Innovative Infrastructure Investing

Eric Jessup
Associate Professor
eric_jessup@wsu.edu
509-335-4987

Freight Policy Transportation Institute
School of Economic Sciences
Washington State University

Mayors Exchange
Walla Walla, WA

September 12, 2018
Washington State University

• Founded in 1890, first land grant school in Washington

• 11 Colleges
  • 95 academic majors on campus, 12 online (undergraduate)
  • 79 master degree programs on campus, 9 online
  • 63 doctoral degree programs
  • 4 professional degree programs: (business, medicine, pharmacy, vet. med.)

• Dr. Kirk Schulz, 11th school president

• WSU Ranks #1 in USDA research
  • $42.8 million in 2016
  • 1st among 350 universities

• 2018 Coug football is 2-0 !!
Transportation Focus

  - Early proponent of deregulation (truck, rail)
  - Shaped subsequent changes to ICC

  - Nationally respected freight research program

  - Freight Policy Transportation Institute
Topics

- Economic Overview
  - National / State

- Infrastructure Challenges

- Potential Opportunities
Global Economic Growth

(Real Annual GDP Growth, Percent, 2016 - 2019)

Source: International Monetary Fund, 2018
Real Income **US** and **Washington** (% Change)

**Real Personal Income**
- Source: Bureau of Economic Analysis 2016, ERFC 2023

**Consumer Price Indices**

**Population**
- Source: Census Bureau 2016, ERFC 2023

**New Housing Units Per 1,000 Population (Level)**
- Source: Census Bureau 2016, ERFC 2023
Employment **US** and **Washington** (% Change)

**Total Nonfarm Payroll Employment**

**Manufacturing Employment**

**Construction Employment**

**Information Employment**

Who loses in a Trade War?

Over 2 million jobs are in U.S. industries affected by China’s tariffs. However much less than half of those jobs are at risk, overall.

Share of Local Employment, County Level, 2016

Source: Brookings Institute
Relationship Between Freight Performance and the Economy
Transportation Infrastructure
Operating at Capacity
Moving Freight & People

http://ses.wsu.edu/fpti/freight-data-warehouse/
Grain Inspections for Export - Year over Year

- **Commodity**: Corn, Soybeans, Wheat
- **Region**: Atlantic, Great Lakes, Interior, Mississippi Gulf, Pacific Northwest, Texas Gulf
- **Standard Deviations**: 3

Legend - Year:
- Brown: 2018
- Blue: 2017
- Green: 2016
Grain Vessel Rates

Monthly Grain Vessel Rates - Year over Year

Price/Metric Ton

Years of Data:
1996 - 2018

Shipping Point:
- Gulf to Japan
- Gulf vs. PNW (spread)
- PNW to Japan

Standard Deviations:

Legend - Year:
- 2018
- 2017
- 2016

Month:
Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec
Weekly Barge Grain Freight Rates

Weekly Barge Grain Freight Rates (Southbound) - Year over Year

Percent of Tariff (1976 = 100)

Week

January 21 - December 23

Years of Data
2004 - 2013

Shipping Points
- Cairo-Memphis
- Cincinnati
- Illinois
- Lower Ohio
- MEM-SO
- Mid-Mississippi
- St. Louis
- Twin Cities

Standard Deviations

Legend - Year
- Brown 2018
- Blue 2017
- Green 2016
The following visualizations are based on the Fruit and Vegetable Truck Rate Report, which is distributed by the USDA each week.

Truck Rates - Year over Year

Legend - Year
- Brown: 2018
- Blue: 2017
- Green: 2016
Truck Rates

The following visualizations are based on the Fruit and Vegetable Truck Rate Report, which is distributed by the USDA each week.

Truck Rates - Year over Year

[Graph showing truck rates over years with options for years, price data, origin state, origin district, destination, and standard deviations.]

Legend - Year
- Brown: 2018
- Teal: 2017
- Green: 2016
Gasoline Prices

Gasoline (all grades) Conventional Retail Prices - Year over Year

Years of Data
1994
2018

Region
- Central Atlantic (PADD 1B)
- Cleveland, OH
- Colorado
- Denver, CO
- East Coast
- Florida
- Gulf Coast
- Lower Atlantic (PADD 1C)
- Miami, FL
- Midwest
- Minnesota
- New England (PADD 1A)
- New York
- Ohio
- Rocky Mountain
- Seattle, WA
- Texas
- U.S.
- Washington
- West Coast

Standard Deviations

2

Legend - Year
- 2018
- 2017
- 2016

Week
Diesel Prices

No. 2 Diesel Retail Prices - Year over Year

Week

Price per Gallon

Region
- California
- Central Atlantic (PADD 1B)
- East Coast
- Gulf Coast
- Lower Atlantic (PADD 1C)
- Midwest
- New England (PADD 1A)
- Rocky Mountain
- U.S.
- West Coast
- West Coast (PADD 5) Excluding California

Standard Deviations

Legend - Year
- 2018
- 2017
- 2016

Years of Data
- 1994
- 2013

FPTI
### ASCE INFRASTRUCTURE REPORT CARD

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Source: American Society of Civil Engineers
US Ranks 9th in quality of overall Infrastructure

NOTE: The World Economic Forum score on overall infrastructure includes transport, telephony, and energy. Only the top 20 ranked countries are shown.
Half of top global cities with the worst congestion are in US
State + Federal Gasoline Taxes
(federal gas tax is $18.4 cents per gallon)
July 2018
State + Federal Diesel Taxes
(federal diesel tax is $24.4 cents per gallon)
July 2018
40% decrease in purchasing power since 1993

CBO projected highway trust fund deficit
Opportunities for Change
Key Assumptions

- Strong / Vibrant communities includes the following attributes:
  - Economic opportunities (jobs)
  - Accessible (transportation)
  - Connected (broadband)
  - Positive quality of life aspects (safe & healthy)

- Investment in infrastructure and technology impacts all of these
New Technologies to Foster / Shape

- Becoming electrified.....
  - Renewables
  - Oceans of natural gas
  - Technology on managing power grids (SEL)

- Electric Vehicles
  - Charging stations
  - 15% of cars by 2025
  - Decreasing costs (over $1,000/kw hour in 2010 to below $130/kw hour today)
  - Increasing demand for Lithium carbonate (Australia, Chile, Argentina, China)

- Autonomous vehicles
  - Infrastructure needs
  - Large reduction in space allocated to parking and highway capacity

- Policies that link revenue to utilization
Recognition

- Technology is changing rapidly.
  - The optimist embraces change
  - The pessimist fears change
- Must address gap in funding for transportation
- Future investments can be made strategically to define our cities
  - Partnering with private tech firms
- A new way of prioritizing infrastructure investments
  - USDA Study
Primary Objectives of Research Study

• Improve procedure for how we prioritize transportation infrastructure investments that span an entire supply chain.
  • Improve synergies across agencies
  • Bring more resources to bear on promoting projects outside jurisdictional boundaries
  • May lead to more efficient infrastructure investing

• Convene workshops of stakeholders to share this prioritization process / results.

• Solicit input / reactions from stakeholders.
Each agency or private entity has different objectives in how they prioritize their investments, may not be compatible across larger geographies. Leads to inefficiencies in seamless/compatible investments to any one supply chain.

Infrastructure investments impact many other supply chains, businesses, public agencies and stakeholders. Investments are not unique to only one type of freight movement (benefits & costs).

Time/cost at compiling information very large.

Maintaining current information difficult, given that data is constantly changing.
TIGER Funding to Rural Areas:

2016 TIGER Grants

2017 TIGER Grants

Percentage of Tiger grant money allocated

- Rural projects
- Urban projects

Source: Transportation Department

2017 TIGER Grants