Spatial Integration of Statistical Data and Census Data for Global Studies

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China Data Center
University of Michigan
Established in 1997, China Data Center at the University of Michigan is an international center for advancing the study and understanding of China. The Center offers the online China data service (http://chinadataonline.org) for Statistical Data, Census Data, and Spatial Data, which has been the primary data sources for China research and education across countries and regions.

The Center’s missions include:

• To support research in the human and natural components of local, regional and global change;
• To promote quantitative research on China;
• To promote collaborative research in spatial studies;
• To promote the use and sharing of China data in teaching and research.
The Flagship Data Products & Services

The Electronic China Data Collections:
- The Complete Collection of China 2000 Provincial Population Census Data Assemblies
- The Complete Collection of China 2000 County Population Census Data Assemblies
- China Comprehensive Statistical Data Compilation
- China Provincial and Professional Statistical Yearbooks

The Online China Data Service:
- Online China Statistical Data Service Subscription (chinadataonline.org)
- Online China Population Census Data Subscription (chinadataonline.org)
- Online China Demographic Maps and Reports (DemographicChina.org)
- Online China Survey Data Network (chinasurveycenter.org)

GIS Based China Spatial Data:
- 2000/2010 China Township Population Census Data with GIS Maps
- 2000/2010 China County Population Census Data with GIS Maps
- 2000/2010 China Province Population Census Data with GIS Maps
- 2000/2010 China Grid Population Census Data with Township Boundaries
- China 1995 Industrial Census Data with GIS Maps
- China 2001 Basic Unit Census Data with GIS Maps
- China 2004/2008 Economic Census Data with GIS Maps
- China City and County Statistical Indicators with Maps (1996-)
China Data Online
- The primary data source for China studies

Statistical Database:
- Monthly Statistics
- National Statistics
- Provincial Statistics
- City Statistics
- County Statistics
- Monthly Industrial Data
- Yearly Industrial Data
- Statistics on Map
- Statistical Yearbooks

Census Database:
- Population Census 1982
- Population Census 1990
- Population Survey 1995, 2005
- Province Census 2000
- County Census 2000
- Economic Census 2004
Demands and Challenges for Spatial Data Service and Analysis

- Integration of data (manipulation of mass data from different sources, time and formats)
- Integration of methodology for data analysis
- Integration of knowledge (results from research)
China & US Geo-Explorers
An Integration of Spatial Data and Analysis for China Studies
China and US Geo-Explorers
Web Based Platform for Spatial Intelligence

**Objectives:**
- To provide a web-based platform for data integration and spatial analysis
- To facilitate multidisciplinary studies and applications by bringing new methodology
- To promote knowledge sharing with new technology, especially for people without GIS skills

**Features:**
- Efficient data integration for spatial and non-spatial data
- Quick and accurate location analysis and spatial assessment
- Identify spatial patterns and trends
- Generate time-saving, easy-to-use, and pre-formatted reports as well as customized reports
- Dynamic maps for visual analysis
- Applications: proximity analysis, buffer analysis, cluster analysis, simulation and projections,....
China Data Sources
Authoritative, Unique, Comprehensive

- **Government Statistics**
  - Provincial Statistics (1949 - )
  - City Statistics (1996 - )
  - County Statistics (1997 - )

- **Population Census**
  - Census 1953 (GRID)
  - Census 1964 (GRID)
  - Census 1982 (GRID)
  - Census 1990 (GRID)
  - Census 2000/2010 (province, city, county, township, GRID)

- **Economic Census**
  - Industrial Census 1995 (province, city, county, ZIP)
  - Basic Unit Census 2001 (province, city, county, ZIP)
  - Economic Census 2004/2008 (province, city, county, ZIP)

- **Establishments** (individual companies and organizations)
  - Industrial Census(1995)
  - Basic Unit Census (2001)
  - Economic Census (2004/2008)

- **Geography and Environment**
  - Land Use data (GRID)
  - Night-Time data (GRID)
  - Transportation (railway, highway, roads)
  - Rivers and Lakes
  - More layers to be added ...
US Data Sources
Rich, Comprehensive, Comparable

• Population Census
  (State, County, Tract, Block, Metropolitan, CCD, Place)
  o Population Census 1970
  o Population Census 1980
  o Population Census 1990
  o Population Census 2000
  o Population Census 2010
  o American Community Survey

• Business Patterns
  (State, County, Metropolitan)
  o Yearly business patterns 1986 - 2013

• Business Units
  o Business Records 2013 (85 industries)
  o Aggregated reports 1997-2013
    (State, County, Metropolitan, CCD, ZIP)
Primary Functions

Data Selection
- By administrative units (province, city, county, twp)
- By locations and spatial range (X & Y coordinates)
- By establishments

Reports
- Summary Report
- Comparison Report
- Original Data Report
- Customized Report

Time series
- Time series visualization in Charts
- Spatial-temporal data extraction
- Instant maps by thousands of variables

Maps
- Export maps to PDF or JPG files
- PDF file

Outputs
- Word file
- Excel file
- GIS Shape files
Selection by Administrative Regions

Select by map

Select by administrative units
Selection by Groups
Selection by Locations

Select by X & Y coordinates

Select by locations on map
Selection by Business Establishments
Export of Space-Time Series Data
Graphic Analysis: Histogram
Graphic Analysis: Scatter Plot
Graphic Analysis : Multi-Plots
Multiple Outputs

Summary Report

Date: 23/10/2014
Selection: (31 selected) Anhui, Beijing, Chongqing, Fujian, Gansu, Guangdong, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jilin, Liaoning, Neimenggu, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Tianjin, Xinjiang, Xizang, Yunnan, Zhejiang

2000 Total Number of Households
2000 Total Number of Family Households
2000 Total Number of Collective Households
2000 Total Population
2000 Total Males
2000 Total Females
2000 Sex Ratio
2004 Number of All Households
2001 Total Industrial Units
1995 Total Industrial Units
Paddy
Dryland

Datasource:
- 2000 China Population Census
- 2000 China Industrial Census
- 2001 China Basic Unit Census
- 2004 China Economic Census
- 2000 China Population Census
- 2000 China Population Census
- 2000 China Population Census
- 2000 China Population Census
- 2000 China Population Census
- 2000 China Population Census
- 2000 China Population Census
Applications

- Disaster Assessment
- Regional Planning
- Environmental and Public Health
- Religious Studies
- Business Site Selections
- Projections and Simulations
- Household/Field Surveys
- Comparative Study of US and China
The Spatial Distribution of Age 65+ in US and China
The Similarity Between Taizhou City and Other Cities in China and Metropolitans in the US
The Similarity Between Ann Arbor and Other Metropolitans in the US and Cities in China
Future Directions

- Voluntary data
- Remote sensing data service
- Data coverage expanded to other countries and regions
- Integration of more methodologies for spatial data analysis
- Integrated spatial data analysis for China, US and other countries and regions
Building An Spatial Infrastructure for Global Studies

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