

Development of High-Resolution Daytime Population Estimates for U.S. Ports



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<http://www.csm.ornl.gov/Internships/abstracts/JanelBrown.pdf>

Abstract

The purpose of this research is to estimate the daily population of workers entering all businesses and facilities within maritime ports in the United States.. Oak Ridge National Laboratory's (ORNL) Geographic Information Science and Technology (GIST) Group has been developing and refining a high-resolution population distribution model and database called LandScan USA. This research will apply LandScan USA's population model to 362 ports and service providers across the US in order to approximate daytime population numbers. It will consist of compiling information from various agency databases, such as Transportation Security Administration (TSA), US Census data, land use, and transportation data. Army Corps of Engineers (USACE) port data points will be enhanced with information from proprietary port websites to estimate port boundaries. The data sets will then be incorporated into ArcView Geographic Information System (GIS), which in turn will display the location of the ports with their associated facilities. Combining these locations with the LandScan population data will provide population estimates of each port and its service providers.

Implemented Tasks

- Define Port Concepts
- Identify Facilities within Ports
- Identify Employment at Facilities in Port Areas
- Develop Port Measure of Employment

Approach

- 1: Immediate measures of impacted working population
- 2: Extension with more sophisticated estimates and formulated as Data System
- 3: Extension to broader concept of port impact areas through examination of network effects and indirect economic impacts. Examine impacts on productivity and possible shift of economic activity because of increased cost or delays.

Descent Methods

- Databases
- LandScan USA
- Transportation Security Administration (TSA)
- US Census data
- Land use and transportation data
- Internet
- ArcView GIS

Objective

Create GIS of U.S. Ports, to model the estimate population of the ports sites and refine daytime population estimate for each 362 port facilities.



Purpose

To develop a high-resolution population estimate applying the techniques developed for ORNL's LandScan USA database for 362 US Ports and associated services providers at each port location.

Benefits

Better assessment of port worker population potentially at risk during an emergency.

Results

Daytime population estimate for each port that can be incorporated into the LandScan USA model.

Other Project

Developing a Geographic Information System (GIS) for Simulating City Bus Movements



Census (l), LandScan(r) Here the two maps are being compare by ORNL's staff, use LandScan to demonstrate high-resolution data used by TSA.

