

The background features a vibrant orange color with several white-outlined shapes. A large, dark blue square is positioned on the right side, partially enclosed by a white border. Other white-outlined shapes, including squares and rounded rectangles, are scattered across the orange field. The overall design is modern and geometric.

HEARTLAND FREIGHT TECHNOLOGY PLAN

BACKGROUND

- The Heartland/Central Plains Region has a strong history of collaboration
- The region hosted a freight focused FHWA Workshop on Multi-Jurisdictional Coordination for the Heartland/Central Plains Region in May 2018



BACKGROUND

- National Economic Partnerships (NEP) Program developed to:
 - Enhance economic development
 - Share best practices, data sharing
 - Enhance mobility of people and goods
 - Identify common tracking and performance metrics
 - Provide opportunities to meet and collaborate with regional peers
- Awarded \$250,000 with a project total of \$312,500

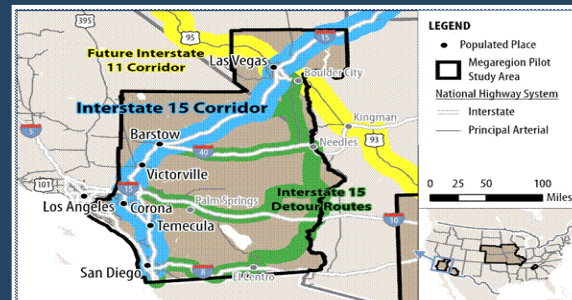


U.S. Department of Transportation
**Federal Highway
Administration**

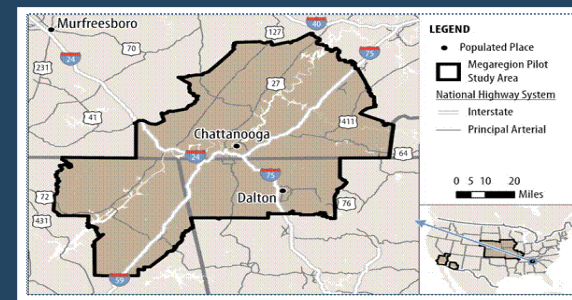
NATIONAL ECONOMIC PARTNERSHIPS



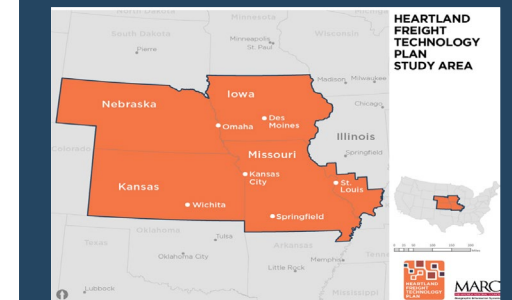
Sun Corridor Value Impact Analysis
Maricopa Assoc. of Governments



Interstate 15 Freight Mobility Enhancement Plan
Nevada DOT



Future Freight Movement along Freight Alley, "The Greater Chattanooga Region"
Tennessee DOT



Heartland Freight Technology Plan
Mid-America Regional Council (MARC) & regional Consortium

PROJECT NEED

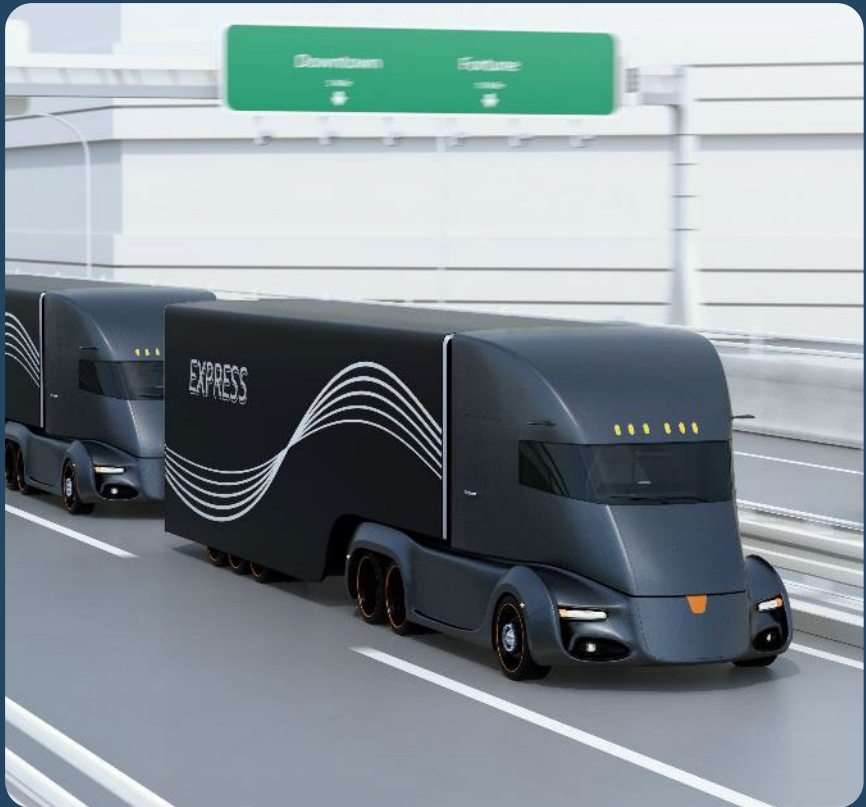
- Regional networks of shared infrastructure support economic linkages between industry clusters and among states and metropolitan areas, these freight and commercial connections must be defined and examined
- Today's freight community is coordinating, developing and analyzing large amount of data that creates an opportunity for insight by the public sector is greater than ever, but true visibility still seems frustratingly out of reach
- Public agencies and other partners in the Heartland want to operate in a manner that uses and supports freight technologies that will add to the region's vitality

PLAN FOCUS

- Engage key regional public and private freight stakeholders
- Examine freight connections between regional metropolitan areas and states
- Assess potential impacts of emerging freight technologies such as autonomous and connected vehicles, vehicle-to-vehicle and vehicle-to-infrastructure systems, etc.



PLAN FOCUS (cont.)



- Develop regional recommendations to harmonize implementation of emerging freight technologies including autonomous freight delivery systems, truck parking systems, blockchain, etc.
- Provide recommendations for public and private data management and sharing arrangements to promote efficient interoperability of freight technology systems within the region

PARTNERS

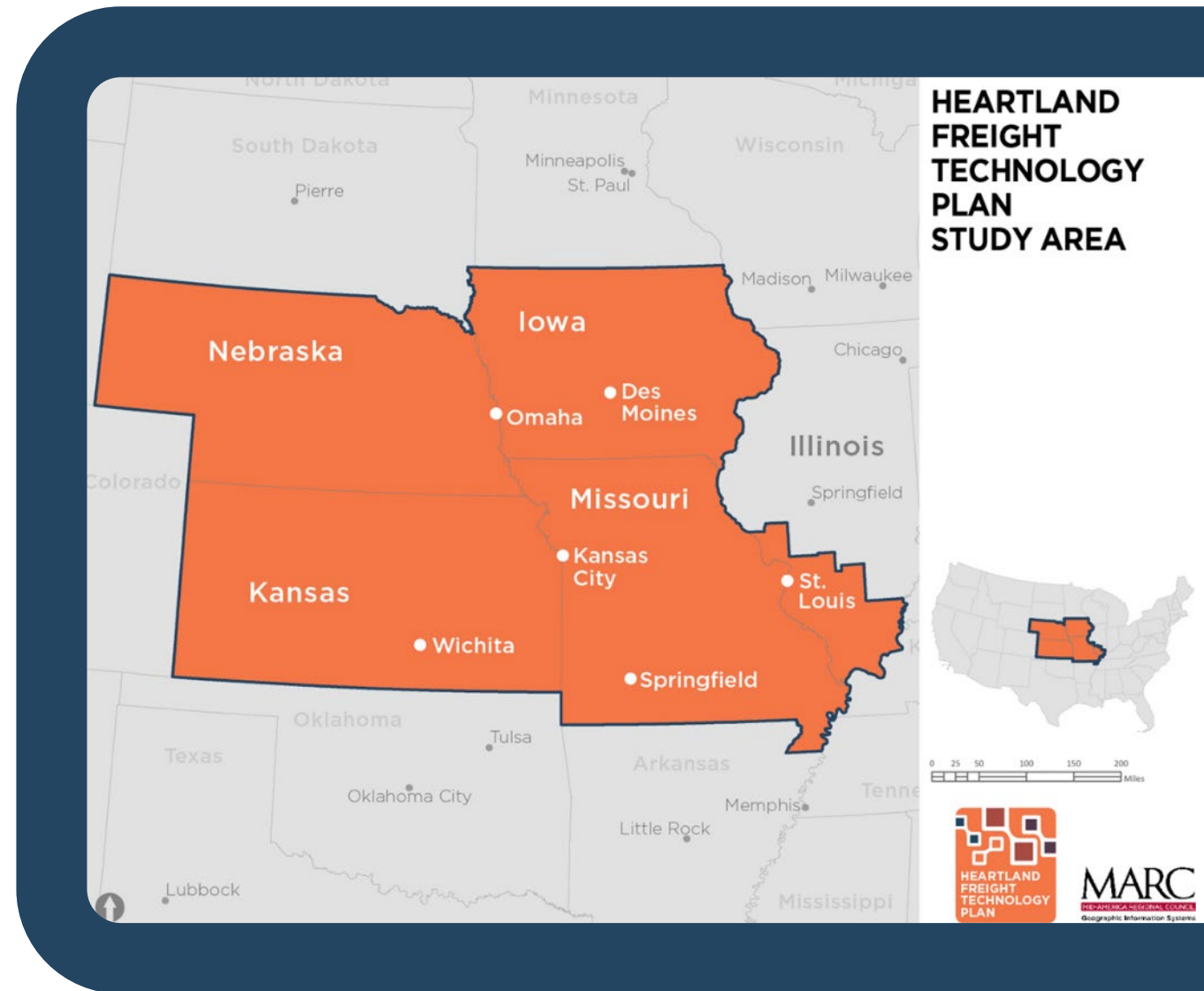
6 MPOS

- Kansas City (MARC)
- Springfield (OTO)
- Wichita (WAMPO)
- St. Louis (EWG)
- Omaha (MAPA)
- Des Moines (DMAMPO)

5 State DOTs

- MoDOT
- KDOT
- Nebraska DOT
- IDOT
- Illinois DOT

Heartland Civic Collaborative



PARTICIPATING MPO LEADS

Kansas City (MARC)

- **Caitlin Zibers**, Project Manager
- **Ron Achelpohl**, Dir Transportation & Env
- **Darryl Fields**, Senior Transportation Planner

Omaha (MAPA)

- **Jim Boerner**, Transportation Planner

Wichita (WAMPO)

- **Chad Parasa**, Director
- **Chris Upchurch**, Principal Planner

Springfield (OTO)

- **Andy Thomason**, Senior Planner

St. Louis (EWG)

- **Bailey DeJonge**, Transportation Planner
- **Jerry Blair**, Dir of Transportation Planning

Des Moines (DMAMPO)

- **Todd Ashby**, Executive Director

PARTICIPATING DOT LEADS

Missouri DOT

- **Griffin Smith**, Planning Manager

Kansas DOT

- **John Maddox**, Manager – Office of Freight & Rail

Nebraska DOT

- **Jarrold Walker**, Freight & Economic Development Liaison

Iowa DOT

- **Sam Hiscocks**, Freight & Rail Planner
- **Andy Lewis**, Traffic Operations

Illinois DOT

- **Jim Durako**, Planning & Systems
- **Michael Vanderhoff**, Planning Section Chief

CONSULTANT SUPPORT

- **WSP** was selected by the Consortium to lead this project
- **Freight Insights** was the subcontractor on the project

Project Manager
Virginia Lingham, PE

Principal-in-Charge
Agnes Otto

QA/QC Manager
Steve Kuciemba

Task 1
Engage
Shane Peck /
Lisa Hummel

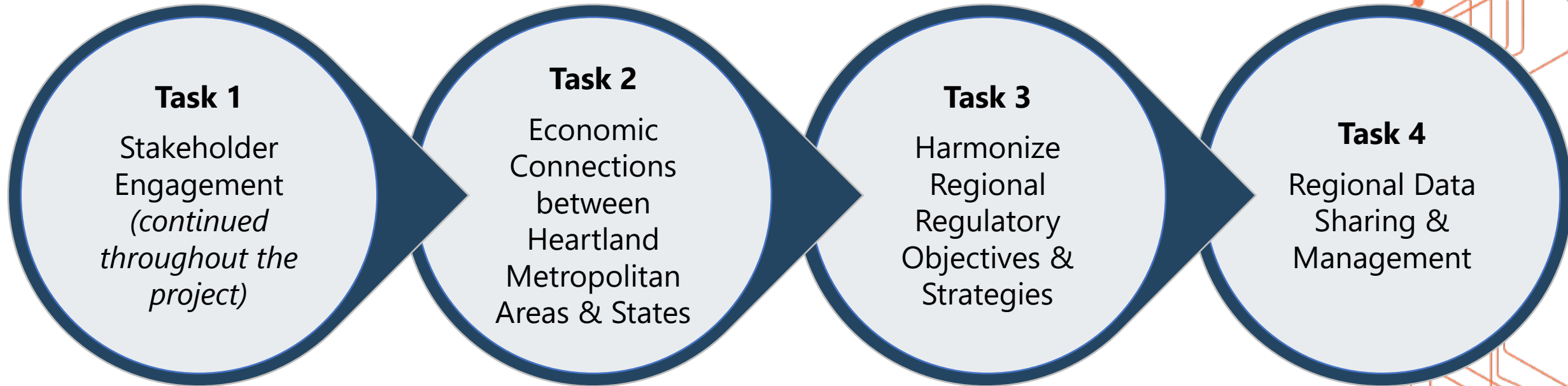
Tasks 2 and 3
Economic and Regulations
Joe Bryan

Task 4
Data
Lindsay Francis

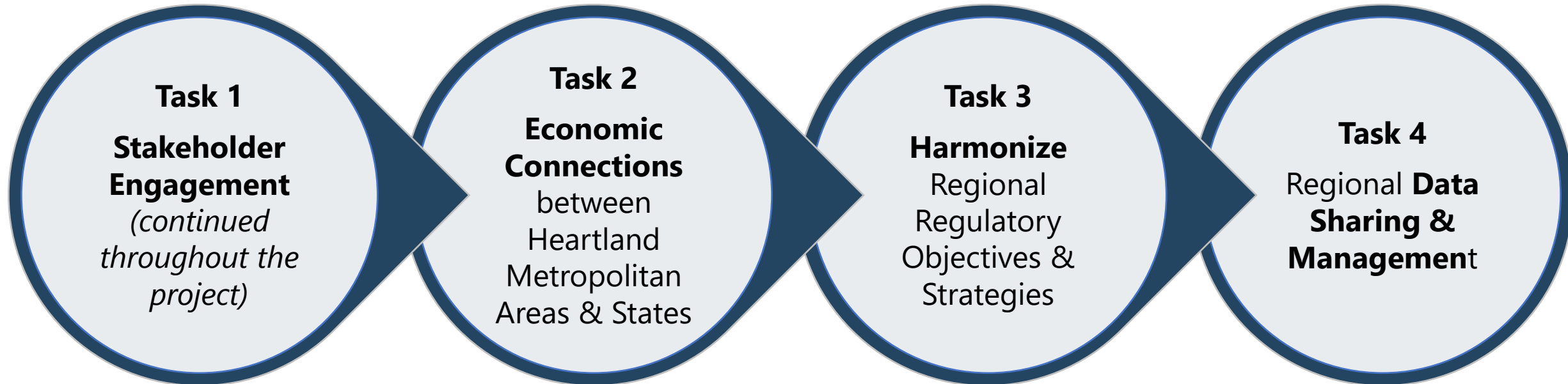
Task 5
Final Report
Virginia Lingham, PE



TASKS OVERVIEW



TASKS & DELIVERABLES



- **Plan** with best practices for multi-jurisdictional engagement

- **Tech memo** describing regional economic and industrial connections along with recommendations

- **SWOT** analysis
- **Policy** recommendations
- **Emerging technology** inventory

- **Guidebook** for data sharing and management
- Data sharing agreement **templates**

TIMELINE



TASK 1: STAKEHOLDER ENGAGEMENT



- Extensive stakeholder database was established & maintained for outreach
 - More than 300 regional contacts
- Stakeholder interviews completed
- Technology Assessment & Data Sharing Survey
- Technology focused workshop/ networking event held on May 6-7, 2020
- Data focused workshop/networking event held on June 10-11, 2020

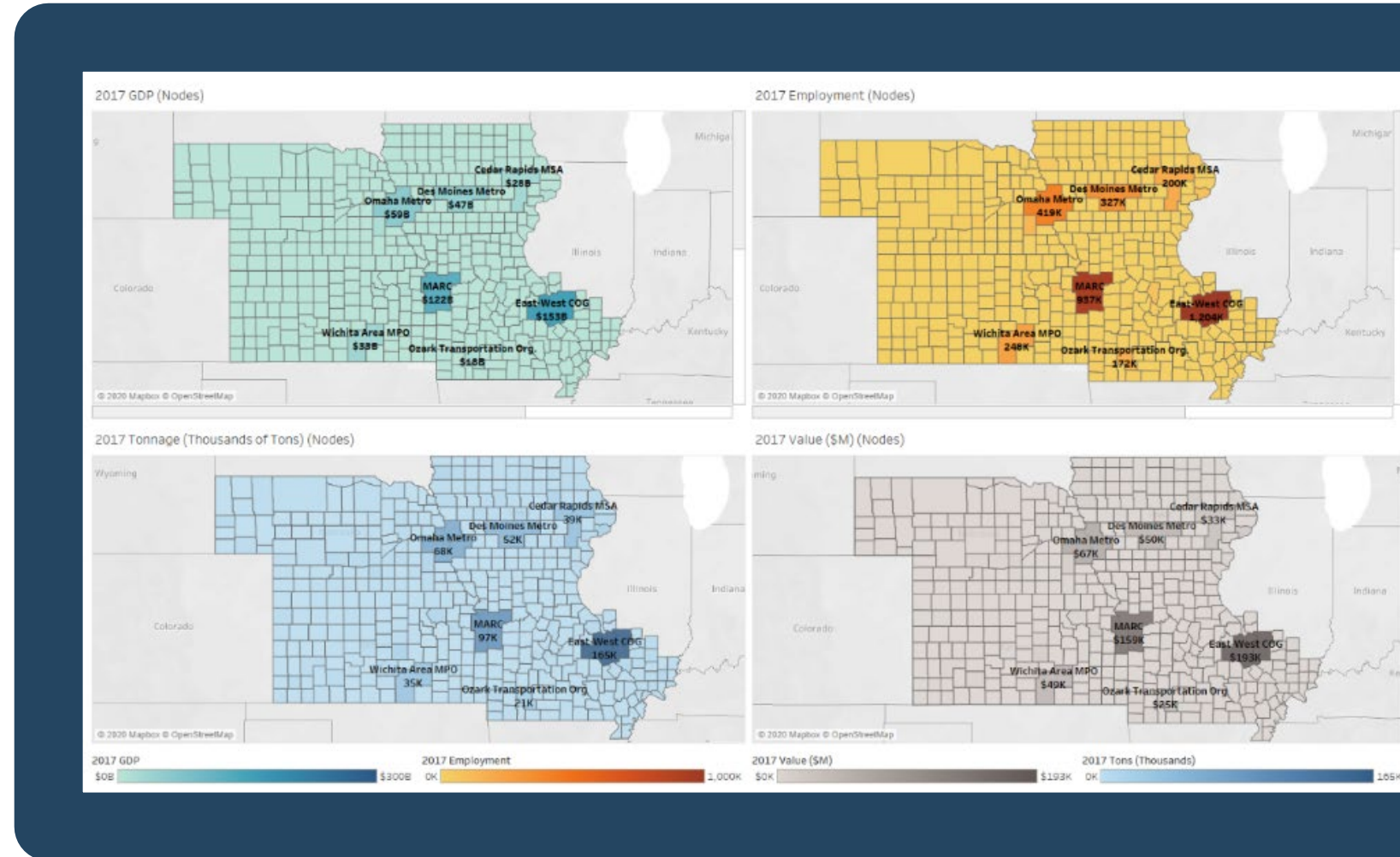
TASK 2: ECONOMIC CONNECTIONS

- **Priority freight nodes/corridors:**

- GDP
- Employment
- Freight Value
- Tonnage

- **Key industries:**

- Manufacturing
- Wholesale trade
- Retail trade
- Construction
- Transportation
- Agriculture



IDENTIFIED REGIONAL NODES

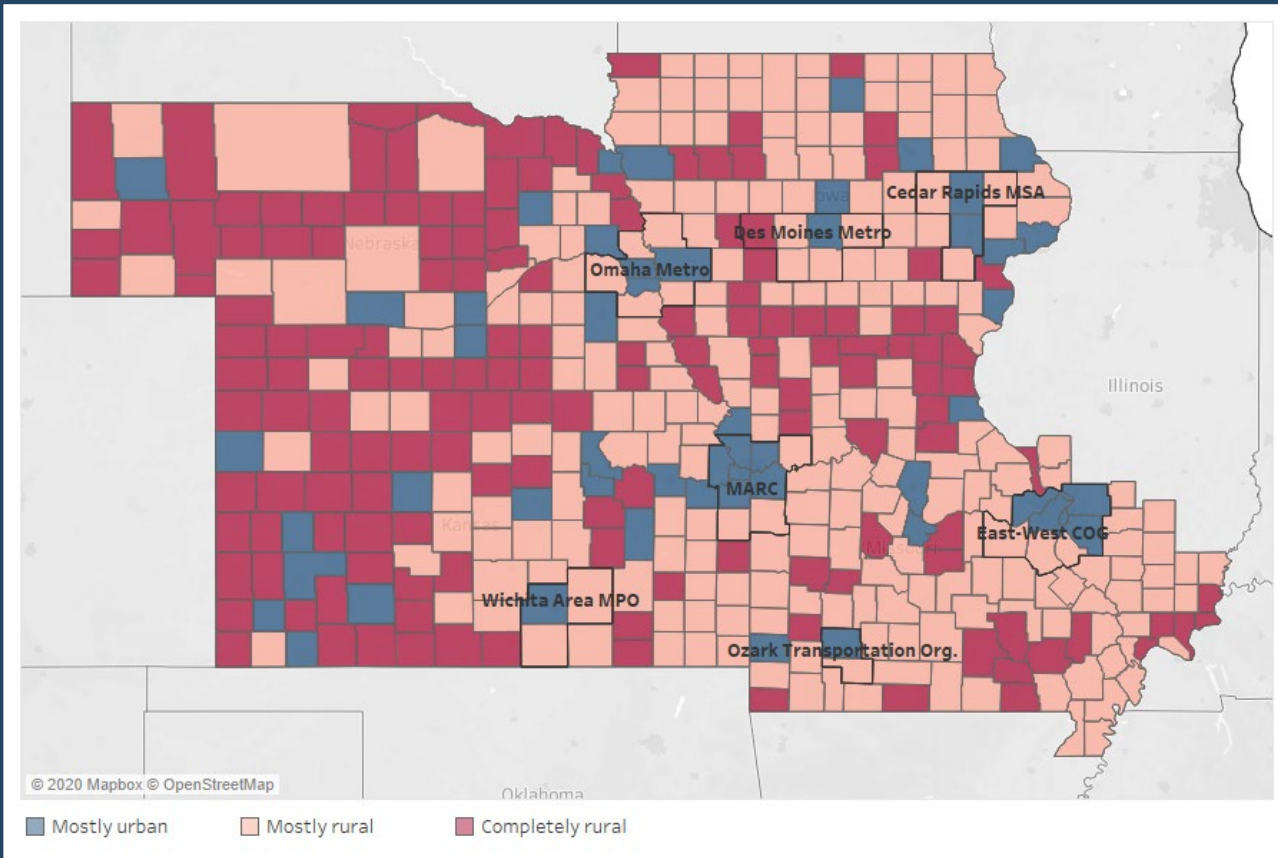
Regional Nodes	2017 GDP	2017 Employment	2017 Freight Flow Tons (Thousands)	2017 Freight Flow Value
East-West COG	\$153B	1,204K	171K	\$196B
MARC	\$122B	937K	98K	\$159B
Omaha Metropolitan Area	\$59B	419K	68K	\$67B
Des Moines Metropolitan Area	\$47B	327K	52K	\$50B
Wichita Area MPO	\$33B	248K	35K	\$49B
Ozark Transportation Org	\$18B	172K	21K	\$26B
Cedar Rapids MSA	\$28B	200K	39K	\$33B

CONTRIBUTION TO REGIONAL ECONOMY

Regional Nodes	2017 GDP	2017 Employment	2017 Freight Flow Tons (Thousands)	2017 Freight Flow Value
East-West COG	20%	20%	10%	15%
MARC	16%	16%	6%	12%
Omaha Metropolitan Area	8%	7%	4%	5%
Des Moines Metropolitan Area	6%	6%	3%	4%
Wichita Area MPO	4%	4%	2%	4%
Ozark Transportation Org	2%	3%	1%	2%
Cedar Rapids MSA	4%	3%	2%	2%
Rest of Heartland	40%	41%	72%	56%

➔ Nodes cover most of region's GDP and jobs, much of freight value – but less of tonnage

STUDY AREA RURAL/URBAN SPLIT



Category definitions from American Community Survey based on percent rural population of county:

- Mostly Urban: 0-50%
- Mostly Rural: 50%-99%
- Completely Rural: 100%

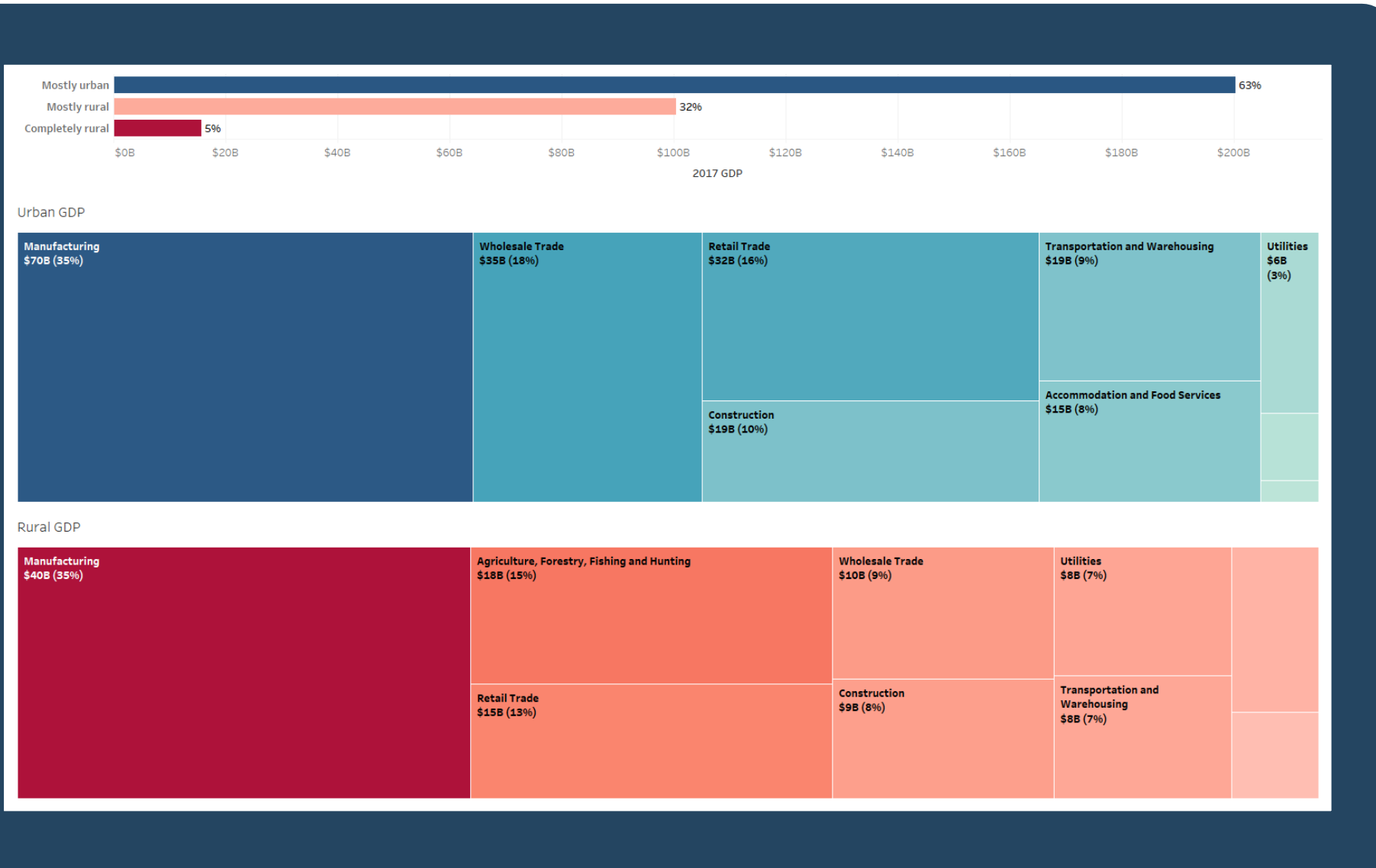
HEARTLAND REGION GDP

GDP for Freight-intensive Industries

- Manufacturing \$111B (35%)
- Retail Trade \$47B (15%)
- Wholesale Trade \$46B (14%)
- Construction \$29B (9%)
- Transportation & Warehousing \$27B (8%)
- Accommodation & Food Service \$20B (6%)
- Agriculture, Forestry, Fishing & Hunting \$20B (6%)
- Utilities \$14B (4%)

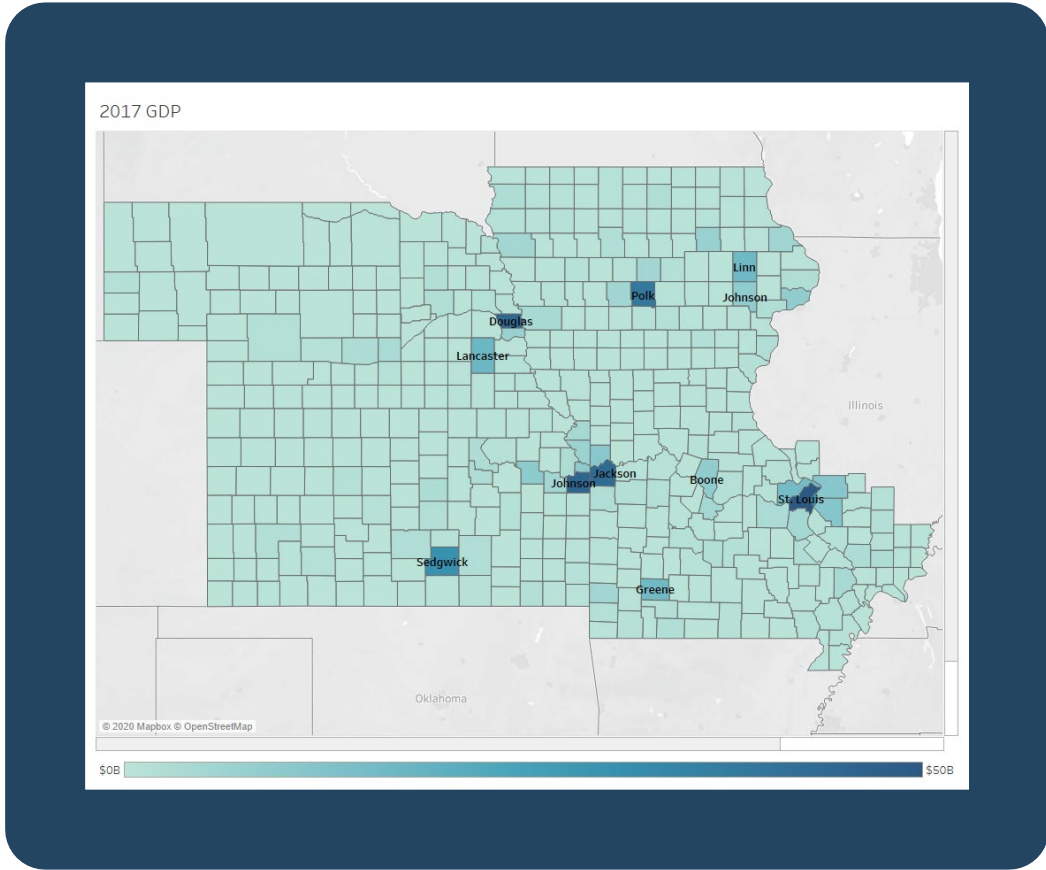
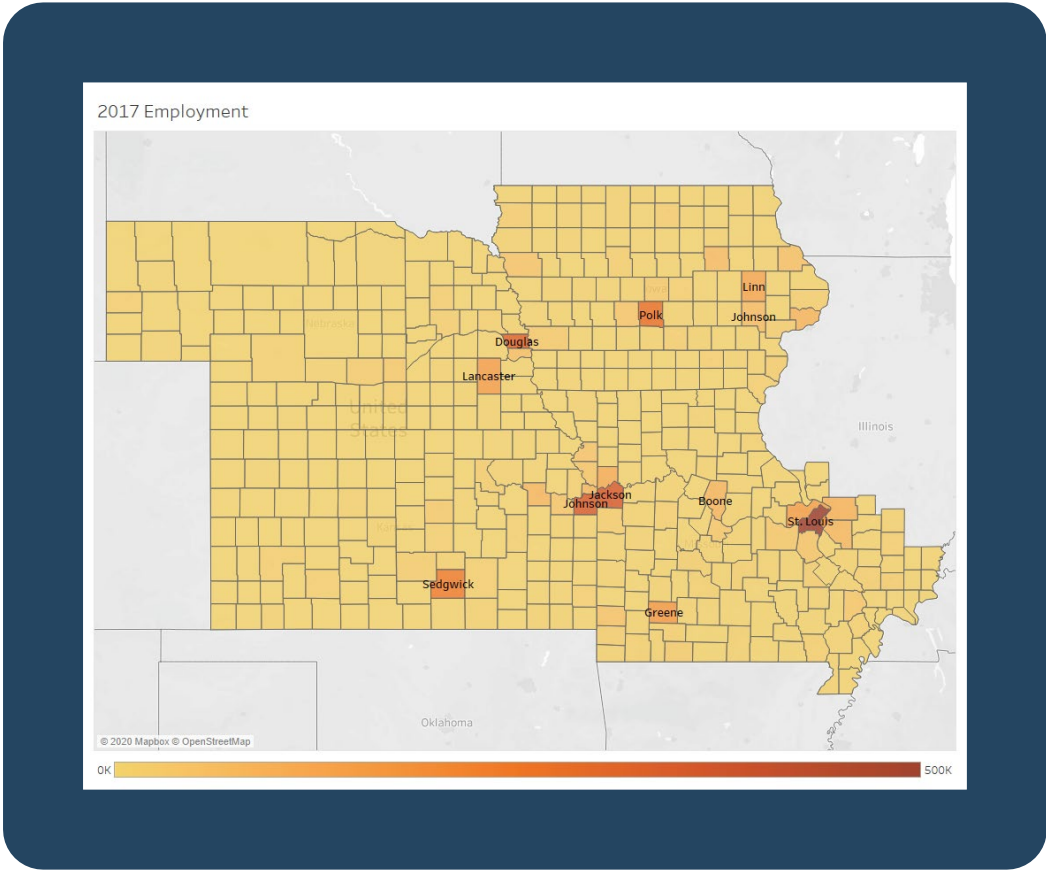


URBAN/RURAL INDUSTRY SPLIT



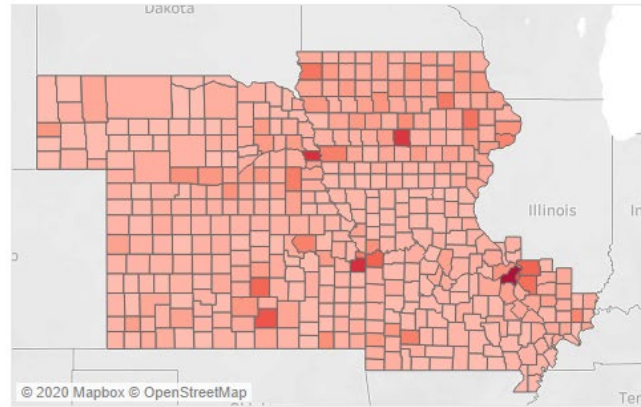
- **Manufacturing dominates** both urban and rural industries across the Heartland region
- **Rural areas have significant contributions** from the agricultural industry
- Other important industries include **trade** (wholesale and retail), **construction** and **transportation**

ECONOMIC PROFILE BY COUNTY

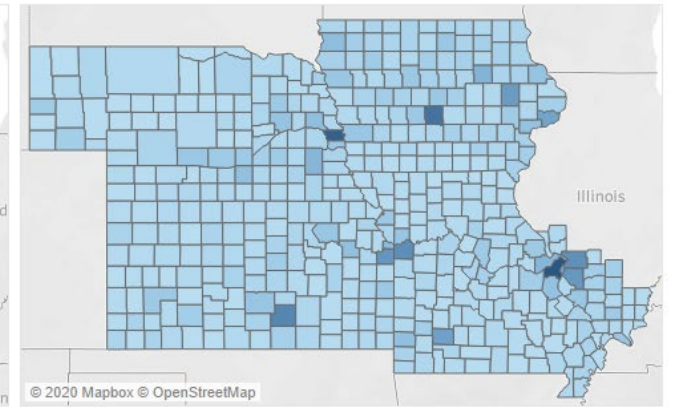


MAJOR FREIGHT ORIGINS & DESTINATIONS

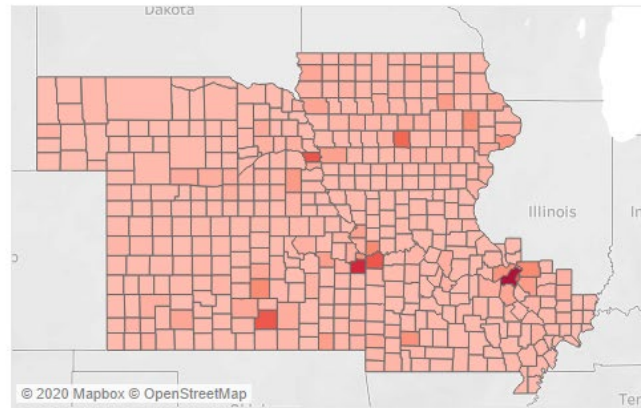
Major Origins (2017 Tonnage)



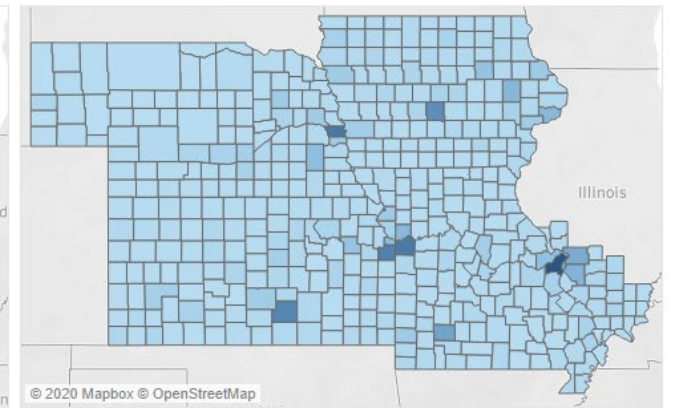
Major Destinations (2017 Tonnage)



Major Origins (2017 \$M)



Major Destinations (2017 \$M)



2017 Tons (Thousands)



2017 Tons (Thousands)



Value (in \$M)



Value (\$M)



FREIGHT FLOW BY TONNAGE

East-West COG Trade Partners

- Trade partners visualized by tonnage of freight moved by truck
- Thickness of segment determines proportion of freight flow relative to other trade partners
- Rest of U.S. split into 4 groups
 - North – WI, MN, ND, SD
 - Gulf – AR, OK, LA, TX
 - West – Rest of states west of Mississippi river
 - East – Rest of states east of Mississippi river

Maps were created for each node.

© 2020 Mapbox © OpenStreetMap

FREIGHT FLOW BY VALUE

East-West COG Trade Partners

- Trade partners visualized by value of freight moved
- Thickness of segment determines proportion of freight flow relative to other trade partners
- Rest of U.S. split into 4 groups
 - North – WI, MN, ND, SD
 - Gulf – AR, OK, LA, TX
 - West – Rest of states west of Mississippi river
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Maps were created for each node.

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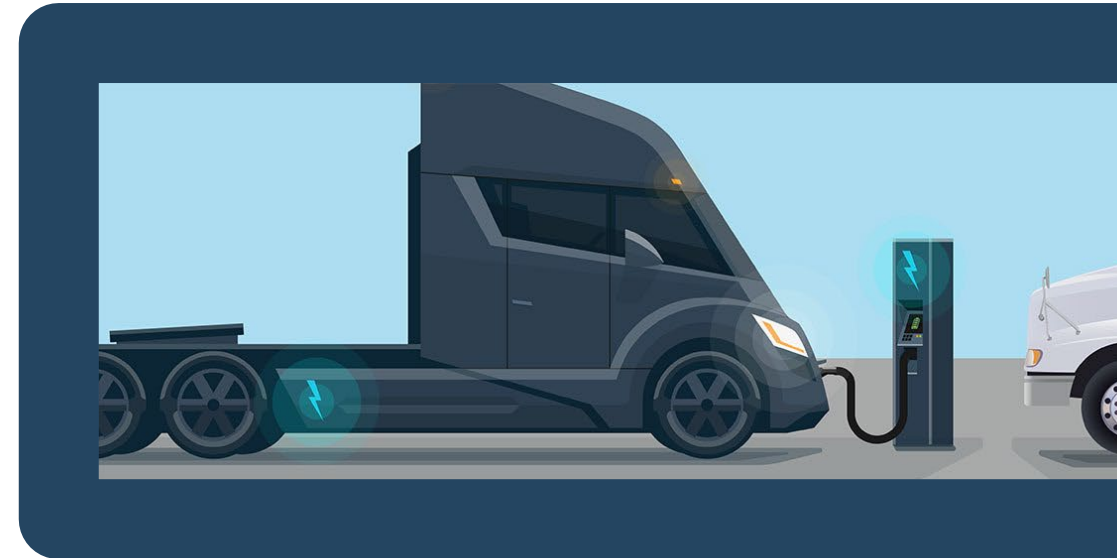
TASK 3: FREIGHT TECHNOLOGY MATURITY

Priority:

- Safety - Advanced Driver Assistance Systems
- Energy - Truck Electrification

Watchlist:

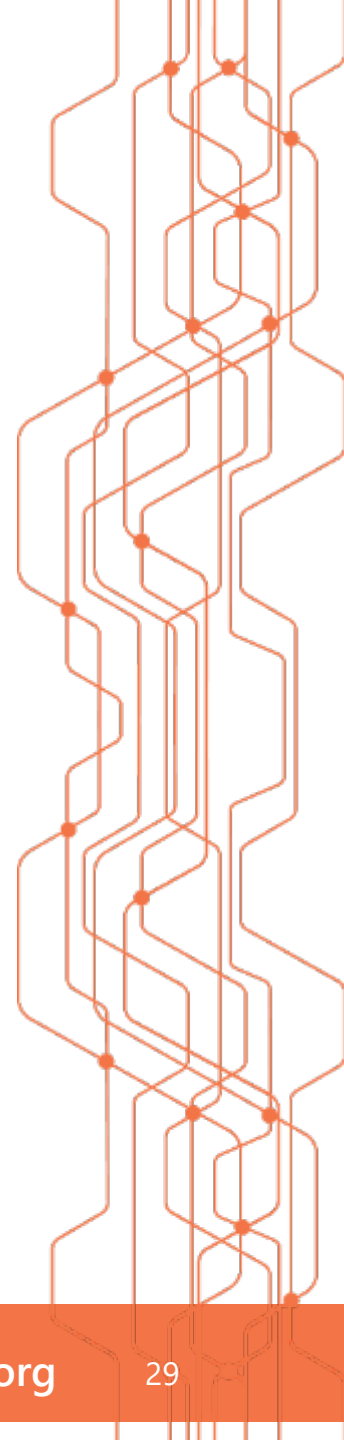
- Automation
- Big Data
- Data, Information & Communication
- Digital Supply Chain
- Enforcement & Inspection
- Intermodalism



TASK 3: REGULATORY STRATEGIES

Key Recommendations:

- Continue consortium for implementation and investigate opportunities to house the plan within a larger agency
- Integrate the HFTP as the source for statewide and regional freight plans as it relates to freight technology
- Focus on implementation of near-term technologies like truck electrification and Advanced Driver Assist Systems
- Maintain technology watchlist



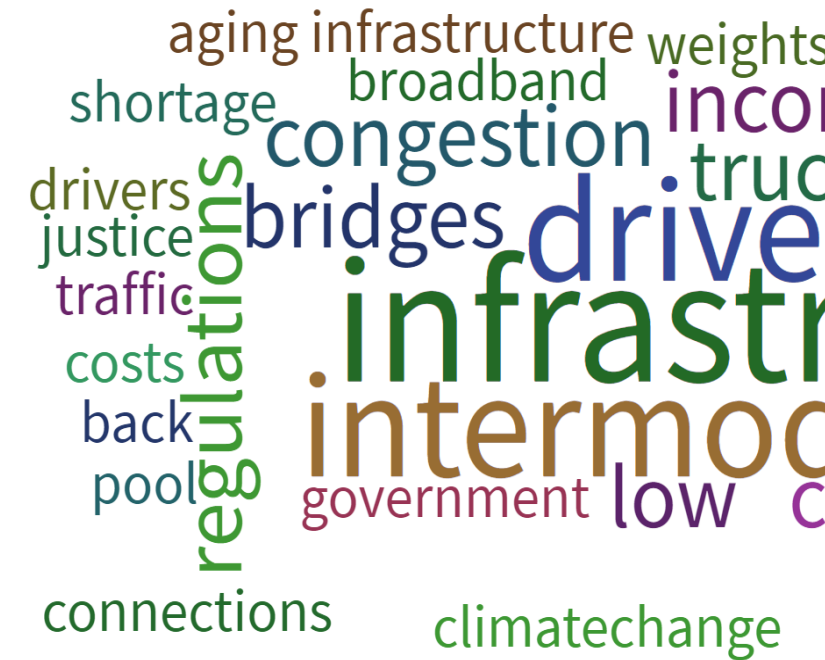
TASK 4: DATA SHARING & MANAGEMENT

Key Recommendations:

- Data working group – including technical members
- Formal data governance structure – strive for a more systematic structure to manage agreements
- Consolidate and share existing freight data resources; develop data, metadata and quality priorities and standards for each data set
- Consider developing a regional data portal for data sharing
- Data agreements to reference and build from

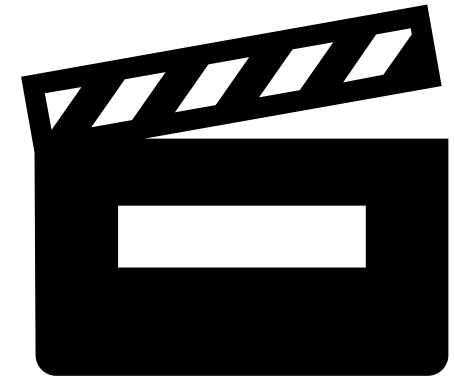
What is the biggest issue facing freight movement in the heartland

underscore like this _ be



BLUEPRINT FOR ACTION

- **Focus on Actionable Steps with Near-term, Mid-term, and Long-term Timelines**
- **Consortium Organization**
- **Working Groups**
- **Ongoing Efforts**



STAY TUNED ONLINE: HeartlandFreight.org

Heartland Freight Technology Plan



A national hub for agriculture, manufacturing and freight distribution, the Central Plains/Heartland Region includes the states of southwestern Illinois, Iowa, Kansas, Missouri and Nebraska.

Together, we are embarking on a freight technology plan for the region that will deliver:

- A prioritization framework for new technologies.
- Goals and strategies for harmonizing regulation.
- Recommendations for data management and sharing.
- A blueprint for action and implementation.

Understanding regional linkages requires vision, foresight and keen awareness of strengths associated with a shared regional vision. We will be looking for partnerships to assist in information sharing. Creation of the freight technology plan will follow this sequence.

- GET INVOLVED
- PROJECT UPDATES
- PARTNERS
- TIMELINE
- FACT SHEET

Economic connections between Heartland metropolitan areas and states

The team will work to define the major economic and industrial connections critical to freight flow within the region. An approach to access these connections in other regions will be developed to support the overall economic benefit of efficient freight movement.

Harmonize regional regulatory objectives and strategies

The team will develop an approach to identify and assess emerging freight technologies as well as provide recommendations for harmonizing policies for transportation agencies in the region.

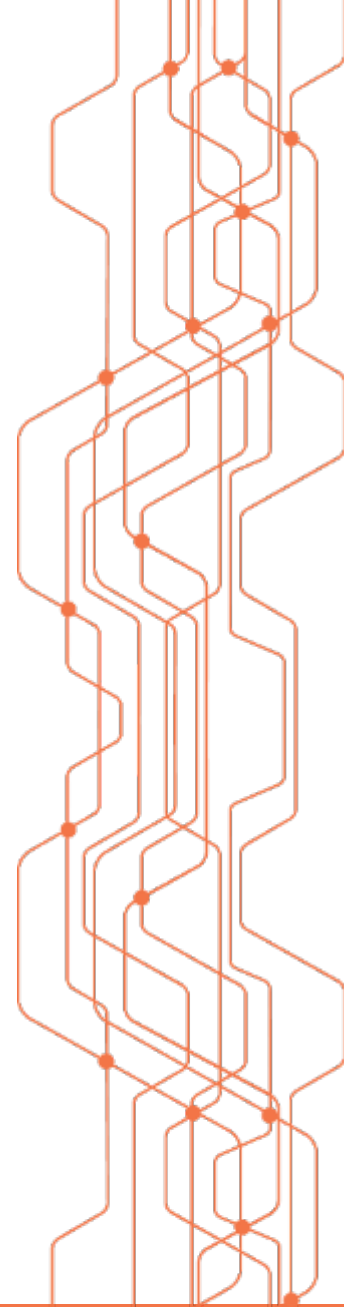
Regional data sharing and management

A guidebook and templates for regional data sharing and management will be created that highlight best practices for public/private data sharing. A

- Final report
- Data sharing agreements
- Contact us

LESSONS LEARNED

- Importance of **champions** & institutional structure to organize and maintain momentum
- Rubric for nodes, corridors and industries
- Technology maturity model
- Data sharing/management practices and agreements



NEXT STEPS

- Continue to foster regional **partnerships**
- On-going analysis/ monitoring of data sharing opportunities
- Stronger bonds of cross-jurisdictional partnerships
- Explore additional Capacity Building assistance from FHWA or other funding opportunities
- Continue to position the Consortium to help the Heartland Region operate in a manner that uses and supports freight technologies that will add to the region's vitality

