Using Geospatial Information and Technologies to Advance U.S. National Priorities

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U.S. Census Bureau
U.S. Census Bureau Vision and Mission

U.S. Census Bureau Vision
To be the trusted source for timely and relevant statistical information, and the leader in data-driven innovation.

U.S. Census Bureau Mission
To serve as the nation's leading provider of quality data about its people and economy.
Our Work at the Census Bureau

Data Collection
3 Primary Censuses
Over 100 ongoing surveys

Data Analysis
Editing, Imputation, Estimation
Disclosure and Confidentiality

Data Dissemination
Data Tools and Applications
data.census.gov
The Geographic Support Program

Geospatial information provides the foundation that supports Census Bureau data collection, analysis, and dissemination.
The MAF/TIGER System Today

Geospatial information in our MAF/TIGER System includes...

- Over 14 million unique geographic areas, including legal, administrative, and statistical areas (e.g., census tracts, block groups, blocks)
- Legal boundaries for approximately 40,000 units of government
- Approximately 7 million miles of roads
- More than 144.5 million housing units
- Structure points for approximately 94% of those housing units
The Evolving Geographic Support Program

Key focus areas:

• Workforce Development
• Data Science
• Artificial Intelligence
• Machine Learning
• Cloud Computing
• Satellite Imagery
• Open-source Programming
• Statistical Grids
• Data Visualizations
• Interactive Maps
Building a Workforce for the Future

**Training Goals**
- Develop technical and occupation-specific competencies
- Promote innovation, adaptability and industry trends
- Upskill staff to solve complex problems using data science

**Geography University (GEO U)**
- Broad curriculum for all staff that includes courses such as: Esri, FME, QGIS, GitLab, SQL, Python, Cloud Computing, Plain Language Writing, Communications, and Project Management

**Data Science Program**
- Diverse Curriculum, Hands-on Experience, Ongoing Mentorship
- Courses: AI/ML, Data Visualization, Cleaning Data in Python
Machine Learning and Automated Change Detection

1. Moderate-Resolution Change Detection
   - Identify change areas
   - Intersect change areas with 1-km grids
   - Request high-resolution imagery for change areas

2. High-Resolution Change Detection
   - Refine change areas
   - Intersect change areas with building footprints

3. Integrate with Intelligence Database
   - Integrate parcels information with change areas

Google Earth Engine
Enterprise Data Lake
Community GIS Portal

United States Census Bureau
U.S. Census Bureau Geography
Step 1: Automated Change Detection
Step 2: Automated Change Detection
Step 3: Parcel Matching
Geospatial Data Files

- Shapefiles
- Geodatabases
- Cartographic Boundary Files (Geodatabases & KML format)
- Application Programming Interface (API)
- TIGERweb

https://www.census.gov/tiger-data
Statistical Grids Program at the Census Bureau

The Geographic Support Program will provide Census Bureau data in Grid format to enable:

• Standardized, stable geographic units for statistical interoperability
• Greater disaggregation of Census Data
• Easier sharing of data across federal government agencies and data stakeholders
• Improved disaster response and climate resilience
• Easier global statistical comparison and analysis
Data Visualizers

Interactive Maps (census.gov)
Addressing National Issues and Concerns
Health Security and COVID-19

Received a COVID-19 Vaccine
Percentage of adults in households who have received a COVID-19 vaccine

Week 27 (March 17-29, 2021)

Received a COVID-19 Vaccine: Adults in households who have received a COVID-19 vaccine

Source: U.S. Census Bureau, Household Pulse Survey

Notes:
The Household Pulse Survey is designed to deploy quickly and efficiently, collecting data on a range of ways in which people’s lives have been impacted by the pandemic. Data will be disseminated in near real-time to inform federal and state response and recovery planning.
Addressing National Issues and Concerns

Digital Equity
Addressing National Issues and Concerns

Emergency Management
Addressing National Issues and Concerns

Measuring Community Resilience

Community resilience is the capacity of individuals and households to absorb, endure, and recover from the health, social, and economic impacts of a disaster such as a hurricane or pandemic. When disasters occur, recovery depends on the community’s ability to withstand the effects of the event. In order to facilitate disaster preparedness, the Census Bureau has developed new small area estimates, identifying communities where resources and information may effectively mitigate the impact of disasters.

Variation in individual and household characteristics are determining factors in the differential impact of a disaster. Some groups are less likely to have the capacity and resources to overcome the obstacles presented during a hazardous event. Resilience estimates can aid stakeholders and public health officials in modeling these differential impacts and developing plans to reduce a disaster’s potential effects.

Individual and household characteristics from the 2018 American Community Survey (ACS) were modeled, in combination with publicly available data from the 2016 National Health Interview Survey (NHIS), to provide tract and county level estimates.

Community Resilience Estimates (census.gov)
Addressing National Issues and Concerns

Measuring Poverty
Census Bureau Leadership

International Leadership
- United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)
- High-level Group of the Integrated Geospatial Information Framework (HLG-IGIF)
- 2030 Agenda for Sustainable Development - SDGs

National Leadership
- Federal Geographic Data Committee
- National Geospatial Data Assets
- National Spatial Data Infrastructure Strategic Plan
- National issues and concerns
National Leadership
Federal Geographic Data Committee (FGDC) and National Geospatial Data Assets (NGDA)

Geographic Support Program manages 2 themes and contributes 35 of 173 datasets (20%)
National Leadership
Building the NSDI Strategic Plan of the Future

The Census Bureau is championing the development of a new National Spatial Data Infrastructure Strategic Plan and engaging with leaders across all of government, the United Nations, Private Sector, and Academia.
National Leadership
Building the NSDI Strategic Plan of the Future

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<th>Goals</th>
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Foster multi-sectoral partnerships and develop a governance framework that promotes collaboration.

Establish a policy and legal framework for instituting effective, efficient, and secure management of geospatial data.

Achieve a resourced NSDI that identifies the financial needs and means for delivering on the NSDI Strategic Plan.

Monitor and advance the nation’s geospatial data portfolio and supporting infrastructure.

Prepare for, Embrace, and Adopt advancements in technology.

Shape the development and adherence of national and international consensus standards.

Bring together different strengths and perspectives to drive achievements towards common goals.

Establish training and education to promote a geo-enabled workforce and society.

Strengthen awareness and understanding of the NSDI and its value.
Thank You

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