China Data Institute

chinadatacenter.net
China-data-online.org

A Digital China In Time and Space

China Geo-Explorer

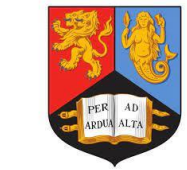
（Version III）

Background

Inherited from the "**China in Time and Space**" (CITAS) project, which was funded by NASA and led by a group of leading scholars on China studies in the US, "**China Geo-Explorer**" (CGE) was designed to provide an spatial platform for the integration of China data in time and space and serve as a digital lab for the spatiotemporal studies of contemporary China. China Geo-Explorer was originally co-developed by the China Data Center of the University of Michigan, the Geo-computation Center for Social Science of Wuhan University, and All China Marketing Research., LTD. and is currently supported by the China Data Institute, a spin-off from the University of Michigan in 2018.

About China Geo-Explorer

"China Geo-Explorer" offers the web-based spatial data service that provides easy access to rich collections of unique, authoritative, and comprehensive information from government statistics, population and economic censuses, and many other data sources in a spatially integrated system with many powerful functions for exploratory spatial data analysis. Unlike many other GIS systems and mapping tools, China Geo-Explorer are compatible with most web browsers and doesn't require advanced GIS skills. China Geo-Explorer has been subscribed by many university libraries and used for research and teaching in population, economy, health, environment, religion and many other fields.



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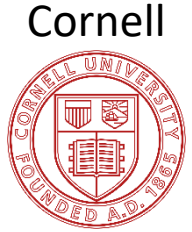
FIU

Dartmouth



Cornell

Duke

Tufts

ASU

Southampton

GWU

Harvard

NWU

Princeton

MIT

Oxford

Boston

Columbia

California

Middlebury

UNIVERSITÀ BOCCONI

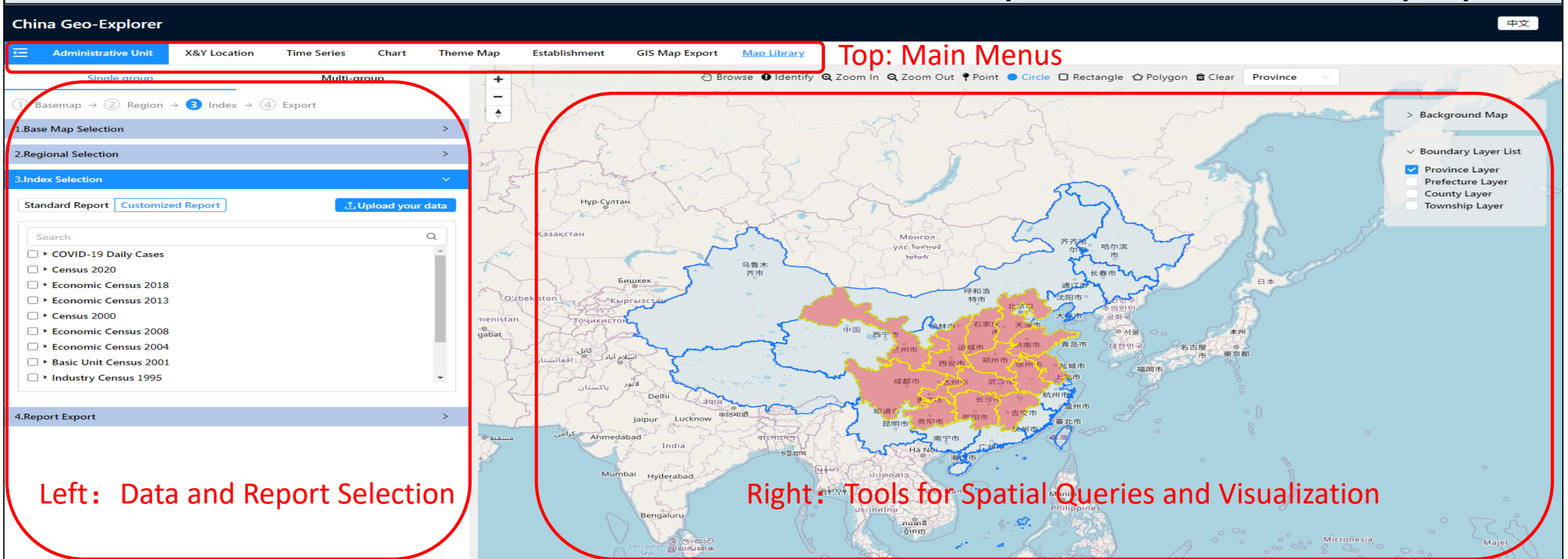
Data Sources

- **Administrative Boundary Maps**（province, city, county and township）
  - 2000
  - 2010
  - 2000-2010
- **Gov’t Statistics**
  - Province Statistics (1949 -)
  - City Statistics (1996 -)
  - County Statistics (1997 -)
- **Population Census**（1953、1964、1982、1990、2000、2010、2020）
- **Industrial Census**（1995）
- **Basic Unit Census**（2001）
- **Economic Census**（ 2004、2008、2013、2018）
- **Establishments** (> 7 millions records)
- **Geography and Environment**
  - Land use data
  - Nighttime light data

User Interface

The interface of **China Geo-Explorer** is composed of three parts: (1) the main menus on the top bar; (2) the left side area for data selection and reports; and (3) the right side area for spatial tools and map display. The top menus offer data selection, theme map, GIS map export and some other functions. Users can select data by administrative units, geographical locations, times series, or establishments for spatiotemporal analysis. It also allows users to upload their own data for data analysis with other data in the system or making maps.

Administrative Unit – Location – Times Series – Chart – Theme Map – Establishment – GIS Map Export



Main Functions

“**Administrative Unit”** function lets users select data by province, city, county, township or any geometric area. User can select regions manually from the left side. The spatial tools on the right side allow user to select data interactively by point, by rectangle, by circle, or by polygon. User can select a predefined report or a customized report for data export in HTM, PDF, EXCEL, or Word formats.

“**XY Location”** function allows users to input X Y coordinates and define spatial ranges, or radius size, for data reports. User can also use the spatial tools on the right side to select data by spatial location and ranges.

“Time Series” function provides various government statistics by province, city and city-level counties. User can select index, region and year, and export the data to a variety of formats or plot the time series data in a chart.

“**Chart**” function allows users to generate time series charts with yearly statistics and economic census data.

"Theme Map" function provides easy tools for online mapping, choosing from thousands of variables. User can export the maps to PDF or JPG files, ready for publication.

"Establishment" function allows users to select data from more than 7 million firm level records. User can search and select establishment by choosing province, city, county, township, zip code, or keywords and export the selected data to an Excel file.

"GIS Map Export" function provide a flexible tool for users to export selected maps and their attributes to GIS shape files.

Main Features

- Authoritative data from the National Bureau of Statistics of China
- Bilingual in English and Chinese
- Comparable data across regions and years
- Complete coverage of all regions of Mainland China (province, city, county and township)
- Spatially integrated data with GIS maps

Applications

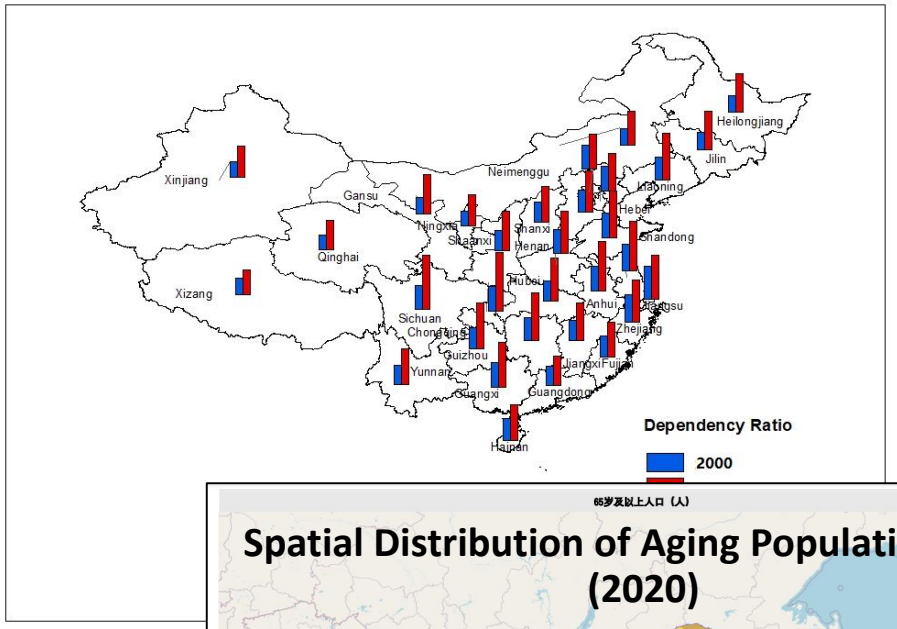
- Spatiotemporal Analysis of Population
- Spatiotemporal Analysis of Economy
- Spatiotemporal Analysis of Urban and Rural Development
- Spatiotemporal Analysis of Health
- Spatiotemporal Analysis of Environment

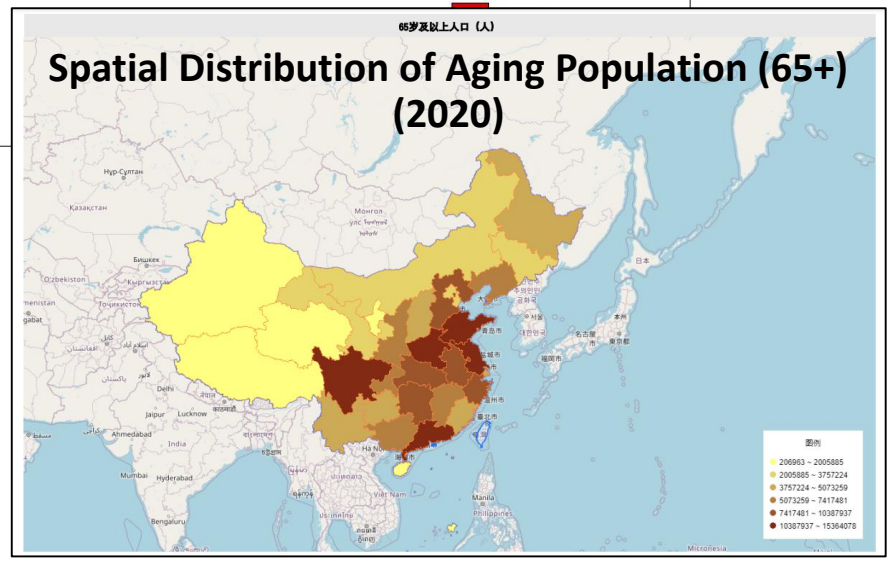
Spatiotemporal Analysis of Population

- Changes in elder dependency
- Changes in migration
- Changes in population structure
- Changes in family and housing structure

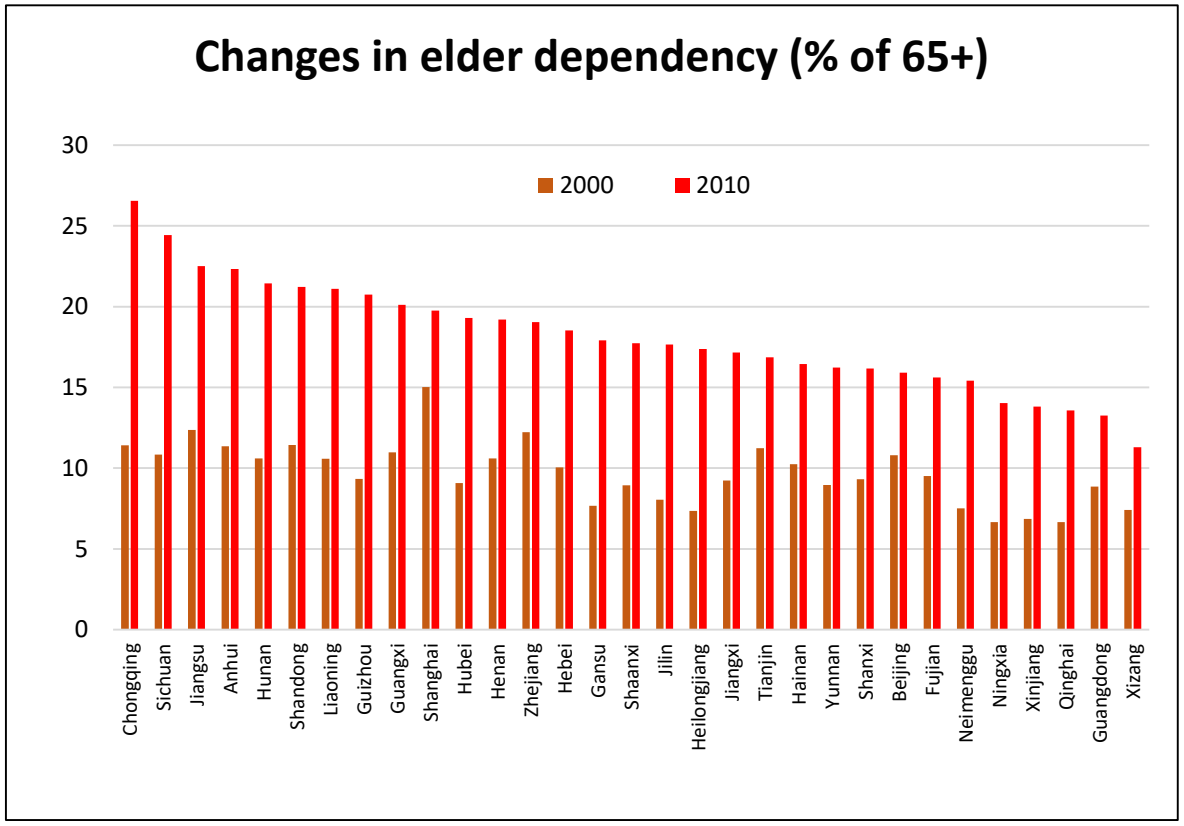
Population Analysis： Changes in Elder Dependency

Changes in elder dependency (% of 65+)： 2000-2010





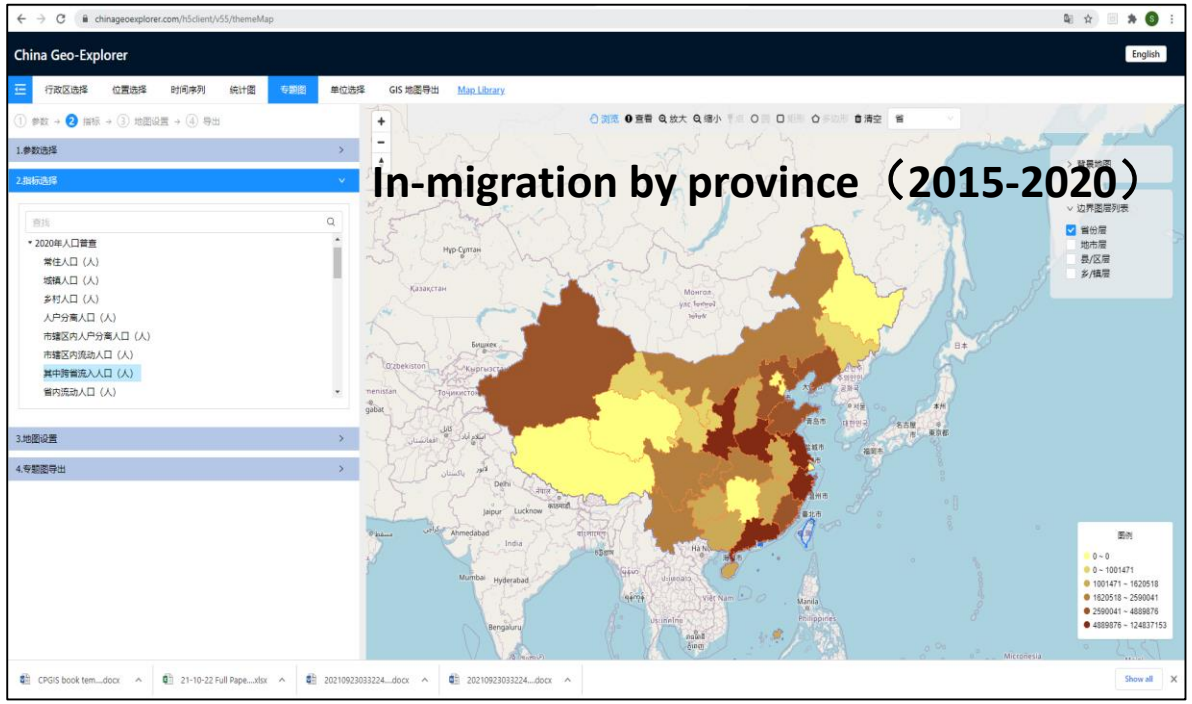
- Significant increase in elder dependency for all regions
- Higher elder dependency ratio in central and western regions
- Concentration of aging population in eastern and central regions.

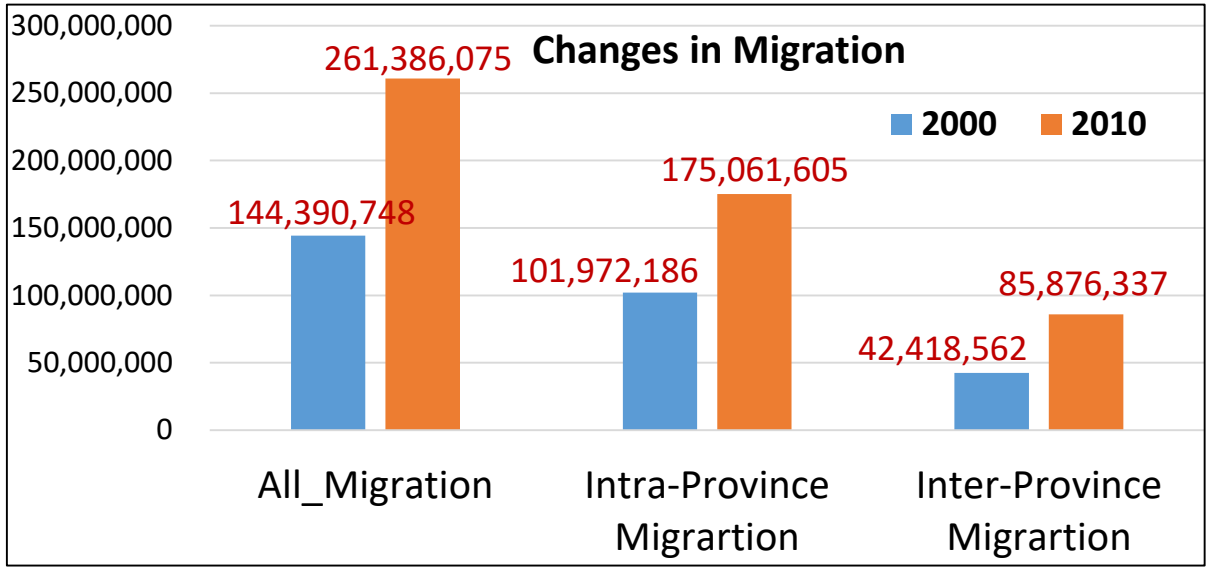


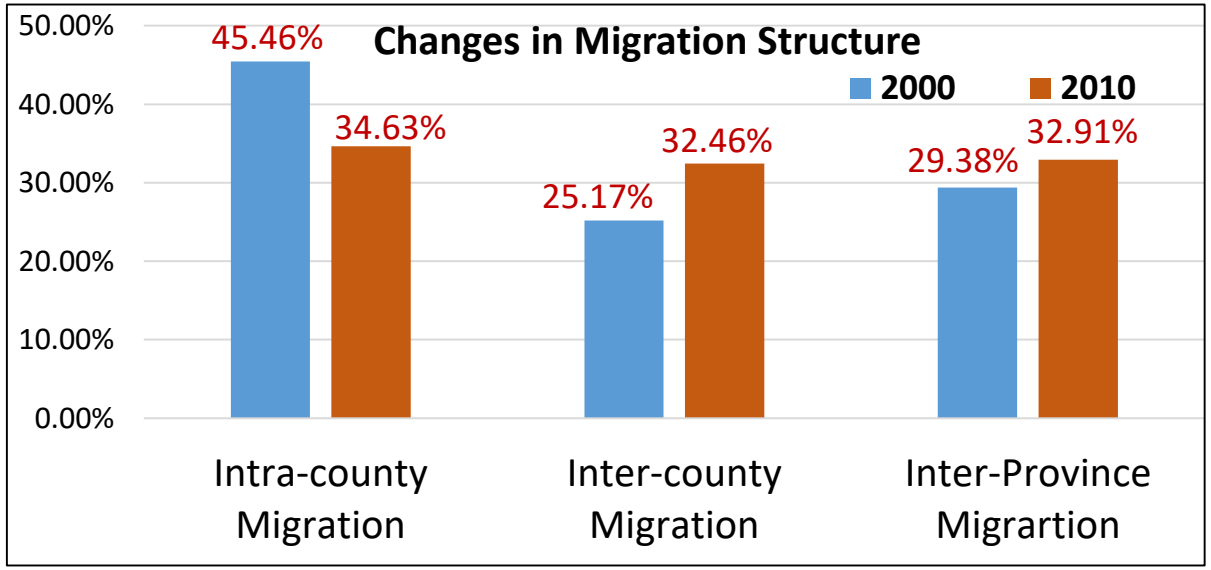
Data source: http://china-data-online.com

Population Analysis： Changes in Migration

- Significant increase of inter- and intra region migration
- The % of intra-county migration is declining while the % of inter-county and inter-province migration is increasing
- Eastern regions have positive net inter-province migration



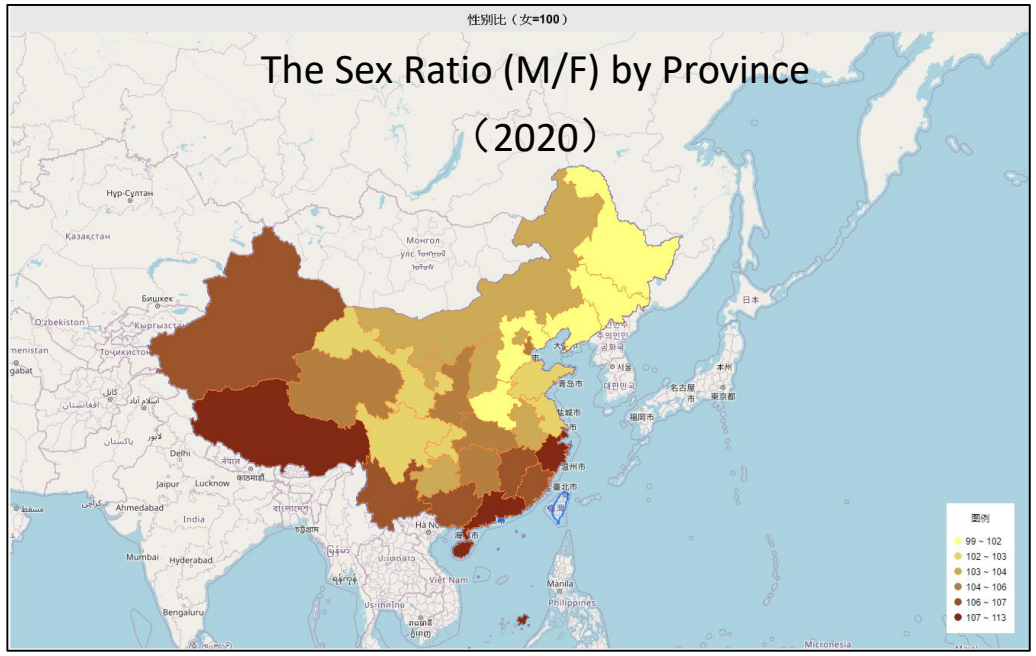


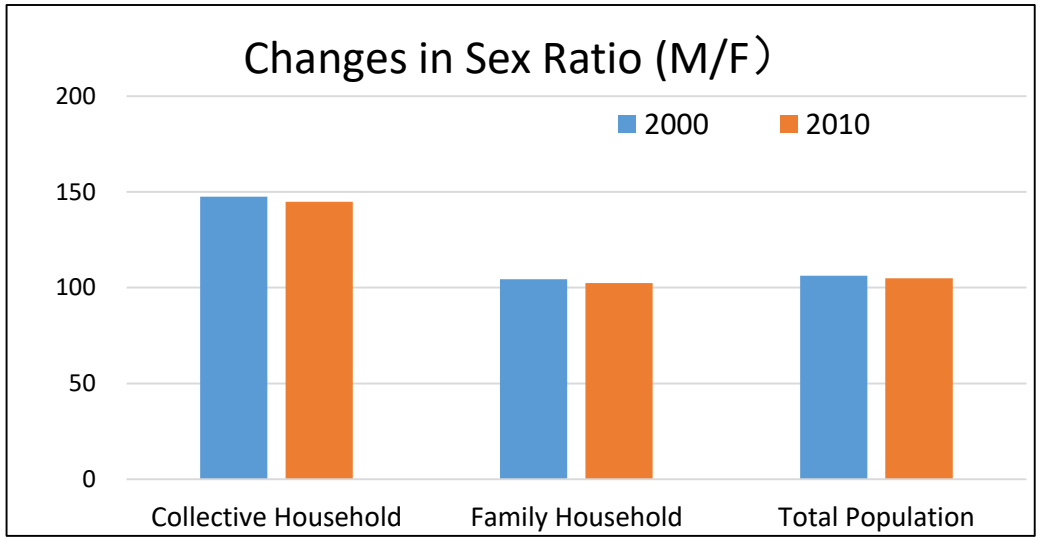


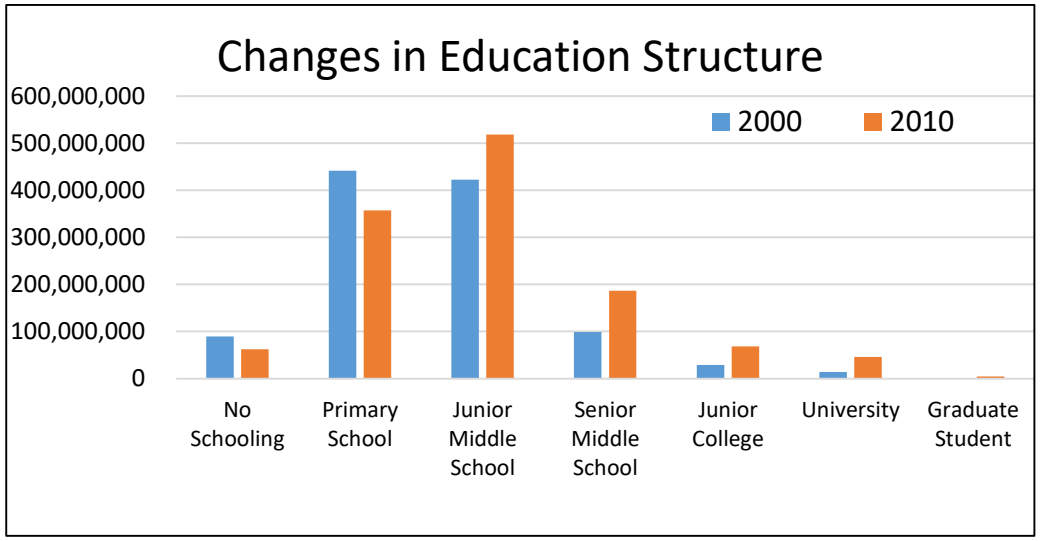
Data source: http://china-data-online.com

Population Analysis： Changes in population structure

- The sex ratio tends to be balanced
- The sex ratio (M/F) are significantly in southern east and western regions higher than average level
- The education in general has been improved while the number of primary students has been shrinking



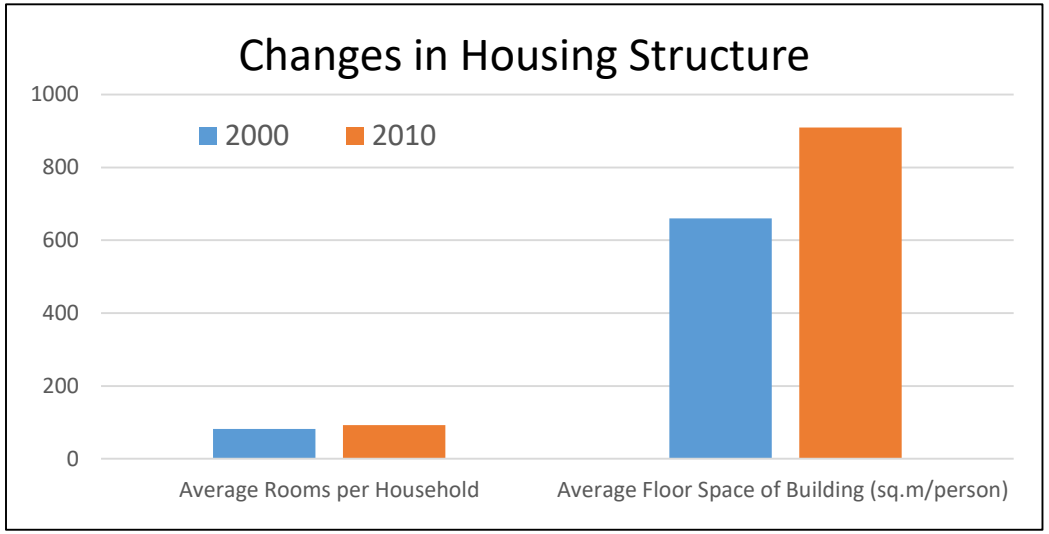


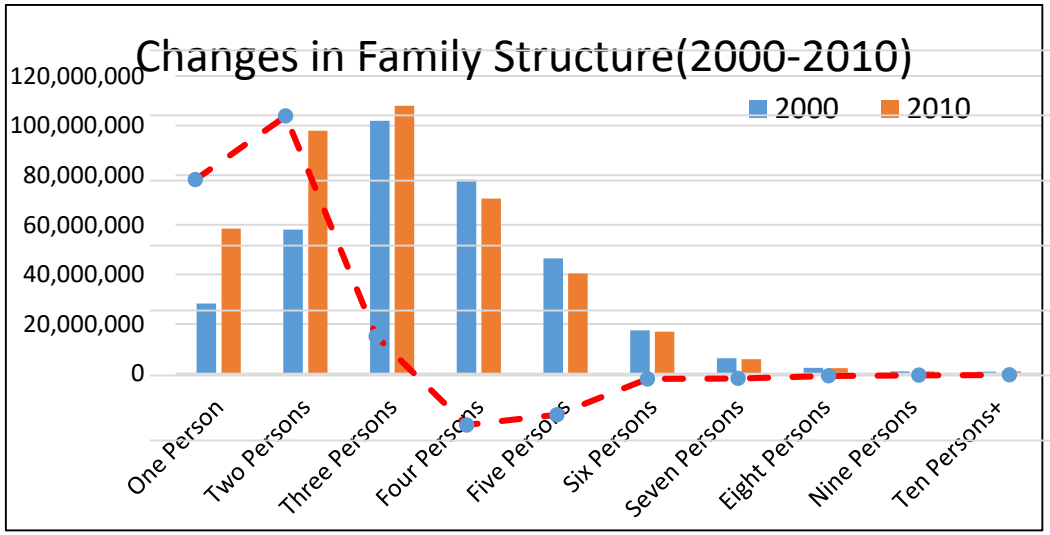


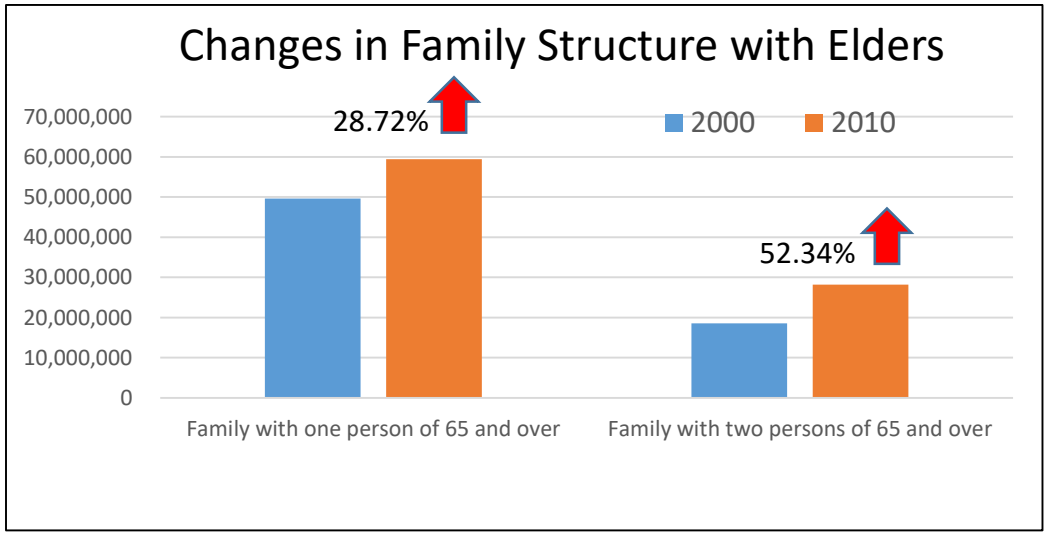
Data source: http://china-data-online.com

Population Analysis: Changes in family and housing structure

- Significant improvement in housing status
- Shrinking family scale
- Significant increasing in the % of families with more than one elders







Data source: http://china-data-online.com

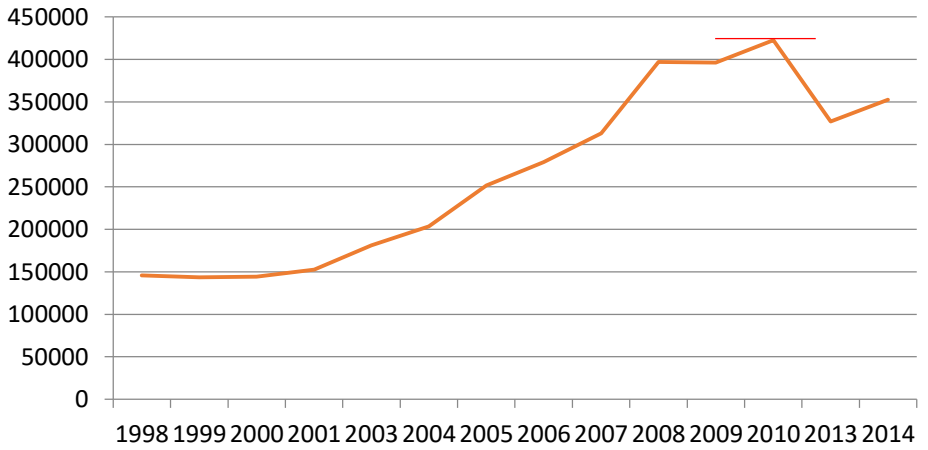
Spatiotemporal Analysis of Economy

- Spatial distribution and structural Changes in Manufacture Industry
- Spatiotemporal changes in population and industrial clusters
- Spatiotemporal changes in financial structure

Spatial Distribution and Structural Changes in Manufacture

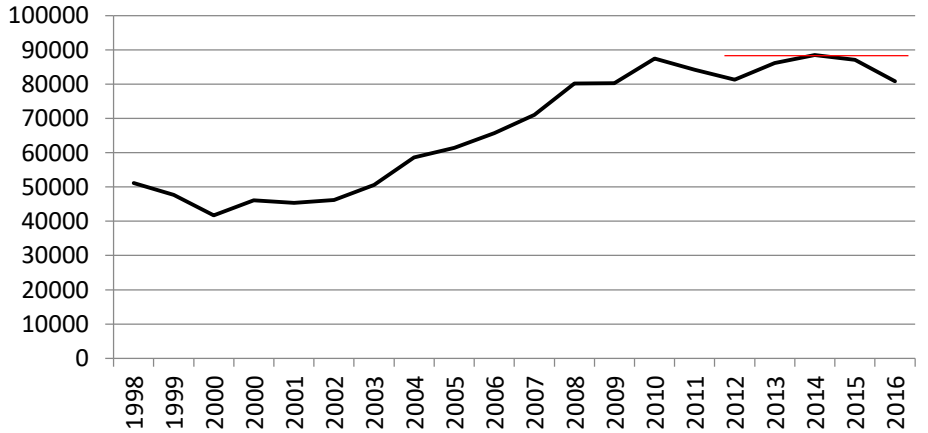
- Most manufactures are distributed in eastern and south central regions.
- The number of manufactures has been experienced rapid growth from 2000-2010 but tends to decrease since 2010
- The employment by manufactures has been experienced growth from 2000-2010 but tends to decrease since 2015

Changes in manufacture units: 1998-2014

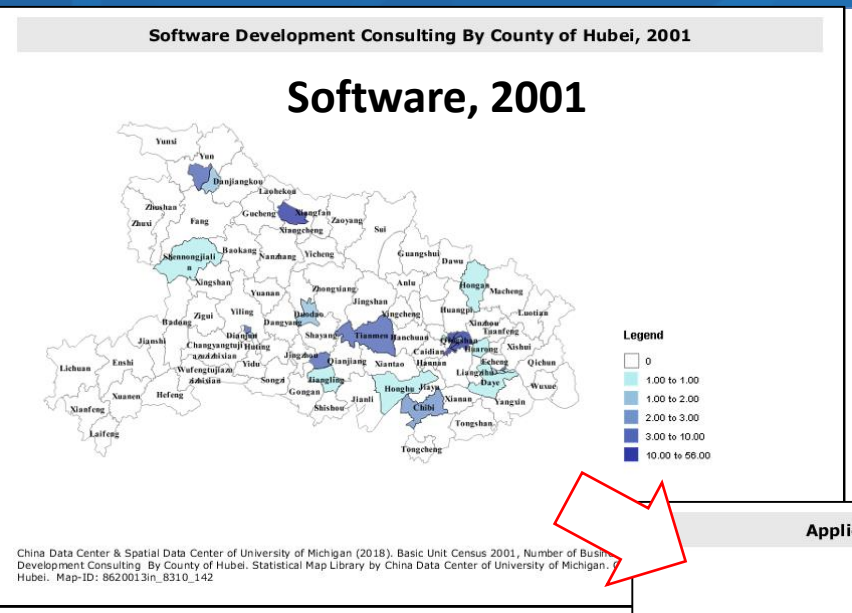


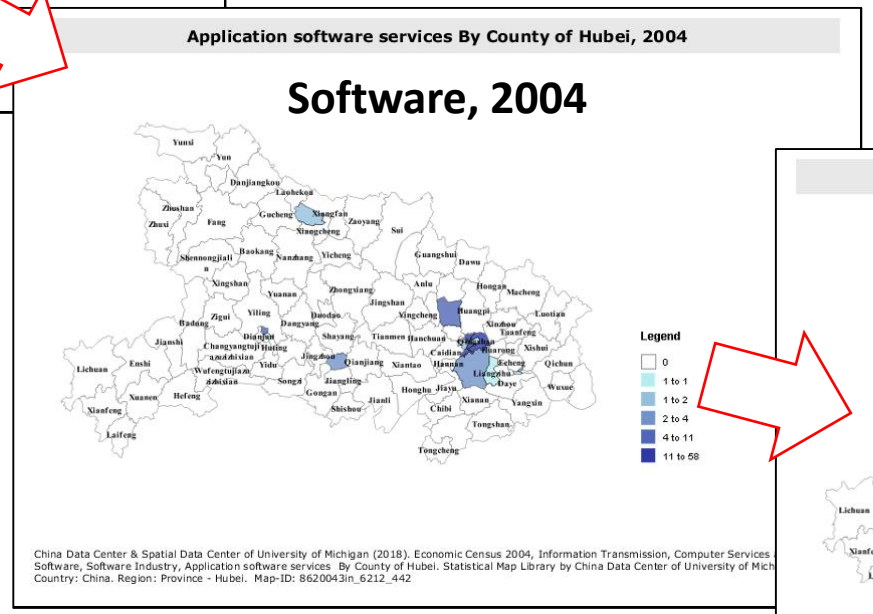
Changes in manufacture employment: 1998-2016

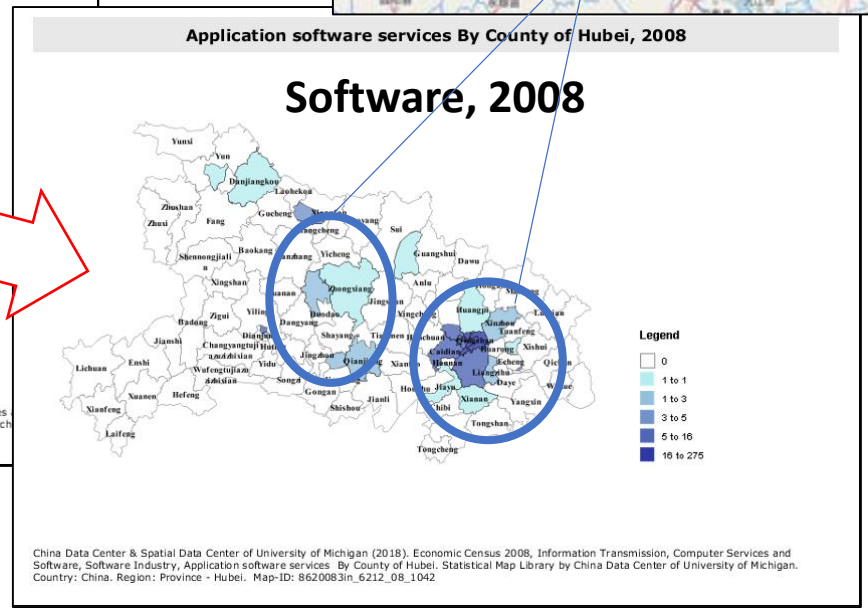
（Unit：One Thousands）

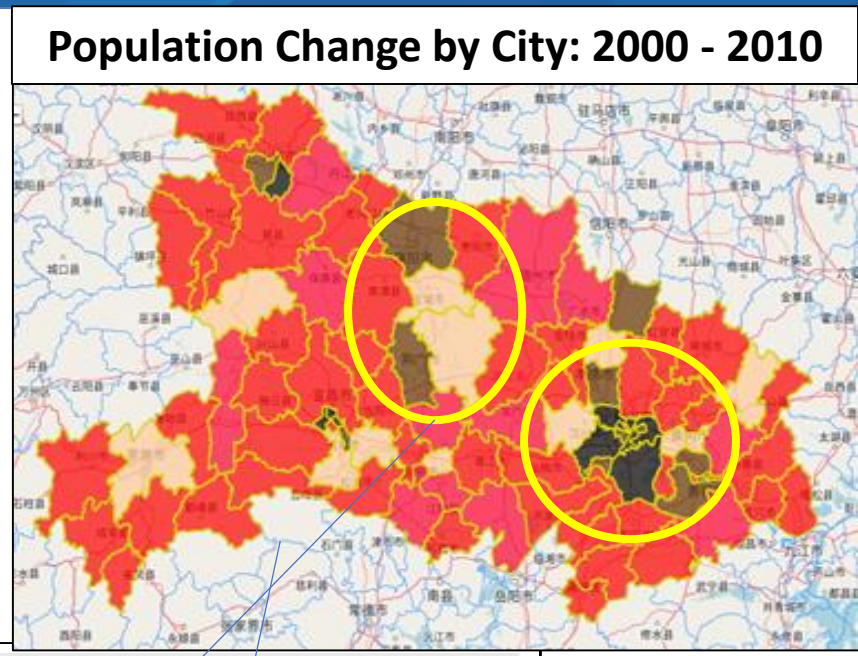


Spatiotemporal changes in population and industrial clusters
（Hubei Case）



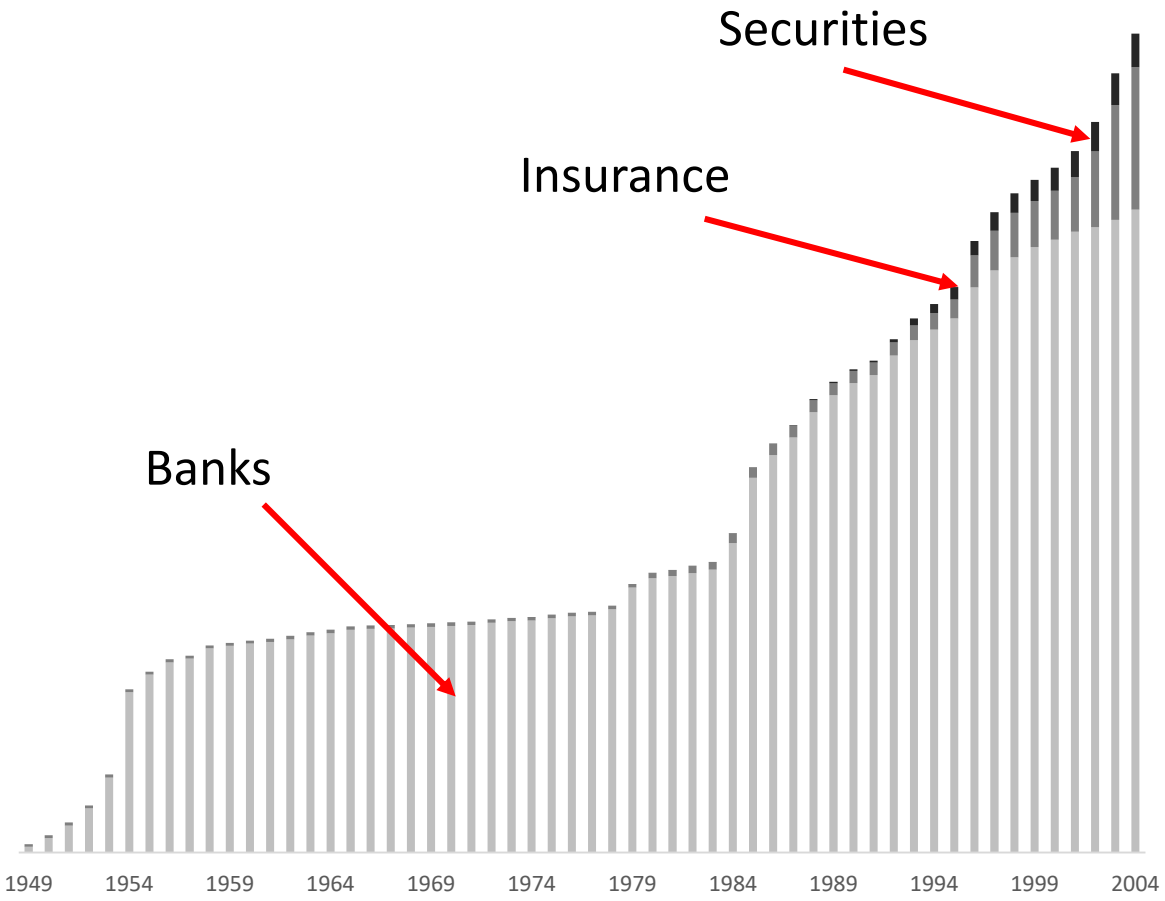




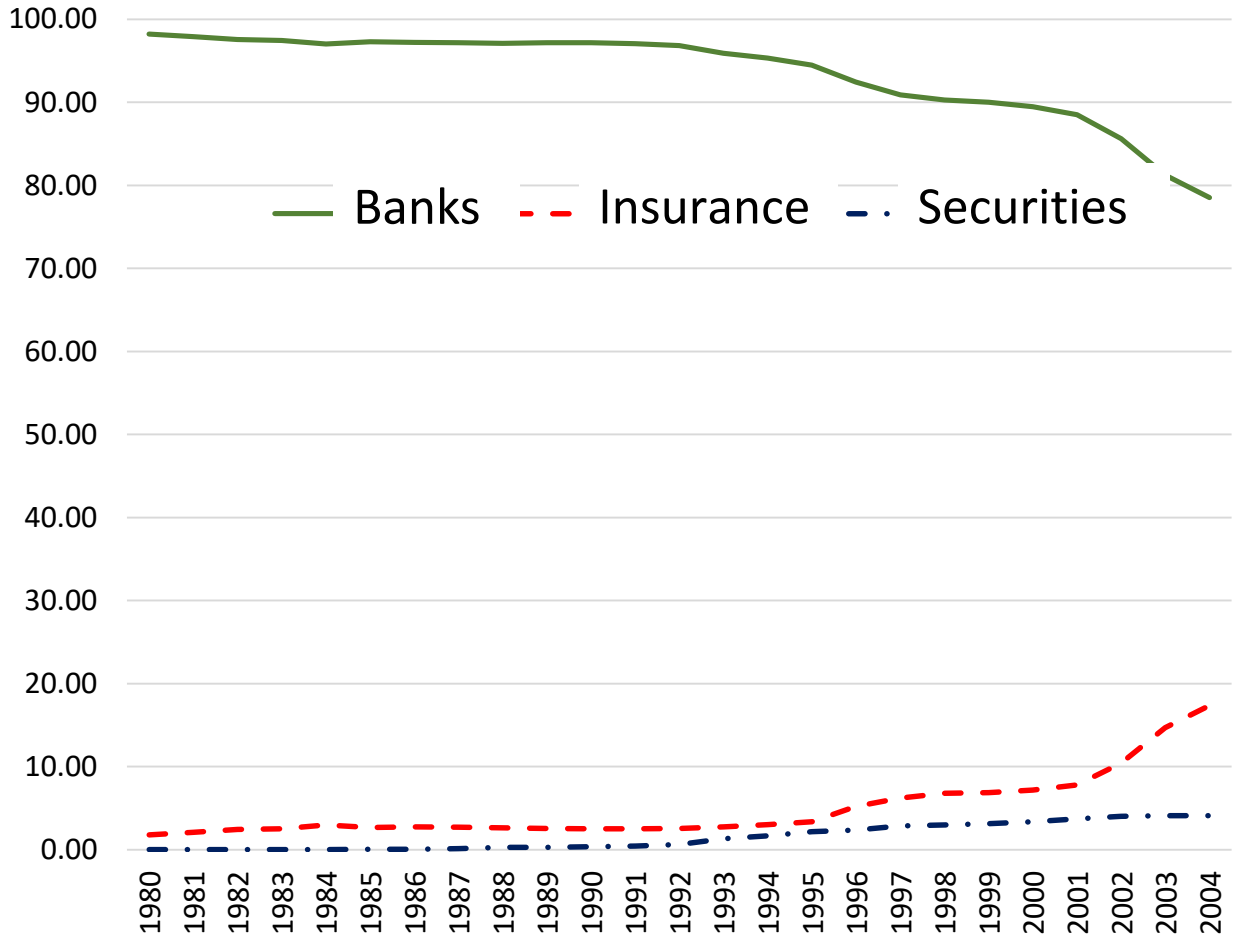


Spatiotemporal Changes in Financial Structure

Changes in the Number of Financial Institutions



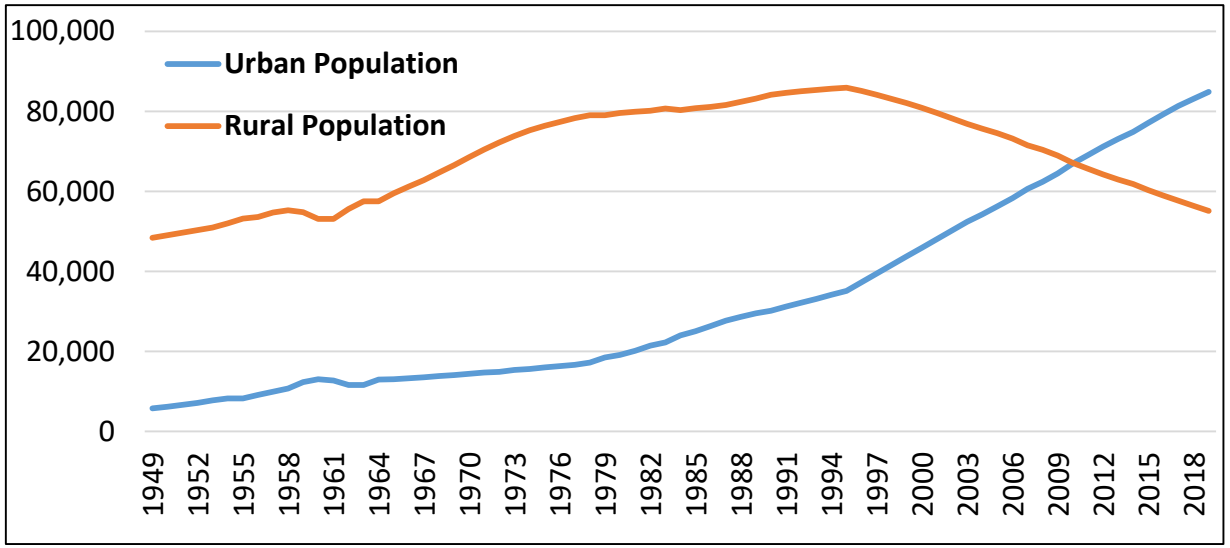
Changes in the Financial Structure (%)

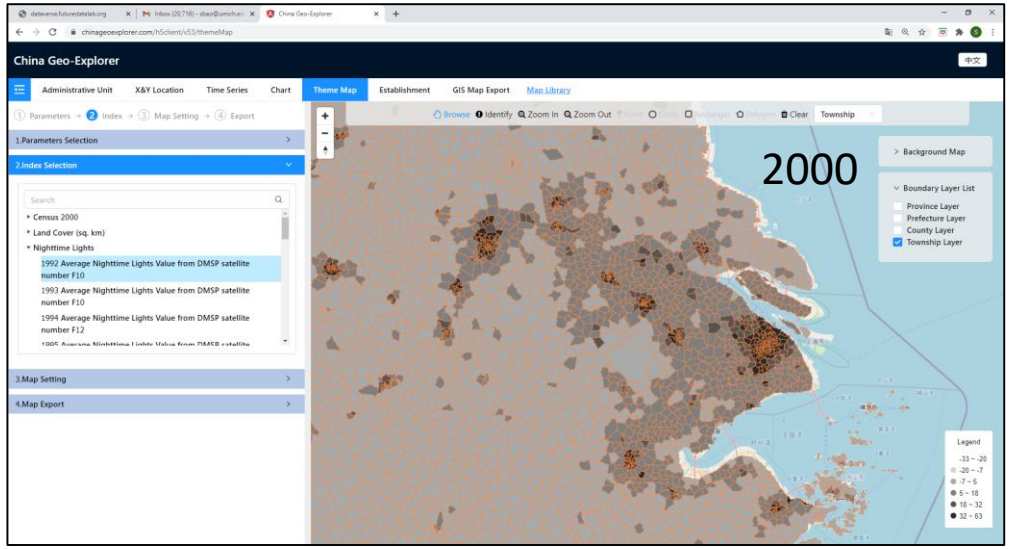


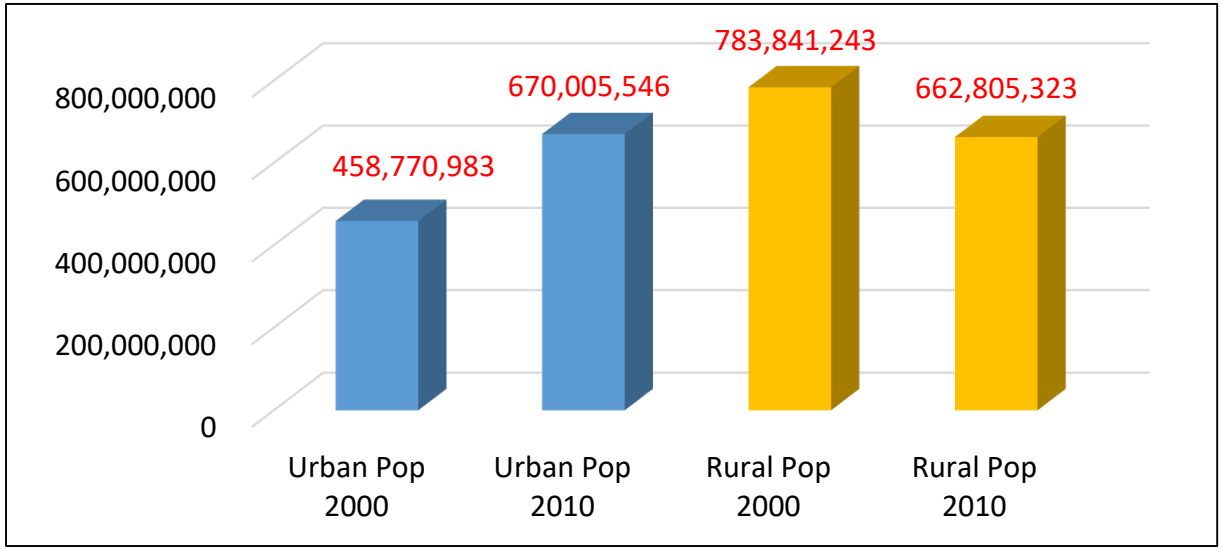
Spatiotemporal Analysis of Urban and Rural Development

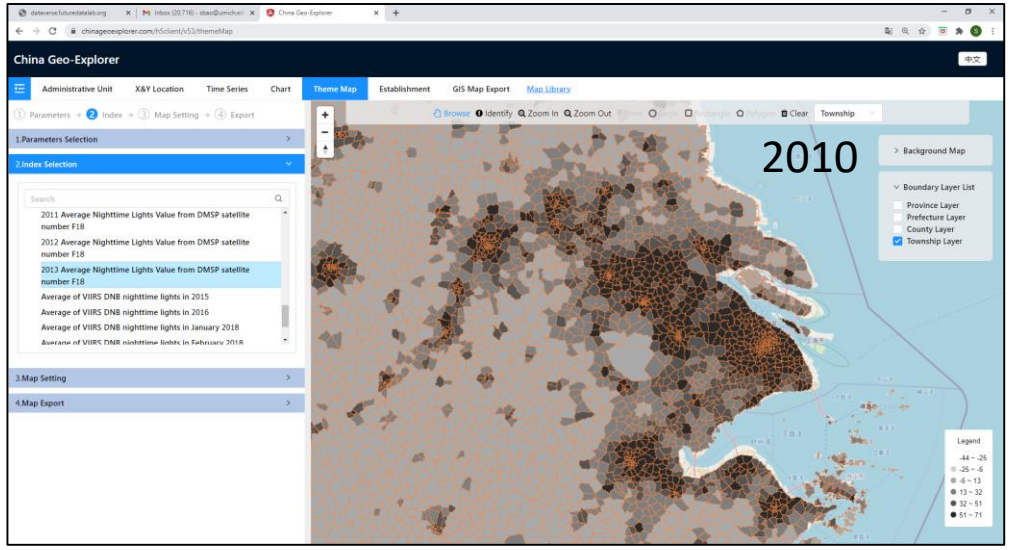
- Spatiotemporal changes in urban and rural areas
- Changes in urban and non-agriculture population
- Spatial distribution and structure change in rural population

Spatiotemporal Changes in Urban and Rural Areas









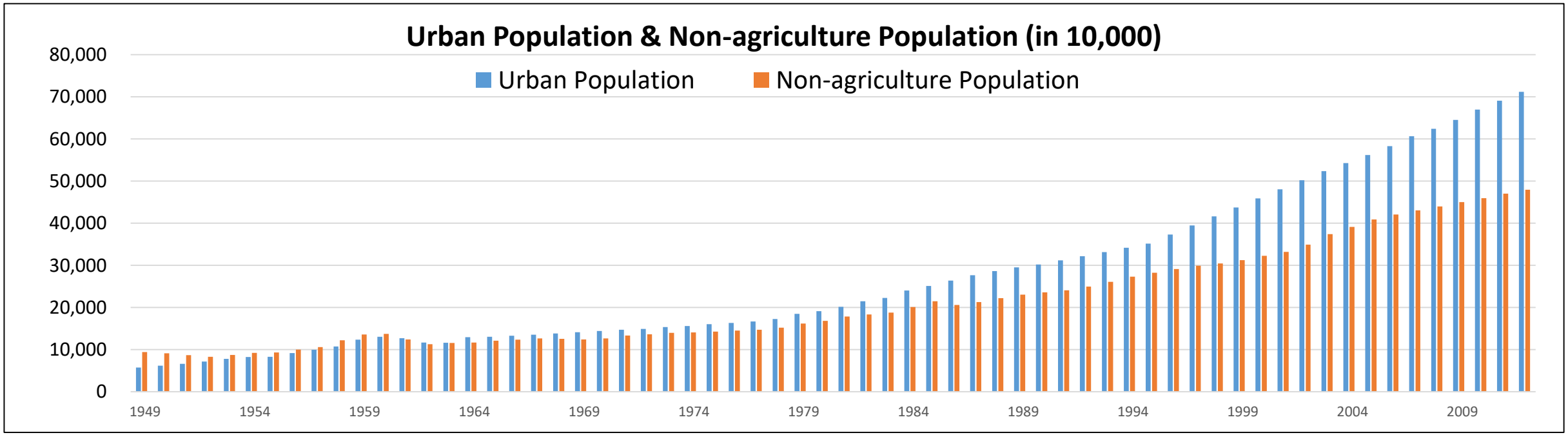
Data source： http://china-data-online.com

Changes in Urban and Non-agriculture Population

Population by Definition:

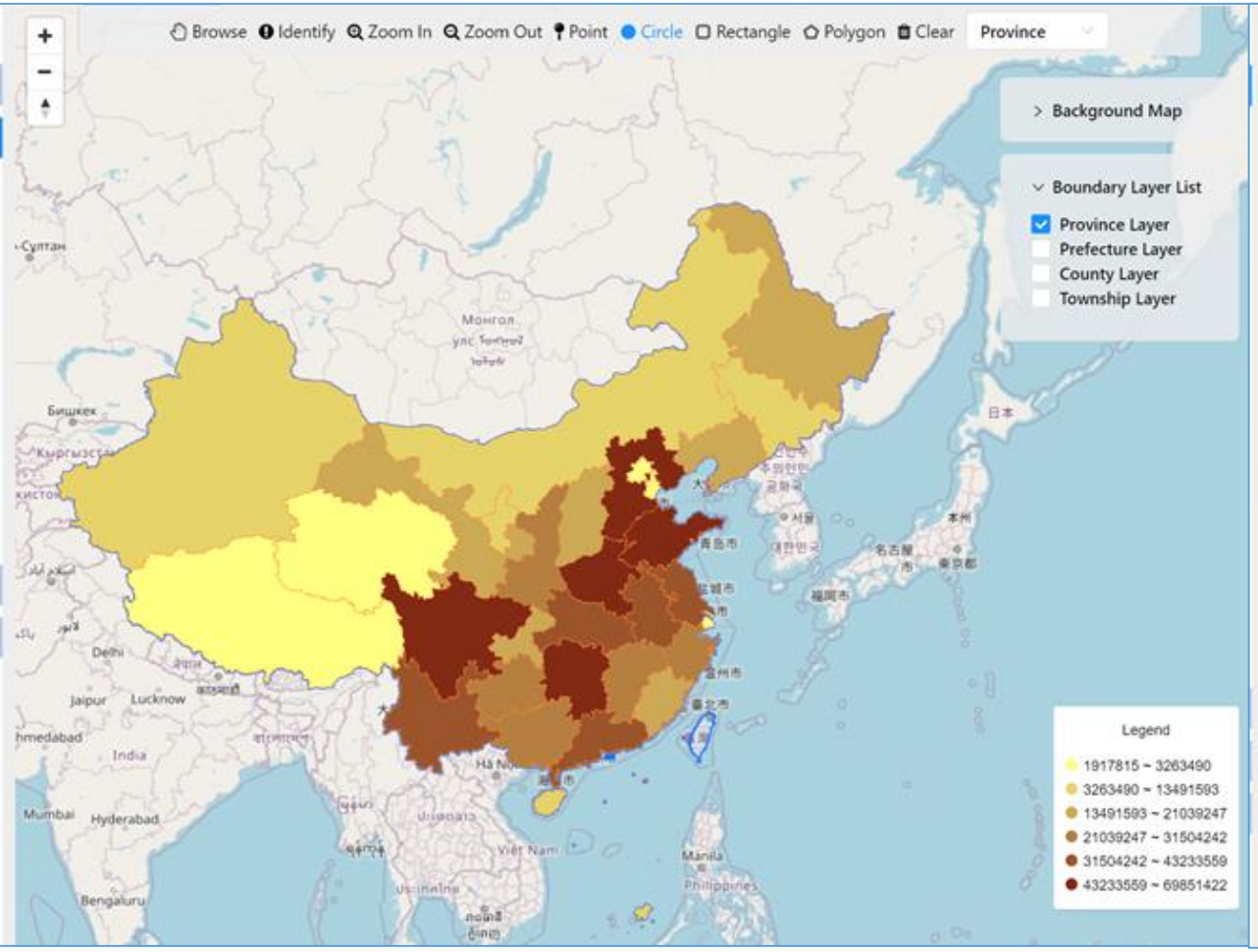
- **By household registration:**
  - Non-agriculture
  - Agriculture
- **By place to stay**
  - Urban population
  - Rural population

Population	Beijing	Tianjin	Shanghai	Chongqing	Shenzhen
2010 Population	19,612,368	12,938,693	23,019,196	28,846,170	10,358,381
2010 Household Registration Population	12,554,049	9,919,579	14,185,160	33,149,845	2,510,145
2010 Urban Population	16,446,857	9,562,255	20,217,748	10,778,685	10,358,381

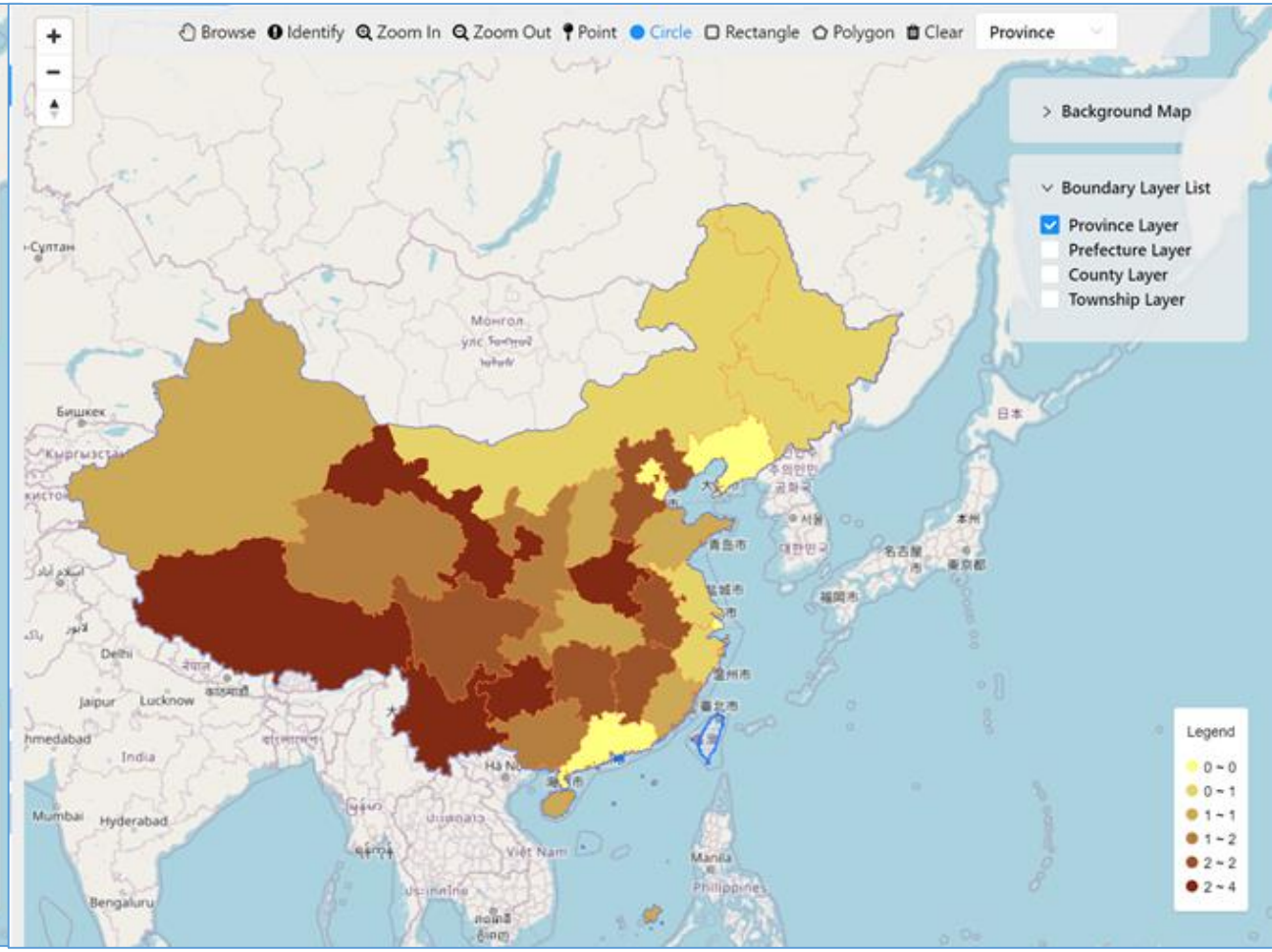


Spatial Distribution and Structure Change in Rural Population

Rural Population by Province in 2000



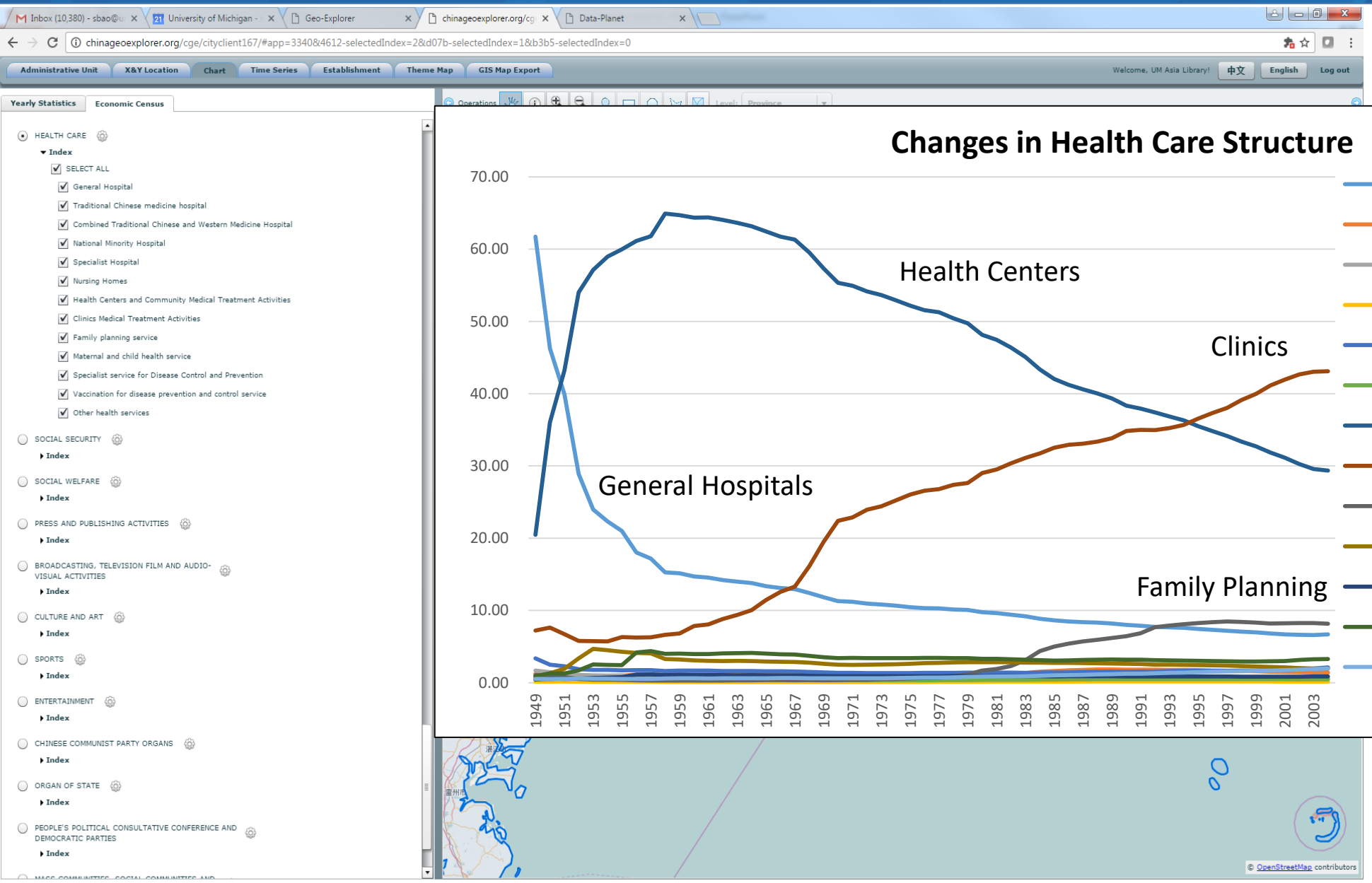
Rural Population by Province in 2000（%）



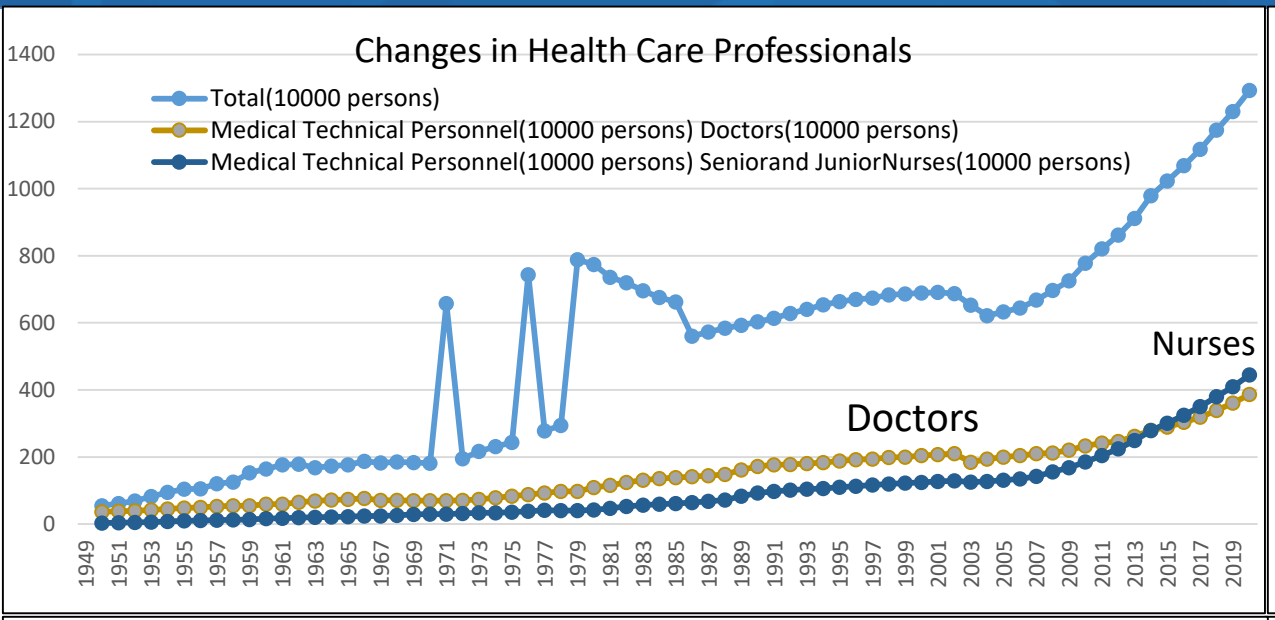
Spatiotemporal Analysis of Health

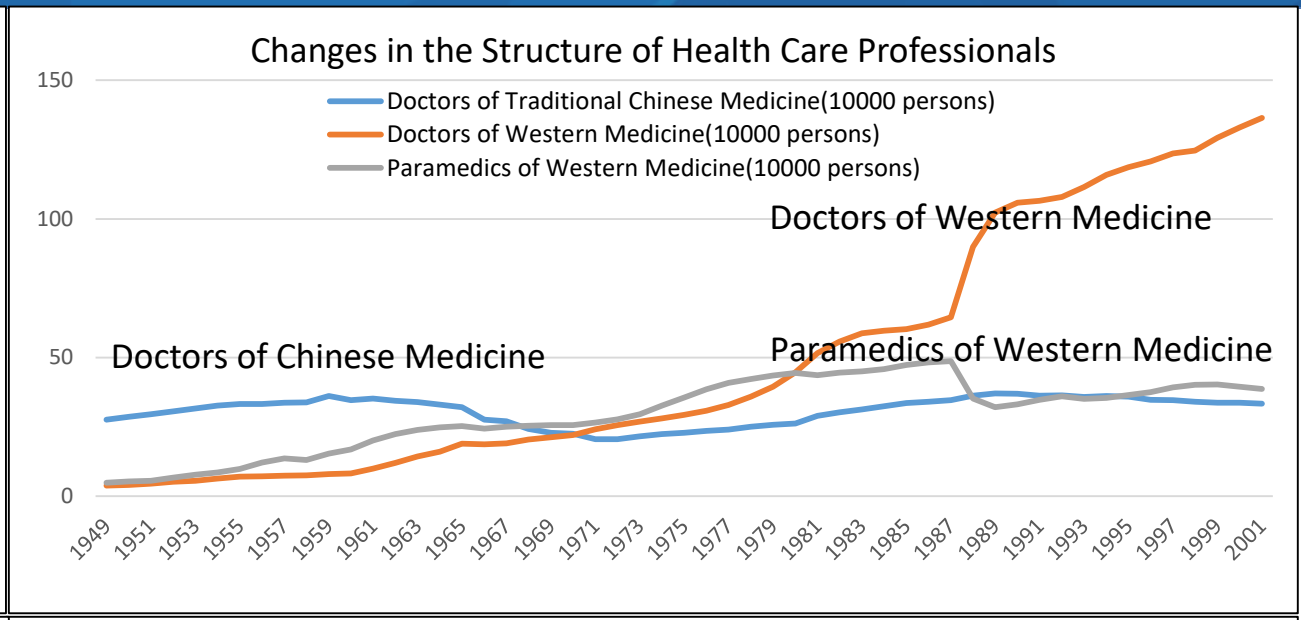
- Structural Changes in Health Care Industries
- Changes in Health Care Institutions and Professionals
- Spatial Distribution of Health Care Institutions and Professionals and Structural Changes

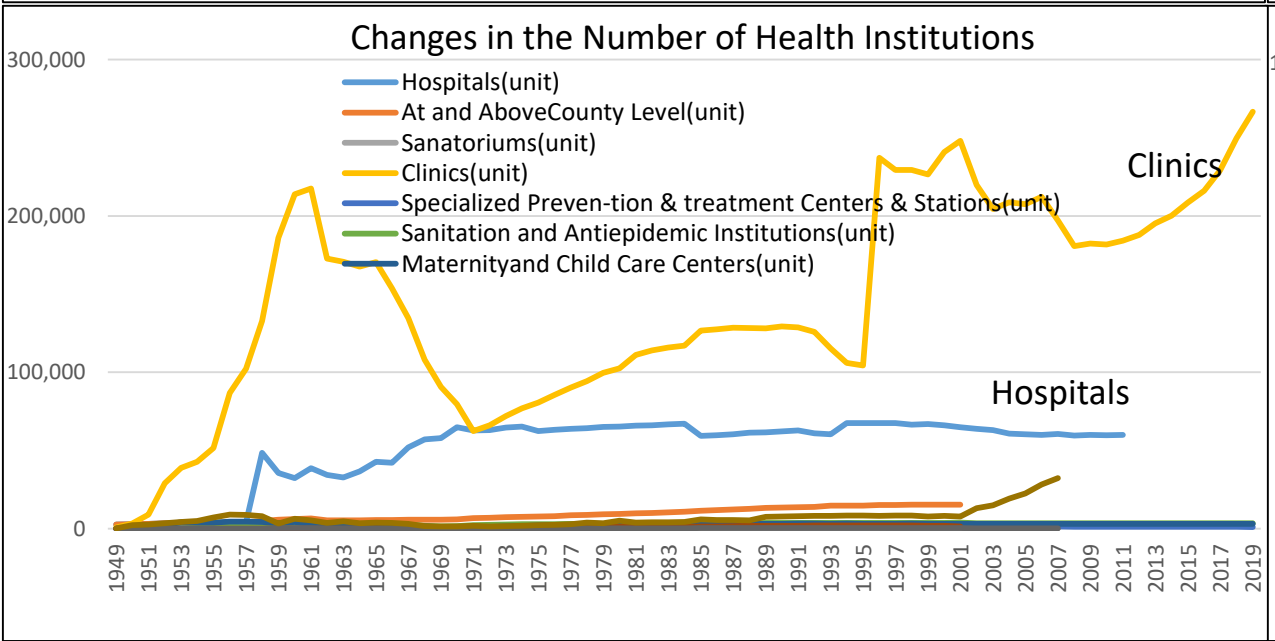
Structural Changes in Health Care Industries

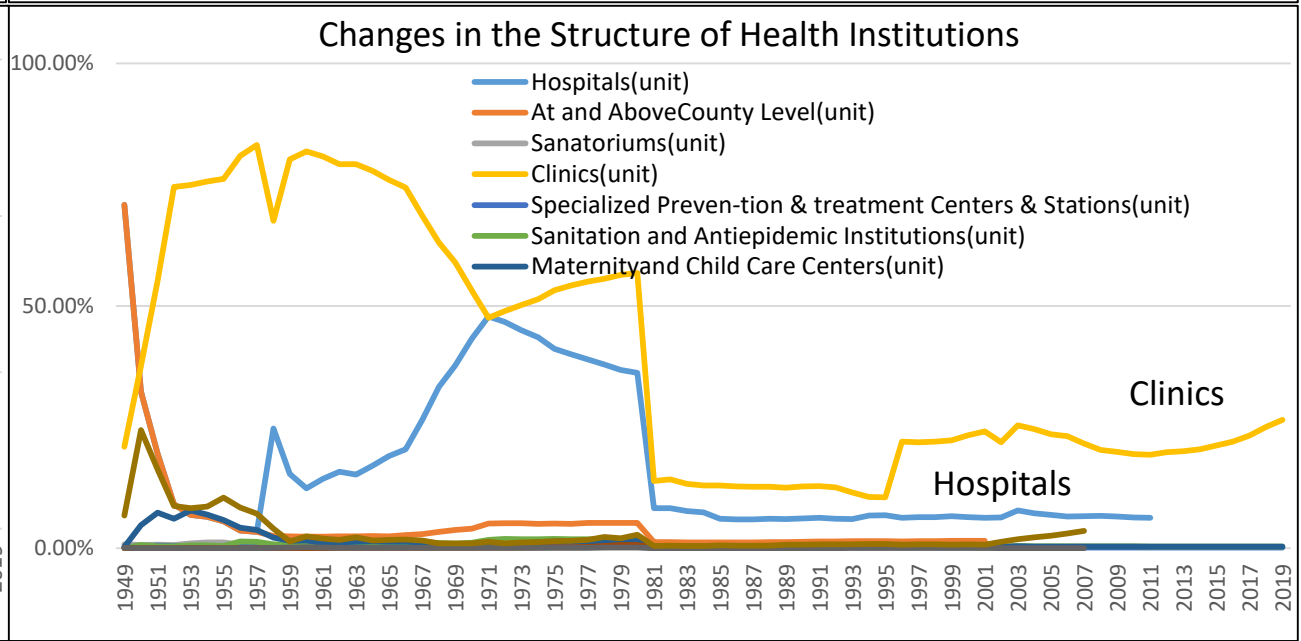


Changes in Health Care Institutions and Professionals

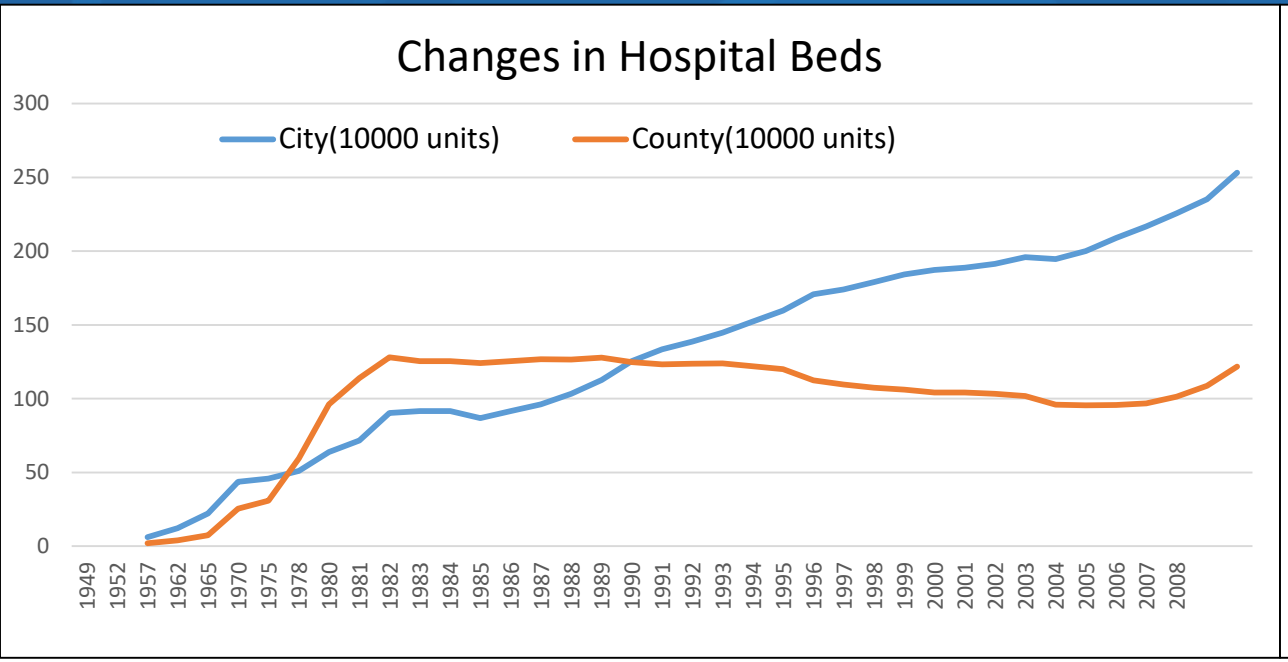


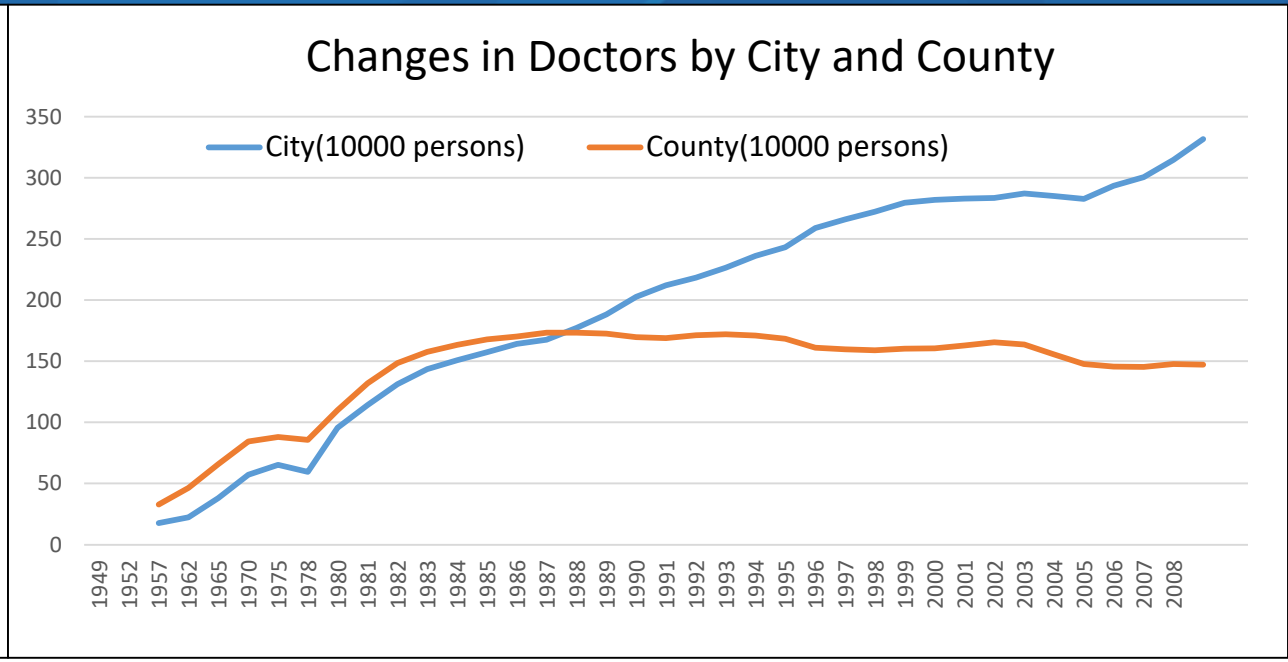




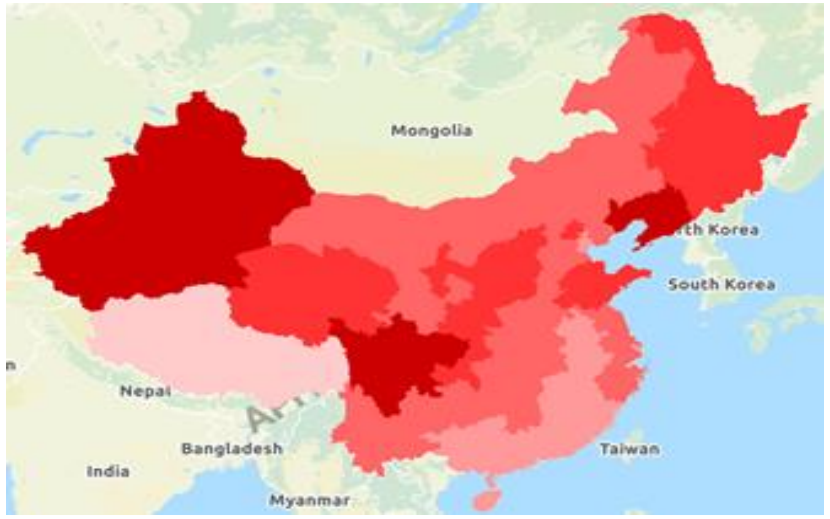


Spatial Distribution of Health Care Institutions and Professionals and Structural Changes

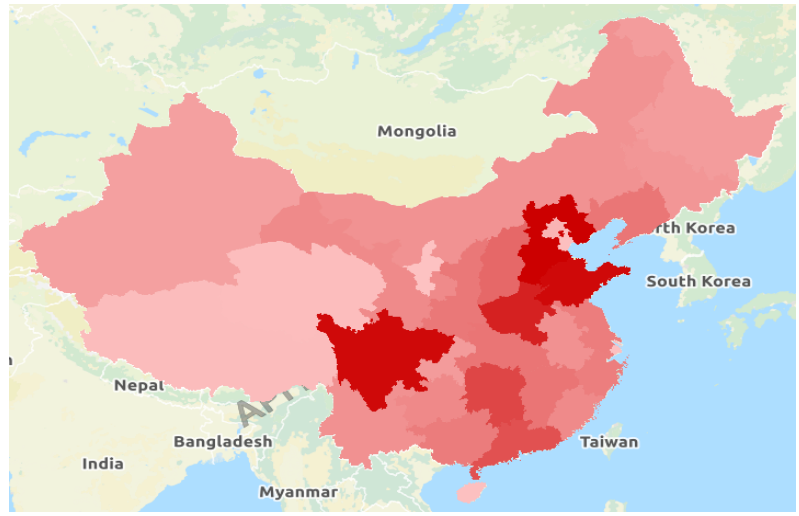




Doctors Per 10,000 person by Province (2018)



Beds Per 10,000 person by Province (2012)



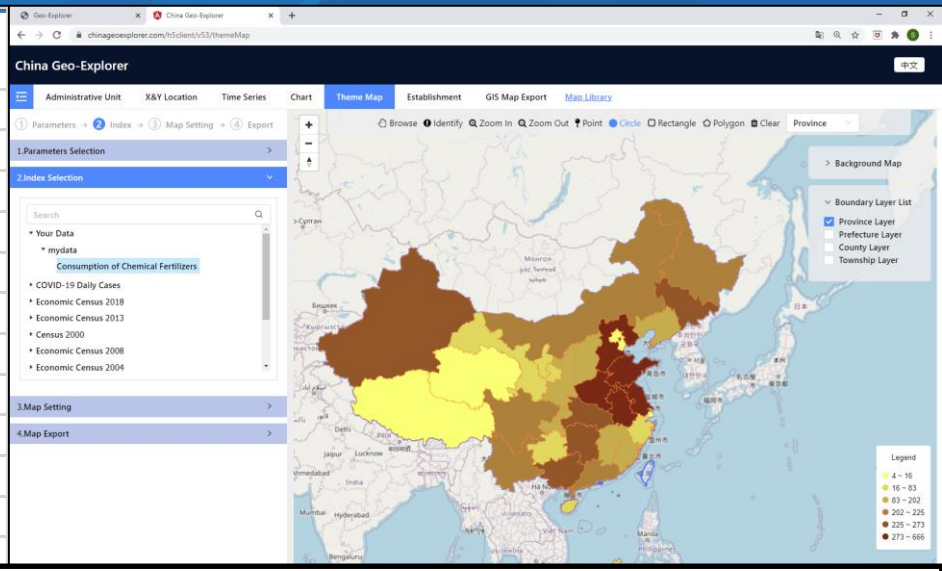
Health Care Institutions by Province (2018)

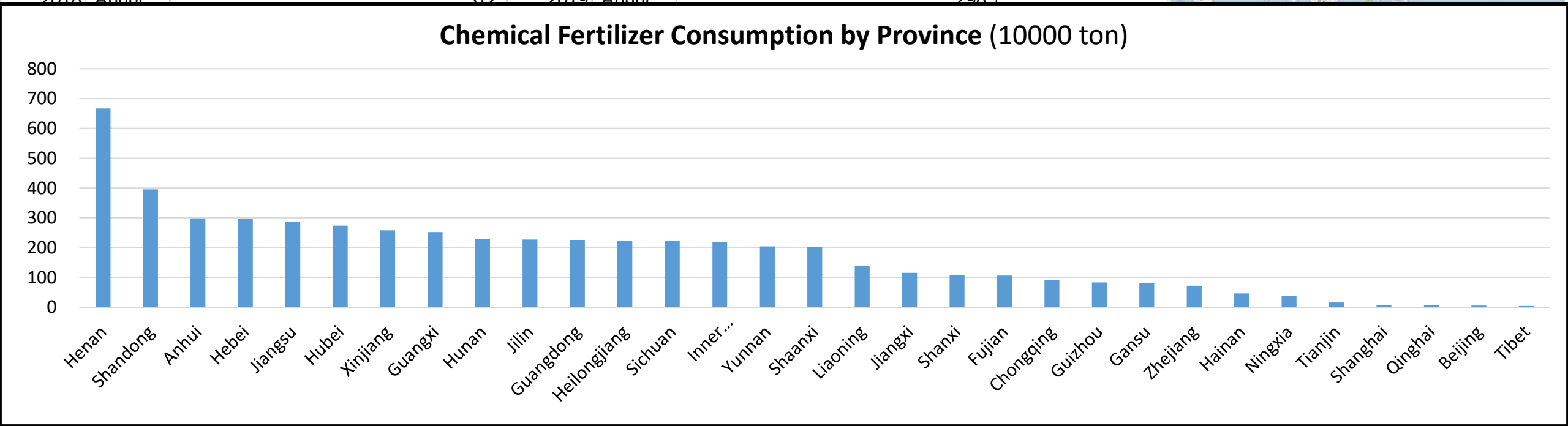
Spatiotemporal Analysis of Environment

- ☐ Spatiotemporal Distribution of Chemical Fertilizer Consumption
- ☐ Spatiotemporal Distribution of Textile Industries
- ☐ Spatiotemporal Distribution of Power Productions
- ☐ Impact Analysis of Wujiang Power Plant on Population and Economy

Spatiotemporal Distribution of Chemical Fertilizer Consumption

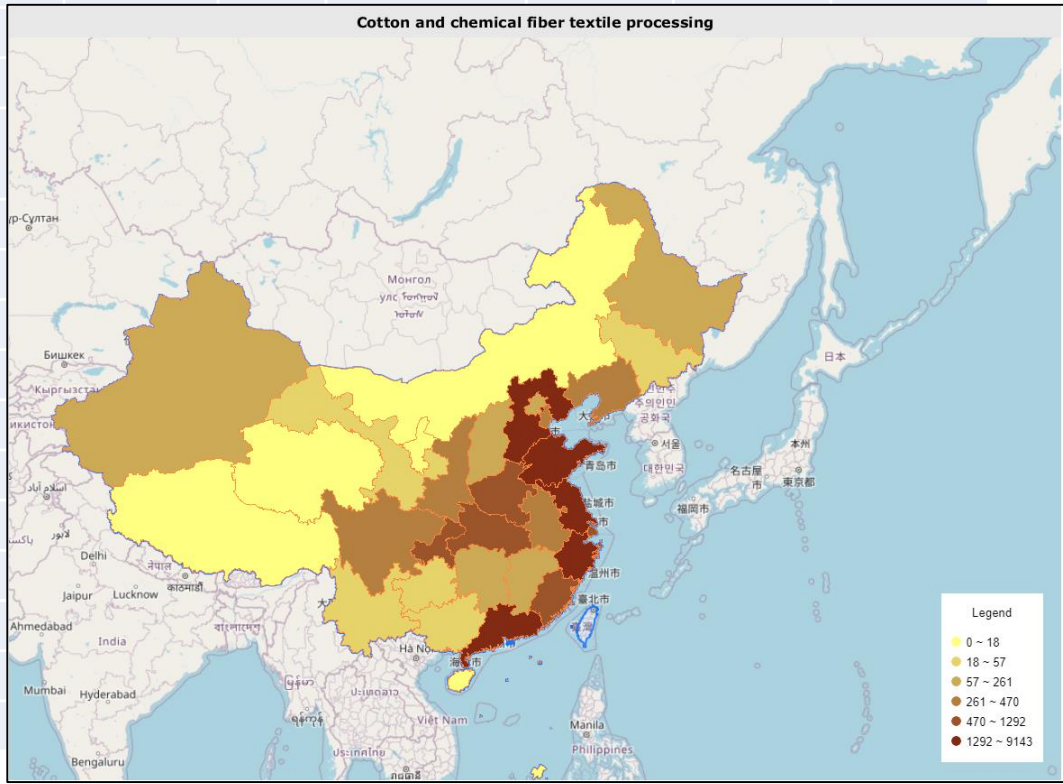
Time	District	Consumption of Chemical Fertilizers (10000 tons)	Time	District	Consumption of Chemical Fertilizers (10000 tons)
2018	Beijing	7	2019	Beijing	6
2018	Tianjin	17	2019	Tianjin	16
2018	Hebei	312	2019	Hebei	297
2018	Shanxi	110	2019	Shanxi	108
2018	Inner Mo	223	2019	Inner Mo	218
2018	Liaoning	145	2019	Liaoning	140
2018	Jilin	228	2019	Jilin	227
2018	Heilongjia	246	2019	Heilongjia	223
2018	Shangha	8	2019	Shangha	8
2018	Jiangsu	292	2019	Jiangsu	286
2018	Zhejiang	78	2019	Zhejiang	73
2018	Anhui	312	2019	Anhui	298





Spatiotemporal Distribution of Textile Industries

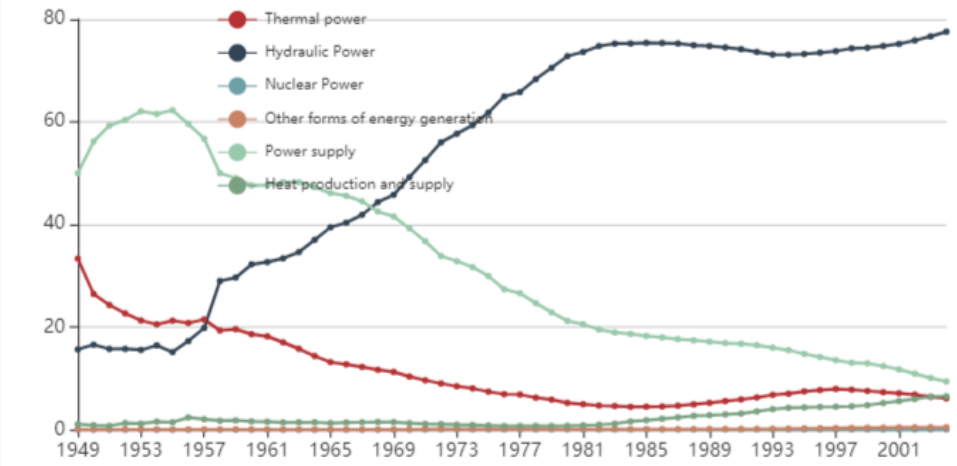
Textile Industry/Province	beijing	tianjin	hebei	shanxi	neimenggu	liaoning	jilin	heilongjiang	shanghai	jiangsu	zhejiang
Cotton and chemical fiber textile processing	101	279	1,776	129	18	470	47	78	797	9,143	5,220
Printing and Dyeing of Cotton and Chemical Fibers	34	109	165	22	1	102	4	4	314	1,506	1,258
Wool Tops Processing	3	9	90	3	70	13	4	5	33	276	35
Wool Textile	44	74	602	16	93	34	20	10	132	955	465
Printing, Dyeing and Refining of Wool	2	16	61	0	36	6	3	2	59	185	115
Hemp Spins	1	4	8	6	4	20	16	173	1	206	69
Silk Reeling Processing	0	1	2	7	1	192	1	1	2	242	259
Silk Spinning and silk processing	8	29	13	4							
Printing, Dyeing and Refining of Silk	6	15	11	1							
Cotton and chemical fiber products manufacturing	166	133	1,252	40							
Woolen Products manufacturing	10	22	150	6							
Hemp products manufacturing	6	9	9	0							
Silk products manufacturing	14	5	7	0							
Fishing Rope, Tug and Cable	10	37	46	1							
Woven Belt and Curtain Cloth	16	44	35	5							
Nonwoven manufacturing	33	39	171	3							
Other textile made-ups manufacturing	36	60	39	7							
Products of Cotton and Chemical Fibers	128	218	148	57							
Knitted and Crocheted Products of Wool	211	143	144	11							
Knitted and Crocheted Products of Silk	10	22	16	4							
Other knitwear and woven goods	21	41	21	8							



Spatiotemporal Distribution of Power Productions

PERCENTAGE STARTUPS ACCUMULATION Period

Start Date 1949 End Date 2004 EXPORT PDF EXPORT EXCEL



Statistics

Thermal power

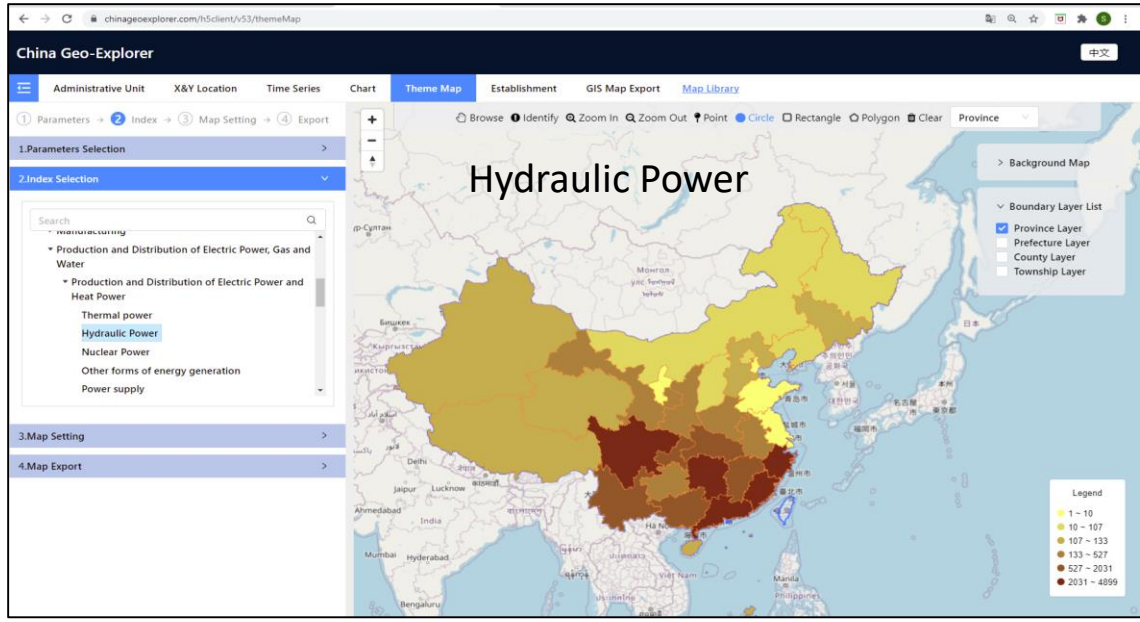
Average: 11.16127966125046
Variance: 47.420675240773654
Stardard Deviation: 6.88626714851912

Hydraulic Power

Average: 54.640297012324666
Variance: 503.51415961078953
Stardard Deviation: 22.439121186240552

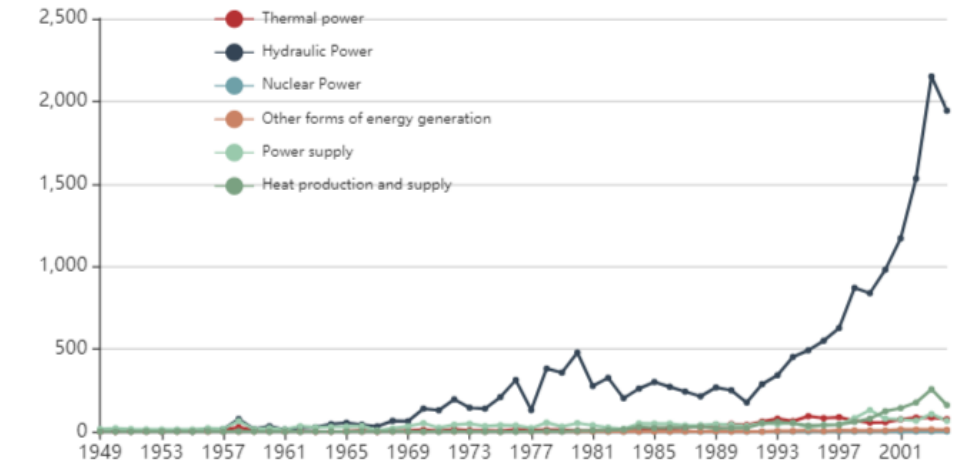
Nuclear Power

Average: 0.013917468616561013



PERCENTAGE STARTUPS ACCUMULATION Period

Start Date 1949 End Date 2004 EXPORT PDF EXPORT EXCEL



Statistics

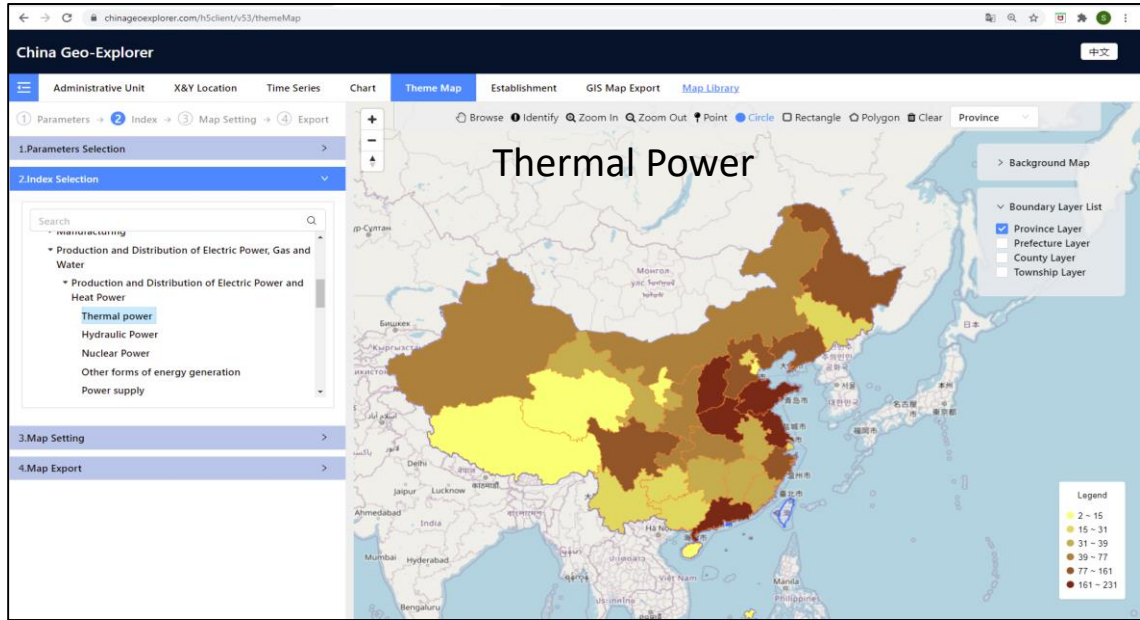
Thermal power

Average: 24.875
Variance: 844.6450892857143
Stardard Deviation: 29.062778416485138

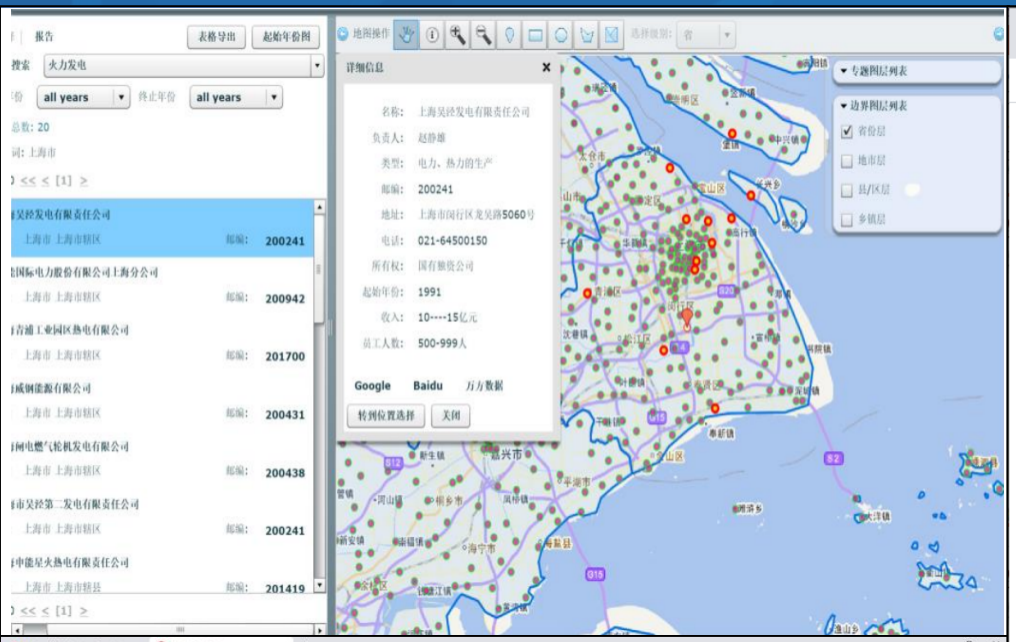
Hydraulic Power

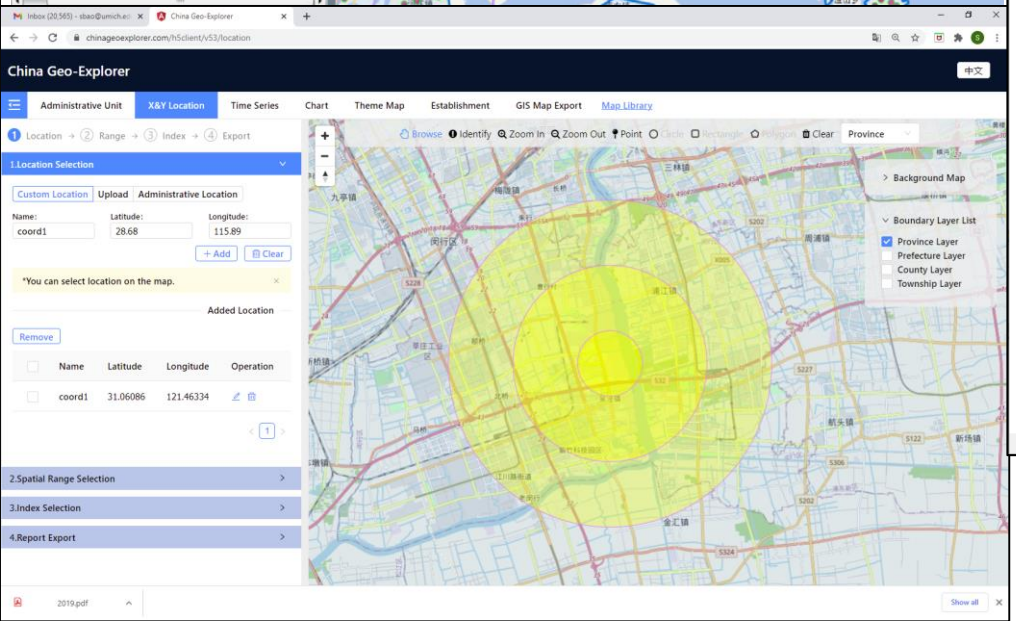
Average: 324.23214285714283
Variance: 205476.46396683672
Stardard Deviation: 453.29511796051446

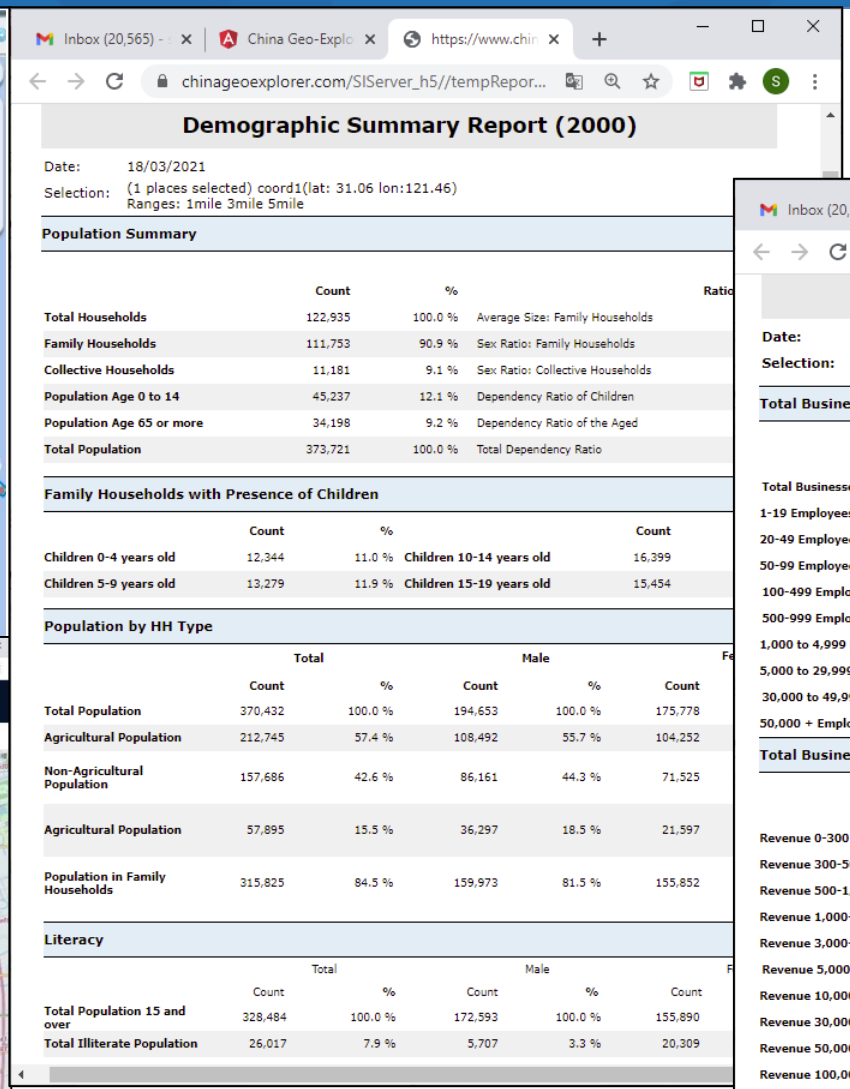
Nuclear Power



Impact Analysis of Wujiang Power Plant on Population and Economy







Demographic Summary Report (2000)

Date: 18/03/2021

Selection: (1 places selected) coord1(lat: 31.06 lon:121.46)
Ranges: 1mile 3mile 5mile

Population Summary

	Count	%		Ratio
Total Households	122,935	100.0 %	Average Size: Family Households	
Family Households	111,753	90.9 %	Sex Ratio: Family Households	
Collective Households	11,181	9.1 %	Sex Ratio: Collective Households	
Population Age 0 to 14	45,237	12.1 %	Dependency Ratio of Children	
Population Age 65 or more	34,198	9.2 %	Dependency Ratio of the Aged	
Total Population	373,721	100.0 %	Total Dependency Ratio	

Family Households with Presence of Children

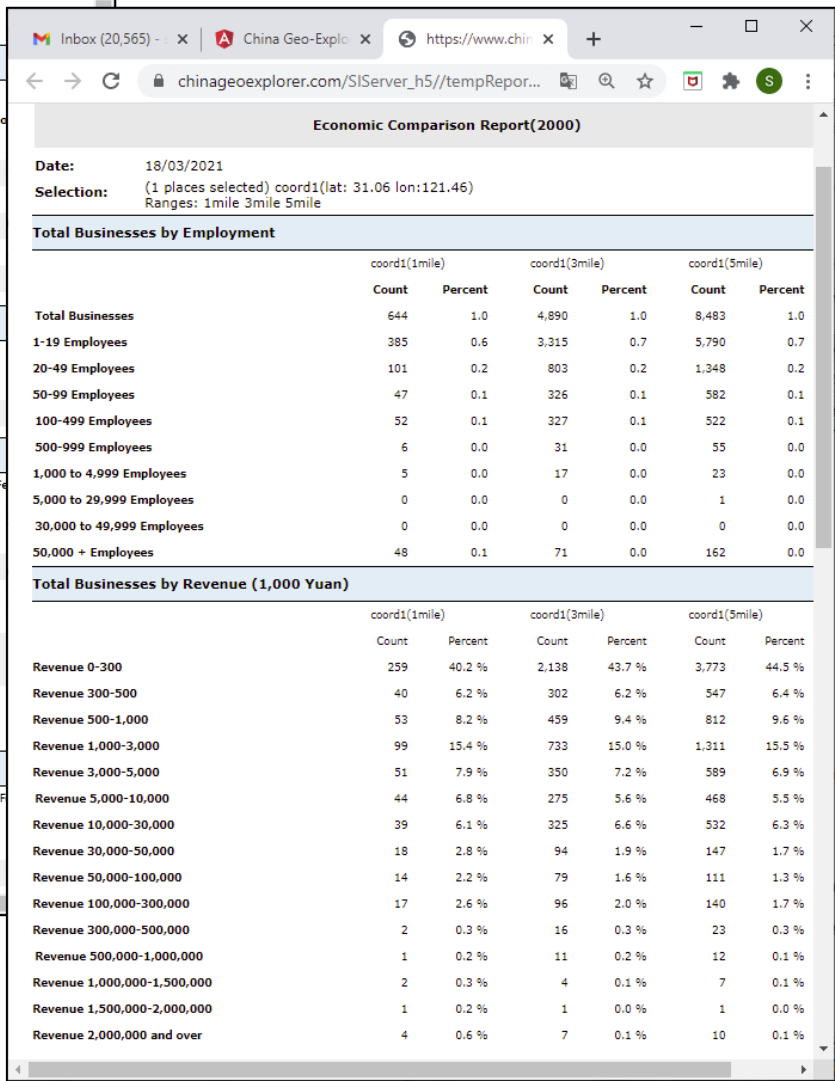
	Count	%		Count
Children 0-4 years old	12,344	11.0 %	Children 10-14 years old	16,399
Children 5-9 years old	13,279	11.9 %	Children 15-19 years old	15,454

Population by HH Type

	Total		Male		Fe
	Count	%	Count	%	Count
Total Population	370,432	100.0 %	194,653	100.0 %	175,778
Agricultural Population	212,745	57.4 %	108,492	55.7 %	104,252
Non-Agricultural Population	157,686	42.6 %	86,161	44.3 %	71,525
Agricultural Population	57,895	15.5 %	36,297	18.5 %	21,597
Population in Family Households	315,825	84.5 %	159,973	81.5 %	155,852

Literacy

	Total		Male		F
	Count	%	Count	%	Count
Total Population 15 and over	328,484	100.0 %	172,593	100.0 %	155,890
Total Illiterate Population	26,017	7.9 %	5,707	3.3 %	20,309



Economic Comparison Report(2000)

Date: 18/03/2021

Selection: (1 places selected) coord1(lat: 31.06 lon:121.46)
Ranges: 1mile 3mile 5mile

Total Businesses by Employment

	coord1(1mile)		coord1(3mile)		coord1(5mile)	
	Count	Percent	Count	Percent	Count	Percent
Total Businesses	644	1.0	4,890	1.0	8,483	1.0
1-19 Employees	385	0.6	3,315	0.7	5,790	0.7
20-49 Employees	101	0.2	803	0.2	1,348	0.2
50-99 Employees	47	0.1	326	0.1	582	0.1
100-499 Employees	52	0.1	327	0.1	522	0.1
500-999 Employees	6	0.0	31	0.0	55	0.0
1,000 to 4,999 Employees	5	0.0	17	0.0	23	0.0
5,000 to 29,999 Employees	0	0.0	0	0.0	1	0.0
30,000 to 49,999 Employees	0	0.0	0	0.0	0	0.0
50,000 + Employees	48	0.1	71	0.0	162	0.0

Total Businesses by Revenue (1,000 Yuan)

	coord1(1mile)		coord1(3mile)		coord1(5mile)	
	Count	Percent	Count	Percent	Count	Percent
Revenue 0-300	259	40.2 %	2,138	43.7 %	3,773	44.5 %
Revenue 300-500	40	6.2 %	302	6.2 %	547	6.4 %
Revenue 500-1,000	53	8.2 %	459	9.4 %	812	9.6 %
Revenue 1,000-3,000	99	15.4 %	733	15.0 %	1,311	15.5 %
Revenue 3,000-5,000	51	7.9 %	350	7.2 %	589	6.9 %
Revenue 5,000-10,000	44	6.8 %	275	5.6 %	468	5.5 %
Revenue 10,000-30,000	39	6.1 %	325	6.6 %	532	6.3 %
Revenue 30,000-50,000	18	2.8 %	94	1.9 %	147	1.7 %
Revenue 50,000-100,000	14	2.2 %	79	1.6 %	111	1.3 %
Revenue 100,000-300,000	17	2.6 %	96	2.0 %	140	1.7 %
Revenue 300,000-500,000	2	0.3 %	16	0.3 %	23	0.3 %
Revenue 500,000-1,000,000	1	0.2 %	11	0.2 %	12	0.1 %
Revenue 1,000,000-1,500,000	2	0.3 %	4	0.1 %	7	0.1 %
Revenue 1,500,000-2,000,000	1	0.2 %	1	0.0 %	1	0.0 %
Revenue 2,000,000 and over	4	0.6 %	7	0.1 %	10	0.1 %

Publications

https://www.china-data-online.com/asp/citations.asp

Web Sites and Contact

China Data Online

http://china-data-online.com

China Data Lab

http://chinadatalab.net

Contact

office@chinadatacenter.net