

Surface Transportation Board
Washington, D.C. 20423-0001
Office of Economics

August 08, 2025

Jurgen Hackl
Assistant Professor,
Department of Civil Engineering
Complex Infrastructure Systems
Engineering Quadrangle
Princeton University
54 Olden Street
Princeton, NJ 085544

Re: Waybill Request WB25-38

Dear Mr. Hackl:

The Surface Transportation Board (STB) has received your request under 49 C.F.R. § 1244.9(c) of July 9, 2025, for permission to access the 1984 – 2025 confidential Carload Waybill Sample (CCWS) with masked revenues. Your request explained that the requested data would be used to apply novel methodologies from network science and complex systems to model the structure and function of railroad infrastructure. You are particularly interested in modeling in detail how trains and cargo move from origin to destination through the multi-modal freight network. Notice of your request was published in the *Federal Register* on July 14, 2025, and no objections were received.

Based on the complete and sufficiently detailed explanations and justifications contained in your request, you will be granted access to a more limited set of data. Specifically, you will have access to the CCWS for the years 1991 – 2023 with masked revenues. I have granted narrower access because masked data sets for the years 1984 – 1990 do not exist. The 2024 and 2025 datasets are not ready to be released at this time and may be requested at a later date. These data may only be used for the purpose detailed in your request and may not be used for any other purpose such as private, commercial consulting. ***This approval becomes effective when signed agreements from the individuals listed below are received by the STB:***

- a) *Jurgen Hackl*
- b) *Timothy LaRock*

The expiration date for this agreement is August 31, 2026. Unless you seek and obtain a renewal from the STB, this agreement upon expiration obligates you to return or destroy all copies of the data (see item 6 of the agreement).

Several aspects of the CCWS limit the conclusions that may be drawn from analysis of the CCWS: 1) the CCWS is a sample, and 2) the CCWS is based on terminating shipments from

relatively large carriers. Only those railroads with more than 4,500 annual terminating carloads are included in the sample. The limited sampling of small railroads may have a substantial effect on studies covering areas served predominately by non-sampled railroads. For additional information on the CCWS, see *Reference Guide* @ <https://www.stb.gov/reports-data/waybill/> on the Board's website.

The rules for release of waybill data are codified at 49 C.F.R. § 1244.9. The CCWS contains confidential shipper and railroad data. As a result, the CCWS is commercially sensitive and has the potential to cause competitive harm to shippers and railroads if disclosed. Therefore, the following agreement must be signed, and a copy of the signature pages returned to the STB, before any waybill data can be used.

Your signature acknowledges your agreement to comply with the following:

1. You will use the CCWS data released to you solely for the purpose requested.
2. Absent permission from the STB, you shall make the information contained in the CCWS (including work product and analyses derived from the CCWS) available only to the individuals identified above. The STB may approve access for additional individuals within your entity working on the particular project or study requiring the waybill data. Each such additional individual must review and sign this agreement, and return a copy of the signature page to the STB.
3. You will not release any CCWS data (including work product and analyses derived from the CCWS) to anyone who has not signed this agreement and been approved for access by the STB until the STB has had the opportunity to review the materials proposed for disclosure to ensure confidentiality.
4. You acknowledge that, in addition to the restrictions described in paragraphs 2 and 3 above, you are bound by the STB's rules governing use and disclosure of CCWS data. These include the confidentiality provisions of 49 C.F.R. §§ 1244.9(f)(1)-(3), which require that "[a]ny shipper data obtained from the Waybill Sample shall not be publicly released unless the data are aggregated to include at least three shippers." In addition, you agree not to disclose CCWS data that permits identification of an individual railroad.
5. You will refer any requests for CCWS data in your possession (including work product and analyses derived from the CCWS) to the STB for processing and will inform the requesting party of such referral to the STB. If you are compelled by law or order of a governmental or judicial body to release CCWS data, you shall notify the Board in writing within three days of any determination that CCWS data must be released, and in no event later than five days before the CCWS data is scheduled to be released.

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6. In order to retain access to the CCWS beyond the expiration date specified above, you must submit a written request for an annual extension of the agreement no later than thirty days prior to the expiration date and the renewal request must be approved by the Office of Economics. **If an annual agreement is not signed and approved, you must certify by no later than the expiration date that all CCWS data (including all work product and analyses derived from the CCWS) obtained under this agreement has been destroyed or returned to the STB.**
7. Failure to request an extension (if necessary), or destroy or return CCWS data when required, may prevent any future release of CCWS data to you. Violations of this agreement may subject you to sanctions by the Board.

After all parties have signed and returned this agreement, please contact waybill@stb.gov to make the necessary arrangements to have a copy of the data sent to you. The STB will provide the data by email through file transfer protocol. Prior payment of processing and mailing cost of **\$138 (\$69 per confidentiality agreement)** is required and received.

Sincerely,

FRANCIS
O'CONNOR

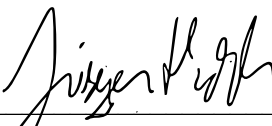
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FRANCIS O'CONNOR
Date: 2025.08.08
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Francis X. O'Connor
Acting Director
Office of Economics

Waybill Agreement WB25-38

I have read and understand the conditions for release of the CCWS data. I agree to comply fully with these conditions and the provisions of this confidentiality agreement. No later than thirty days before the agreement expires, I will request an extension of this agreement, if necessary. If no extension is requested, I will return or destroy all CCWS data and certify that I have done so. I have the authority to sign this agreement.

By: Jurgen Hackl



Signature

Waybill Agreement WB25-38

I have read and understand the conditions for release of the CCWS data. I agree to comply fully with these conditions and the provisions of this confidentiality agreement. No later than thirty days before the agreement expires, I will request an extension of this agreement, if necessary. If no extension is requested, I will return or destroy all CCWS data and certify that I have done so. I have the authority to sign this agreement.

By: Timothy LaRock

A handwritten signature in black ink, appearing to read 'Timothy LaRock', written over a horizontal line.

Signature



Dr. Jürgen Hackl
Assistant Professor

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Princeton, 2025-07-09

Dr. Kristen Monaco
Director, Office of Economics
Surface Transportation Board
395 E Street SW
Washington, DC 20423

Subject: Request for Access to CCWS for Academic Research

Dear Dr. Monaco,

I respectfully write to request access to the Confidential Carload Waybill Sample (CCWS) for academic research purposes. At Princeton University, I lead the [Complex Infrastructure Systems](http://cis.princeton.edu) group within the Department of Civil and Environmental Engineering. Our interdisciplinary research team focuses on understanding, modeling, and improving the resilience, efficiency, and sustainability of large-scale infrastructure networks. We specialize in developing advanced modeling techniques rooted in network science, data analytics, and systems theory to better understand the behavior of multi-modal transportation networks, energy systems, and other critical infrastructures. Access to the CCWS would play a vital role in advancing our ongoing research on railway freight transportation in North America by enabling detailed modeling of cargo flows and operational dynamics across the rail system. This dataset would be critical to achieving the scientific objectives outlined below.

Research Objectives

The goal of our research is to apply novel methodologies from network science and complex systems to model the structure and function of railroad infrastructure. We are particularly interested in modeling in detail how trains and cargo move from origin to destination through the multi-modal freight network. Some specific research objectives include:

1. Characterizing the *structure* and *function* of the geographically embedded physical infrastructure network.
 - ▶ Using network analysis to identify the most structurally important stations and junctions, which are those whose failure or removal would do the most to modify the structural characteristics of the network.
 - ▶ Characterizing the physical infrastructure network as a conduit for the movement of goods, identifying the most functionally important stations, junctions, and corridors based on detailed information about the volume and flow of trains and freight.
 - ▶ Identifying *higher-order patterns* by analyzing trajectories or paths of trains and cargo through the railway network.
2. Analyzing how the rail infrastructure and freight system has evolved *over time* by developing a generative or mechanistic model for the growth and evolution of large-scale railway infrastructure.
3. Integrating with trucking and air freight datasets to analyze intermodal cargo routing using a multi-layer network modeling approach.

**Justification for
Confidential Data**

The CCWS is the best available dataset to address our research objectives as it contains samples of trajectories of trains and freight through the railway network at a scale appropriate for our analyses. We have investigated the possibility of using the Public Use Waybill File, however the aggregation of the routing and interchange data to the BEA level does not provide sufficient granularity for our research objectives, which require data at or as close as possible to the station and junction level. We have also gathered data about the physical infrastructure network from other sources such as the [STB National Rail Map](#) and the [North American Rail Network datasets](#) maintained by U.S. DOT. However, neither of these datasets includes data about how the system actually functions, *i.e.*, how trains and cargo move through the network, which data is only available within individual railroad operators or in the CCWS.

Data Requested

In order to address our research objectives, and given that we are interested in modeling the evolution and growth of the railway system over time, we request access to a longitudinal sample of the CCWS encompassing data from as many years as are available between 1984 and 2025.

The main unit of analysis in our planned research is a sequence of stations and junctions navigated by trains and freight and therefore we are particularly interested in the Routing data ([column 32](#)). We also request data pertaining to the date of the movement to test for seasonal effects; the type and weight of freight transferred; the railroads involved in each segment of the journey (necessary to maintain confidentiality); information about intermodality and type of movement; as well as whether shipments cross state or national borders (type of move).

We note that we are not at this time planning to carry out an economic analysis, thus we are not requesting access to any revenue or fee data in this instance.

Confidentiality

We recognize that the data contained in the CCWS is considered highly confidential proprietary information and agree to treat the CCWS data confidentially in line with the terms codified in 49 CFR 1244.9 paragraphs (b)(4)(i) through (iv). At Princeton University, we have access to encrypted storage systems where we can hold the data such that only authorized users may access it. The only users authorized to access the data will be Professor Jürgen Hackl and Dr. Timothy LaRock. We further agree that any results of our analyses that we hope to publish in the scholarly record will be shared with no one else without the approval of STB, will be approved by the STB before submission, and will be aggregated such that the data cannot identify individual railroads.

Concluding Remarks

We appreciate your consideration of this request and are fully committed to complying with all confidentiality requirements and data handling protocols set forth by the STB. We believe that access to the CCWS will substantially advance the scientific understanding of freight transportation systems and support the development of models and tools with broad relevance to infrastructure planning, policy, and resilience. Please do not hesitate to contact me if further information or documentation is required in support of this request.

Yours sincerely,

Jürgen Hackl