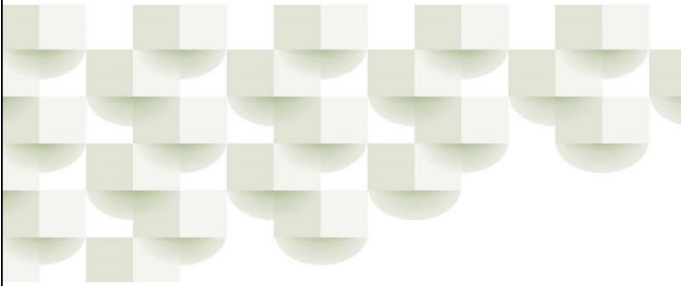


**NCHRP**  
Research Report 1002

National Cooperative  
Highway Research  
Program

**Metropolitan Planning Organizations**  
STRATEGIES FOR FUTURE SUCCESS



*The National Academies of*  
SCIENCES • ENGINEERING • MEDICINE  
  
TRANSPORTATION RESEARCH BOARD

**NCHRP 1002**

# Success Strategies for Metropolitan Planning Organizations

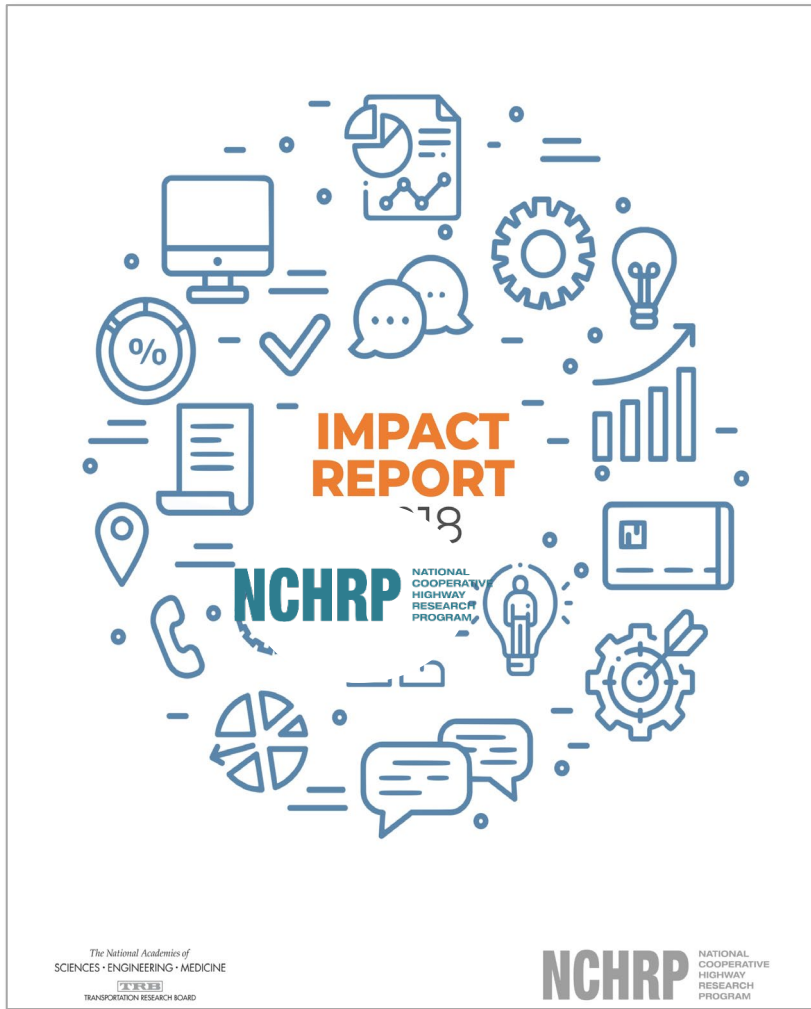
Wednesday, May 10<sup>th</sup>

Chandler Duncan / Scott Lane

# The NCHRP mission

## NCHRP is...

The National Cooperative Highway Research Program (NCHRP) is an **applied research program** designed to respond to the practical needs of state departments of transportation (DOTs). TRB administers the program, for which the state DOTs fund, select, and oversee the research.



- TRB Mission Brochure

# About the Project

It starts with a great team

**Modern Mobility Partners**

Keli Kemp / Julia Billings



**Metropolitan Research Center  
University of Utah**

Reid Ewing  
Brandon Siracuse



**Metro Analytics**

Scott Lane, Prin. Investigator  
Chandler Duncan, Director  
Wade Carroll, Project Mngr.  
Matt Miller



**Burns & McDonnell**

Danny Rotert

**Gannett Fleming**

Howard Glassman



**A Whole Lot of MPOs**

Thank you for your input!



**PublicInput.com**

Graham Stone

*Thera Black, co-Principal Investigator through Phase I and NCHRP Review Panel for Feedback and Insights*

# Refining the Scope: Survey

From Many Issues to 12 Topics



- 1 Financing Projects / Effective Use of Funds
- 2 Collaboration / Engagement (public, officials, etc.)
- 3 Staff Capacity (number, technical proficiency)
- 4 Collaboration with Regional Partners (and MPOs)
- 5 Changing Demographics, Lifestyles, Travel
- 6 Changes Presented by Technology (inc. Big Data)



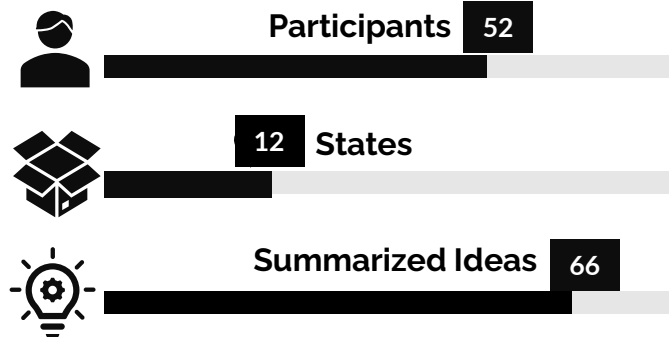
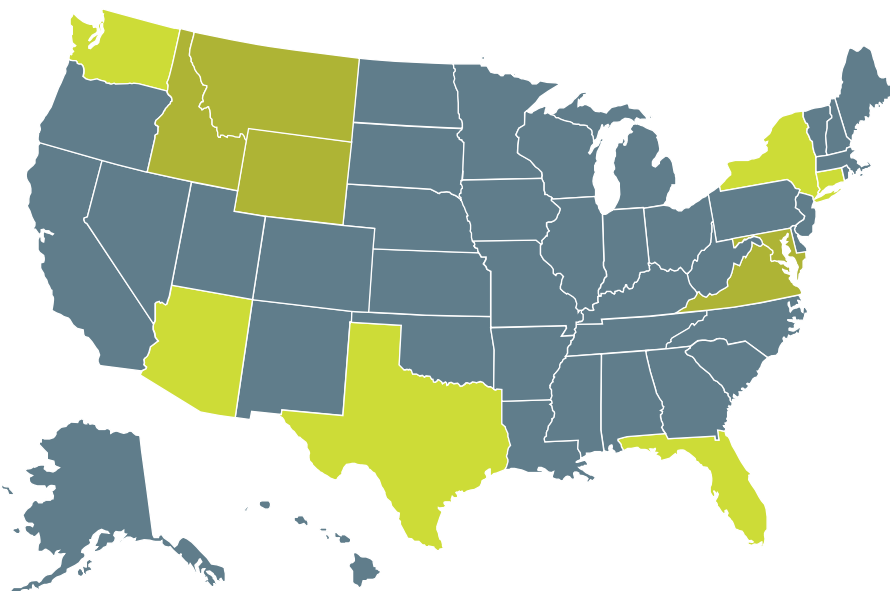
MPOs said they need on-line resources, peer exchanges, and practical examples and easy-to-adapt strategies



Practical, “Fresh,” Easy to Access, Low-Cost, Innovative

# Roundtables

Six **Single-State** and Two **Multi-State**



 **FOCUS: partnerships and collaboration**

## Typical Agenda\*

- Welcome and Introductions / Research Overview
- MPO Director overview of the MPO planning process
- Challenges and Opportunities experienced
- Potential enhancements or changes to 3C planning process
- Noteworthy best practices
- MPO and Agency Partner potential actions to address
- MPO major policy issues

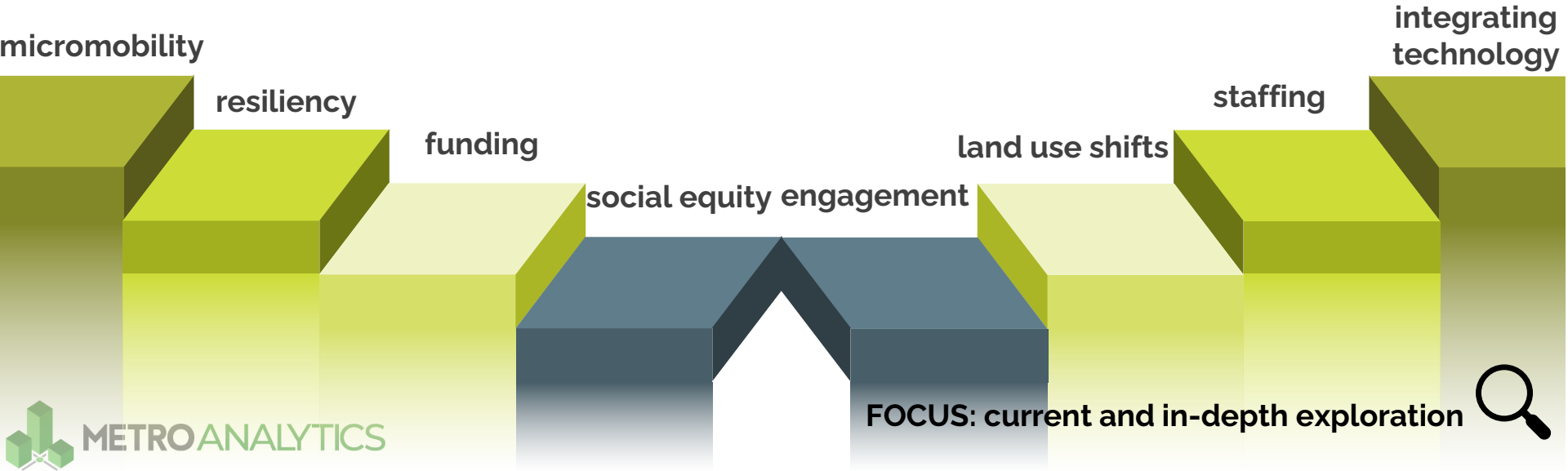
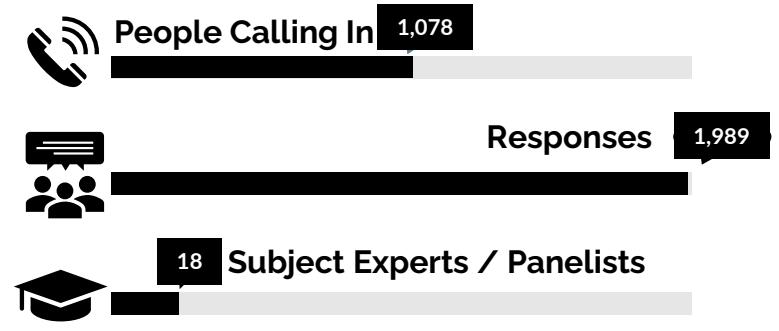
*\*multi-state roundtables had slightly different questions*

# Information Forums

The Topics **In-Depth**

**Information Forum Agenda**

- Introductions to Project
- Introductions to Panelists
- 15-Minute Presentation (ea.)
- Write-In Questions (chat)
- Facilitator Questions
- Polling Questions (audience)



# Toolkit for the 21<sup>st</sup> Century

Two Pages\* and to the **Point**



**Social Equity**



**New & Emerging Technologies**



**Resilience in Planning**



**Financial Constraints**



**Staff Capacities**



**Freight**



**Inclusive Engagement**



**Travel Patterns**



**Shared Mobility**



**Curb Space Management**



**Demographic Patterns**



**Planning for The Unknown**

*\*Each Topic Includes: MPO Challenges, Strategies, Potential Solutions, Examples, More*



# Toolkit for the 21<sup>st</sup> Century

## Sample: Incorporating Resilience into MPO Planning

### CATEGORIES

Topic: **Resilience**  
 Categories: Internal Operations, External Influences, Policy Issues, Partnering & Coordination

### TOPIC

#### Incorporating Resilience in MPO Planning

#### MPO CHALLENGE

The concept of resilience in MPO planning encompasses many strategies and approaches to anticipate or reduce the impacts of disruptive events on the transportation system. This toolkit shows how MPOs are addressing resilience in their processes and plans.

### CHALLENGE

#### WHY IS IT IMPORTANT?

MPOs can incorporate new strategies to better anticipate external forces or shocks to the transportation system that occur with natural and human-caused hazards.

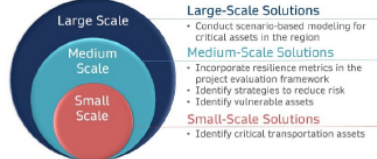
#### POTENTIAL SOLUTIONS

Addressing resiliency can be categorized within internal operations, external influences, and partnering and coordination. Addressing resiliency involves the integration and cooperation of agencies at the federal, state, regional, and community level. MPOs are uniquely positioned to increase their resilience and recovery of such events. MPOs are most familiar with the critical assets in the transportation system at a regional scale, assessing the stressors and hazards that pose the biggest threat.

Existing and potential future stressors, shocks, and hazards have intensified the need for MPOs to assess hazard vulnerabilities for infrastructure in the area. MPOs can take steps by compiling data (assets, temperature, humidity, air quality, etc.) and identifying strategies to mitigate risks.

**Solution 1: Identify Critical Transportation Assets and Develop Resilience Goals and Metrics in the Transportation Planning Process, Framework, and Project Prioritization.** MPOs can develop resilience-related goals to incorporate in their metropolitan transportation plans (MTP). Once critical transportation assets have been identified, evaluation criteria can be used to prioritize and deliver projects that mitigate risks and provide redundancy to those critical transportation assets. Performance measures can also be evaluated, such as centerline miles of roadway on evacuation routes operating at or better than the adopted level of service, greenhouse gas emission levels, travel delay times, and pavement conditions.

#### Scalable Solutions and/or Resources



**Solution 2: Perform a Vulnerability Assessment.** MPOs can perform a vulnerability assessment by identifying potential threats (flooding, hurricanes, wildfires, etc.) that could occur and affect critical transportation assets. The Federal Highway Administration's *Resilient Framework*, which provides guidance on how to assess infrastructure assets, assists MPOs in identifying vulnerabilities, and future identification of critical and vulnerable assets is done together. However, due to variability in MPO resources, we have separated the identification of critical assets as an earlier step that requires fewer resources.

**Solution 3: Identify Adaptation and Mitigation Strategies and Use Scenario-Based Models to Compare with Baseline Scenarios.** MPOs can identify strategies to mitigate hazards to transportation assets. They can use scenario modeling to understand which strategies are most effective in reducing and absorbing risks to transportation assets in a trend scenario where no steps are taken to improve the transportation system. Such strategies include evacuation routes, bridges, security operations, or



Internal Operations External Influences Policy Issues Partnering & Coordination

RESILIENCE

#### WHERE IT HAS BEEN DONE

The **Southwest Louisiana (SWLA) MPO** is centered on Lake Charles, part of a heavily trafficked freight corridor along I-10 and encompassing much of Calcasieu Parish. During their MTP update, a new project prioritization system was developed based on public and private input. The system was developed based on public and private input. The system was developed based on public and private input.

### EXAMPLES

The **Federal Highway Administration (FHWA)** offers funding and assistance to DOTs and MPOs to identify resilience solutions through resilience pilot programs. Below are some examples.

In **San Francisco**, the **Metropolitan Transportation Commission (MTC)** was awarded FHWA Climate Change Resilience Pilot funding to complete a vulnerability assessment. The infrastructure assets included I-80, I-880, State Route 92, two bridges, passenger rail, and freight rail. The goal was to collect data, gain insight on storm event exposure, and identify climate adaptation options and strategies for the critical infrastructure and surrounding areas. MTC completed baseline scenarios to show how each asset would be affected by various levels of sea level rise if no action is taken to adapt. The MPO also compared those outcomes to scenarios where five adaptation strategies were used. Overall, MTC developed a vulnerability assessment that identified strategies to best adapt to sea level rise.

The **Chattanooga-Hamilton County/North Georgia Transportation Planning Organization (TPO)** obtained technical assistance through the FHWA Resilience Pilot Program to support incorporating resilience into the 2050 Regional Transportation Plan (RTP). The goal of the pilot was to identify potential project recommendations and strategies to address hazards affecting the transportation system. The TPO and FHWA held a two-day resilience workshop early in the RTP planning process with approximately 100 invited participants.

### STEPS

#### HIGH-LEVEL STEPS

1. Identify critical transportation assets
2. Assess vulnerability by identifying hazards or stressors affecting the region
3. Identify adaptive strategies to mitigate or reduce risk, impact, and vulnerabilities
4. Model scenarios that compare trend scenarios and scenarios representing environmental or human disruptions
5. Prioritize and fund projects and policies that promote resilience

#### HIGH-LEVEL DETAILS OF APPROACH

MPOs can address resilience and protect critical infrastructure and assets. The first step is to identify critical and vulnerable assets such as major highways, evaluation routes, bridges, rail, and intermodal ports. Hazardous events such as precipitation, temperature, and other weather-related events can affect the transportation system. Projects that crossed high-vulnerability areas received a lower score; projects that facilitated emergency routing, bettered access to low-income/minority populations, and improved freight routes got a higher score.

### APPROACH

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**Adaptive Strategies**  
 Develop strategies to mitigate and reduce impacts from potential disruptors to the transportation system

**Vulnerability Assessment**  
 Identify critical and vulnerable assets

### MORE INFO

Identify critical transportation assets in the region such as bridges, dams, port facilities, evacuation routes, etc.

#### WHERE TO FIND MORE INFORMATION

Metropolitan Transportation Council (MTC), *Climate Change and Extreme Weather Adaptation Options for Transportation Assets in the Bay Area Pilot Project*, 2014. [https://www.fhwa.dot.gov/environment/sustainability/resilience/pilots/2013-2015\\_pilots/mtc/final\\_report/mtcfinal.pdf](https://www.fhwa.dot.gov/environment/sustainability/resilience/pilots/2013-2015_pilots/mtc/final_report/mtcfinal.pdf) (accessed February 18, 2021)

Lake Charles Metropolitan Planning Organization (LCMPO), *Lake Charles Urbanized Areas (LCUA) 2045 Metropolitan Transportation Plan*, [https://www.planswla.com/files/LCMPO\\_2045\\_MTP\\_Report.pdf](https://www.planswla.com/files/LCMPO_2045_MTP_Report.pdf) (accessed April 4, 2021)

Chattanooga-Hamilton County/North Georgia Transportation Planning Organization, accessed March 15, 2021. <https://2050rtpt-chrcpa.hub.arcgis.com/>

"Resilience" Federal Highway Administration, Office of Planning, Environment, & Realty (HEP), accessed February 18, 2021. <https://www.fhwa.dot.gov/environment/sustainability/resilience/>

RESILIENCE

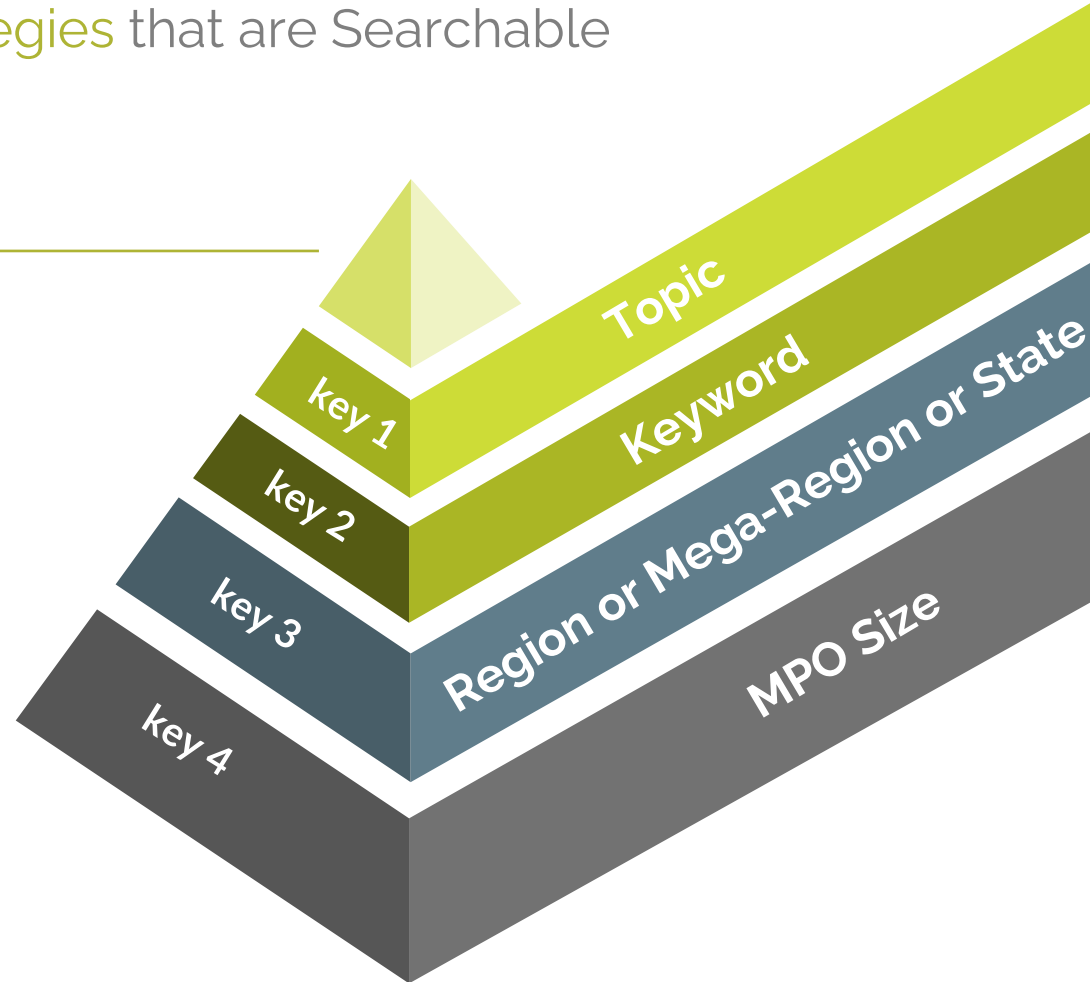


# Innovation Database

Tailored **Strategies** that are Searchable

## Best Practices (108)

- Location
- Keywords
- Short Description
- Long Description
- Link / Contact Information



*"We don't need you to reinvent the wheel; if you create a new resource it needs to beat an on-line Google search."*

- AMPO 2019 Conference Participant

# Innovation Database

## Screenshot

TITLE

MPO

STATE

KEYWORDS (3)

MPO FEATURES

TYPE

CITY

TOPICS

DESCRIPTION

Title	Type	MPO /	Central Ci	State	Primary TO	Secondary Ti	Keyword	Keyword	Keyword	MasterKe	Description	MPO Population (00C	Region	MegaRegio
SMART Plan	Conference Proceedings	Miami-Dade TPO	Miami	Florida	Transit	Economics	BRT	Environmental Impact	Economic Impact	BRT, Environmental Impact, Economic Impact	The Strategic Miami Area Rapid Transit (SMART) Plan is a bold infrastructure program of projects that will significantly improve transportation mobility in Miami-Dade County and the South Florida region. The SMART Plan will provide a world-class transit system that will promote economic growth and job creation, as well as increase the region's international competitiveness. The SMART Plan intends to advance six rapid transit corridors identified in an earlier planning effort, along with a network system of Bus Express Rapid Transit (BERT) service, in order to implement mass transit projects in Miami-Dade County. To ensure the SMART Plan moves forward, the TPO Governing Board directed the Miami-Dade TPO Executive Director to work with the TPO FPC to determine the costs and potential sources of funding for Project Development and Environment (PD&E) studies for the projects, and to also take all necessary steps to implement the SMART Plan. The Miami-Dade TPO is leading the land use and visioning elements forward for the six corridors under study now. Additionally, on-line tools like bicycle and walk-to-school trip planning, interactive TIP and MTP sites; and Community	1million - 5million	South Atlantic	Florida
CRITPD Staffing & Resources Study	Research Report	Charlotte Regional TPO	Charlotte	North Carolina	Staff Capacity	Changing Demographics	Staff Capacity	Staffing	Organizational Governance	Staff Capacity, Staffing, Organizational Governance	The CRITPD, with Cambridge Systematics, completed an organizational study for the MPO that considered peer staffing comparisons and stakeholder research to formulate recommendations for future staffing needs. The study concluded that, while most felt that the staff was performing well and was meeting current needs, it was not sufficiently staffed to meet future needs or address additional challenges beyond basic requirements. Recommendations addressed training, "in-source" of more work, engage more on a national level, maximizing public involvement position, increase staff specialization, creating an internship	1million - 5million	South Atlantic	Piedmont Atlantic
Using Tactical Urbanism to Create Design Changes with Lasting Effects	Conference Proceedings	City of Charlotte	Charlotte	North Carolina	Land Use Integration	Equity	Public Involvement	Tactical Urbanism	Partnerships	Public Involvement, Tactical Urbanism, Partnerships	The City of Charlotte (Lead Planning Agency for the Charlotte TPO) and Charlotte Urban Design Center presented on a city-led tactical urbanism program. The presentation delivered in 2013 is image-rich, and extolls the virtue of creative, collaborative public engagement to improve spaces. The specific projects shown are part of the The Better Block program, and the presentation discusses process, beliefs, conditions, and after conditions.	1million - 5million	South Atlantic	Piedmont Atlantic
North Florida Smart Region Master Plan	Conference Proceedings	North Florida Transportation Planning Organization	Jacksonville	Florida	Technology	iOT - Internet of Things	Partnerships	Shared Mobility	Technological Change	Partnerships, Shared Mobility, Technological Change	"Smart North Florida is using innovative and emerging technologies to collect, analyze and apply data from many sources to solve problems and enhance the region's livability. While some of these technologies have been deployed independently with great success, harnessing the power of regional collaboration and coordinated data will provide new and innovative means to improve citizens' quality of life. Though the North Florida Smart Region Master Plan's initial focus is on transportation, the Smart North Florida movement is growing to include utilities and other public assets on Clay, Duval, Nassau, and Santa Fe counties."	1million - 5million	South Atlantic	Florida

# The Products

Translating Research into Better Practice

[www.trb.org/Main/Blurbs/182715.aspx](http://www.trb.org/Main/Blurbs/182715.aspx)

*(or search "NCRHP 1002")*



Report

PDF Format;  
Important Stuff in  
Front



Information Video  
Summaries

Eight, 2-3 minute  
videos summarizing  
the Information  
Forums



Innovation  
Database

Searchable MS-Excel  
database of best  
practices



Toolkit for the  
21<sup>st</sup> Century

12 two-page summary  
sheets, each focusing  
on a different topic



# Thanks For Listening!

— What's on Your Mind? —

**Chandler Duncan / Scott Lane**

Project Director / Principal Investigator

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[www.metroanalytics.com](http://www.metroanalytics.com)



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