Impacts of Freight Consolidation and Truck Sharing on Freight Mobility Dataset

Dataset available at: https://doi.org/10.5281/zenodo.3237605

(This dataset supports report **Impacts of Freight Consolidation and Truck Sharing on Freight Mobility,** https://transet.lsu.edu/wp-content/uploads/sites/16/2019/06/17ITSOKS02_Final_Report.pdf)

This U.S. Department of Transportation-funded dataset is preserved by the Transportation Consortium of South-Central States (Tran-SET) in the digital repository Zenodo (https://zenodo.org/), and is available at https://doi.org/10.5281/zenodo.3237605.

The related final report **Impacts of Freight Consolidation and Truck Sharing on Freight Mobility**, is available from the National Transportation Library's Digital Repository at https://rosap.ntl.bts.gov/view/dot/42413

Abstract: The trucking industry is an important sector of the U.S. economy. However, it is quite fragmented, hindering the efficiency of cargo transportation and the ability for small carriers to identify demands to fill full truck loads. The focus of this research is to study models and algorithms in order to aid online freight marketplaces to identify efficient consolidation strategies. To accomplish this aim, a new mixed integer programming model for the pickup and delivery problem has been developed. The model is geared towards identifying effective freight consolidation opportunities. A branch-and-cut algorithm to solve the model was also developed. The model was applied to several case studies using Transplace, Inc. (a third party logistics company) route data to identify optimized, consolidated routes. Emission impacts were also estimated for both the existing and consolidated routes using monetary equivalent cost (MEC) values. A linear regression model was developed to predict freight movement between metropolitan statistical areas (MSAs). Results of the case studies were then applied to estimate the operation and environment-related costs associated with freight movement from New Orleans MSA to Oklahoma City MSA for all commodities. Finally, the results of the case studies were applied at the national level and projected for future years, to estimate the potential cost savings in freight consolidation. Results indicate that it may be possible to consolidate cargo with only 67% of the currently used number of trucks, which may reduce the operation cost by 23% and MEC by 17%.

Versions:
- Version 1 - 10.5281/zenodo.3237605
- Version 2 - 10.5281/zenodo.3403285

Recommended citation:
Tieming Liu, & Chaoyue Zhao. (2019). Impacts of Freight Consolidation and Truck Sharing on Freight Mobility [Data set]. Zenodo. http://doi.org/10.5281/zenodo.3403285

Dataset description:
This dataset contains 1 .zip file collections described below.

TranSET_17ITSOKS02_Data.zip
This collection contains 5 .xlsx files and 1 .docx file, listed below:
- 1_Electronics freight movement within US.xlsx
- 2_Electronics NAICS data.xlsx
- 3_Shipments data.xlsx
- 4_Ton-miles and emission from NewOrleans to OKO.xlsx
- 5_Tonnage freight movement from NewOrleans to OKO.xlsx
- Data_Notes.docx

The .xlsx file is a Microsoft Excel file, which can be opened with Excel, and other free available software, such as OpenRefine. The .docx file is a Microsoft Word file, which can be opened with Word and other free word processor programs, such as Kingsoft Writer, OpenOffice Writer, and ONLYOFFICE.

National Transportation Library (NTL) Curation Note:
As this dataset is preserved in a repository outside U.S. DOT control, as allowed by the U.S. DOT's Public Access Plan (https://ntl.bts.gov/public-access) Section 7.4.2 Data, the NTL staff has performed *NO* additional curation actions on this dataset. NTL staff last accessed this dataset at http://doi.org/10.5281/zenodo.3403285 on 2019-10-03. If, in the future, you have trouble accessing this dataset at the host repository, please email NTLDataCurator@dot.gov describing your problem. NTL staff will do its best to assist you at that time.