

Transportation Issues and Concerns for Evacuation in Rural Coastal Counties of the Northern Gulf of Mexico

Zhirui Ye
Jaydeep Chaudhari
Janelle Booth
Benedict Posadas

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Outline

- Background
- Objective of study
- Methodology and results
- Conclusions

Background

- Rural roads comprise 80% of national road miles (3.1 million rural road miles)
- 90% of rural roads are two lanes or less
- Rural populations are more automobile dependent than urban populations
- Nearly 40% of the country's transit-dependent population live in rural areas (FHWA)
- Studies found a lack of coordination between urban and rural evacuation planning efforts

(Meit, M., Briggs, T., & Kennedy, A. (2008))



Objective and Study Area

- Evaluate the use of rural transportation infrastructure in evacuations operations
- Study area: Northern Gulf Region (NGR)
 - Predominantly rural communities
 - 24 counties and 4 parishes
 - 75% of population live in rural or suburban settings

Study Area



Importance of the Northern Gulf of Mexico

- The most vital sea ports in the United States
- Two-thirds of all U.S. oil imports are conveyed through the area
- Essential for the mobility of people and commodities on a domestic and international scale

Ref: Burkett, V. R., Hyman, R. C., Hagelman, R., Hartley, S. B., & Shephard, M. (2008)

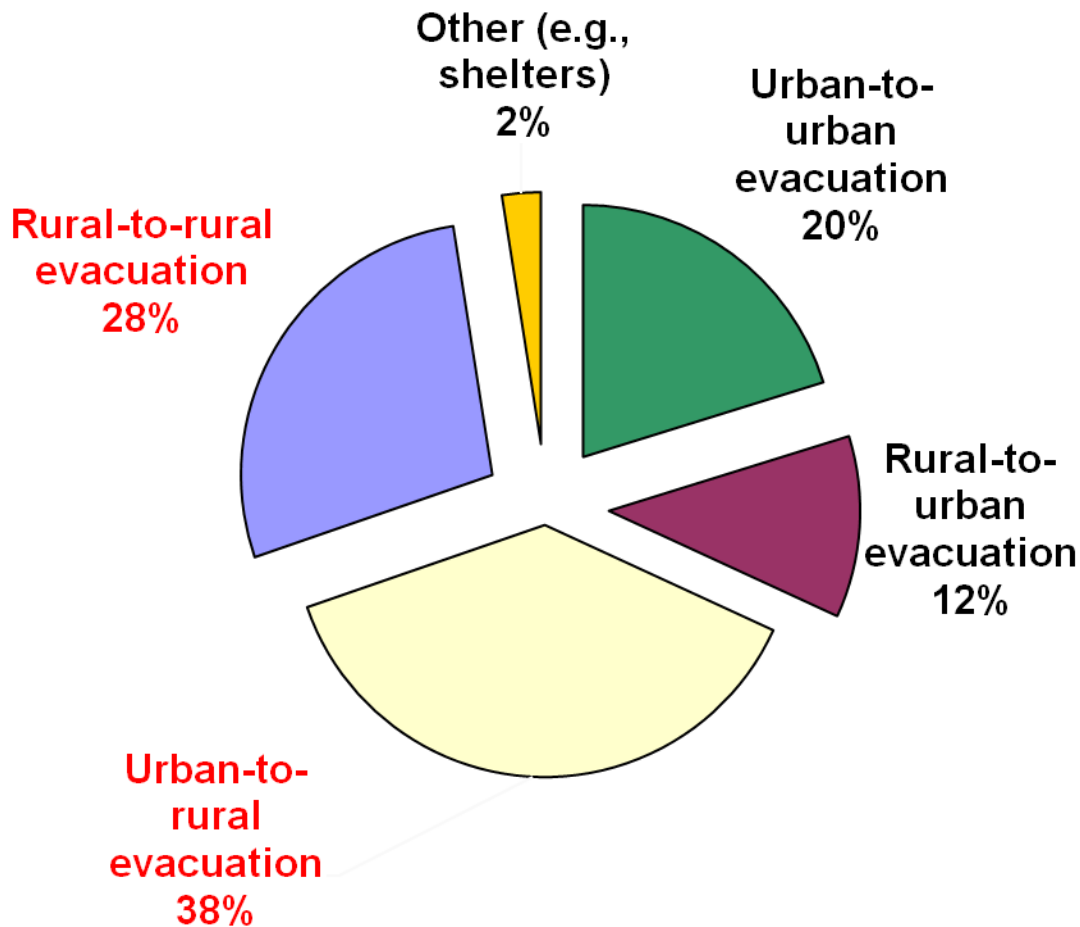


Survey Methodology

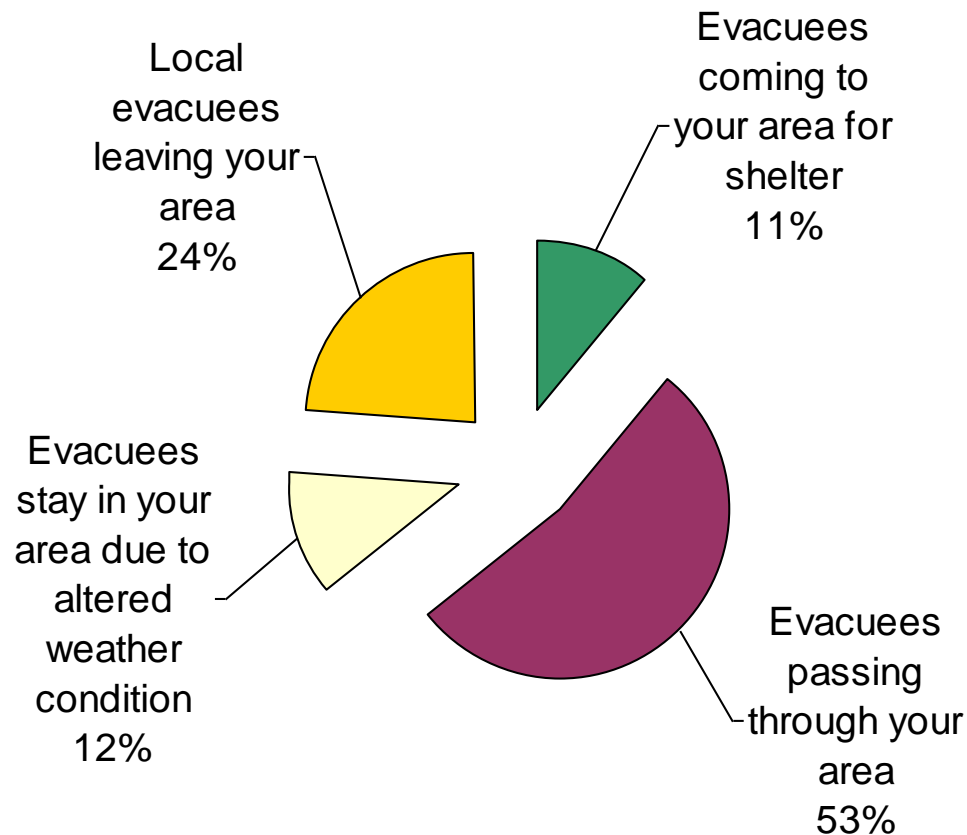
- Survey was distributed to 33 agencies within the NGR
 - Emergency Management Agencies (EMAs) and district DOTs
 - 18 responses (response rate: 55%): 4 AL, 5 MS, 4 LA, and 5 FL
- Major topics
 - Evacuation routes and evacuee flow
 - Use and efficiency of evacuation tools
 - Evacuation preparation
 - Issues or barriers in evacuation events



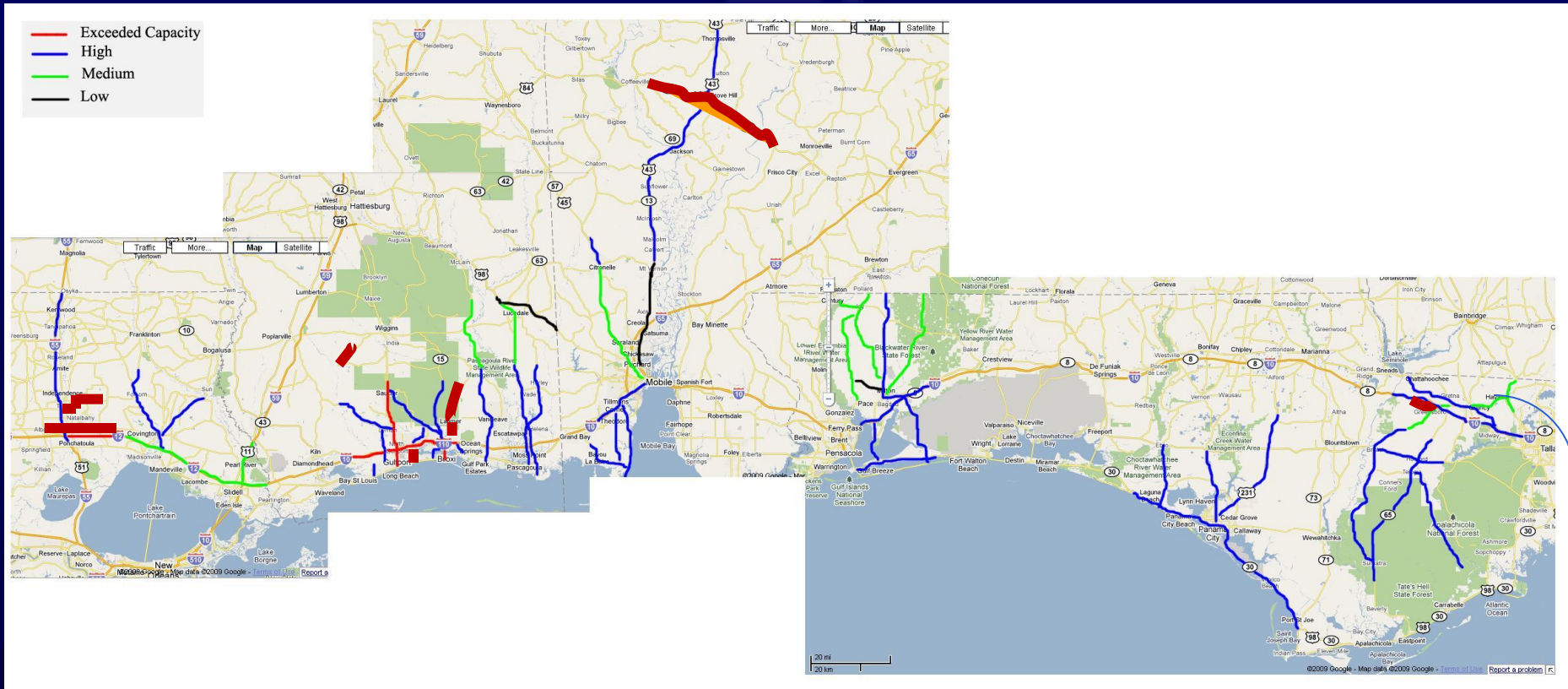
Evacuation Flow



Evacuee Flow



Evacuation Routes



Source: maps.google.com

Communication

Communication Devices / Systems	Use		Efficiency	
	Number of Responses	<i>Total Score</i>	Number of Responses	<i>Average Score</i>
Dial (Reverse) 911	16	20	14	2.38
Dial 511	15	7	12	1.5
Loudspeakers	15	4	12	1
Siren System	15	5	13	2
Highway Advisory Radio (HAR)	16	24	13	1.88
Roadside Information Locations	16	14	12	1.83
Newspapers	18	40	15	1.93
Flyers	16	14	11	1.57
Television	17	50	15	2.73
Public Address and Emails	14	26	12	1.8
Cell Phones	15	21	12	1.9
Emergency Alert Systems	16	20	13	2

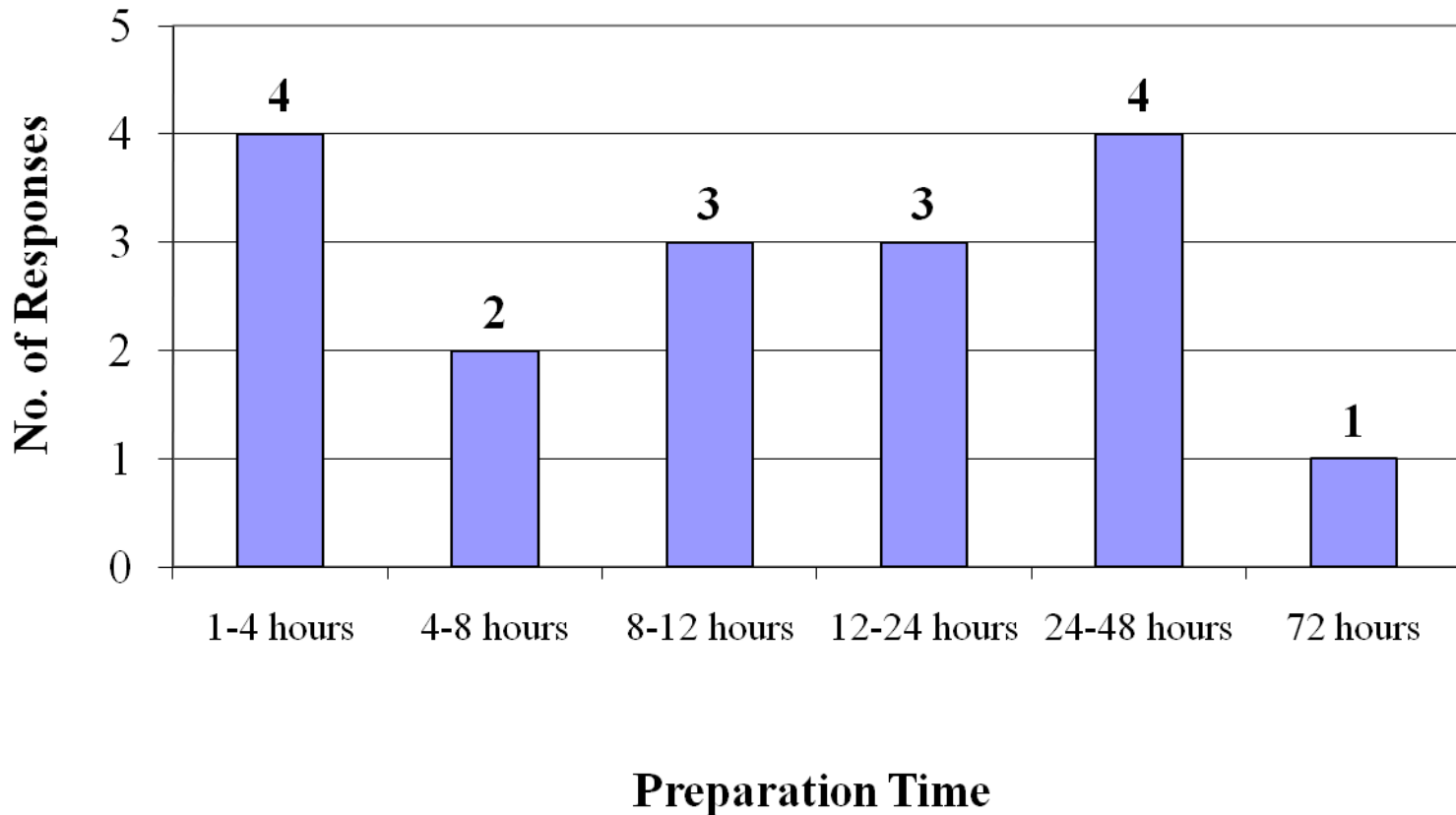
Traffic Control

Traffic Control Devices/Systems	Use		Efficiency	
	Number of Responses	<i>Total Score</i>	Number of Responses	<i>Average Score</i>
Portable Traffic Signal	15	10	12	2.2
Ramp Meters	16	7	13	2.33
Traffic Signs	17	40	16	2.57
Channelization Devices (cones and barricades, concrete barricades)	16	32	16	2.75
Temporary Pavement Markings	16	6	13	2.33
Dynamic Message Signs (DMS)	17	24	15	2.78
Traffic Management Centers	17	13	15	2.5
Human Directives (Police, Army, and Volunteers)	18	35	17	2.47

Use of Weather and Condition Assessment Tools

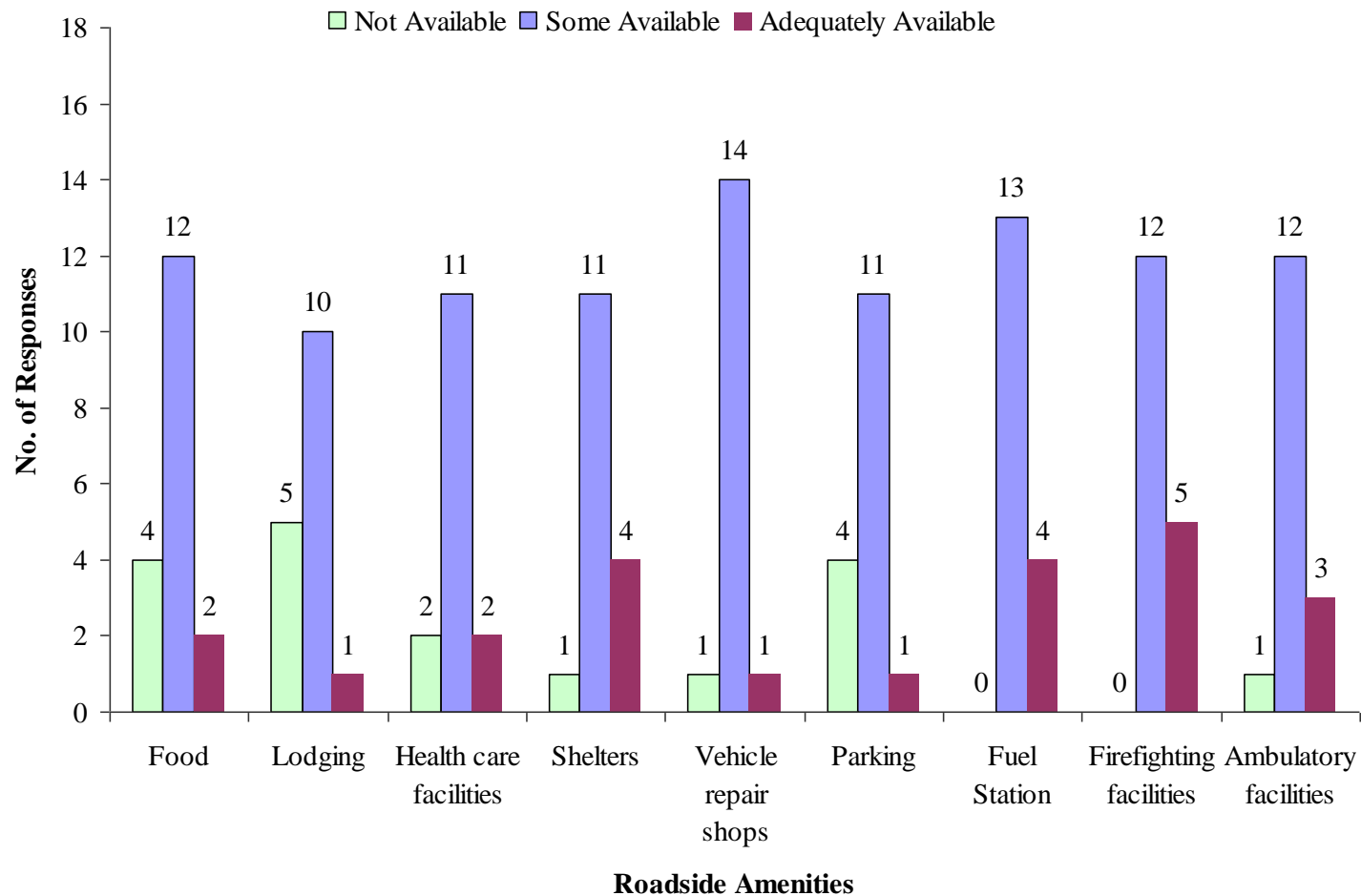
Weather and Condition Assessment Tools	Use			
	Not Used	Low	Medium	High
National Weather Service	0	0	0	18
Clarus Initiative (Established by the FHWA Road Weather Management Program)	11	2	1	0
FHWA Road Weather Management Program	11	2	1	0
Evacuation Traffic Information System (ETIS)	8	1	4	1
Evacuation Travel Demand Forecasting System	9	1	2	2
Hazards U.S. Multi-Hazard (HAZUS-MH MR2- Developed by FEMA)	6	4	3	1

Evacuation Preparation Preparation Time



Evacuation Preparation

Roadside Amenities



Barriers to Emergency Management Activities

Barriers/Obstacles	Emergency Management Activity			
	Mitigation	Preparedness	Response	Recovery
Lack of operating budget	12	9	8	8
Funding restrictions to provide service	6	4	4	4
Lack of workforce	5	5	6	5
Having to plan ahead	1	1	0	0
Lack of roadside assistance	1	2	3	0
Lack of roadside amenities	1	2	2	0
Odd weather conditions	2	1	2	1
Service boundaries/jurisdiction	1	0	1	0
Lack of medical facilities	1	2	3	1
Lack of communication facilities	1	2	3	1
Lack of traffic control services	2	1	1	1
Lack of vehicles to access flood-affected area	1	0	5	2

Conclusions

- Rural areas need to be considered while urban evacuation planning
- Rural transportation infrastructure is under stress during evacuation
- Limited resources include smaller and less diverse workforce
- Estimation of evacuees - a challenging task
- Incompetent communication network for coordination



Acknowledgements

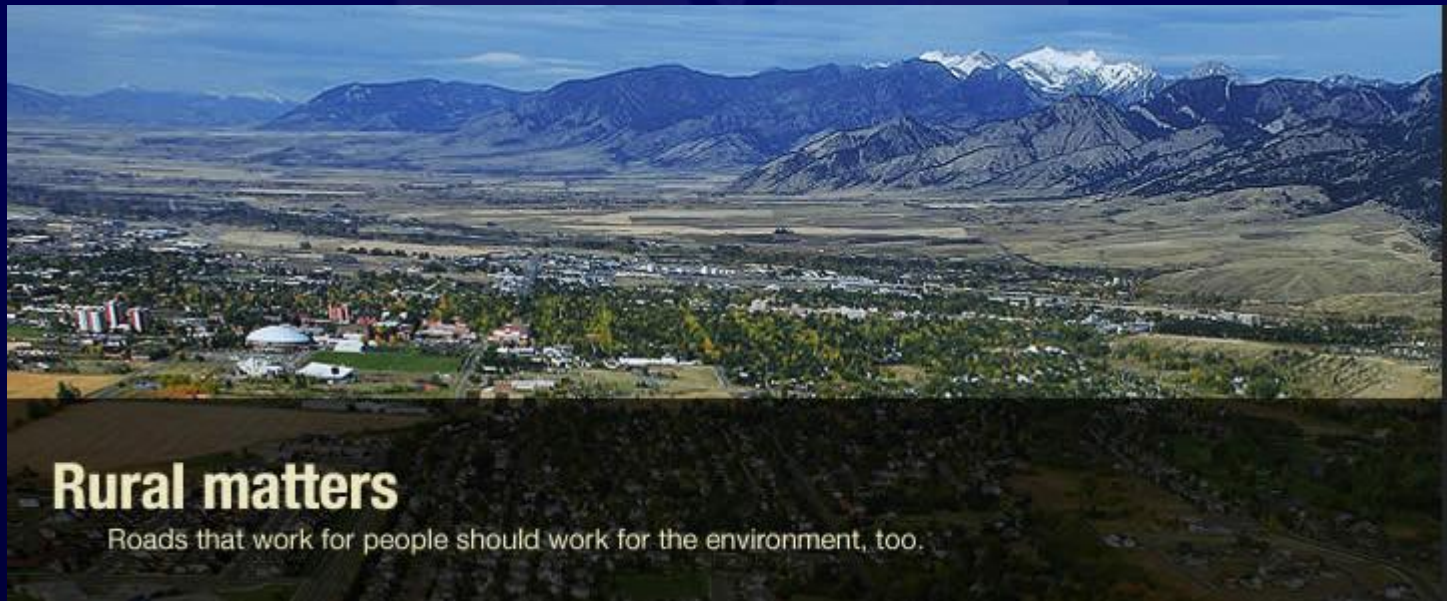
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Center for Urban Rural Interface Studies
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<http://curis.msstate.edu/>

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Thank you

- www.westerntransportationinstitute.org



Rural matters

Roads that work for people should work for the environment, too.



MONTANA
STATE UNIVERSITY

College of
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Western Transportation Institute

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