

Surface Transportation Board
Washington, D.C. 20423-0001

Office of Economics

June 20, 2023

Xinming Du & Andrew Wilson
PhD Candidates
Sustainable Development Program
Columbia University
116th and Broadway
New York, NY 10027

Re: Waybill Request WB23-33

Dear Mr. Du and Mr. Wilson:

The Surface Transportation Board (STB) has received your request under 49 C.F.R. § 1244.9(c) of May 30, 2023 for permission to access the unmasked 1984-2021 confidential Carload Waybill Sample (CCWS). Your request explained that the requested data would be used for academic research purposes. The objectives of your research are to study the rail operators' response to slow orders and the resulting effects of these responses on railway safety. Ultimately, you all plan to model the tradeoff between safety and delay and understand how slow speed leads to delays which result in loss of economic revenue. Your request explained that the CCWS is required to fulfill your research objectives and that the revenue data from the CCWS is needed to conduct your analysis and cannot be obtained anywhere else. Notice of your request was published in the Federal Register on June 5, 2023, and no objections were received.

Based on the complete and sufficiently detailed explanations and justifications contained in your request, you will be authorized to access the requested data. Specifically, you will have access to the 1984-2021 unmasked waybills. Although, it is the Board's practice to generally limit disclosure to masked revenue data, unmasked revenues are being released because your request explains with particularity how revenue data will be used and the need to conduct your academic research with actual revenue data. This data may only be used for the academic 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) *Xingming Du – Columbia University*
- b) *Andrew Wilson – Columbia University*

The expiration date for this agreement is June 30, 2024. 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). Any request for renewal will need to provide a detailed explanation for why continued access to the data is necessary and demonstrate that you are continuing to actively use the data for the originally requested purpose.

Waybill Agreement WB23-33

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 1 and 2 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

Waybill Agreement WB23-33

data must be released, and in no event later than five days before the CCWS data is scheduled to be released.

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 Mr. Dusenberry (202) 245-0319 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 **\$120 (\$60 per confidentiality agreement)** is required. Payment can be made through the Board's electronic payment system, Pay.gov. Your payment through Pay.gov will generate a unique Pay.gov transaction number, which you will need to provide with your signed agreement. Pay.gov accepts payment through bank accounts, credit cards, debit cards with a MasterCard or Visa logo, and digital wallet.

Sincerely,

William Brennan

William Brennan, PhD
Chief Economist & Director,
Office of Economics

Waybill Agreement WB23-33

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: Xinming Du

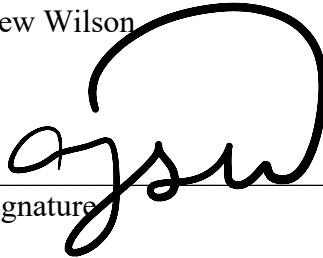
Xinming Du
Signature

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By: Andrew Wilson

Signature

A handwritten signature in black ink, appearing to be 'ajw', written over a horizontal line.



May 30, 2023

Subject: Request for Unmasked Carload Waybill Sample

Dr. Brennan:

We are writing to request access to the unmasked confidential Carload Waybill Sample from 1984–2021. This data will support an academic research plan related to rail operators' responses to slow orders and the resulting effects of these responses on railway safety. To answer these questions, we require data on train origins, destinations, freight revenue, and characteristics, information recorded in the unmasked Carload Waybill Sample but not in its public alternative. The research will be conducted by Xinming Du and Andrew Wilson, PhD candidates in the Sustainable Development program at Columbia University.

Research question:

In this study, we aim to explore how freight train operations change in response to environmental conditions, in particular, whether temperature fluctuations that may lead to slow orders can induce behavioral responses including modifications in train length, speed, weight, and related characteristics. We hypothesize that some of these behavioral responses may have implications for rail safety, though are unsure about the sign and magnitude of these consequences. To our knowledge, we would be the first to explore these questions with actual train operations data.

At its core, our study proposes to explore the influence of weather on rail operations. This requires that we know the weather conditions that trains are exposed to along their route, information we plan to estimate from the origin and destination available in this data. We are interested in weather conditions because thermal expansion and contraction are key considerations in rail design and construction. Rail operators and the trains they operate may also exhibit vulnerability to temperature changes. Using detailed weather and railway accident data, we plan to estimate empirically whether both heat and cold lead to more railway malfunctions, as well as the implications of these malfunctions for rail safety. In a changing climate, adapting to new temperature regimes may require additional investment in rail infrastructure, though such investments have social returns above private returns, which provides a rationale for public support.

Though physical adaptations—including CWR, rail monitoring, and rail retrofits—may increase safety in response to a changing climate, they are slow and expensive. In the short run, behavioral responses on the part of track and rolling stock operators will dominate. In response to slow orders, one such form of adaptation, rail operators may change train characteristics,

including train length, speed, and weight. These responses may have consequences for safety over and above the effects of temperature alone. While aggregated data shows the number of rail accidents per day has declined since the 1980s, trains have also gotten longer. We hope to be able to speak to the tradeoffs inherent in these questions.

In addition, we plan to model the tradeoff between safety and delay. On one hand, train operators care about safety, and accidents are costly for both private operators and society. On the other hand, driving in a cautious manner and at a slow speed leads to delays and results in a loss of economic revenue. We will use the freight revenue in the unmasked dataset to calibrate our model.

Results and confidentiality:

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 Xinming Du and Andrew Wilson. The final output will be an academic paper in an economics journal.

Researchers' qualifications:

Xinming Du is a final-year PhD candidate in Sustainable Development at Columbia University. Her research fields include environmental economics, applied microeconomics, and digital economy. Her papers have been published in the Economics Letters, AEA Papers and Proceedings, Nature Climate Change, and other leading journals in environmental economics. During her PhD, she did consultancy at the World Bank and the International Monetary Fund.

Andrew Wilson is a fifth-year PhD candidate in Sustainable Development at Columbia University. His research explores the impact of air pollution and temperature exposure on human health, how people respond to information about climate risks, and the value of weather and climate forecasting improvements.

Thank you for your consideration of this request.

Sincerely,
Xinming Du
Columbia University
xd2197@columbia.edu

with Andrew Wilson
Columbia University
ajw2206@columbia.edu