

Confidential Waybill Data Application

308182

February 28, 2024

Francis O'Connor
Acting Director of the Office of Economics
395 E Street SW Washington, DC 20423.

ENTERED
Office of Proceedings
April 12, 2024
Part of
Public Record

Subject: Request for Unmasked Carload Waybill Sample

Dear Director O'Connor:

We are writing to request access to the unmasked confidential Carload Waybill Sample from 1984–2022. This data will support a recently started DOE ARPA-E (Advanced Research Projects Agency - Energy) project in the exploratory program of “Increasing Transportation Efficiency and Resiliency through Modeling Assets and Logistics.” This 30-month project, building upon partnership among the University of Illinois at Urbana-Champaign, the University of California Irvine, and the Argonne National Laboratory, aims to develop a freight data hub and decision-support web-portal to enhance efficiency, sustainability, and resiliency of highway/railway/waterway intermodal freight operations. It would be extremely helpful if we could have access to the data such as carload origins, destinations, freight revenue, freight characteristics, and other information as recorded in the unmasked Carload Waybill Sample. Only our team members from the University of Illinois, as listed at the end of this letter, may have access to the requested Waybill data.

Project Objectives

The U.S. freight transportation industry is responsible for a significant portion of the nation’s greenhouse gas (GHG) emissions, and the highly congested transportation infrastructures have exacerbated the freight systems’ vulnerability to disruptions. One of the primary barriers to the enhancement of freight network decarbonization and resiliency is the lack of an integrated, overarching, and data-driven modeling framework that can be used to predict, optimize, and provide decision-support for intermodal freight logistics operations.

The goal of the project is to develop a series of integrated data and computational models, as well as associated executable computer programs, that enable modeling and decision making on the nation’s intermodal freight logistics systems across water, roadway, and railway modes. At the end of the project, a prototype freight data hub will be built to address the current gaps in collecting and visualizing timely and policy-relevant data on intermodal freight operations. Logistics optimization models will be developed that could explain freight shippers’ choices (e.g., mode, origin/destination) and logistics service providers’ decisions (e.g., on routing and scheduling) across multiple integrated shipment modes. System dynamics analysis under disruption scenarios will also be used to assess the system resilience. All these data and model capabilities will be integrated into an open computational platform and virtual testbed.

Scope of Work

Our research will use the Waybill Data for the following tasks:

1. Prototyping a national intermodal freight data hub

We will explore the feasibility of integrating (i) real-time data from a Southern California Case Study on intermodal freight volumes at key network links as well as freight activity patterns and associated externalities, and (ii) the nation's historical freight data by water, rail, and highway modes, into a prototype data hub on freight system performance, utilization, impacts, and vulnerabilities.

2. Logistics and infrastructure models

Using available data in the data hub, we will build an overarching multi-layered intermodal network (highway, railway, and waterway) model with multi-scale spatial resolutions. Logistics optimization models will be developed to explain freight shippers' choices and logistics service providers' mode, routing, and storage decisions across multiple integrated shipment modes. Assessment will be conducted to understand the tradeoffs among system efficiency, emissions, and socially equitability impacts in location, allocation, and pricing of renewable energy "fueling" facilities for intermodal freight. System dynamics analysis under disruption scenarios will also be used to assess the system resilience at both full-scale (e.g., from ports to warehouses) and local scales (e.g., within the port).

3. Data-model integration

All these data and model capabilities will be integrated into an open computational platform and virtual testbed. Our target is to build a functional cyber model representation of the intermodal freight transportation system in the U.S., which could help reduce the cost of shipment, decreasing freight related congestion, as well as decarbonizing the energy portfolio in the intermodal freight sector.

Detailed Data Requested

We request access to the unmasked confidential Carload Waybill Sample from 1984–2022. We have access to the public use waybill file, but the data is limited and incomplete for our analysis of railway and intermodal networks. Thus, we require more information recorded in the unmasked Carload Waybill Sample.

Data Management Plan

While these data will be used in their unmasked form for our main analysis, all analytical products will report only aggregate values at a scope sufficient to ensure confidentiality; we will not report any individual-level data. We understand and will comply with all confidentiality regulations related to the use of this data (e.g., those contained in 49 CFR § 1244.9) and will share research products with the Office of Economics for compliance review prior to release. The data will only be used for academic research conducted by our team members listed in this file. The final deliverables will include an open computational platform and virtual testbed for intermodal freight strategies towards decarbonization and resilience.

Thank you for your consideration of this request.

Sincerely,



Yanfeng Ouyang, Ph.D.

George Krambles Endowed Professor in Rail and Public Transit

On behalf of the following research team at UIUC.

Imad L Al-Qadi	Grainger Distinguished Chair in Engineering; Director, Illinois Center for Transportation; Professor Office: 1207 Newmark Civil Engineering Bldg, Urbana, IL 61801 Email: alqadi@illinois.edu
Angeli Jayme	Research Scientist, Illinois Center for Transportation Email: agamez2@illinois.edu
Yanfeng Ouyang	George Krambles Endowed Professor in Rail and Public Transit; Associate Director, Illinois Center for Transportation; Professor Office: 1209 Newmark Civil Engineering Bldg, Urbana, IL 61801 Email: yfouyang@illinois.edu
Jeffery R. Roesler	Ernest Barenberg Professor in CEE; Professor Office: 2129E Newmark Civil Engineering Bldg, Urbana, IL 61801 Email: jroesler@illinois.edu
Alireza Talebpour	Assistant Professor Office: 1206 Newmark Civil Engineering Bldg, Urbana, IL 61801 Email: ataleb@illinois.edu
Jiawen Xu	Research Assistant Email: jiawenx3@illinois.edu