



ARC Transportation Access & Mobility Interactive Maps

Visualizing Transportation Performance Measures

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Agenda

- ▮ The necessity of creating performance measure webpage
- ▮ Data
- ▮ MPOs websites
- ▮ Software
- ▮ Website / Webpage (structure & content)

The necessity of creating performance measure webpage

- Federal Performance-Based Planning (PBP) is a strategic approach to set goals, measure progress, and make informed decisions based on performance data.
- Transportation Performance Measure & Target is a metric to evaluate the performance of transportation systems at the federal level.
- Three measures mandated by the Federal Highway Administration (FHWA)
 - Safety
 - Asset Management
 - System Performance
- Two measures mandated by the Federal Transit Administration (FTA)
 - Transit Safety
 - Transit Asset Management

Performance Measures & Targets Data

PM1, Highway Safety, mandated by FHWA in 2016

1. Number of fatalities;
2. Rate of fatalities per 100 million vehicle miles traveled;
3. Number of serious injuries;
4. Rate of serious injuries per 100 million vehicle miles traveled; and
5. Number of combined non-motorized fatalities and non-motorized serious injuries.

PM2, Asset Management, mandated by FHWA in 2017

1. Percent of Interstate pavements in good condition;
2. Percent of Interstate pavements in poor condition;
3. Percent of non-Interstate National Highway System (NHS) pavements in good condition;
4. Percent of non-Interstate NHS pavements in poor condition;
5. Percent of NHS bridges by deck area classified as in good condition;
6. Percent of NHS bridges by deck area classified as in poor condition.

Performance Measures & Targets Data

PM3, mandated by FHWA in 2017, National Highway System, Freight Movement on the Interstate system, and the Congestion Mitigation & Air Quality Improvement (CMAQ) Program

National Highway System Performance

1. Percent of person-miles on the Interstate system that are reliable (LOTTR)
2. Percent of person-miles on the non-Interstate NHS that are reliable (LOTTR)

Freight Movement on the Interstate

3. Truck Travel Time Reliability Index (TTTR)

Congestion Mitigation and Air Quality Improvement (CMAQ) Program

4. Annual hours of peak hour excessive delay per capita (PHED)
5. Percent of non-single occupant vehicle travel (Non-SOV)
6. Cumulative two-year and four-year reduction of on-road mobile source emissions for CMAQ funded projects (CMAQ Emission Reduction).



Performance Measures & Targets Data

Transit Asset Management, mandated by FTA

1. Rolling stock, the percentage of revenue vehicles exceeding the useful life benchmark (ULB)
2. Equipment, the percentage of non-revenue service vehicles exceeding ULB
3. Facilities, Administrative and Maintenance; and Passenger and Parking, rated based on Transit Economic Requirements Model (TERM) Scale
4. Infrastructure, the percentage of track segments (by rail mode) that have performance restrictions.

Transit Safety, mandated by FTA

1. Fatalities
2. Injuries
3. Safety events
4. System reliability

The necessity of designing and updating performance measure webpage

“To strengthen public participation in the planning and project delivery process and specifically to aid the public in understanding proposed plans, SAFETEA-LU calls for States and MPOs to use visualization techniques.”

U.S. Department of Transportation
Federal Highway Administration

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FHWA Scenario Planning and Visualization in Transportation

Visualization in Planning

Scenario Planning Visualization In Planning

Noteworthy Practices and Innovative Uses

FHWA → Planning → Scenario And Visualization

Visualization in Planning

Welcome to the Federal Highway Administration's (FHWA) Visualization in Planning website. Here you can learn about [noteworthy practices and innovative uses of visualization for transportation planning](#), and who to contact in FHWA about questions or issues on visualization in planning.

What is Visualization in Planning?



To strengthen public participation in the planning and project delivery process and specifically to aid the public in understanding proposed plans, SAFETEA-LU calls for States and MPOs to use visualization techniques. Through visual imagery, the complex character of proposed transportation plans, policies and programs can be portrayed at appropriate scales -- state, region, local area, project architecture, etc. and from different points of view. "The effective presentation of projects" impacts to the public has become an increasingly essential part of the planning and design of transportation" system.

Examples of visualization techniques include sketches, drawings, artist renderings, physical models and maps, simulated photos, videos, computer modeled images, interactive GIS systems, GIS based scenario planning tools, photo manipulation and computer simulation.

New technology has changed the communication process. Providing visual images to a broader audience has become easy, fast and high quality. Visualization can provide the public and decision makers a clear idea of the proposed policies, plans and Transportation Improvement Programs and the impacts to the human and natural environment. Visuals can make information instantly or intuitively understandable. The new technology has made it possible to communicate what the proposals may look like when implemented. [Public involvement techniques](#) such as [visual preference surveys](#) and [scenario planning tools](#) improve consensus building.

Contacts

For more information, please contact:

- Mike Barry
- Mack Frost
- Mark Sarmiento
- Mark Sarmiento

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FHWA Scenario Planning and Visualization in Transportation

Visualization in Planning

Scenario Planning Visualization In Planning

Noteworthy Practices and Innovative Uses

FHWA → Planning → Scenario And Visualization → Visualization In Planning

Visualization for Transportation Planning

What is visualization in transportation planning?

Webster's definition

"formation of mental visual images, or the act or process of interpreting in visual terms or of putting into visible form."

Design visualization

Design visualization has often taken the form of a simulated representation of a proposed transportation improvement. Simulated representation may be appropriate in some instances during the planning phase, but visualization during the planning process may be much, much more. Planning documents are often spreadsheets that are difficult to read, populated with acronyms and abbreviations that must be deciphered or plans that are filled with dense narrative describing a process, procedure, policy or proposal.

The visual simulations that are used during project design are often not appropriate for use during the transportation-planning phase. The projects have only been identified based on a project need or objective. It is too soon in the process, and therefore the project alignment, context, scope and other details have not yet been defined. It would be premature and misleading to the public and other partners to imply through simulation that these decisions have been made. The public may balk at further involvement with the planning and project development if the project appears to have a completed design.

Planning documents traditionally contain a very limited amount of visualization. Simply adding photos, images, flow charts, diagrams or maps to illustrate, transportation planning may be more clearly conveyed.

Visualization for Transportation Planning; preparing documents for the Internet

Interactive map for the Plan, TIP, and STIP

New technology has made the development of transportation planning techniques easy, high quality and efficient to produce. There are many good examples of good user-friendly techniques. [Washington DOT](#) uses an interactive map for their STIP on their web site. The [Atlanta Regional Commission's](#) Mobility 2030 Regional Transportation Plan Interactive Mapping can be used to locate the project.

The interactive map allows the user to click on the red dot in the county they wish to view. The more detailed county map is obtained and the user can then click on the project name or the location on the map to open the page for the proposed transportation project. The proposed transportation projects are often described with the use a combination of a narrative of project needs; combined with a project map of the location, a photo image that clearly displays the situation that creates the project need. Maps, images, sketches, cross sections help the reader interpret the technical.

Transportation Improvement Programs includes maps and sketches

The [Denver Council of Government's \(DRCOG\) Transportation Improvement Program \(TIP\)](#) uses flow charts, charts and graphs to illustrate the project planning process. DRCOG's TIP is formatted with information boxes consistently placed, providing information on project function, project status, etc. and includes project maps, sketches or images. The inclusion of relevant information, which is not abbreviated, formatted consistently allow for uncomplicated interpretation of this TIP.

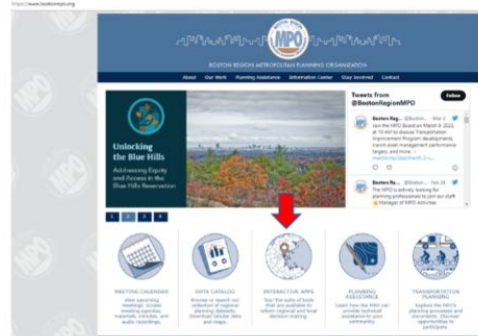


Other MPOs websites

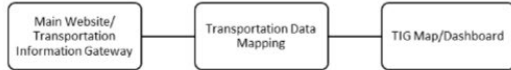
- ▮ Boston Region Metropolitan Planning Organization, Boston Transportation Performance Dashboard
- ▮ Metroplan Orlando, Visualizing Complex Data
- ▮ New York Metropolitan Transportation Council (NYMTC), Transportation Information Gateway (TIG)
- ▮ San Diego Association of Governments (SANDAG)
- ▮ Southern California Association of Governments (SCAG)
- ▮ Charlotte Regional Transportation Planning Organization (CRTPO)

Interactive Maps Accessibility

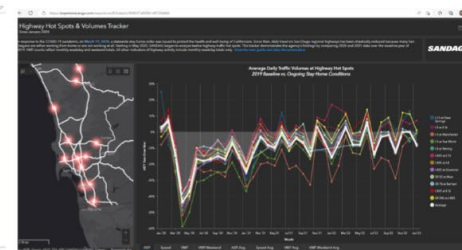
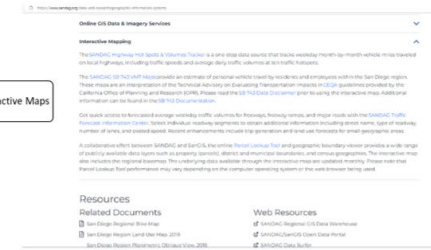
Boston



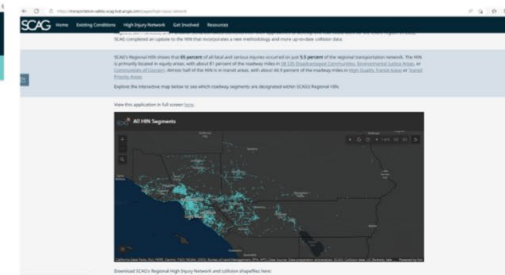
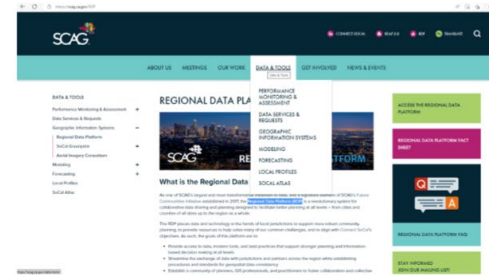
NY



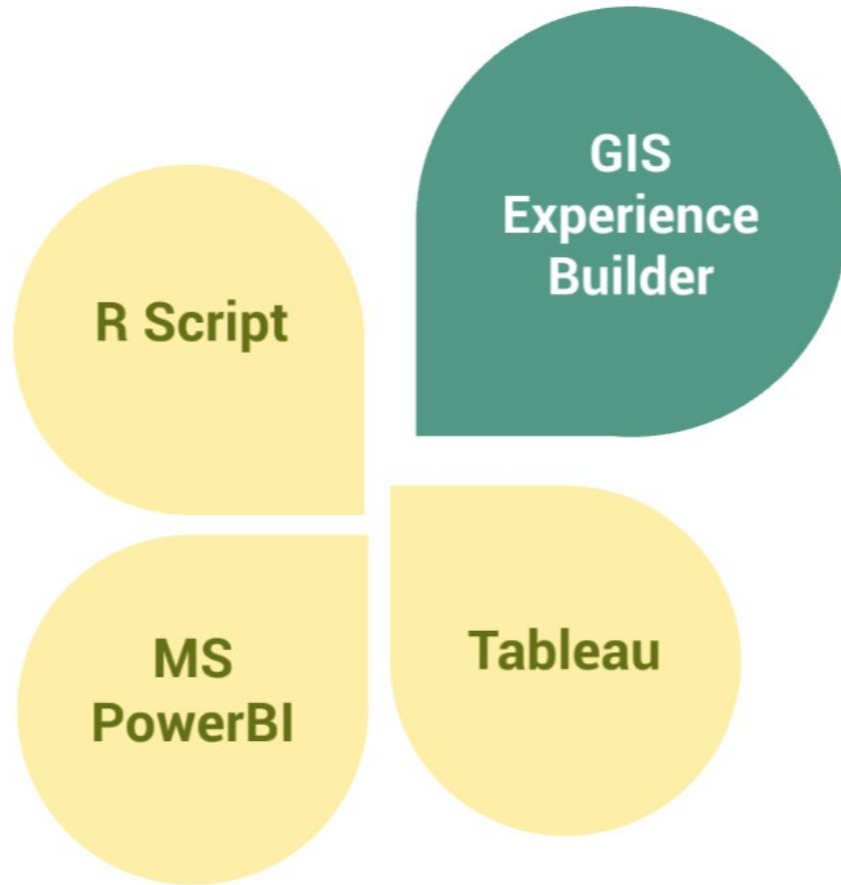
San Diego



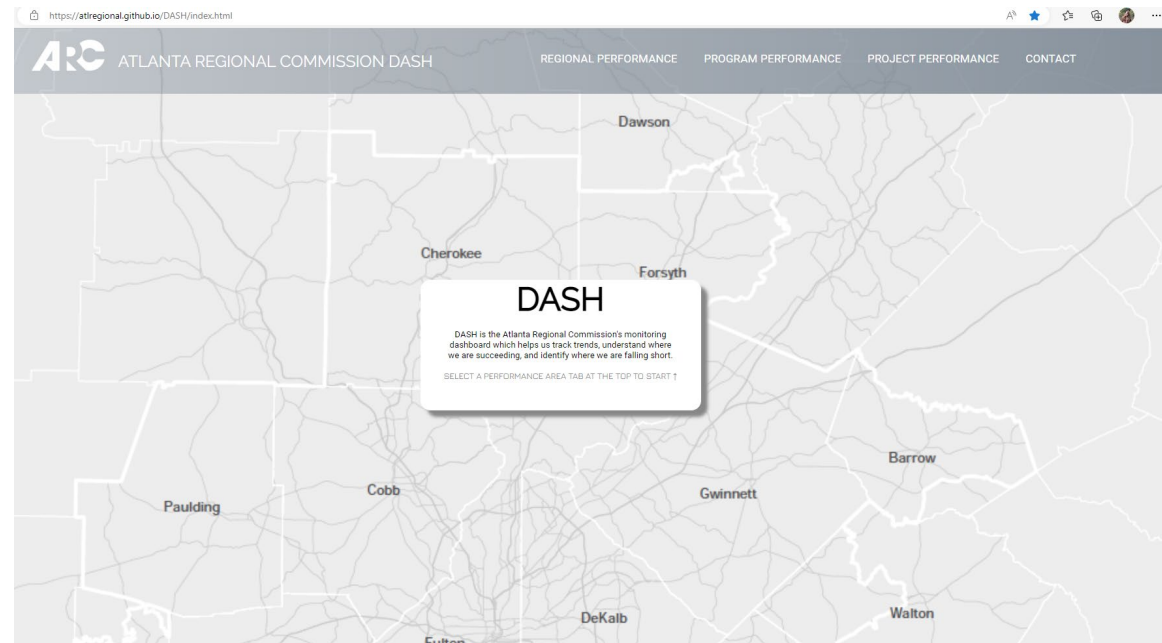
Los Angeles



Software



- Customization
- Spatial Data Analysis
- Integration with GIS Software



Web-Content Accessibility

Esri Accessibility Conformance Report **ArcGIS Experience Builder**

Product Version: Online Edition
Report Date: 3/01/2021

- Compliance with Web Content Accessibility Guidelines (WCAG)
- Keyboard Accessibility
- Alternative Text for Images
- Color Contrast and Visual Design

Website Structure

The screenshot shows a web browser displaying the Atlanta Regional Commission (ARC) website. The URL is <https://experience.arcgis.com/experience/ef871d8bd7aa4cc5b405d153d809b7dd/?draft=true>. The page header includes the ARC logo and the text "Transportation Access & Mobility". A navigation menu on the right lists: Congestion, Equity, Safety, Reliability, Air Quality, Infrastructure, Transit, and Moving Forward. Below the header, there are tabs for "Region profile" and "Transportation Performance Targets" (which is selected). Under the "Transportation Performance Targets" tab, there are five buttons: "PM1 - Safety", "PM2 - Asset Management", "PM3 - System Performance", "Transit Asset Management", and "Transit Safety".

Transportation Performance Targets

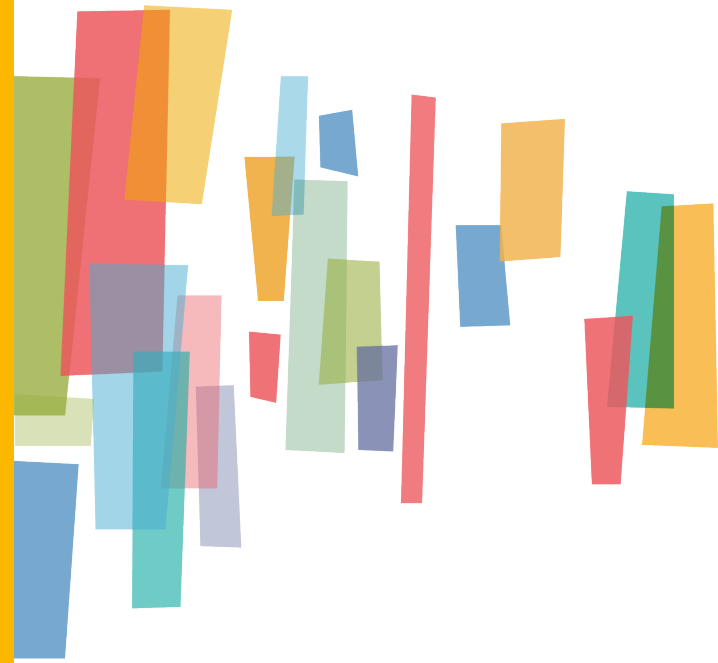
Federal transportation performance measures are metrics used to evaluate the performance of transportation systems at the federal level. These measures are used to assess the effectiveness and efficiency of transportation investments, as well as to identify areas for improvement. The Atlanta Regional Commission (ARC) uses performance measures to track trends in transportation system performance. The trends observed in these measures provide important insights that can help guide transportation planning and investment decisions in the region.

PM1 - Safety

The Atlanta Regional Commission (ARC) has a comprehensive safety program that aims to reduce the number of traffic fatalities and serious injuries in the 20-county Atlanta region. The program is designed to address safety issues on all types of transportation infrastructure, including roads, bridges, transit systems, and pedestrian and bicycle facilities.

Thank you for listening!

Q & Comments



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REGION