

Question: What tasks must be accomplished to show that a Navigation System Model adequately captured the 'real world' for use in decision making?

Group C

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Focus on 2 parts

1. Individual shipper decisions.
2. Linking decision making into market models

#### SHIPPER DECISION MAKING

- A survey of individual shippers should be done to analyze their decision-making, including identifying the institutional settings under which they make their decisions.
- A literature search should be completed of other relevant research.
- Develop framework of the system should be developed. The shippers should be queried on what is right and wrong with the system. Those factors that matter most to the shippers should be identified. Theoretical constructs should be calibrated so that they reflect the reality shown by discussions with the shippers.
- Need to think about how to best survey the shippers:
  - Surveys: *revealed* or *stated preference* types- neither is better than the other; perhaps some combination of both should be used.
  - Identify those attributes that underlie decision-making: rate, transit time, reliability and some safety considerations (shippers will reflect safety in their choice framework, for example, being willing to pay more to move by barge than rail b/c the barge is safer).
  - Price in alternate markets, the price of commodities in other areas, should be considered in discussions with the shippers. Need to understand how this impacts their choices.
  - Issues that came up over again- time in transit & reliability. There are also policy variables that need to be reflected in the revealed choice survey
  - Who are the shippers- what is their setting, capacity, sunk cost investments (mode specific investments such as load facilities)
- Estimate the model and validate using a transportation choice modeling approach (same as group A)
  - Hindcasting for validating- want to make sure the model explains what happens in the world- and can pass the "does it make sense test"
  - Is the NED model appropriate? Can the models nest the NED framework into them? Any models need to make the necessary assumptions. Also an issue, are the NED assumptions okay? Are the models and their results statistically important? Economically important?
- With existing tools, forecasting models of equilibrium framework are possible but the difficulty is in defining the relevant model over spatial market. What are the spatial boundaries?

- The supply side is an area that will need some time. Supply functions how strange results. They can be estimated using surveys of individual barge companies or aggregate data if necessary. Supply functions are only defined if they are price takers- NED assumes prices are competitive. If this assumption falls through then the proposed analysis may be different. The question of competitive pricing assumptions needs to be addressed.
- Transportation identifies the derived demand- there is a direct linkage between elasticity of demand and prices- this relationship should be linked into market models.
- Congestion is part of supply and will be represented on both supply and demand sides in order to model accurately.
- Supply functions- the group had a discussion on understanding the industry structure. Transportation suppliers, if they are not a competitive industry, then the analyses need to be incorporating the degree of imperfection into the model of equilibrium quantities and prices.

#### COMMON THEMES:

- First action item is to develop survey of shippers.
- We have been assuming a particular kind of shipper rationality but this needs to be validated. Are the assumptions reflective of what is happening? These issues need to be part of standard shipping
- Do more on shipper behavior and modeling *only* if is useful- the effort has to explain the world and needs to satisfy the common sense test. Determine what level of research is needed to explain the world first, before moving ahead.
- Other modes do this research and have for long time so pieces of model already exist. Trip generation is the hardest part because it will be bringing in the rest of the world in order to estimate the amount of traffic moved. This needs to be done with a framework over time. A behavioral analysis of shipper motivations will inform this process- this will fit well with models of other modes.