

# MEASURE TO MANAGE: PERFORMANCE METRICS FOR TRANSPORTATION

America has reached a profound inflection point in our transportation history. Where the 20th Century was characterized by the imperative to build roads and transportation infrastructure, in the 21<sup>st</sup> Century, enabled by advanced transportation technologies and enhanced capabilities in data generation, collection and analysis, we now focus on improving the performance of those systems.

The responsibility for achieving performance falls on the roughly 266 traffic management centers (TMCs) and Traffic Operations Centers (TOCs) across the United States who monitor and manage the efficient operation, safety, and health of major metropolitan and regional transportation networks and corridors. Following Edward Deming's famous dictum that "you can't manage what you can't measure" the U.S. Department of transportation established performance measurement requirements under MAP-21 and the FAST Act. But did the FAST Act get it right? What are the right performance measures for transportation systems?

We studied diverse set of eight regional TMCs and six state Departments of Transportation across the U.S. to discern state-of-the-art operational activities and best practices that we recognized to be among the most effective and efficient ways to monitor, measure and manage transportation performance. We found that there are seven monitoring and management activities at the heart of performance measurement best practices.

Traffic	Quantity, characteristics and movement of the vehicles using the transportation system
Incidents	Quantity, nature and response to unplanned events that disrupt traffic flow and cause injury or death
Work Zones	Quantity, nature and impact of planned activities that disrupt traffic flow and increase incident risk
Weather	Degree and impact of weather events on traffic and road conditions to determine response needed
Systems	Performance of the devices, hardware, software, connectivity and tools that comprise the system
Infrastructure Condition	Quality of roads and bridges for purposes of upkeep and maintenance and to inform the budget process
Environmental Sustainability	Impact of vehicular emissions on air quality and the environmental impact of road construction

These are the seven areas in which TMCs / TOCs should invest time, attention and resources to measuring and monitoring in order to correspondingly manage transportation system performance. The ability to achieve desired outcomes, such as improved safety, traffic congestion and flow, system reliability, freight movement or other outcomes, all emanate from efforts to measure, monitor and manage performance in these seven areas.