Freight trends are closely related to Economic trends

Freight:
Global & Economic Perspective

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Special Committee per Senate Resolution No. 10)
6:00pm, Wednesday, August 9, 2017
Hockessin Fire Hall, 1225 Old Lancaster Pike, Hockessin, DE

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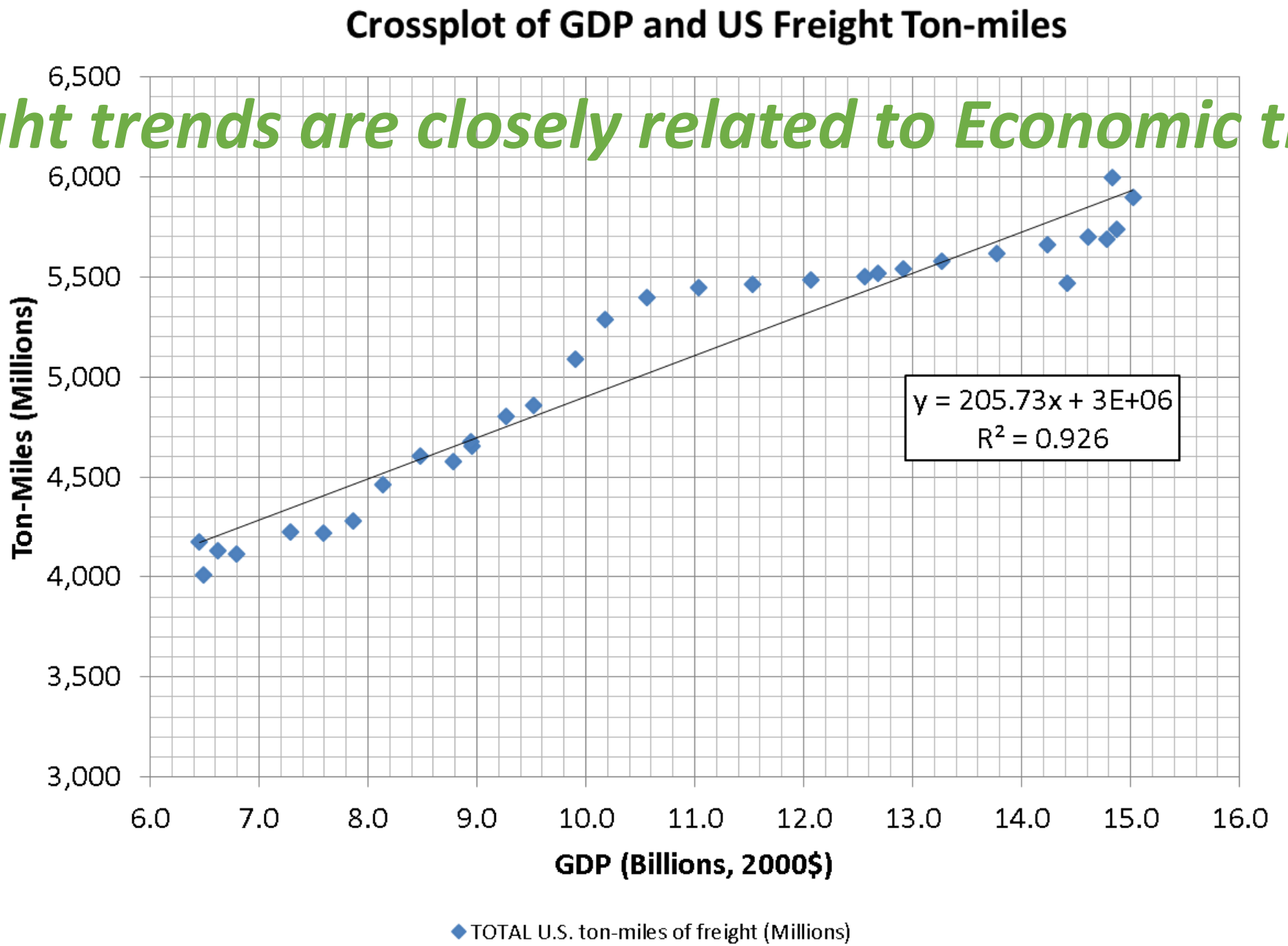
Freight trends are closely related to Economic trends



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Transportation Planning and Policy is a priority at Local, Regional, National, International scales

The National Academies of SCIENCES • ENGINEERING • MEDICINE engaged in Critical Transportation Issues

- Making systems safe and secure
- Achieving a state of good repair
- Automation/technology/innovation
- Efficient Freight/Goods movement
- Resilience/Climate Change/Clean energy
- Economic development/growth
- Reliability/Congestion relief
- Equity issues
- Governance Issues

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Summary of remarks

- Why is freight mobility important and changing now?
- How paths are chosen?

- How does freight transportation interact with stakeholders?

- What transportation attributes matter most? (Hint: trick question)
- What does this mean for transportation planners?

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Three freight connections

1. International freight becomes domestic freight;
   long-haul goods movements become short-haul and local deliveries

2. Freight trends are not the same as traffic trends (across modes)

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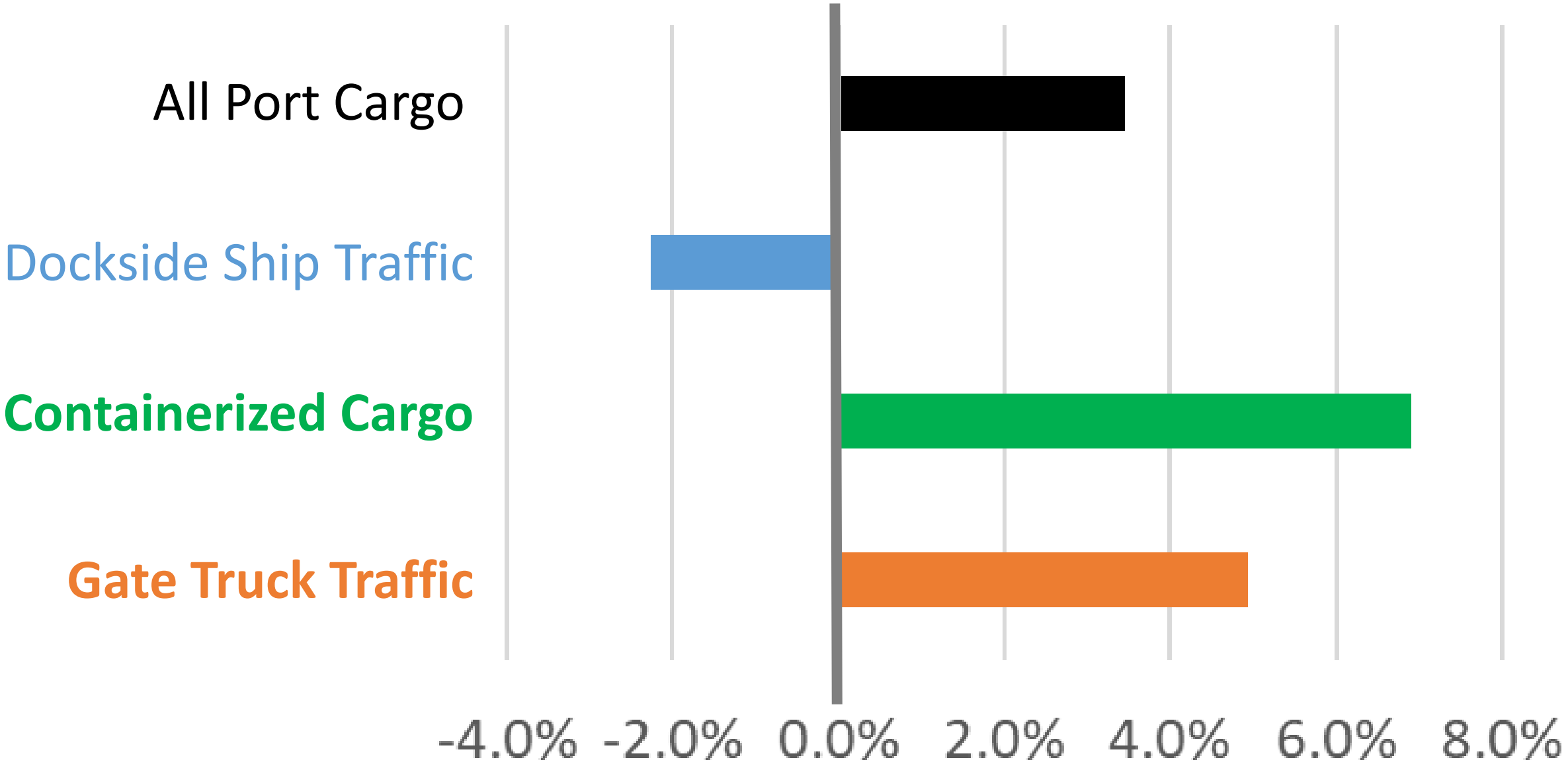
Port of Wilmington Freight Change (%/yr)



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Three freight connections

1. International freight becomes domestic freight;
   long-haul goods movements become short-haul and local deliveries

2. Freight trends are not the same as traffic trends (across modes)

3. Big freight patterns emerge in our regional corridors from:
   - Small, enterprising firms taking separate actions, aggregated
   - Large firm(s) making big decisions, maybe game changers
   - Community mobility patterns shifting in or out of sync with road system

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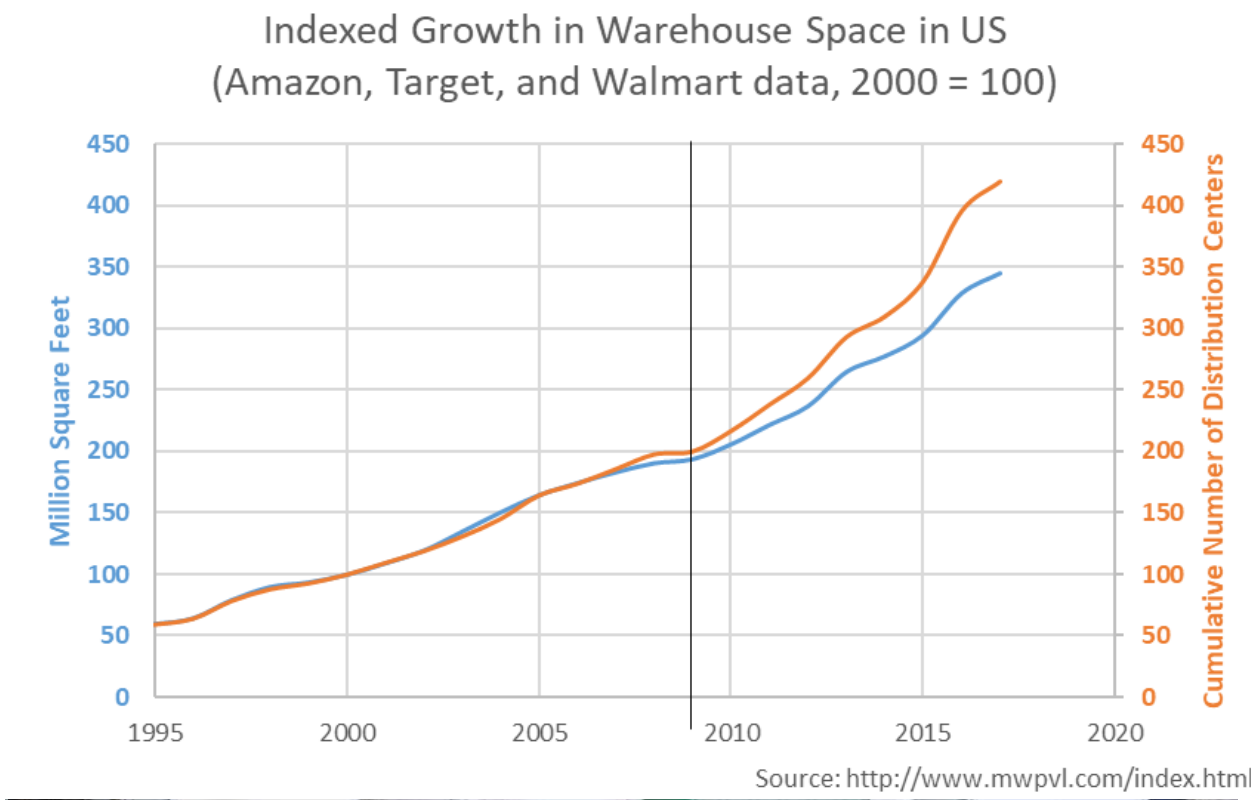
Freight mobility is important and changing

- **Container shipments have grown by 290% since 2000**
- Vessel size/speed, “right-steaming”
- Alternative ports are on the rise
- Supply chain is more intermodal
- **Distribution Centers: larger size and greater number over last decade**



http://www.capacityllc.com/blog/7-striking-stats-logistics-global-local/

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Economic Geography or Dire Straits?

Paths of least resistance and routes of greatest value

Where to Where?

When to When?

- Least Distance – a proxy for time, ignores posted or effective speeds
- Least Time – a function of distances and speeds, plus delays and dwell
- Low Cost – a function of labor, vehicle technology, payload characteristics
- High Value – the relationship between cost and freight rate (profit)

- Dire Straits analogy … *six lanes of traffic; three lanes moving slow*?

- What variables and responses fall under control of a decision actor?
  - Fleet, dispatch, route – trucking company, logistics provider
  - Road infrastructure, transport rules – transportation planning authority, engineer
  - Location, Location, Location – shipper, value-added processor, receiver

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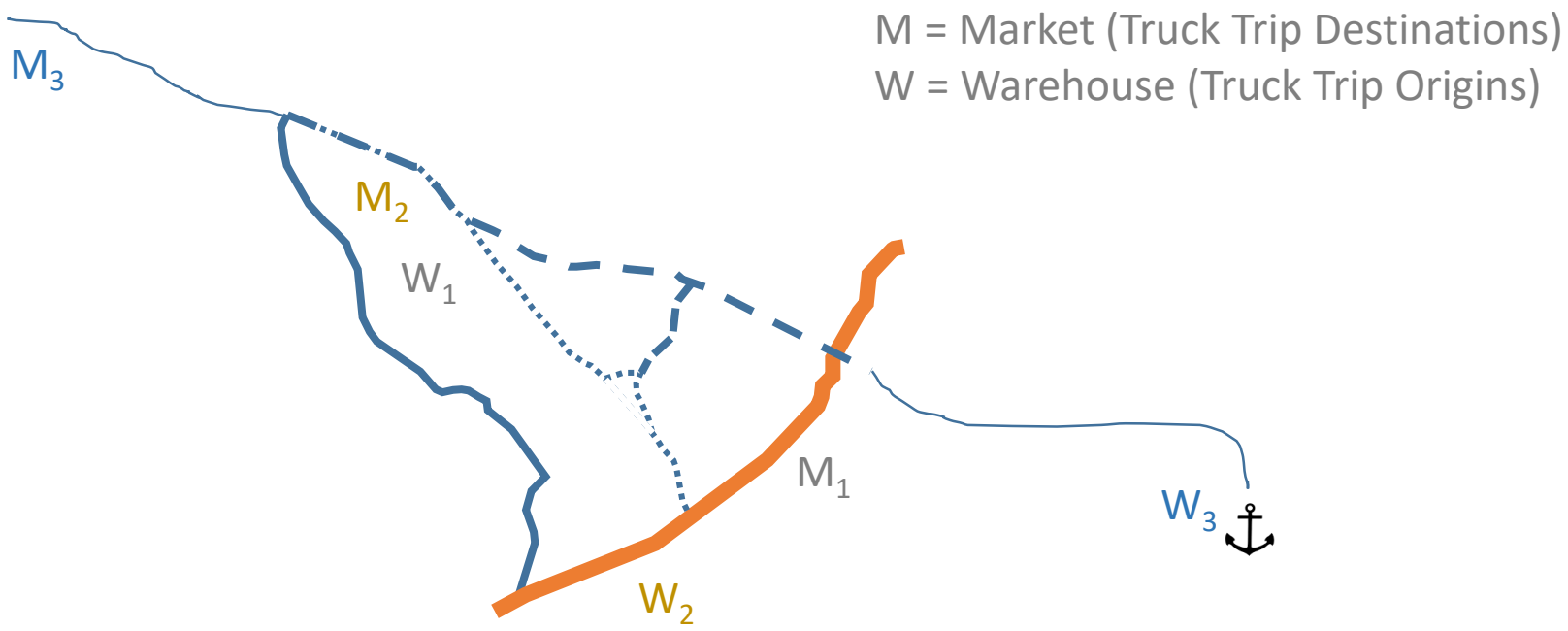
Freight corridor interactions

- How does the freight interact among corridor stakeholders?
  - Origin-Destination concepts: Port, Warehouse, Enterprises, Majors, Markets
  - Transport-community interactions: Auto-Truck sharing, Communities served



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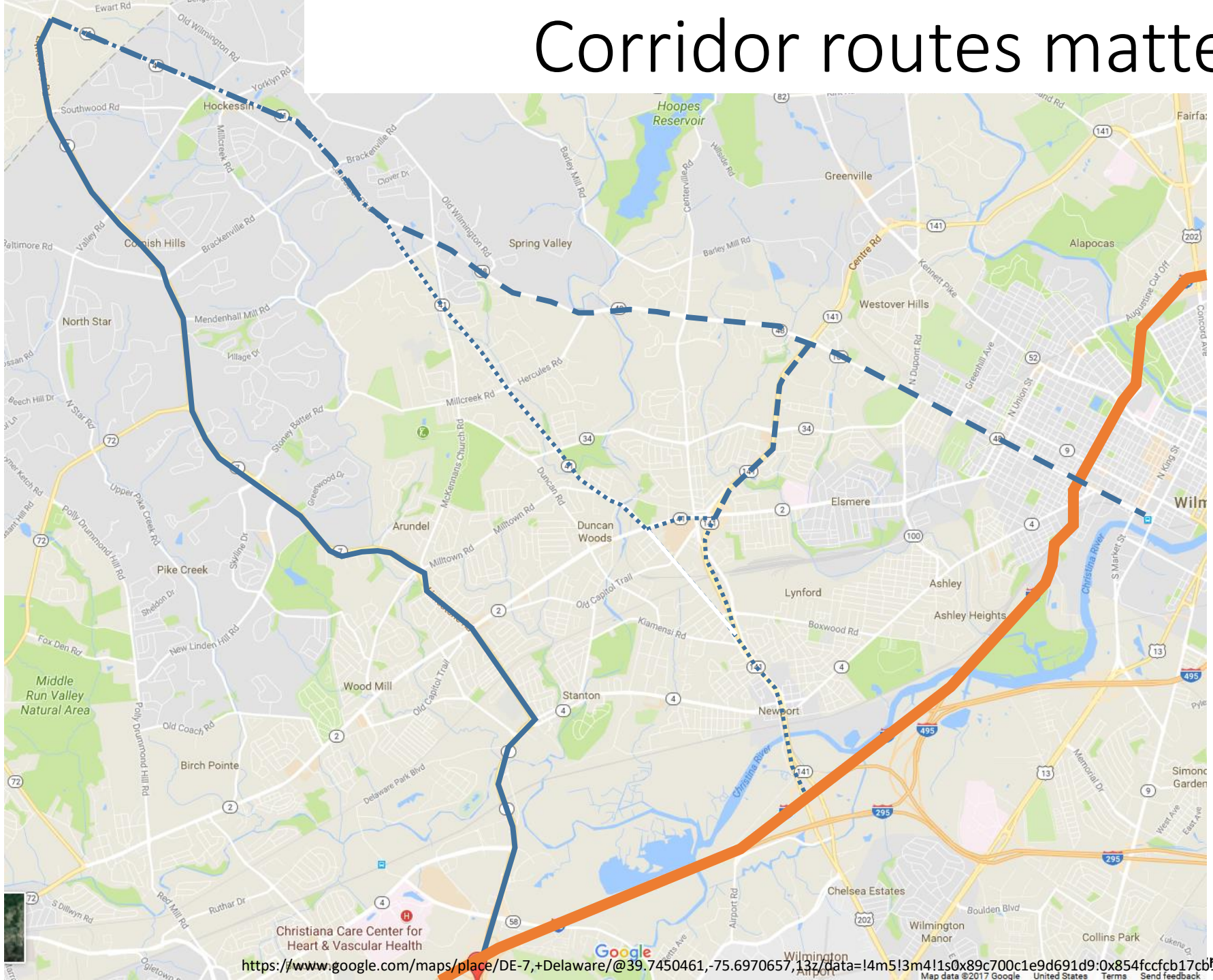
Corridor routes matter



https://www.google.com/maps/place/DE-7,+Delaware/@39.7450461,-75.6970657,13z/data=!4m5!3m4!1s0x89c700c1e9d691d9:0x854fccfcb17cb1f8!8m2!3d39.6796246!4d-75.6572293

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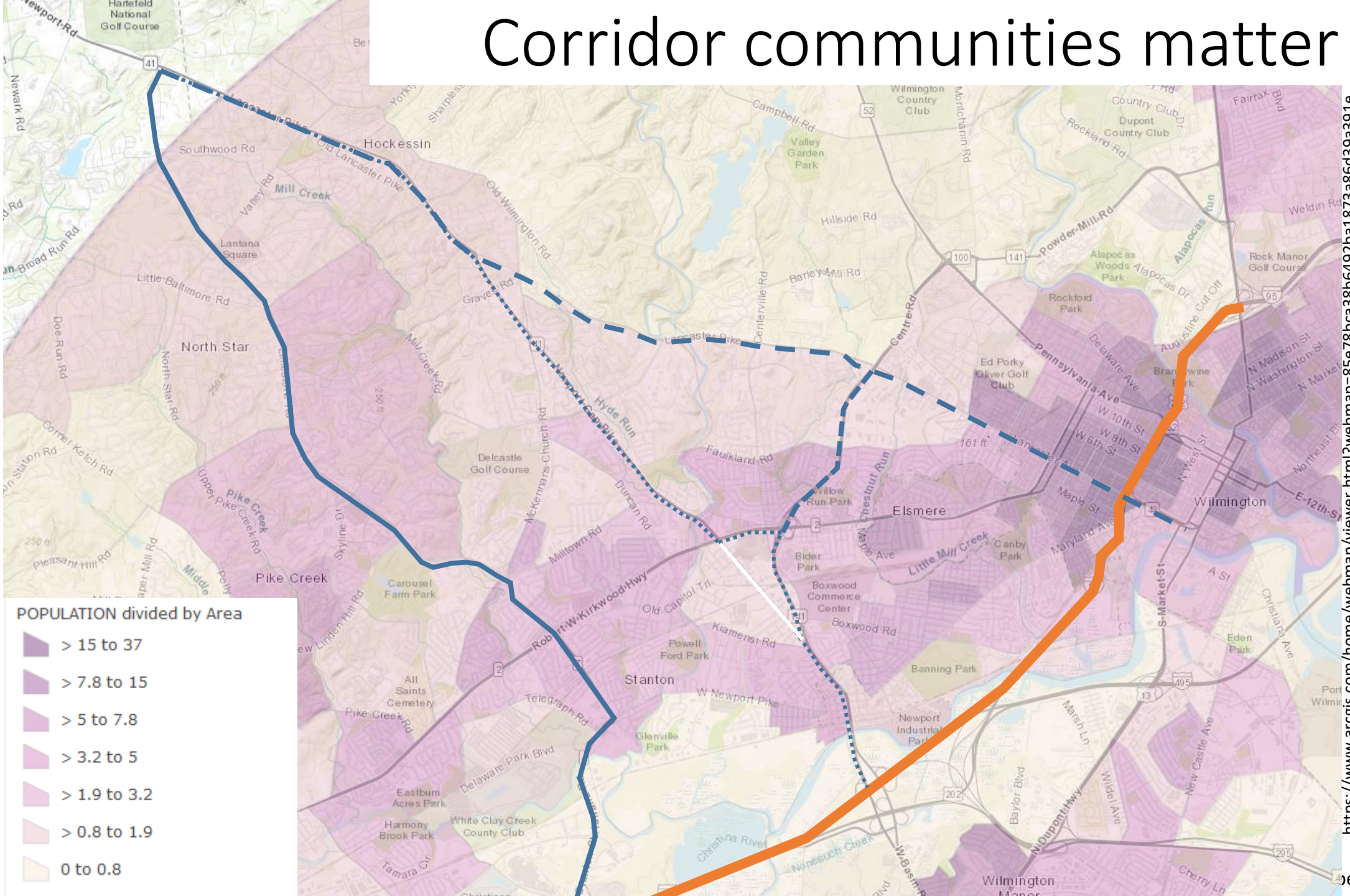
Corridor communities matter



https://www.arcgis.com/home/webmap/viewer.html?webmap=85e78bca38b6492ba1873a86d39a391e

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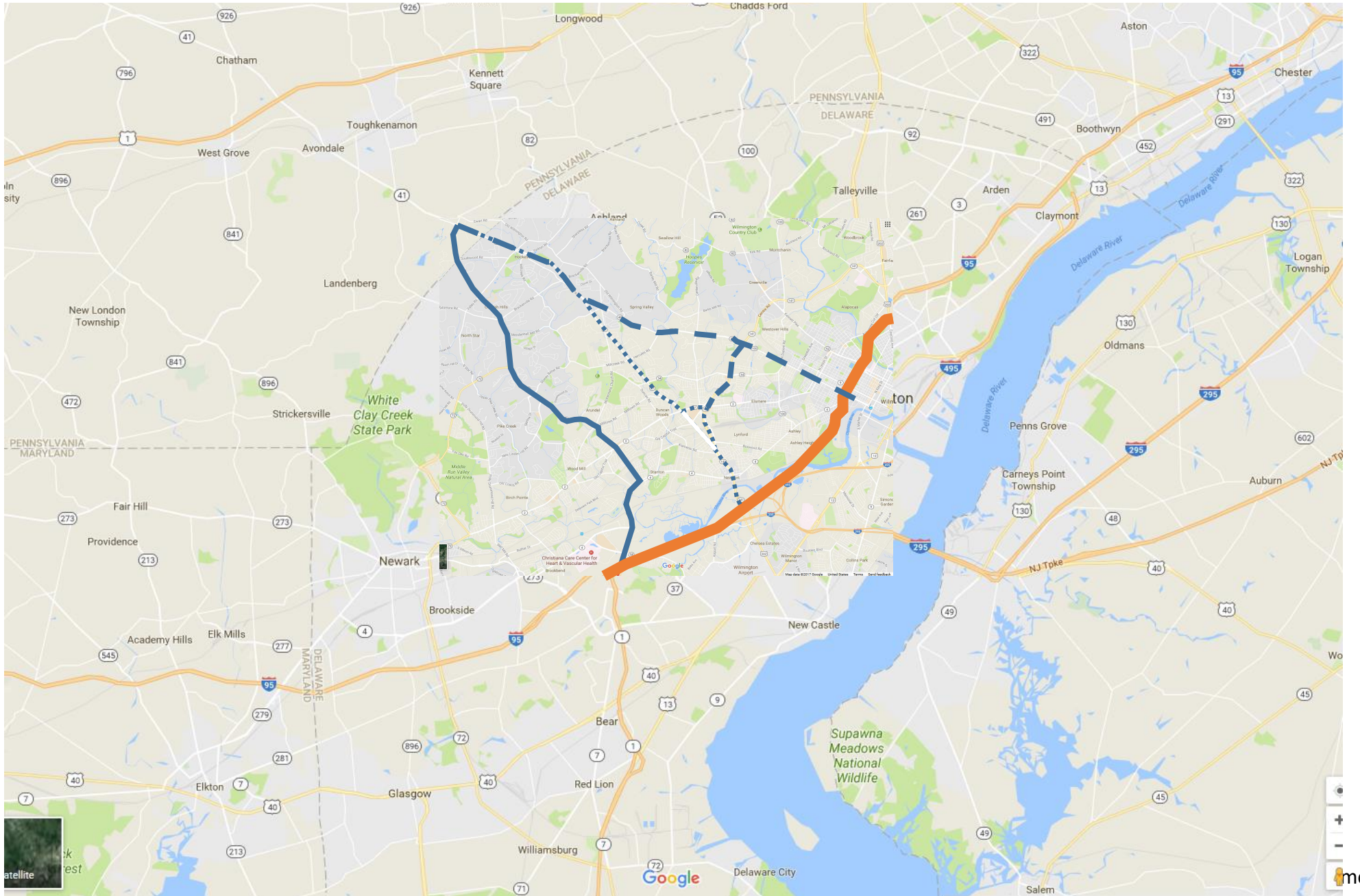
Corridor options may be broader than corridor



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Different modes, routes, intermodal combos

Truck traffic diversion is not controlled entirely by planners or policy making

- Depends upon cargo compatibility, infrastructure feasibility, and timing practicality

Bounding preferences:

A. We all want transportation service that is timely and direct
B. We prefer that service for "not us" be invisible or absent
C. To obtain direct/timely service for all, we might jointly consider corridor design
   We might recognize a shared corridor of traffic serving communities/businesses

SR 10 committee charter says:

- Reduce the number of trucks traveling along these roadways
- Improve the quality (reduce impact) to communities through engineering, infrastructure, education, enforcement

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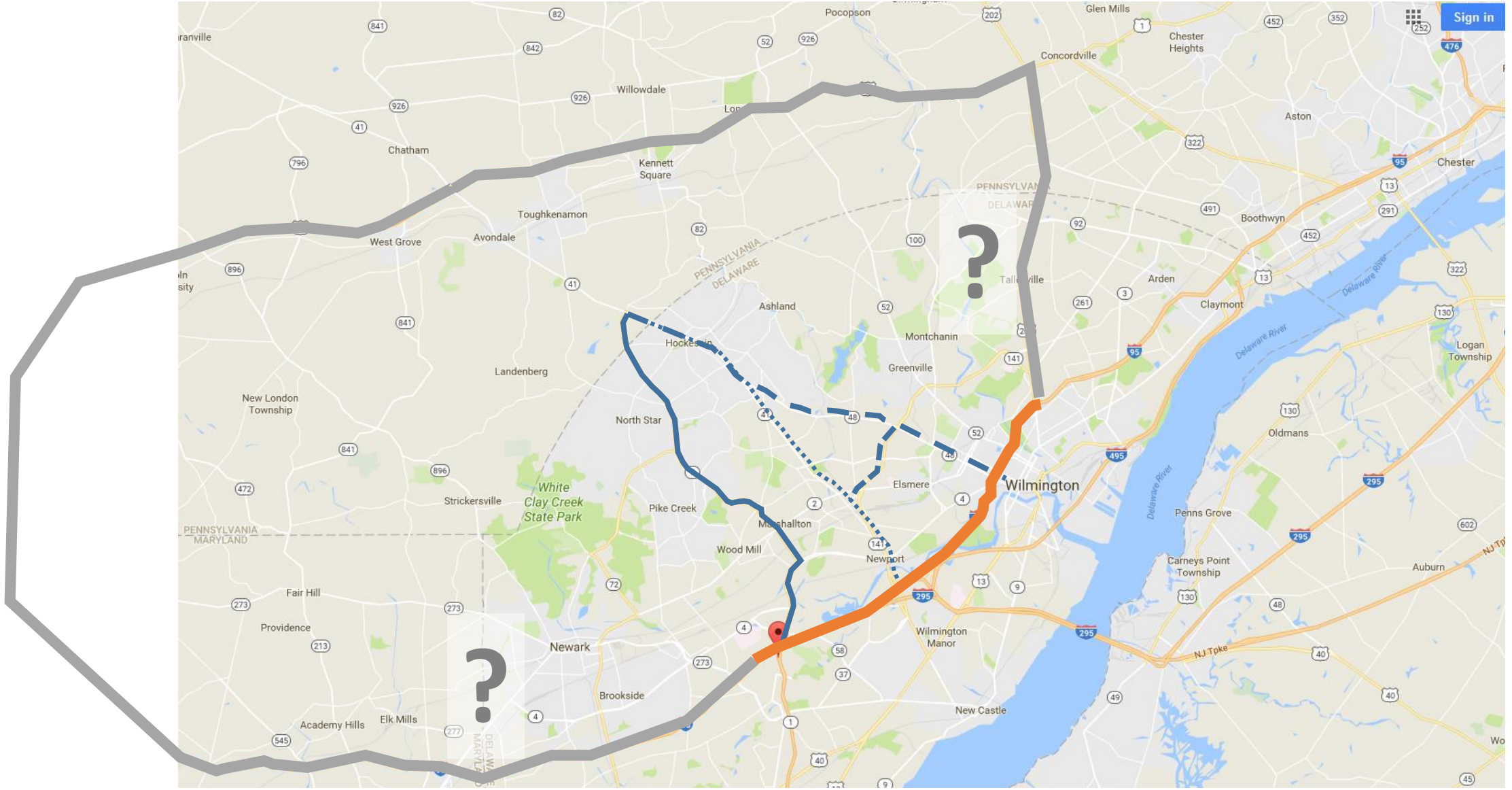

Some options may be infeasible, beyond bounds

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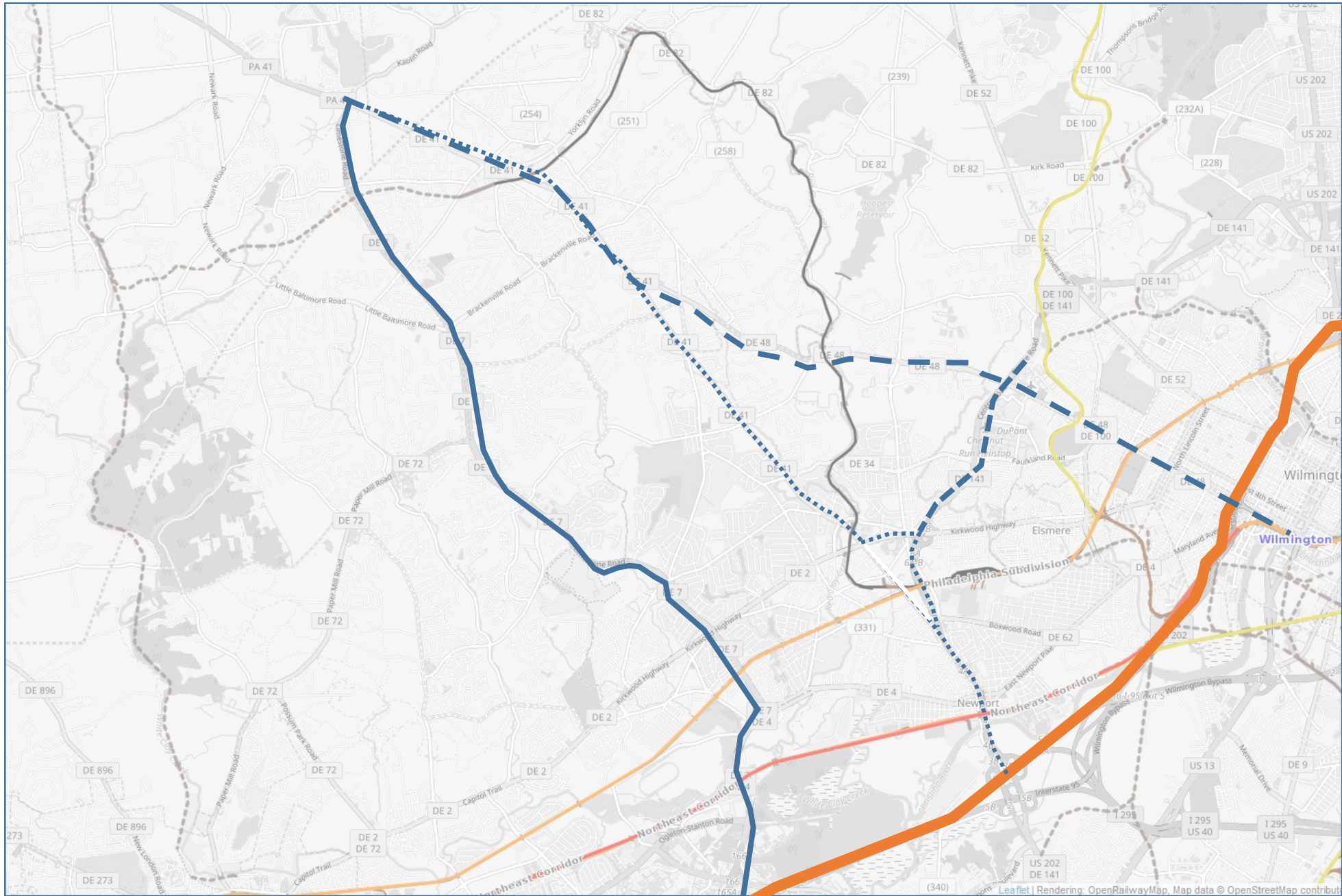
Rail infrastructure is a tough match to this corridor



Tradeoffs could be important

- 2008-10 Study for US DOT and Maritime Administration:

Infrastructure Performance Improvement to Reduce Corridor Delays for Freight Flows

  - Time and mode tradeoff study visualizing least time and least energy routes
  - Reduction in GHGs comes at a substantial time penalty

Key issues identified here: truck traffic noise, safe roads, efficient mobility

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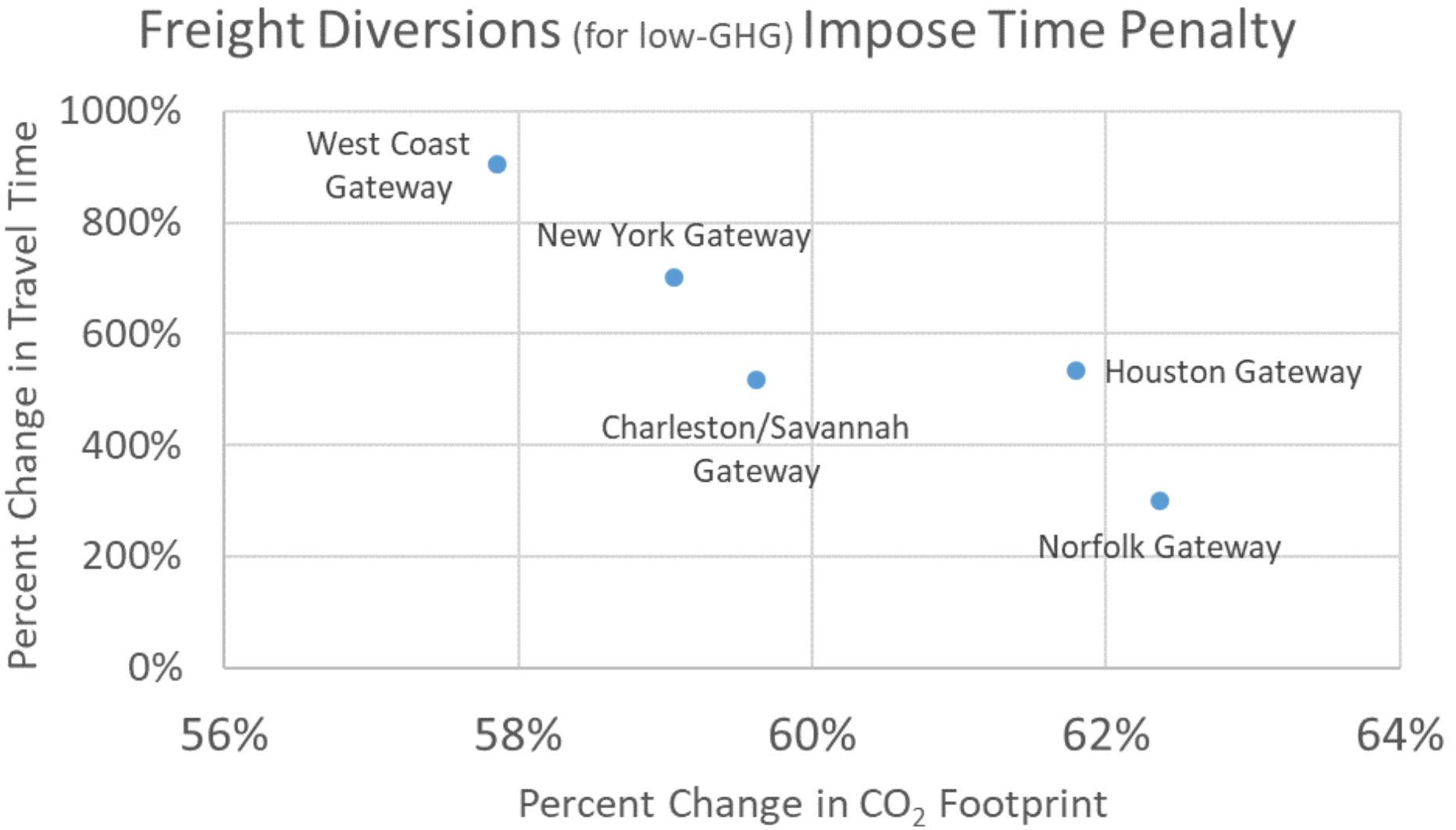
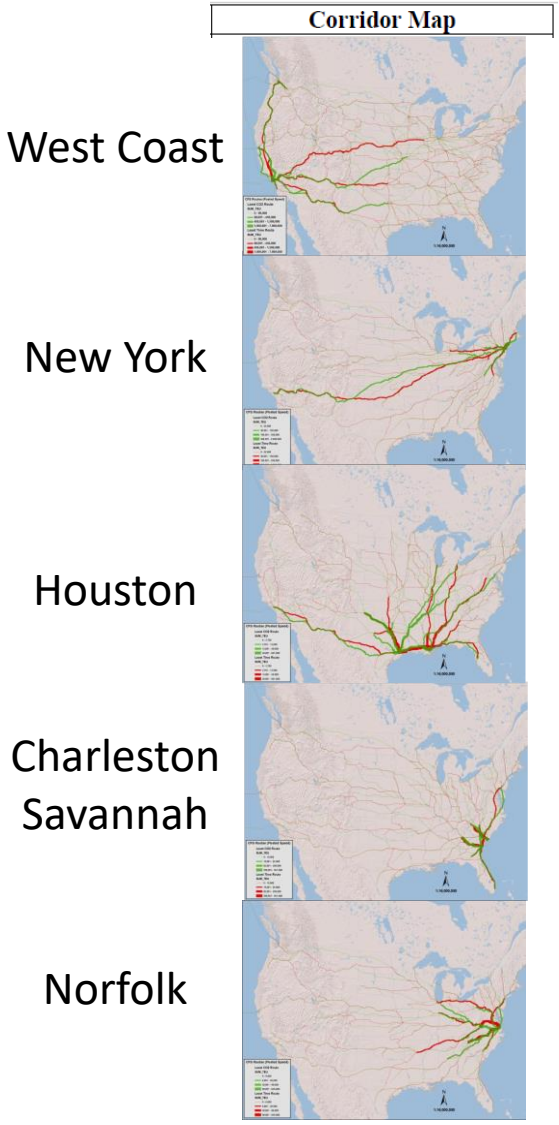
Our National Corridor study ID'd diversion delays

3x to 9x more delay for ~60% GHG reductions





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- Toward better questions for corridor communities:
  - How much do additional trucks (and/or autos) increase noise?
  - Might more truck traffic, matched to good road design, be safer?
  - Can route balancing (with policy help) make freight more or less efficient?
    - If policy (or absent policy) reduces mobility, then ↑ dispatch and enforcement costs
    - Could result in unintended changes for other community concerns

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Not my area of expertise, but a primer …

If we get some trucks to use one route,
but cars respond by diverting to other route in sufficient numbers
… what might we get?

How Trucks Affect Traffic Noise

A

One Truck

B

32 cars

A sounds as loud as B.

How Traffic Volume Affects Noise

A

2000 vehicles per hour

B

200 vehicles per hour

A sounds twice as loud as B.

How Speed Affects Traffic Noise

A

55 miles per hour

B

15 miles per hour

A sounds twice as loud as B.

http://www.nonoise.org/library/highway/traffic/traffic.htm

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Thank you for the opportunity to discuss this

- Freight mobility is important and changing
- Path patterns emerge from many different decision actors
- Freight interactions among stakeholders are a key consideration
- Designing for what matters requires cooperation and tradeoffs
- Transportation planners task is challenging, good input is important

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