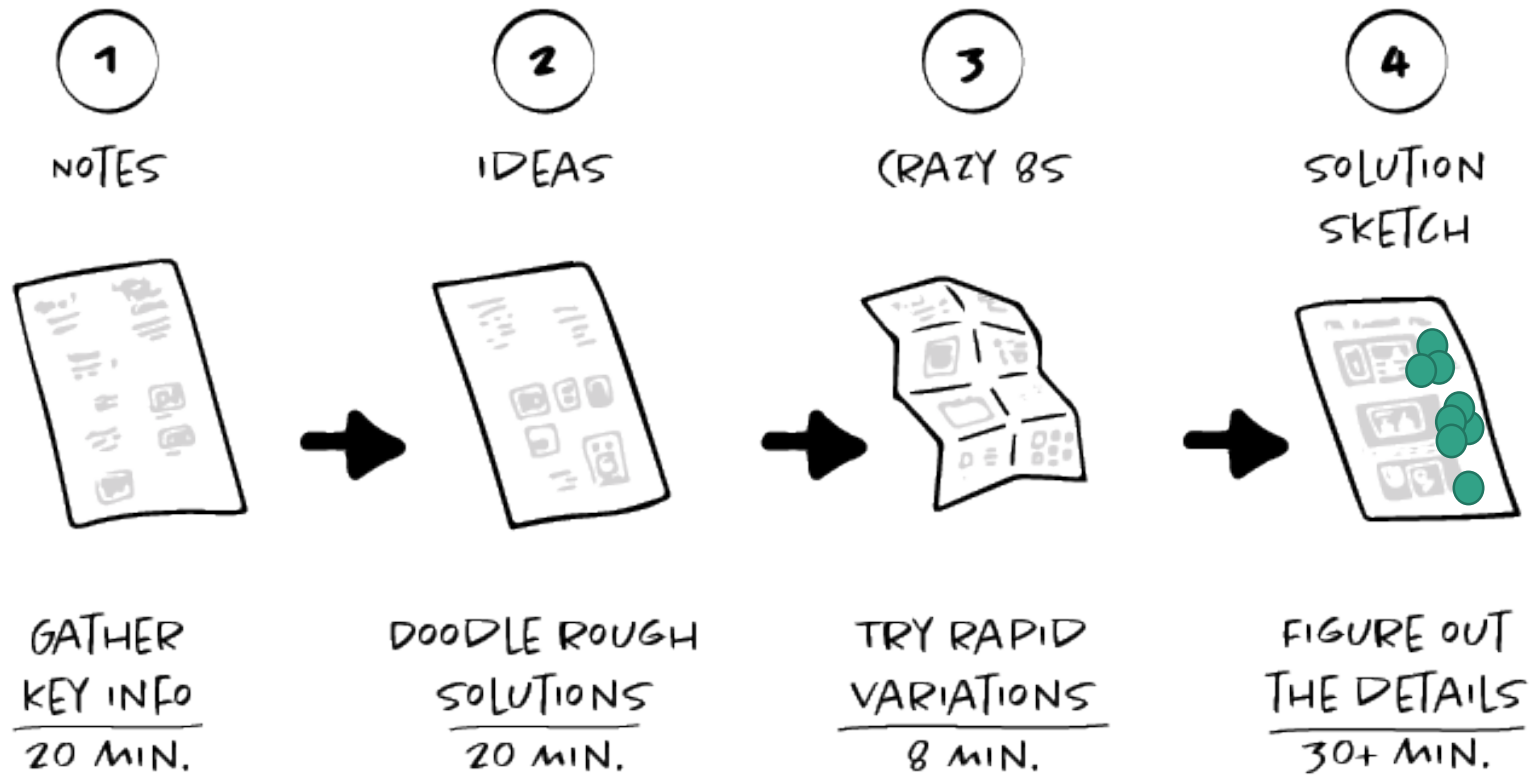
Nathan Higgins, Cambridge Systematics

Before We Start

- 👁️ We will give you 20 dots
- 👁️ Grab a stack of square sticky notes
- 👁️ You will...
 - Stick a dot on any part of an idea that resonates
 - Post a comment/question if you have one
 - Have a chance to explain and improve on your idea

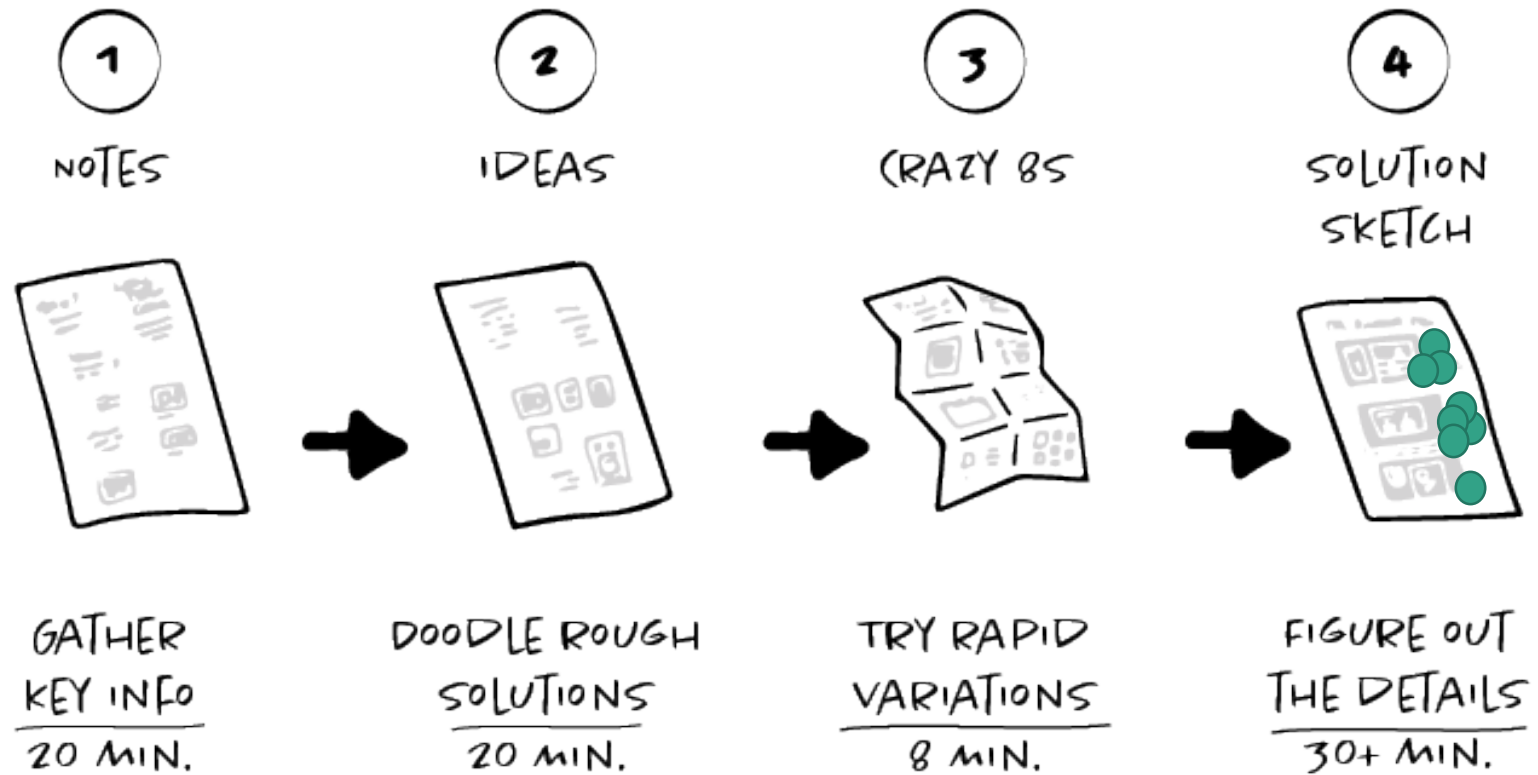
Heatmap and Comment

Homeroom



Explain and Respond

Homeroom

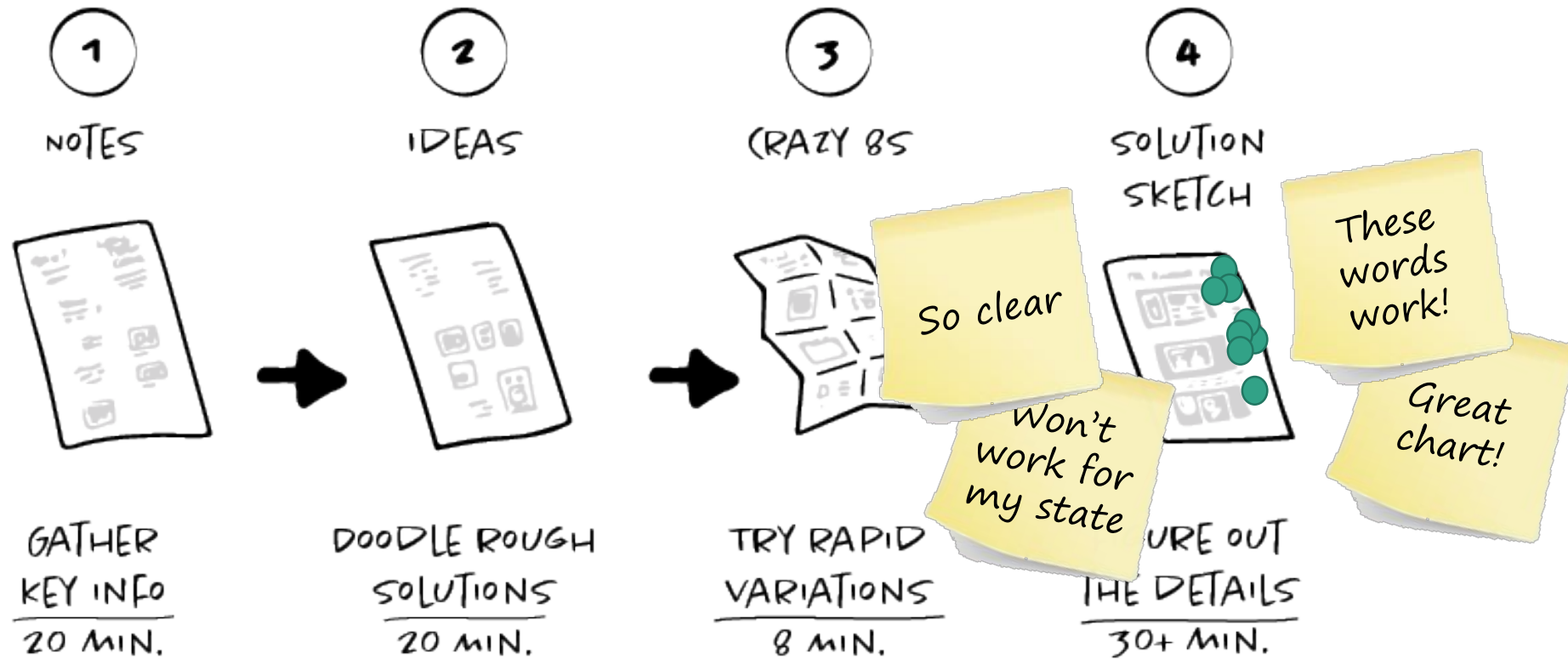


Before We Move On

- 👁️ We need 2-3 volunteers to stick around the homeroom – you'll stand in to explain your group's ideas
- 👁️ The rest of you all can filter to the other rooms to add dots and comment on other communication ideas
- 👁️ Grab 20 more dots for each room

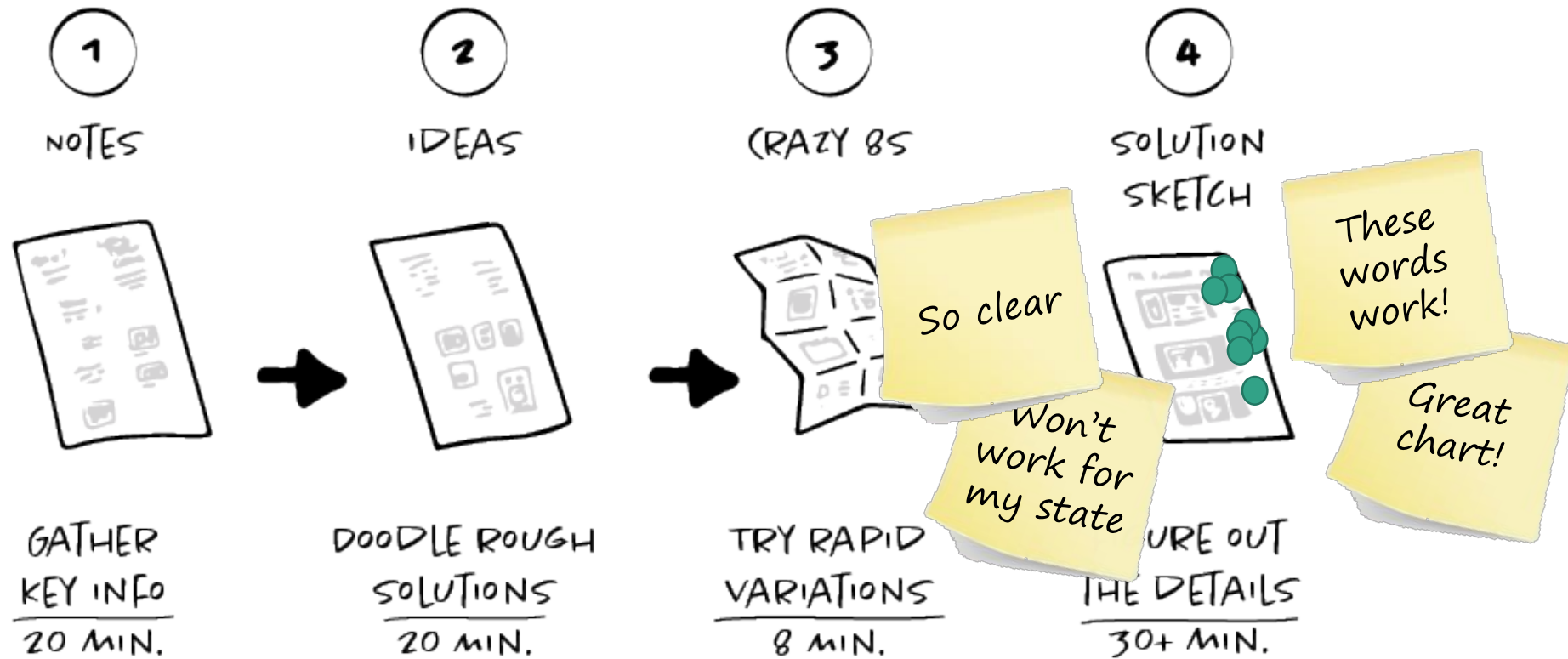
Heatmap, Comment, Explain, Respond

Other Room #1



Heatmap, Comment, Explain, Respond

Other Room #2





Storyboard

Rejoin Your Home Breakout Group

Lance Neumann, Cambridge Systematics

Julie Lorenz, Burns & McDonnell

Nathan Higgins, Cambridge Systematics

Before We Start

- 🌐 Work together
- 🌐 Pick an artist – you don't need to be good at it, just a good listener!
- 🌐 Draw a grid on the whiteboard
- 🌐 Synthesize the parts of the communication ideas that resonate into a multi-part story – sort of like a comic book
- 🌐 Choose a presenter – you will present the storyboard to the group later



State Bridges-Preservation Work in FFY 2017

Legend

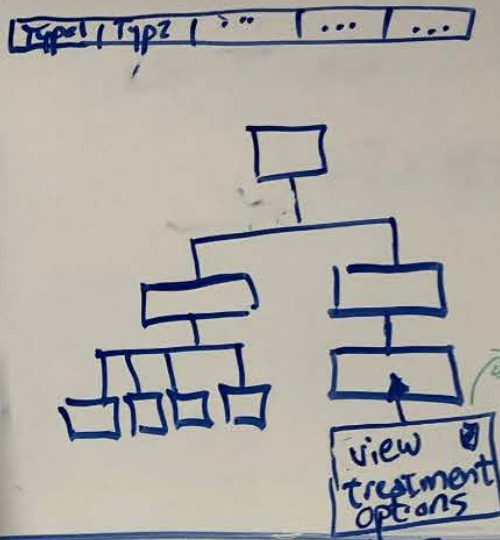
- Bridge Design Bureau Projects - 29
- ▲ Bridge Maintenance Bureau Projects - 8

State Bridges Preserving Preservation work in FFY 2017

BRIDGE DESIGN BUREAU	BRIDGE MAINTENANCE BUREAU
<ul style="list-style-type: none"> 1. BRIDGE DESIGN BUREAU PROJECTS 2. BRIDGE DESIGN BUREAU PROJECTS 3. BRIDGE DESIGN BUREAU PROJECTS 4. BRIDGE DESIGN BUREAU PROJECTS 5. BRIDGE DESIGN BUREAU PROJECTS 6. BRIDGE DESIGN BUREAU PROJECTS 7. BRIDGE DESIGN BUREAU PROJECTS 8. BRIDGE DESIGN BUREAU PROJECTS 9. BRIDGE DESIGN BUREAU PROJECTS 10. BRIDGE DESIGN BUREAU PROJECTS 11. BRIDGE DESIGN BUREAU PROJECTS 12. BRIDGE DESIGN BUREAU PROJECTS 13. BRIDGE DESIGN BUREAU PROJECTS 14. BRIDGE DESIGN BUREAU PROJECTS 15. BRIDGE DESIGN BUREAU PROJECTS 16. BRIDGE DESIGN BUREAU PROJECTS 17. BRIDGE DESIGN BUREAU PROJECTS 18. BRIDGE DESIGN BUREAU PROJECTS 19. BRIDGE DESIGN BUREAU PROJECTS 20. BRIDGE DESIGN BUREAU PROJECTS 21. BRIDGE DESIGN BUREAU PROJECTS 22. BRIDGE DESIGN BUREAU PROJECTS 23. BRIDGE DESIGN BUREAU PROJECTS 24. BRIDGE DESIGN BUREAU PROJECTS 25. BRIDGE DESIGN BUREAU PROJECTS 26. BRIDGE DESIGN BUREAU PROJECTS 27. BRIDGE DESIGN BUREAU PROJECTS 28. BRIDGE DESIGN BUREAU PROJECTS 29. BRIDGE DESIGN BUREAU PROJECTS 	<ul style="list-style-type: none"> 1. BRIDGE MAINTENANCE BUREAU PROJECTS 2. BRIDGE MAINTENANCE BUREAU PROJECTS 3. BRIDGE MAINTENANCE BUREAU PROJECTS 4. BRIDGE MAINTENANCE BUREAU PROJECTS 5. BRIDGE MAINTENANCE BUREAU PROJECTS 6. BRIDGE MAINTENANCE BUREAU PROJECTS 7. BRIDGE MAINTENANCE BUREAU PROJECTS 8. BRIDGE MAINTENANCE BUREAU PROJECTS

Minimap
Show full table w/ these attributes

Configure
Consider showing model builder



Optimize

Set optimize params
Cost unlimited
strategy package
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10...

optimal
option 2
option 3

2 year 4 6 8 10 12

View other options - Glass Box

Check for results

Opt
Set Opt
Cost
max
2
4
Br1
Br2
Br3
Br4

B	O	G
F	F	F
P	P	P

Validate

REB MEP
2 4 6 8 10

Add map
make map driven
map has
data &
information

Br

⊕ Add bridge

Save

Validate (instant)

Re-optimize once we get missed

Add work

Note: why?
...
Obrupt check
of field data

per bridge
cost benefit results

Benefit/cost per bridge

Publish

Finalize the list

Field Check form

PER
2 4 6 8 10
0 \$1m

Recy work pbn

TC Util Row

scope
schedule Year 6
Cost est. \$1.5mm

Report (Choose Scen)

Bentley

Graphs and Charts

15 Minute
Break

Return to the
Main Room

Present Storyboard

Lance Neumann, Cambridge Systematics

Julie Lorenz, Burns & McDonnell

Nathan Higgins, Cambridge Systematics



Performance Management Reporting

PEER EXCHANGE

Day 1

NCHRP 20-24(124)

Presented by:

Nathan Higgins, Cambridge Systematics

Lance Neumann, Cambridge Systematics

Julie Lorenz, Burns & McDonnell



Performance Management Reporting

PEER EXCHANGE

Day 2

Presented by:

Nathan Higgins, Cambridge Systematics


Lance Neumann, Cambridge Systematics

Julie Lorenz, Burns & McDonnell

Yesterday...

- 🌐 We had a great discussion of the State and Federal pavement performance measurement
- 🌐 States gave some strong, detailed examples of what they do, both here and in our survey
- 🌐 You developed some initial communication concepts

You still have more to do!

-  We'd like some additional thoughts on some key issues:
- Common purposes Federal/State pavement performance measures
 - Why the measures are different
 - The implications of Federal/State measures
 - **Others?**

Next Steps

- 👁️ 3 breakout groups to discuss all 3 issues
- 👁️ Reconvene to discuss NCHRP 20-24(124) deliverables

Deliverables

- 🌐 **Peer Exchange Documentation** | Key issues, sketches and storyboards, future research, and capacity building
- 🌐 **PowerPoint Presentation** | State and Federal perspectives
- 🌐 **Library of Resources (for discussion)** | Charts, maps, written word, website concept, and game concept
- 🌐 **Final Report and Executive Summary** | Wrapping in all of the above



Performance Management Reporting

PEER EXCHANGE

Thank You!

Presented by:

APPENDIX B: DOT Survey

Appendix B. DOT Survey Text



DOT Survey

August 17, 2018

Greetings!

Matt Hardy from AASHTO recently reached out to you by email to ask for your interest in participating in the NCHRP 20-14 Task 124 Performance Management Reporting Peer Exchange. Thank you to all who have responded – there clearly is a lot of energy around this topic!

As we prepare for the peer exchange, we are gathering examples of how you calculate pavement performance measures and how you communicate and report on the national-level performance measures in conjunction with state and local performance measures. We understand that these different measures may or may not be telling the same story.

We request:

- That you gather documents that you have on hand, including:
 - Documents that explain how you calculate your state pavement performance measure
 - Documents that communicate your state pavement performance and how it relates to Federal pavement performance
- That you respond to a handful of open-ended questions regarding your experience communicating pavement performance

We imagine that your subject matter experts in performance management, pavement management, and communications will be best suited to respond to the questions included below.

If you have any questions, please contact Nathan Higgins, the Principal Investigator, at nhiggins@camsys.com or Jillian Linnell, the Deputy Principal Investigator, at jlinnell@camsys.com.

We Would Like To Gather Your Examples

Technical Examples

Please send us documents that you have on hand that describe how you calculate your state-specific pavement performance measure. Below are some questions to consider as you gather your document(s); don't feel as though you need to respond to each item:

- *How often* do you collect your pavement data?
- Do you collect pavement data by *in-house staff or by contract?*
- On *how many lanes/directions* do you collect pavement data?
- On *what networks* do you collect pavement data (e.g., Interstates, certain categories of State roads, all State roads, locally-owned NHS...)?
- *What distresses and/or ride quality metrics* do you use to calculate pavement performance?
- *What formula(e)* do you use to create your pavement index (we would appreciate the actual equation if you have it)?

Communication Examples

Please send us any communication materials you have used to communicate pavement performance and, specifically, the difference between the Federal and state pavement performance measure. We are interested in charts, graphs, infographics, written narrative, presentations, websites, or any other media. Below are some questions to consider; don't feel as though you need to respond to each item:

- How have you or anyone in your agency described your state pavement performance or the difference between state and Federal pavement performance to the Legislature, your CEO, other engineers, or the general public?

This could include consideration of:

- Frequency and coverage (lanes/direction) of data collection
 - Networks measured (e.g., NHS, Interstate, non-state owned NHS)
 - Distresses and overall formula for calculating pavement index or other measures
- Did you receive feedback? What was the nature of the feedback?

We Also Have Some Communication Questions

What is the context for asset and pavement management in your state? Specifically, we are interested in the following questions (please respond in-line):

- Does the Federal measure make your pavement performance *appear worse or better?*
- Who is your most important audience - *legislators, engineers, or the public?*
- What *resonates most with your audience* – State performance measures vs. Federal performance measures; performance vs. neighboring states; or perceived effectiveness of the agency?
- What aspect of pavement performance *is the most difficult to communicate?*
- How do you *communicate targets* and the target setting process?
- *How do you communicate the decline in performance* if your targets represent a lower performance?
- What *concerns your agency most* approaching the October reporting deadline?

APPENDIX C: DOT Survey Results

Appendix C. State DOT Communication Examples (Survey Results)



DOT Survey Results

All survey results can be viewed using Airtable and accessed using the following link.

<https://airtable.com/shrUx7bXnTgUaefP5>

The screenshot shows an Airtable interface with a table titled 'NCHRP 20-24(124) Survey Results'. The table has columns for 'DOT', 'Attachments', 'How often do you collect pa...', 'Do you collect pavement...', 'On how many lanes/dire...', and 'On what networks do yo...'. The data rows correspond to the states listed in the text below.

DOT	Attachments	How often do you collect pa...	Do you collect pavement...	On how many lanes/dire...	On what networks do yo...
1 Arizona	[Attachments]	Annually collected by vendor	By contract starting 2017	Right lane, both directions for ADOT-owned system.	Approximately 15,000 miles in total (for 2017 data collection):
2 Florida	[Attachments]	Annually	In-house	We used to collect data on both directions for divided highways and only cardinal	-Both directions of ADOT-owned highway system
3 Kansas	[Attachments]	KDOT annually collects pavement surface condition data on the entire State Highway System. We collect the other locations (HPMS) with the northern half of the state in one year and the	KDOT collects pavement surface data in-house	Pavement data is collected in the outside lane in both directions for divided highways and collected in one direction for undivided roadways. The lane with the	All state roads are collected annually. NHS roads not on the state highway system are collected every two years.
4 Kentucky	[Attachments]	No response	No response	KDOT collects one lane and one direction on undivided routes. We have also moved to try to collect in inventory direction on NHS routes.	No response

APPENDIX D: Solution Sketch and Storyboard Exercise Results

Performance Management Reporting Peer Exchange

NCHRP 20-24(124)

SOLUTION SKETCH AND STORYBOARD EXERCISE RESULTS

Tuesday October 16 – Wednesday, October 17, 2018

The Hall of States
444 North Capitol Street
Washington, DC

Sponsored by
National Cooperative Highway Research Program

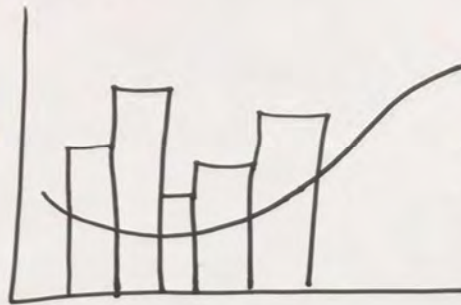
Prepared by
Cambridge Systematics, Inc.
Burns & McDonnell



SOLUTION SKETCH RESULTS

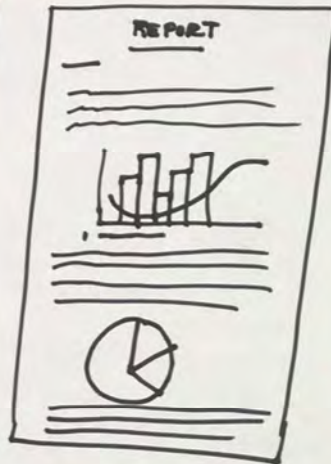
DATA VISUALIZATION PRESENTATION

VISUALIZE DATA



- * GENERALIZE DATA FOR ALL STAKE HOLDERS
- * MAKE DATA AVAILABLE / TRANSPARENT
- * → ELECTRONIC
- * → PRINT
- *

SUMMARY REPORT



- * MAKE AVAILABLE / TRANSPARENT
- * PROVIDE VISUAL EXPLANATION WITH DETAIL INFORMATION FOR SUPPORT

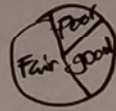
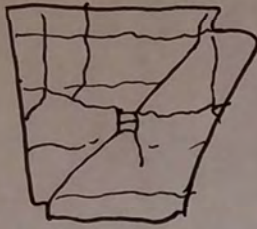
ROAD SHOW



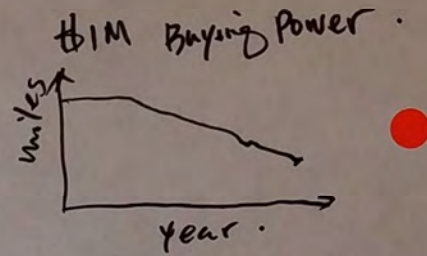
- * BE PROACTIVE ABOUT GETTING YOUR AGENCIES STORY INTO THE COMMUNITY
- * BUILD PERSONAL RELATIONSHIPS IN YOUR COMMUNITIES

Game of Performance Management

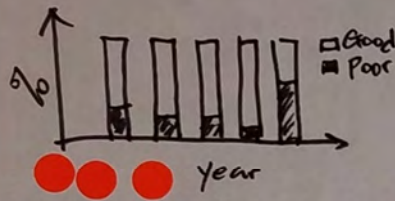
Executive briefing Book



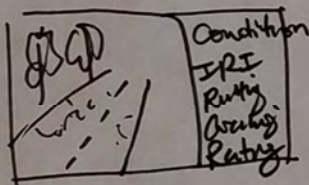
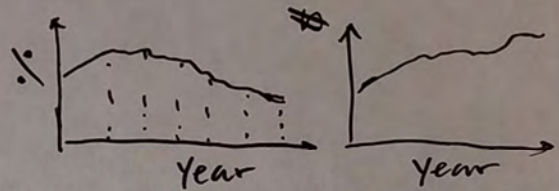
Presentation in a box.



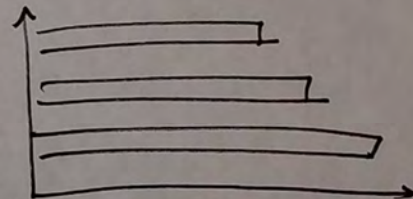
Dashboard



Annual Condition Report



state mileage

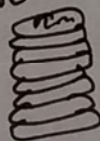


Interactive game

Roads

Br. gen

Condition
better
Worst

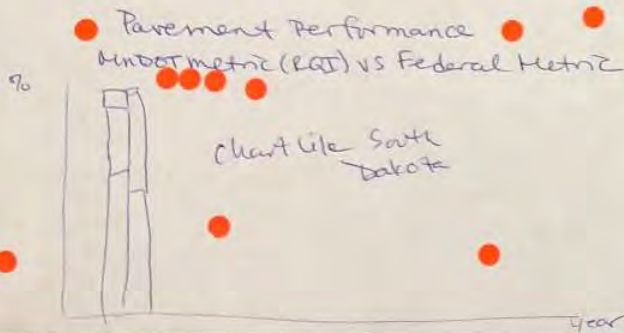


coins.

Good Enough Idea

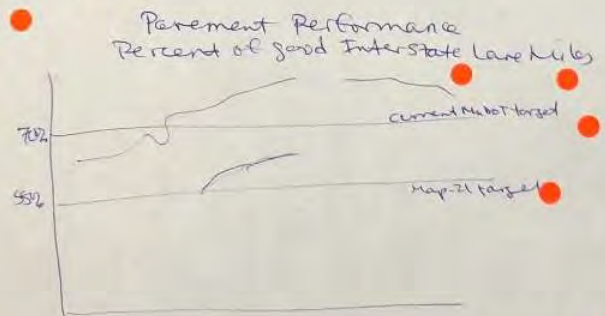
As part of MAP-21, the Federal Highway Administration requires state DOTs to report performance outcomes and set targets for pavement and bridge condition, as well as other non-asset performance areas.

- These federal measures do not match MnDOT's measures in some cases. The measure for pavement condition are substantially technically different, such that the differences need to be outlined. Federal targets are also different. Federal targets are set for two and four year outcomes whereas MnDOT targets apply regardless of year.
- MnDOT's pavement measure is ride quality index, whereas the federal measure also includes cracking, rutting and faulting. The federal measure is more complex, ~~but~~ and gives different results for the same pavement.



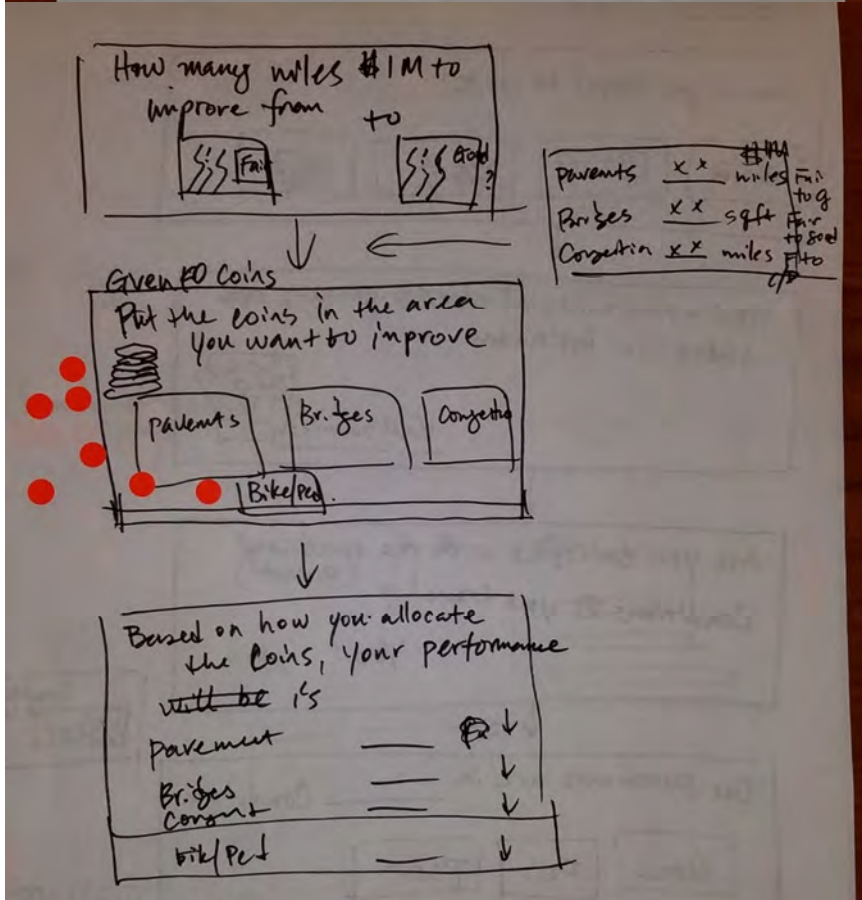
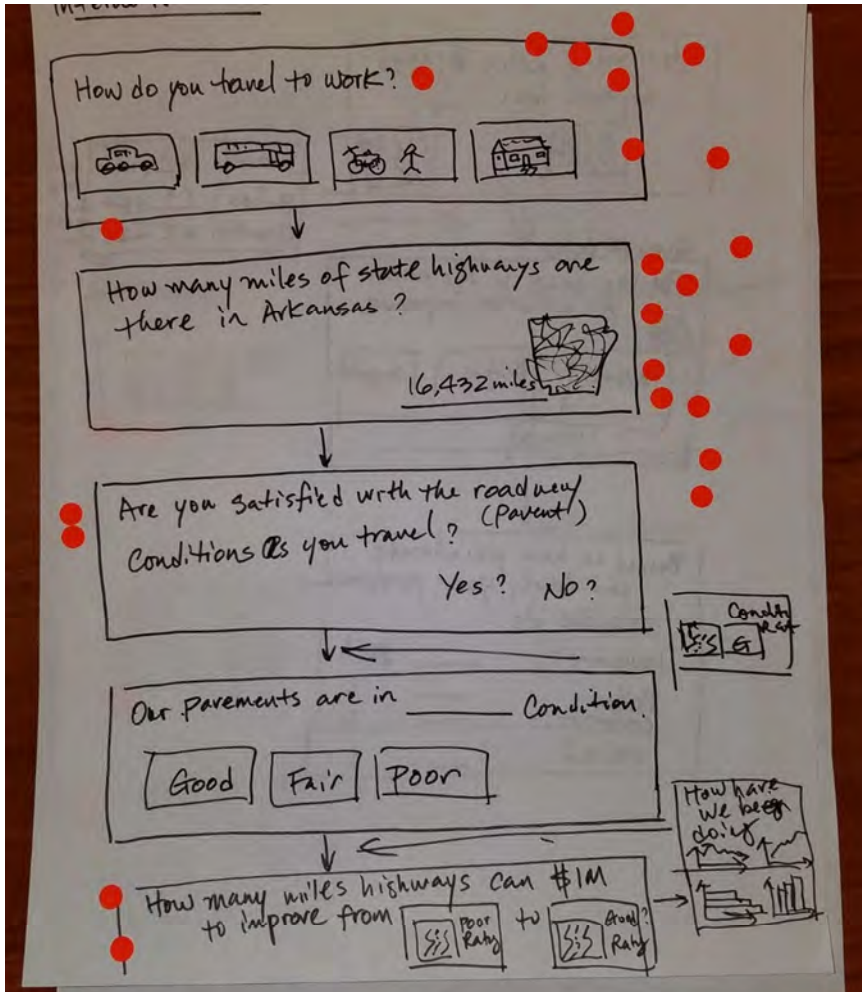
The chart shows that the federal metric results in a lower % of poor and good roads, and a larger percentage of fair.

- ~~Current~~ Targets for MnDOT and the federal measure are also different. Federal targets are based on 2 and 4 year expected outcomes from programmed investments. MnDOT's targets are longer term and ~~represent~~ are used to communicate a desired outcome and identify investment needs.
- MnDOT cannot project the federal measure, so for ~~short term~~ federal short term ^{expected} targets, must rely on the trend of our historic measure



- MnDOT will report federal targets, ^{outcomes and}
- but continue to use RQI and our pavement model for investment decision making.

Interactive Game



Keep it Separate, Fed vs. State

Keep it
Separate
Fed vs. State

1. Explain the difference of purpose -
- Fed vs State

2. Explain at high level - ~~how~~ ^{how} it's different

3. Explain how used for Investment Decision
longer State

4. Explain Results - High level -
Fed metrics State metrics

- 2 metrics - 2 purposes - limit direct comparison

Fed

- Purpose - show improvement in the NHS
- Appropriate to show progress towards national goals
- National system performance?
- Fed invest direct decisions - link performance to ^{value} reward
- Explain what part would be at
- Benchmarking is a hybrid of different systems
- Explain point
- Benchmarking - funding decisions - lessons learned - it so - via what available?
- Shift focus from strategy to national system as a whole

State (VA)

- VA is what 192 state - targets (in theory) set min thresholds to meet before going to court
- Purpose - measure performance work on
- Fair or better - focus on overall network health - E.O.S
- Investment decisions - how much & should be spent on individual systems to meet min standards

Keep comparison simple - talking to

	Fed	State
coverage	16% of National NHS	measure full system
metric	EBS (new) success	spend / distance (border success)
target	looks only at ends of the range good vs poor	fair or better - (read a book)

Comp matrix (cont)

	Fed	State
what is good	45% or more	40% fair or better
what is poor	10% or less	

Percent of system

	Fed metrics		State metrics	
	End	total	End	total
Excellent	15	15	10	10
Good	45	60	40	60
Fair	25	95	35	95
Mediocre				
Poor	15	100	5	100

Medium-Agnostic, Multi-Media Strategy

1. FRAMEWORK

BASIC PREMISE



We the people all want good roads ... but we have a problem!

THE PROBLEM:

"GOOD" means different things to different people!

TO COMMUNICATE ...

- Keep it simple (stupid!)
- Use commonplace analogies
- To influence actions: influence perceptions to influence feelings to influence reactions to influence decisions.

ACL

2. APPROACH (EXAMPLE)

ANALOGIES → COMPARISONS → ACTIONS

▷ Who is "tall"?



- Tall enough for the roller coaster?
- Too tall to be comfortable in an airline coach seat?

▷ What is "rough"?

skin	sandpaper	road
dishpan hands	coarse	interstate
baby's bottom	fine	gravel
↓	↓	↓
gloves	shaping	speed
bottom	finishing	ride

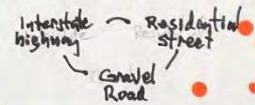
ACL

3. MESSAGE STRATEGY

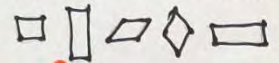
- AGREE ON SIMPLE ANALOGIES



- AGREE ON UNIVERSAL EXAMPLES



- RELY ON EACH AGENCY TO MAKE THE LOCAL INTERPRETATION



ACL

State vs. Federal Measures

Tools to achieve strategic direction
Ability to demonstrate need for and impacts of funding levels.

Purpose is to show understanding NYS on a very high level.
To understand impacts of investment.

Considerations

- States will have different levels of experience with asset and performance management.
- By meeting state goals, will states meet Federal goals.
- History and ability to project.
- Manage vs. Reporting

①

Right sized workforce (state / consultants / contractors)

Use performance management to tell your story

Drive decisions

Support stable funding

③

Use data to show need for investment and the benefit of investment. (Your story)

Consistent message across all audiences

Transparency

Public facing dashboard w/ ability to drill down into data

Confidence in agency - they will invest where needed and demonstrate expected results.

②

Strategically use terms: High volume / low volume

Our Shared Story

① Our Goal

- Transportation departments at federal, state and local levels all share the same goal: delivering an efficient, effective and safe transportation system for you.

② Power in Data

To assess our progress toward that shared goal, we measure our roadways and bridges. Recently, the federal government established a national standard to evaluate system pavement conditions across the country.

- The common measures are used to contribute to a view of the overall health of the national transportation system. These new measures are different from how our state has assessed the system in the past. In some places the measure may look better - in others worse.

③ State Flexibility

- From a national perspective, getting pavement data collected in the same way from each state is the only way to get a complete system picture of the condition of our system.

The federal government is interested in making progress toward a national goal - each state is responsible for contributing to that progress in a way that serves our citizens.

Even though the national goal is the same, the means and funding decisions may differ state-to-state.

④ Delivering on our Promise

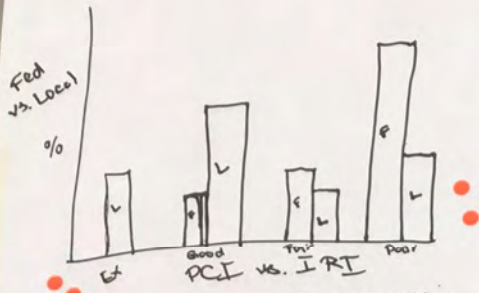
- (A) We know better data will yield better decisions. As we have for decades, we will continue to collect data across our system to help us make the right investments for the future of our state.

Along with our local partners we will work with our federal partners to provide them the information they need, while delivering on our promise to our citizens to use their tax dollars in a wise and effective way, now and in the future.

PALOOZA

1

Graph



- PCI - is a better indication of the condition in an urban areas
- IRI - is not suitable in urban areas as an indication of condition

2

Photos of ^{of Press} conditions - ^{confirm} pot hole - ^{Palooza}

Before & After - PIX

EXPLAIN Strategy/Analogies (like roof)

1/2 investment

Photo of Finished product

3

Pro Active

Info graphics on results - Social

Keytimes - ASCO reports etc.



Roads treated

Dollars invested

Planned projects

Compare to other national measures.

CAFE, ENERGY STAR

- Purpose, limitations

- Transition History from initial development of these other measures

Pavement Health

- IRI
- Rutting
- Cracking

Data (how many, how define)

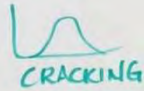
52 state Avg Feet % G, F, P
My state % G, F, P



Why the difference

- State historical data
- combine metrics differently IRI, rutting, cracking
- traffic volumes segment
- predictive model - lengths > 0.1 mi
- life cycle approach Cor Service Manual
- Climate

report card
A
B
C
D



How We Use State Measure

- Investment Strategy
 - Economic Vitality
 - Accessibility
 - Opportunity
- Optimization
- Network
 - Project Specific

would like "how to use national measure"

TOM VAN

① Our

State

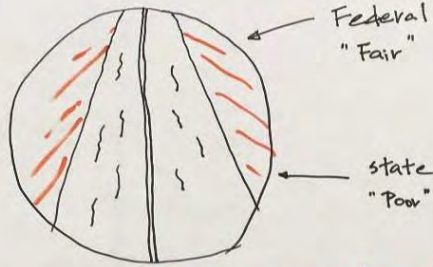
Measure

is

(PURPOSE & DEFINITION)

↳ data
↳ calculations

③



Same story, different scale/indicator

② The Federal/National

Measure

is

(PURPOSE & DEFINITION)

↳ data
↳ calculations

④ Conclusion from measures

Our

Pavements

are . . .

- good
- poor
- improving
- need improvements
- other

⑤ This is what we'll be doing to address measures . . .

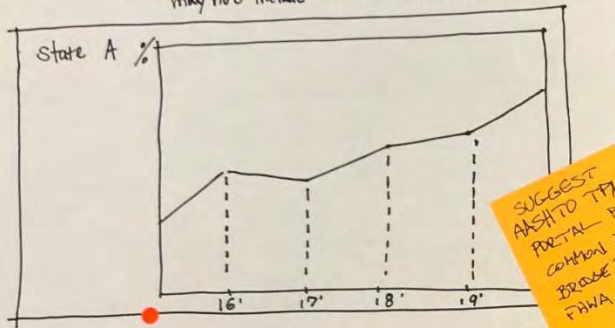
- more funding
- less funding
- different use of funding
- preservation vs. other activities
- maintenance
- capacity projects

Two Sides

1. On FHWA pavement perf website,

TPM Pavement Perf Portal

* Please note: States may have other pavement perf measures and their pavement investment decision may or may not include this federal perf measure.



SUGGEST ASKING TO TPM PORTAL PROVIDES COMMON FRAMEWORK BRIDGE BETWEEN FHWA + STATES

2. on State DOT website,

Pavement Perf Dashboard

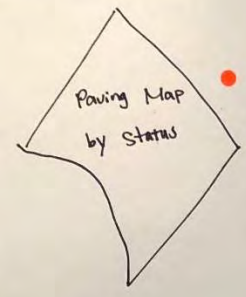


- filter
 - federal measure
 - state measure
- narratives about measure
- we use state measures for paving work scoring.

3. on State DOT website

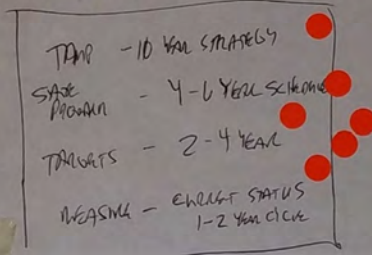
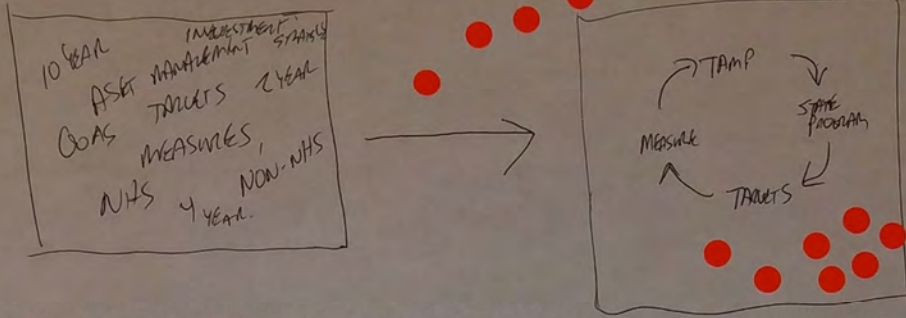
FY XX Paving Plan

	Under Const.
X ₁ Completed	1. _____
X ₂ Sub. Completed	2. _____
X ₃ under const.	3. _____
X ₄ planned	4. _____
	5. _____
	6. _____
	7. _____

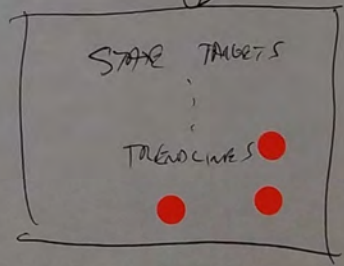
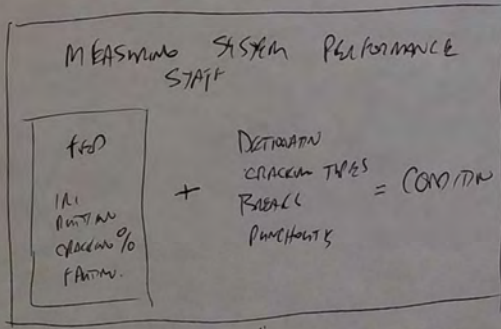
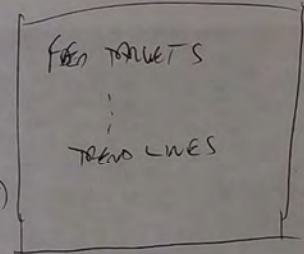
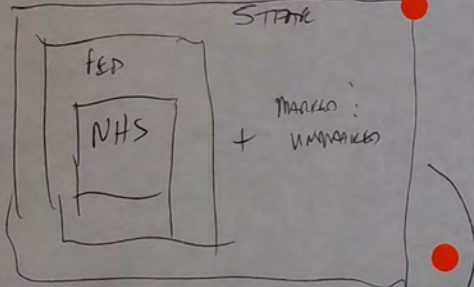


Unnamed 1

WORLD VIEW OF PM TEAMS



SUMMARY SYSTEM PERSPECTIVE



① Pavement Matters

people travel x miles per year / #trips to moon

② \$ billion
 move on our highways per year

③ How well does our pavement work?
 nationally?
 In Kansas?

④ We don't know
 nationally - but need to know to make wise investments

⑤ We need 1 way to measure how our pavement works (50 states/50 ways)

1 set of books for Congress

⑥ National system
 national performance - target
 KS performance - target national - target historic (for a while)

⑦ So what?
 → insert nat'l message
 → insert state message

⑧ Better highways
 smoother, safer, faster
 across the country
 better customer experience language

Figure out the folks your targeting
Make a list

TRIP
TTI
ETC



Do your homework:
- Specific reports that are relevant to this conversation
- What's below the line for them

- Take advantage of relationships - ~~but~~ gather contacts

Strategize on the best way to tell your story

Ed boards
graphics, data capture



What are your goals?

Start tailoring your message to the groups - core messages same



Develop a timeline

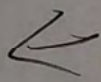


Develop materials that will support your story:

Ed boards



Execute



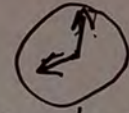
Make sure you have buy-in from whoever (leadership)



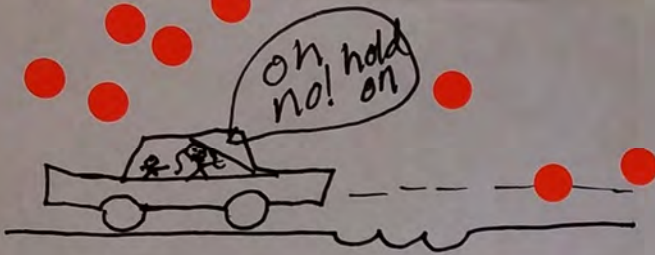
What does pavement performance mean to me? That I'm not driving thru a bunch of potholes on my way to pick up my kids.

Why should I care?

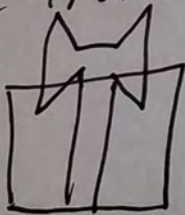
expect or K on time.



I have time for coffee



my package is here from Amazon.



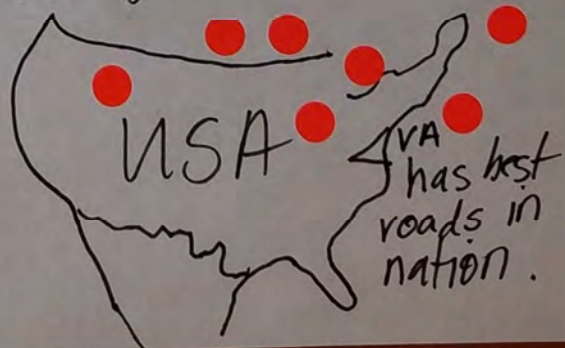
MAXIMIZE return on investments



Jobs created men at work



Bragging rights % good roads



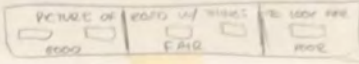
ROAD CONDITIONS

What things fig? how do we measure our performance?

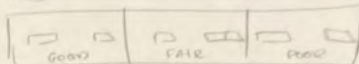
Several ways to measure road performance based on things like potholes, roughness, cracking, rutting and faulting.

ROUGHNESS

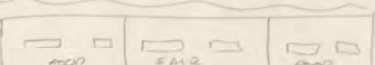
Roughness is measured with the International Roughness Index



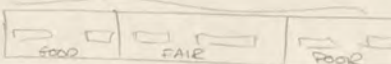
CRACKING



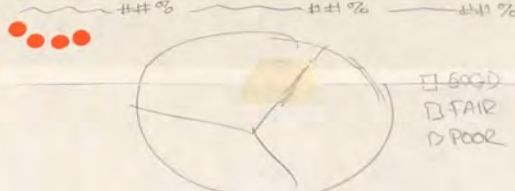
RUTTING



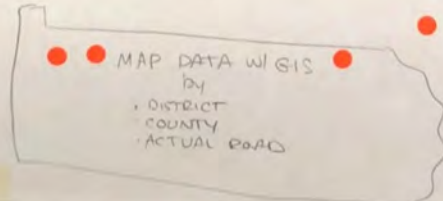
FAULTING



So, how do we rate?

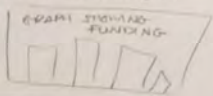


Check your roads.



OK, what do we do with these measurements?

PennDOT uses these metrics to aid in the allocation of funds.



What does this mean for the future?

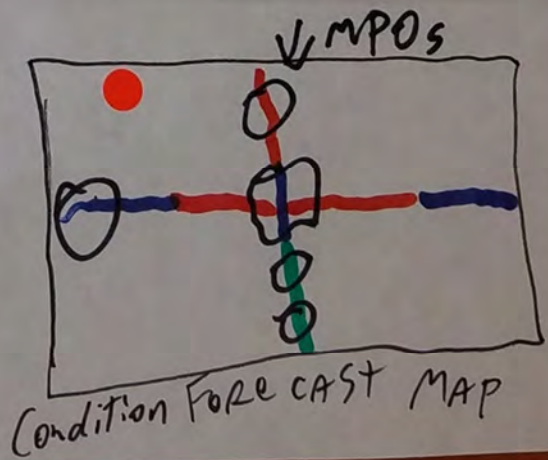
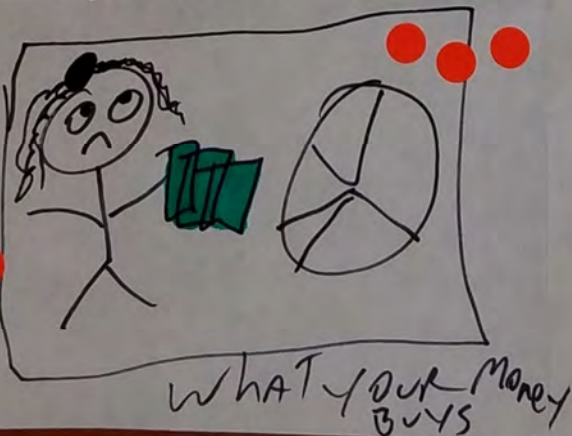
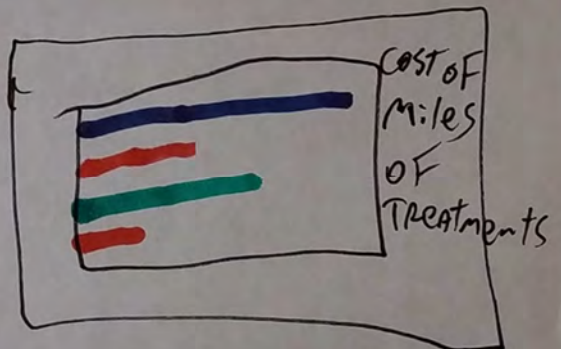
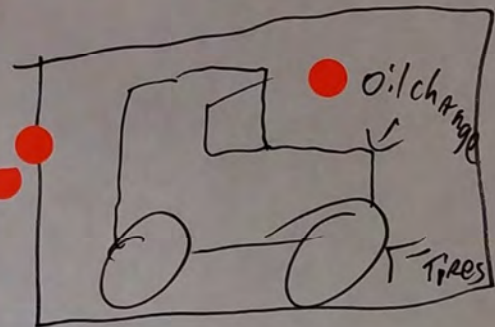
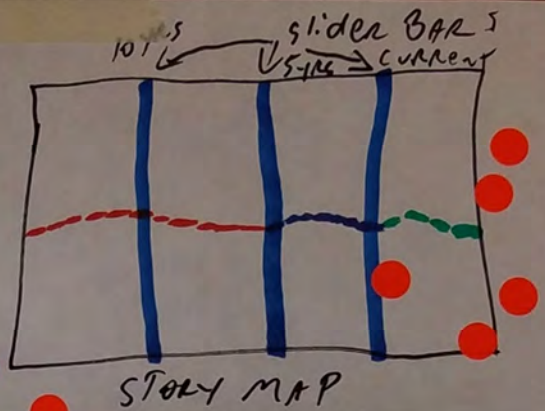
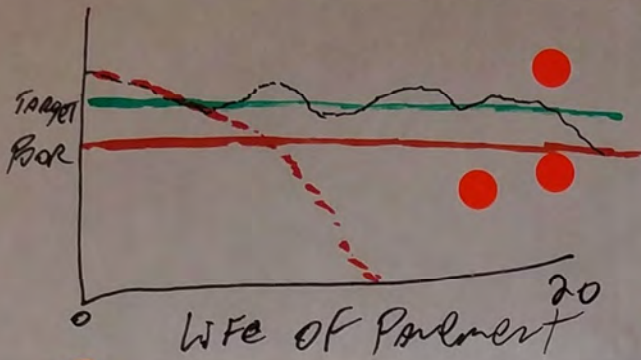
Unfortunately, it doesn't always change with funding. PennDOT may not be able to keep up with the necessary maintenance.

Some kind of analytical graphs showing deterioration over time probably has that w/ map

How has PennDOT is working to prevent that?

So road index depends on what these categories mean? What?

Williams Trans20 Story





STORYBOARD EXERCISE RESULTS

GREEN GROUP

			<p>Accountability You Care & We Care How're we doing?</p>	
<p>Performance Management Infra. Health</p>	<p>We use Performance measures</p>	<p>How would you manage it? <u>click Here</u></p> <p>To play a game of performance management.</p>	<p>Rules of the game</p> <p>Good Fair Poor </p>	<p>Harmonization</p>
<p>Performance (target)</p>	<p>Strategies to achieve desired Performance</p>	<p>Achieve PM Need \$ - limited \$ allocate</p>	<p>National outcome performance based on your coin allocation</p> <p>Compare to our current cond.</p>	

PURPLE GROUP

www.usdot.fhwa.gov

AK	▬	⊕
AR	▬	⊕
ME	▬	⊕
WV	▬	⊕
CA	▬	⊕
MN	▬	⊕
DC	▬	⊕

REASON FOUNDATION REPORT ON PAVEMENT CONDITION

MN pavement better than they say!

www.aashto.bend.com

state | MN ⊕

Similar States

Wisconsin	} Cold Climate
N. Dakota	
S. Dakota	
Iowa	
Tennessee	} manage same system size
Louisiana	

REPORTER

why is pavement better?

2 sites (benchmark)

② state site

www.mndot.p3pp.gov

- Safety & Security ⊕
- System Stewardship ⊕
- Economic Dev. ⊕
- Critical Connections ⊕
- Healthy Communities ⊕

www.fhwa.gov

Performance Based Planning | Pavement

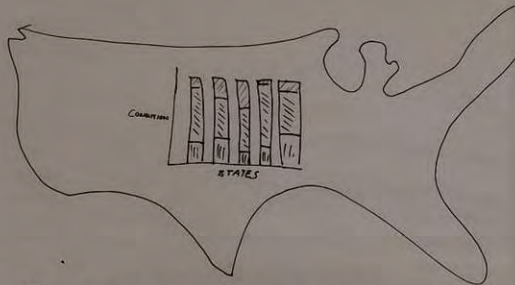
- we've been doing this for decades. It's the right thing. It's been beneficial.
- New Federal rule

Learn more ⊕

Pavement	Performance
State	Federal
	System
	Measure

BLUE GROUP

WHAT IS THE PURPOSE
A.K. OF THE FEDERAL MEASURE?



PERFORMANCE BASED
MANAGEMENT STRATEGY
FOR
CONGRESS

WHAT IS THE PURPOSE OF THE
FEDERAL MEASURES?

1. MONITOR PAVEMENT CONDITION ACROSS ALL 50 STATES
2. GUIDE RESOURCE ALLOCATION
3. COMMUNICATE TO STAKE HOLDERS

WHAT IS THE PURPOSE OF
THE STATES' MEASURE(S)?

1. MONITOR PAVEMENT CONDITION
2. GUIDE INVESTMENT DECISIONS
3. COMMUNICATE TO STAKEHOLDERS (TRANSPARENCY)
- ~~4. SET PERFORMANCE GOALS~~
5. SET DESIRED OUTCOME
5. MAKE OBJECTIVE, DATA-DRIVEN DECISIONS
6. DETERMINE APPROPRIATE TREATMENTS

FEDERAL AND STATE
Differences

LEVEL OF DETAIL

1. FEDERAL - ANALYSIS OCCURS AT A HIGH, GEOGRAPHICALLY LARGE SCALE (NHS)
2. STATE - ANALYSIS OCCURS AT A MORE DETAILED LEVEL FOR THE ENTIRE STATE SYSTEM (NHS, SECONDARY, LOCAL)

RESOURCE ALLOCATION

1. FEDERAL - PROVIDE INDICATION OF ADEQUACY OF RESOURCES ~~PROVIDE TO NHS~~ ALLOCATED
2. STATE - MAKE DETAILED INVESTMENT DECISION ACROSS MANY PROGRAMS