



ADVANCING FREIGHT FLUIDITY MEASURES DATA OPTIONS & ANALYTIC ISSUES

TRANSPORTATION RESEARCH BOARD
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Areas of Focus for Data

- Focus on 3 supply chain performance factors:
 - Speed, or travel time
 - Reliability, or variability of travel time
 - Cost, as market price of services
- Based on ready availability and ACSCC findings
- General facets:
 - Operational: linehaul, staging, pickup & delivery
 - Modes: truck, rail, water

Fluidity Data Sources: Overview

- Majority from private sources
 - Commercial enterprise
 - ... and commercial opportunity
- Recent public model: government purchase from private vendors for controlled use
 - Example: NPMRDS
 - Public sources by mandate are minority and unlikely to expand
- Private sources not synonymous with private vendors
 - Proprietary and confidentiality issues when moving from national to local data
 - Solutions have involved intermediaries and release/use limitations

Fluidity Data Sources

Performance Dimension:	Data Suppliers by Mode:			
	Truck	Rail	Seaport	Waterway
Travel Time	<u>Roadway & border crossing:</u> <ul style="list-style-type: none"> FHWA NPMRDS ATRI INRIX, others <u>Basic estimate:</u> <ul style="list-style-type: none"> Google, others 	<u>Intermodal linehaul & dwell:</u> <ul style="list-style-type: none"> TransCore Railinc? <u>Carload linehaul & dwell:</u> <ul style="list-style-type: none"> RSI Railinc? 	<u>Vessel turnaround:</u> <ul style="list-style-type: none"> USACE/USCG NAIS <u>Truck turnaround:</u> <ul style="list-style-type: none"> ATRI <u>Shipment thruput:</u> <ul style="list-style-type: none"> Terminal operators? 	<u>Linehaul & lock:</u> <ul style="list-style-type: none"> USACE/USCG NAIS
Reliability	<u>Roadway & border crossing:</u> <ul style="list-style-type: none"> FHWA NPMRDS ATRI INRIX, others <u>Urban buffer:</u> <ul style="list-style-type: none"> TTI 	<u>Intermodal linehaul & dwell:</u> <ul style="list-style-type: none"> TransCore Railinc? <u>Carload linehaul & dwell:</u> <ul style="list-style-type: none"> RSI Railinc? 	<u>Vessel turnaround:</u> <ul style="list-style-type: none"> USACE/USCG NAIS <u>Truck turnaround:</u> <ul style="list-style-type: none"> ATRI <u>Shipment thruput:</u> <ul style="list-style-type: none"> Terminal operators 	<u>Linehaul & lock:</u> <ul style="list-style-type: none"> USACE/USCG NAIS
Cost	<u>Truckload (van, reefer, flatbed):</u> <ul style="list-style-type: none"> Chainalytics 	<u>Intermodal:</u> <ul style="list-style-type: none"> Chainalytics <u>Carload:</u> <ul style="list-style-type: none"> STB CWS 	N/A	<ul style="list-style-type: none"> USDA (index) USACE PCXIN Operator Associations?

- Fluidity measures are new market for private suppliers
 - Can be leveraged to stimulate expansion of services: close data gaps, reduce barriers to doing business
 - Competition among mobile source vendors demonstrates this
- Argues role for large public entities in market making
 - US DOT, multistate coalitions
- Objective: organize market from demand side
 - Simplify number and diversity of transactions
 - Create scale economies
 - Incorporate protections
 - Clarify market opportunity to attract competition
 - Assure continuing demand for services

Analytic Issues: Repeatability

- Fluidity data most informative in time series
 - Direction and degree of change is basic performance indicator
 - ➔ a tracking tool
 - Comparability across locations and conditions not initially clear
- Repeatability thus crucial – and advantageous:
 - Reduces difficulty in processing
 - Reduces cost and reporting time
- Repeatability indicates stability of process
 - Alternative check on data integrity when trade secrets at issue

Analytic Issues: Comparability

- Necessary for totaling across stages and modes
 - Comparable metrics, reasonably comparable geography
- Vital for selection of time frames
 - Consistency in time series analysis
 - Control for external influences: seasons, cycles, etc.
- Key consideration in data budgets
 - Longer periods (annual/quarterly) can mean more data and cost – but shorter periods less informative
 - Argues for larger purchasers: federal, multistate

Analytic Issues: Scalability

- Important challenges in scalability:
 - Roadway speed and reliability sum across network segments, railway do not
 - Market prices reflect lane and service, not segments
- Local conditions still affect national results
 - Comparable, repeatable indicators needed
 - Productivity can be a local cost proxy

- Overarching managerial oversight of end product required
 - Objective: consistent, trackable end-to-end measurement of supply chain performance
 - Purpose: performance improvement through diagnosis of component deficiency by location, mode, character
 - ➔ Needs public parallel to private supply chain management, addressing component contributions to total result
- National, multijurisdictional program required
 - Clear federal role; likely role for multistate coalitions
 - Handles market making; supplier negotiation; innovation, assurance of data integrity, comparability, repeatability, scalability

- Next steps: negotiate with data suppliers
 - Clarifies budget and restrictions
 - Explores cost, conditions, capabilities for national program

Thank You!

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