Cargo routing and disadvantaged communities Dataset

Dataset available at: https://doi.org/10.25338/B8934T

(This dataset supports report **Cargo Routing and Disadvantaged Communities,**
https://doi.org/10.7922/G28050WB)

This U.S. Department of Transportation-funded dataset is preserved by the University of California in the digital repository Dryad (https://datadryad.org), and is available at https://doi.org/10.25338/B8934T

The related final report **Cargo Routing and Disadvantaged Communities**, is available from the National Transportation Library's Digital Repository at https://rosap.ntl.bts.gov/view/dot/58491.

Abstract:
Freight is fundamental to economic growth, however, the trucks that haul this freight are pollution intensive, emitting criteria pollutants and greenhouse gases at high rates. The increasing volume and time-sensitivity of freight demand over the past decade has encouraged carriers to take the fastest route, which is often not an eco-friendly route. The increase in urban freight movement has thus brought along negative externalities such as congestion, emissions, and noise into cities. Alternative fuel technologies, such as electric trucks and hydrogen-fuel trucks can significantly reduce freight-related emissions. However, despite their lower operational costs, the high purchase cost and consequent longer payback periods compared to traditional vehicles, have resulted in slow adoption rates. Since the need to reduce global greenhouse gas emissions and local criteria pollutants is immediate, accounting for externalities in carriers' tactical and operational decision-making in the form of eco-routing can bring about desired reductions in emissions. The objectives of this work are to explore the possibilities and potential of eco-routing from the perspective of the carrier, in terms of cost-benefits and trade-offs, and from the perspective of the regulator, in terms of network-wide effects and policy initiatives that could encourage carriers to eco-route. This study evaluates reduction in global greenhouse emissions and local criteria pollutants, with a particular focus on direct impacts on disadvantaged communities in the Southern California Association of Governments (SCAG) region.

Methods:
This study develops two analytical tools -
1. Point-to-Point Routing tool (PPR) to evaluate private impacts of eco-routing for a carrier hauling diesel trucks in the SCAG region.

2. multi-class Traffic Assignment by Paired Alternative Segments (mTAPAS) to evaluate network-wide effects of system-wide freight eco-routing.

These two tools employ -
1. Southern California Association of Governments (SCAG) region network and its attributes
2. Califronia Communities Environmental Health Screening Tool (CalEnviroScreen)

The SCAG network can be requested via SCAG data services program, while the CalEnviroScreen tool can be obtained from the California Office of Environmental Health Hazard Assessment website.

Usage Notes:
Please view the README.txt file for information on the uploaded dataset.

Funding:
U.S. Department of Transportation, Pacific Southwest Region UTC

Recommended citation:

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

doi_10.25338_B8934T_v4.zip:
This collection contains 2 .csv file and 1 .txt file listed below.
- network.csv
- CES3.csv
- README.txt

The .csv, Comma Separated Value, file is a simple format that is designed for a database table and supported by many applications. The .csv file is often used for moving tabular data between two different computer programs, due to its open format. The most common software used to open .csv files are Microsoft Excel and RecordEditor, (for more information on .csv files and software, please visit https://www.file-extensions.org/csv-file-extension).

The .txt file type is a common text file, which can be opened with a basic text editor. The most common software used to open .txt files are Microsoft Windows Notepad, Sublime Text, Atom, and TextEdit (for more information on .txt files and software, please visit https://www.file-extensions.org/txt-file-extension).

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 https://doi.org/10.25338/B8934T on 2022-01-14. 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.