

Using Data to Improve Traffic Incident Management

http://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/timdata.cfm

In this table, the EDC-4 implementation stages have been mapped to established TIM Performance Measurement Institutionalization levels (which are based on the annual TIM Self-Assessment). There are various approaches to this innovation (see page 4 for examples). The EDC-4 team can help to tailor a specific approach based on each state’s current level and individual capabilities and needs.

<p style="text-align: center;">Innovation Implementation Stage Definitions</p>	<p style="text-align: center;">Prompt Questions for Describing the Implementation Stage</p> <p>The following questions are intended to help you determine your current implementation stage. While it is not mandatory to respond to each question, providing some narrative describing your current status will be helpful to the EDC teams.</p>
<p>Not Implementing: The State is not currently using the innovation (TIM) anywhere in the State and is not interested in the innovation.</p>	<ul style="list-style-type: none"> • Is the state not implementing because: <ul style="list-style-type: none"> ○ State does not see the value of this innovation? ○ State does not have the resources to implement? ○ State is not ready because of technology constraints? ○ State has already evaluated TIM and decided it was not for them?
<p>Development Stage: The state is interested in pursuing the <i>Using Data to Improve TIM</i> innovation or seeking additional information on how to implement it.</p> <p>TIM PM Institutionalization Level 1:</p> <ul style="list-style-type: none"> • Limited incident data is collected or available for analysis. • Some data may be available through existing systems, but it cannot readily be accessed or used for TIM performance analysis. • Consequently, none of the three standard TIM performance measures (roadway clearance time, incident clearance time and number of secondary crashes) is typically collected/ reported. • TIM partners have not been engaged in TIM performance discussions. 	<ul style="list-style-type: none"> • Has the state performed any of the following activities for the purposes of improving/enhancing TIM data collection, analysis, or reporting: <ul style="list-style-type: none"> ✓ Reviewed TIM performance measures, definitions, and data requirements?¹ ✓ Collected/reviewed guidance and/or best practices?¹ ○ Implemented/hosted training on TIM data collection? ○ Investigated TIM data collection/analysis opportunities/tools? ✓ Participated in peer-to-peer workshops? ○ Requested technical assistance? ○ Pursued and/or developed a process/plan for implementing tools/techniques/processes for improving TIM data (e.g., electronic crash reports, integrated CAD, TMC software modification, training, peer exchanges, technical assistance)?
<p>Demonstration Stage: The state is testing/piloting an innovation that helps accelerate/improve TIM data collection, analysis, or adoption of TIM performance measures.</p> <p>TIM PM Institutionalization Level 2:</p> <ul style="list-style-type: none"> • TIM data is available but only as a bi-product of existing/separate data collection efforts (e.g., fields taken from the crash report, computer-aided dispatch (CAD), or TMC reports). • There is little to no focus on TIM performance at the data collection stage. • Sufficient data are not readily available for effective TIM performance analyses (not the right data elements, systems old and/or not consistent/compatible for data sharing/integration, etc.). • One or more of the TIM performance measures is collected but may vary from the standard definitions. • TIM partners may or may not have been engaged in TIM performance discussions and/or data collection. 	<ul style="list-style-type: none"> • Has the state performed any of the following activities: <ul style="list-style-type: none"> ○ Identified and assessed what data are available, from what sources, and in what format?¹ ○ Identified the tools/strategies to be tested/piloted to collect and/or integrate data with a focus on TIM performance? ○ Requested technical assistance? ○ Participated in technical site visits and/or training regarding data collection/analysis tools/technologies? ○ Tested/piloted/implemented any tools/techniques for improving/enhancing TIM data collection/analysis or the adoption of TIM performance measures? ○ Established data management strategies? ○ Engaged expertise beyond internal skills/capabilities? ○ Developed an action plan for expanding collection of the TIM performance measures beyond the pilot?

<p>Assessment Stage: The state is beyond testing/piloting an innovation that helps accelerate/improve TIM data collection, analysis, or adoption of TIM performance measures. The state is assessing the performance and the process for carrying out the innovation and/or making adjustments to prepare for full deployment.</p> <p>TIM PM Institutionalization Level 3:</p> <ul style="list-style-type: none"> • Strong data collection systems are in-place, but they are typically agency-specific, which can limit the coverage of incidents (e.g., TMC data only). • There is a focus on TIM performance at the data collection stage. • Limited or some data integration. • Two or more of the standard TIM performance measures are consistently collected, but may not always be analyzed or reported. • TIM partners have been engaged in TIM performance discussions, data collection, and analysis/results. 	<ul style="list-style-type: none"> • Has the state performed any of the following activities: <ul style="list-style-type: none"> ○ Reviewed and analyzed data to ensure accuracy? ○ Developed an approach to collect all three standard TIM performance measures? ○ Developed an approach to expand the coverage of data collection (e.g., add law enforcement, integrate with CAD)? ○ Identified data analysis limitations? ○ Discussed/documentated the expansion of analysis capabilities? ○ Trained appropriate staff on data analysis, reporting, and visualization? ○ Discussed/documentated actions to move to the institutionalization stage? ○ Established or engaged a multi-disciplinary TIM team/committee to support improved data/performance analysis?
<p>Institutionalized: The <i>Using Data to Improve TIM</i> innovation is adopted by the state’s transportation and/or TIM community and used regularly to report the performance of the TIM program and activities.</p> <p>TIM PM Institutionalization Level 4:</p> <ul style="list-style-type: none"> • Robust data collection systems are in place. • Some data integration may be in place (e.g., TMC ATMS integrated with law enforcement CAD, crash reports, and/or safety service patrol logs, etc.) • Automated reporting capabilities may be in place. • All three standard TIM performance measures are routinely measured and reported. • TIM partners are fully engaged in TIM performance discussions, data collection, analysis, and results on a regular basis. • TIM performance data and results are routinely shared internally and externally, tied to region-wide outcomes, and used to improve the TIM program and activities. 	<ul style="list-style-type: none"> • Has the state performed any of the following activities: <ul style="list-style-type: none"> ○ Explored new tools/technologies/techniques that could further expand/enhance TIM data collection, analysis, and visualization? ○ Shared data/results internally with technical managers on a regular basis? ○ Shared data/results with executive staff on a regular basis? ○ Shared data/results externally with stakeholders and decision-makers on a regular basis? ○ Used results or feedback to inform improvements to TIM procedures and policies? ○ Developed a plan that outlines how data/performance measures will be tied to system or region-wide outcomes such as travel time reliability or congestion/delay? ○ Developed an approach that specifies how data will be used for the monetization of TIM benefits?

¹**Available Resources** (all resources will soon be available for download from the *TIM PM* tool website - nchrptimpm.timnetwork.org):

- Guidance for Implementation of TIM Performance Measurement (from NCHRP 07-20). Consists of two resources:
 - Online *TIM PM* tool
 - Written guidance
- Process for Establishing, Implementing, and Institutionalizing a TIM Performance Measures Program
- Check list of TIM performance measures data elements (33 standardized data elements)
- TIM PM outreach document
- TIM PM brochure: *Making the Case for TIM Performance Measurement*
- TIM PM technical briefing
- TIM PM database schema

Progress Report Questions:

Reporting Period:	Progress Report #2: July – December 2017
1) If there has been NO CHANGE on this innovation during this reporting period and the previous Progress Report is still accurate, select "No Change from Progress Report" and you do not need to complete Questions 2-7.	(Choice) <input type="checkbox"/> No Change from Progress Report <input checked="" type="checkbox"/> Changes indicated in Progress Report Below
2) Division Contact for additional information:	Charles Remkes – NMDOT-ITS Ops 505 490-3308 Marilyn Ochoa – FHWA-NM 505 820 2038
3) What is the State's current stage of innovation implementation? Review the Innovation Profile Template and select the appropriate implementation stage for this innovation.	(Choice) <input type="checkbox"/> Not Implementing <input checked="" type="checkbox"/> Development Stage <input type="checkbox"/> Demonstration Stage <input type="checkbox"/> Assessment Stage <input type="checkbox"/> Institutionalized
4) Describe the State's accomplishments for this reporting period (both State DOT and local agency accomplishments). Please provide EDC-4 highlights with good "so what" nuggets. -- What would another state be interested in and/or how could leadership use the information I am providing? -- If the State has advanced to the next implementation stage, consider the prompt questions in the chart and explain the advancements made to support your selection. -- Please include benefits as part of your explanation (i.e. time/cost savings, delay/crash reductions, etc.)	<i>Participated in a Peer Exchange with AZDOT, that included folks from Minnesota DOT</i>
5) Describe any additional assistance needed by your state.	<i>(open discussion)</i>
6) Describe any implementation obstacles or lessons learned. Also, indicate if and how your state can provide assistance to others in their implementation of this innovation.	<i>Pursuing having additional fields added to the crash reporting system (TRACs) to capture 'roadway opening time', 'incident clearance time' and 'secondary crashes' to establish baselines. This will require the consensus of all reporting agencies.</i>
7) The responses have been coordinated with the necessary transportation agencies and Division Office technical resource.	(Choice) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Possible Innovations/Demonstrations

- Develop or modify existing data collection tools/techniques to collect TIM performance measures:
 - Modify existing TMC software (e.g., adding secondary crash check box and training operators to use it).
 - Incorporate TIM performance measures into existing electronic crash reporting software.
- Implement training to improve quality/quantity of data collected:
 - Train TMC operations on TIM performance data elements and definitions.
 - Train troopers to collect the TIM performance data elements, particularly through an electronic crash reporting system.
- Implement use of smart devices and/or mobile apps to improve data collection.
- Push, publish, and/or integrate data into the TIM PM standard database.
- Demonstrate use crowd sourcing data, such as Waze, for TIM data collection/performance analysis.
- Develop automated data collection and/or reporting capabilities.
- Implement integrated CAD system.

Possible Assessment Activities

- Analyze data in standard database to show TIM performance.
- Analyze data to identify secondary crashes (as opposed to collecting them).
- Analyze data to determine user costs associated with traffic incidents.
- Assess ability of crowd sourcing data, such as Waze, to provide the data elements for TIM performance analysis.
- Assess improvement in data after implementation of training, process changes, or new technology (e.g., integrated CAD).
- Use data to conduct before-and-after assessment of TIM project/policy/procedure.