NCHRP 20-122
Rural Transportation Issues Research Roadmap

5th Stakeholder Meeting
Webinar
March 7th, 2019

Presented by:

Jaime Sullivan, WTI at Montana State University

John Shaw, InTrans at Iowa State University

Presentation Agenda

- Project Panel
- Project Overview
- Background of Roadmaps and Rural
- Project Framework
- Project Process
- Next Steps

Project Panel

Charles Carr, MS DOT, Chair

Barbara Cline, Transit

Santo Grande, Transit

Ronald Hall, University/Tribal

Kristin Joyner, Transit

Peggi Knight, Iowa DOT

Dianne Kresich, AZ DOT

Dale Peabody, ME DOT

Robin Phillips, Transit

Fred Schmidt, University

Julie White, NC DOT

Pat Wise, MT DOT

Guohui Zhang, University

Jill Stark, FHWA Liaison

Elan Flippin, FTA Liaison

Caroline Kieltyka, AASHTO Liaison

Tim Klein, OST/R Liaison

Jennifer Weeks, TRB Liaison

Stephan Parker, NCHRP SPO

NCHRP 20-122 Overview

- Identify critical rural transportation issues that can be addressed by research through NCHRP and other research programs

- Produce a research roadmap that can assist state DOTs and other public agencies and help inform policy-driven investment decisions

- Develop early-action items and longer-term research needs

What is a Research Roadmap?

- Curated collection of research needs
- Helps establish near-term and long-term research agenda
- Helps define priorities and sequencing of research work
- Assists state DOTs, AASHTO, and TRB staff when considering proposed national studies
- Facilitates formation of state Pooled Funds Studies
- Lists potential research topics for MS and PhD students

Why a Rural Roadmap?

- Secretary Chao is a champion for rural transportation
- Request by AASHTO Special Committee on Research and Innovation (R&I)
- TRB Executive Committee – Senior Policy Board hosting TRB session on rural
- 70% of the 4 million miles of road in U.S. are rural (NHTSA 2018)
- Rural fatalities account for 48% while only 19% population is rural (NHTSA 2018)
- Diversity of U.S. communities (urban, rural, and mixed):
  - 3,031 Counties
  - 19,519 Municipalities
  - 16,630 Townships
  - Vast range of terrain, climate, modal connectivity, and economic activities

Rural Roadmap – Unique Challenges

- Funding challenges
- Twice as long for EMS response
- Sparse law enforcement
- Unique terrain
- Increased number of tourism areas
- Challenges for autonomous and connected vehicles
- Lack of data and resources
- Infrastructure challenges with unpaved roads and bridges

- Transportation employee recruitment and retention
- Longer distances
- Unique barriers with the behavioral safety and social issues
- Natural disasters and climate change impacts to transportation
- Lack of communication and power infrastructure
- Less sustainable options for mobility due to distance and ridership

NCHRP 20-122 Framework

Created a framework for the roadmap:

- Defined several rural community types

- Categorized rural critical needs

- Created fact sheets as conversation starters

This fact sheet is a working draft. Due to the breadth of the rural transportation topics, it is not intended to be an exhaustive, comprehensive list, but rather a starting point for facilitated discussions.

Theme #7: Weather, Climate and Resilience

Community Type and Mode

The community types and modes that pertain to this theme are shown in the tables below.

Community Type	Mode
☑ Beyond the "Lower 48" ○ (AK, HI, PR, VI, GU, AS, MP)	☐ Aviation
☑ Exurban Community	☐ Bicycle
☑ Frontier/Remote Community	☐ Bus
☑ Resource-based Community	☐ Maritime
☑ Tourism-based Community	☐ Pedestrian
☑ Tribal Lands and Alaska Native Communities	☐ Rail
	☑ Roadway

Theme Description

Rural transportation is vulnerable to the impacts of changing weather patterns. Floods, severe storms, and other adverse events can damage rural infrastructure, disrupt travel, cut off small communities, and interfere with passenger services and freight deliveries. When these incidents occur, agencies incur substantial unplanned costs to repair damaged infrastructure. Concurrently, long-term increases in humidity, heat, and freeze-thaw cycles hasten the natural deterioration of transportation infrastructure. Since reliable travel is essential to the economic and social wellbeing of rural areas, agencies must find ways to adapt to change, increase resilience to extreme weather, minimize damage, and fund necessary repairs.
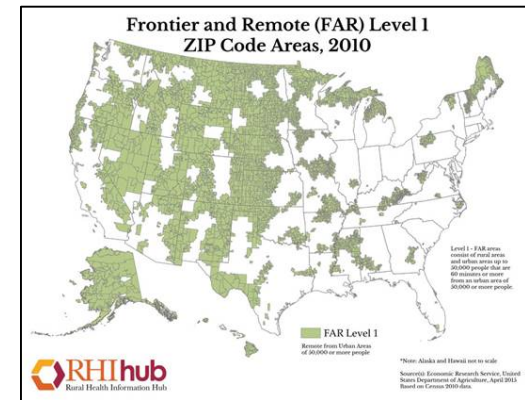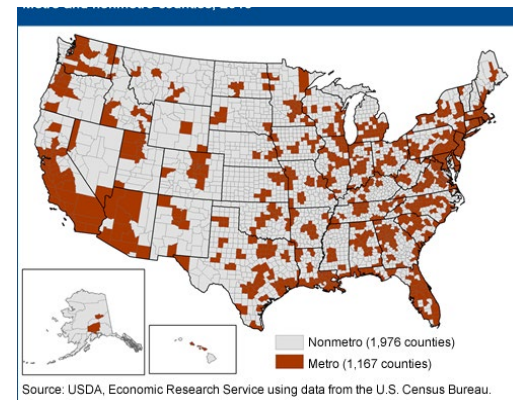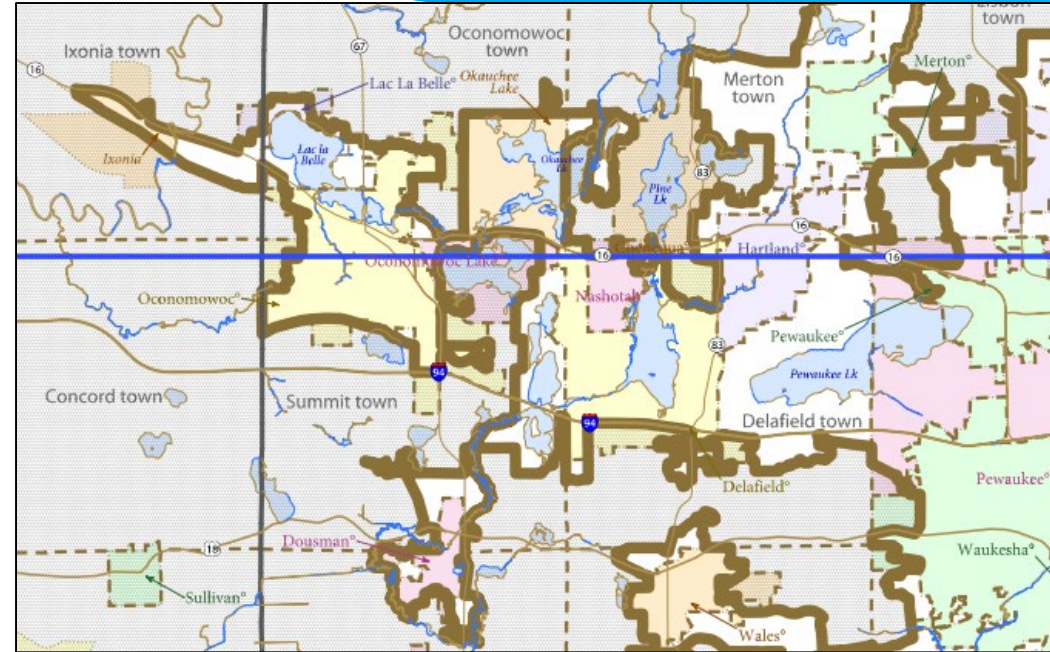
"Resilience" refers to the transportation system's ability to withstand the impacts of adverse events. A resilient system can recover from problems quickly: although operations might not be entirely normal, the basic needs of first responders, road users, and passenger/freight customers are accommodated reasonably well. The concept of resilience includes adapting infrastructure and services to minimize the likelihood of damage and disruption, preparing to respond quickly and efficiently when problems occur, and establishing fallback plans to assist personnel in focusing on the most critical priorities in case of widespread problems.

Increasing Prevalence of Severe Storms, Floods, Forest Fires, and Related Events

Comprehensive daily weather records have been collected throughout the United States since 1895, and records in some cities go back much further. Severe storms have been reported in newspapers since the 1700s and recorded in ship captains' log books since the 1500s. These sources clearly indicate that severe weather is occurring more frequently than in the past. For

What is "rural?"

- Many definitions:
  - Census (97% of U.S land, 19% of U.S. population)
  - Municipal boundaries
  - USDA/HHS (frontier & remote)
  - Highway design standards
- No specific definition selected for NCHRP 20-122
- Identify research generally applicable to rural and predominantly-rural areas
- Includes state, tribal, county, and small-town research needs

Nonmetro (1,976 counties)
Metro (1,167 counties)

Source: USDA, Economic Research Service using data from the U.S. Census Bureau.

Frontier and Remote (FAR) Level 1
ZIP Code Areas, 2010

FAR Level 1

RHIhub
Rural Health Information Hub
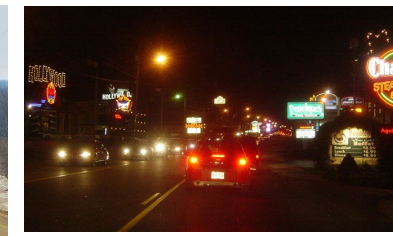
How many kinds of rural?

Categories for Rural Critical Needs

1. Active transportation
2. Workforce development
3. Transportation access and mobility
4. Intersection of health and transportation
5. Generational expectations, work & lifestyle
6. Transporting rural products to market
7. Weather, climate and resilience
8. Rural public & school transportation
9. Law enforcement, crime and drugs
10. Aviation
11. Connected and automated vehicles and emerging technologies
12. Tourism and the natural environment
13. Roadway infrastructure and balancing capacity with demand
14. Rural transportation safety
15. Funding, policy and economy

Research Needs

Gap Analysis

TRB Committees

Previously Submitted Research Needs Statements

Georgia Workshop Dec 2018

Literature Review

TRB Workshop Jan 2019

Environmental Scan and Fact Sheets

TRB Executive Committee Jan 2019

Colorado Workshop Sept 2018

Stakeholder Webinar March 2019

Rural Transportation Research Roadmap

Completed

In Progress

Future Task

Project Milestones

- Stakeholder Workshops
  - Denver, CO (September 28, 2018) – Transit and Policy Focus
  - Savannah, GA (December 6, 2018) – Safety Focus
  - Washington DC (January 16, 2019) – Policy Focus
  - Washington, DC (January 17, 2019)
  - Webinar (March 7, 2019)
- Early-action Research Needs Statements developed
- Fast-tracked RNS presented to AASHTO R&I (October 29, 2018)
- Draft Interim Report completed
- Roadmap development is ongoing
  - Stakeholder suggestions (workshops, emails, conversations)
  - Literature review results
  - Relevant existing TRB Research Needs Statements
  - So far, more than 500 research ideas have been compiled

Fast-Tracked Research Needs Statements

| Image	Title	Scale
	Effectiveness of Zero-Tolerance Drug & Alcohol Policies for Rural Transportation Agencies	$400,000 18 months
	Force Multiplier Toolkit for Rural Traffic Safety Enforcement	$250,000 18 months
	Trade-off Analysis: A Multi-Modal Guide for Rural Transportation Investment Analysis	$500,000 30 months
	Accessing America's Great Outdoors: Recreational Travel Patterns, Demand & Needs	$450,000 24 months
	MIRE Data Requirements Supporting Safety Improvements on Unpaved Roads	$300,000 12-18 mo.
	National Intercity Bus Atlas Development and Implementation	$600,000 18 months
	Enabling On-demand, Multi-modal Trips to be Booked in Real-time in Rural America	$700,000 24 months

Fast-Tracking Process

First Pass (Sept-Nov 2018)

- 14 Issue papers prepared

- 25 Research Needs Statements developed

- 7 RNS selected for advancement to AASHTO in spring 2019

- Framework for roadmap developed

- Interim report completed

Second Pass (Dec 2018-Summer 2019)

- Long-term roadmap under development

- Vision for national-level rural transportation research

TRB Workshops
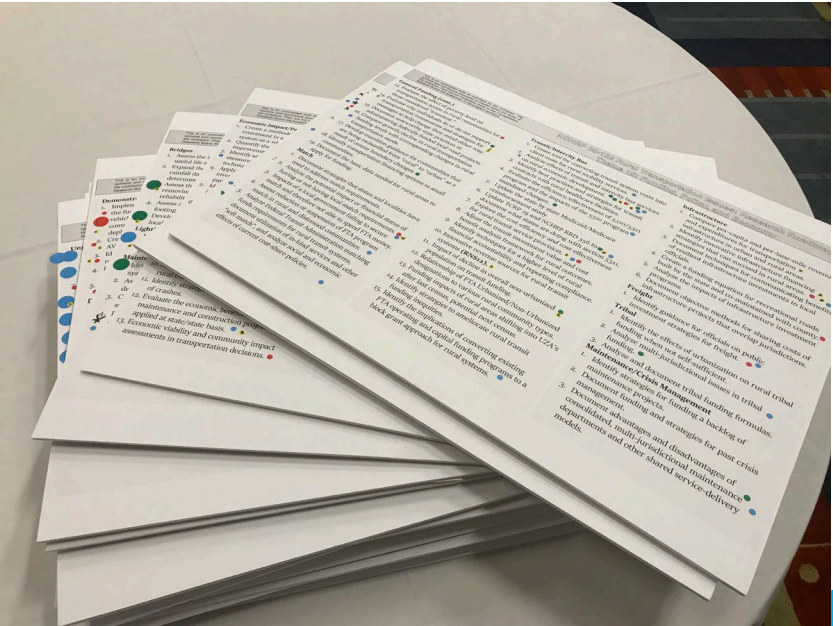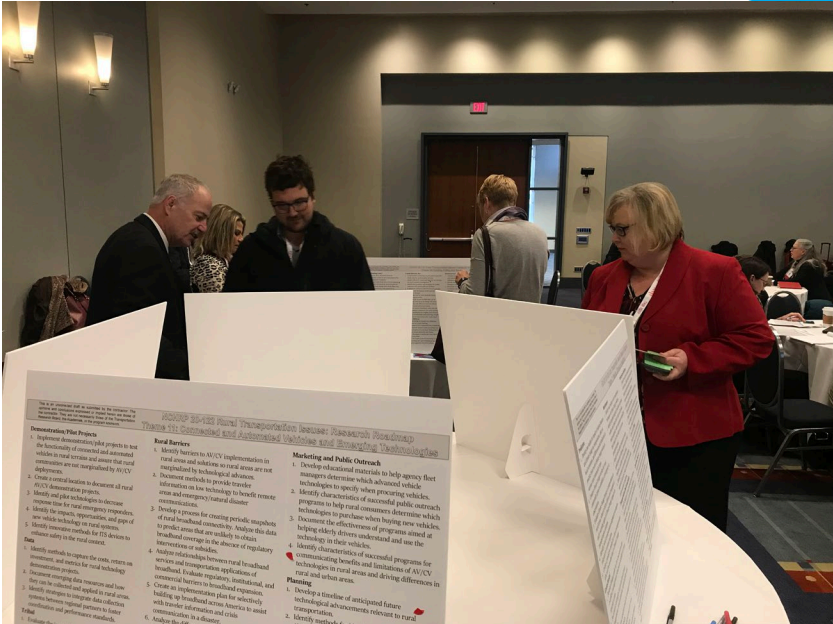
Final Stakeholder Input

- Utilize surveys to gain final stakeholder input

- Corresponding themed pdfs will be available

- Surveys will go live on Monday, March 11th

https://westerntransportationinstitute.org/research_projects/rural-transportation-issues-research-roadmap/

- Deadline for input is Friday, March 22nd

#1   20-122 Rural Transportation Issues: Research Roadmap

This is an uncorrected draft as submitted by the contractor. The opinions and conclusions expressed or implied herein are those of the contractor. They are not necessarily those of the Transportation Research Board, the Academies, or the program sponsors.

Theme #1: Active Transportation

Culture

1. Document active transportation behaviors and attitudes of rural residents (including barriers) to support active transportation policy and compare with urban areas.
2. Analyze rural bicycle culture and safety differences between U.S. and European countries such as Denmark and the Netherlands.
3. Evaluate the difference in bicycle culture and non-bicycle culture.

Data

1. Develop and document techniques for obtaining reliable pedestrian and bicyclists counts in rural areas (including recreational use).
2. Identify impacts of not having reliable pedestrian and bicycle counts outside of metro areas.
3. Develop the effect of lack of bicycle volume data on crash rate calculation.
4. Identify surrogate risk measures of pedestrian and bicycle traffic volumes when data from direct observations is unavailable.

Electric Scooters

1. Identify health and safety benefits and disbenefits of electric scooter use in rural areas.
2. Analyze rural and small-town electric scooter crashes and determine whether the use of helmets or other personal protective equipment should be mandatory in these areas.
3. Analyze economics of electric scooter rental industry and determine whether scooter-sharing is financially viable in small towns.
4. Evaluate potential synergies between electric scooters and rural public transportation, along with methods for safely storing scooters during the transit portion of the trip.
5. Identify appropriate design criteria for accommodating electric scooters safely on rural roads and small-town streets, for example when scooters should be separated from pedestrian and/or motorized traffic.

Infrastructure

1. Evaluate the assumption that signing for bike routes tells drivers that bicyclists are there.

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Input Needed

- Assistance in prioritizing
    - Note the ability to provide no response

- Comments on existing research needs
    - Not rural-specific
    - Better suited for synthesis, pooled fund, technical assistance, etc.
    - Knowledge of existing research

- Additional research needs
    - Freight
    - Aviation
    - School transportation
    - Health (EMS)
    - Non public lands tourism
    - Environment
    - Frontier and remote communities

Survey Instructions

Subcategory: Culture

Do you wish to rank research need associated with this subcategory?

○ Yes

○ No

→

Survey Instructions

Subcategory: Data

	Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important	No Opinion
1. Develop and document techniques for obtaining reliable pedestrian and bicyclists counts in rural areas (including recreational use).	○	○	○	○	○	●
2. Identify impacts of not having reliable pedestrian and bicycle counts outside of metro areas.	○	○	○	○	○	○
3. Develop the effect of lack of bicycle volume data on crash rate calculation.	○	○	○	○	○	○
4. Identify surrogate risk measures of pedestrian and bicycle traffic volumes when data from direct observations is unavailable.	○	○	○	○	○	○

Survey Instructions

Please provide any comments on the research needs associated with this subcategory (please identify by item number).

Are there any additional research needs associated with this subcategory that you feel should be added to the roadmap?

Next Steps

- Incorporate final stakeholder input into the database
- Provide prioritized list and new additions to project panel in paragraph format
- Project panel to provide final prioritization
- Expand project panel priorities into research need statements
- Create final report

Questions & Contacts

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