Port Statistics and Performance Measures
Why do we even have Public Sector Data/Analytical programs?

- What are potential markets,
- What infrastructure is needed,
- What are implications from policy decisions,
- What are the emerging trends,
- What resources are necessary,
- What actions outside my control may change this decision framework,
- Are we collecting all revenues due,
- What is my competition thinking,
- To satisfy congressional mandates,
- What can I do to manage risks/costs,
- What is my competition thinking,
- The simple need to know.
The Characteristics of Transportation Data

- **When Collected?**
  - Transactional or post transaction
  - How Often? Monthly, per transaction, etc.,
  - By Who? What is mandate for collection?

- **When Processed:**
  - Who processes information?
  - How often is the information processed?
  - Who pays for processing?
  - How is the information made available?
  - Is the information filtered before being released?
When Used:

- Is it used by the same people who collected information?
- Is the information readily available in a finalized form, or is additional post-processing required?
- Is data converted to intelligence?
- What is publicly or privately released?
Challenges Placed on Infrastructure

Responding to changing markets, demographic shifts – Focus is short to medium term

Responding to changing service requirements

Responding to changing markets, demographic shifts – Focus is medium-long term

Control of Cargo routing

Investment Decisions

Shippers

Transportation Providers

Infrastructure Providers
LATTS Identified Needs Related to Changing Latin American Trade
Note: Highway & Rail is additional highway mileage with daily truck payload equivalents based on annual average daily truck traffic plus average daily intermodal service on parallel railroads. Average daily intermodal service is the annual tonnage moved by container-on-flatcar and trailer-on-flatcar service divided by 365 days per year and 16 tons per average truck payload.

What does the Global Supply Chain Mean to the U.S.?

- Cost of logistics in the US was $1.4 trillion in 2007; 10.1% of gross domestic product (GDP), according to CSCMP’s 19th Annual “State of Logistics Report®”.
- US expenditures on logistics are larger than the national GDP of all but ten countries.
- US expenditures on truck transportation alone ($635 billion) are larger than the GDPs’ of all but 16 countries.
- 11.3 million people (8.6% of the total US labor force), United States Department of Labor statistics
- Projected to be 1/3 of National GDP by 2020 (up from ¼ in early 2000’s)
We all support planning/policy/economic assessments that:

- Verify the nature of traffic flows across our respective countries, borders, and terminals
- Understand linkages to supply chains, commodities and routing
- Generate information for policy and planning studies
- Provide output to other users (state, and industry partners)

*Must recognize that most data is not collected for planning/policy applications!*
Back to First Cause?

- What are the correct tools and information?
- Will these tools raise the awareness to program projects that are beneficial to freight mobility? Do they help people make informed decisions?
- What tools and data elements are still needed?
- Can tools be developed to balance the wide range of border crossing needs?
- What is needed to provide additional and timely understanding of markets and trends?
- Are we providing accurate information to satisfy or anticipate future policy, program, legislative requirements?
How Can One Look At A System?

- Inventory Functions – physical characteristics, numbers of facilities, labor, equipment
- Engineering – structural integrity, deterioration
- Operational Reliability – delay, closures
- Economical and Financial – Cost/Benefit Analysis, capital and financial resources
- Demand - Traffic volumes and flows
- Safety and Security

*Each can have different performance measures*
Can You Improve What You Can’t Describe?

Port Authority

Port

Railroad

RR1 Chicago

Drayage

Infrastructure Provider and manager - e.g. Traffic Mgmt.

RR2 Chicago

Dest. City

Railroad

Consignee

Infrastructure & Traffic Mgmt

Drayage
The Ideal Database? (Based on TRB Reports)

- Time (date) associated with the shipment movement itself;
- Mode (truck, rail, water) and submode;
- Product origin and destination, including international shipments;
- Facility or equipment interchanges, including intermodalism;
- Type of equipment used to move the product;
- Product weight, density (measured in pounds per cubic foot) and value;
- Shipment size;
- Route used for domestic shipments. For international trade, the inland movement to/from a port, airport or gateway and the movement to/from foreign markets;
- Shipper and receiver relationship (contractual);
- Transportation rates, fees, and costs;
- Time sensitivity (just in time, JIT) or perishability of the product;
- Equipment movements, including repositioning empties and backhauls;
- Other products moving on the same piece of equipment (multiple products from either the same or different shippers);
- The economic multipliers associated with the shipment (tied to other modeling efforts);
- Cargo ownership, including the names and addresses of the shipper, receiver, and carriage provider;
- Tax and fuel payments tied to shipment;
- The relationship between goods movement to the local economy and jobs;
- Timely data collection and reporting of the shipment event to others (the information is reported fairly quickly after the shipment occurred);
- Identifying the actual product that was shipped?
Performance Measures

- Performance Measures provide mechanism for understanding system performance.
- Given limited budgets, etc., another tool for informing investment decisions at a state or local level.
- The Government Performance and Results Act (GPRA) of 1993 requires federal agencies to compare program goals against outcomes.
- TRB and PIANC both Studying Corridor/Multimodal Performance Measures
Where is the priority?

10 days
4000 miles

2 days
No miles

2 days
1500 miles

4 hours
+/- 2 hours
20 miles
What Performance Measures Are Needed?

- Average ship turn-round time
- Average tonnage per vessel day
- Average vessel time at berth
- Average vessel time outside
- Average waiting (idle) time
- Average Waiting Rate (5a/3)
- Tons per gang hour
- TEUs per crane (hook)
- Dwell time
- Berth throughput
- Throughput per linear meter
- Berth occupancy rate (%)
- Berth utilization rate (%)
- Income (expenditure) per GRT (or NRT) of shipping
- Operating surplus per ton of cargo handled
- Rate of return on turnover
Analytical Challenges of Performance Measures for Ports

- Developing common regional traits
  - Consistent over time and activity
  - Define Average and Regional matrix
- Operational structures
- Physical limitations to actually implementing change
- Data collection for the performance measures – Where and When?
- Converting performance measures into direct costs
- Consistent with those in use elsewhere?
- Select what you can manage and measure
- Need a combination of performance measures that can be clearly collected and studied
Concerns Regarding Developing Performance Measurement Tools

- Public Private Data partnerships
- Security Concerns and Other Datasets
- Confidentially Agreements
  - Conflict of revenue versus knowledge
  - Public Disclosure – Negative Consequences
  - Port Competition
- Funding New Data programs and Legacy Authorizations
- Conflicting goals between the various parties involved in the process
This should not be the end of Transportation Data…

How do we move from data into analysis and provide additional information?
The World is Changing...

- Operational Changes
  - Port Strikes
  - Rail meltdowns
  - Growing Vessel Capacity
  - Lock and Dam Closures
- Regulatory Policies
- Shifting trade patterns
- Cost Variability
- Natural Disasters/climate change
- Terrorism and Security
- Economic Downturns
- “Green” Pressures
- Funding Challenges
- Reducing Risks
Can we rely upon old approaches to answer new questions?...

How do we move from data into analysis while providing useful information?
FHWA Real-Time Freight Performance Measures

Proof-of-Concept Project to determine:

- What are the most appropriate corridors?
- What are the most appropriate measures?
- What is the optimal system for tracking real-time measures?
- Can FPMs be tracked and measured?
- Working with ATRI, Trucking Companies
OmniTRACS System Active Unit Location
Corridor Data Based on March 19, 2003
From 12:00am - 4:00am PST
Truck Speed Calculation Based on 50-mile increments

Corridor’s included in analysis are (I5, I10, I45, I65, I70)
Final Observations

- Performance Measures can be developed, and should be, to improve logistics planning efforts
- New technologies make this possible
- Institutional Changes may be required
- Decision makers do not necessarily want the correct data, only the data that supports a position
- Better data does not lead to better decisions
Thank you

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