



China Data Institute

chinadatacenter.net
China-data-online.org

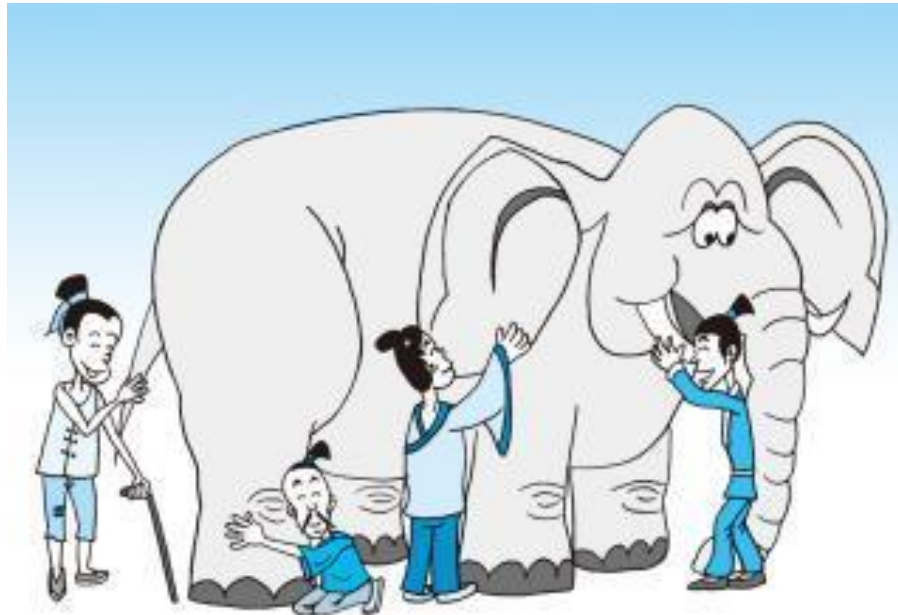
Spatial Data Analysis with China Geo-Explorer

Shuming Bao
China Data Institute

Ecological Approach: A System Theory

Wikipedia: Systems theory. https://en.wikipedia.org/wiki/Systems_theory

“A system is a cohesive conglomeration of **interrelated** and **interdependent** parts that is either natural or man-made. Every system is delineated by its **spatial** and **temporal** boundaries, surrounded and influenced by its **environment**.”

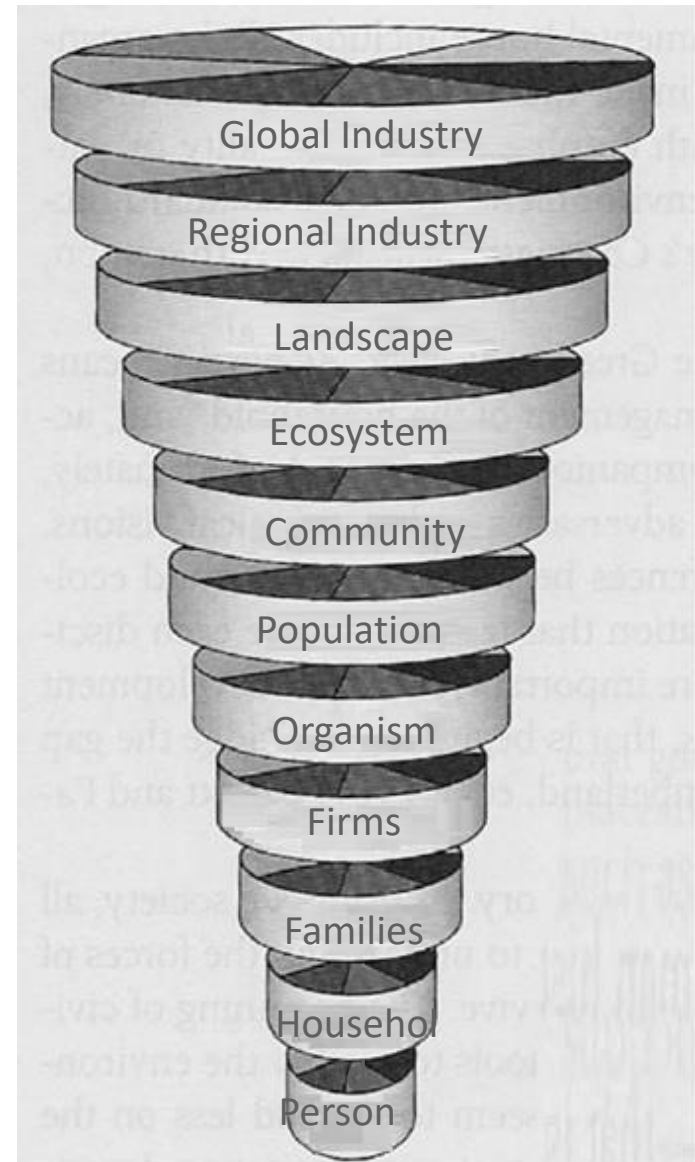
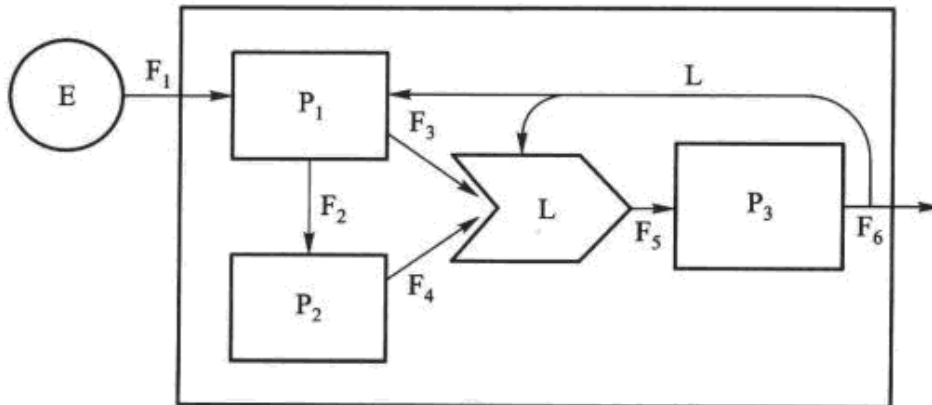


Ecological Models for Social Sciences

Fundamental Assumptions:

- ❑ Everything is related
- ❑ Degenerative system
- ❑ Increasing ecological risks:
 - Environmental risk
 - Health risk
 - Social risk

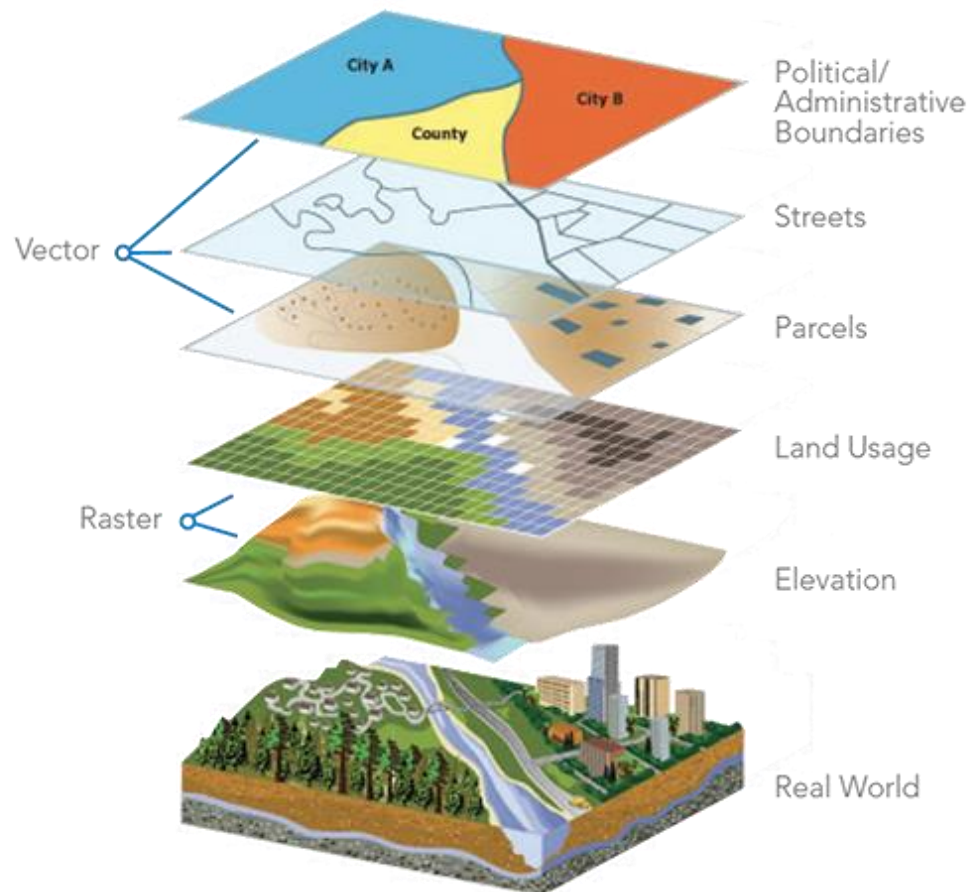
An graphic model of ecosystem



Features of Spatial Data Infrastructure

Spatial Data Platform: A Unique Platform for Multi-sources and Multi-scale Data Integration:

- ❑ Location
- ❑ Time
- ❑ Integration



Topics

- **Principles** for spatial database design
- **Methodologies** for ecological analysis
- **Functions** for spatio-temporal analysis
- **Applications** of China Geo-Explorer
- **Directions** for future work

Principals for Spatial Database Design

Principals:

- **Comprehensive** data coverage
- **Comparable** spatio-temporal data structure
- **Compatible** multi-source data structure
- **Consistent** multi-scale data structure

Primary Factors:

1. Space (boundary)
2. Time
3. Scale (Sub-systems)

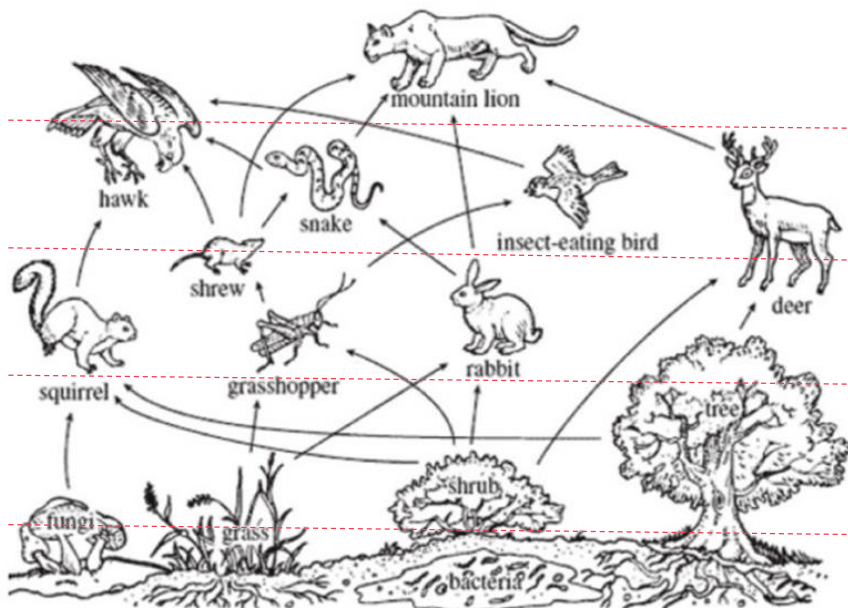
Methodologies for Ecological Analysis

❑ **Classification** (spatial and non-spatial)

❑ **Identification**

- Patterns
- Linkages (Inter and intra-regions, Inter and intra-sectors)
- Changes (spatio-temporal patterns and structures)

❑ **Modeling**



Tertiary consumers (predator)

Secondary consumers (meat)

Primary consumers (vegetable)

Producers (make own food and do not depend on any other organism for nutrition)

Environment (Detritivores & Decomposers)

Questions for Spatial Data Analysis

- What are the spatial **patterns** of data?
- What are the spatial **structures** of data?
- What are the spatial **trends** (patterns and structures) over the time?
- What are spatial **interactions** between different regions and aspects of the society over the time and space?
- What are the potential **impacts** of proposed actions on the complex systems?

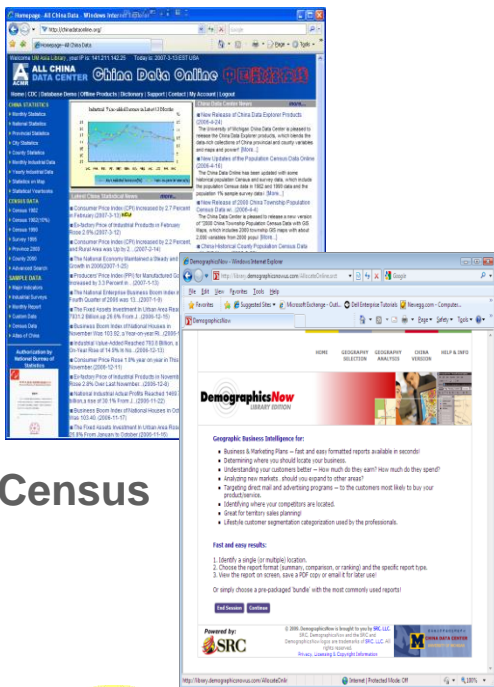
Functions for Spatio-temporal Data Analysis

- Report Analysis
- Chart Analysis
- Spatial Analysis
- Statistical Analysis
- Map Analysis

China Geo-Explorer

An Integration of Spatial Data and Analysis for China Studies

Statistics



The screenshot shows the All China Data Center website with a navigation menu on the left and a main content area displaying various statistics and maps. A 'DemographicsNow' section is highlighted, featuring a map of China and text about geographic business intelligence.

DemographicsNow

Geographic Business Intelligence for:

- Business & Marketing Plans - fast and easy formatted reports available in seconds!
- Determining where you should locate your business.
- Identifying your customer better - how much do they spend? How much do they spend?
- Identifying new markets, should you expand to other areas?
- Targeting direct mail and advertising programs - to the customers most likely to buy your products/services.
- Identifying where your competitors are located.
- Great for territory sales planning.
- Useful customer segmentation categorization used by the professionals.

Fast and easy results:

1. Identify a single or multiple location.
2. Choose the report format (summary, comparison, or ranking) and the specific report box.
3. View the report on screen, save a PDF copy or email it for later use!

Or simply choose a postpaid bundle with the most commonly used reports!

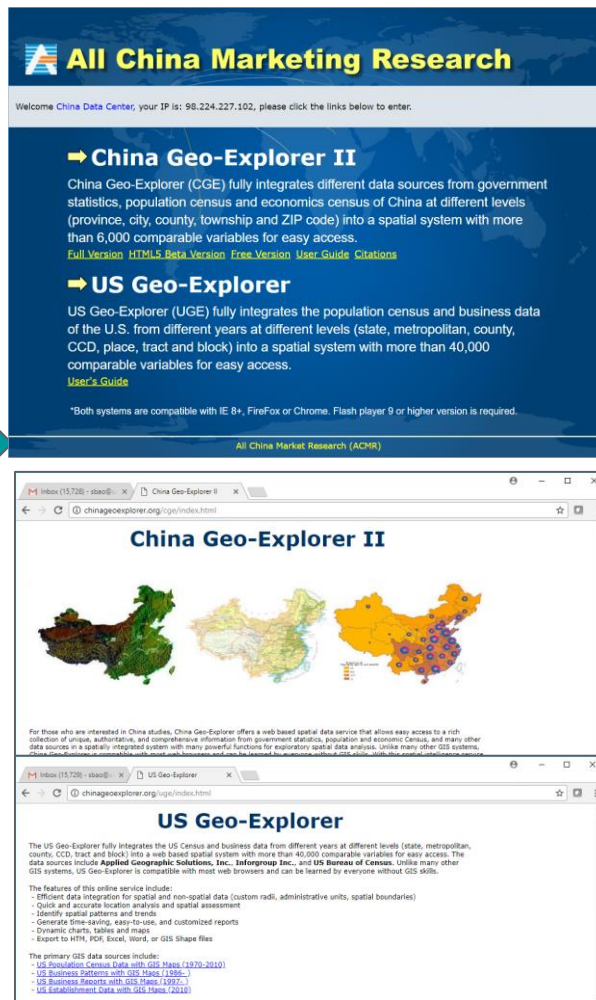
Census



Three circular maps showing population census data for China. The top map is titled '中国历史县级人口普查数据' (Historical County Population Census Data with MAPS) and covers the years 1953, 1964, 1982, 1990, and 2000. The middle map is titled '中国2000县级人口普查资料' (China 2000 County Population Census) and shows data for the year 2000. The bottom map is titled '四川省' (Sichuan Province) and shows data for that specific region.

GIS

Data



The screenshot shows the All China Marketing Research website. The main heading is 'All China Marketing Research'. Below it, there are two sections: 'China Geo-Explorer II' and 'US Geo-Explorer'. The 'China Geo-Explorer II' section states: 'China Geo-Explorer (CGE) fully integrates different data sources from government statistics, population census and economics census of China at different levels (province, city, county, township and ZIP code) into a spatial system with more than 6,000 comparable variables for easy access.' The 'US Geo-Explorer' section states: 'US Geo-Explorer (UGE) fully integrates the population census and business data of the U.S. from different years at different levels (state, metropolitan, county, CCD, place, tract and block) into a spatial system with more than 40,000 comparable variables for easy access.' Below these sections are three maps of China and a section titled 'US Geo-Explorer' with a list of features and data sources.

China Geo-Explorer II

China Geo-Explorer (CGE) fully integrates different data sources from government statistics, population census and economics census of China at different levels (province, city, county, township and ZIP code) into a spatial system with more than 6,000 comparable variables for easy access.

US Geo-Explorer

US Geo-Explorer (UGE) fully integrates the population census and business data of the U.S. from different years at different levels (state, metropolitan, county, CCD, place, tract and block) into a spatial system with more than 40,000 comparable variables for easy access.

US Geo-Explorer

The US Geo-Explorer fully integrates the US Census and business data from different years at different levels (state, metropolitan, county, CCD, tract and block) into a web based spatial system with more than 40,000 comparable variables for easy access. The data sources include Applied Geographic Solutions, Inc., Intergraph, Inc., and the Bureau of Census. Unlike many other GIS systems, US Geo-Explorer is compatible with most web browsers and can be learned by everyone without GIS skills.

The features of this online service include:

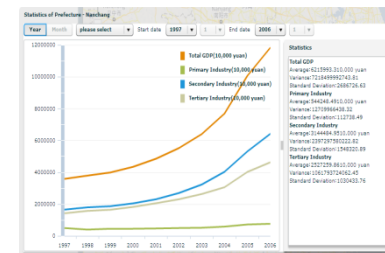
- Efficient data integration for spatial and non-spatial data (custom rsdri, administrative units, spatial boundaries)
- Quick and accurate location analysis and spatial assessment
- Identify spatial patterns and trends
- Generate time-saving, easy-to-use, and customized reports
- Dynamic charts, tables and maps
- Export to HTML, PDF, Excel, Word, or GIS Shape files

The primary GIS data sources include:

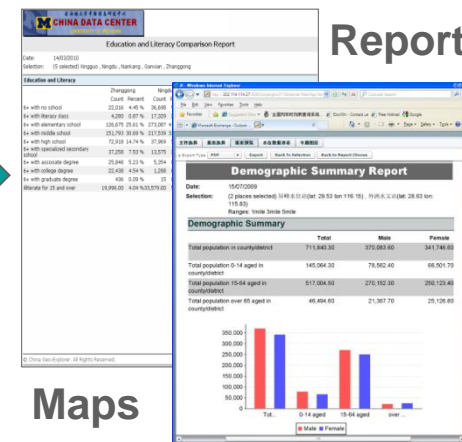
- US Population Census Data with GIS Files (1970-2010)
- US Business Patterns with GIS Files (1989-)
- US Business Reports with GIS Files (1997-)
- US Establishment Data with GIS Files (2001)

Output

Charts



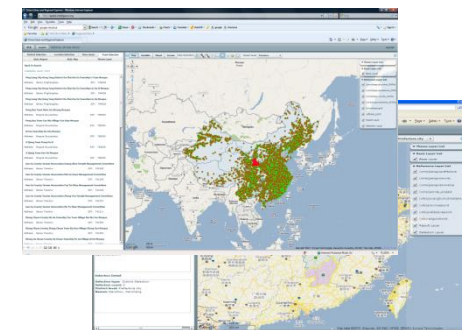
Tables



The screenshot shows a 'Demographic Summary Report' table and a bar chart. The table displays population statistics for different age groups. The bar chart shows the population distribution by age group, with a legend for 'Total' and 'Over 65'.

Age Group	Total	Male	Female
Total population in country/region	711,842,330	372,083,400	341,748,930
Total population 0-14 aged in country/region	145,064,330	75,962,400	69,101,930
Total population 15-64 aged in country/region	417,264,530	216,182,300	201,082,230
Total population over 65 aged in country/region	48,513,470	25,187,710	23,325,760

Maps



The screenshot shows a GIS map of a geographical area, likely a city or region in China. The map displays various data layers, including roads, buildings, and administrative boundaries. A legend on the right side of the map identifies the different data layers.

Data: China



- **Government Statistics**
 - Provincial Statistics (1949 -)
 - City Statistics (1996 -)
 - County Statistics (1997 -)
- **Population Census**
 - Census 1953
 - Census 1964
 - Census 1982
 - Census 1990
 - 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** (more than 7 millions companies and organizations)
- **Geography and Environment**
 - Land Use data
 - Night-Time data
- **Base Maps**
 - 2000
 - 2010
 - 2000-2010

China Geo-Explorer

Administrative Units – Location – Chart – Time Series – Establishment
– GIS Map Export – China-US Comparison – Map Library

Base Year: 2000 2010 2000-2010

Group: Single group Multi-groups

Level: Province City County Town Any area

Region Customized Report Standard Report **Upload your data**

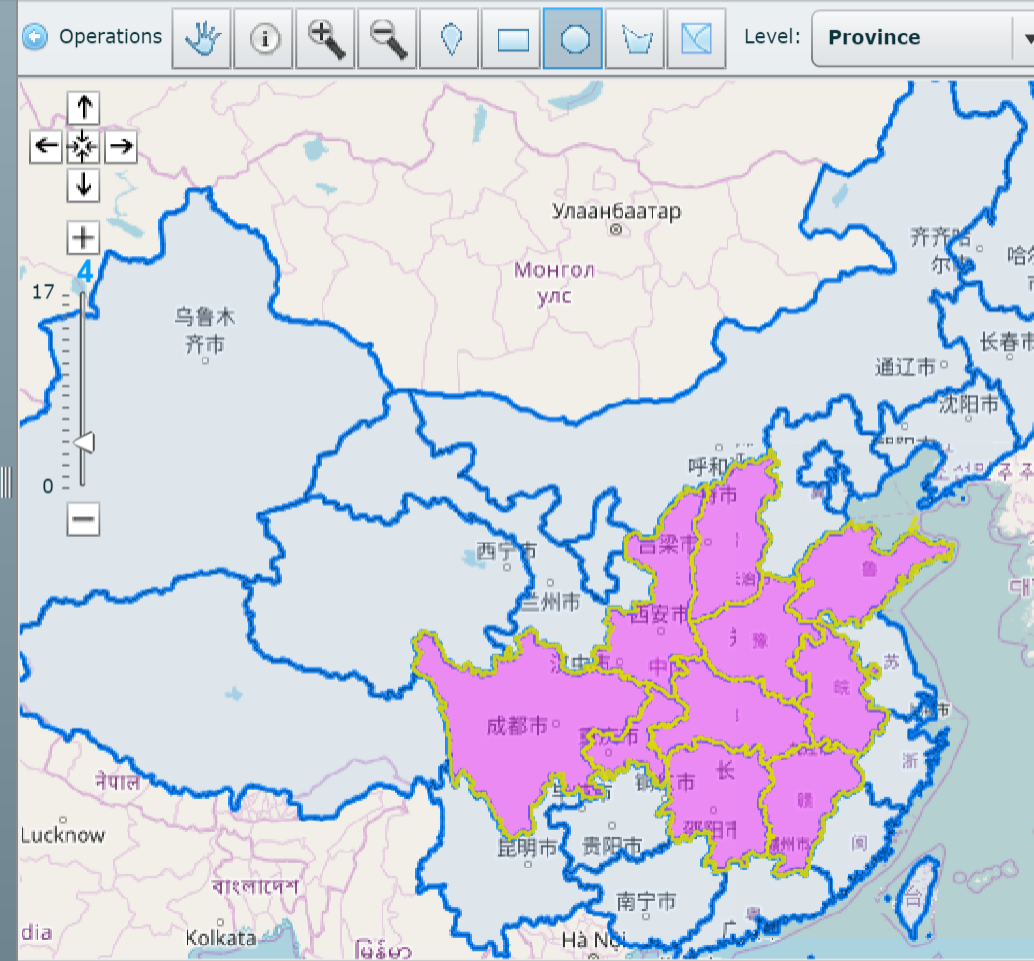
China (Province) [Back to the Upper Level](#)

Beijing
Fujian
Gansu

Selection

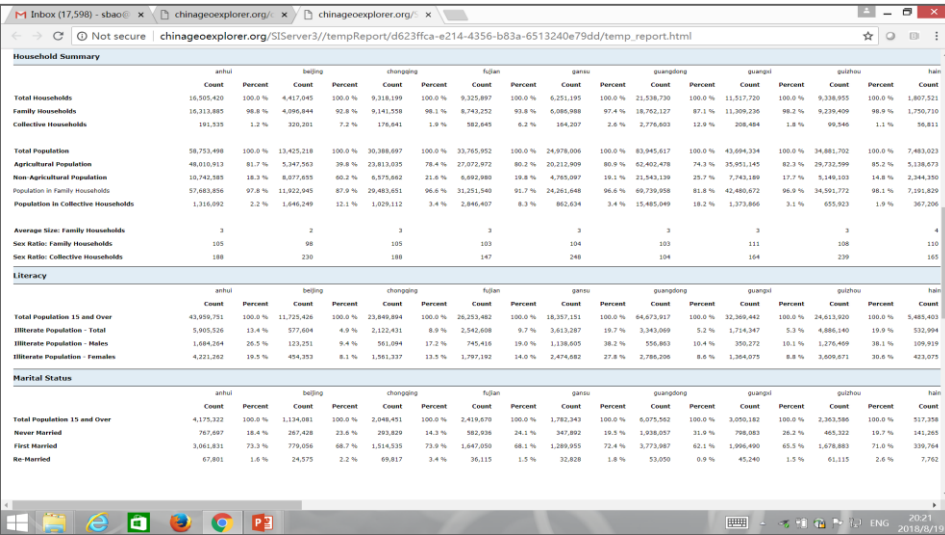
Anhui
Chongqing
Henan
Hubei
Hunan
Jiangxi
Shaanxi

Selection count: 10

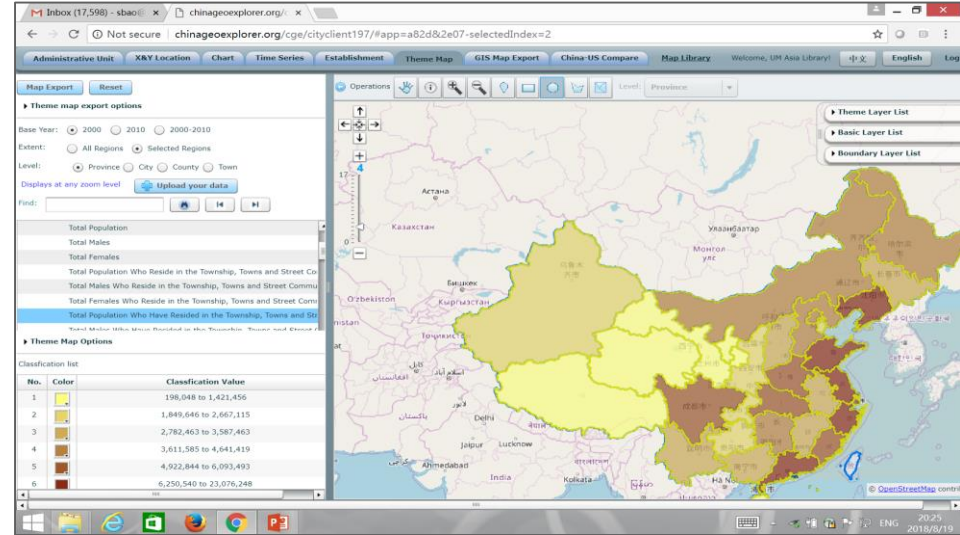


Tests of Spatial Patterns

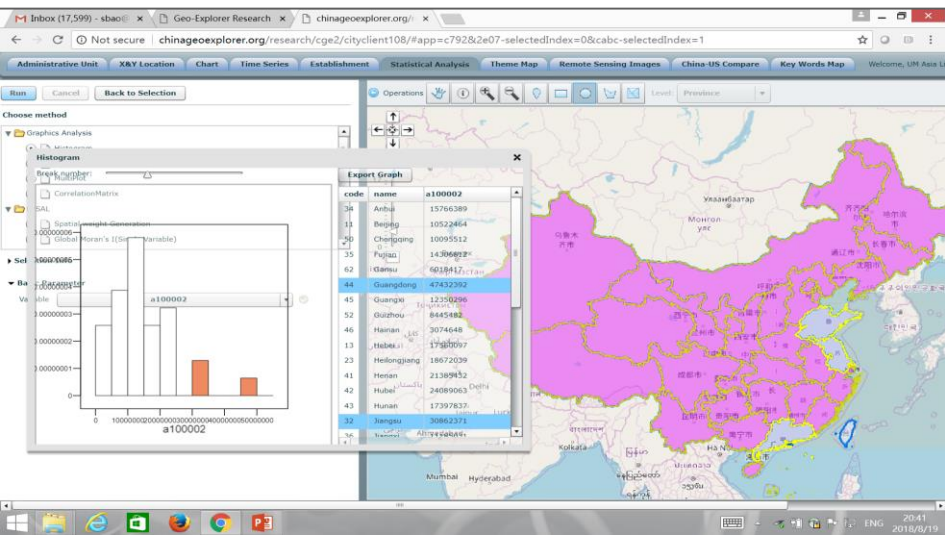
Reports



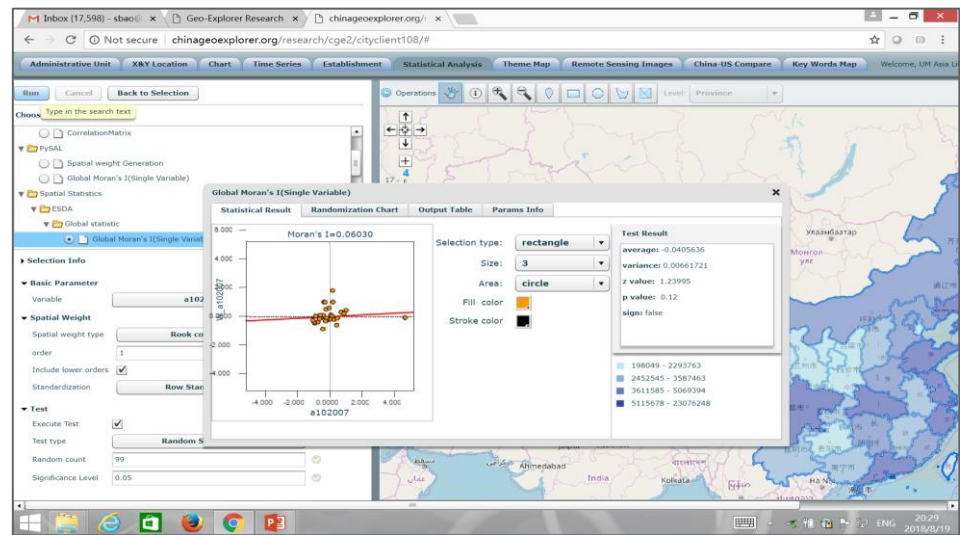
Maps



Charts: Histogram



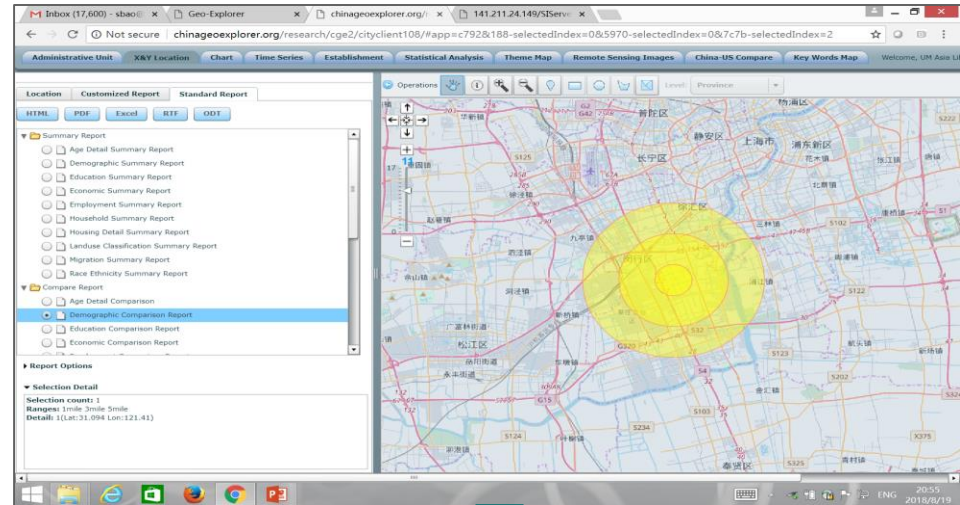
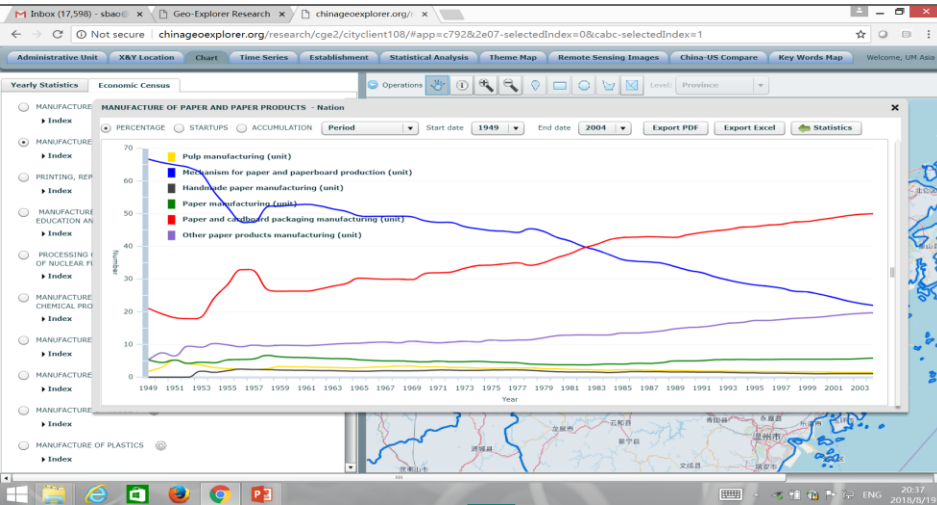
Morans' I: Spatial Autocorrelation



Tests of Spatial Structures

Industrial Structures

Spatial Structures



The screenshot shows an Excel spreadsheet with the following columns: Year, Name Code, Pulp manufacturing, Mechanism for paper and paperboard production, Handmade paper manufacturing, Paper manufacturing, Paper and cardboard packaging, and Other paper products manufacturing. The data spans from 1949 to 2003.

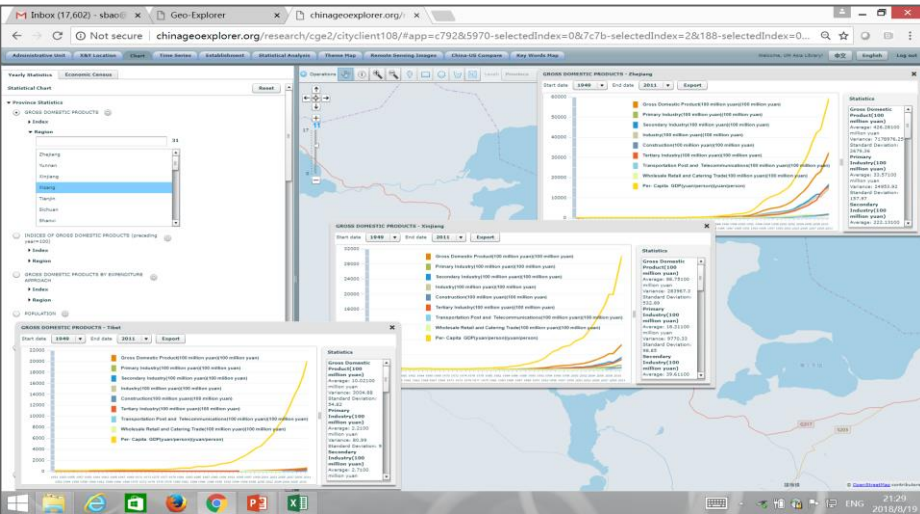
Year	Name Code	Pulp manufacturing	Mechanism for paper and paperboard production	Handmade paper manufacturing	Paper manufacturing	Paper and cardboard packaging	Other paper products manufacturing
1	1949	175438594012208	6686666666666666	0	263157894736842	21052631578947368	746266567164178
2	1950	1112112112112112	2985074826856714	0	477611940298507	1940298507482686	6746266567164178

The screenshot shows a 'Household Summary' report with the following data:

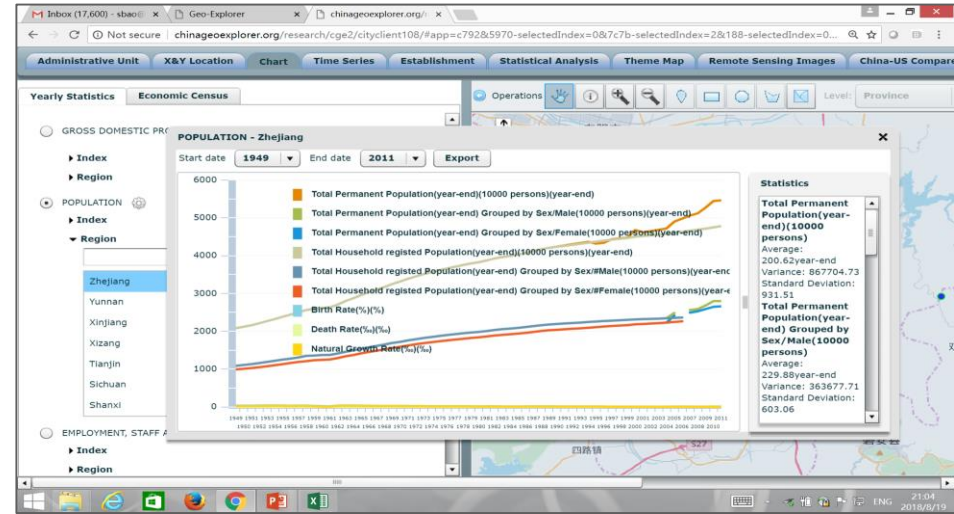
	1(1mile)		1(3mile)		1(5mile)	
	Count	Percent	Count	Percent	Count	Percent
Total Households	4,614	100.0 %	79,130	100.0 %	246,702	100.0 %
Family Households	4,166	90.3 %	71,785	90.7 %	222,818	90.3 %
Collective Households	447	9.7 %	7,344	9.3 %	23,884	9.7 %
Total Population	14,043	100.0 %	229,353	100.0 %	714,080	100.0 %
Agricultural Population	8,124	57.9 %	91,913	40.1 %	279,878	39.2 %
Non-Agricultural Population	5,918	42.1 %	137,439	59.9 %	434,202	60.8 %
Population in Family Households	11,388	80.4 %	191,103	82.7 %	600,565	83.5 %
Population in Collective Households	2,778	19.6 %	40,019	17.3 %	118,916	16.5 %
Average Size: Family Households	2		2		2	
Sex Ratio: Family Households	106		104		113	
Sex Ratio: Collective Households	293		252		203	
Literacy						

Tests of Spatial Trends

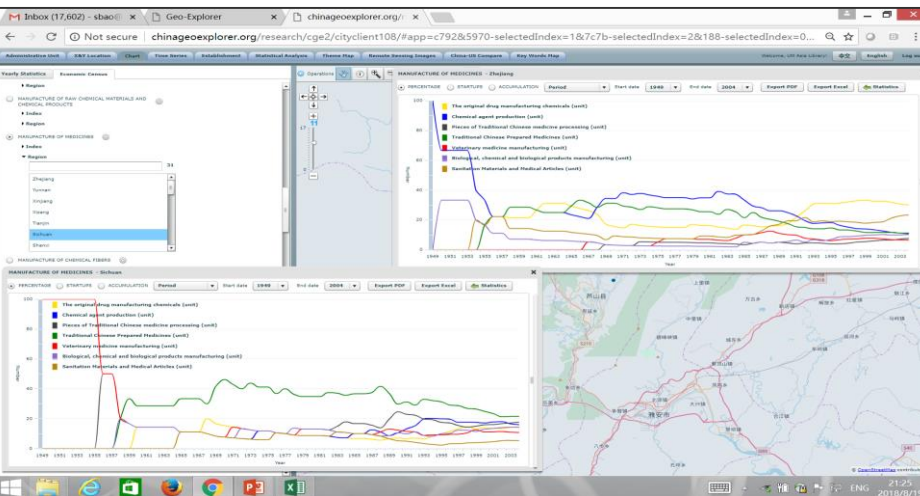
GDP: Zhejiang/Xinjiang/Tibet



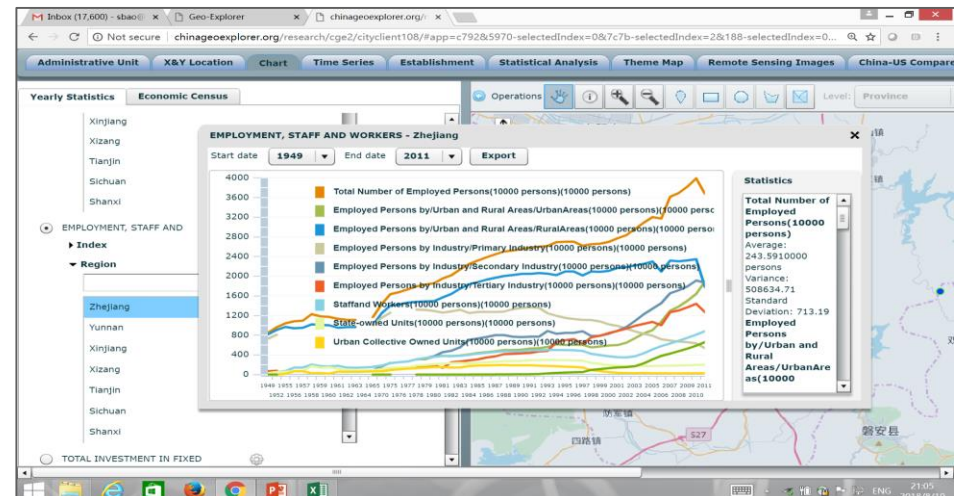
Population



Manufacture of Medicine: Zhejiang & Sichuan



Employment



Tests of Inter and Intra-Regional Similarities

Comparative Reports between Groups

Page 1 of 3

	Group 1		Group 2		Group 3		Group 4		Group 5	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Total Households	32,071,061	100.0 %	21,246,966	100.0 %	72,426,097	100.0 %	132,418,970	100.0 %	93,070,604	100.0 %
Family Households	31,670,458	98.8 %	20,767,702	97.7 %	70,952,313	98.0 %	129,268,671	97.6 %	87,832,053	94.4 %
Collective Households	400,603	1.2 %	479,264	2.3 %	1,473,784	2.0 %	3,150,299	2.4 %	5,238,551	5.6 %
Total Population	104,109,254	100.0 %	79,101,940	100.0 %	256,157,701	100.0 %	460,752,658	100.0 %	333,681,463	100.0 %
Agricultural Population	56,543,142	54.3 %	57,694,613	72.9 %	207,154,028	80.9 %	353,326,328	76.7 %	253,998,118	76.1 %
Non-Agricultural Population	47,566,112	45.7 %	21,407,327	27.1 %	49,003,673	19.1 %	107,426,330	23.3 %	79,683,345	23.9 %
Population in Family Households	102,132,164									
Population in Collective Households	2,732,015									
Average Size: Family Households	3									
Sex Ratio: Family Households	103									
Sex Ratio: Collective Households	166									

	Group 1	
	Count	
Total Population 15 and Over	85,554,268	
Illiterate Population - Total	5,100,563	
Illiterate Population - Males	1,447,980	
Illiterate Population - Females	3,652,583	

Comparative Reports within Groups

Demographic Comparison Report (2000)

Date: 19/08/2018

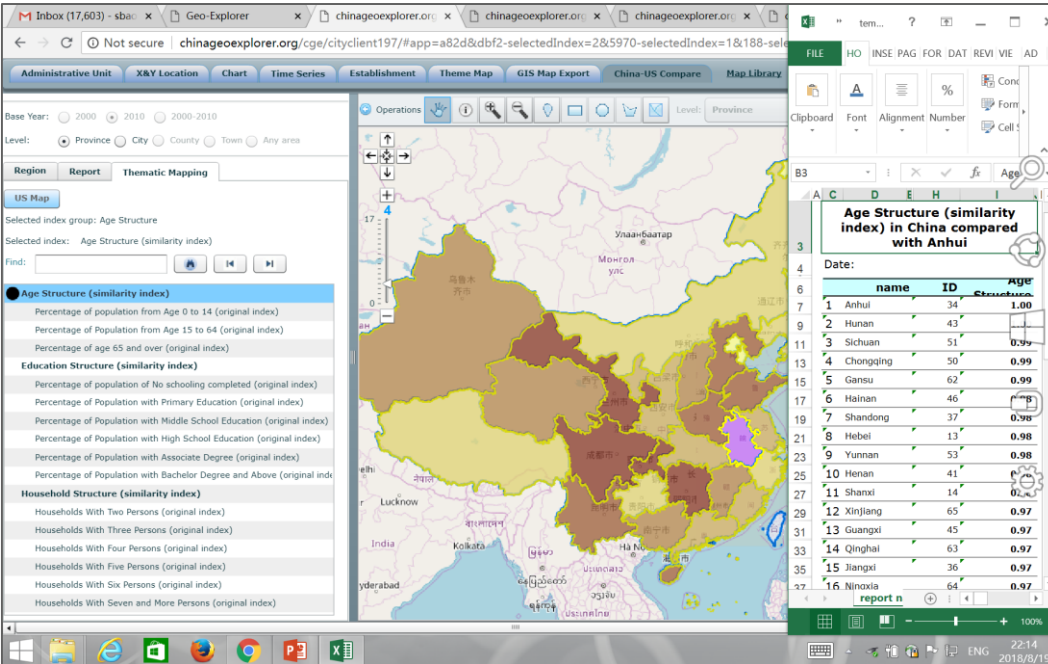
Selection: Group 1(3): liaoning,jilin,heilongjiang

Household Summary

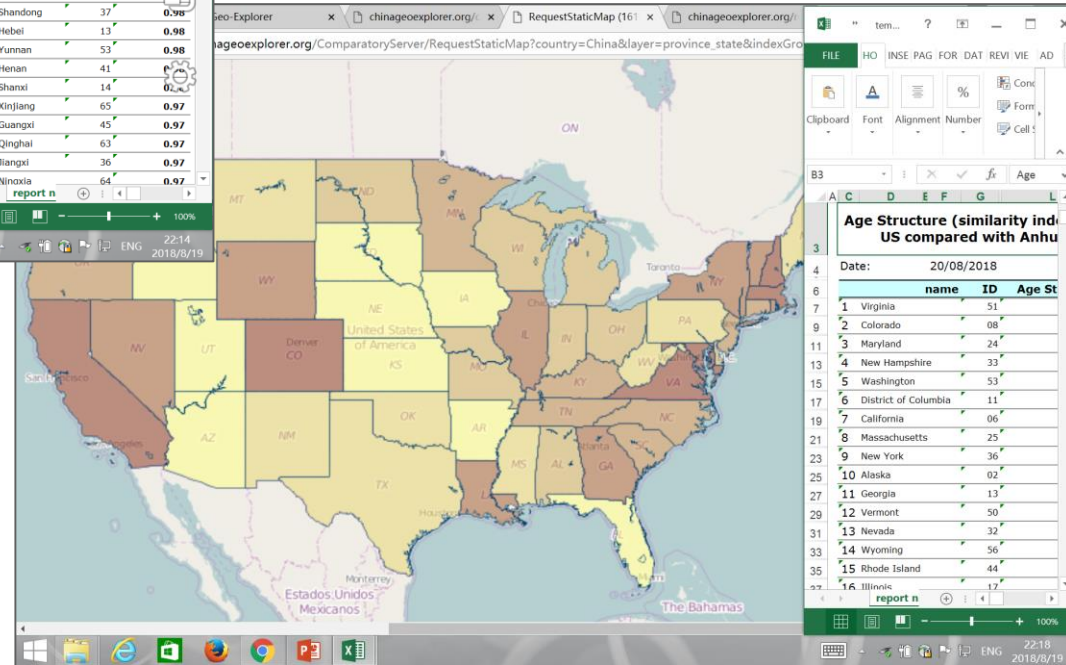
	liaoning		jilin		heilongjiang	
	Count	Percent	Count	Percent	Count	Percent
Total Households	13,046,524	100.0 %	7,953,615	100.0 %	11,070,922	100.0 %
Family Households	12,866,262	98.6 %	7,848,446	98.7 %	10,955,750	99.0 %
Collective Households	180,262	1.4 %	105,169	1.3 %	115,172	1.0 %
Total Population	41,553,243	100.0 %	26,591,484	100.0 %	35,964,527	100.0 %
Agricultural Population	22,462,770	54.1 %	15,076,240	56.7 %	19,004,132	52.8 %
Non-Agricultural Population	19,090,473	45.9 %	11,515,244	43.3 %	16,960,395	47.2 %
Population in Family Households	40,597,750	97.1 %	26,076,948	97.3 %	35,457,466	97.8 %
Population in Collective Households	1,226,662	2.9 %	725,243	2.7 %	780,110	2.2 %
Average Size: Family Households	3		3		3	
Sex Ratio: Family Households	102		103		103	
Sex Ratio: Collective Households	171		168		159	

Tests of Regional Similarities and Dissimilarities

Similarity Index between Anhui and Other Provinces of China



Similarity Index between Anhui and States of the US



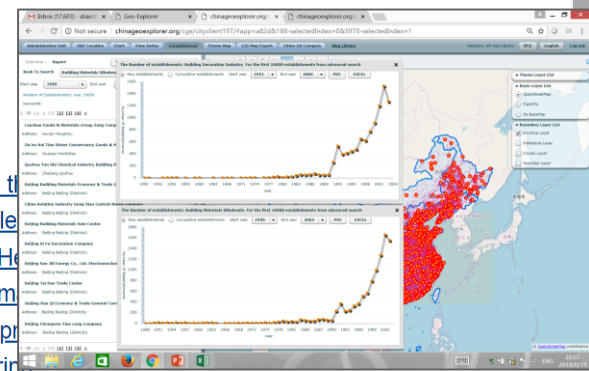
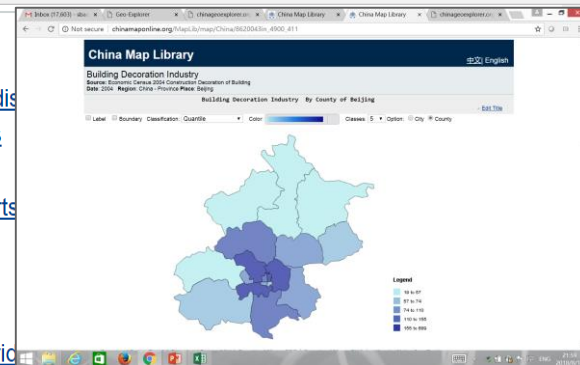
Tests of Industrial Linkages by Space and Time

Rank of Related Industries 2004 By Spatial Relevance

- | | |
|--|---|
| 1 Other machinery and equipment rental | 16 Semiconductor manufacturing dis |
| 2 Building Materials Wholesale | 17 Repair of household appliances |
| 3 Other cleaning services | 18 Fruit and vegetables wholesale |
| 4 Construction and installation industry | 19 Cars, motorbikes and spare parts |
| 5 Cars, motorbikes Maintenance | 20 Laundry and dyeing Services |
| 6 Other food wholesale | 21 Building cleaning services |
| 7 Other interior decoration materials retail | 22 Retail |
| 8 Automotive retail | 23 Railways, roads, tunnels and brid |
| 9 Flower retail | 24 Metal and metal ore wholesale |
| 10 Cosmetics and health supplies wholesale | 25 Taxi passenger |
| 11 Management of urban greening | 26 Kitchen, bathroom appliances and daily groceries wholesale |
| 12 Paint retail | 27 Textiles, knitwear and raw materials wholesale |
| 13 Real estate development and management | 28 Western medicine wholesale |
| 14 Hardware retail | 29 Other cultures and office machinery manufacturing |
| 15 Retail of Auto Parts and Accessories | 30 Furniture retail |
- [Export All](#)

Rank of Related Industries 2004 By Temporal Relevance (Startups)

- | | |
|---|---|
| 1 Manufacture of metal doors and windows | 16 Wood furniture manufacturing |
| 2 Industrial Automation System device manufacturing | 17 Other activities not specified in t |
| 3 Property management | 18 Processing crude oil and petrole |
| 4 Project management services | 19 Manufacture of Nutritious and H |
| 5 Paint manufacturing | 20 Power electronic components m |
| 6 Retail of Auto Parts and Accessories | 21 Distribution switch control equip |
| 7 Electronic components and parts manufacturing | 22 Textile and apparel manufacturing |
| 8 Supply with General Instruments and other equipment manufacturing | 23 Refrigeration and air-conditioning equipment manufacturing |
| 9 Transport agency services | 24 Hardware retail |
| 10 Environmental Pollution Prevention Equipment | 25 Other real estate activities |



Panel Data for Spatial Modeling

Browser tabs: M Inbox (17,603) - sbao@ x | Geo-Explorer x | chinageoexplorer.org/c x | chinageoexplorer.org/r x | 141.211.24.149/SIServe x

Address bar: 141.211.24.149/SIServerResearch//tempReport/597336bd-e3a1-4a8e-8835-65619db5d2e9/temp_report.html

Time-series Report

Date: 19/08/2018

Selection: (4 selected) zhejiang , tianjin , y

Original Variables

Spatially Weighted Variables

	name	year	Gross Domestic	Primary Industry	Secondary Industry	Gross Domestic	Primary Industry	Secondary Industry
1	tianjin	2009	7,521.9	128.8	3,987.8	15,159.8	1,324.7	7,640.2
2	tianjin	2010	9,224.5	145.6	4,840.2	18,081.4	1,526.9	9,226.2
3	tianjin	2006	4,344.3	118.2	2,488.3	9,570.7	918.0	4,939.7
4	tianjin	2007	5,050.4	110.2	2,892.5	11,455.6	1,050.3	5,902.5
5	tianjin	2008	6,354.4	122.6	3,821.1	13,626.3	1,241.1	7,117.9
6	tianjin	2011	11,307.3	159.7	5,928.3	21,441.7	1,762.1	10,970.9
7	zhejiang	2010	27,722.3	1,360.6	14,297.9	17,809.7	1,551.2	8,940.6
8	zhejiang	2011	32,318.8	1,583.0	16,555.6	21,163.0	1,798.8	10,653.4
9	zhejiang	2006	15,742.5	925.1	8,509.6	9,421.9	946.0	4,764.4
10	zhejiang	2007	18,780.4	986.0	10,148.5	11,259.4	1,083.4	5,669.9
11	zhejiang	2008	21,486.9	1,095.4	11,580.3	13,348.6	1,287.2	6,812.6
12	zhejiang	2009	22,990.3	1,163.1	11,908.5	14,943.3	1,347.8	7,377.5
13	yunnan	2010	7,224.2	1,108.4	3,223.5	12,753.8	1,372.5	6,304.8
14	yunnan	2011	8,893.1	1,411.0	3,780.3	15,398.3	1,639.1	7,734.8
15	yunnan	2006	3,981.3	749.8	1,712.6	6,481.9	835.0	3,042.2
16	yunnan	2007	4,741.3	837.4	2,051.1	7,801.2	985.9	3,683.3
17	yunnan	2008	5,700.1	1,020.9	2,451.1	9,276.7	1,187.1	4,471.8
18	yunnan	2009	6,169.8	1,067.6	2,582.5	10,583.4	1,190.0	5,030.8
19	xinjiang	2008	4,203.4	691.1	2,086.7	678.7	83.0	322.6
20	xinjiang	2006	3,045.3	527.8	1,459.3	465.3	60.3	205.6
21	xinjiang	2007	3,523.2	628.7	1,647.5	562.9	69.2	258.1
22	xinjiang	2009	4,277.1	759.7	1,929.6	761.3	85.6	356.0
23	xinjiang	2010	5,437.5	1,078.6	2,592.2	929.0	101.8	454.3
24	xinjiang	2011	6,610.1	1,139.0	3,225.9	1,138.1	114.8	592.0

Case Study: Risk Assessment of Wujing Thermal Power Plant, Shanghai, China

Inbox (17,603) - sbao@ x | Geo-Explorer x | chinageoexplorer.org/c x

Not secure | chinageoexplorer.org/cge/cityclient197/#

Administrative Unit | X&Y Location | Chart | Time Series | Establishment | Theme Map | GIS Map Export | China-US Compare | Map Library | Welcome, UM Asia Library!

Selection | Report | Table Export | Plot of starting year | Operations | Level: Province

Back To Search | Thermal power

Start year: all years | End year: al

单位总数: 20
搜索词: 上海市
1 - 20 << >> [1] >

Shanghai Wu Jing Power Co., Ltd.
Address: Shanghai Shanghai (Districts)

Hua Neng International Electric Power Co., Ltd.
Address: Shanghai Shanghai (Districts)

Shanghai Qingpu Industrial Zone Thermolect
Address: Shanghai Shanghai (Districts)

Shanghai Wei Steel Energy Co., Ltd.
Address: Shanghai Shanghai (Districts)

Shanghai Zha Dian Combustion Gas Turbine Power Co., Ltd.
Address: Shanghai Shanghai (Districts)

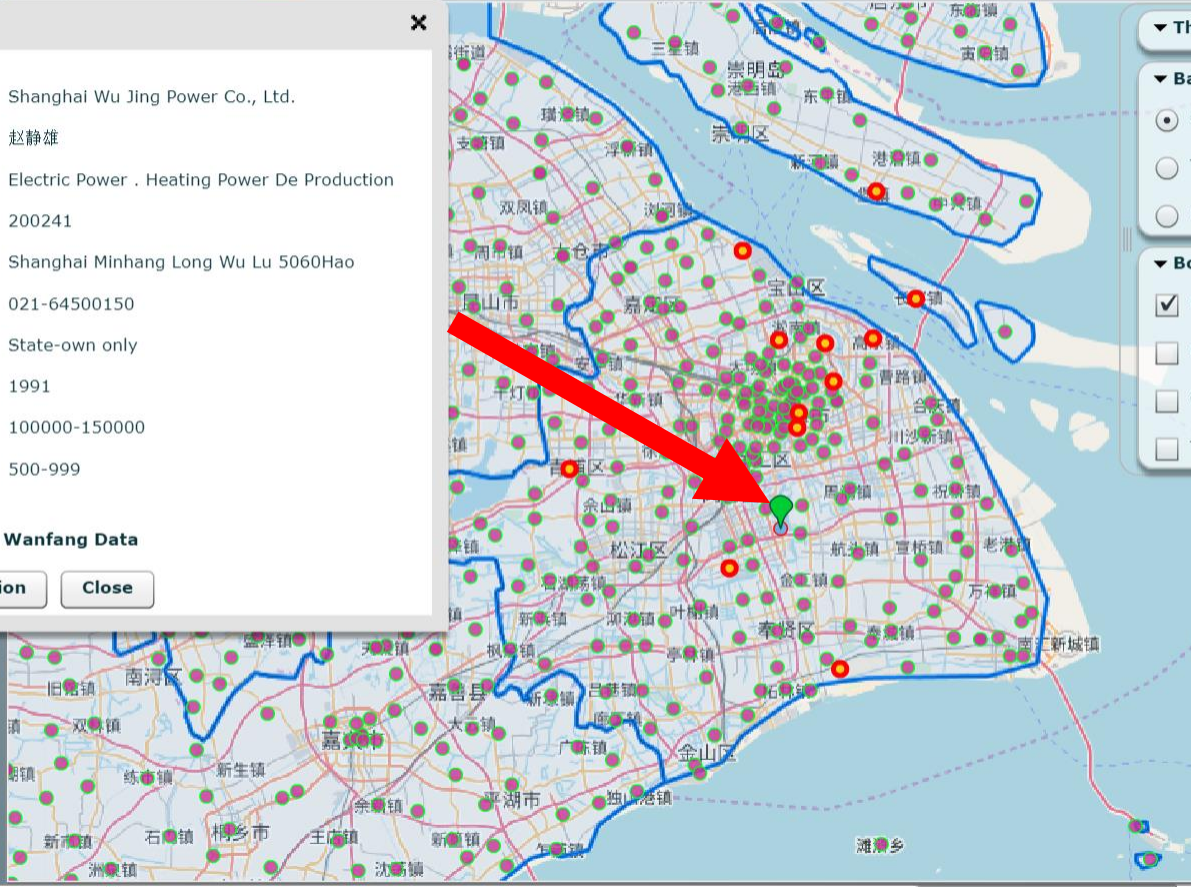
Shanghai Wu Jing Di Er Power Co., Ltd.

Detailed Information

name: Shanghai Wu Jing Power Co., Ltd.
Responsible person: 赵静雄
Type: Electric Power . Heating Power De Production
ZIP: 200241
Address: Shanghai Minhang Long Wu Lu 5060Hao
Telephone: 021-64500150
Ownership: State-own only
Starting year: 1991
Revenue: 100000-150000
Employee Count: 500-999

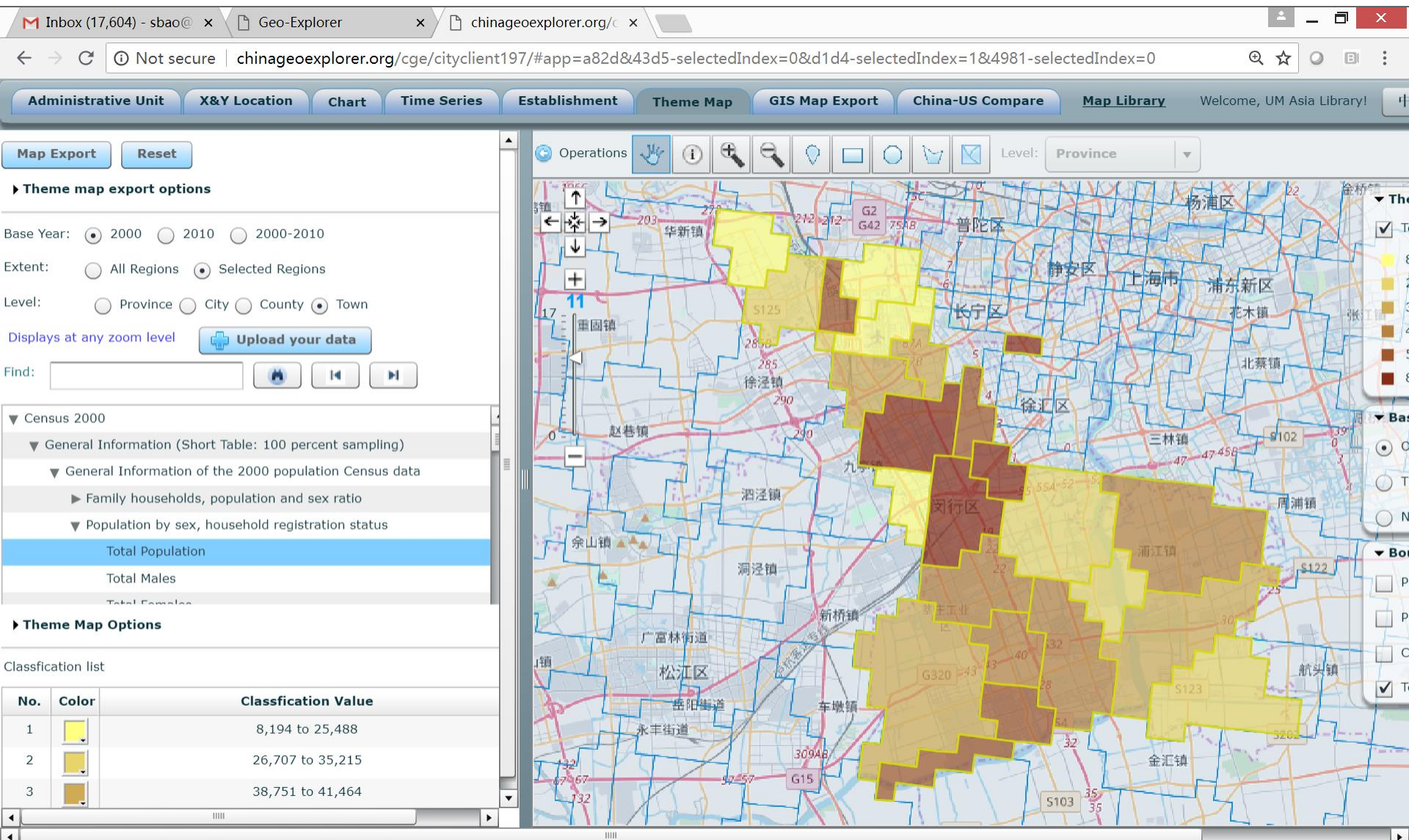
Google | Baidu | Wanfang Data

Go to Location Selection | Close

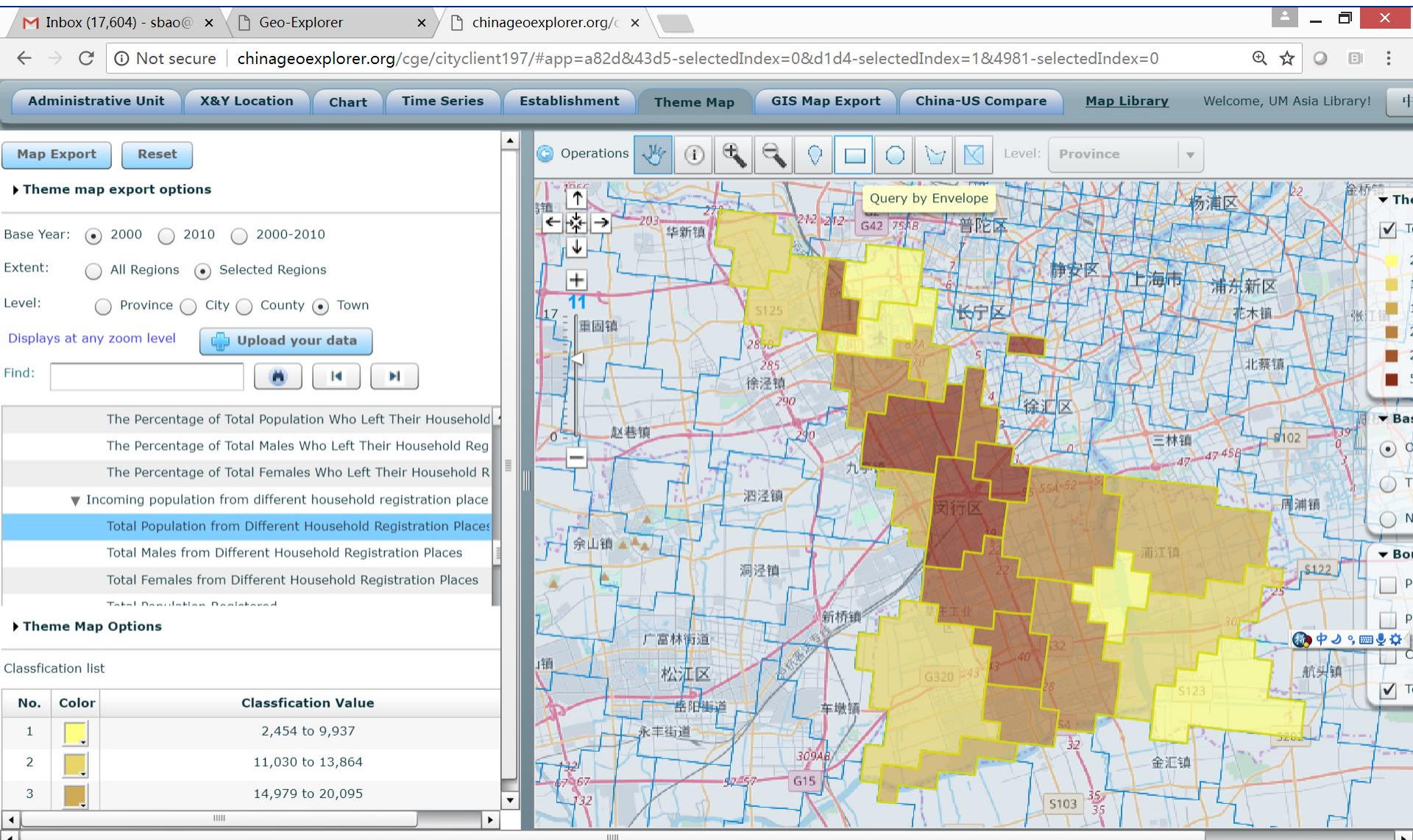


22:45
2018/8/19

Population by Township of Minhang



Migration from Other Places



Location Analysis

Inbox (17,603) - sbao@ x Geo-Explorer x chinageoexplorer.org/c x chinageoexplorer.org/S x

Not secure chinageoexplorer.org/cge/cityclient197/#app=a82d&43d5-selectedIndex=0&d1d4-selectedIndex=2&4981-selectedIndex=0

Administrative Unit X&Y Location Chart Time Series Establishment Theme Map GIS Map Export China-US Compare Map Library Welcome, UM Asia Library!

Location Customized Report Standard Report

HTML PDF Excel RTF ODT

- Economic Summary Report
- Employment Summary Report
- Household Summary Report
- Housing Detail Summary Report
- Landuse Classification Summary Report
- Migration Summary Report
- Race Ethnicity Summary Report
- ▼ Compare Report
 - Age Detail Comparison
 - Demographic Comparison Report
 - Education Comparison Report
 - Economic Comparison Report
 - Employment Comparison Report

Report Options

Selection Detail

Selection count: 1
Ranges: 1mile 3mile 5mile
Detail: 200241(Lat:31.062 Lon:121.459)

Operations Level: Province

Map showing Minhang District, Shanghai, with a circular analysis area highlighted in yellow. The map includes labels for various locations and roads.

Windows Taskbar: 22:50 2018/8/19

Demographic Report by Spatial Ranges

Demographic Comparison Report (2000)

Date: 20/08/2018
Selection: (1 places selected) 200241(lat: 31.06 lon:121.46)
 Ranges: 1mile 3mile 5mile

Household Summary

	200241(1mile)		200241(3mile)		200241(5mile)	
	Count	Percent	Count	Percent	Count	Percent
Total Households	6,521	100.0 %	35,693	100.0 %	113,743	100.0 %
Family Households	5,941	91.1 %	32,069	89.8 %	103,476	91.0 %
Collective Households	580	8.9 %	3,623	10.2 %	10,267	9.0 %
Total Population	18,638	100.0 %	110,077	100.0 %	340,905	100.0 %
Agricultural Population	5,577	29.9 %	68,252	62.0 %	187,363	55.0 %
Non-Agricultural Population	13,061	70.1 %	41,825	38.0 %	153,541	45.0 %
Population in Family Households	16,079	85.6 %	91,714	82.5 %	290,608	84.5 %
Population in Collective Households	2,695	14.4 %	19,442	17.5 %	53,246	15.5 %

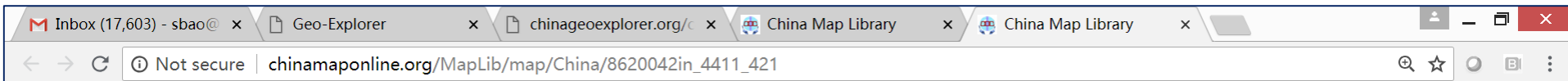
Business of Power Industries by Spatial Ranges

Compare Report

Date: 20/08/2018
Selection: (1 places selected) 200241(lat: 31.06 lon:121.46)
Ranges: 1mile 3mile 5mile

	200241(1mile)	200241(3mile)	200241(5mile)
2008 Thermal power	2	2	2
2008 Hydraulic Power	0	0	0
2008 Nuclear Power	0	0	0
2008 Other forms of energy generation	1	1	1
2008 Power supply	0	0	0
2008 Heat production and supply	1	3	3
2008 Gas production and supply	1	3	3
2008 Water production and supply	0	2	3
2008 Sewage treatment and recycling	0	0	0
2008 Other water treatment, utilization and distribution	0	1	1

Correlations between Thermal Power and Other Power Plants by Space and Time



Rank of Related Industries 2004 By Spatial Relevance

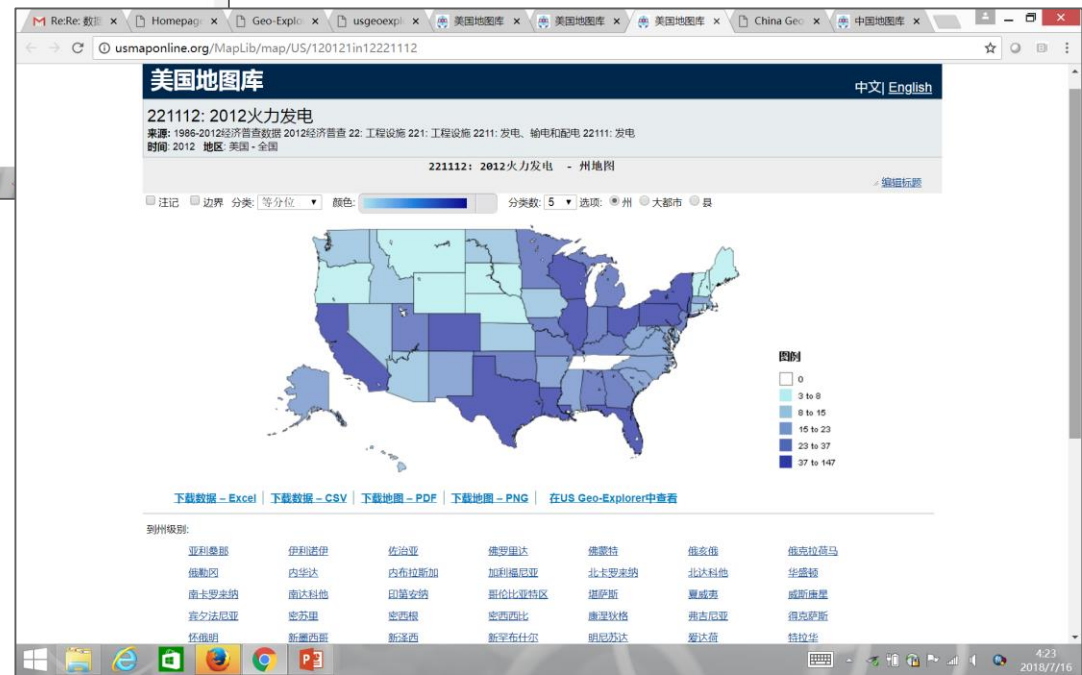
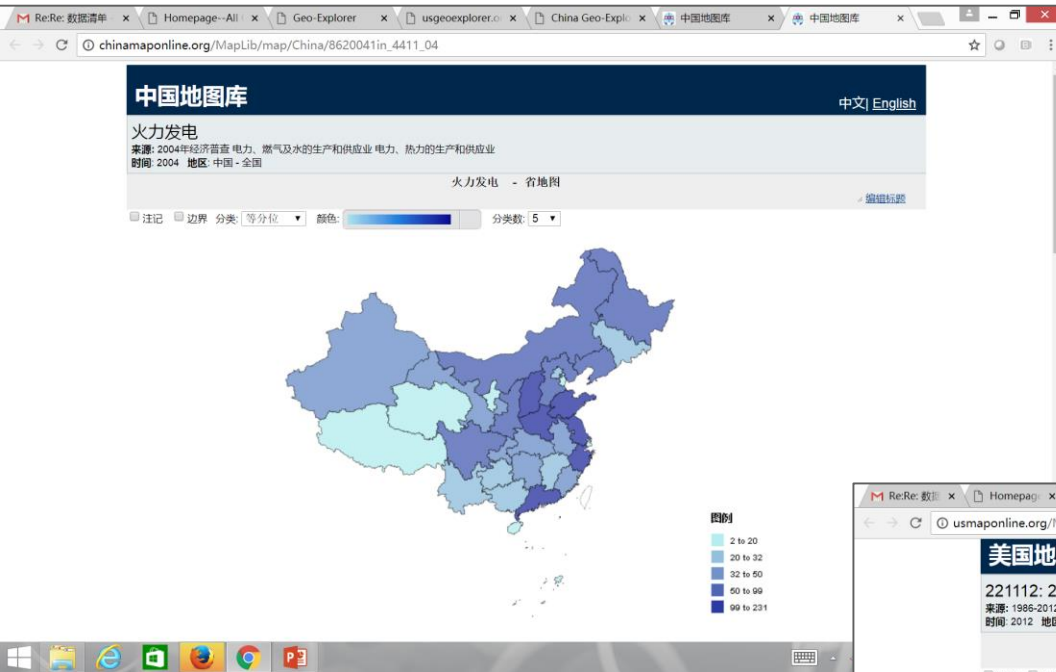
- | | |
|--|--|
| 1 Acrylic fiber manufacturing | 16 Road transport of goods |
| 2 Oil refineries and chemical production equipment for manufacturing | 17 Special ceramic products manufacturing |
| 3 Wholesale of coal and its products | 18 Mechanical Parts Manufacture and Equipment Repair |
| 4 Other rubber products manufacturing | 19 Plastic plates, tubes, profiles of manufacturing |
| 5 Other special chemical products manufacturing | 20 Safety, fire metal products manufacturing |
| 6 Graphite and carbon products manufacturing | 21 General Hospital |
| 7 Other Daily-used Chemical Products | 22 Manufacture of metal doors and windows |
| 8 Wholesale of oil and its products | 23 Metal manufacturing pressure vessels |
| 9 Chemical reagents and additives manufacturing | 24 Motor vehicle manufacturing |
| 10 Manufacture of Instant Noodle and Other Convenient Foods | 25 And pipe-line construction |
| 11 Toy manufacturing | 26 Wholesale of renewable materials recovery |
| 12 Other synthetic materials | 27 Coal products manufacturing |
| 13 Building Materials Wholesale | 28 Other machinery and equipment rental |
| 14 Basic geological exploration | 29 Other Daily-used Plastic Products |
| 15 Manufacture of Equipments for Open Amusement Park | 30 Heat-insulating and Soundproof Materials |
- [Export All](#)

Rank of Related Industries 2004 By Temporal Relevance (Startups)

- | | |
|---|--|
| 1 Manufacture of Liquor | 16 Printing of Packaging and Upholstering |
| 2 Taxi passenger | 17 Communications terminal equipment manufacturing |
| 3 Religious organizations | 18 Primary forms of plastics and synthetic resin manufacturing |
| 4 Other support activities for road transport | 19 Gas compression machinery manufacturing |



Spatial Distribution of Thermal Power Plants in the US and China



Future Directions: Fragmented Data Stitching

Big Data Sources:

Mobile facilities

- Cell phones
- Mobile tablets

APPS

- QQ, WeChat, Facebook, Twitter, Tumblr etc.

Transportation network

- Bus
- Train
- Bicycle

Traditional Business systems:

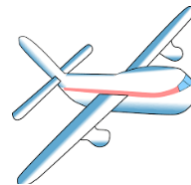
- Data produced by Public Agencies
- Data produced by businesses

Internet of Things:

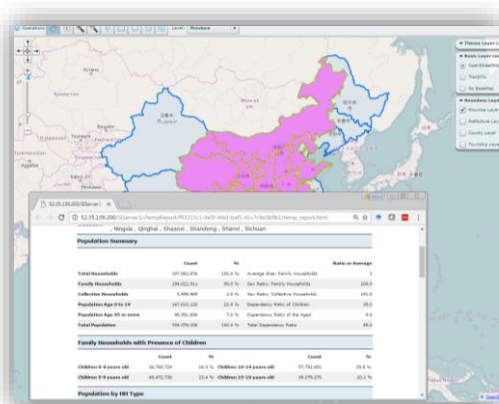
- Data from sensors
- Data from online shopping

Features of Big Data:

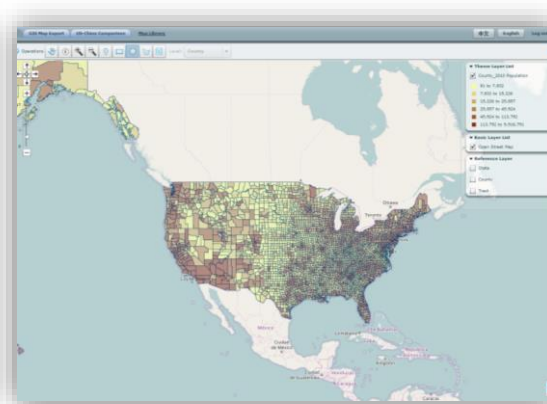
- Multi-sources
- Space and time
- Classifications
- Complex structure



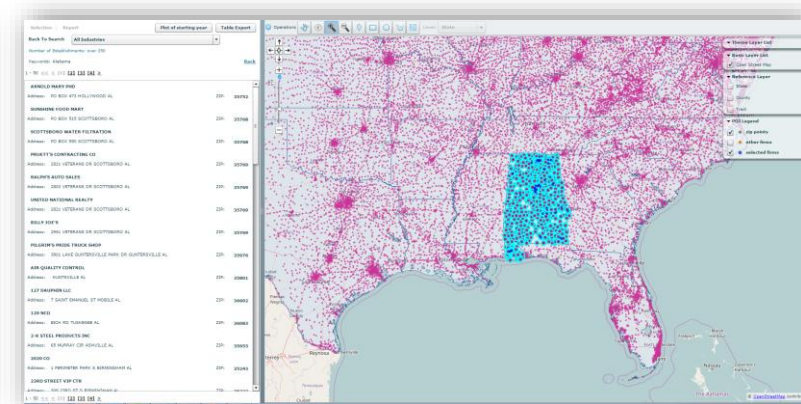
Geo-Explorers: Integrated Data Analysis



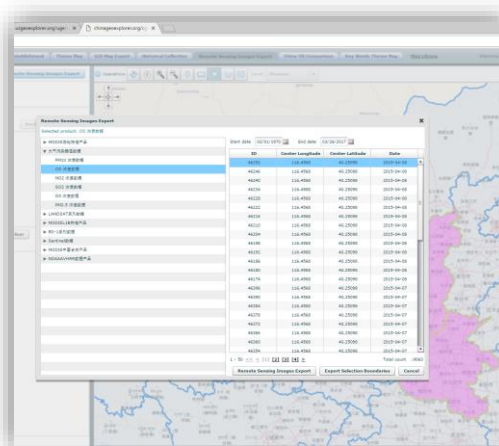
Reporting



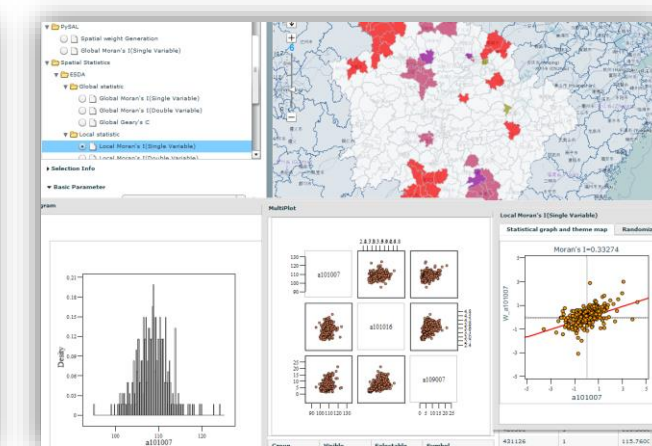
Thematic Maps



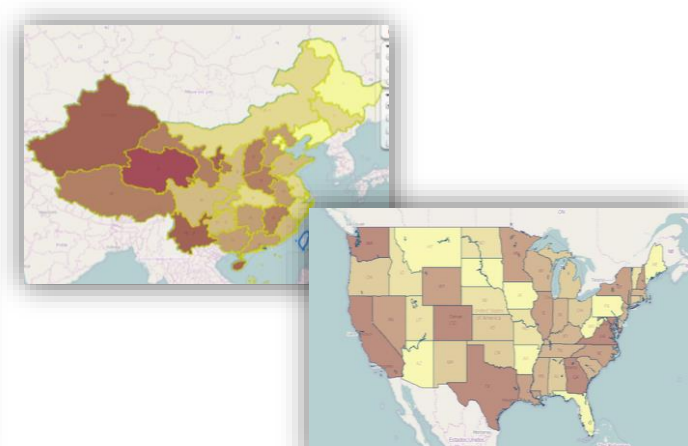
Establishment search



Remote Sensing Data



Exploratory Spatial Data Analysis

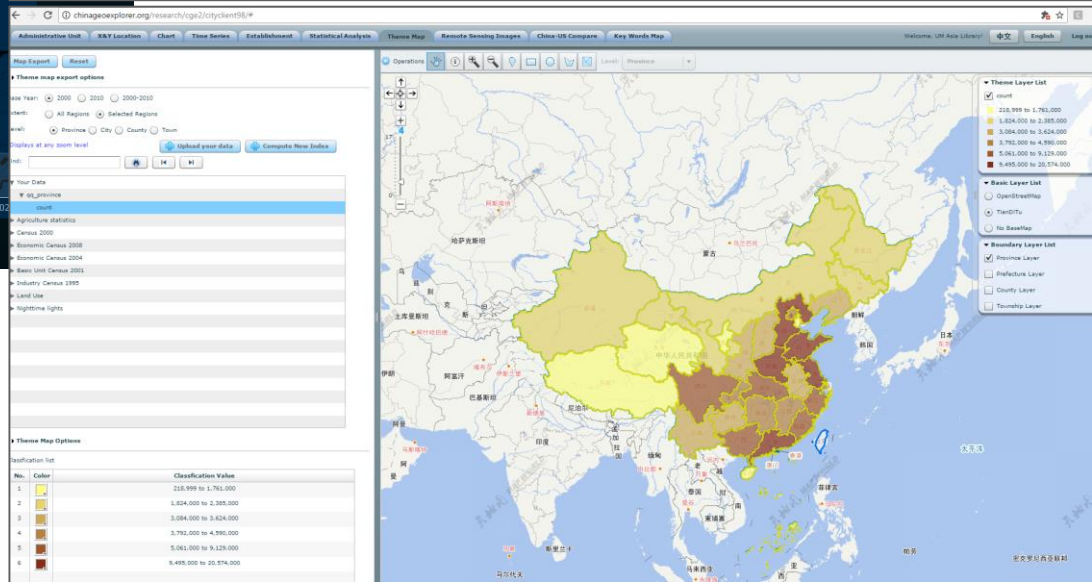
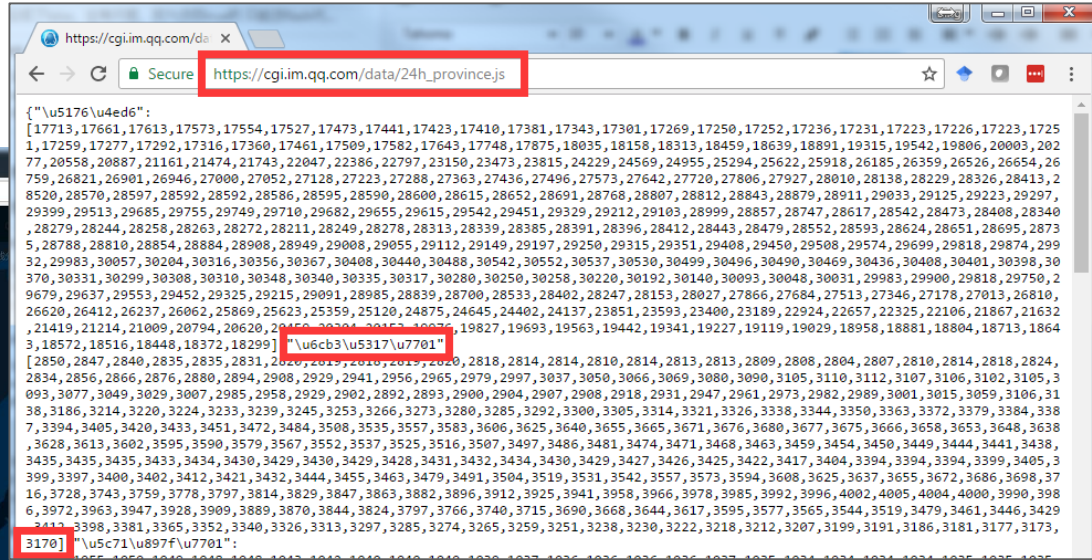
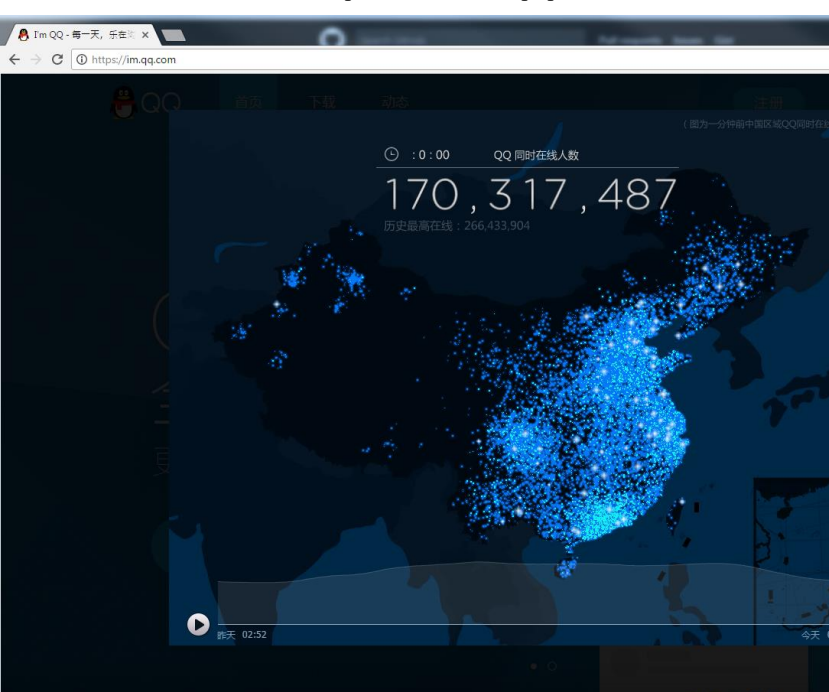


China-US Comparative analysis

Identifying Spatial Population with QQ Data

https://cgi.im.qq.com/data/24h_province.js

<https://im.qq.com/>

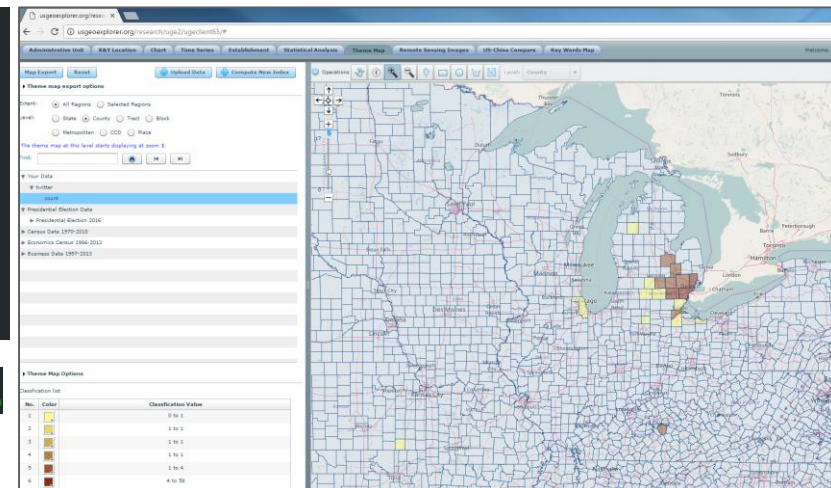


Identifying Population Activities with Twitter Data

- ❑ Step 1: API Register
- ❑ Step 2: Search Twitter Data through Tweepy
- ❑ Step 3: Transform Twitter Data into GeoJson
- ❑ Step 4: Upload to GeoExplorer
- ❑ Step 5: Spatial analysis and visualization

<https://dev.twitter.com/overview/api/tweets>

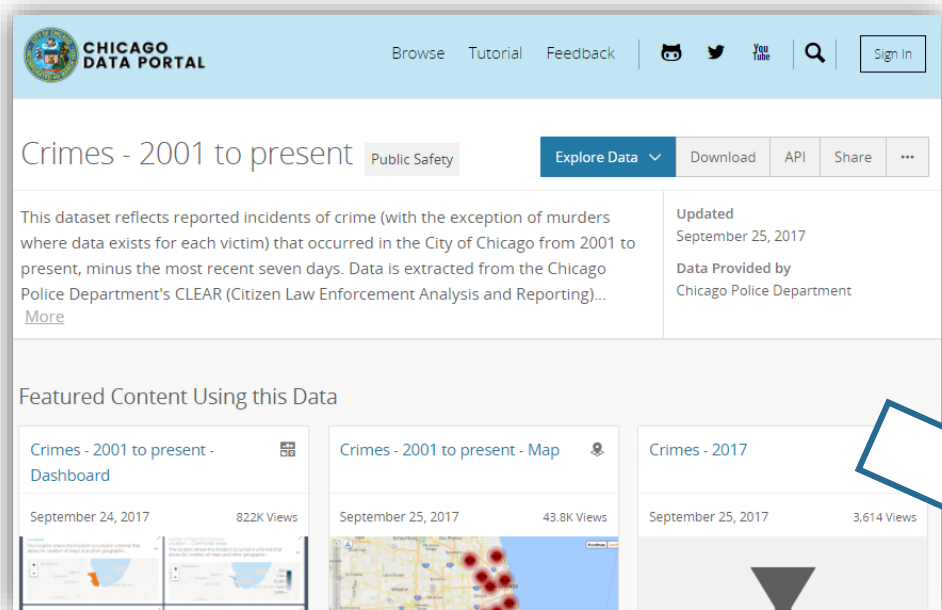
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  },  
  "coordinates":  
  {  
    "coordinates":  
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    ],  
    "type": "Point"  
  },  
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}
```



Identifying Spatial Crime with Web Crawling

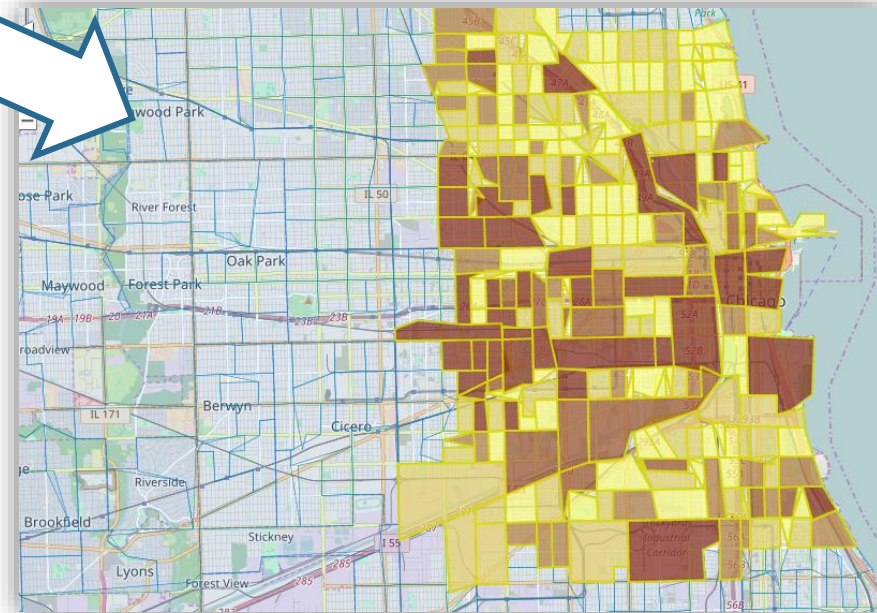
Open Government Data

<https://data.cityofchicago.org/>



The screenshot shows the Chicago Data Portal interface. At the top, there's a navigation bar with 'CHICAGO DATA PORTAL' logo, 'Browse', 'Tutorial', 'Feedback', social media icons, and a search bar. The main content area is titled 'Crimes - 2001 to present' under the 'Public Safety' category. It includes an 'Explore Data' dropdown menu, 'Download', 'API', and 'Share' options. A description states: 'This dataset reflects reported incidents of crime (with the exception of murders where data exists for each victim) that occurred in the City of Chicago from 2001 to present, minus the most recent seven days. Data is extracted from the Chicago Police Department's CLEAR (Citizen Law Enforcement Analysis and Reporting)... [More](#)'. Metadata includes 'Updated: September 25, 2017' and 'Data Provided by: Chicago Police Department'. Below this, a 'Featured Content Using this Data' section displays three items: 'Crimes - 2001 to present - Dashboard' (822K Views), 'Crimes - 2001 to present - Map' (43.8K Views), and 'Crimes - 2017' (3,614 Views). A large white arrow with a blue outline points from the 'Crimes - 2017' item towards the crime map on the right.

Crime Map by Tract



Big Data Integration – Web Search

Keyword: 伊斯兰教 雅虎

Map

名称	基督教_雅虎	佛教_雅虎	道教_雅虎	伊斯兰教_雅虎
1 北京市	289,000	1,060,000	217,000	126,000
2 上海市	252,000	921,000	169,000	89,100
3 上海市	252,000	921,000	169,000	89,100
4 内蒙古	185,000	299,000	74,800	93,100
5 西藏	175,000	308,000	97,600	61,700
6 山东省	168,000	430,000	99,600	59,600
7 天津市	119,000	430,000	89,500	45,800
8 广东省	116,000	363,000	94,200	50,600
9 四川省	111,000	335,000	108,000	51,700
10 新疆	110,000	412,000	82,500	106,000
11 浙江省	109,000	400,000	92,800	34,800
12 江苏省	99,300	316,000	82,800	46,000
13 重庆市	95,600	401,000	77,100	50,200
14 河南省	88,400	364,000	100,000	51,700
15 福建省	85,100	283,000	85,900	38,000
16 湖南省	80,800	268,000	82,300	48,300
17 山西省	74,100	267,000	81,100	34,700
18 河北省	71,800	285,000	80,000	43,000
19 湖北省	70,100	208,000	87,300	37,500
20 江西省	70,000	284,000	87,200	36,500
21 云南省	68,900	330,000	65,200	44,900
22 陕西省	66,200	221,000	72,600	37,300
23 辽宁省	62,300	168,000	48,500	39,000
24 吉林省	61,400	163,000	45,400	30,300
25 贵州省	57,900	281,000	52,800	39,300
26 广西省	57,800	253,000	51,200	35,700
27 海南省	56,800	190,000	51,000	31,200
28 黑龙江省	53,600	143,000	42,900	30,200
29 甘肃省	51,900	167,000	48,100	36,100
30 青海省	47,400	175,000	39,000	33,600

Results from keyword search:

- Non-structural data -> Structural data
- Non-spatial data -> Spatial data
- Text data -> Numeric data
- Unlimited keywords -> Unlimited data
- Complimentary data to baseline data

	基督教_雅虎	佛教_雅虎	道教_雅虎	伊斯兰教_雅虎	蒙古族人口小计	回族人口小计
基督教_雅虎	1.0000	0.9017	0.8730	0.8539	0.2402	-0.2323
佛教_雅虎	0.9017	1.0000	0.8029	0.7753	-0.0707	-0.2482
道教_雅虎	0.8730	0.8029	1.0000	0.7445	-0.0651	-0.2685
伊斯兰教_雅虎	0.8539	0.7753	0.7445	1.0000	0.3377	-0.0241
蒙古族人口小计	0.2402	-0.0707	-0.0651	0.3377	1.0000	-0.0364
回族人口小计	-0.2323	-0.2482	-0.2685	-0.0241	-0.0364	1.0000

<http://china-data-online.com>

Contact

China Data Institute

office@chinadatacenter.net

(734)680-3943