

## LandScan Global Population Databases

### The World's Finest Population Distribution Data

#### Name of ORNL Technology:

LandScan Global Population Databases.

#### Critical Features of LandScan:

- The world's most accurate and reliable, geographically based, time-of-day population distribution model and databases.
- Integrated with Transportation Routing (such as TRAGIS) for route-specific small area population impact analysis and atmospheric dispersion models (such as HPAC).
- The LandScan data are available in GIS (ESRI grid) format.

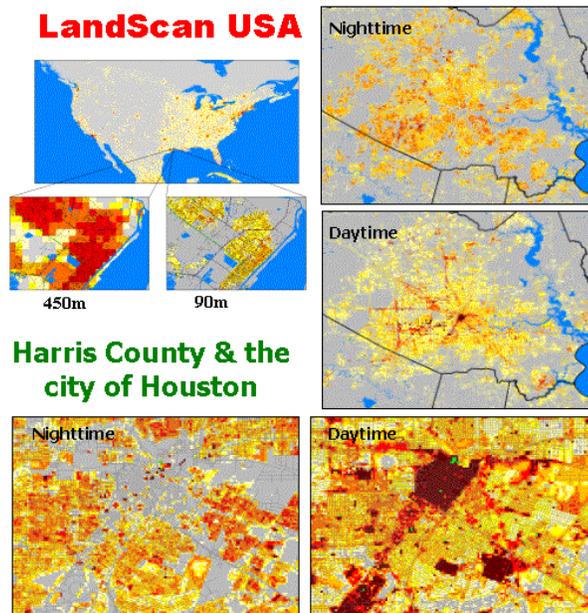
#### Utility of LandScan:

- Allows quick and easy assessment, estimation, and visualization of population at risk.
- Provides high resolution nighttime (residential) as well as daytime population distributions.
- Demographic (age, race, sex) and socioeconomic characteristics are integrated with population data to allow easily integration with risk and impact assessment models.
- Critical component of Emergency planning and management, Rapid risk assessment, Evacuation planning, Consequence assessment, Mitigation Planning and implementation.

#### Brief Description of LandScan:

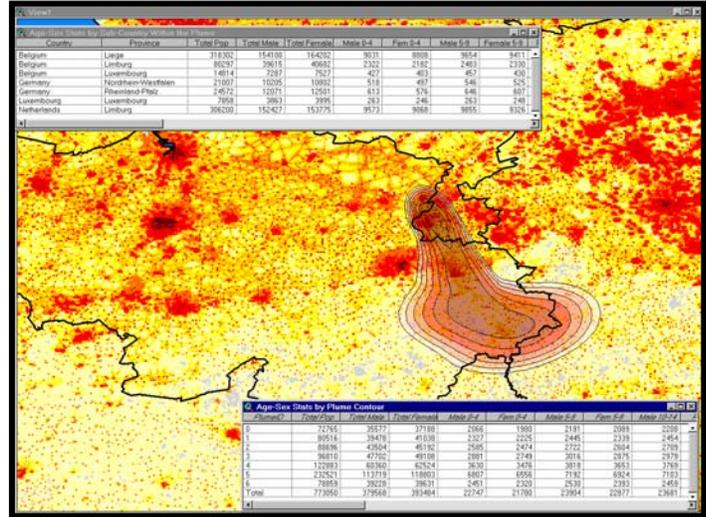
Using an innovative approach with Geographic Information System and Remote Sensing, ORNL's LandScan global population project has developed a population distribution model that produces the finest resolution population distribution data available for the entire world and the Continental US. LandScan global at 1 km resolution represents an "ambient population" (average over 24 hours) and is 2400 times more spatially refined than the previous standard. As an expansion to global LandScan, ORNL is currently developing a very high-resolution (90m cell) population distribution data (LandScan USA) for the US. LandScan USA includes nighttime (residential) as well as daytime population distributions. LandScan USA is more spatially refined than the resolution of block-level census data and includes demographic attributes (age, sex, race). The potential benefit of LandScan USA has been demonstrated for 29 counties covering coastal Texas and Louisiana including the Houston metropolitan area. Locating daytime populations requires not only census data, but

also other socio-economic data including places of work, journey to work, and other mobility factors. The combination of both residential and daytime populations will provide significant enhancements to geospatial applications ranging from homeland security to socio-environmental studies.



## Important Analyses and Visualization through LandScan:

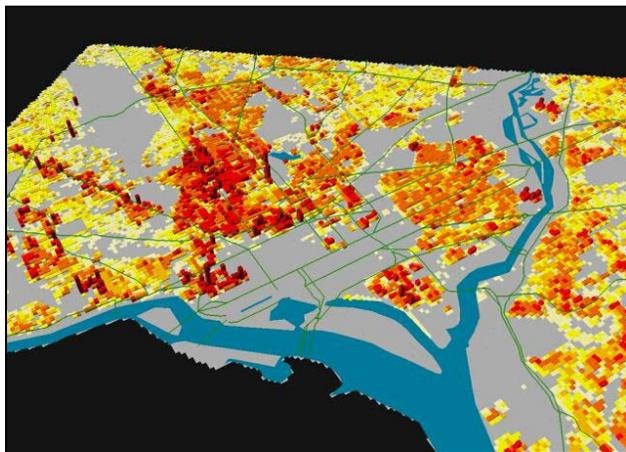
- Spatial and temporal (day vs. night) visualization of population distribution
- How many people are impacted? Where are those people? What are the demographic distributions of those people?



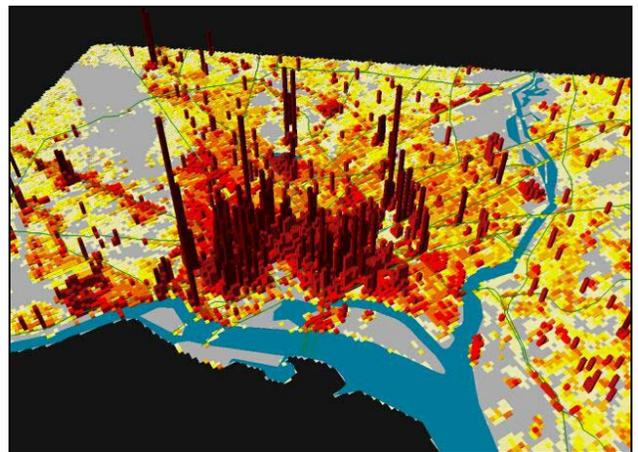
## Availability of LandScan:

LandScan population data is available in GIS (ESRI Grid) format and can be used with most GIS software.

- LandScan Global (1 km spatial resolution; 175 MB)
  - 2002 (copyrighted) version available from [www.ornl.gov/gist](http://www.ornl.gov/gist)
- LandScan USA Interim (450m spatial resolution; 28 MB)
  - 2000 census based; available for CONUS
- LandScan USA (90m spatial resolution; currently 100 MB)
  - 2000 Census based; nighttime and daytime distributions; alpha version available for 120 major urban areas; development in progress



Washington DC Nighttime



Washington DC Daytime

**Operability of LandScan:**

- LandScan population data is available in GIS (ESRI Grid) format and can be used with most GIS software. In addition, an ASCII version of the data is also available for specific application software.
- It requires ESRI GIS software or other commercial GIS software or commercial GIS based application software that can import the data.
- Any DOE EOC staff with basic training in GIS software can use the LandScan data bases.
- GIS-based tools have been developed that allows analysis of LandScan data during emergency situations that can be easily integrated with DOE Emergency Operations Center.
- EOC staff can be easily trained (few hours) to operate the software and analyze the data.
- The data can be exported to common picture formats and visualized with other geospatial information.

**Current Users of LandScan:**

- LandScan population data is the accepted standard for estimating population at risk by the DoD and DOS.
- LandScan is being used at the Health and Human Services Command and Control Center.
- Other agencies including DTRA, NIMA, DOE, USGS, NASA, EPA, CDC, and NIH are current users of the data for their research and development and routine exercises.
- Over 750 non-defense registered users of LandScan data worldwide including WHO and the UN agencies.
- Used in Rand McNally's World Goode's Atlas and National Geographic Maps.

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