Don’t Be Scared:

Small and Medium-Sized Communities can do Freight Planning, too!

Champaign-Urbana Region Freight Plan

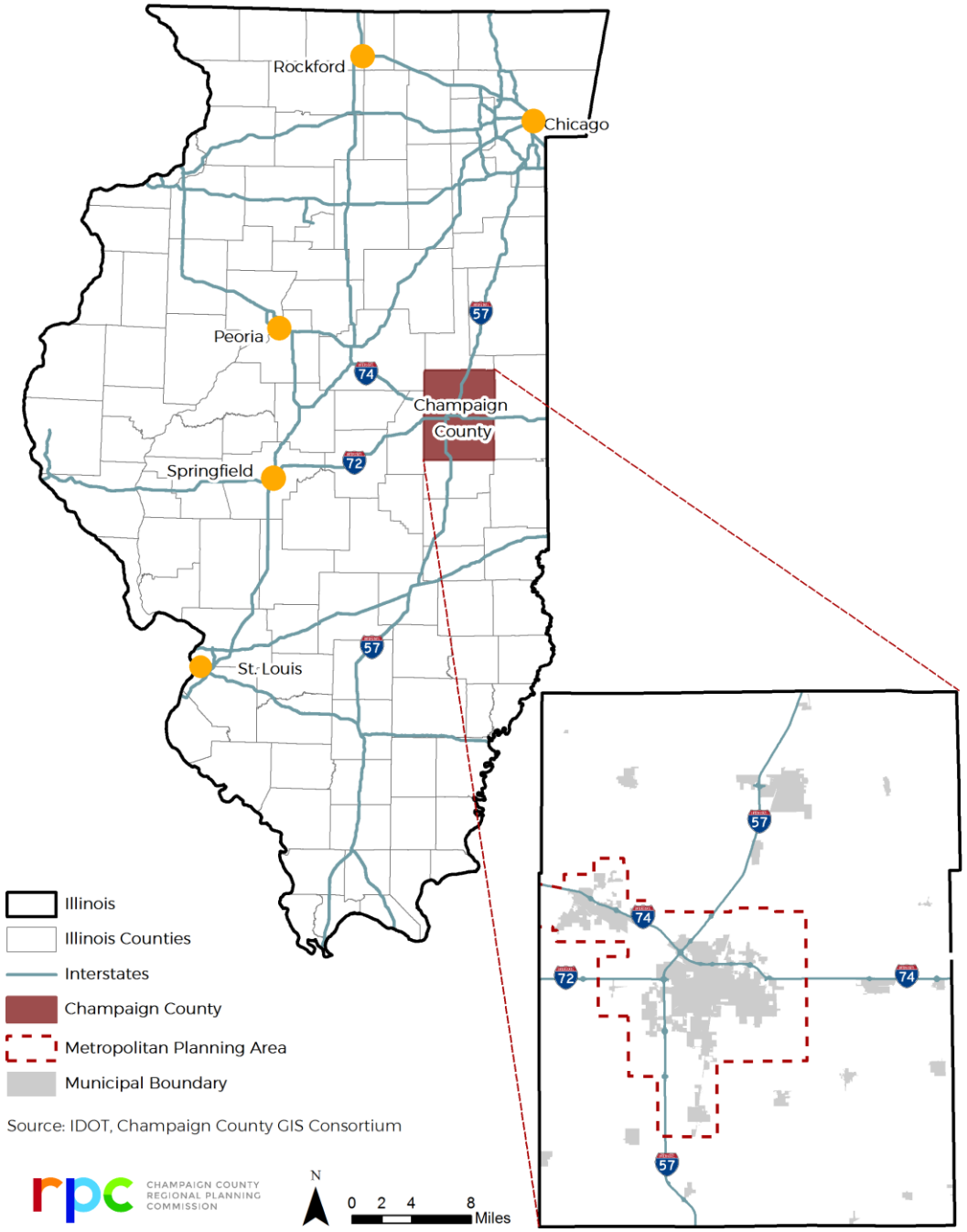
Illinois State Freight Advisory Council (ISFAC)

Shuake Wuzhati, Associate Transportation Engineer

Rita Morocoima-Black, Planning and Community Development Director

Champaign County Regional Planning Commission

Champaign Urbana Urbanized Area Transportation Study (CUUATS)



The Champaign-Urbana region

- **Location**
  135 miles south of Chicago in central Illinois
- **Land area**
  180 square miles
- **Population**
  148,000
- **Home to the University of Illinois**
  50,000 students

Champaign-Urbana Region

FREIGHT PLAN

rpc CHAMPAIGN COUNTY REGIONAL PLANNING COMMISSION CUUATS

Plan funded by

Illinois Department of Transportation (IDOT)

Plan prepared by

CUUATS Staff at the Champaign Urbana Urbanized Area Transportation Study (CUUATS)

rpc a program of the Champaign County Regional Planning Commission (CCRPC)

In cooperation with

Champaign County

Champaign County Chamber of Commerce

Champaign County Economic Development Corporation

City of Champaign

City of Urbana

Federal Highway Administration (FHWA)

IDOT Central Office, IDOT District 5

Mid-West Truckers Association

University of Illinois

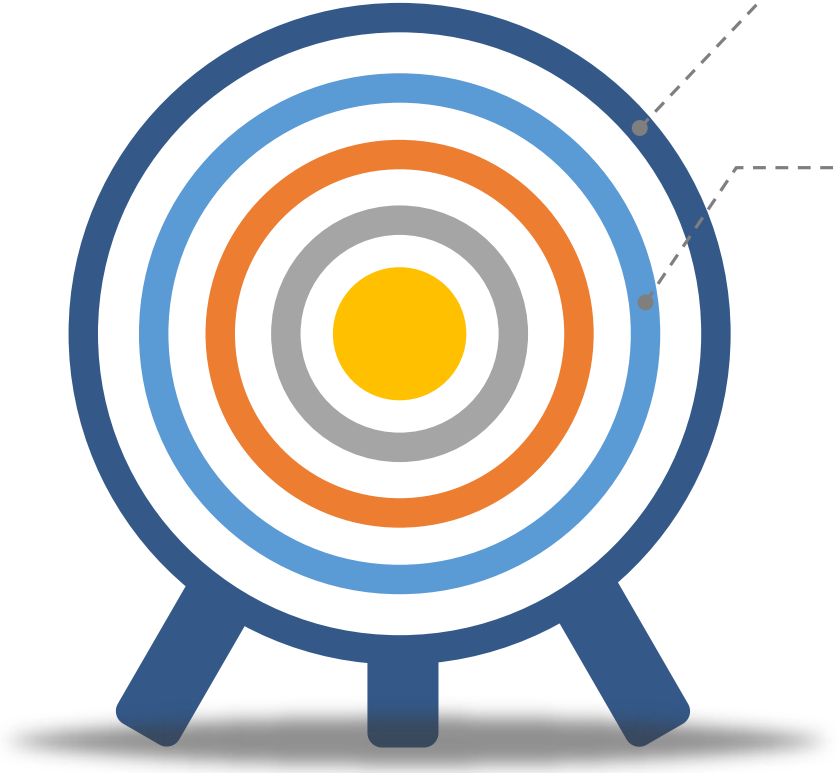
Village of Savoy

Plan Objectives

Build awareness

Linkage between the region's economy and key infrastructure components.

Plan Objectives



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Identify freight movement patterns

Commodity tonnage and value by mode and direction

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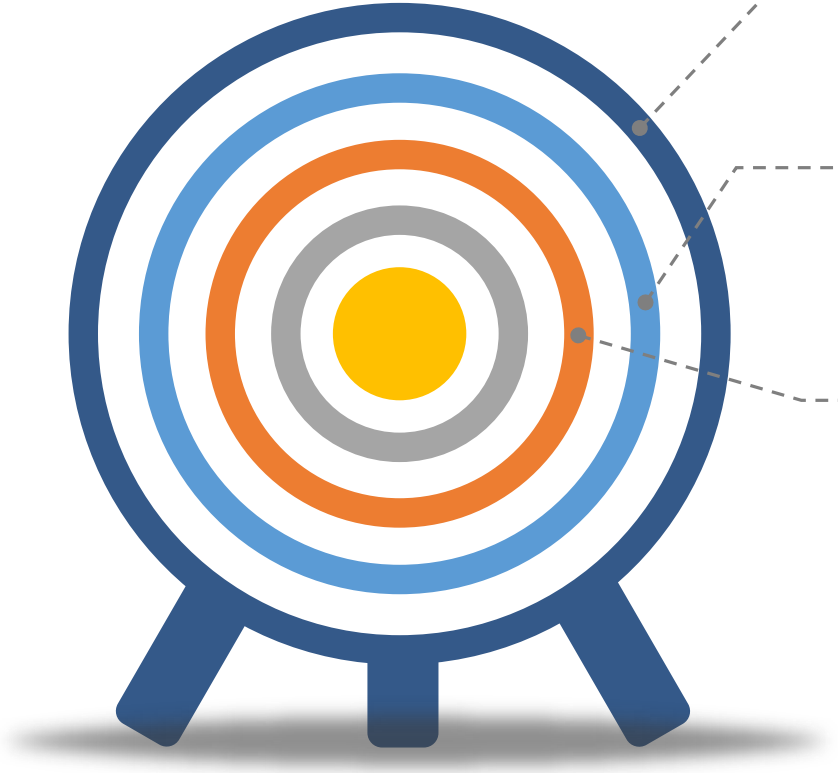

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Establish an understanding
How the transportation system is utilized by freight generators and carriers

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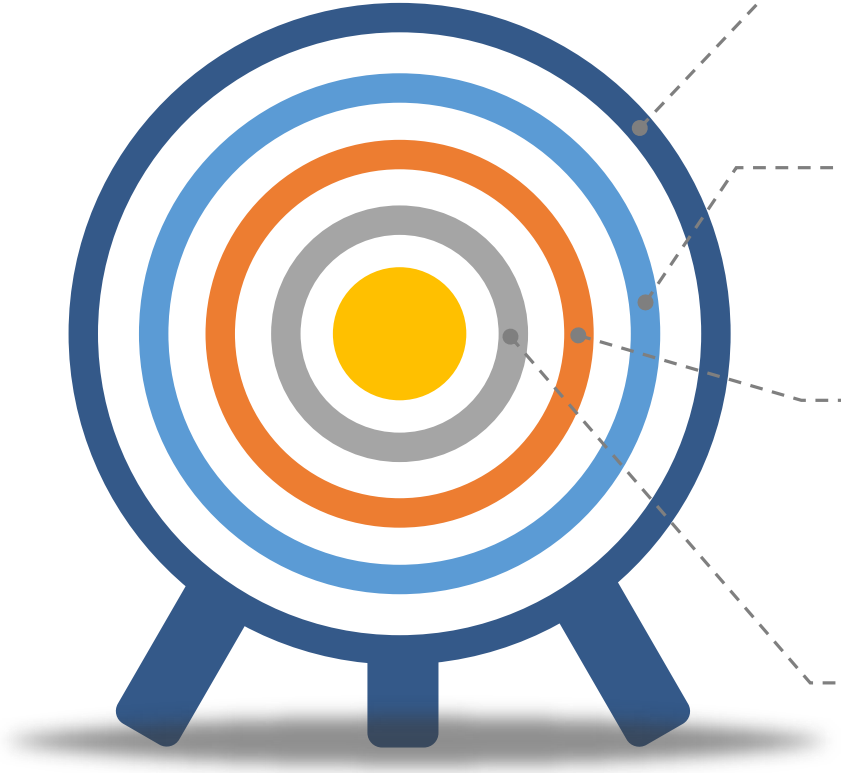

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Stakeholder interview and survey
Develop a commodity flow database and a regional freight model

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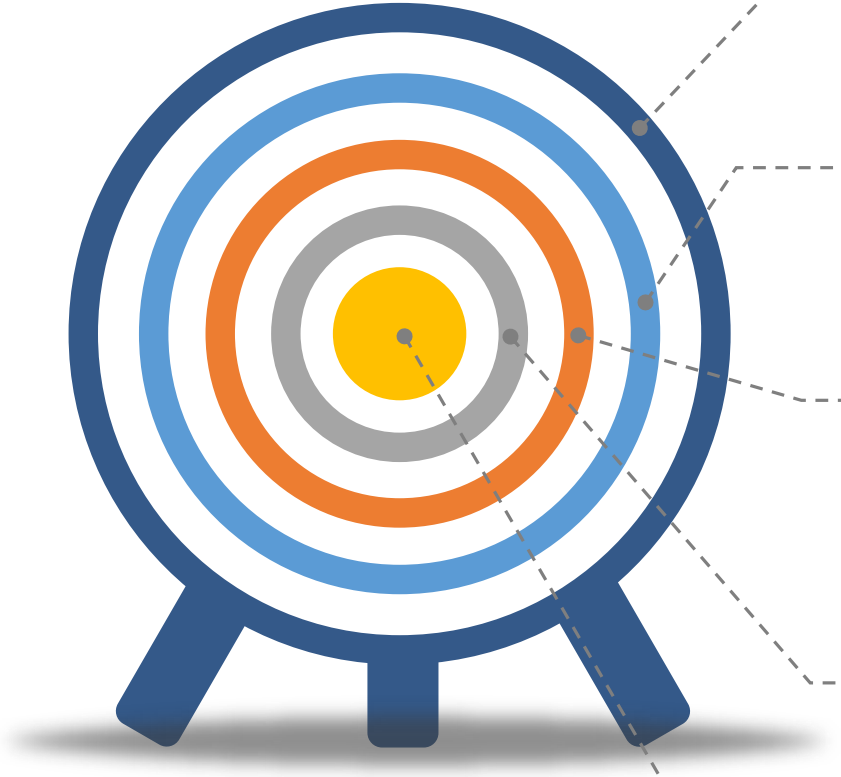

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Develop a commodity flow database and a regional freight model

Identify and prioritize opportunities
Create performance measures
Planning and policy decisions

1 Why Plan for freight?

1 **Why** Plan for freight?

2 **Who** generates, attracts, & carries freight?

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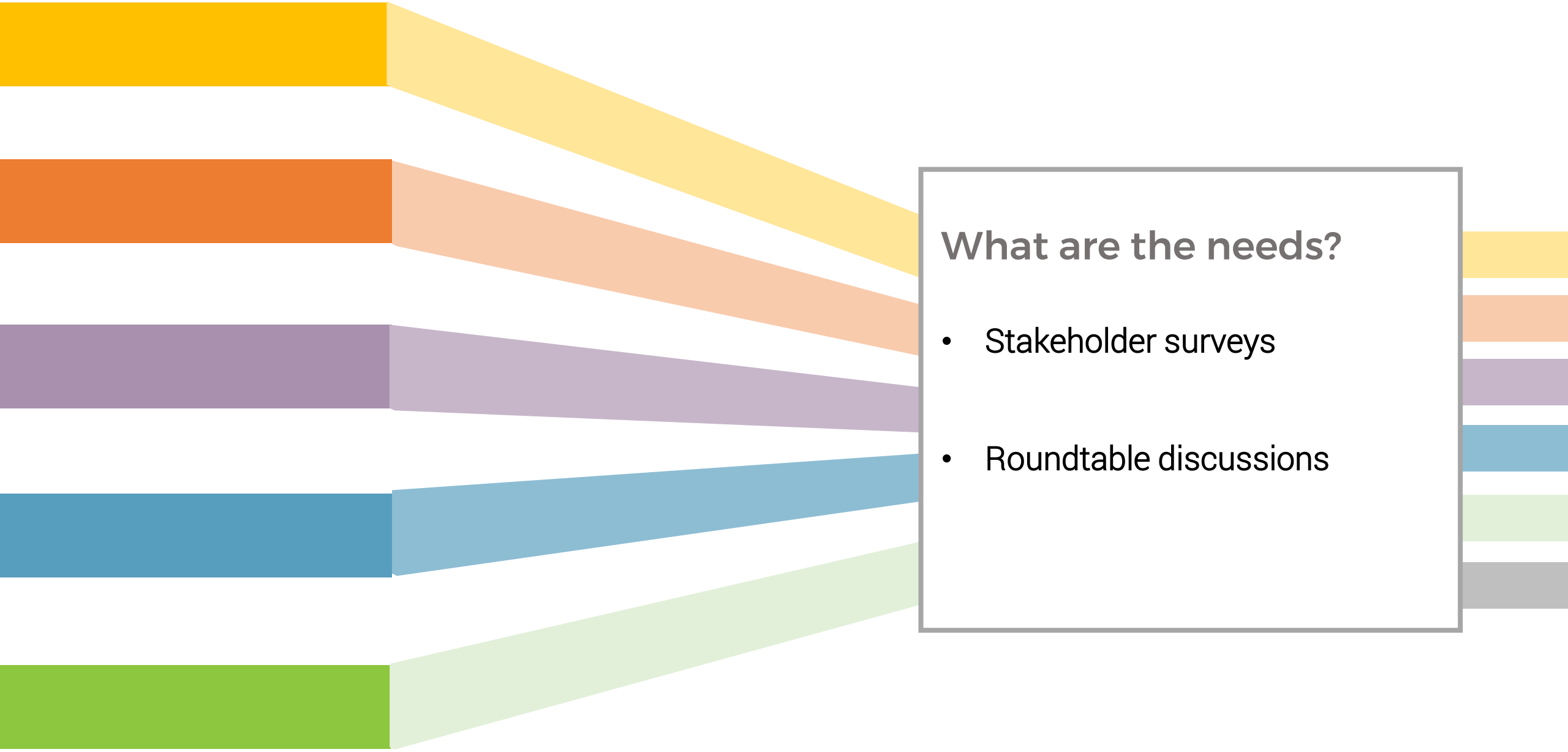

What are the needs?

- Stakeholder surveys
- Roundtable discussions

How are the freight movements and needs likely to change in the future?

- Freight demand modeling
- Other trends

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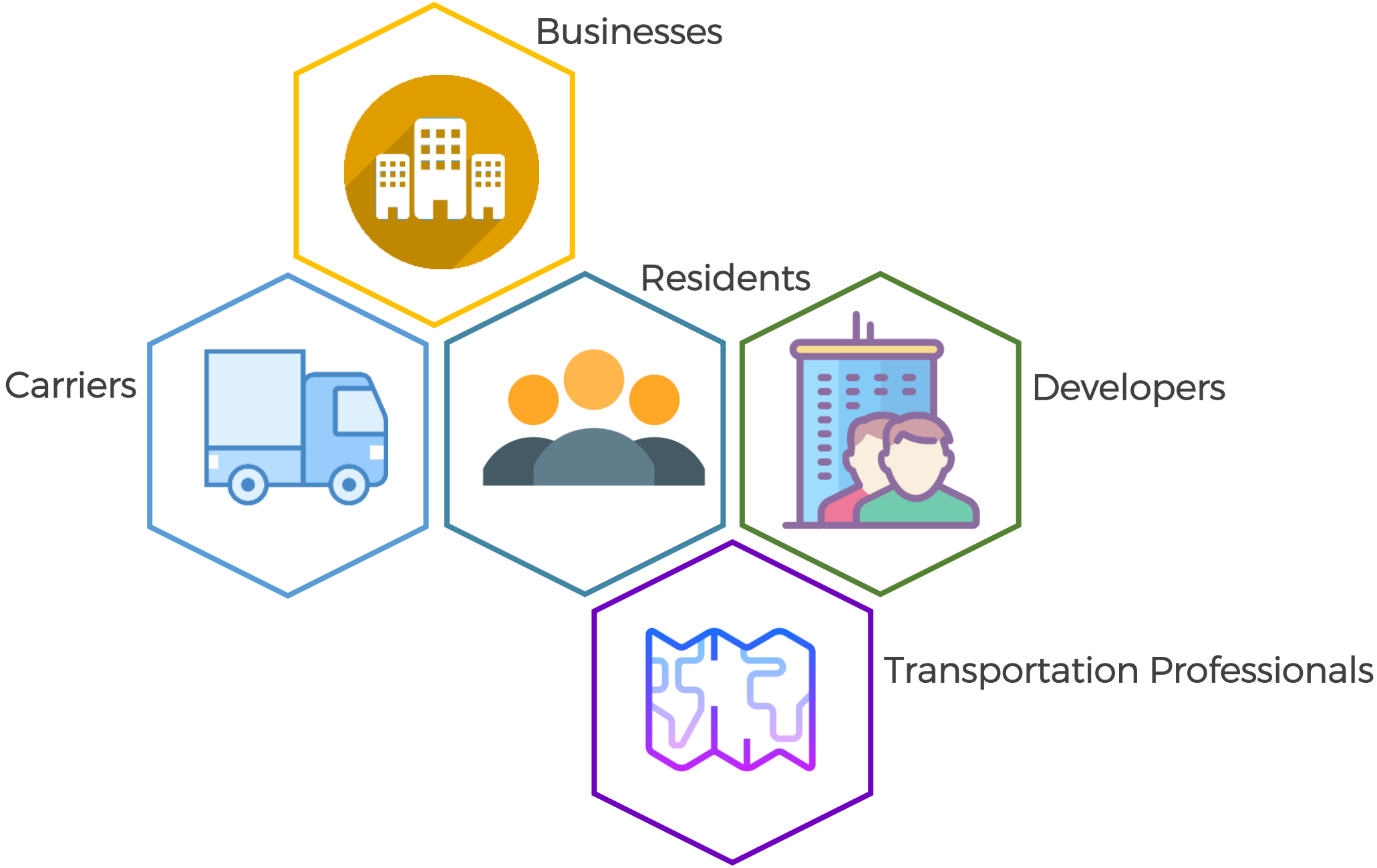
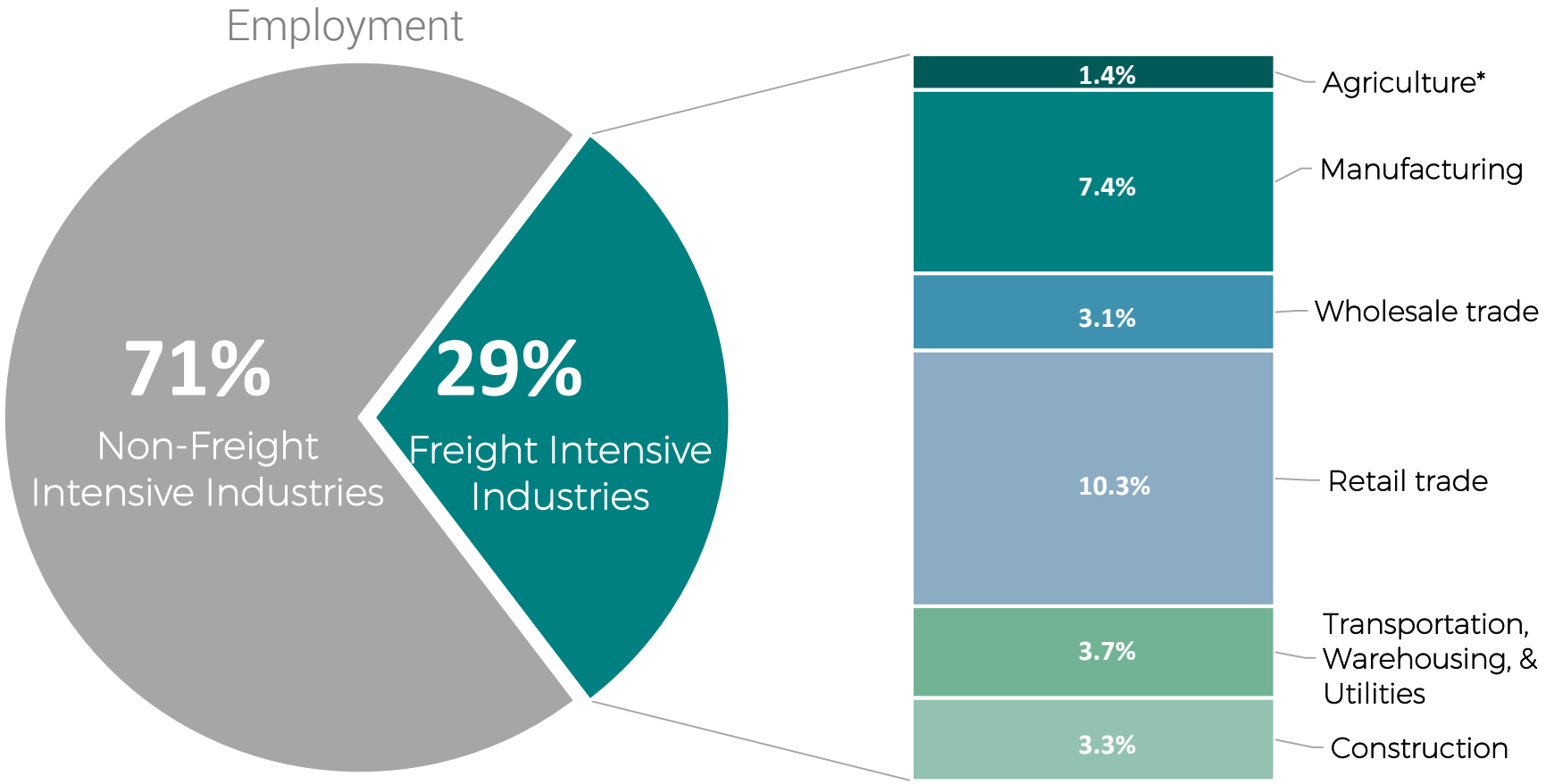

Businesses
Residents
Carriers
Developers
Transportation Professionals

1 **Why** Plan for freight?

2 **Who** generates, attracts, & carries freight?

Freight Intensive Sectors

33% of the businesses and 29% employment of Champaign County



Agriculture* includes agriculture, forestry, fishing and hunting, and mining

Data Source: 2015 American Community Survey 5-year estimates, US Census Bureau

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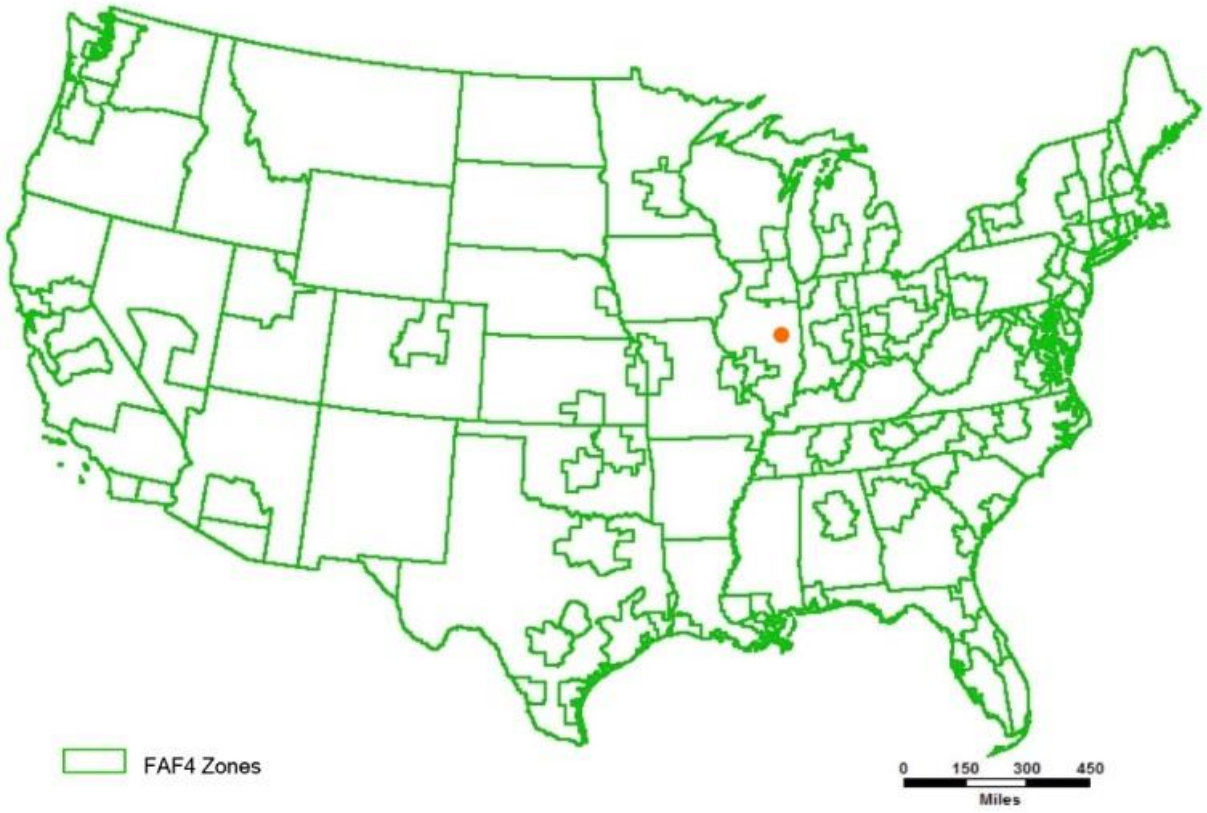
FAF4 data

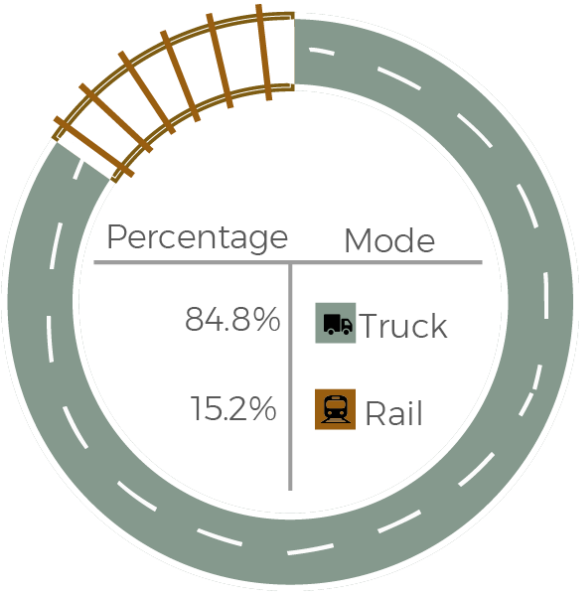
- U.S. Department of Transportation
- Commodity Flow Survey
- 42 broad commodity groups
- Limitations:
  - Latest data available: 2012
  - 132 FAF zones instead of county level
  - Limited information on pass-through flows
  - Does not capture some in-house fleet movements, and certain commodities



Champaign County, 2017

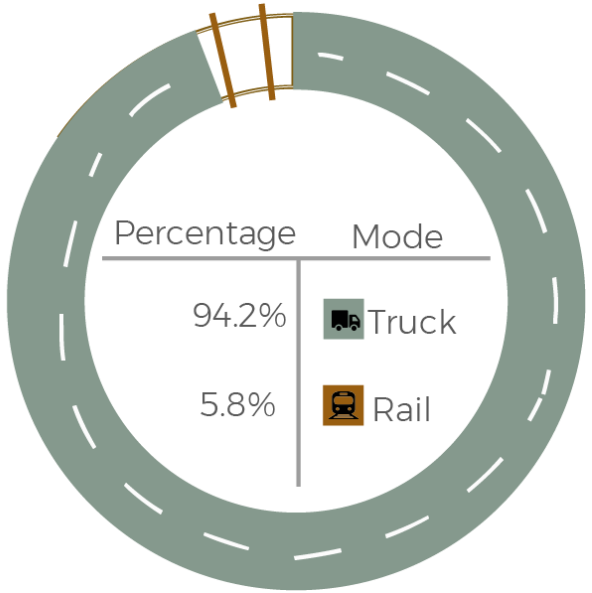
20.7 million tons

Tonnage

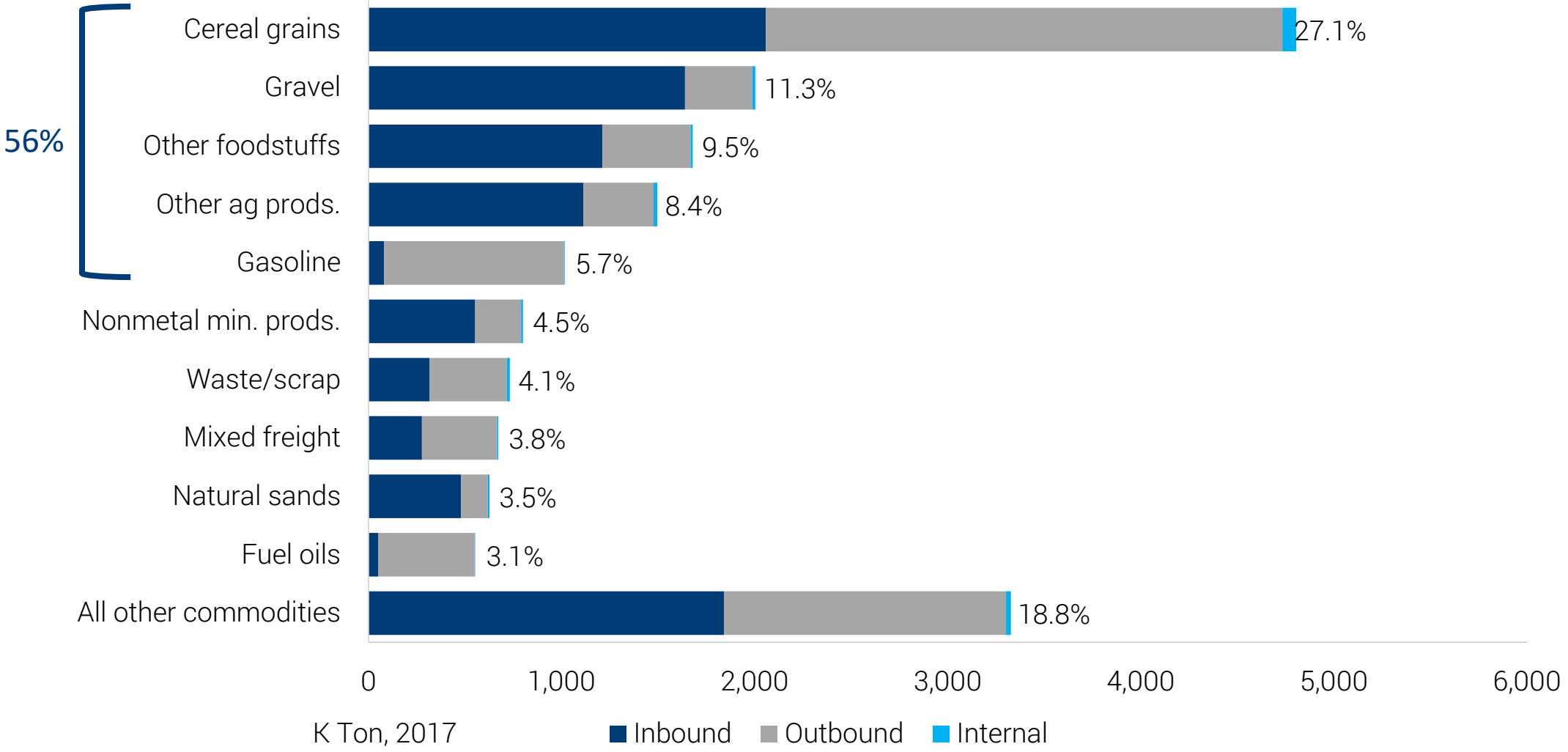


$20.9 billion

Value

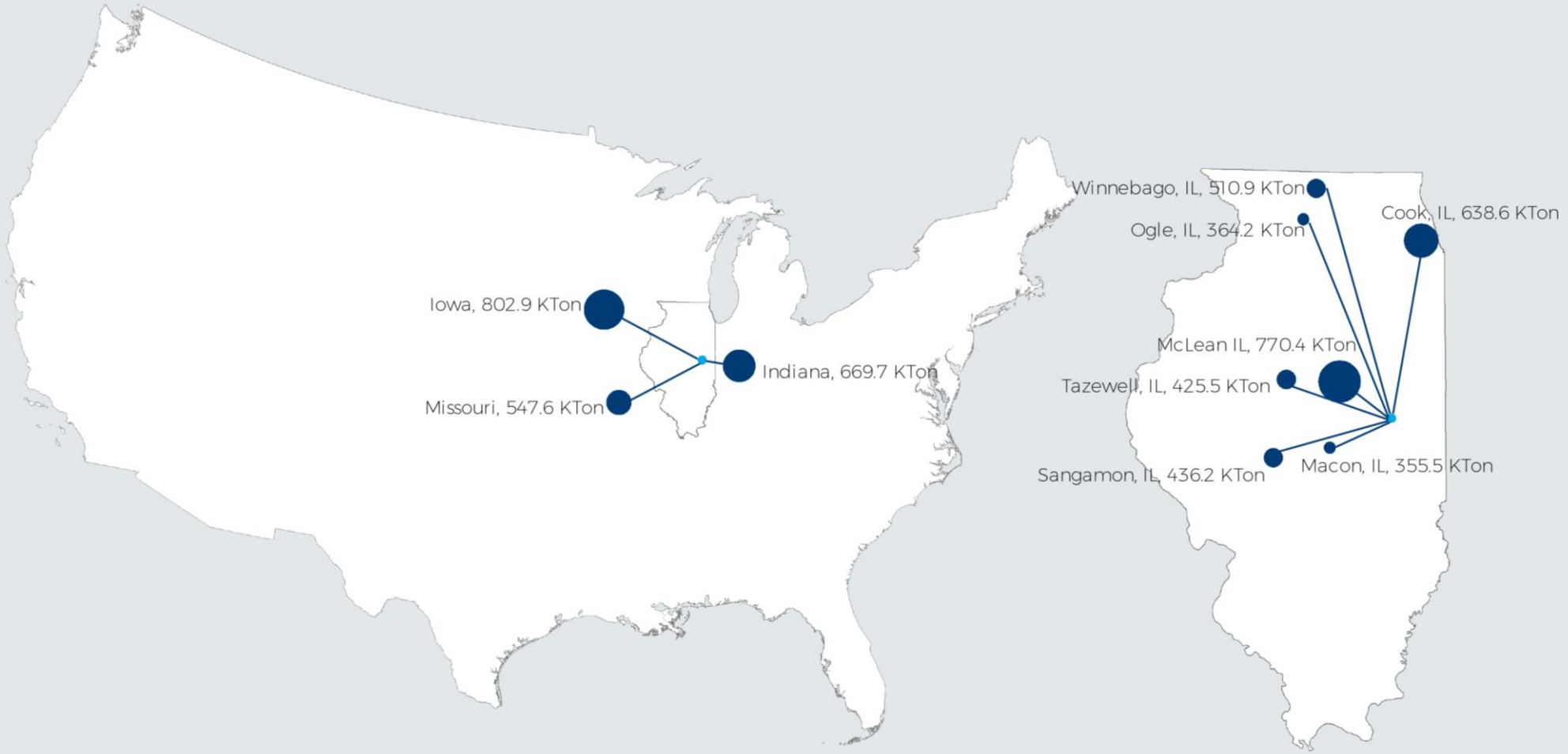


Leading commodity types by tonnage (truck)



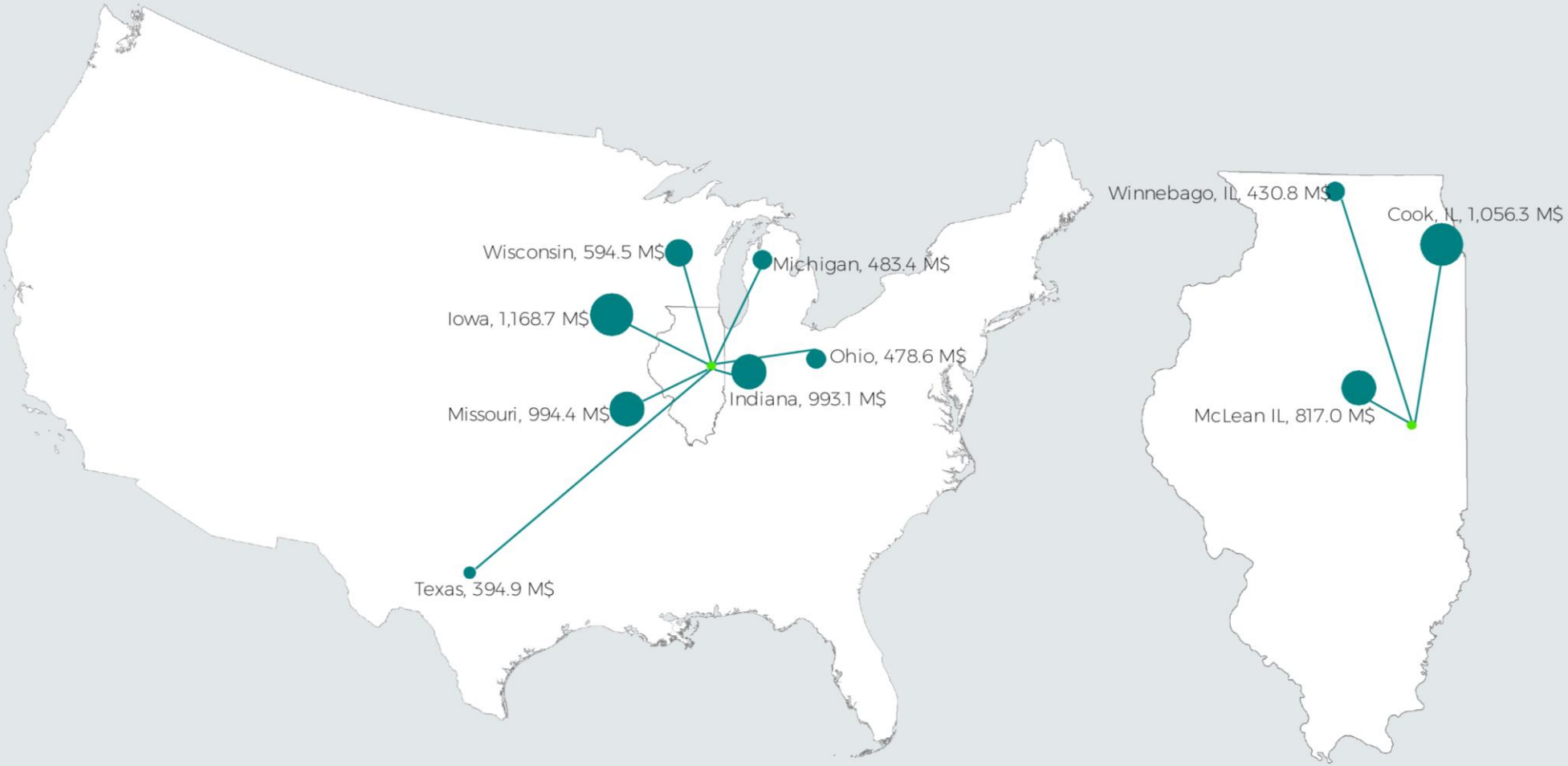
Top truck trading partners by tonnage, 2017

In 1,000 tons



Top truck trading partners by value, 2017

In million dollars



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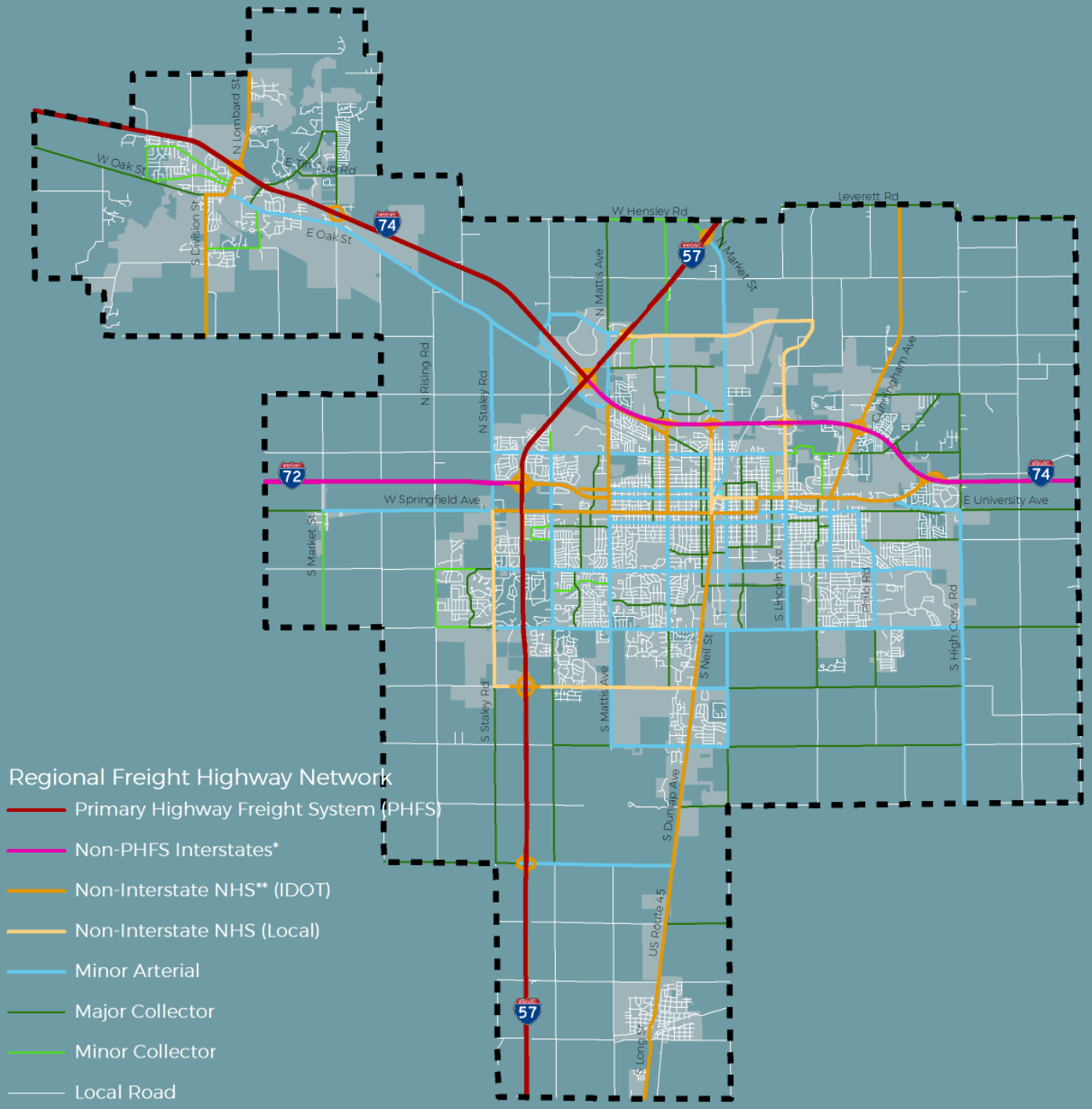
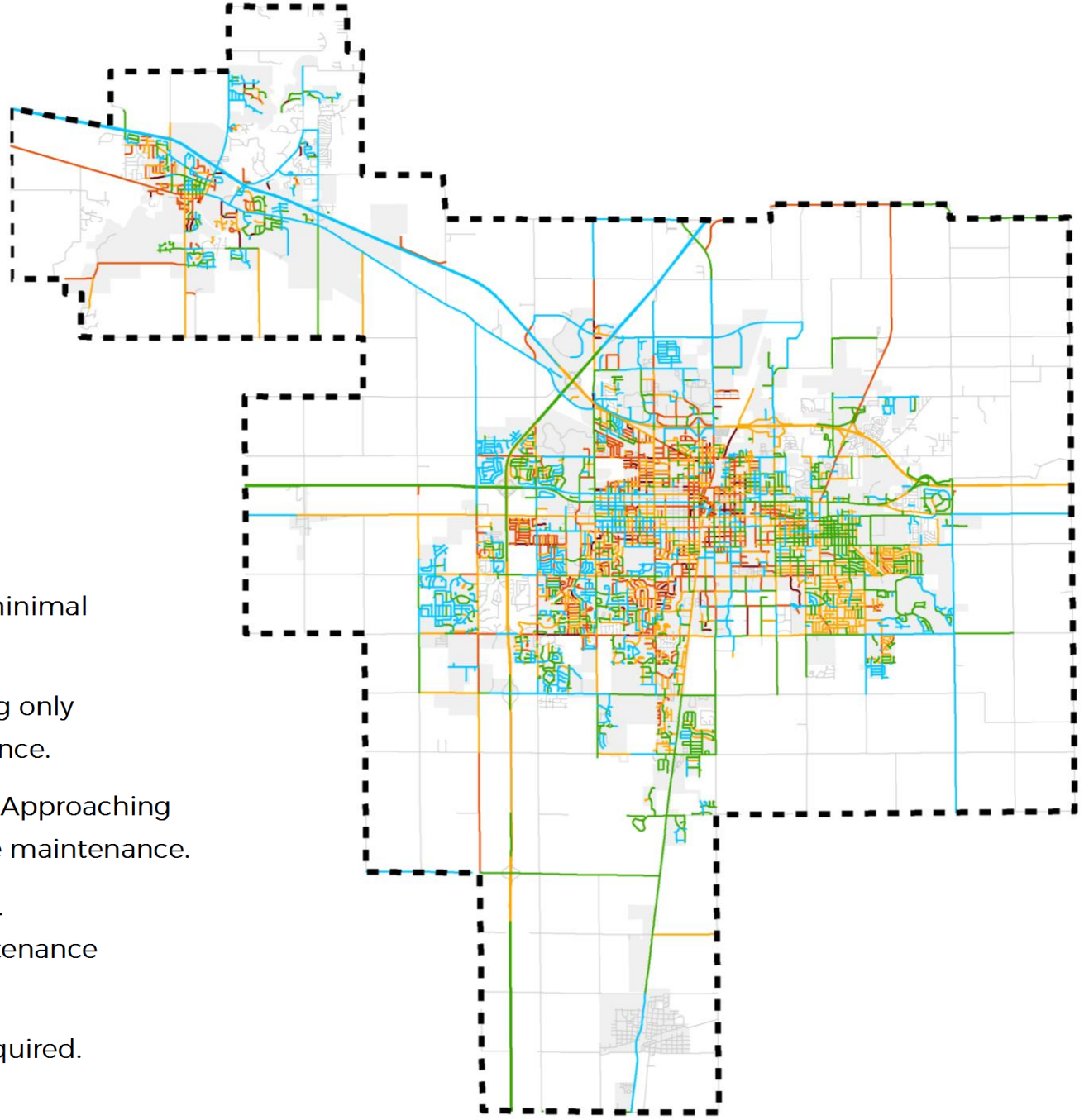
Roadway Network

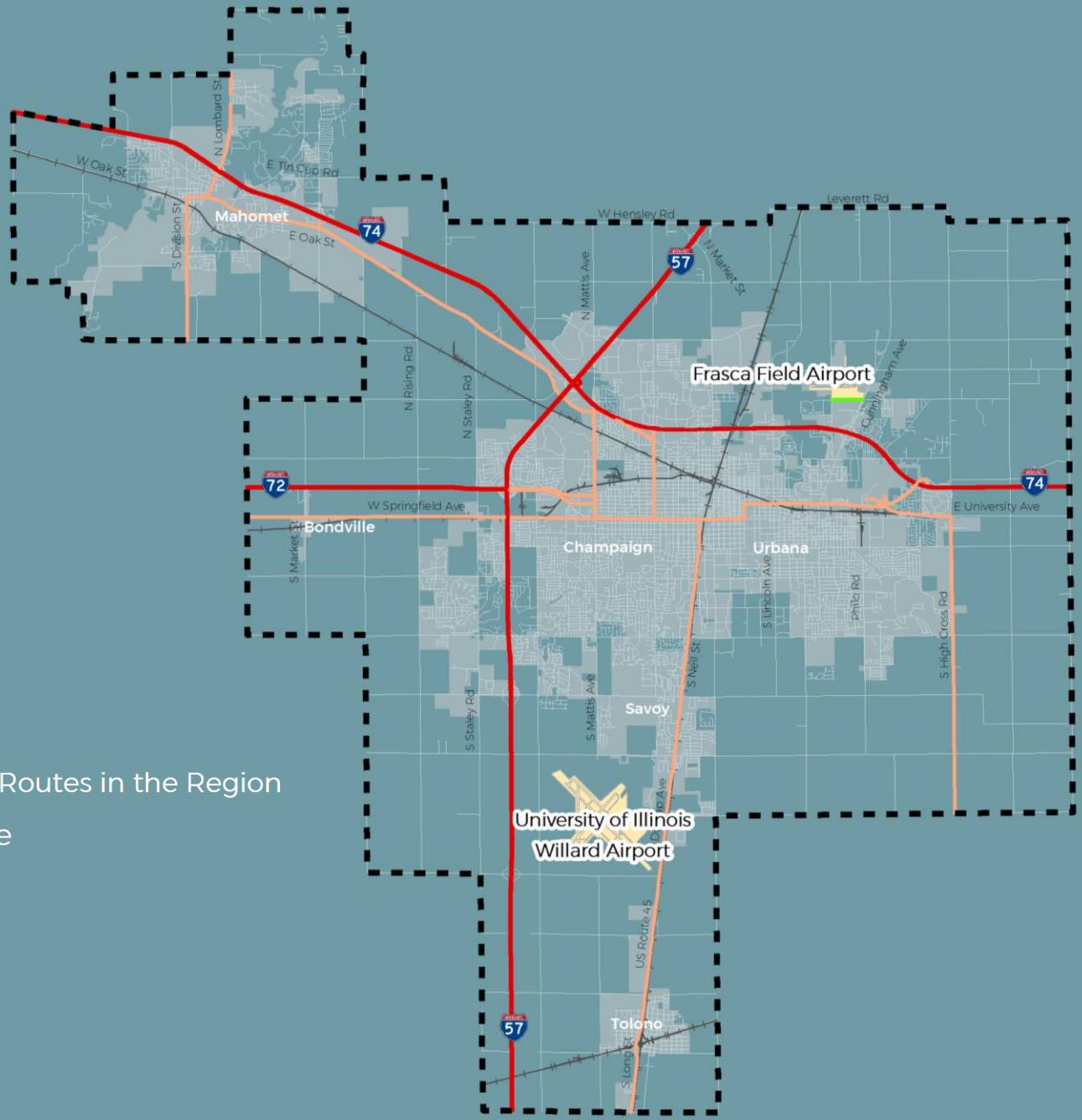


Pavement Condition

More than 19 percent of the roadways in the MPA were rated Poor and Failed in 2017.



Truck Routes

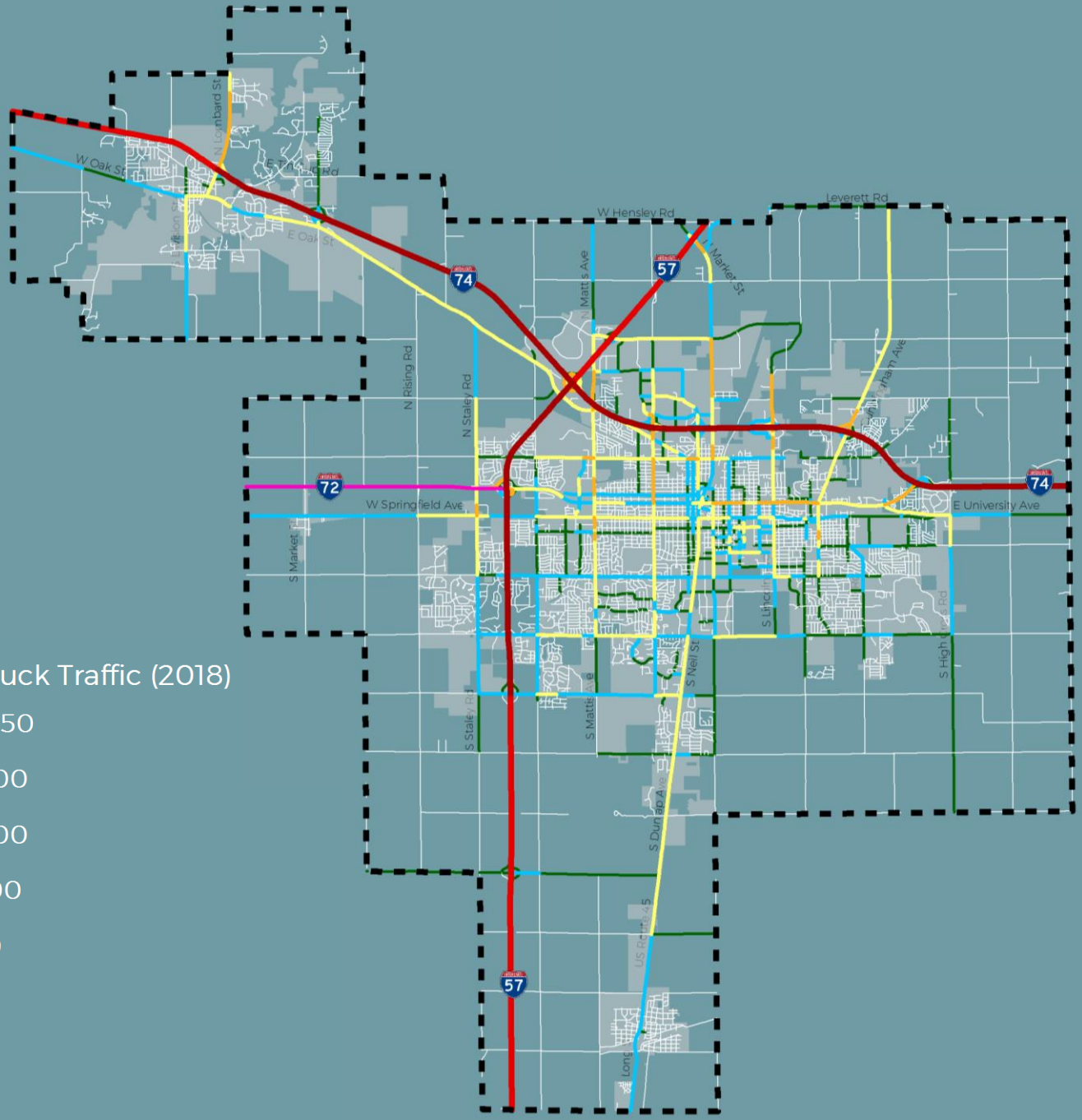


Designated Truck Routes in the Region

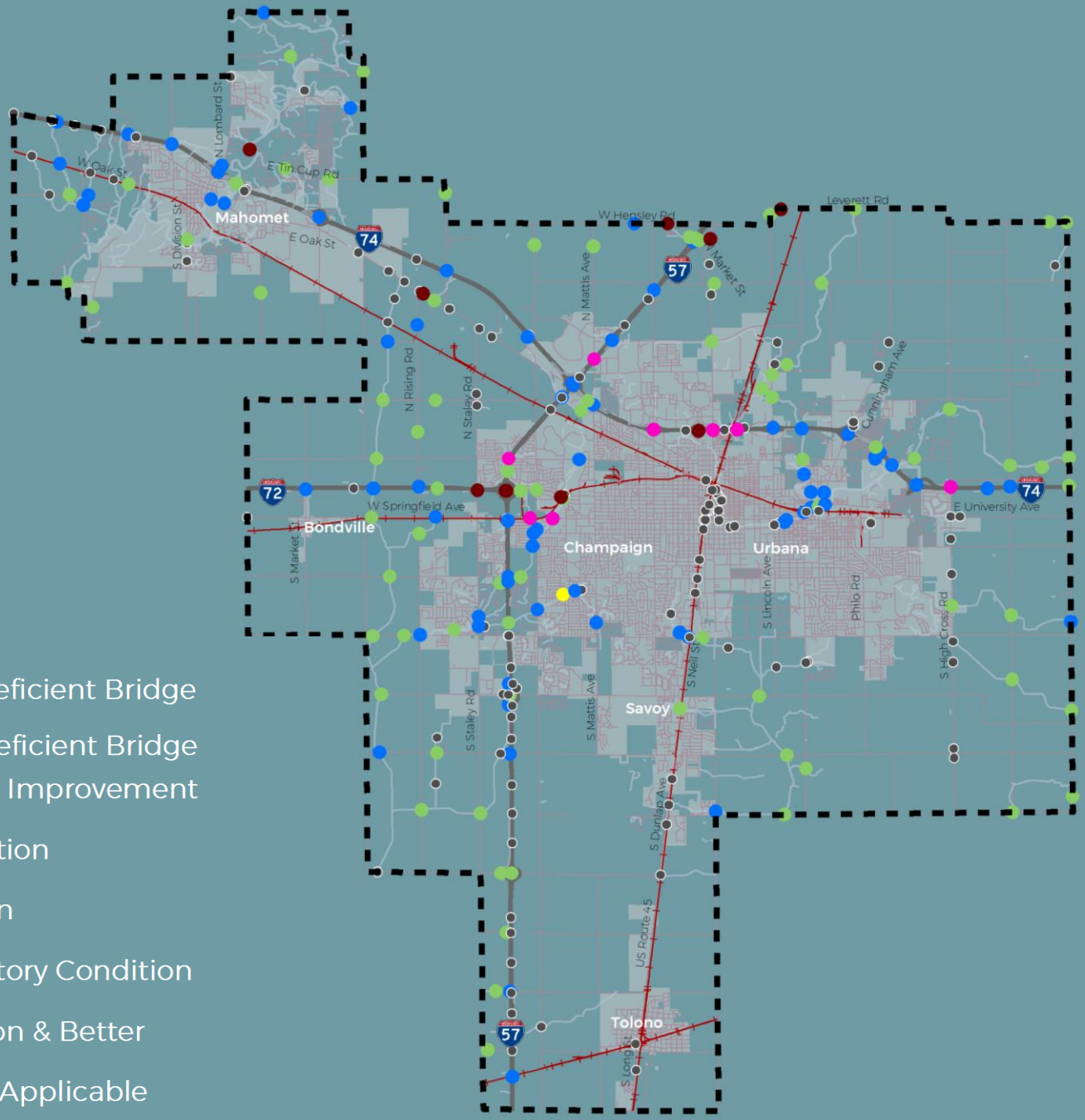
Truck Route Type

- Class One
- Class Two
- Class Three

Truck Traffic



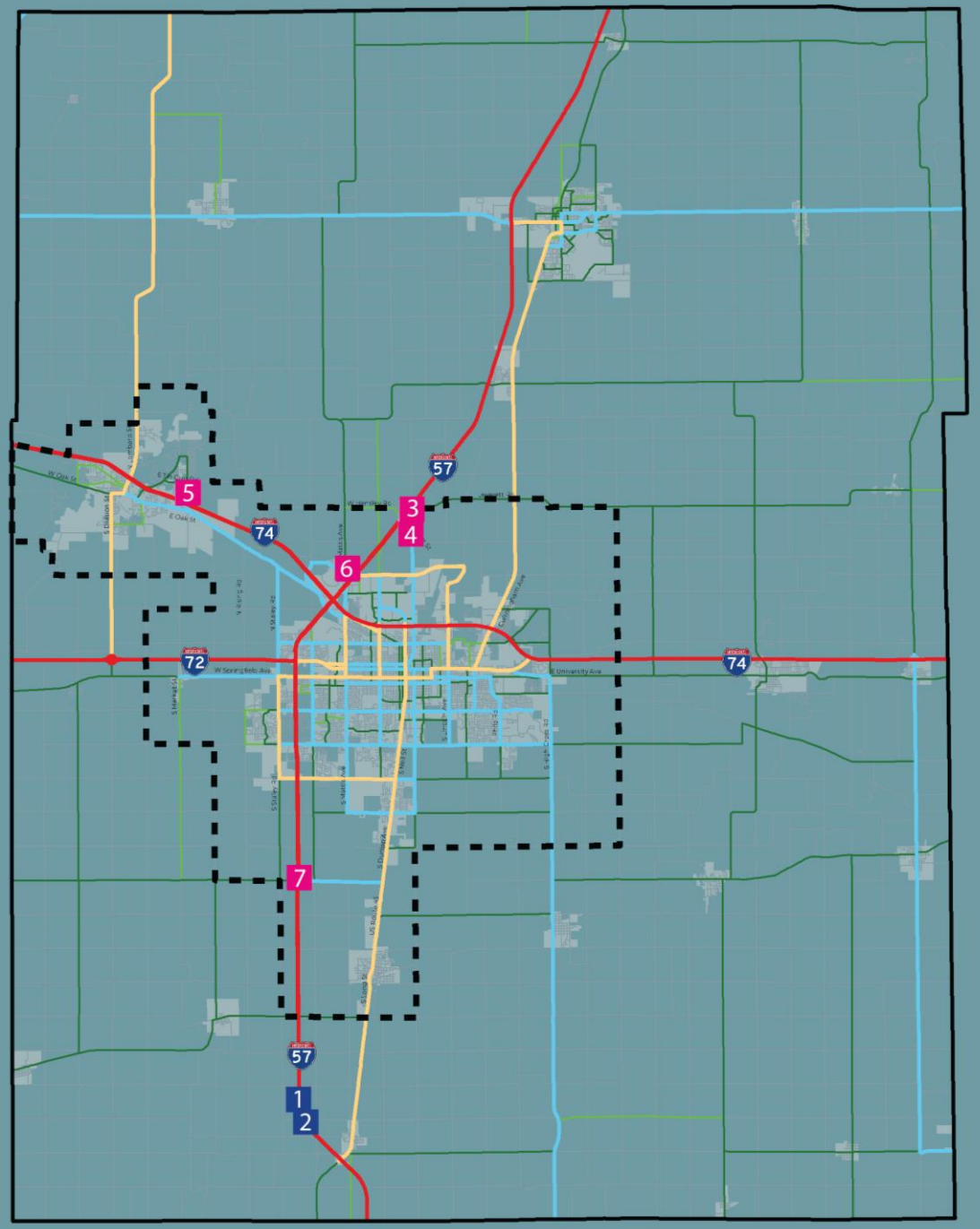
Bridge Condition



Bridge Condition

- Structurally Deficient Bridge
- Structurally Deficient Bridge Scheduled for Improvement
- Serious Condition
- Poor Condition
- Fair & Satisfactory Condition
- Good Condition & Better
- No data / Not Applicable

Truck Parking



Regional Truck Parking

P Public

P Private

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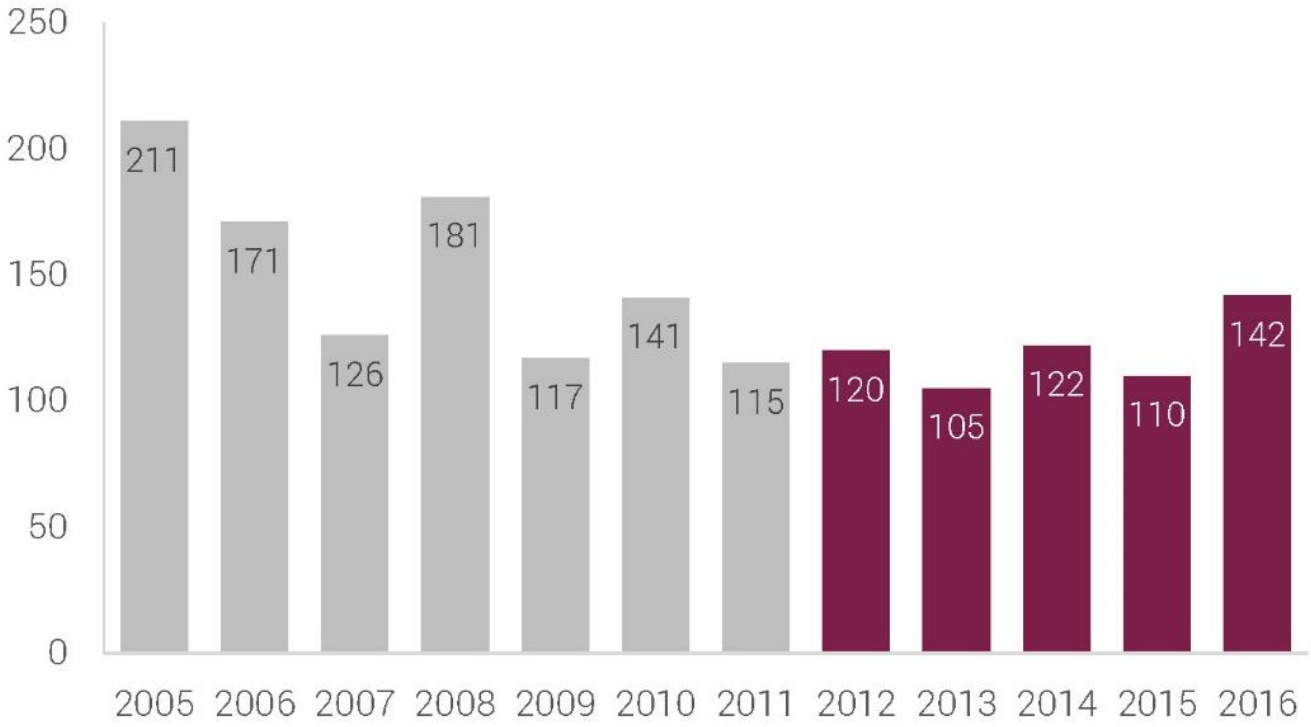
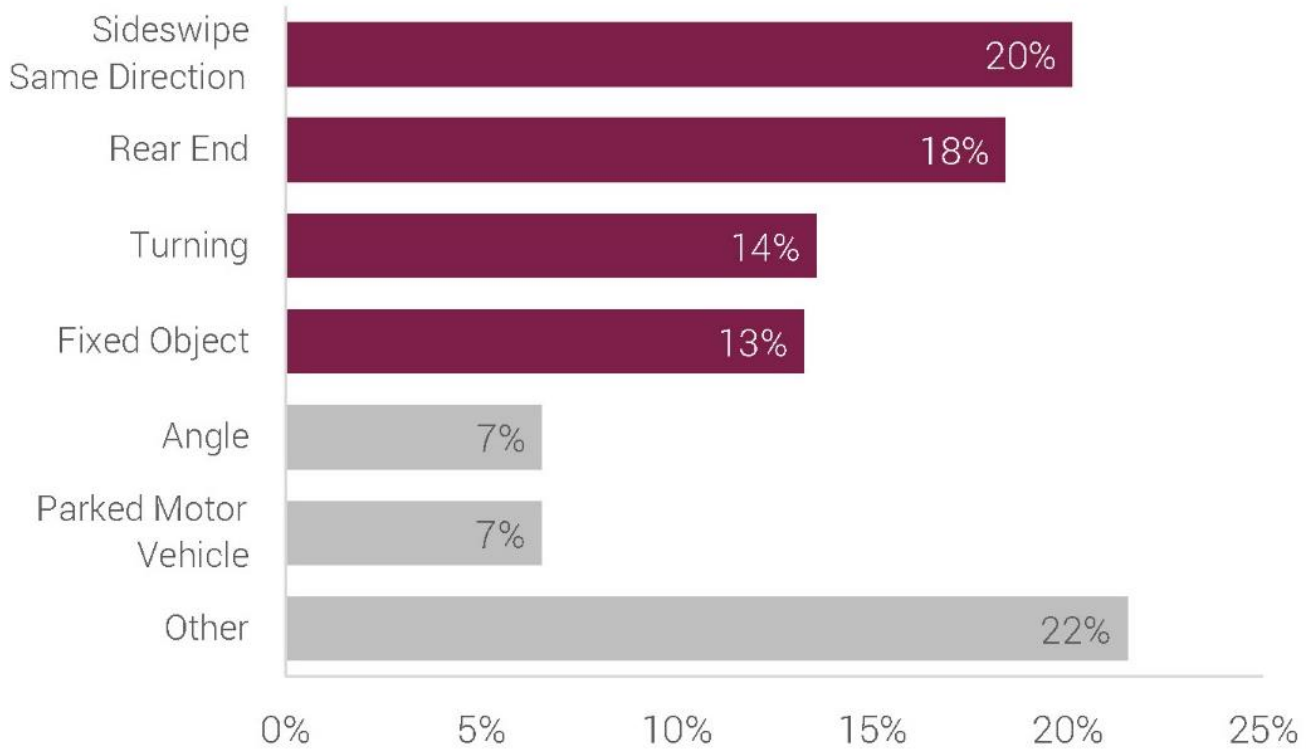
Safety

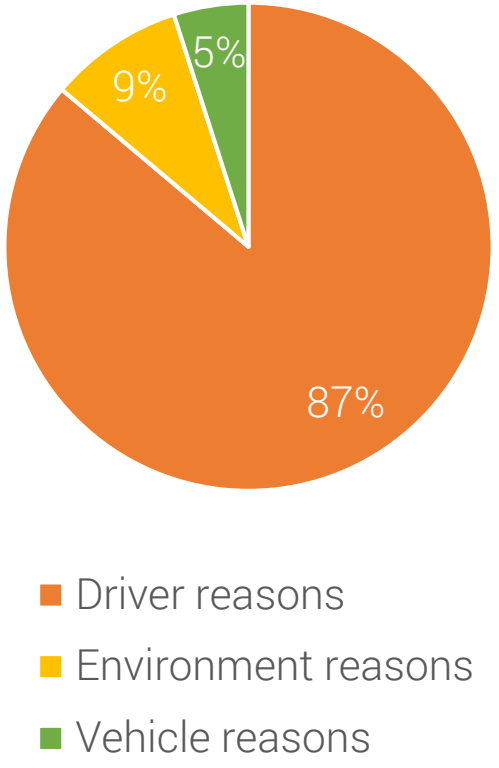
Number of truck crashes (Champaign-Urbana MPA, 2005-2016)



Safety

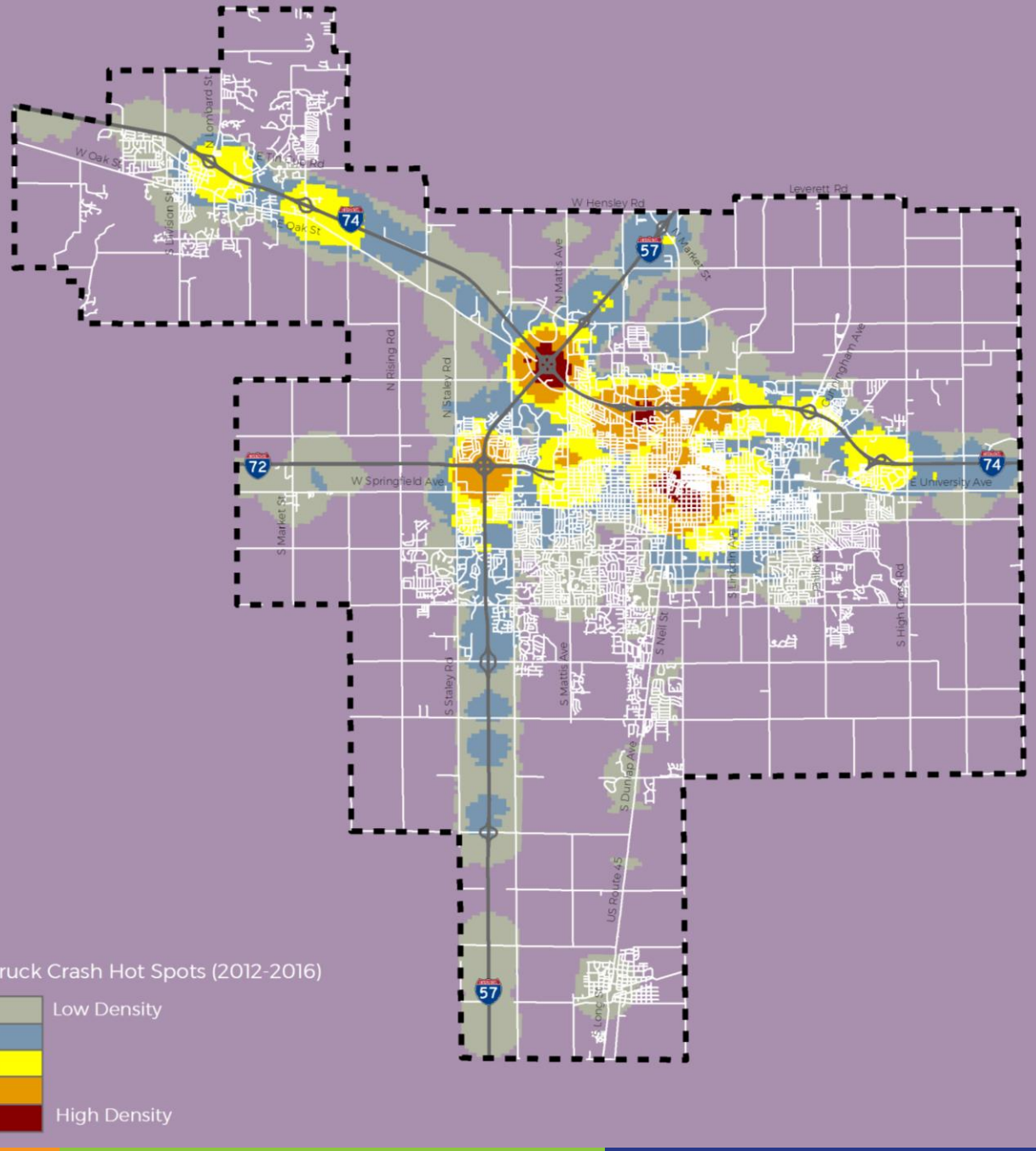
Type and Reason of truck crashes (Champaign-Urbana MPA, 2012-2016)





Safety

Truck crash density
(Champaign-Urbana MPA, 2012-2016)



Mobility

- Data Source: 26 million truck GPS records from ATRI
- Time period: February, April, July, and October of 2017 (two weeks per month)

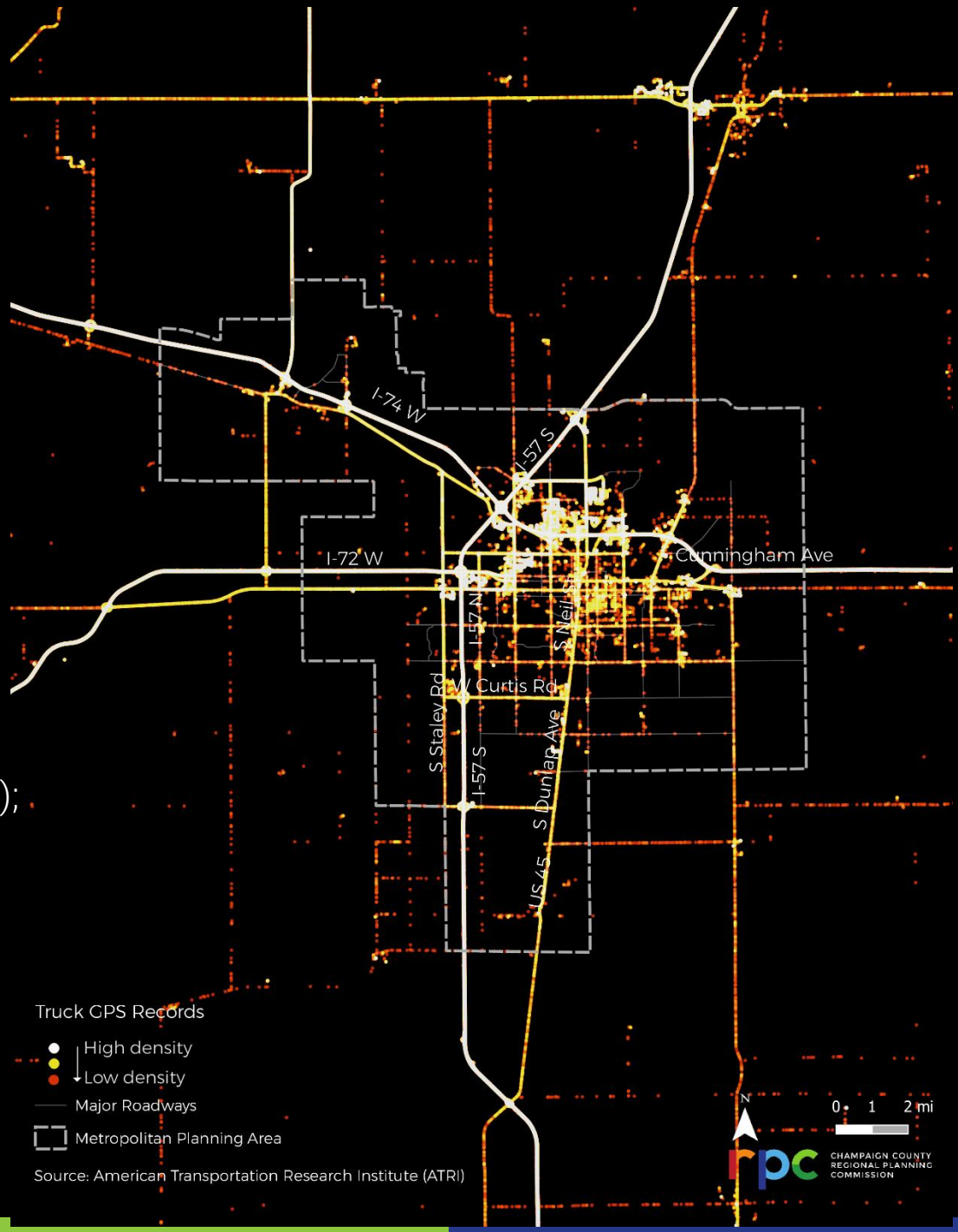
  The week of October 17 to 24, which contains a total of 2.9 million GPS records for more than 33,000 unique trucks, was selected for more detailed analysis.

- Data limitations:
  - Onboard communications equipment installed on commercial trucks only (agricultural trucks and some logistics providers trucks not represented)
  - Various GPS data stream frequencies
  - No activity information included

Mobility Analysis

High Truck Traffic Roadways & Locations

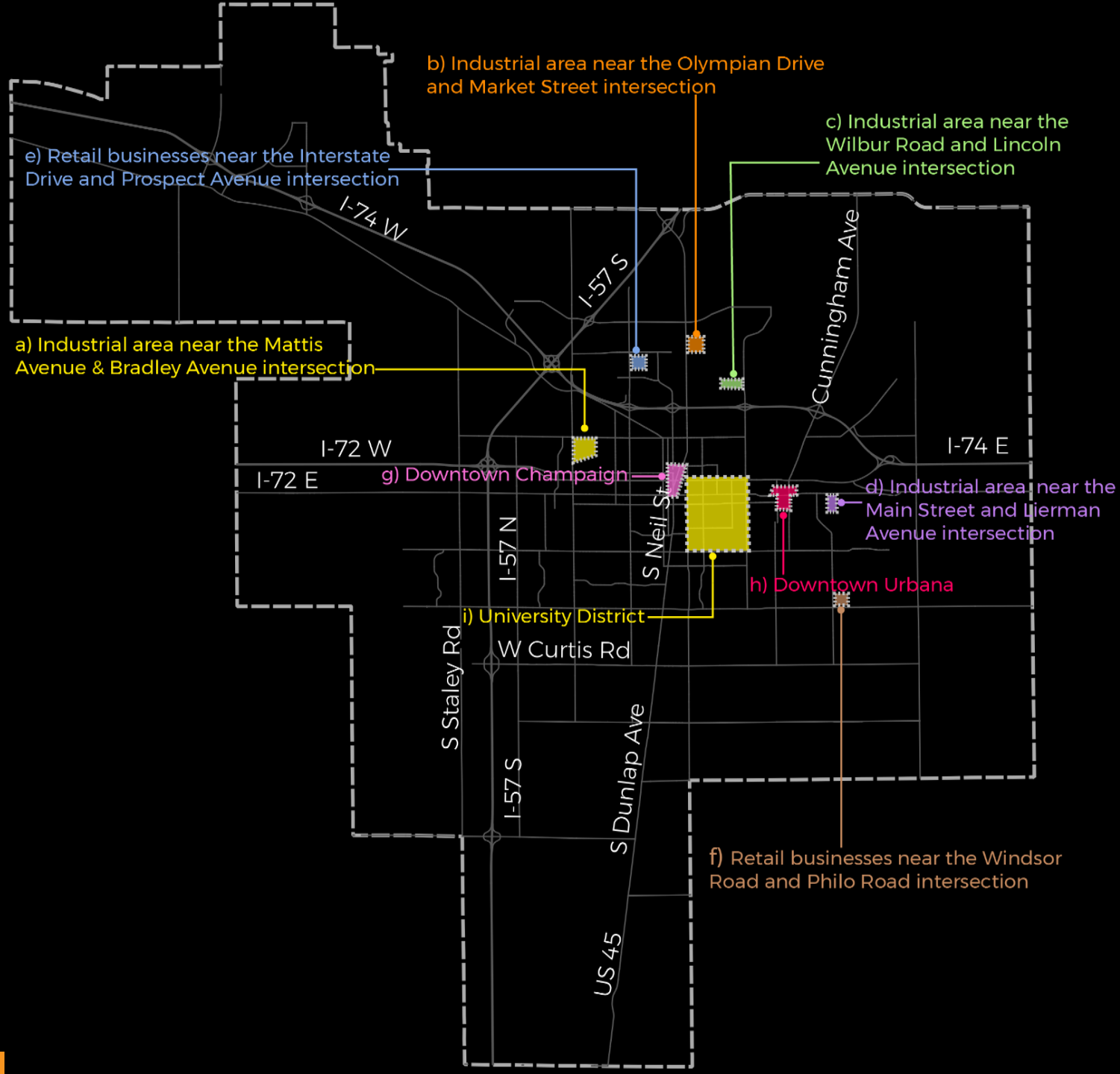
- The interstates (I-57, I-72, I-74);
- The U.S. routes (U.S. 45, U.S. 150);
- The state routes (IL 10, IL 47, IL 130);
- Staley Road (U.S. 150 - Curtis Road);
- Olympian Drive (I-57 - Apollo Drive);
- Bradley Avenue (Staley Road - Lincoln Avenue);
- Mattis Avenue (Bloomington Road - Windsor Road);
- Duncan Road (Bradley Avenue - IL 10/Springfield Avenue);
- Prospect Avenue (Bloomington Road - Interstate Drive);
- ……



Mobility Analysis

Areas of Interest

- Major industrial land use areas
- Logistics and distribution centers
- Major retail businesses
- Downtown Champaign
- Downtown Urbana
- University of Illinois campus district



e) Route Analysis

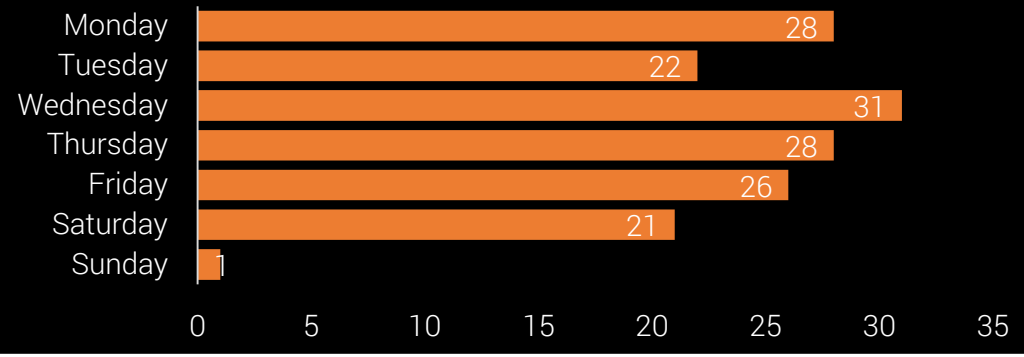
Trucks accessing the retail businesses near the Interstate Drive and Prospect Avenue intersection

Major access roadways

- I-57, I-74, I-72, U.S. 45
- West Olympian Drive, North Prospect Avenue, Bradley Avenue, Mattis Avenue, Church Street, and East and West University Avenue

Daily number of trucks

Busiest days: Mondays, Tuesdays, Thursdays



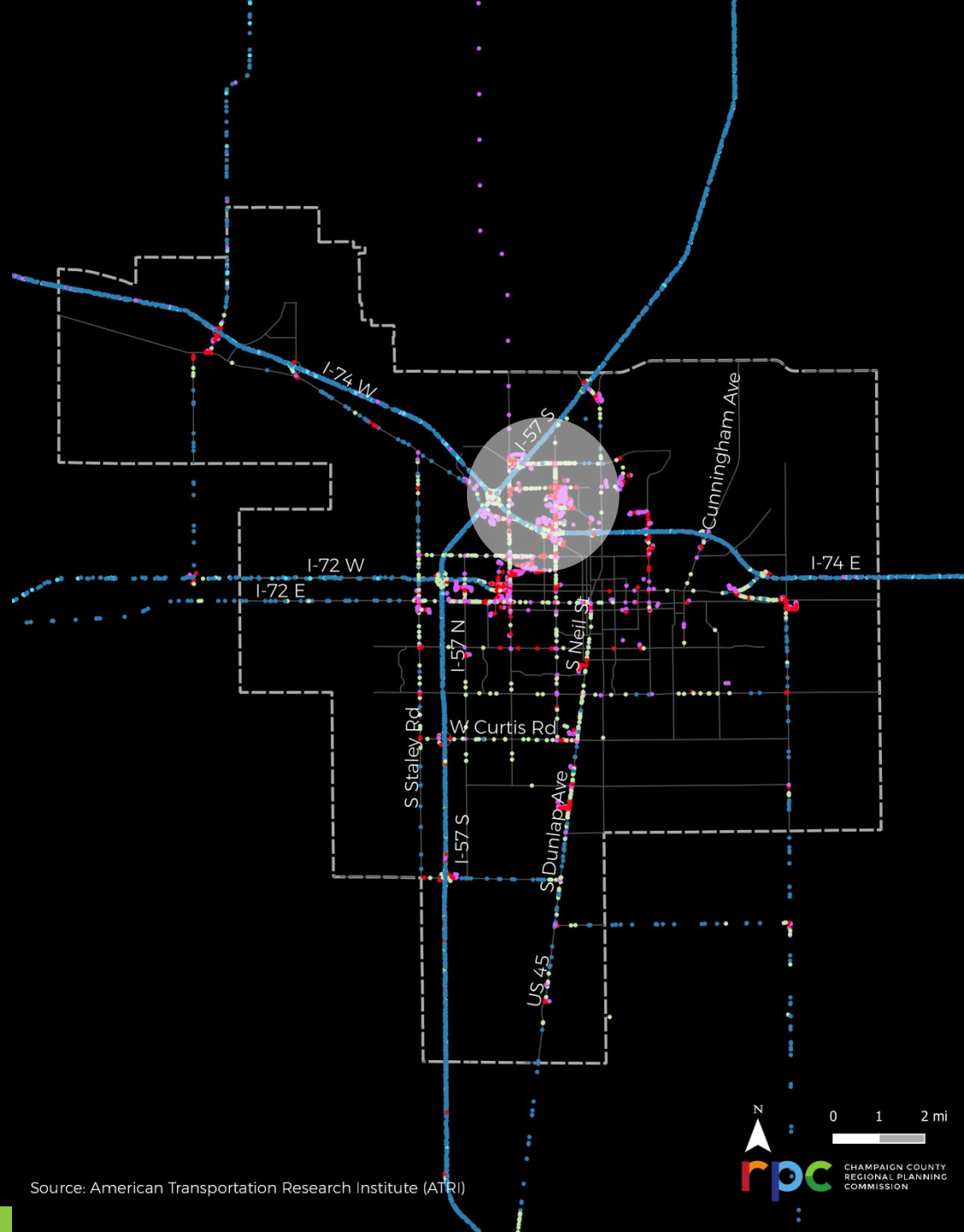
27% of the truck movements were concentrated between 7 a.m. and 8 a.m. and between 12 p.m. and 1 p.m. on weekdays

e) Speed Analysis

Trucks accessing the retail business area near the Interstate Drive and Prospect Avenue intersection

Slow Speed:

- near the retail businesses area
- Interstate exits



Truck GPS Records

- Speed <= 10 mph
- 10 mph < Speed <= 25 mph
- 25 mph < Speed <= 45 mph
- 45 mph < Speed <= 65 mph
- Speed > 65 mph

Source: American Transportation Research Institute (ATRI)

CHAMPAIGN COUNTY REGIONAL PLANNING COMMISSION

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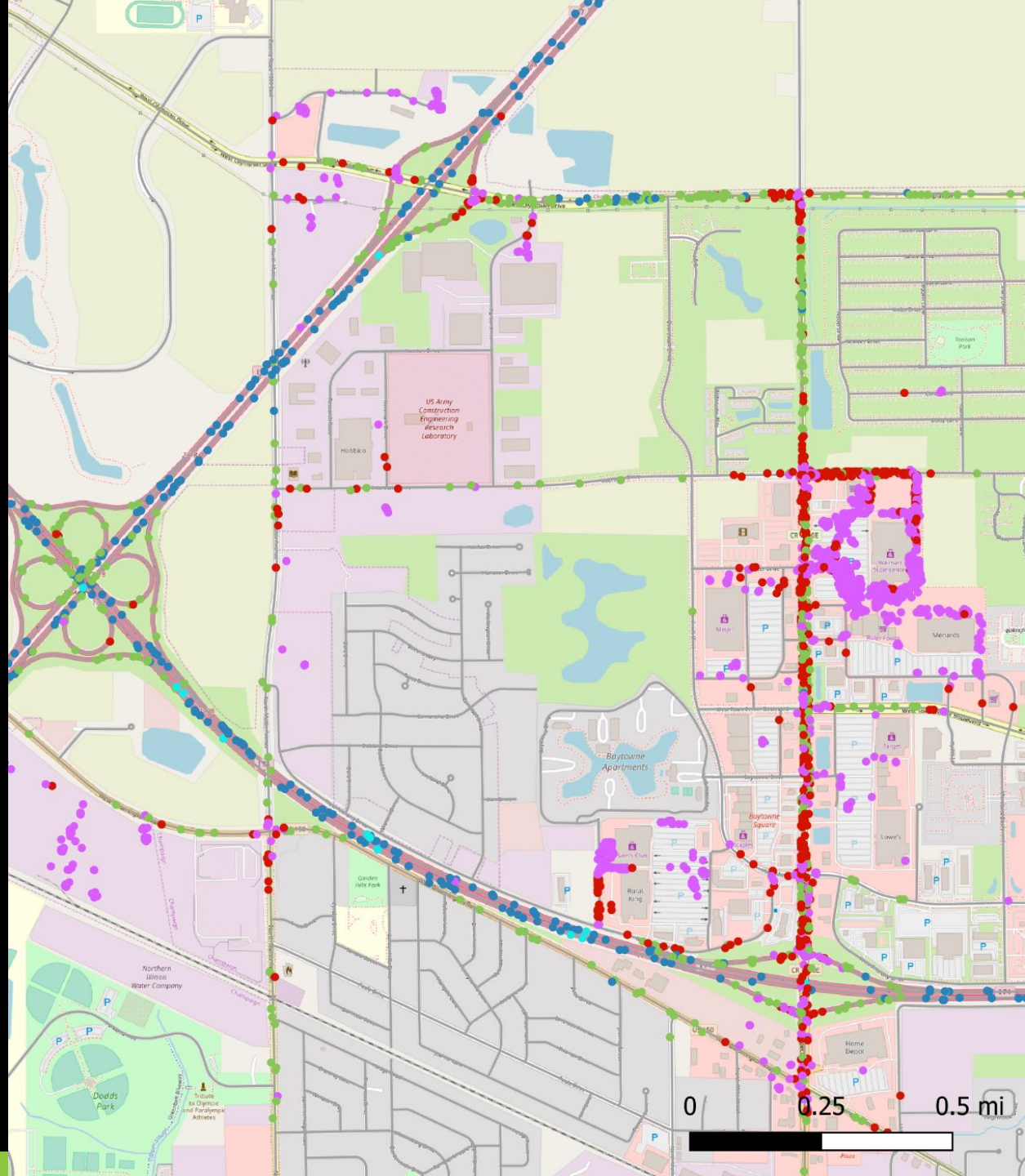

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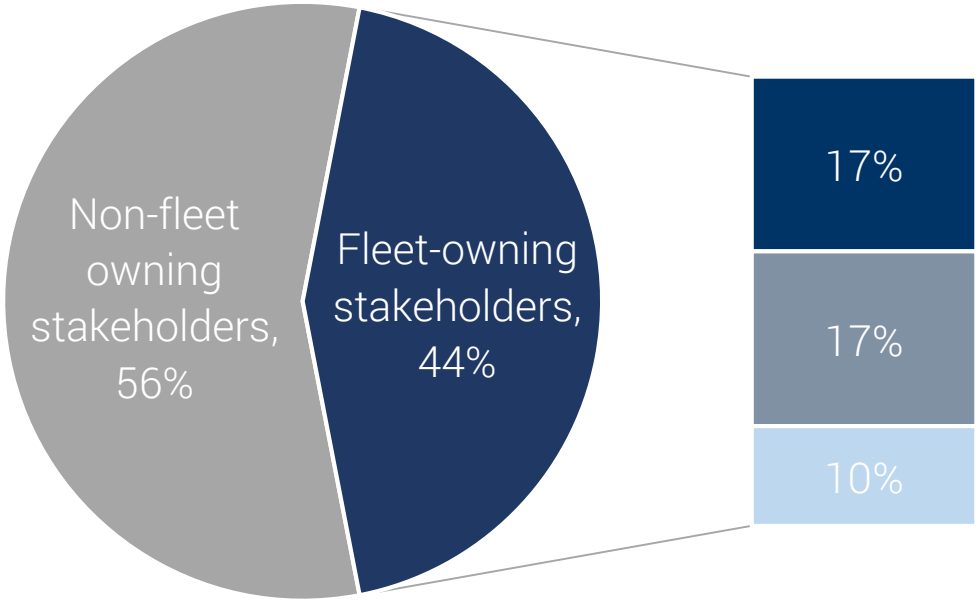
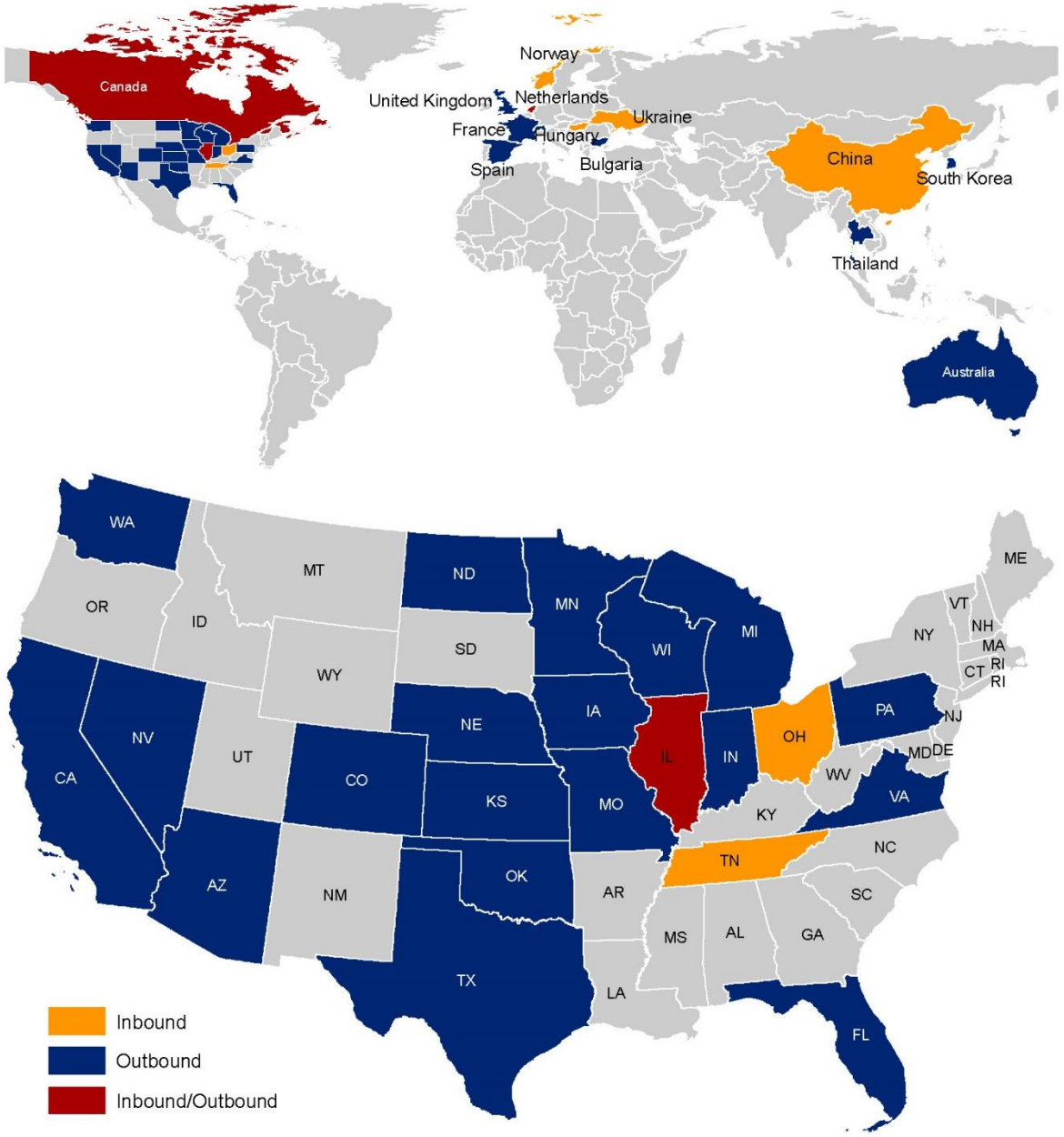
What are the needs?

- Stakeholder surveys
- Roundtable discussions

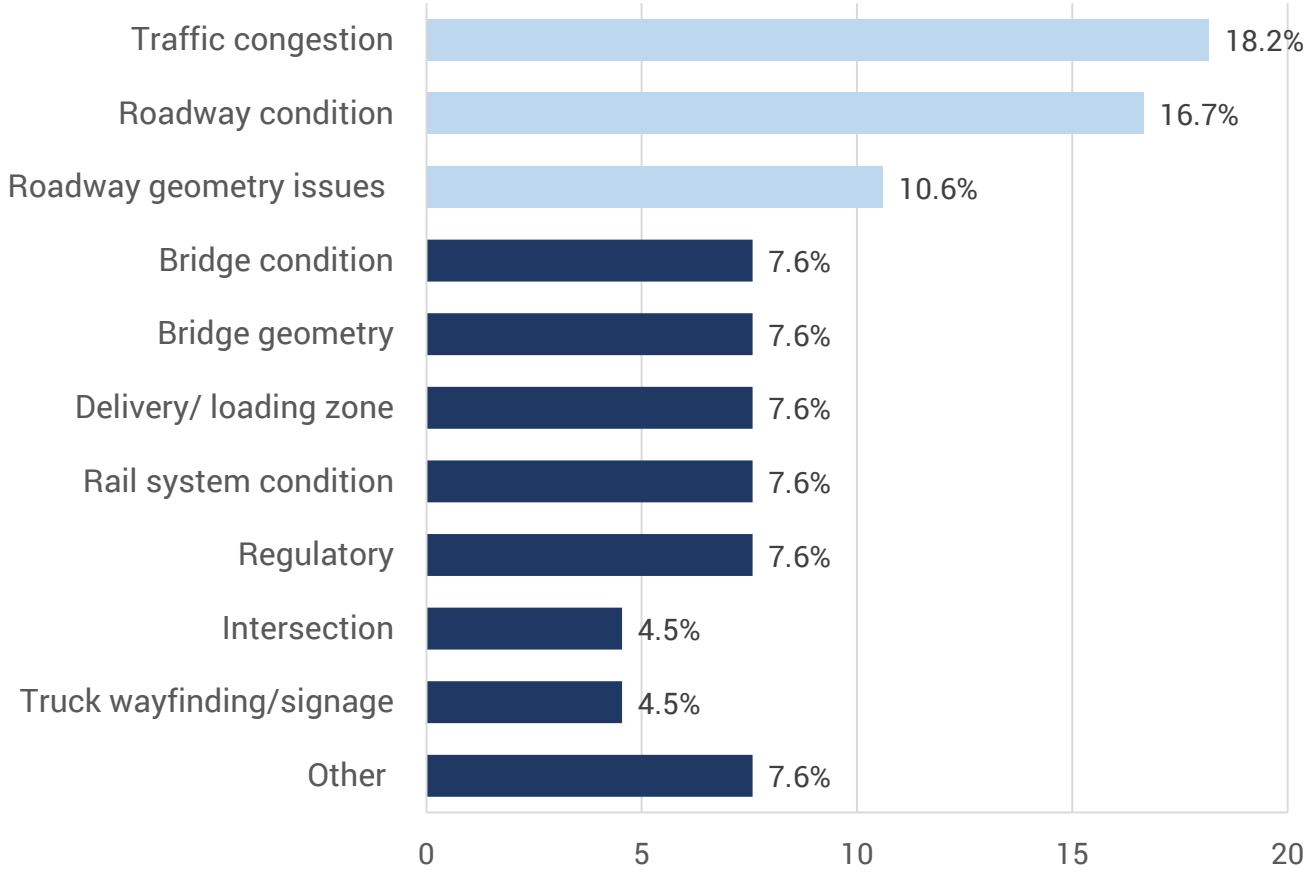
Stakeholder outreach
Surveyed businesses profile

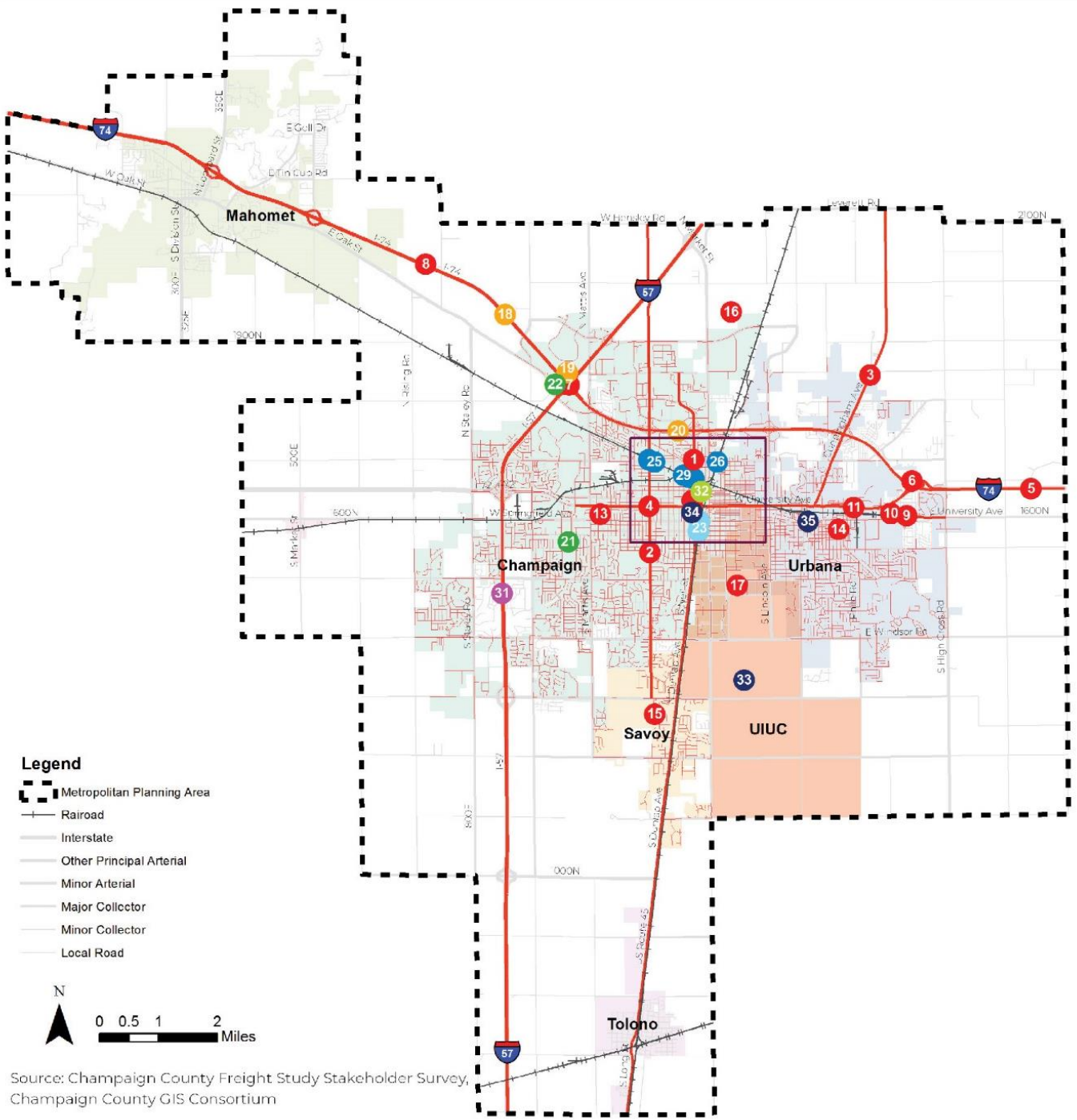




Stakeholder outreach

Key freight system issues and needs





Source: Champaign County Freight Study Stakeholder Survey, Champaign County GIS Consortium

Transportation issues affecting freight movement

Traffic congestion

1. Neil Street
2. Prospect Ave
3. Route 45
4. University Ave to Prospect Ave
5. I-74 (Champaign and Danville)
6. Route 150 and I-74 ramp
7. I-74 an I-57 Interchange
8. I-74 from Mahomet during commuter hours
9. Route 150 (Route 130 to I-74)
10. Route 150, huge quantity of additional traffic due to I-74 construction
11. East University Ave, Urbana
12. Downtown Champaign
13. Champaign
14. Urbana
15. Savoy
16. North/South access roads to/from Champaign/Urbana
17. Campus streets difficult to manuever

Roadway condition issues

18. I-74
19. I-74 and I-57 Interchange
20. I-74, too many accidents causes huge back ups and delays

Roadway geometry issues

21. Champaign
22. I-74 and I-57 Interchange

Bridge geometry issues

23. Springfield Ave
24. Green Street

Railroad crossing issues

25. CN rail crossing over Bradley Rd
26. Bradley Ave
27. Prospect Ave
28. Neil St
29. State St
30. Randolph St

Bridge condition issues

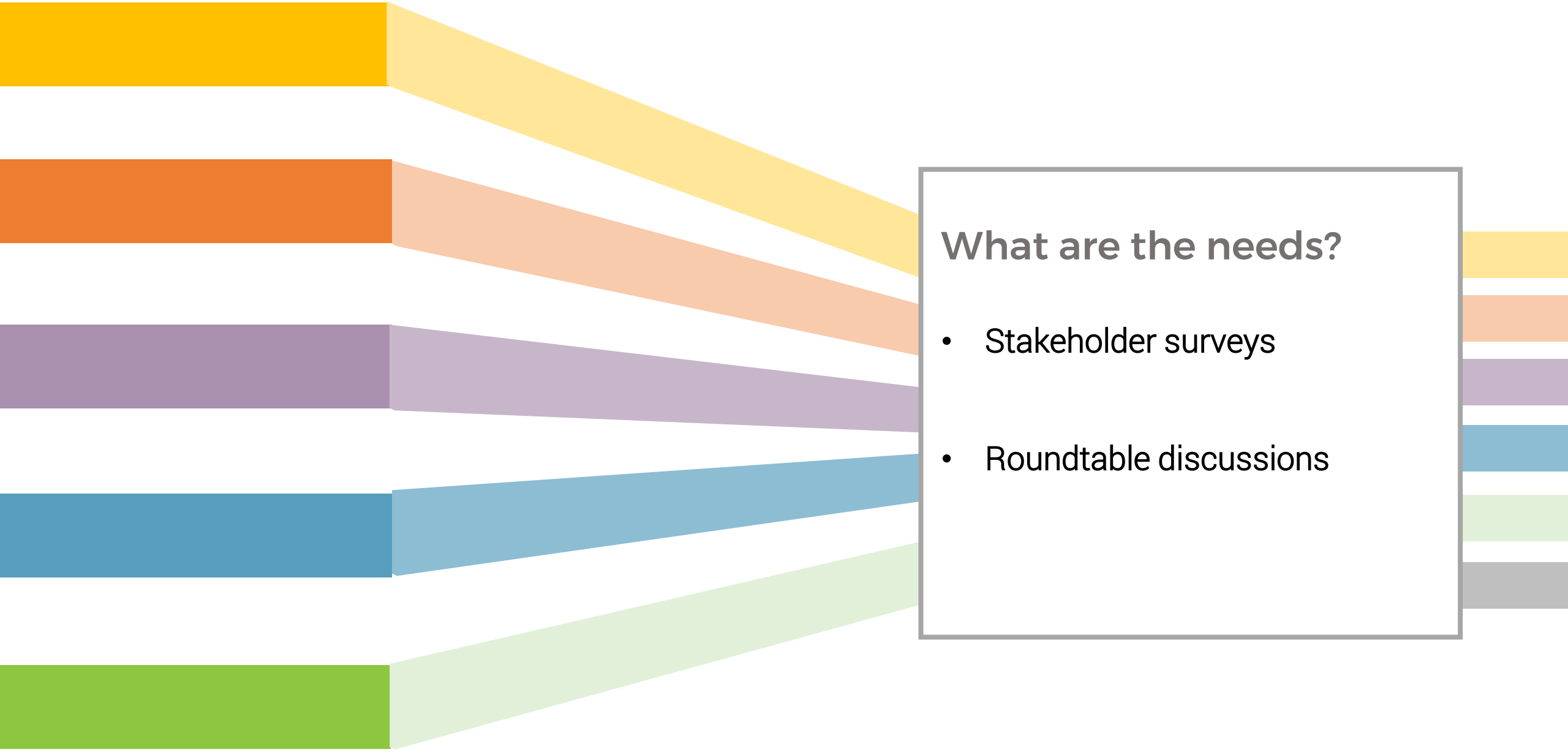
31. Narrow bridges over I-57

Truck wayfinding/signage issues

32. Walnut Street northbound, where the oneway ends is not marked adequately to note left lane needs to turn left. Two way traffic ahead.

Delivery/ loading zone issues

33. Campus
34. Parking in downtown Champaign
35. Parking in downtown Urbana



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Modeling Freight vs Passenger Travel

Passenger Movements

- Persons trips
- Less intermodal in nature
- Less infrastructure impact
- Trip generation and attractions well understood and predicted
- Plenty of publicly available data
- Stakeholders easily identified
- Vehicle trips proportional to demand (vehicle occupancy rate)
- Variables: Land use, car ownership, activity concentration, network supply

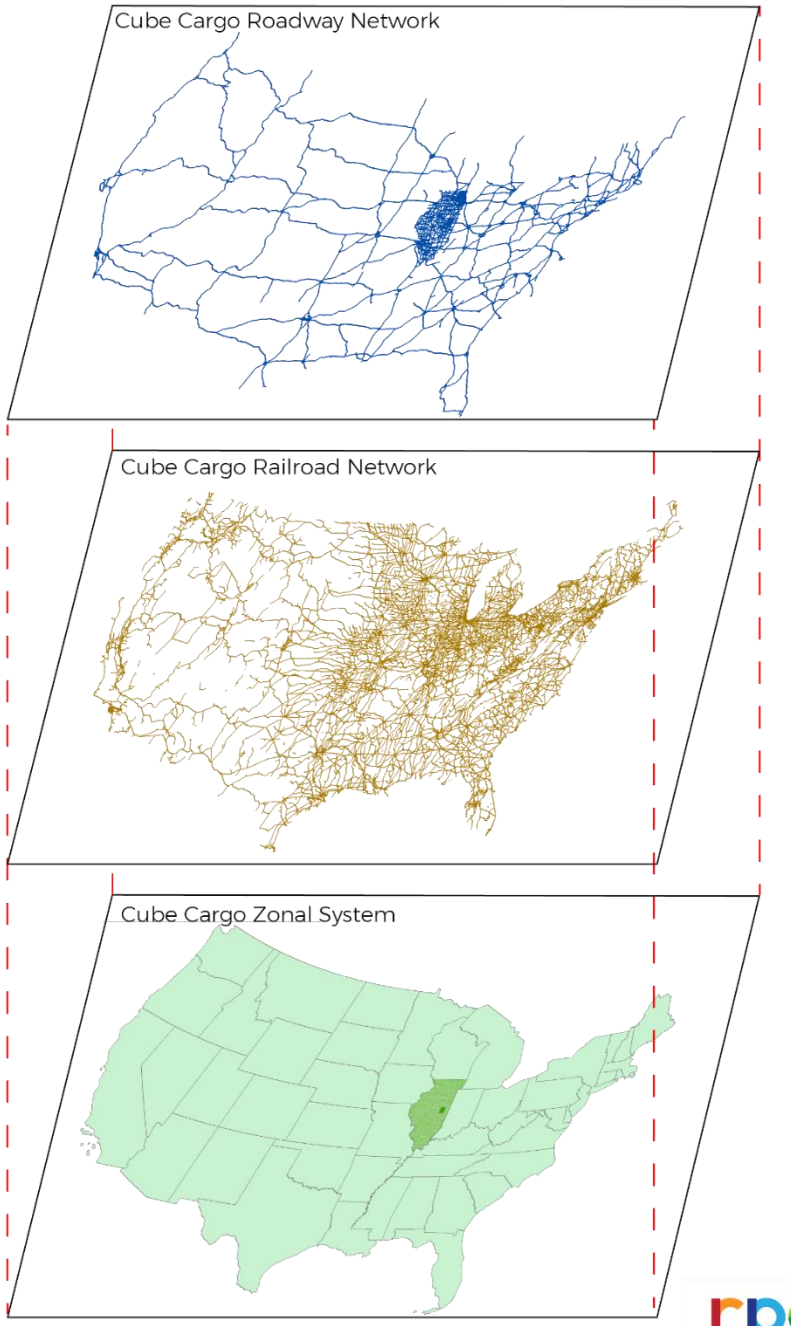
Freight Movements

- Complex chain of interregional trips carrying commodities & services
- Often more intermodal
- Heavier vehicles have greater infrastructure impacts
- Freight movements sensitive to market forces; difficult to forecast demand
- Fewer sources of publicly available data
- Freight stakeholders harder to identify and more challenging to engage
- Truck trips not proportional to demand (carrier cargo consolidation)
- Variables: Economic activity, business size, land use, logistics decisions, additional network constraints

Freight Demand Modeling

- Model: Commodity-based freight demand model

  Cube Cargo
- Base year: 2015
- Horizon year: 2045
- Modes: truck & rail



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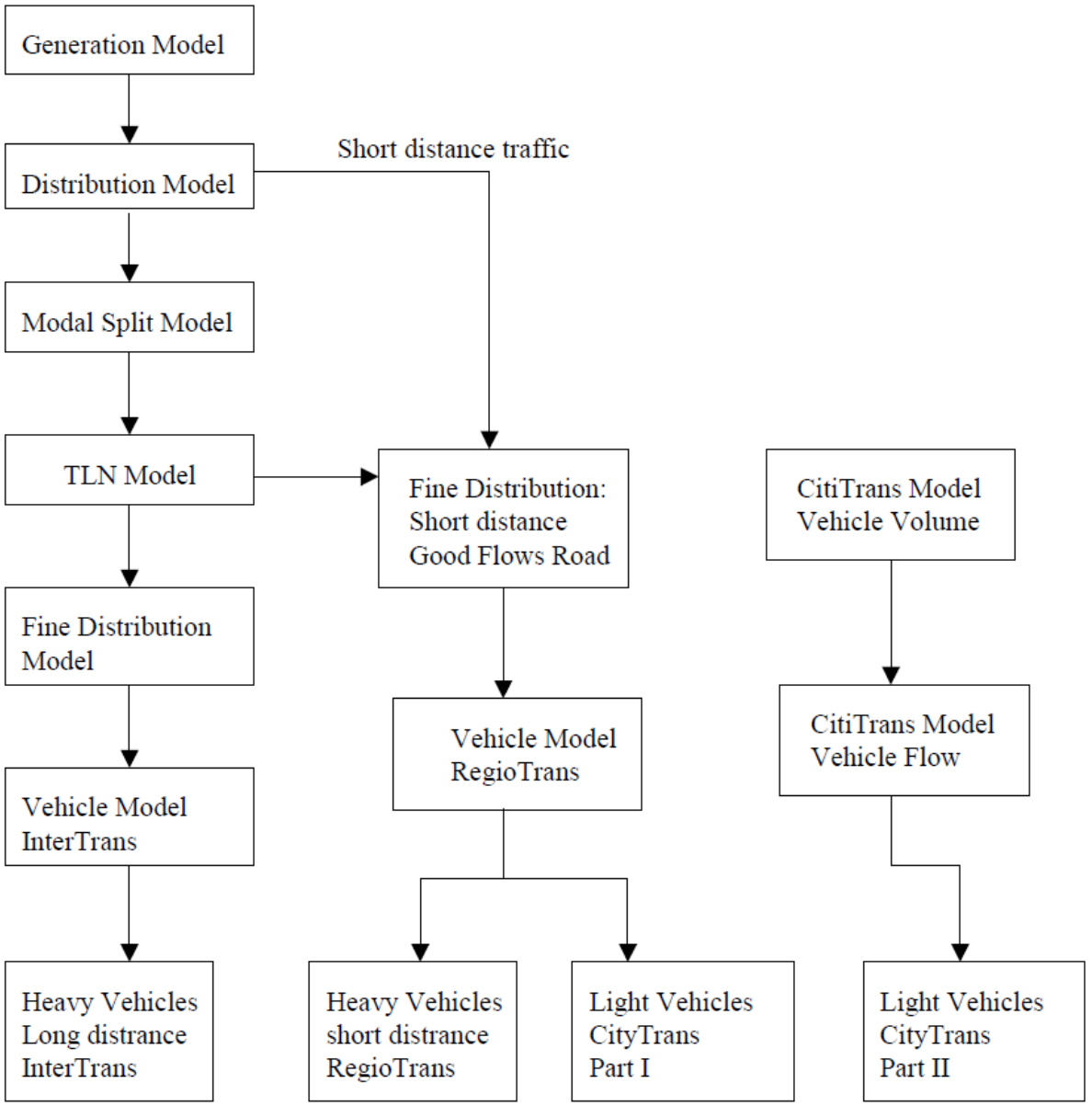

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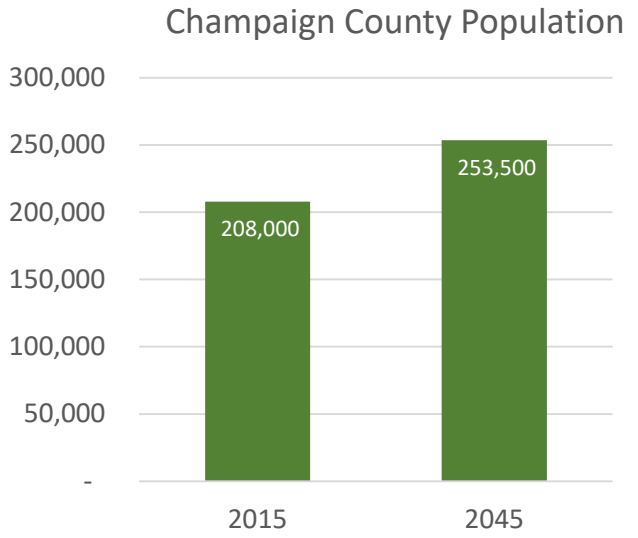
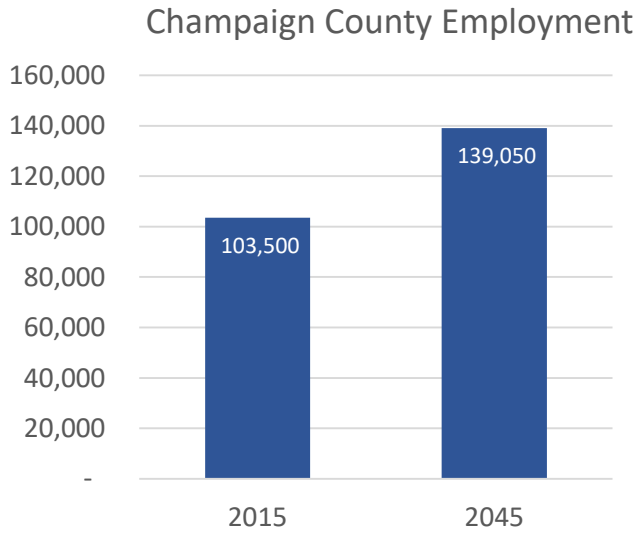
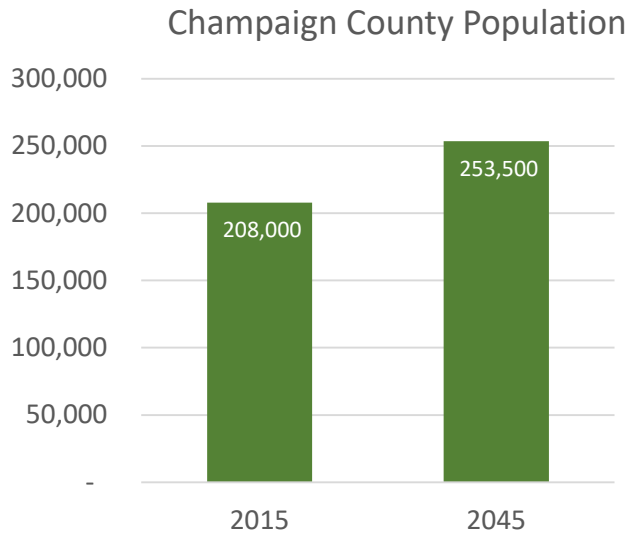
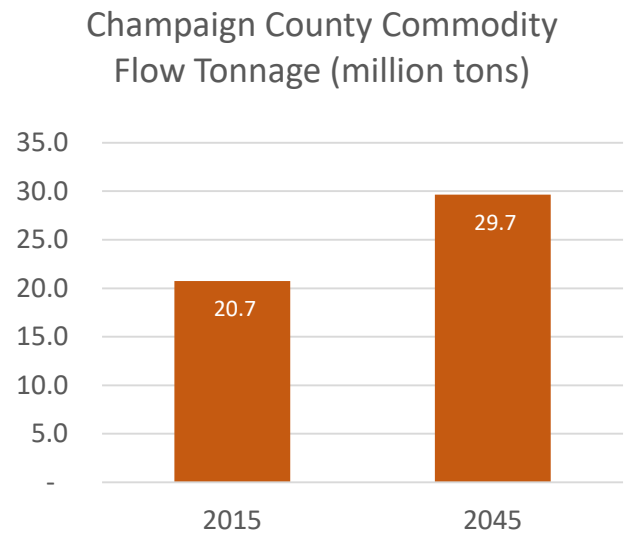
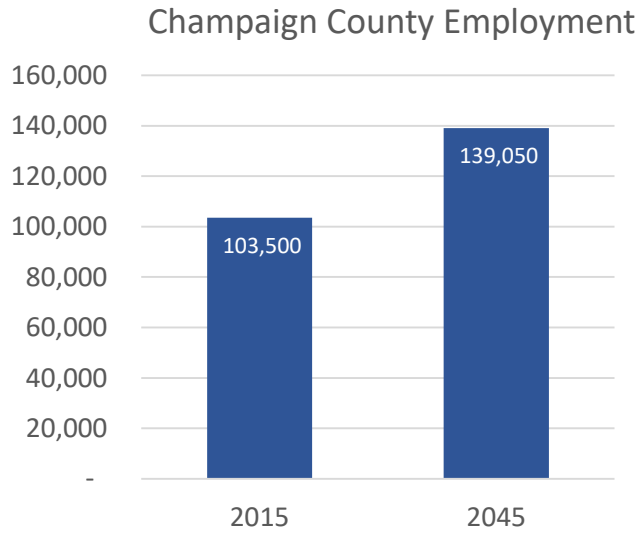


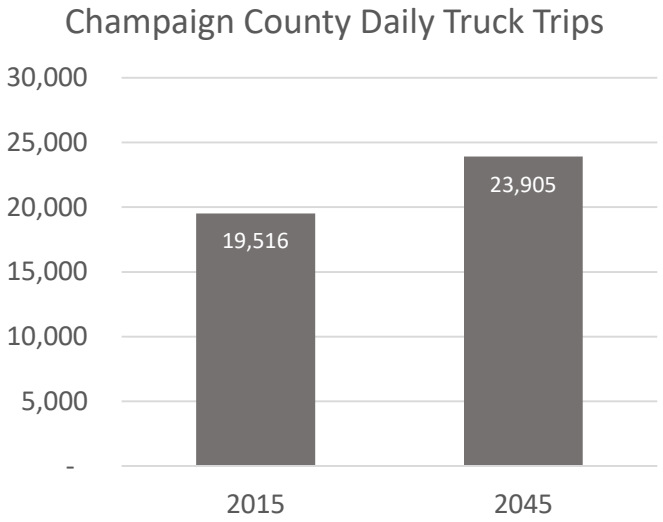


Freight Demand Modeling









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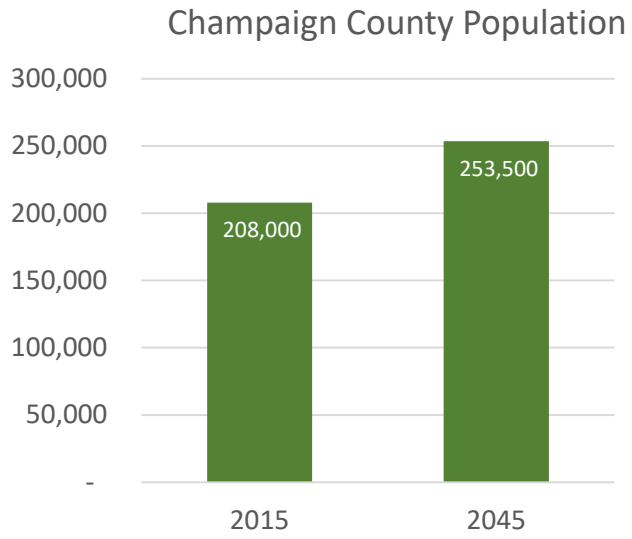

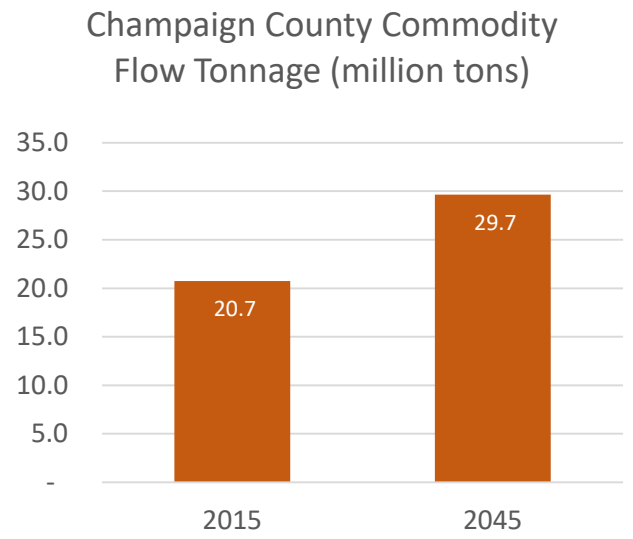

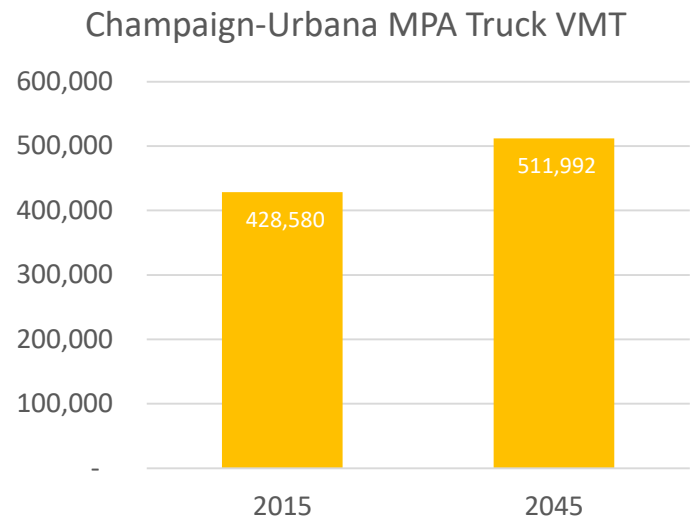

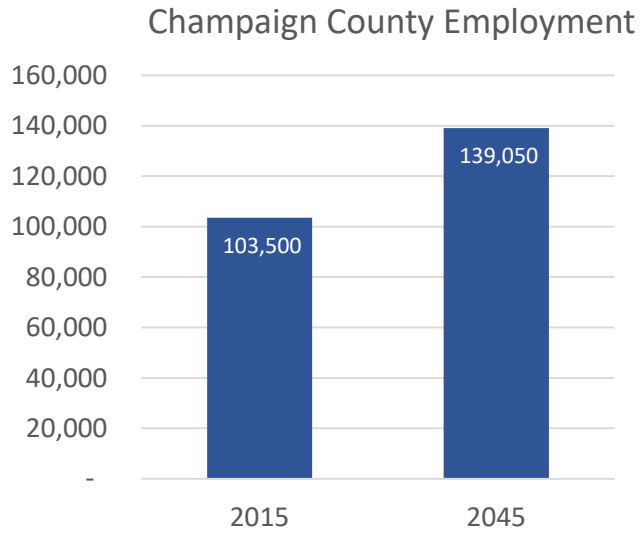

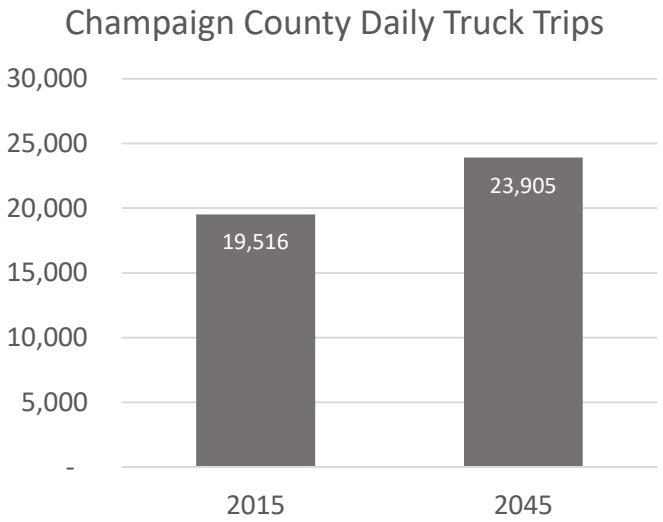

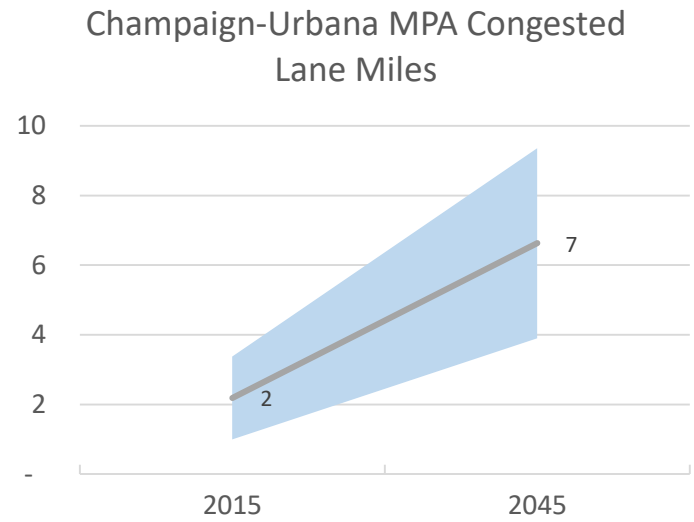


How are the freight movements and needs likely to change in the future?
• Freight demand modeling
• Other trends
Vision
Goals
Objectives
Performance Measure
Strategies & Projects

Vision

The Champaign-Urbana Region Freight Plan envisions the Champaign-Urbana area as a **vibrant region** with a **thriving economy** connecting **people and goods** to regional, national, and global markets by providing **safe, efficient, and reliable** transportation connections.

Goals

Improve safety

Preserve existing infrastructure

Improve efficiency

Expand freight-supporting services and grow the economy

Improve quality of life

- ✓ National Highway Freight Program Goals
- ✓ Illinois Strategic Highway Safety Plan (ILSHP) Goals
- ✓ Illinois Freight Plan Goals
- ✓ LRTP 2040 Sustainable Choices 2040 Goals
- ✓ 43 Literature reviewed

Goals

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Goals: Improve safety

The Champaign-Urbana area will ensure the safety of the transportation system for all people, goods, and services, and in the long term, **achieve the state's "Zero Fatalities" goal and reduce heavy-vehicle-involved serious injuries**.

Goals: Improve safety

Objectives

Eliminate all heavy-vehicle-involved fatalities by 2025

Performance Measure

Total heavy-vehicle involved fatalities (five-year rolling average)

Strategy	Description
Intersection study	Conduct an intersection study for the intersection of Bloomington Road and Prospect Avenue and investigate solutions, including the "peanutabout" concept, to improve the safety for truck traffic and other modes of transportation at that intersection .
Freight fleet safety measures	Explore the feasibility of requiring freight vehicles operating under IDOT/municipal/the University contracts to have truck side guards installed, where appropriate.
Truck route study	Support the development, maintenance, and communication of a regional truck route system and a truck wayfinding plan with consistent truck route signage.
New and expanded truck parking locations	Support new and expanding truck parking locations with the supply of fuel, alternative fuel, electric power sources, and other services for truck drivers and measures to enhance driver safety.

Short-term (2019-2025) | Medium-term (2026-2035) | Long-term (2036-2045) | On-going

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New and expanded truck parking locations	Support new and expanding truck parking locations with the supply of fuel, alternative fuel, electric power sources, and other services for truck drivers and measures to enhance driver safety.
Enhance air cargo services	Provide support to the development of the Willard Airport Master Plan to encourage new and enhanced air cargo services.
Curbside management study & Improved truck delivery zone	Develop a curbside management study/plan that inventories existing curbside spaces, private loading bays, current municipal curbside usage, regulations on permitting, pricing, signage, truck loading zone designation and hours, and the relationship between truck loading zones and traveling lanes, parking lanes, transit stops, bicycle and pedestrian facilities.

Short-term (2019-2025) | Medium-term (2026-2035) | Long-term (2036-2045) | On-going

Strategy	Description
C/AV study	In preparation for the emerging technologies such as autonomous/connected vehicles and truck platooning, continue maintaining roadway striping to keep roadways detectable for sensors; participate in discussions about pilot programs in the state to be aware of emerging opportunities; initiate studies to coordinate and build consensus among stakeholders on the requirements for operating autonomous trucks on local streets.
Intermodal terminal yard	Identify opportunities for an intermodal terminal yard or a rail transloading facility and improve multimodal connections among rail yard, industrial developments, airport, and the truck freight network to relieve traffic congestion on highways by encouraging use of alternate modes whenever possible.

Short-term (2019-2025) | Medium-term (2026-2035) | Long-term (2036-2045) | On-going

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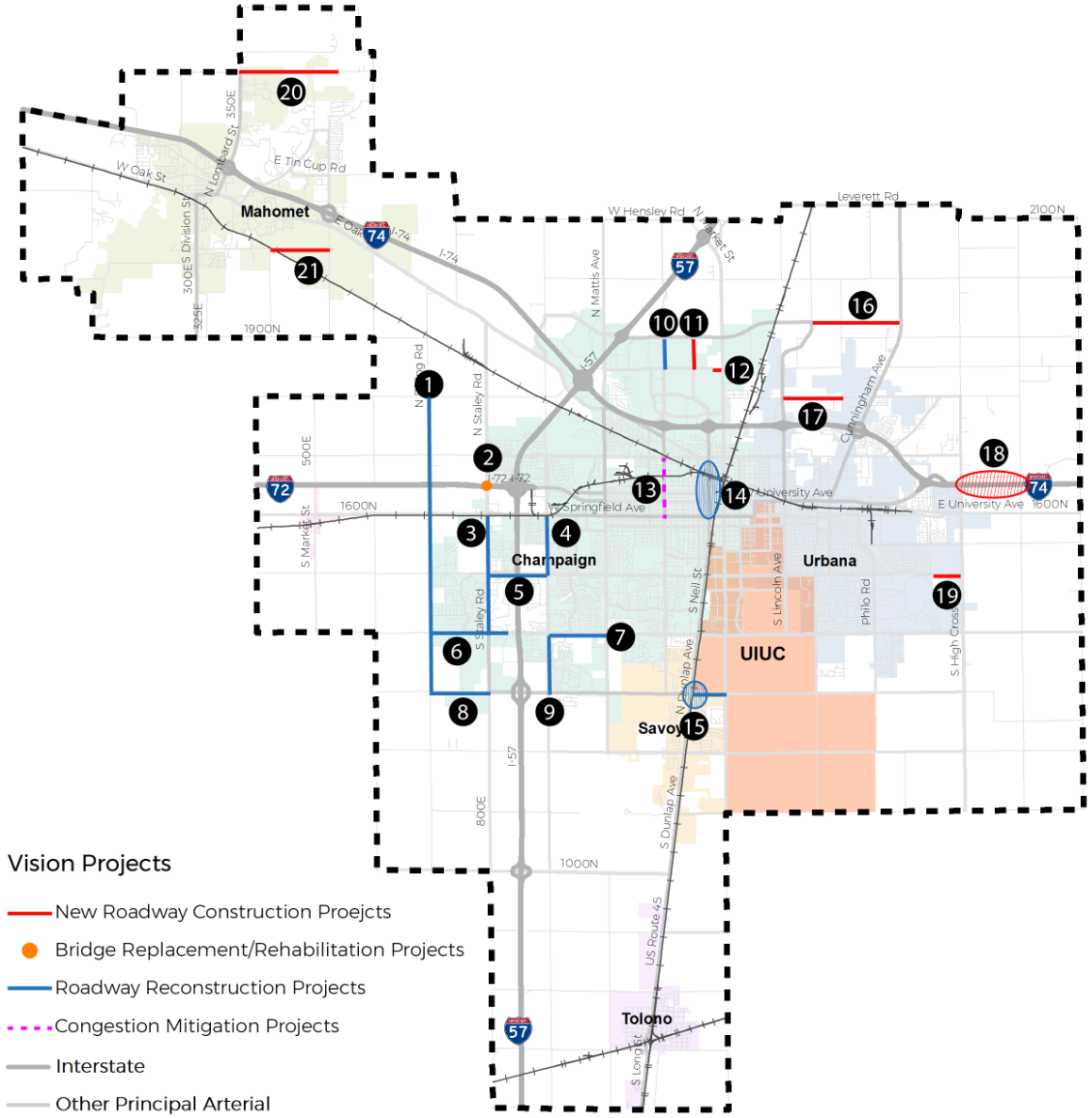
Funding advocacy	Continue to identify federal, state, and other funding sources and work with public agencies, the private sector, and elected officials to identify local projects eligible and suitable to apply. Continue to advocate for adequate funding and investment to maintain and improve the freight transportation system.
Safety data analysis	Continue monitoring and analyzing heavy-vehicle involved crashes to identify areas that have problematic or crash-inducing patterns and work with the state and local agencies to investigate safety solutions.
Alternative fuel freight fleet	When purchasing new or replacing old municipal truck fleets, consider alternative fuel trucks and educate truck drivers in eco-driving practices to conserve fuel while driving.
Public outreach & education	Develop and distribute education materials for trucking companies on the freight network, local municipal regulations, preferred routes parking, low bridges, online information system, and other resources. Educate the public on the importance of freight in regional economy and safety information when sharing a road with trucks.

Short-term (2019-2025) | Medium-term (2026-2035) | Long-term (2036-2045) | On-going

Goals: Improve safety

Strategies & Projects




Vision
Goals
Objective
Performance Measure
Strategies & Projects

Moving forward

Responsible parties, time frame, & funding sources

- State Road Fund
- State Construction Account Fund
- Surface Transportation Block Grant Program (STBG)
- Illinois Grade Crossing Protection Fund
- Truck Access Route Program (TARP) Funds
- Highway Safety Improvement Program (HSIP)
- Economic Development Program (EDP)
- Rail Freight Local Program
- Illinois Transportation Enhancement Program (ITEP)
- Airport Improvement Program
- BUILD
- National Highway Performance Program (NHPP)
- National Highway Freight Program
- INFRA

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COMMISSION