

# Statewide Freight Planning & Visualization using FAF 4.2 Data

CHICAGO AREA  
MODEL USERS GROUP

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# About the Freight Analysis Framework

- u FAF is a free public data model produced by the FHWA to assist freight planning
  - Uses 2012 Commodity Flow Survey, and other trade data
  - Current version has 2012 base year with forecasts to 2045
  - International and domestic flows, by mode
  - Tons, value, and vehicle miles of travel
  - Highway network assignments to major routes
  - Limited commodity specificity -- 43 broad groups
  - Limited geographic specificity -- 132 analysis zones

[https://ops.fhwa.dot.gov/freight/freight\\_analysis/faf/](https://ops.fhwa.dot.gov/freight/freight_analysis/faf/)



# Standard Classification of Transported Goods (SCTG) Codes

SCTG	Commodity	SCTG	Commodity	SCTG	Commodity
01	Live animals/fish	15	Coal	29	Printed products
02	Cereal grains	16	Crude petroleum	30	Textiles/leather
03	Other agricultural products.	17	Gasoline	31	Nonmetal mineral products
04	Animal feed	18	Fuel oils	32	Base metals
05	Meat/seafood	19	Coal-n.e.c.	33	Articles-base metal
06	Milled grain prods.	20	Basic chemicals	34	Machinery
07	Other foodstuffs	21	Pharmaceuticals	35	Electronics
08	Alcoholic beverages	22	Fertilizers	36	Motorized vehicles
09	Tobacco prods.	23	Chemical prods.	37	Transport equipment
10	Building stone	24	Plastics/rubber	38	Precision instruments
11	Natural sands	25	Logs	39	Furniture
12	Gravel	26	Wood products	40	Misc. mfg. products.
13	Nonmetallic minerals	27	Newsprint/paper	41	Waste/scrap
14	Metallic ores	28	Paper articles	43	Mixed freight
				99	Commodity unknown



# FAF Freight Modes

- uTruck
- uRail
- uWater
- uMultimodal
- uPipeline
- uAir
- uOther

# FAF Flows Available by

u Value (\$2012)

u Tons

- *FAF ton database allows for shipping analysis*
- *FAF dollar database allows for economic analysis.*



# FAF Markets

6

- u Domestic
- u Import
- u Export



# Study Years Available

7

u2012

u2025

u2013

u2030

u2014

u2035

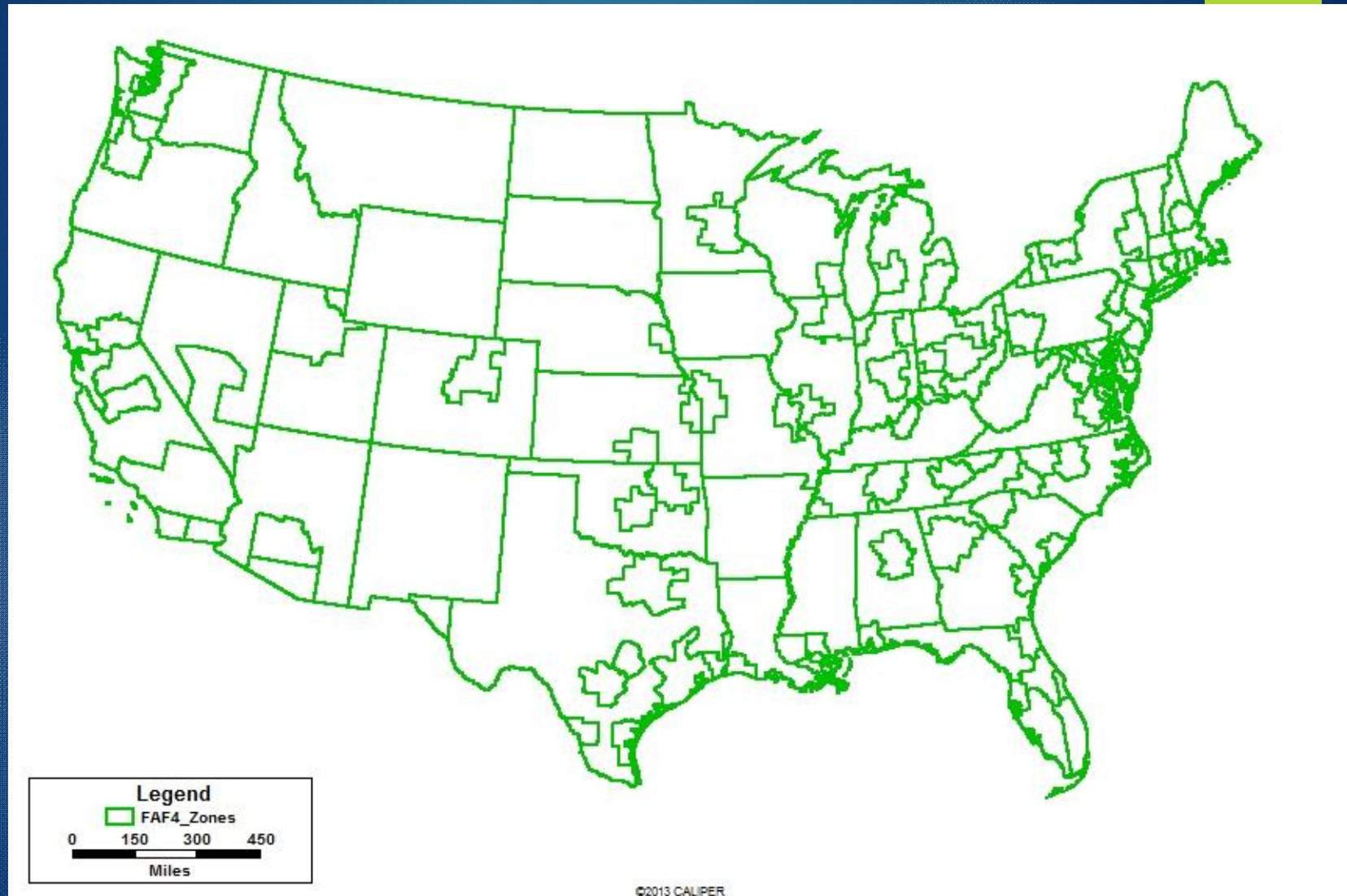
u2015

u2040

u2020

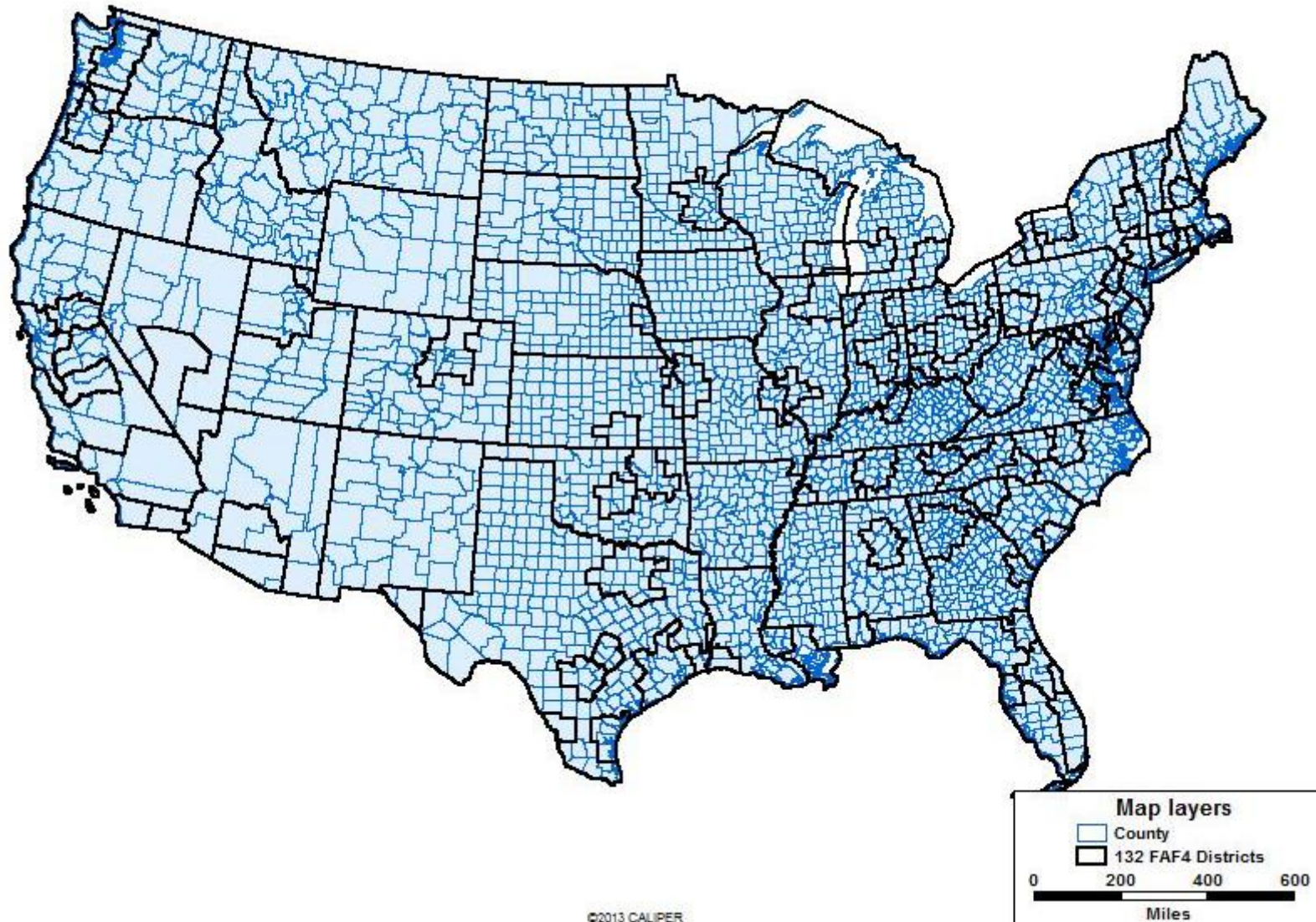
u2045

# FAF Geography – 132 Analysis Zones



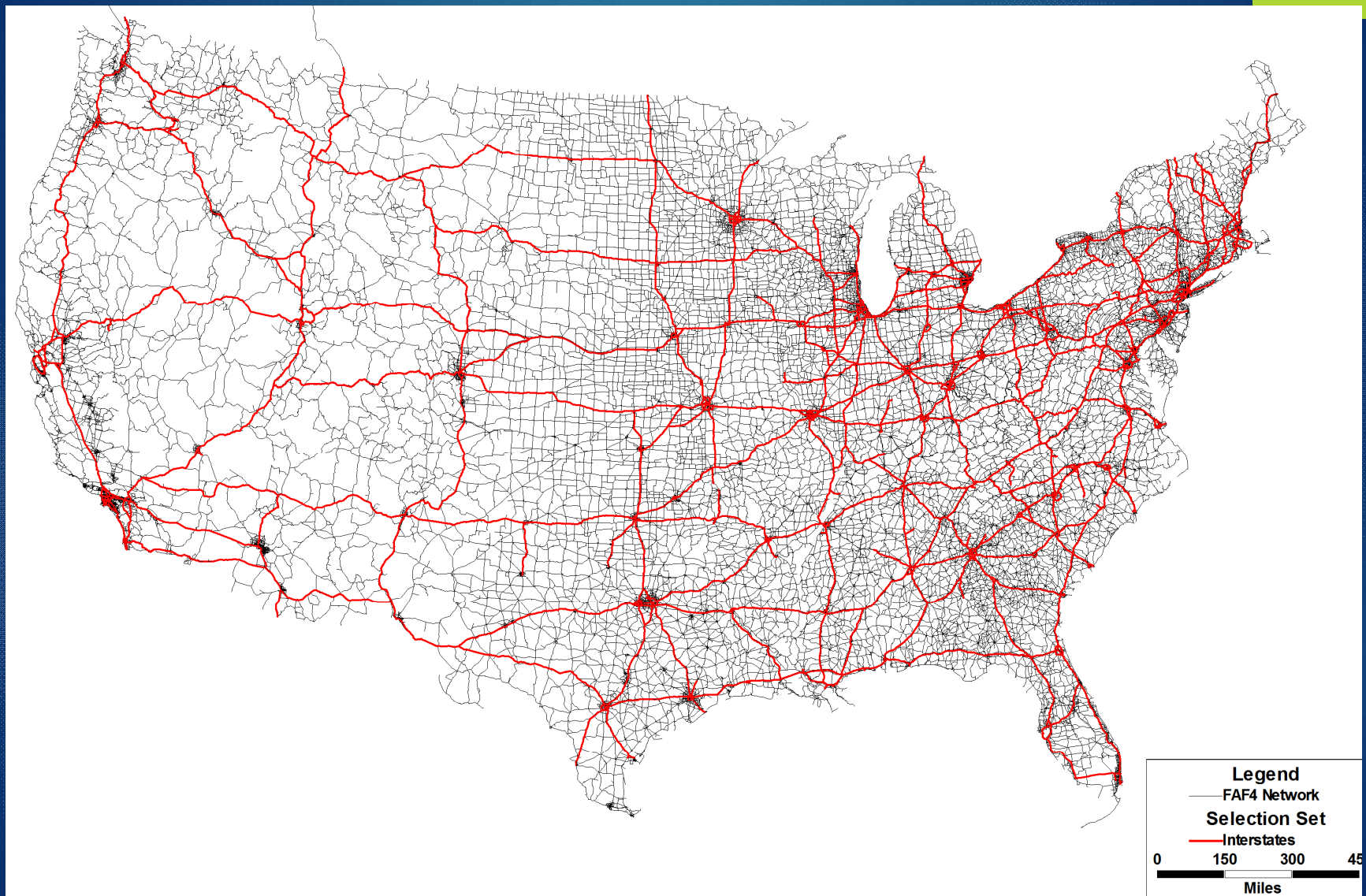


# FAF Geography – 132 Analysis Zones





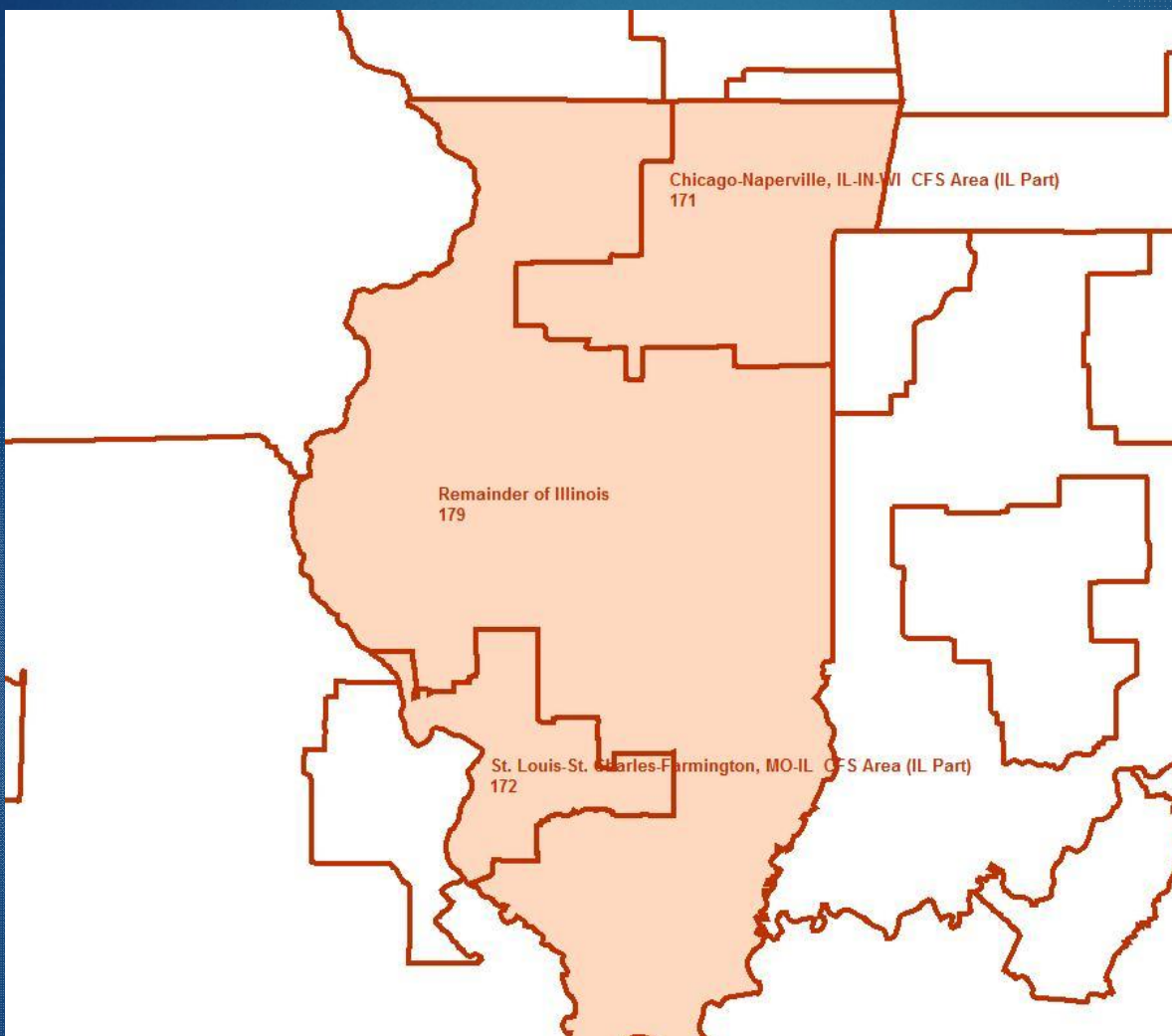
# Corresponding FAF Roadway Network





# FAF Zones in Illinois

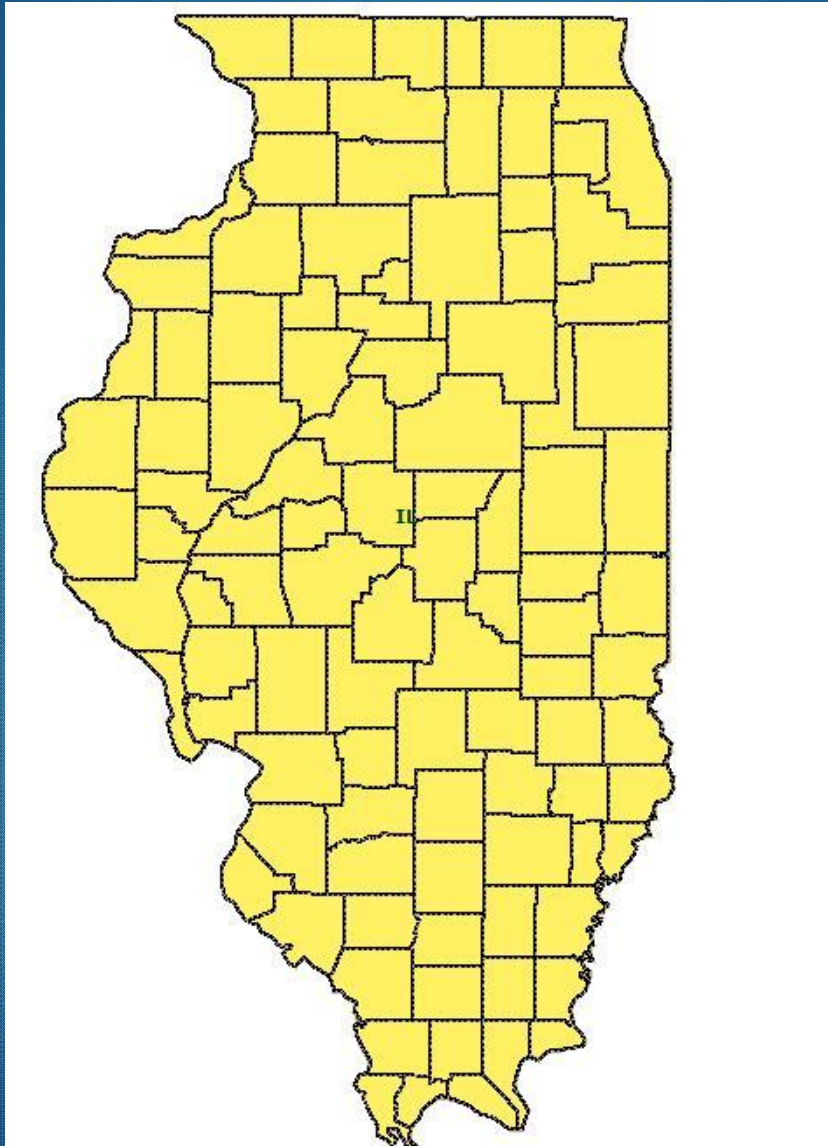
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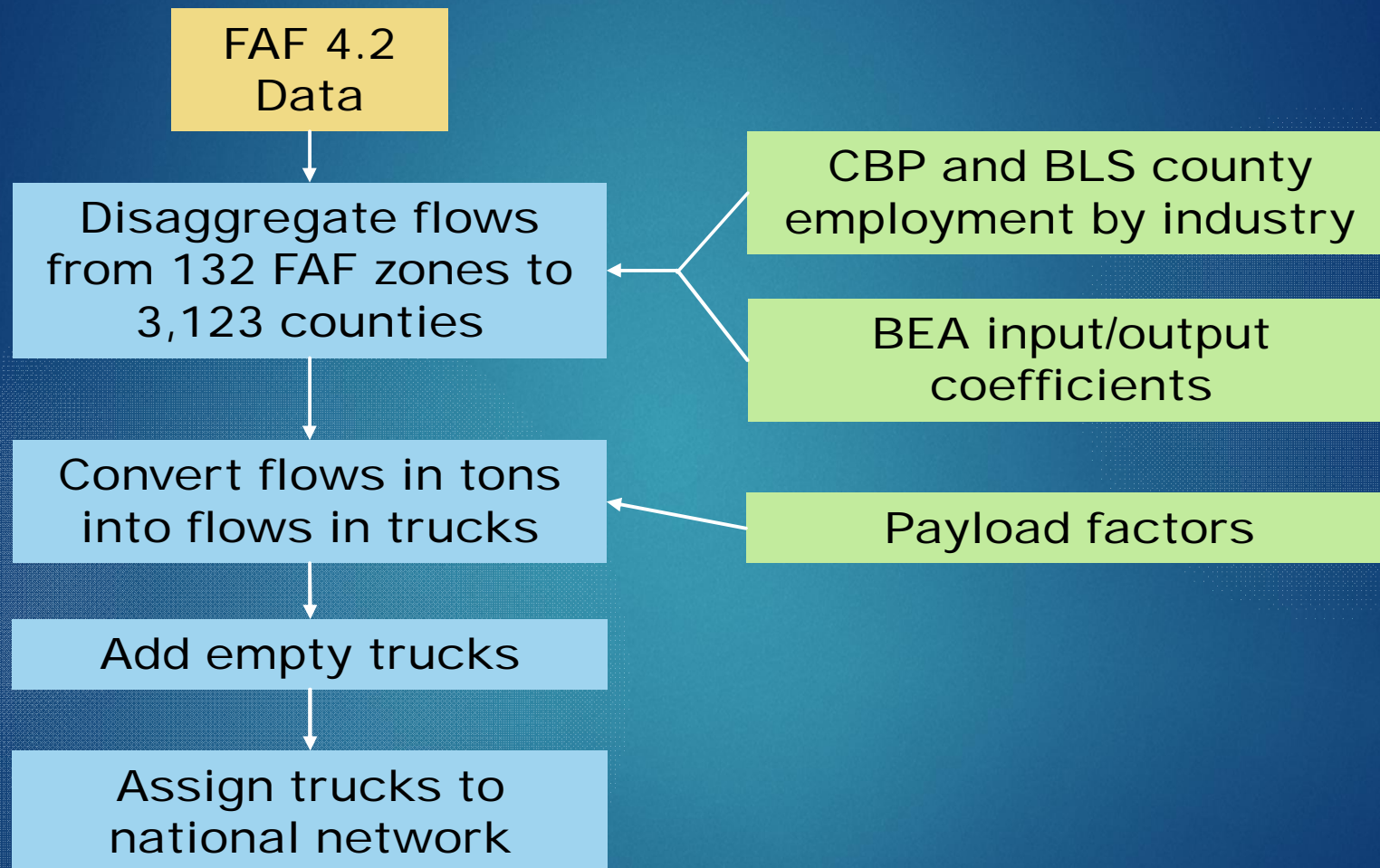
# Counties in Illinois (102)

12





# Commodity to Truck Conversion



## Two Examples

- Illinois Freight Flow Analysis
- Eight County Intergovernmental Agency (Dubuque)

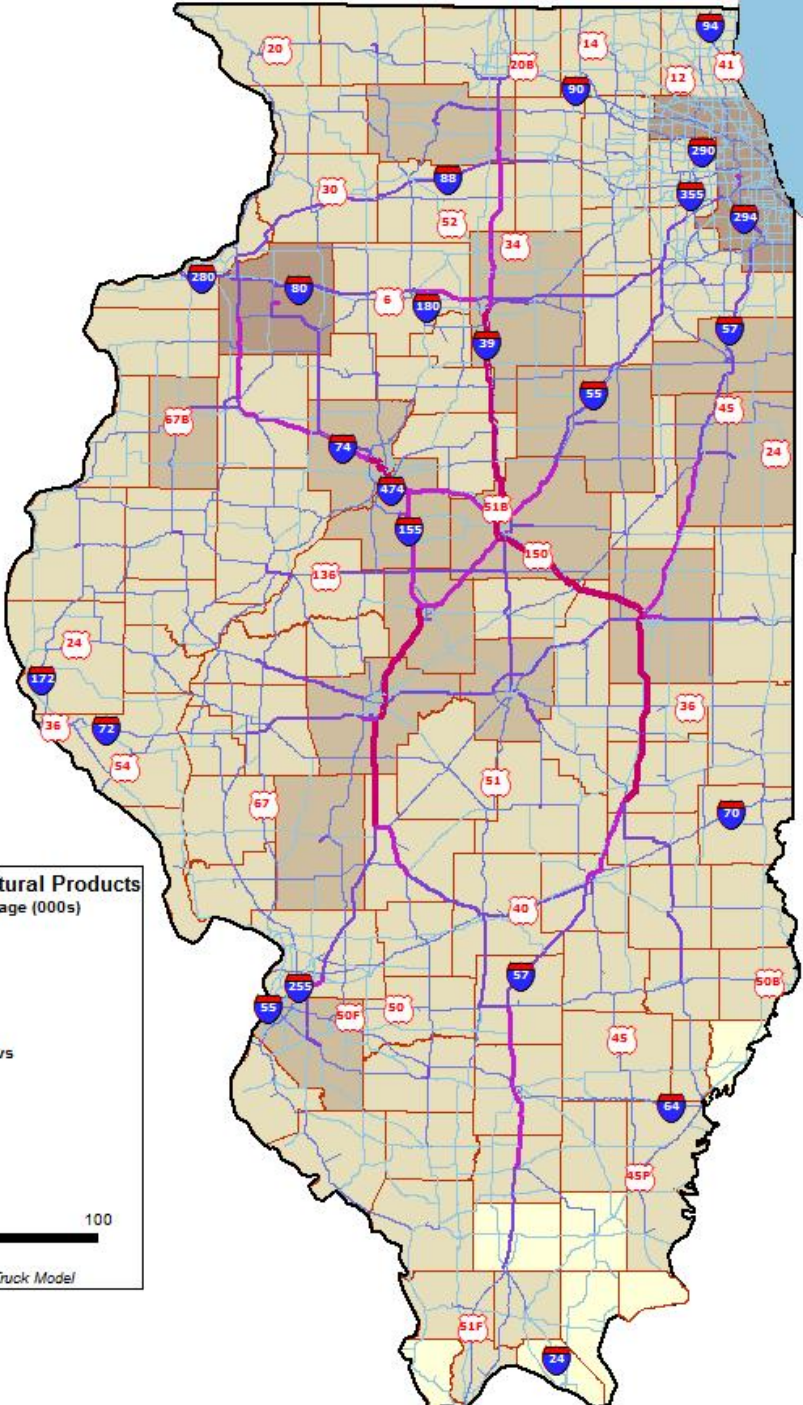
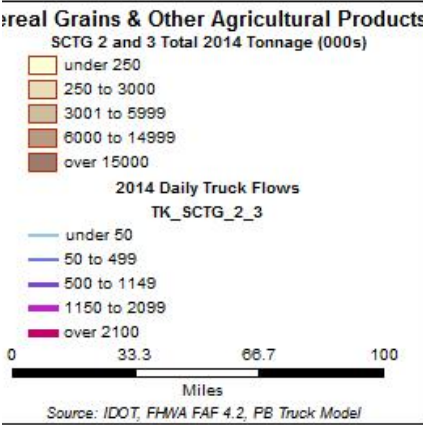


# Illinois Freight Flow Analysis



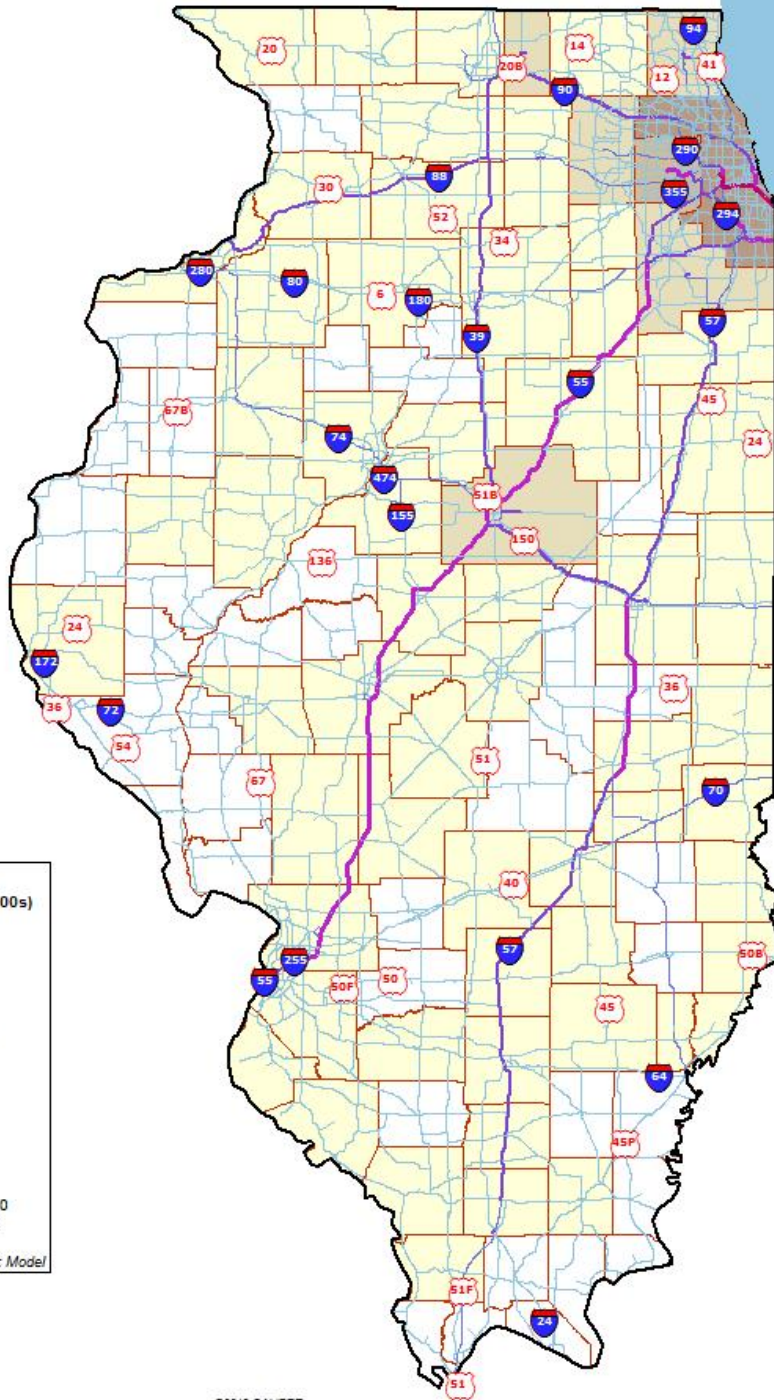
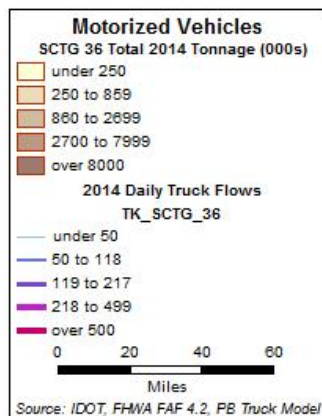
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# Cereal Grains & Other Agricultural Products



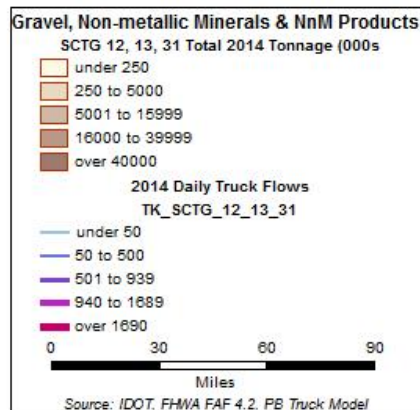


# Motorized Vehicles





# Gravel, Non-Metallic Minerals & Non-Metallic Products





# Eight County Intergovernmental Agency

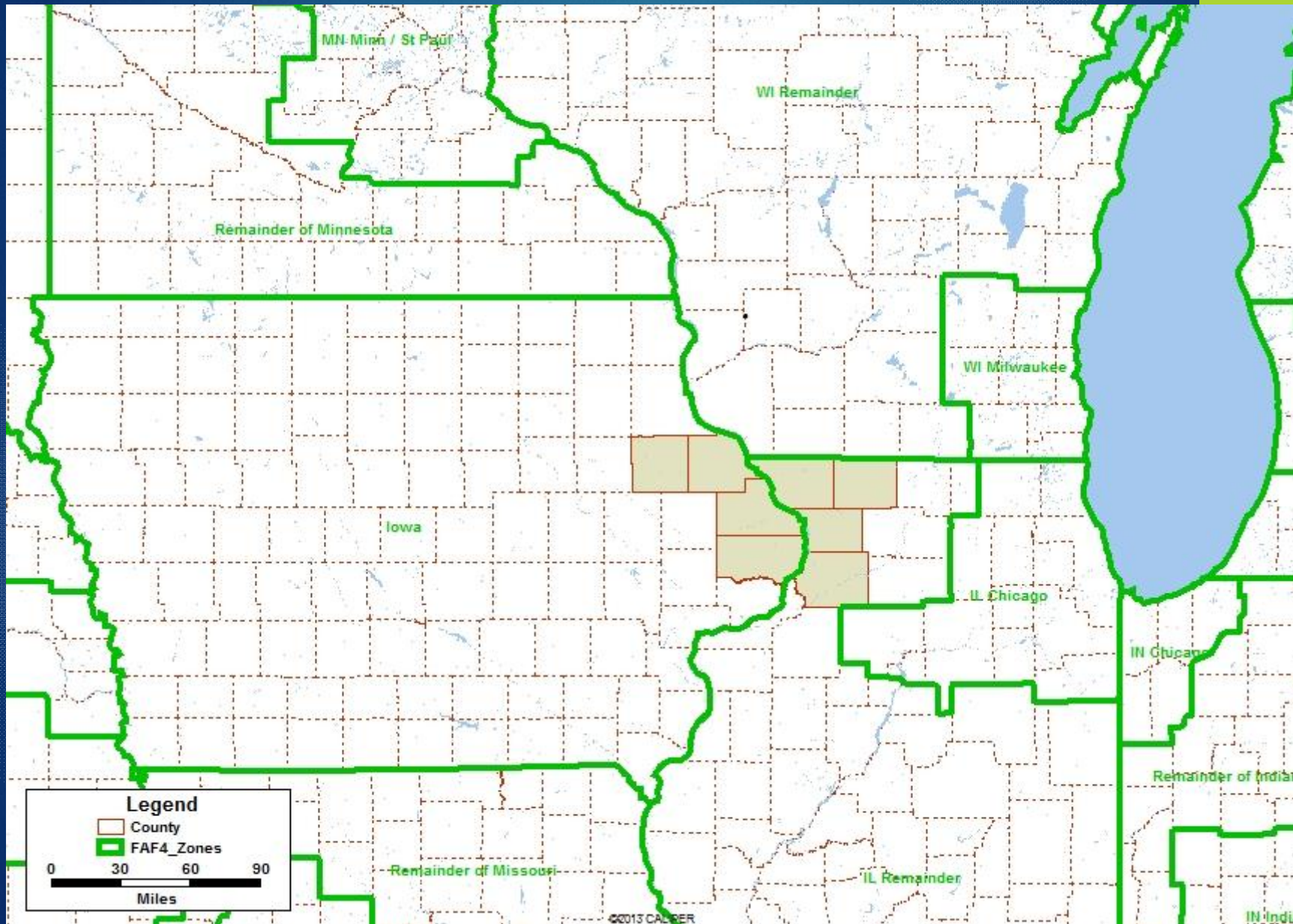


# FAF Disaggregation and this Study

- u WSP developed a disaggregation of FAF data to the county level for Illinois DOT
  - u Recently updated (to FAF 4.2) to support the state freight plan
  - u From 132 FAF zones to 3,123 counties
  - u Truck, rail, water and “multiple modes”
  - u Base year updated to 2014
- u Disaggregation allows us to isolate and analyze FAF data for the Eight County Study area
  - u ECIA totals and individual counties
  - u Truck tonnage on highway network
  - u Commodity flow statistics



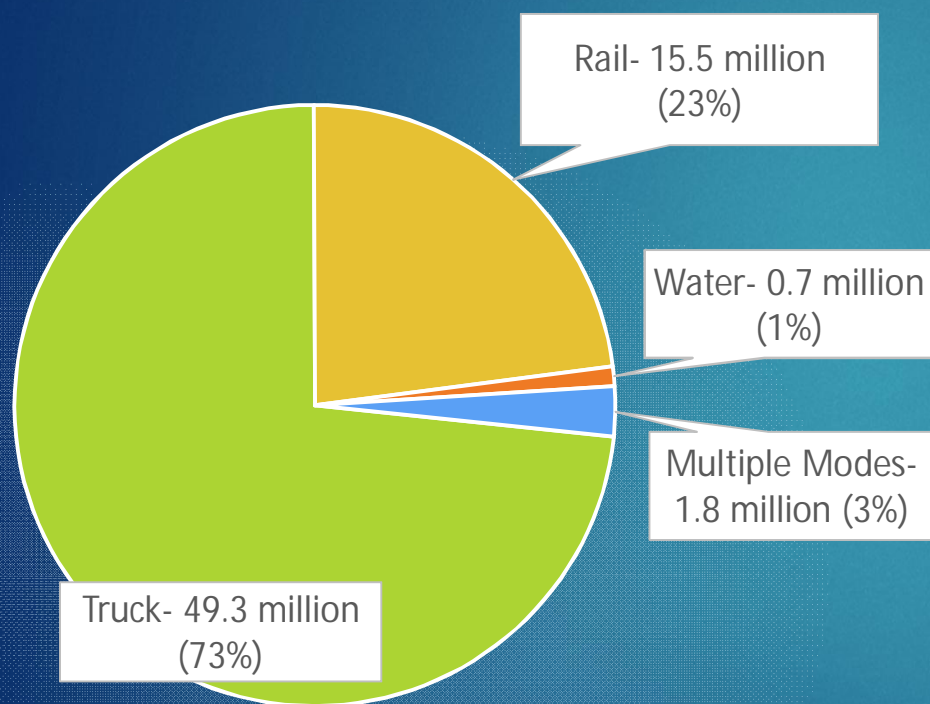
# ECIA Counties are in Different FAF Zones



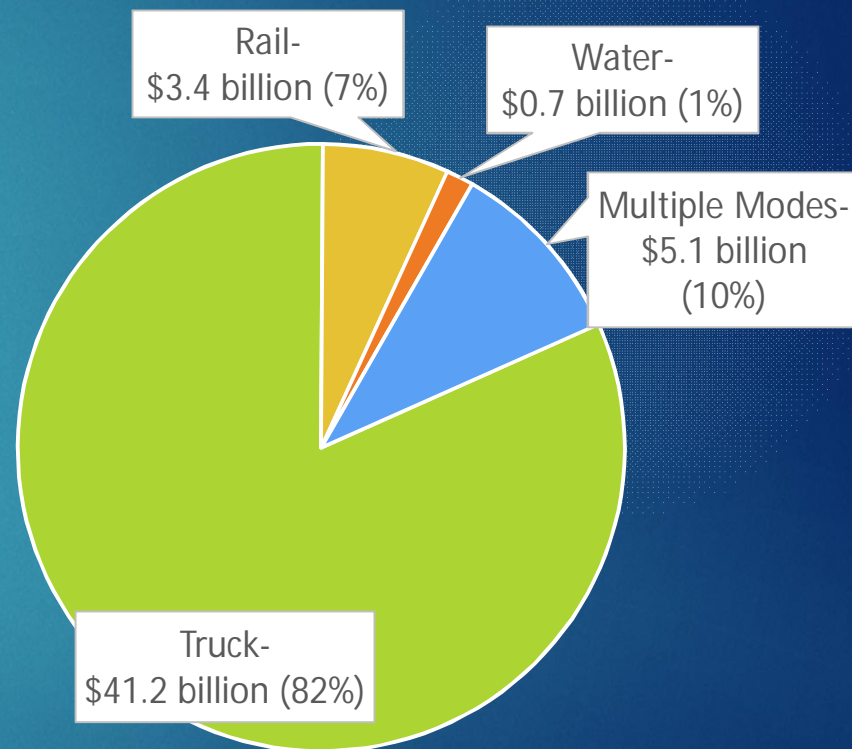


# ECIA Tons and Value by Mode, 2014

Tons by Mode (2014)  
Total = 67.3 Million tons



Value by Mode (2014)  
Total = \$50.4 Billion

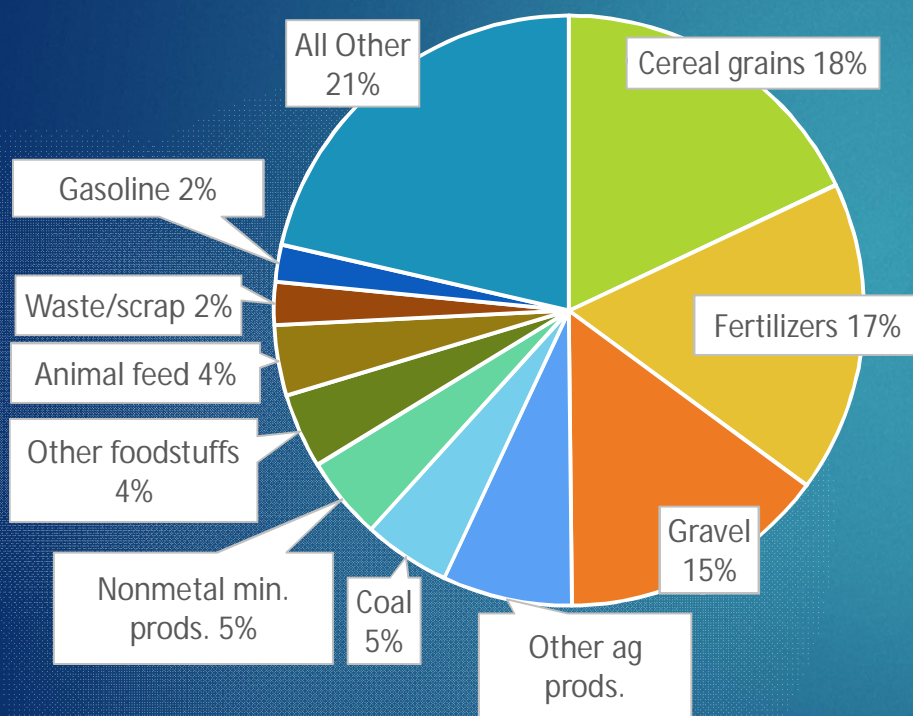


Source: WSP Analysis of FHWA Freight Analysis Framework version 4 (FAF4) data. Preliminary.

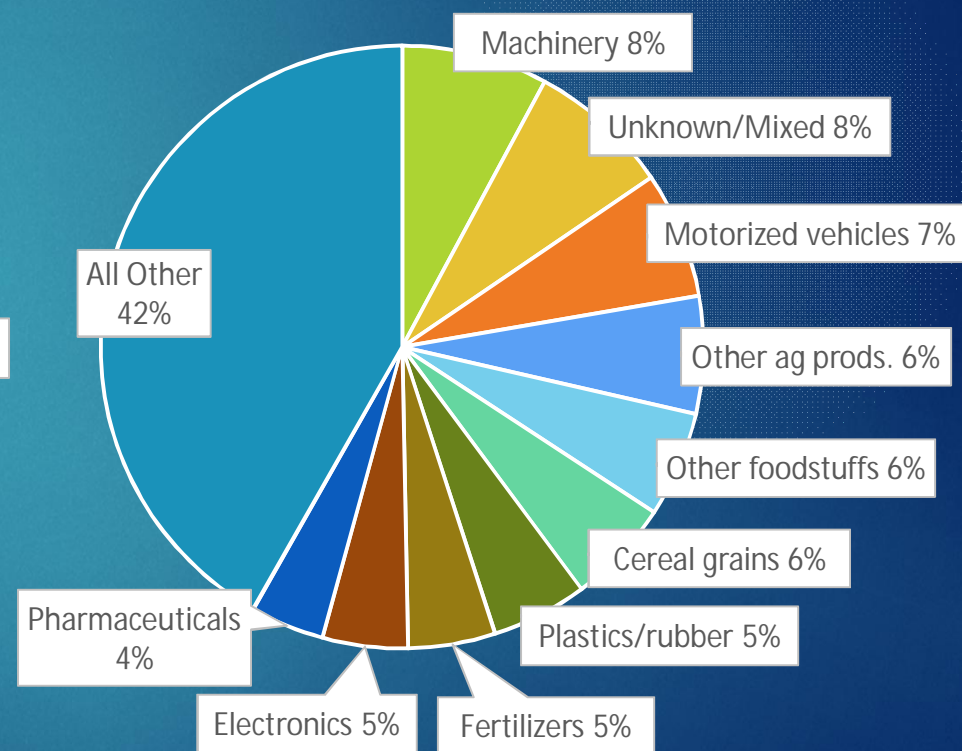


# ECIA Tons and Value by Commodity, 2014

Tons by Commodity (2014)  
Total = 67.3 Million tons



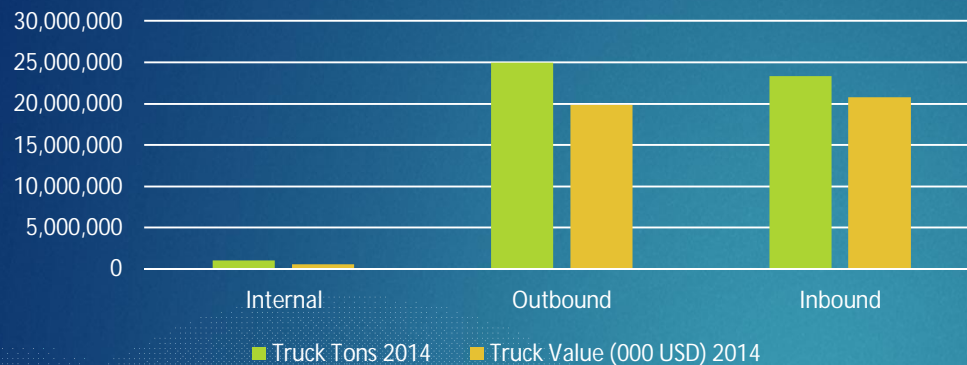
Value by Commodity (2014)  
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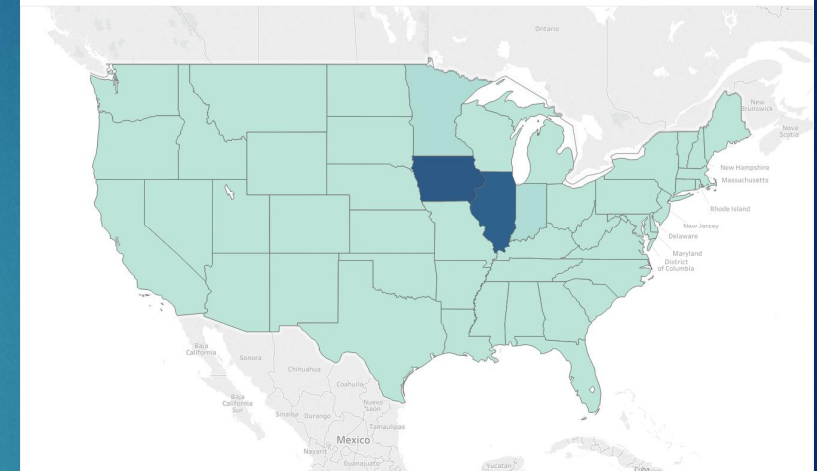
# ECIA Truck Tons and Value, 2014

Truck Tons and Value by Direction, 2014

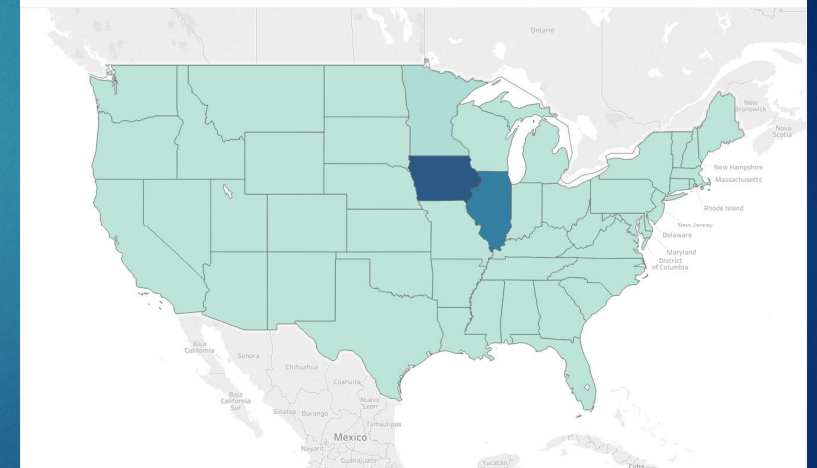


Truck Commodities	Tons 2014	Truck Commodities	Value (USD) 2014
Cereal grains	10,076,986	Unknown/Mixed	3,689,363,504
Gravel	9,514,989	Machinery	3,433,067,624
Fertilizers	4,206,544	Motorized vehicles	2,712,922,662
Other ag prods.	3,418,598	Other ag prods.	2,343,340,221
Nonmetal min. prods.	2,916,398	Cereal grains	2,294,635,986
Animal feed	2,285,944	Plastics/rubber	2,153,360,757
Other foodstuffs	1,781,752	Other foodstuffs	2,133,921,989
Waste/scrap	1,383,529	Fertilizers	1,849,732,284
Gasoline	1,208,675	Electronics	1,784,076,277
Fuel oils	1,159,313	Base metals	1,761,783,320
All Other	11,394,844	All Other	17,061,759,714
Grand Total	49,347,572	Grand Total	41,217,964,338

Origin States for Inbound Trucks



Destination States for Outbound Trucks



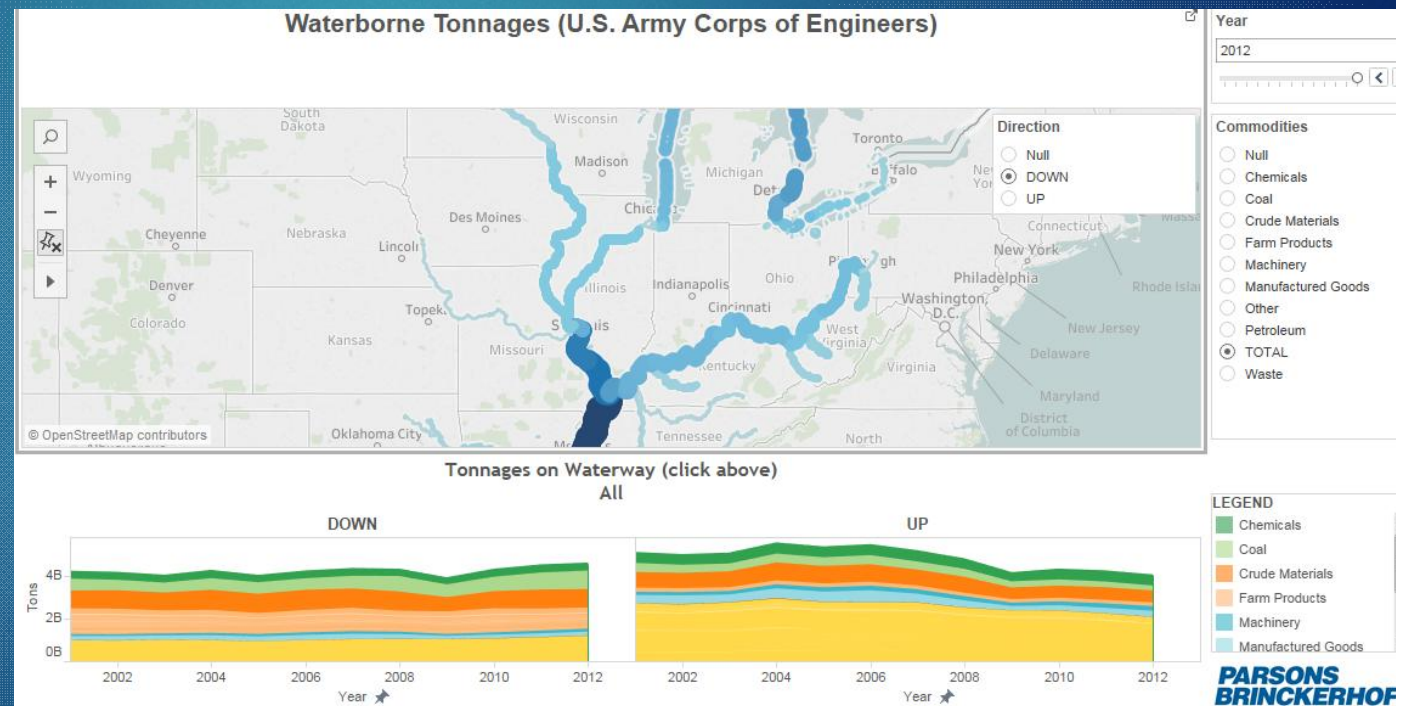


# Freight Data Visualization



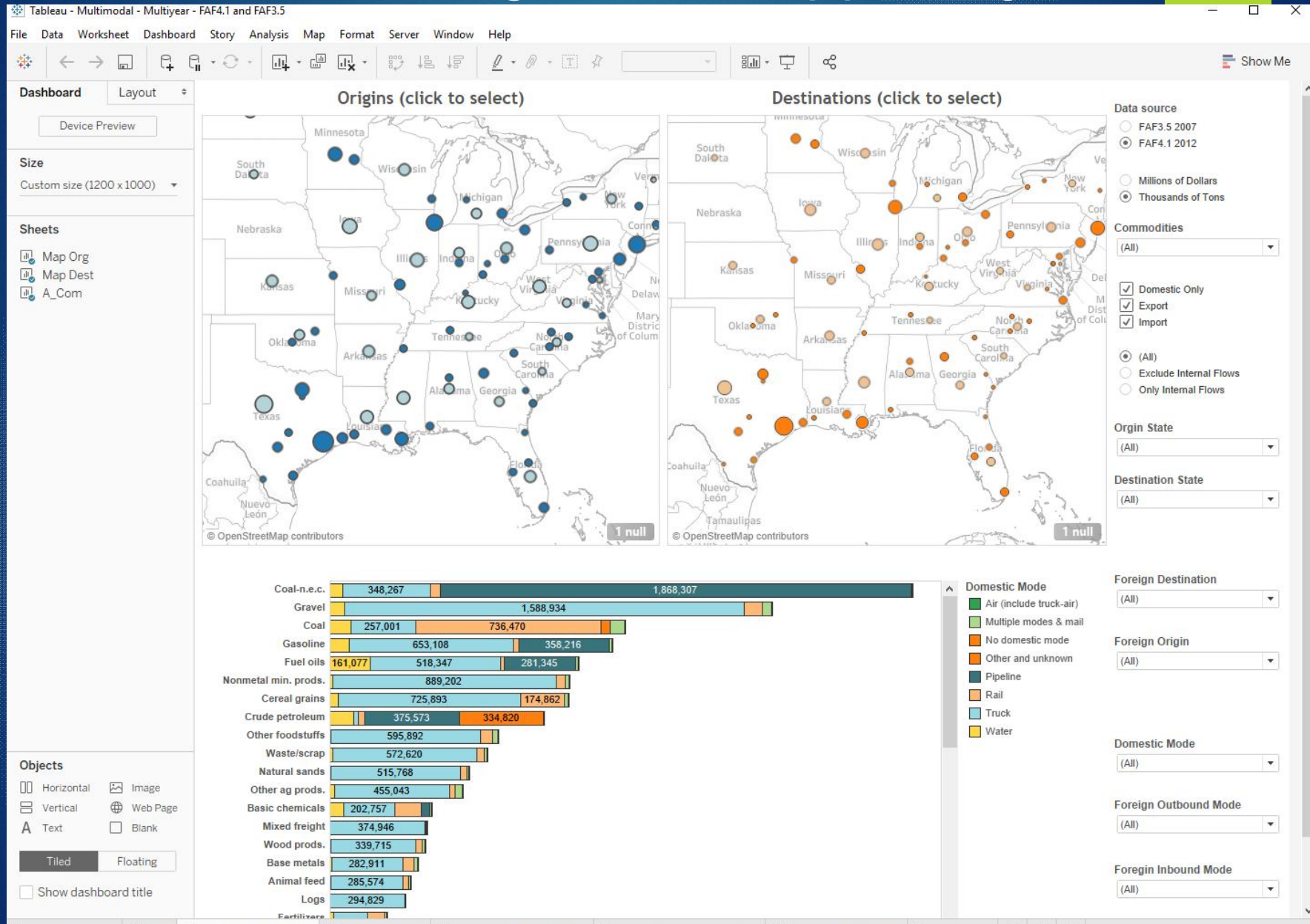
# Sharing Results and Visualization

- u Compelling and clear graphics
- u Multiple platforms
- u Easy sharing
- u Scalability
- u Control



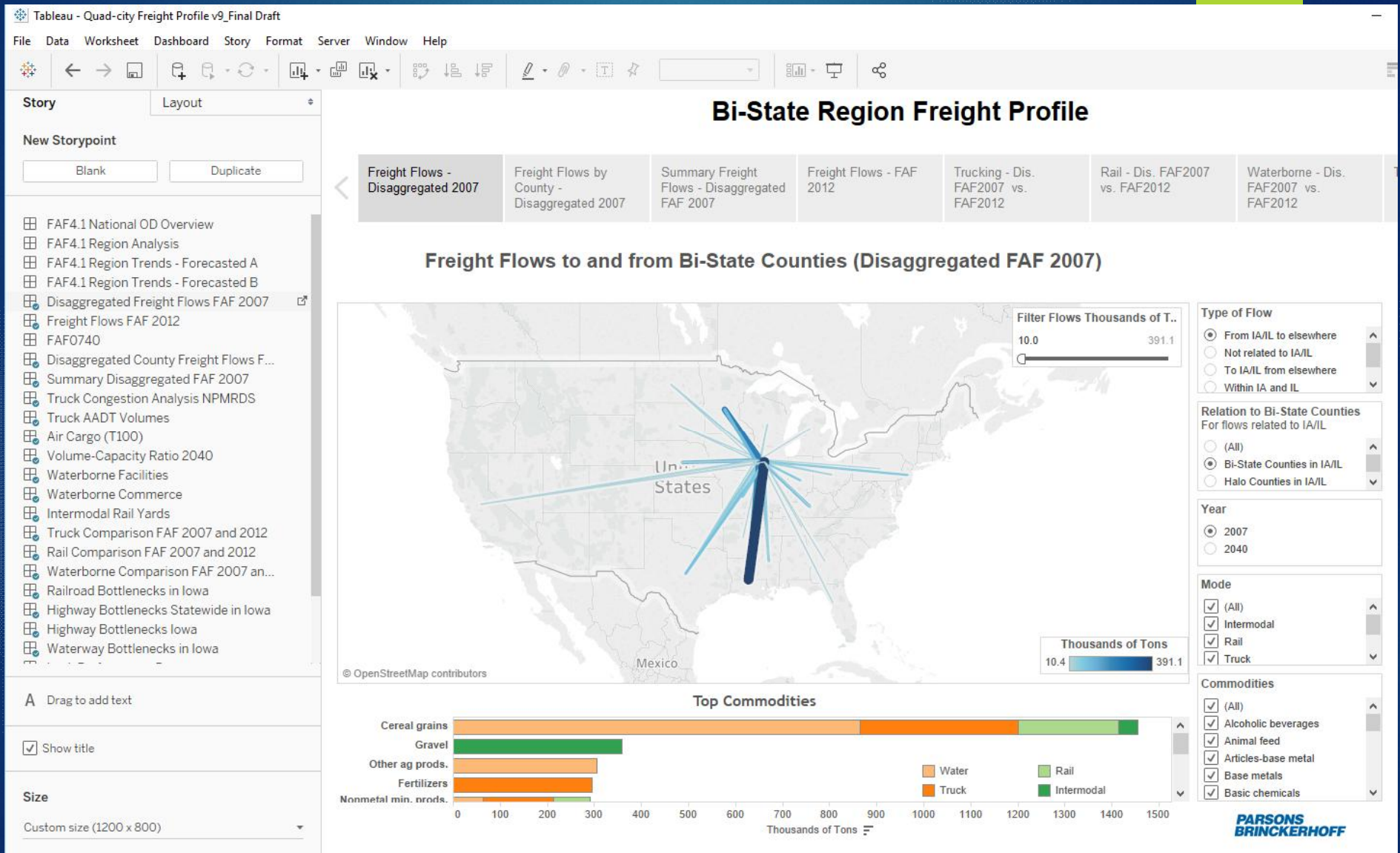


# Florida Freight Data Support System





# Bi-State Regional Commission Data System



# Summary

- u FAF datasets are useful for freight planning and modeling
- u Disaggregation from 132 FAF districts to county is the minimum to conduct planning work
- u More applications lead to the discovery of more uses.
- u Visualization adds value.