



NATIONAL SECURITY SCIENCES

Population Dynamics

Understanding human activity from local to global scales

INTRODUCTION

Oak Ridge National Laboratory (ORNL) is a world leader in population dynamics, focusing on high resolution global population datasets, characterization, and modeling. Our teams help provide a dynamic understanding of the world's population through high-resolution gridded estimates and modeling.

MISSION

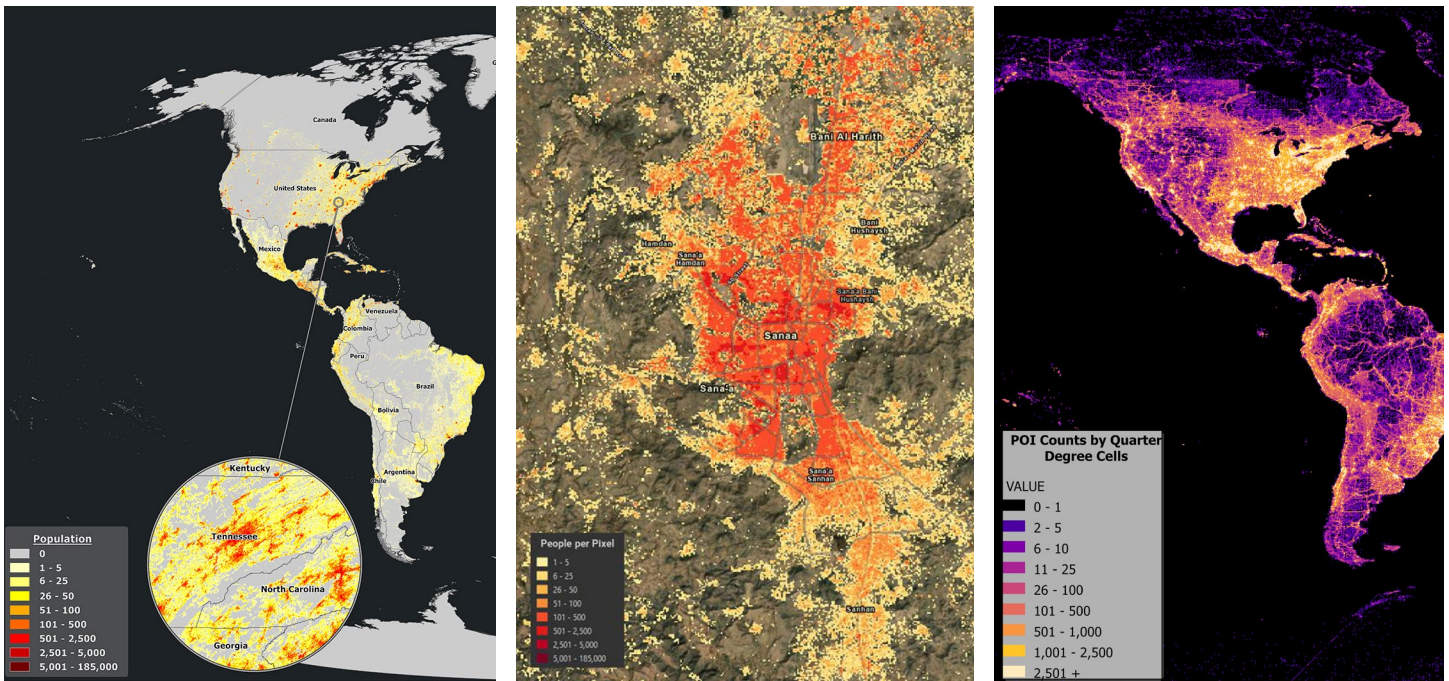
Deliver enhanced, global-scale understanding of human populations and their environments to support safe, secure, and resilient communities.

IMPACT

- Guidance for U.S. government, international partners, and the humanitarian community to guide recovery efforts following natural disasters such as earthquakes in Iran, tsunamis in Sri Lanka, and hurricanes in the Bahamas
- Simulations that model how individual reactions impact the population as a whole help [researchers can design and measure interventions](#), applicable to [epidemics](#), emergency management, or national security events
- Social media analysis to help detect and mitigate disinformation spread

The population dynamics capabilities at ORNL provide valuable insights and tools for understanding human interactions with their environments. By leveraging advanced modeling, real-time data analysis, and interdisciplinary research collaboration, ORNL contributes significantly to disaster response, community resilience, and informed decision-making.





ORNL KEY DIFFERENTIATORS

World-renowned decision support platforms with a legacy of real-time data and trusted technology

- **LandScan (Global, USA, and HD)** global population datasets are critical in guiding situational awareness and recovery efforts in humanitarian crises through high-resolution planetary population data
- **PlanetSense** enables researchers to analyze human activity through economic, cultural, and social lenses with more than 250 million global points of interest, dynamic location intelligence information, and visualization tools

Multidisciplinary teams answering questions about the world faster and more completely than ever before

- The **Human Geography Group** reveals the dynamic human landscape—at the planet, country, neighborhood, and building levels—to discover vulnerable populations and explore the impacts of weather events, geopolitical conflicts, or changes in governmental policies.
- The **Location Intelligence Group** uses open data to understand places and the factors that influence human activity in them. Location intelligence informs everything from emergency response and urban planning to disinformation and its impacts.

Access to unparalleled national laboratory resources

- High performance computing
- Autonomous systems and artificial intelligence
- Leading multidisciplinary teams across a wide variety of science fields, including national security, cyber resilience, and nuclear nonproliferation.

CONTACT

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