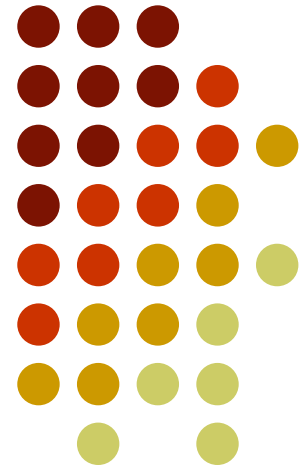


# Usage

**Dr. Kazuya Kawamura**

University of Illinois at Chicago  
Urban Transportation Center



# Usage data types

- **Link data**

## Objectives:

- Develop the data set that covers the entire study area
- Provide input to the capacity analysis

- **O-D data**

## Objectives:

- Identify key characteristics of freight movement (national, regional, state)
- Set the "crude" boundary for the growth over the next 20 years

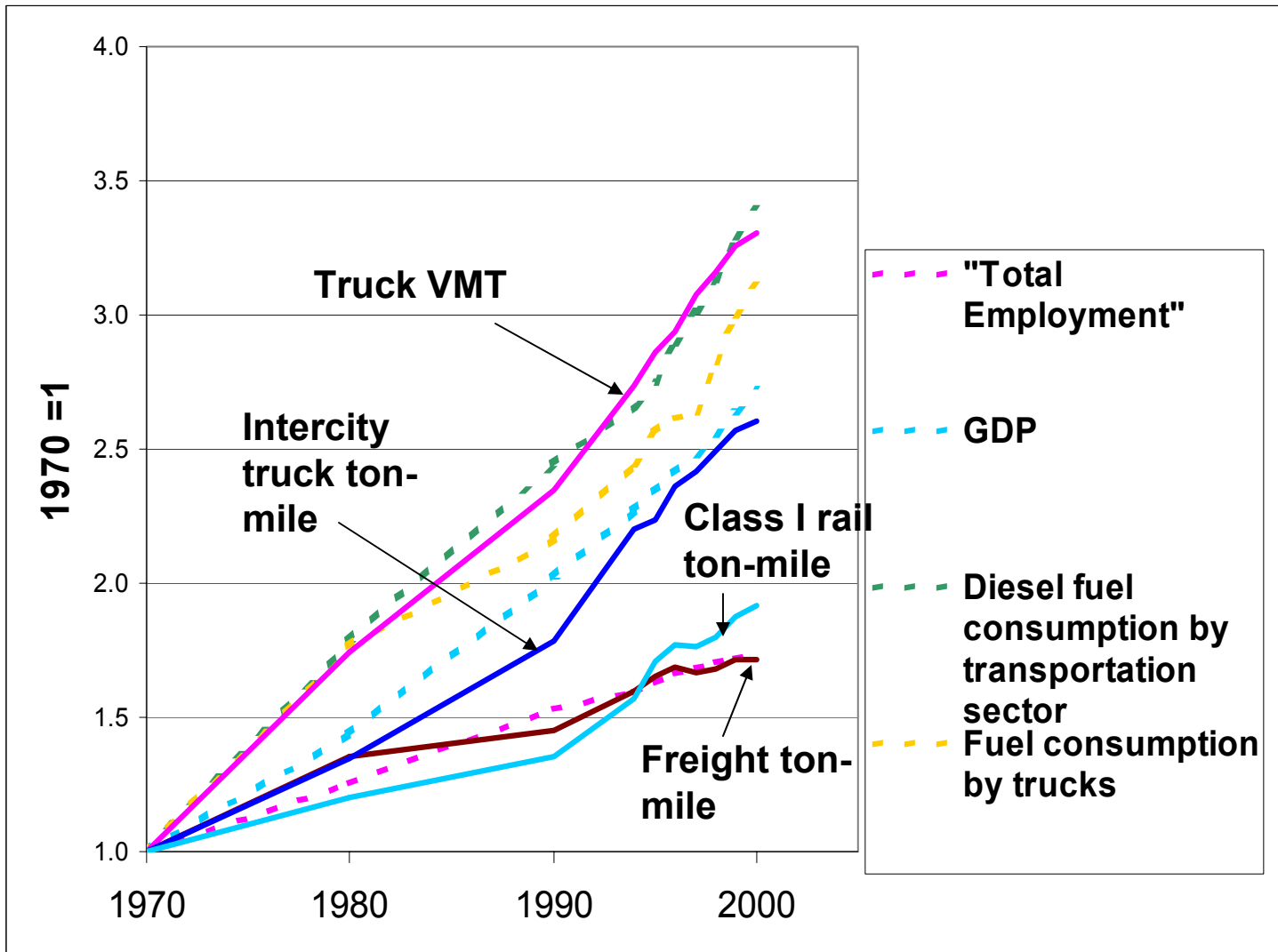
# Outline of the presentation

- **"Big-picture" analyses**
  - Past trends and long-term projections
  - Economic development and freight
- **Opportunities**
  - Intermodal (rail-truck)
  - Regional approach

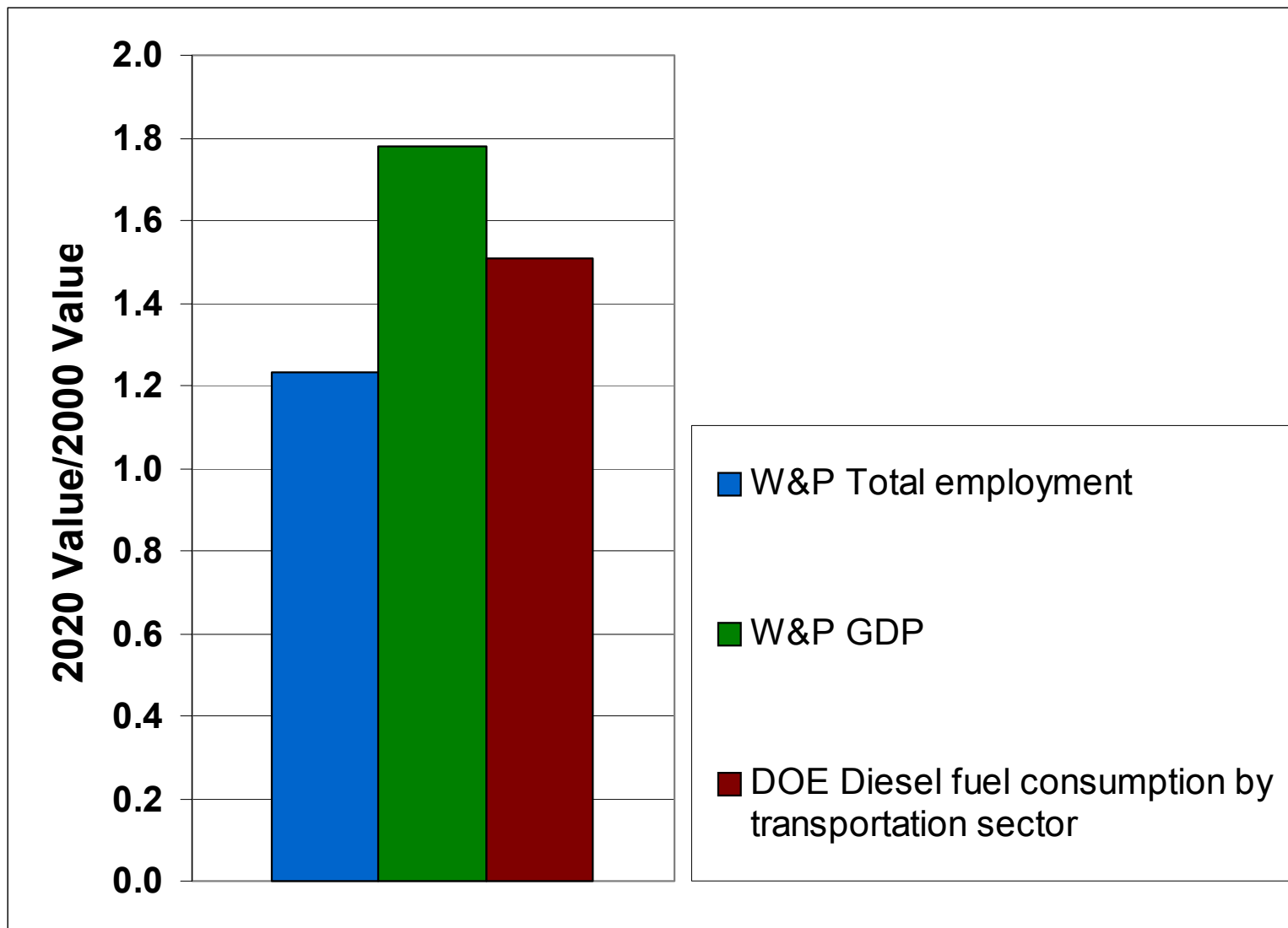
# Past trends and long-term projections

- A crude analysis, trying to determine the realistic boundary for the growth over the next 10 ~ 15 years

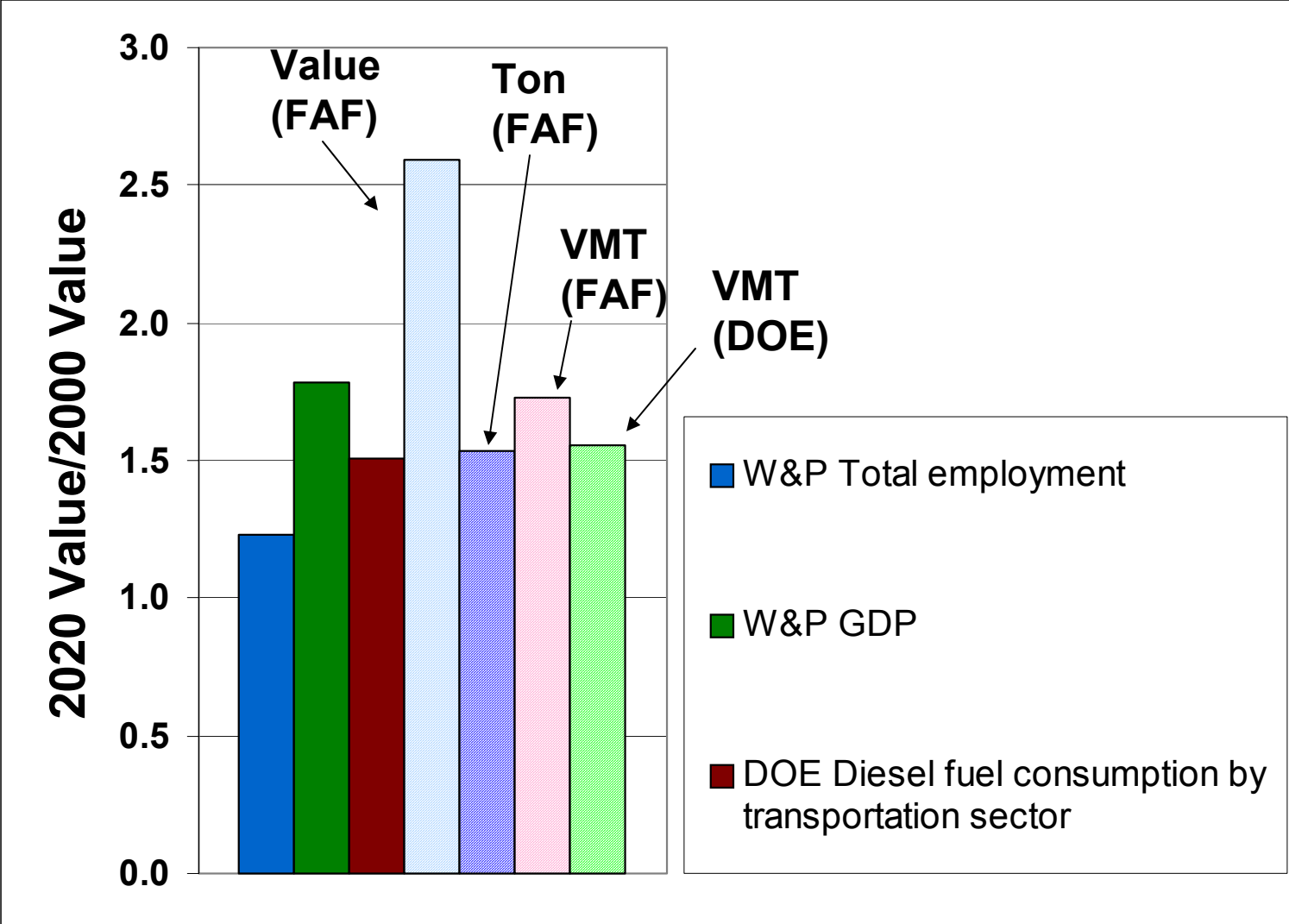
# US freight activity and indicators (1970-2000)



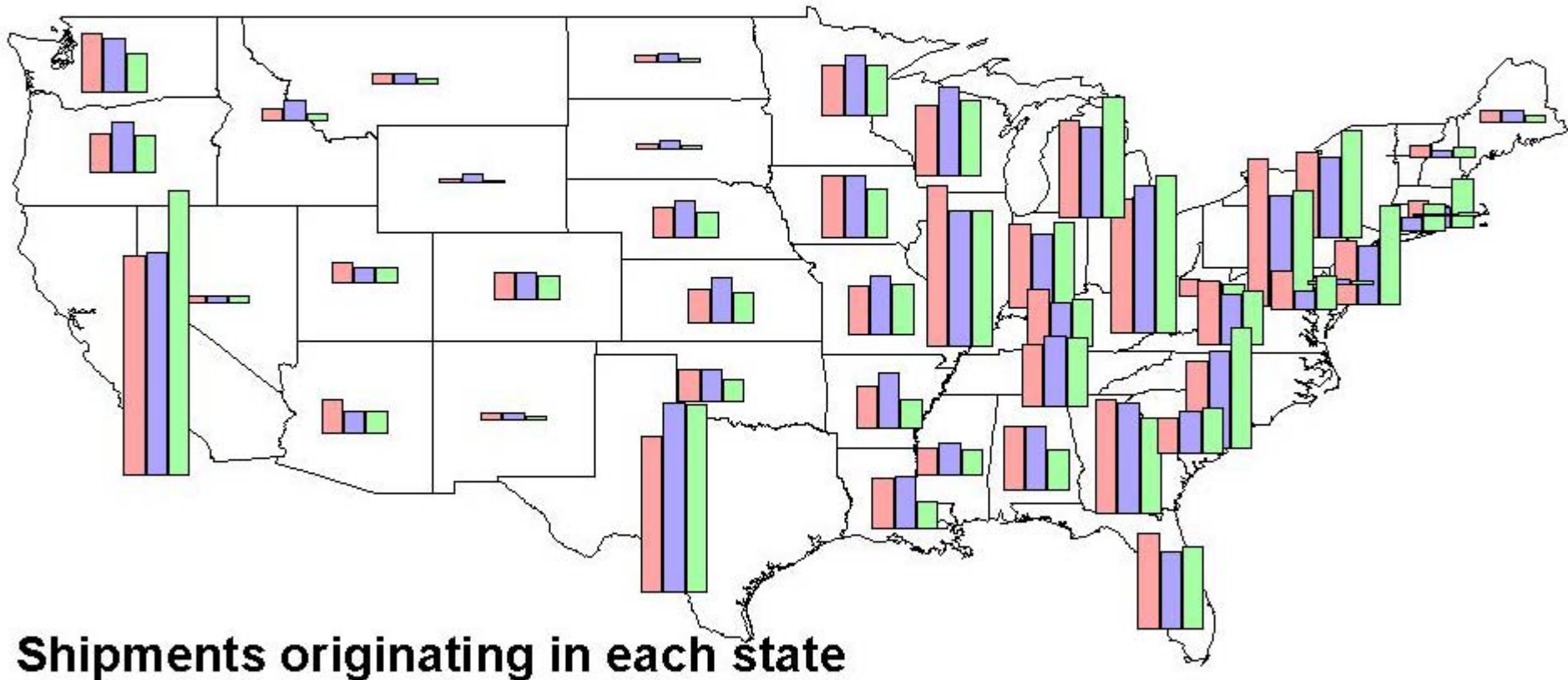
# Expected increase in economic indicators (2000-2020) - National forecasts



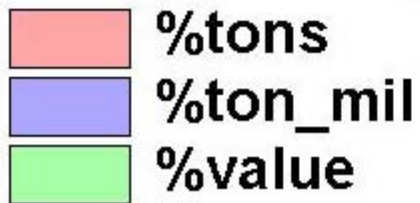
# Comparison of expected growth (2000-2020) National forecasts



# Distribution of freight activities (1997)

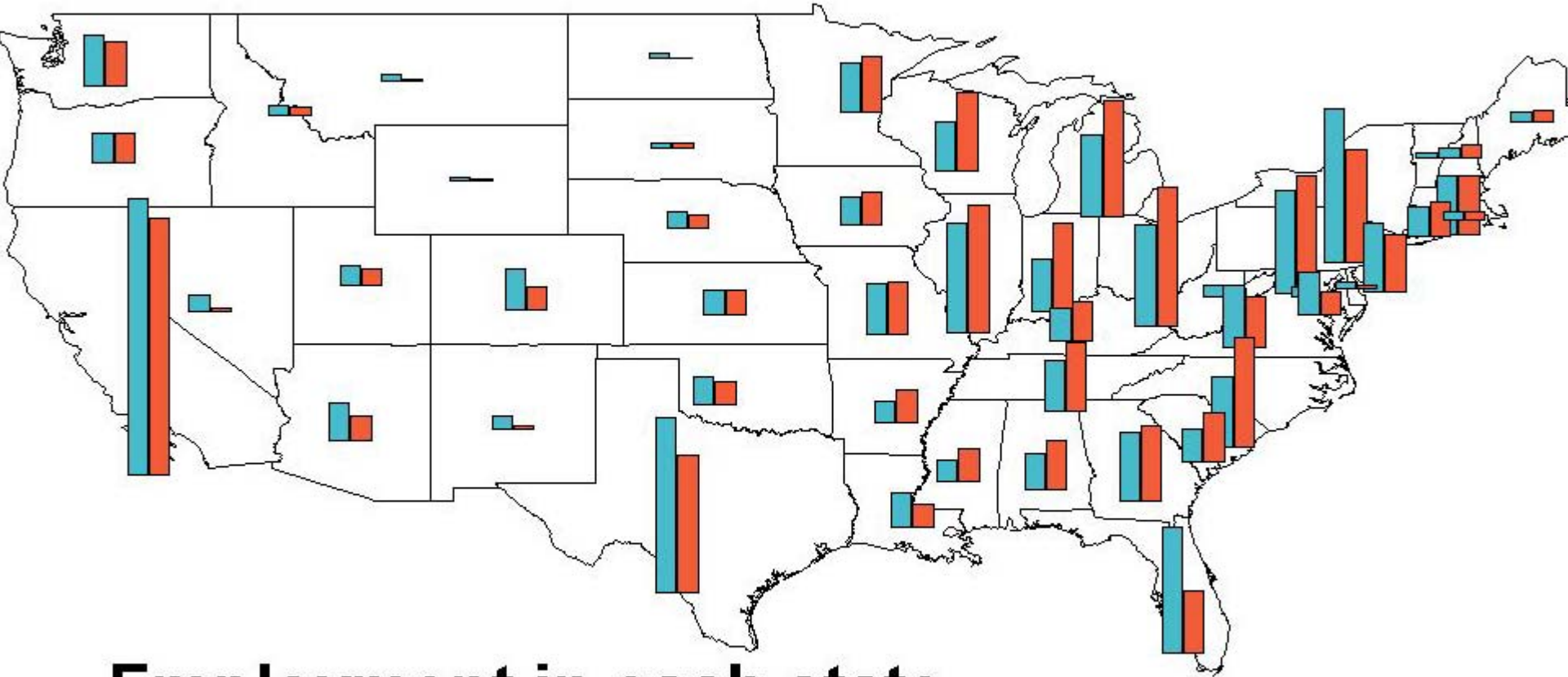


Shipments originating in each state

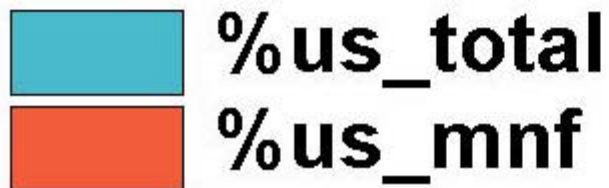


Source: 1997 CFS

# Distribution of employment (1997)

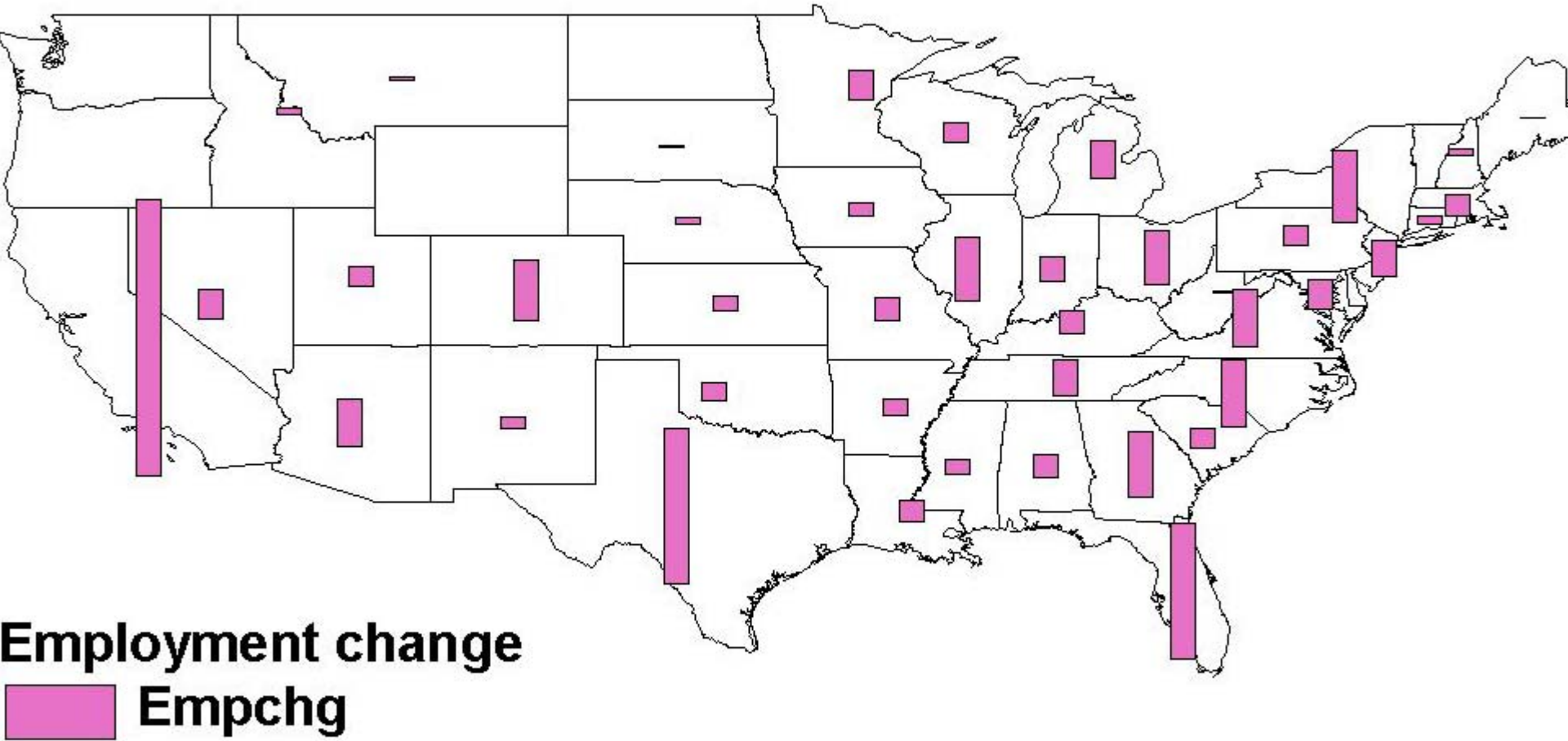


## Employment in each state



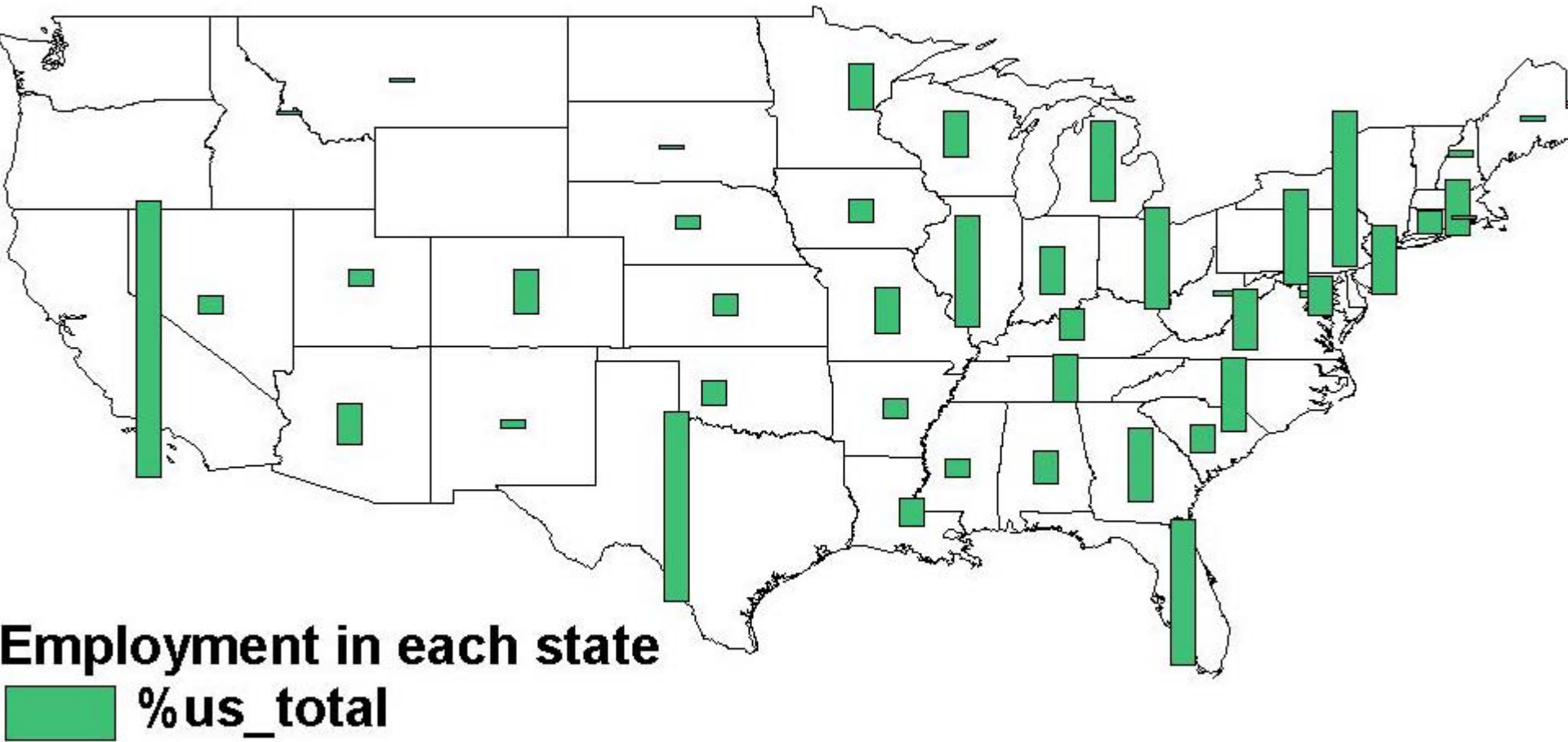
Source: US Bureau of Labor Statistics

# Projected change in employment (2000 - 2010)



Source: US Bureau of Labor Statistics

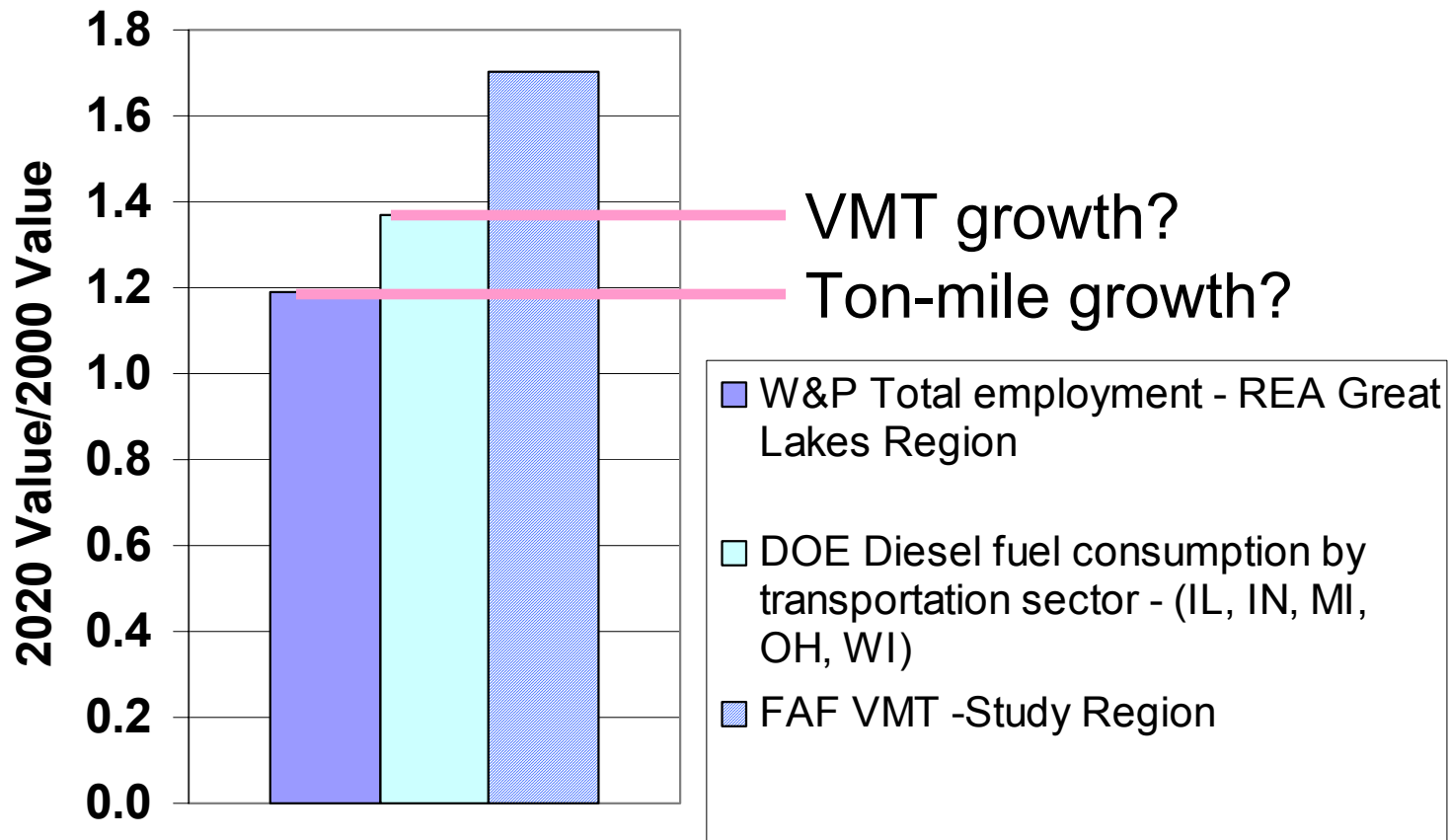
# Distribution of employment (2010)



Source: US Bureau of Labor Statistics

# Comparison of expected growth (2000-2020) Upper Midwest forecasts

## 2000-2020 Growth Comparison



# Overall assessment

- Pre-2000 projections for domestic freight activities need to be adjusted downward (40-50% increase in VMT by 2020 instead of 75%)
- Capacity shortage is still a serious problem

# Opportunities:

**Will Intermodal be the solution?**

**Why regional approach makes sense**

# Will Intermodal be the solution to the capacity problem?

- In 1997, the most recent official figure available (97 CFS), Intermodal accounted for
  - **0.5% of tons,**
  - **2.1% of ton-miles, and**
  - **1.1% of value**of the U.S. freight movement

# Will Intermodal be the solution to the capacity problem?

- In 2002, using the estimated growth of 7% a year between 1997 and 2002, Intermodal accounted for
    - **0.7% of tons,**
    - **2.4% of ton-miles, and**
    - **1.3% of value.**
- of the U.S. freight movement

# Will Intermodal be the solution to the capacity problem?

- Assuming Intermodal will grow at 7% and total freight will grow at 2% a year, in 2020, Intermodal will account for
    - **1.6% of tons**
    - **5.8% of ton-miles, and**
    - **3% of value**
- of the total freight in the US

# Characteristics of Intermodal freight

- **Intermodal still accounts for a small share of the entire freight movement that originate in the study area (97CFS)**
  - **0.2% of weight**
  - **1.2% of value**
  - **1.8% of ton-mile**

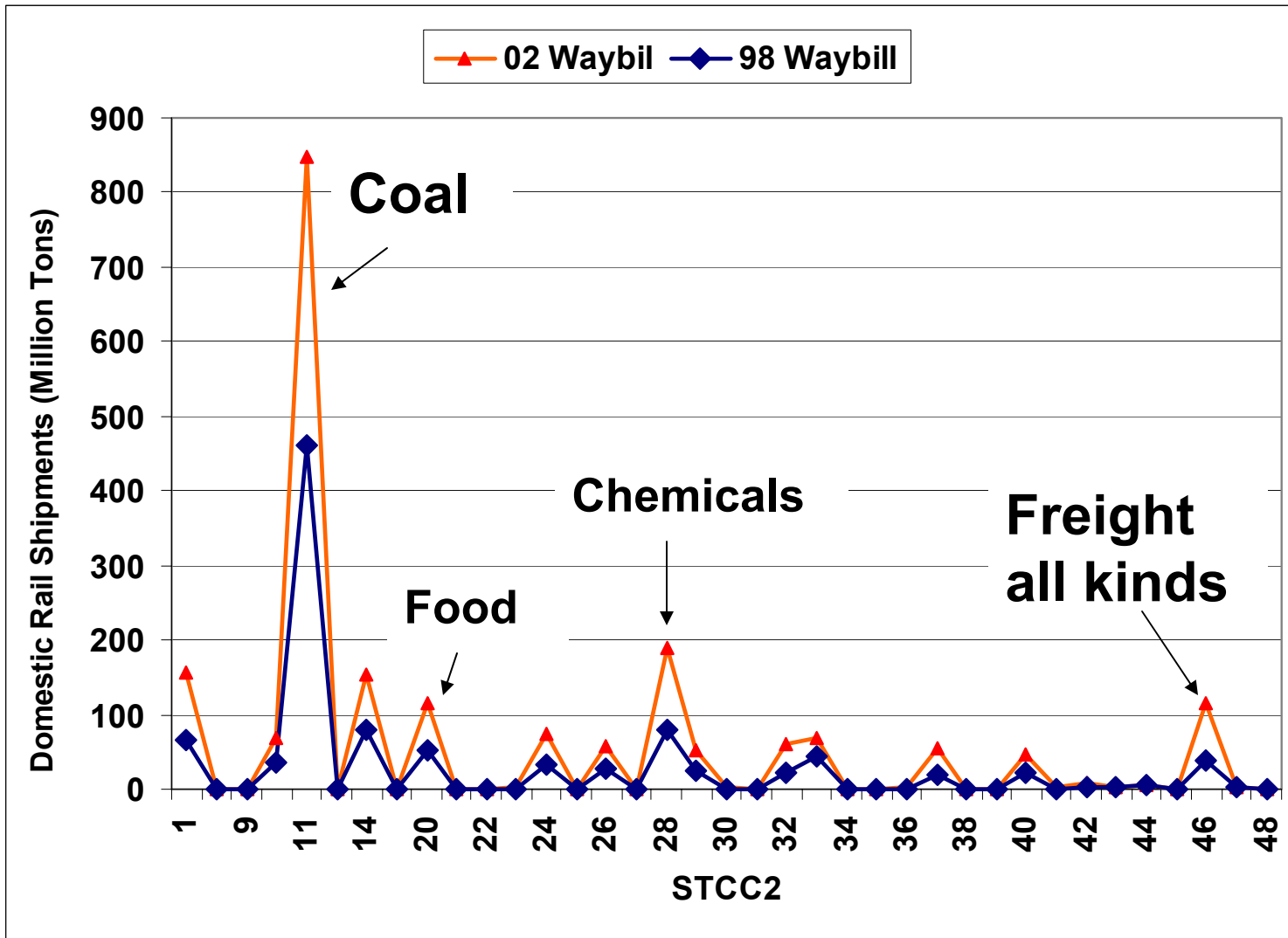
# Current characteristics of Intermodal freight

- **Intermodal relies on niches**

Examples:

- CA and TX account for ~50% of Intermodal tonnage originating in the Study Area
  - Automobiles and Parts account for 73% of value and 35% of tons of Intermodal shipments originating in the Study Area
  - **Intermodal can be a major player in those niches**
- ~ 10% of total freight tonnage going from the study area to CA is by Intermodal

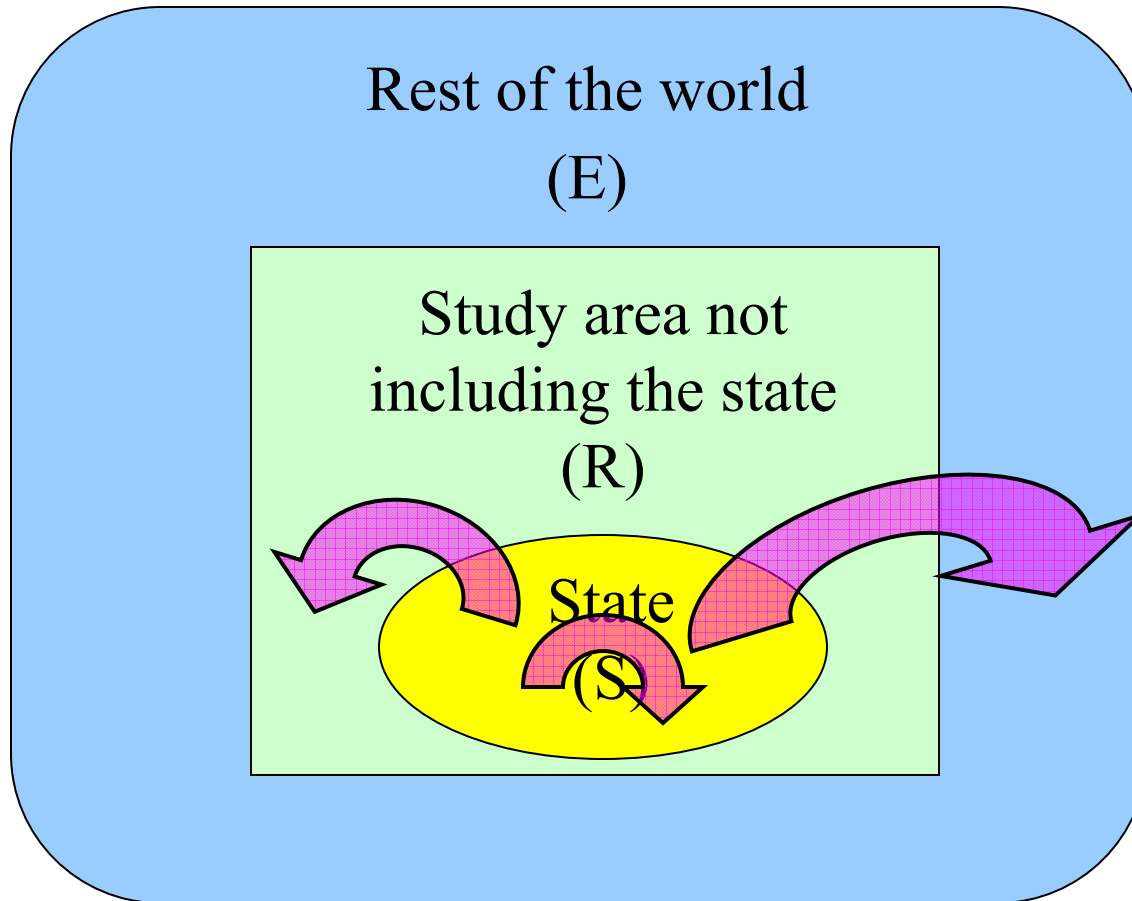
# Commodity shipped by rail (Million tons)



# Why regional approach makes sense

- Inter-regional shipments are critical for addressing congestion
- Most of the freight on the study corridor segment is regional in nature

# Shipment Types Used in the O-D Analysis



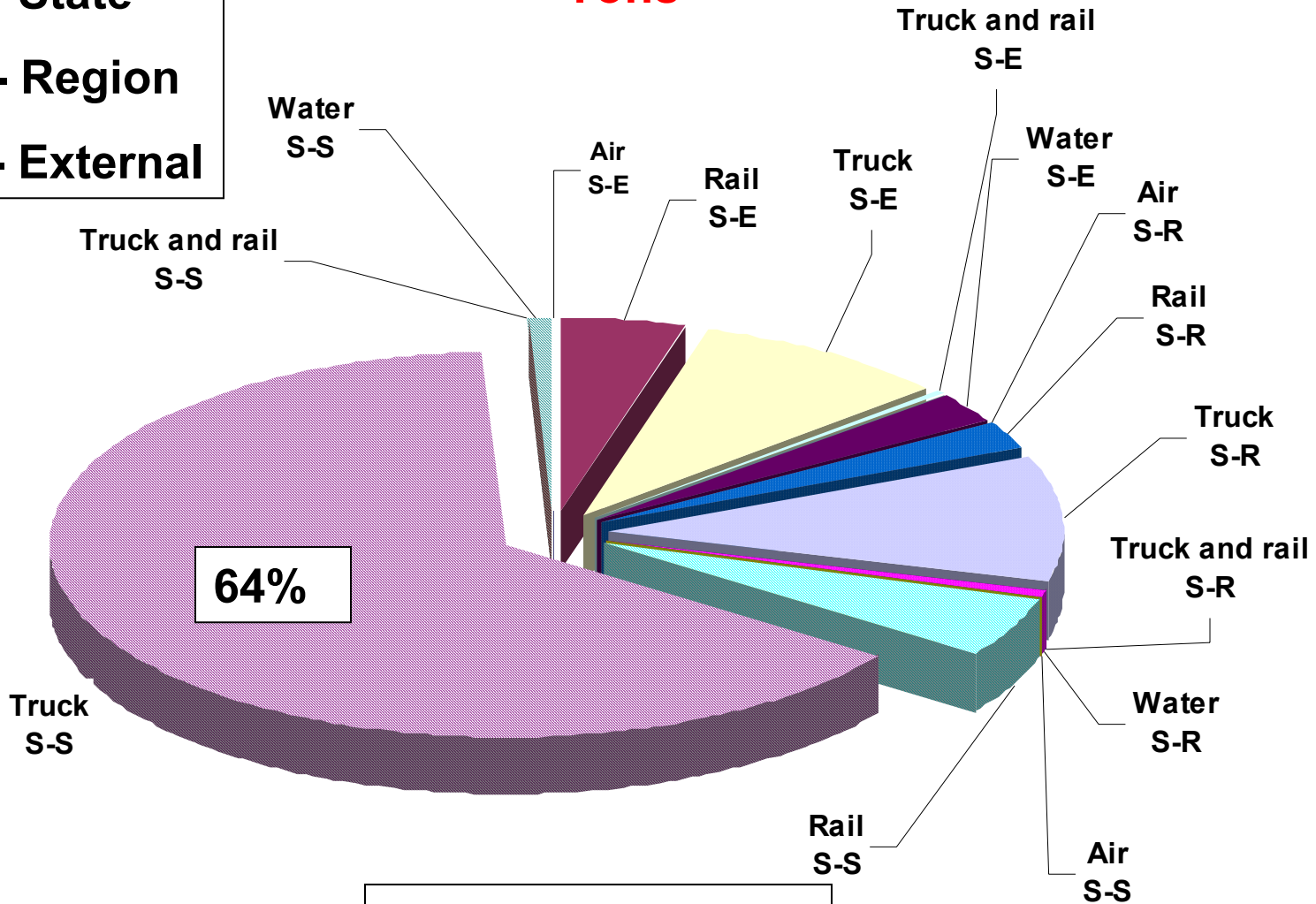
## 3 Types of shipment

- **S ⇌ S** (Intrastate)
- **S ⇌ R** (Intra-regional)
- **S ⇌ E** (External)

# Shipment with Origin in the Study area

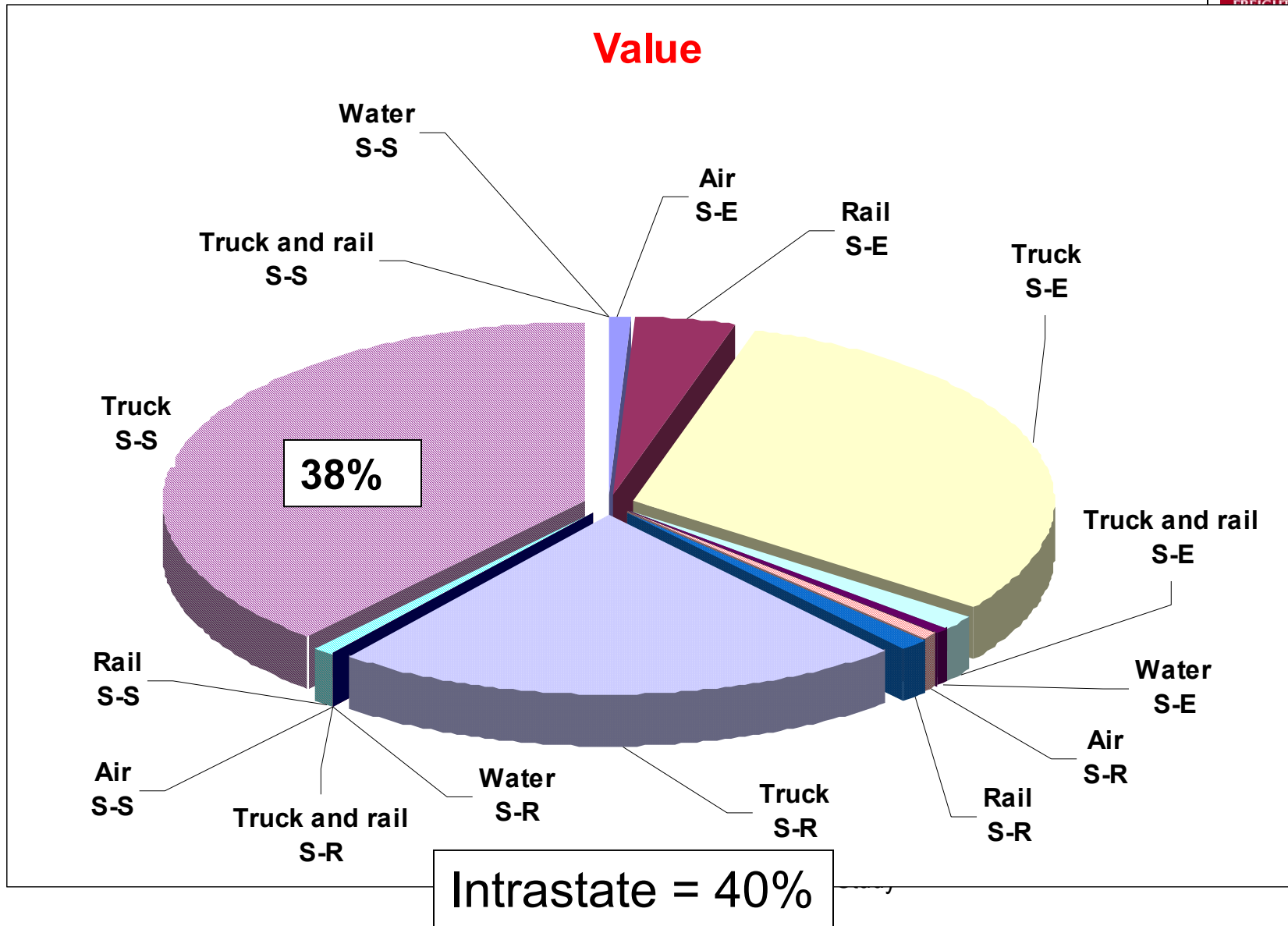
**S - State**  
**R - Region**  
**E - External**

**Tons**

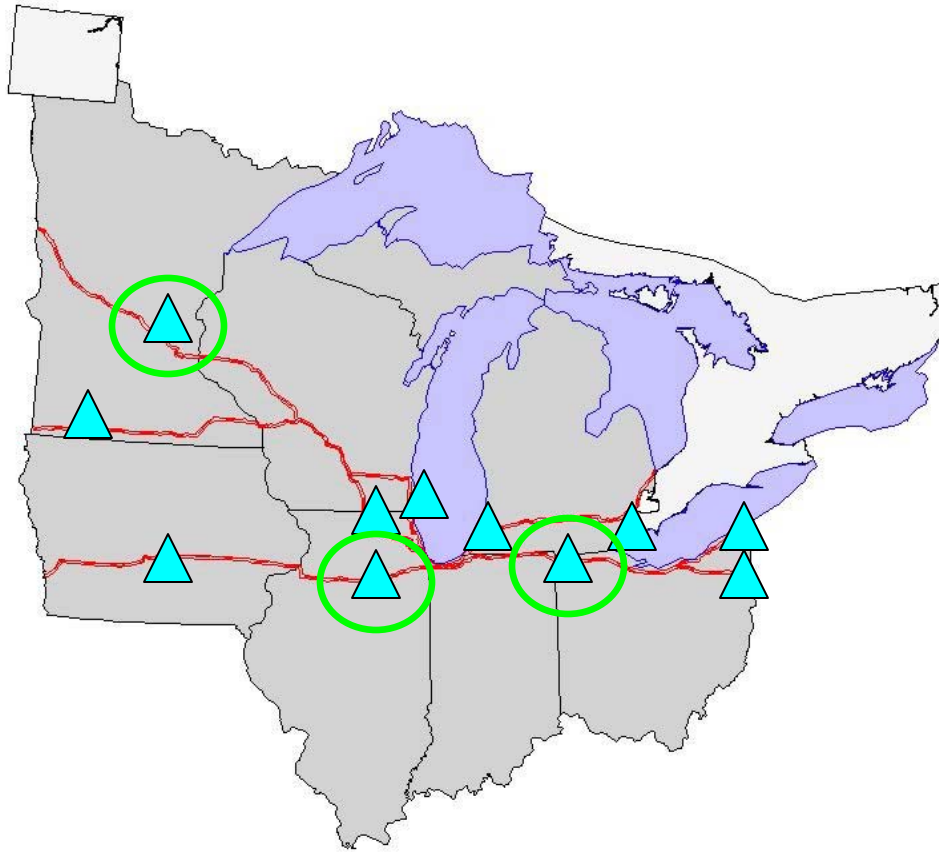


**Intrastate = 70%**

# Shipment with Origin in the Study area

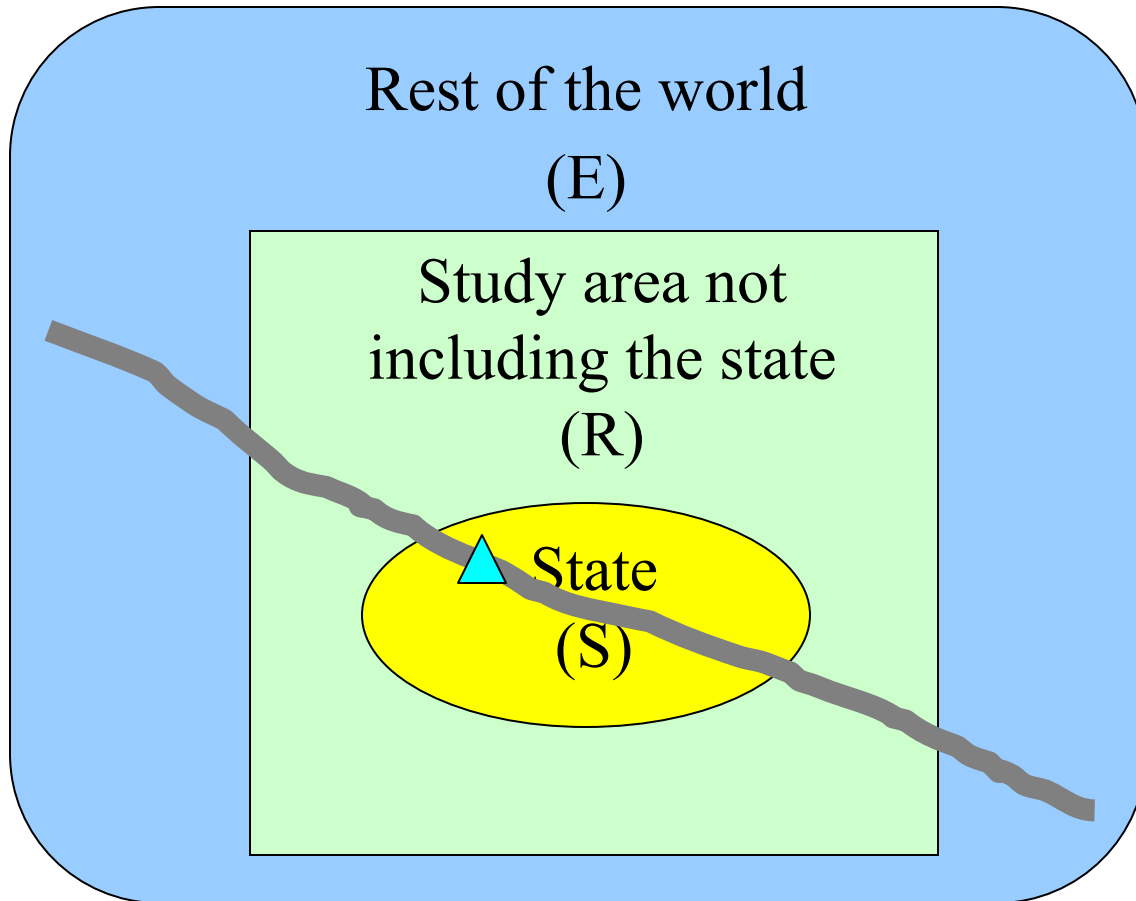






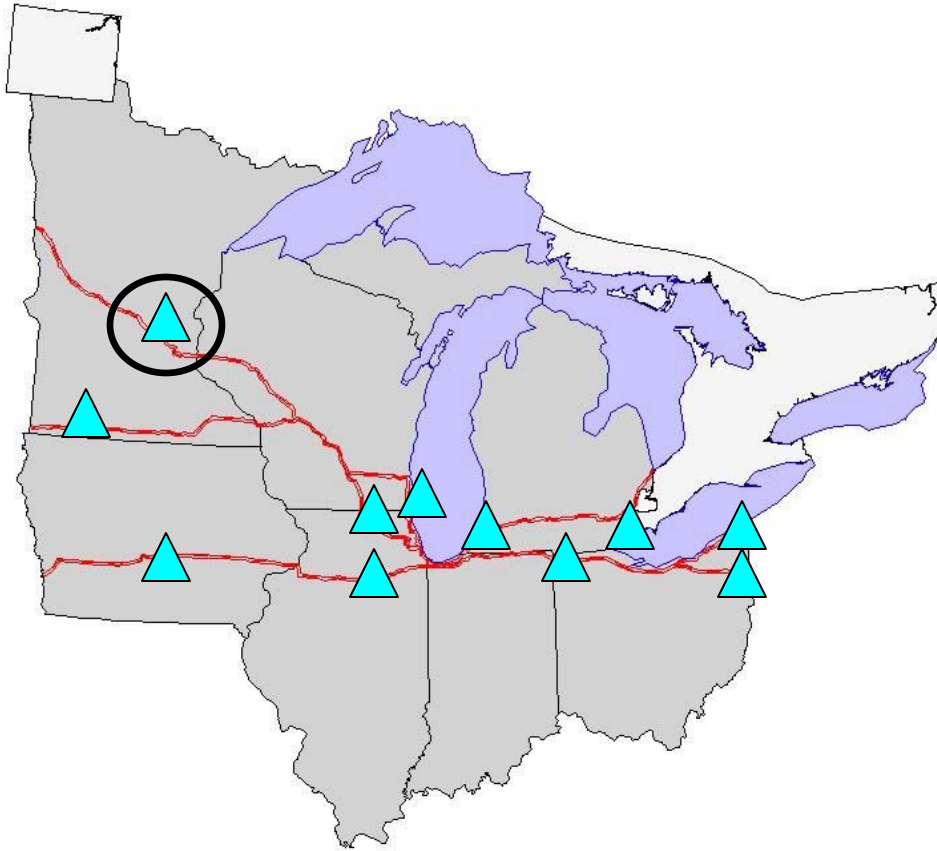
**Select link analysis locations**

# Shipment Types Used in the Select Link Analysis



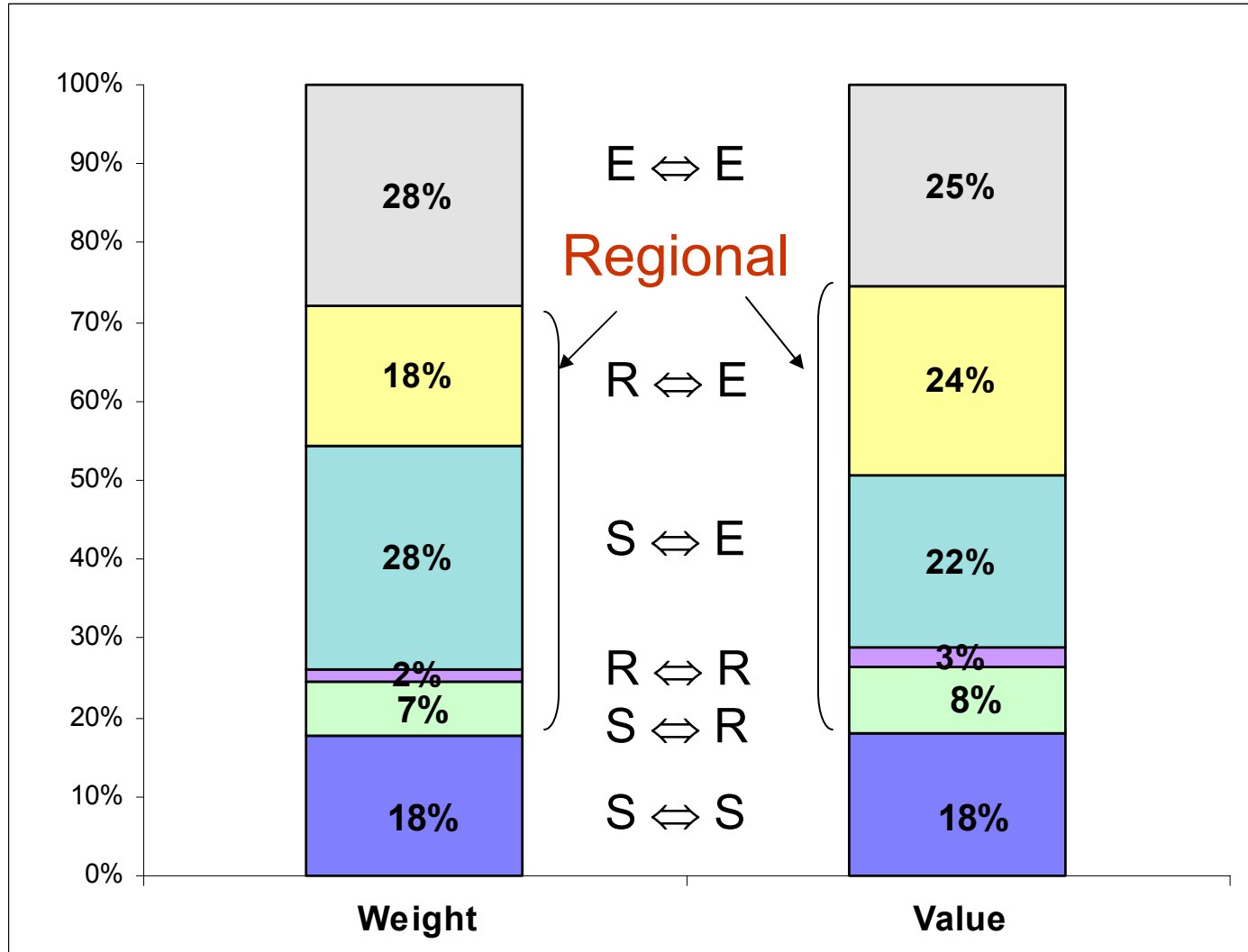
## 6 Types of shipment

- **S** ↔ **S** **Intrastate**
  - **S** ↔ **R**
  - **S** ↔ **E**
  - **R** ↔ **R**
  - **R** ↔ **E**
  - **E** ↔ **E** **Through**
- Regional**



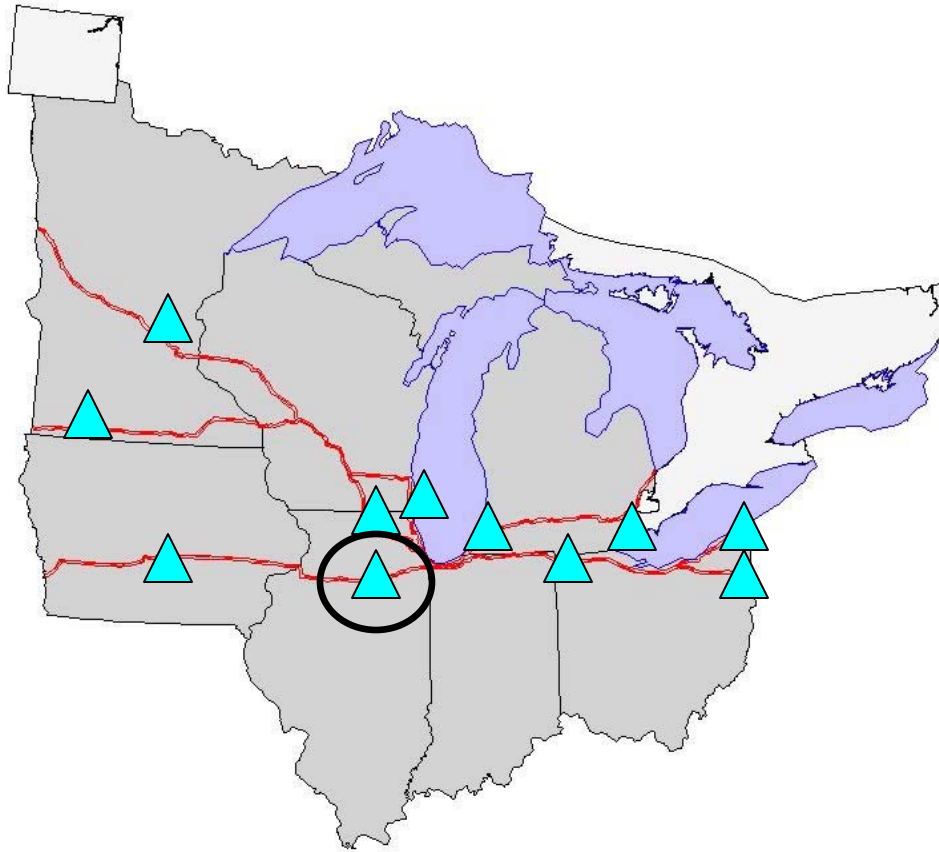
**Select link analysis locations**

# Shipment types for truck freight on I-94 west of Minneapolis



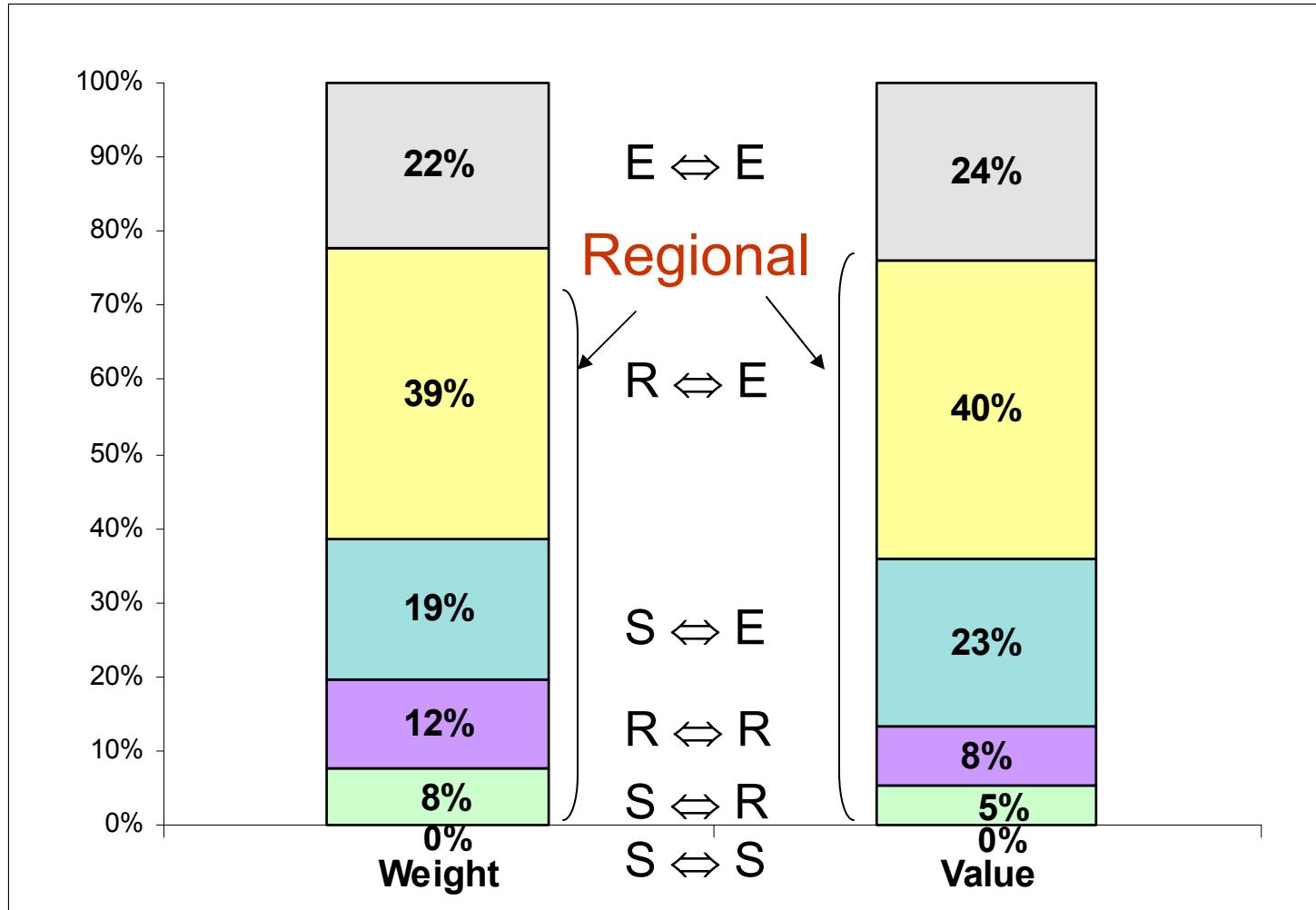
Upper Midwest Freight Corridor Study

Source: FHWA



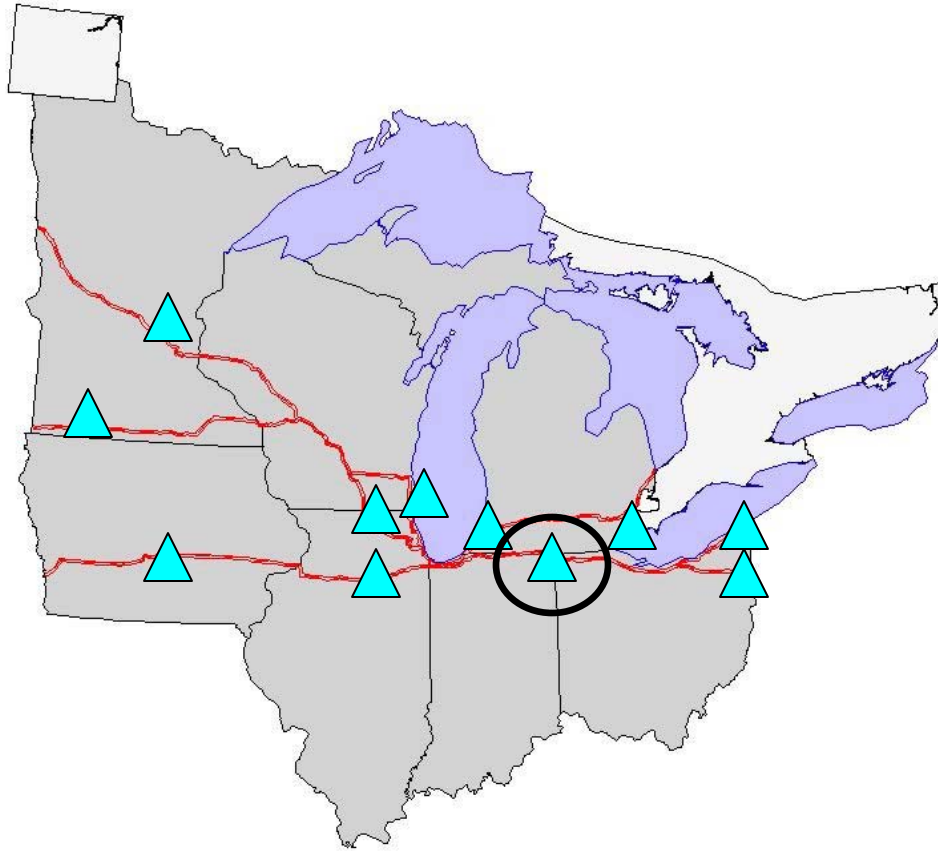
**Select link analysis locations**

# Shipment types for truck freight on I-80 west of Davenport



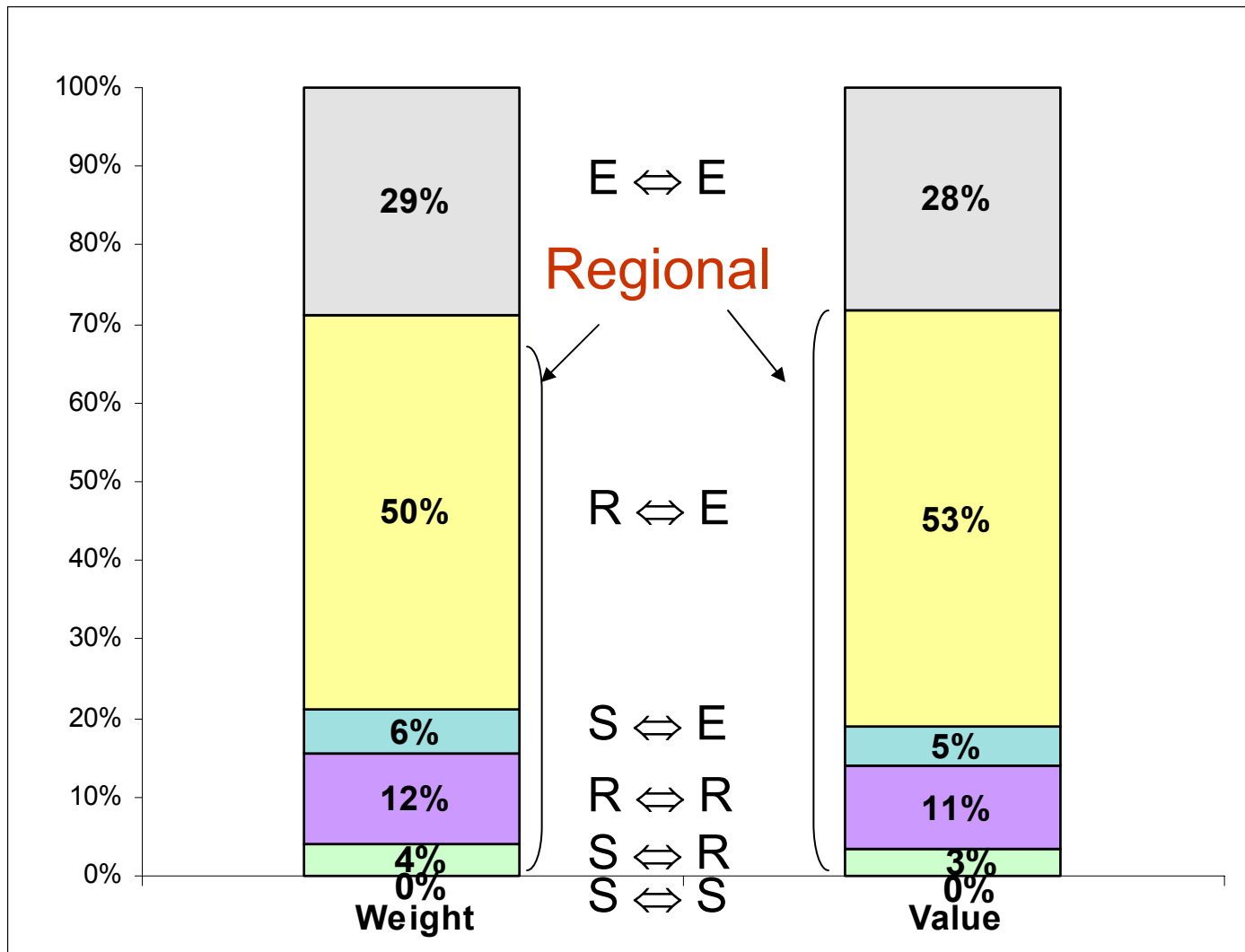
Upper Midwest Freight Corridor Study

Source: FHWA



**Select link analysis locations**

# Shipment types for truck freight on I-80/90 in IN near OH border



Upper Midwest Freight Corridor Study

Source: FHWA

# Summary of key findings from the usage analysis

- 7-State region is a large economic engine, generating about 30% of nation's freight movements
- Even at a lower rate, growth in freight activity within and through the study area will be formidable

# Summary of key findings from the usage analysis

- Intermodal alone will not solve the system capacity problem, but it can play an important role
- Technological innovations?
- Regional approach makes sense because intra-regional movements are critical
- Need more recent data
- Need better Intermodal data