The Transportation Secure Data Center (TSDC) at www.nrel.gov/tsdc provides free, web-based access to detailed transportation data from a variety of travel surveys conducted across the nation.

While preserving the privacy of survey participants, this online repository makes vital transportation data broadly available to users from the comfort of their own desks via a secure online connection.

Data Available through the TSDC

Maintained by the U.S. Department of Energy’s National Renewable Energy Laboratory (NREL) in partnership with the U.S. Department of Transportation (DOT), the TSDC houses data from travel surveys and studies conducted using GPS devices. It features millions of data points—second-by-second GPS readings, vehicle characteristics (if applicable), and demographics—for all modes of travel.

NREL screens the initial data for quality control, translates each data set into a consistent format, and interprets the data for spatial analysis. NREL’s processing routines add information on vehicle fuel economy and road grades and join data points to the road network.

Valuable to Planners, Researchers, and Manufacturers

Using archived data can reduce research costs and save public funds. This valuable transportation data can be used for applications such as:

- Transit planning and travel demand modeling
- Congestion mitigation research
- Emissions and air pollution modeling
- Vehicle energy and power analysis
- Climate change impact studies
- Homeland Security evacuation planning
- Alternative fuel station planning
- Validating transportation data from other sources
- Toll and pricing research.

Contacts

Visit the website (www.nrel.gov/tsdc) for more information and to apply for secure online access to TSDC data, or e-mail tsdc@nrel.gov to ask general questions.

To discuss partnership options, contact NREL’s Jeff Gonder at 303-275-4462 or Jeff.Gonder@nrel.gov; or DOT’s Elaine Murakami at Elaine.Murakami@dot.gov.

Travel data can be combined with demographic, economic, and land use reference information to support analyses. Figure from NREL/TSDC
Example GPS Data Sets

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<th># Persons</th>
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TSDC SECURE PORTAL ENVIRONMENT SUPPORT

DATABASES
- PostgreSQL/PostGIS
- ArcGIS Geodatabase
- Microsoft Access
- Quantum GIS
- ArcGIS
- GRASS

SCRIPTING
- Python (arcapy, numpy, scipy, matplotlib, gdal, psycopg2)
- R

SUPPORT DATA
- Census 2010 demographic and economic data
- Road network data (including grade and class)
- Region-specific land use data

TSDC DATA ANALYSIS EXAMPLES

Vehicle Dwell Time
The chart on the right indicates dwell time following trips of different purposes in California placed in one-hour bins. The image on the right shows 3D columns distributed over a 2D grid of southern California, with the height of each column proportional to the cumulative vehicle dwell time at non-home and non-work locations. Applications for this type of analysis include infrastructure placement for electric and other alternatively fueled vehicles.

Speed and Acceleration on Different Road Types
From left to right, these three density plots show the relative frequency of different speed and acceleration conditions from multiple TSDC data sets on (1) all roads, (2) functional class 1 roads, and (3) functional class 3 roads after transitioning from a functional class 4 road. Applications for this type of analysis include predicting fuel use over potential driving routes.