

Freight Demand Modeling and Data Improvement Strategic Plan

SHRP 2 C20

RESEARCH SUMMARY



March 2011



The SHRP 2 C20 initiative is aimed at fostering fresh ideas and new approaches in freight demand modeling and data to ultimately improve decision making.

Project Need

Freight makes up a large—and rapidly growing—portion of the traffic on our roadways. Appropriately accommodating the demand for moving goods requires policies, plans, and projects that are based on a clear understanding of how that demand is realistically expected to shift under various scenarios.

However, current freight demand forecasting models and data sources are inadequate. Freight forecasting is currently based on methods and tools developed for passenger transportation, which do not reflect the distinct nature and complexities of freight. Improvements are needed to better reflect how freight transportation really operates and how it would be affected by future plans and decisions.

Project Highlights

The SHRP 2 C20 project encompassed an analysis of the current state of the practice, freight decision-making needs, and gaps between current models and real-world needs.

An integral part of the project was the Freight Modeling and Data Innovation Symposium conducted in September 2010 (www.freightplanning.com). The symposium featured 15 presentations selected to address the challenge of finding the next generation of freight demand models. Participants presented innovative approaches and research into goods movement from a variety of academic and applied perspectives from a range of countries and contexts.

In addition to a detailed technical report, the project produced a strategic plan to guide future advances in freight modeling and data.

Strategic Objectives

The project identified seven strategic objectives to serve as the basis for future innovation in freight demand modeling and data, and to guide both near-term and long-term implementation.

1. Improve and expand the knowledge base for planners and decision makers.
2. Develop and refine forecasting and modeling practices that reflect the “real world” of supply-chain management.
3. Develop and refine forecasting and modeling practices based on sound economic and demographic principles.
4. Develop standard freight data (similar to Commodity Flow Survey (CFS), Freight Analysis Framework (FAF), and possible future variations) to smaller geographic scales.
5. Establish methods for maximizing the beneficial use of new freight analytical tools by state departments of transportation and metropolitan planning organizations (MPOs) in their planning and programming activities.
6. Improve the availability and visibility of data among agencies and between the public and private sectors.
7. Develop new and enhanced visualization tools and techniques for freight planning and forecasting.

The project culminated in the development of 13 sample research initiatives that represent near-term opportunities to advance the strategic objectives (see matrix next page). The research initiatives will yield a greater sophistication in freight modeling and data, and thereby enhance transportation decision making related to freight.



Strategic Road Map

The SHRP 2 C20 Strategic Road Map for moving forward recommends establishing a flexible mechanism to spur public-private collaboration and continuous innovation in freight modeling and data: a Global Freight Research Consortium (GFRC).

This peer-based consortium would enable, fund, and promote research and enhanced analytical approaches through public organizations—national and international—together with private organizations that have a stake in improved freight system performance. Participation would be voluntary, attracting those organizations motivated to achieve the strategic objectives.

GFRC member organizations would include public domestic agencies, modal and other associations, universities, and the transportation research entities of other countries. Private sector members could include organizations such as Con-way, Wal-Mart, EXCEL Logistics, FedEx, and UPS.



Global Freight Research Consortium focus areas:

- Define issues ripe for research innovation.
- Provide recognition and incentives to spur breakthroughs.
- Conduct regular innovation forums.
- Promote technology transfer from other disciplines.
- Promote an international focus.
- Recognize the application of completed research.

What is SHRP 2?

Congress established the Strategic Highway Research Program 2 (SHRP 2) in 2006 to investigate the underlying causes of highway crashes and congestion through a short-term program of focused research. SHRP 2 targets goals in four interrelated focus areas:

-  **Safety:** Significantly improve highway safety by understanding driving behavior in a study of unprecedented scale.
-  **Renewal:** Develop design and construction methods that cause minimal disruption and produce long-lived facilities to renew the aging highway infrastructure.
-  **Reliability:** Reduce congestion and improve travel-time reliability through incident management, response, and mitigation.
-  **Capacity:** Integrate mobility, economic, environmental, and community needs into the planning and design of new transportation capacity.



www.trb.org/shrp2

This project was carried out as part of the Capacity focus area. The research was guided by a Technical Expert Task Group (TETG) of public and private sector leaders in goods movement. The TETG was charged with setting and maintaining the project's vision, direction, and progress monitoring.