



China Data Institute

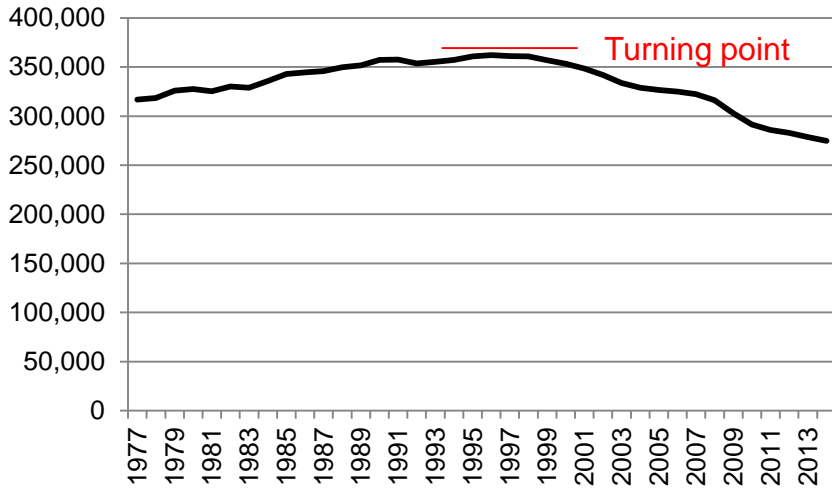
chinadatacenter.net
China-data-online.org

Spatial Study of Industry with China and U.S. Data

Shuming Bao, Ph.D.
Director, China Data Institute

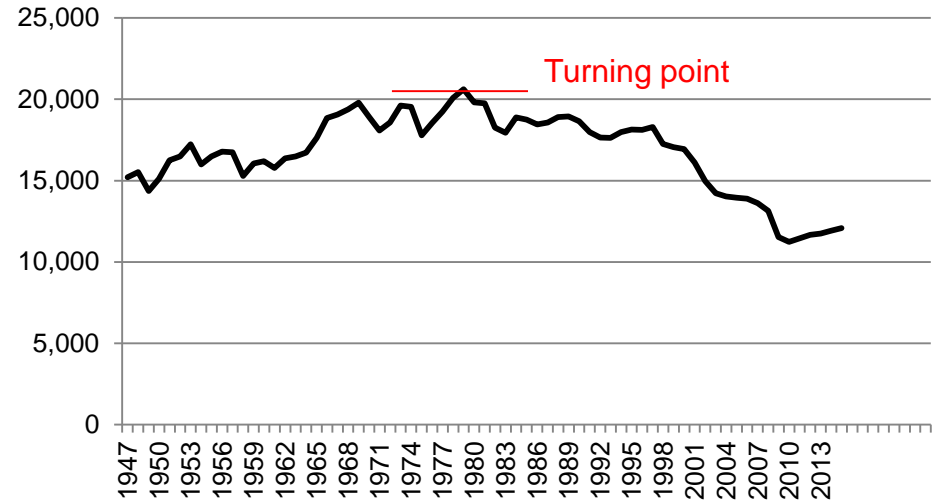
Manufacturing Trends in the US

The Number of Manufactures in the US: 1977-2014



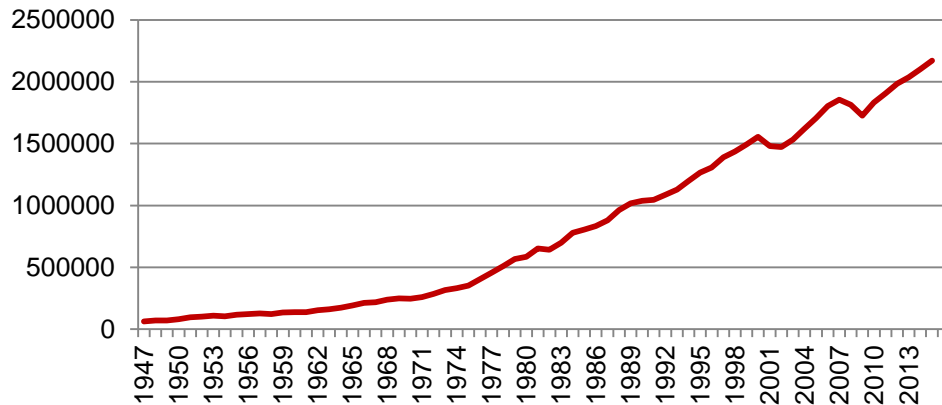
The Employees of Manufactures in the US: 1947-2015

(Unit: One thousand)

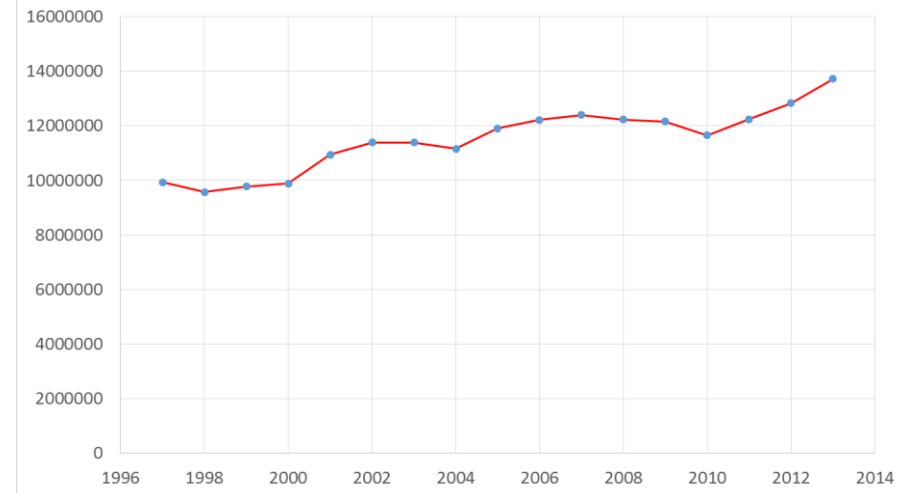


The GDP of Manufactures in the US: 1947-2015

(Unit: One million US\$)



Total Number of Business (Mfg & Service) in the US



Changing Industrial Landscape: US

3841: SURGICAL AND MEDICAL INSTRUMENTS (1997 – 2013)

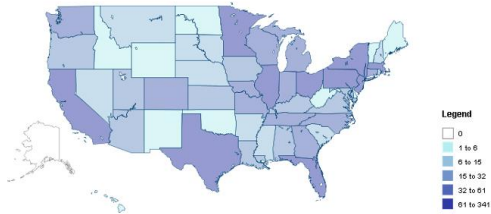
Firms

Employees

Sales

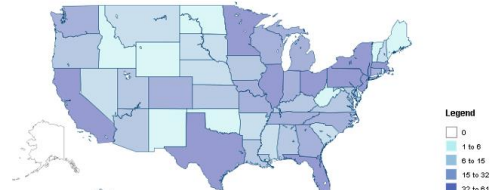
3841: SURGICAL AND MEDICAL INSTRUMENTS_1997 By State

1997



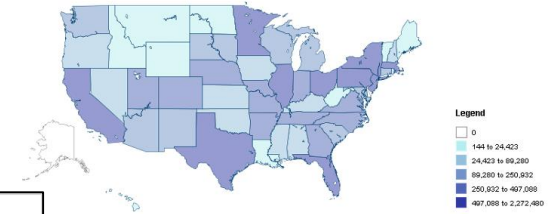
3841: SURGICAL AND MEDICAL INSTRUMENTS_1997 By State

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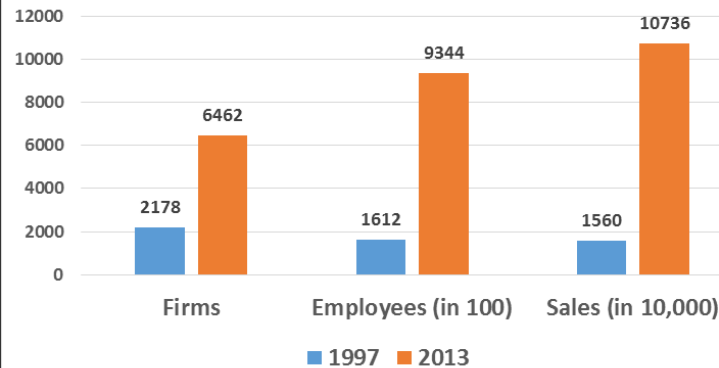


3841: SURGICAL AND MEDICAL INSTRUMENTS_1997 By State

1997



The Growth from 1997 to 2013

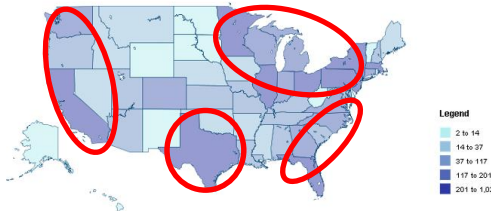


Center of University of Michigan (2017), Business Data 1997-2013, Firm Level Sales 1997, 38: Measuring, Analyzing, And Controlling Instruments, Photographic, Optical Goods; Watches And Clocks, 3841: SURGICAL AND MEDICAL INSTRUMENTS_1997 By State. Statistical Map Library by Spatial Data Center of University of Michigan. Country: US. Region: Nation Map-ID: 119971fba3841_1997



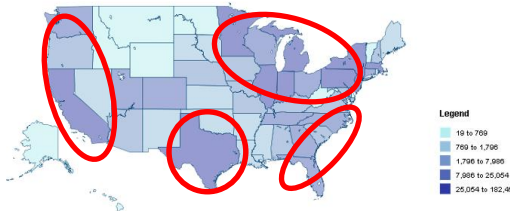
3841: SURGICAL AND MEDICAL INSTRUMENTS_2013 By State

2013



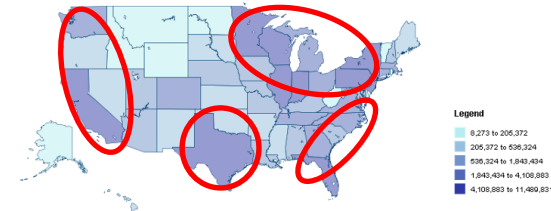
3841: SURGICAL AND MEDICAL INSTRUMENTS_2013 By State

2013



3841: SURGICAL AND MEDICAL INSTRUMENTS_2013 By State

2013



Spatial Data Center of University of Michigan (2017), Business Data 1997-2013, Firm Level Total 2013, 38: Measuring, Analyzing, And Controlling Instruments, Photographic, Medical And Optical Goods; Watches And Clocks, 3841: SURGICAL AND MEDICAL INSTRUMENTS_2013 By State. Statistical Map Library by Spatial Data Center of University of Michigan. Country: US. Region: Nation Map-ID: 120131fba3841_2013

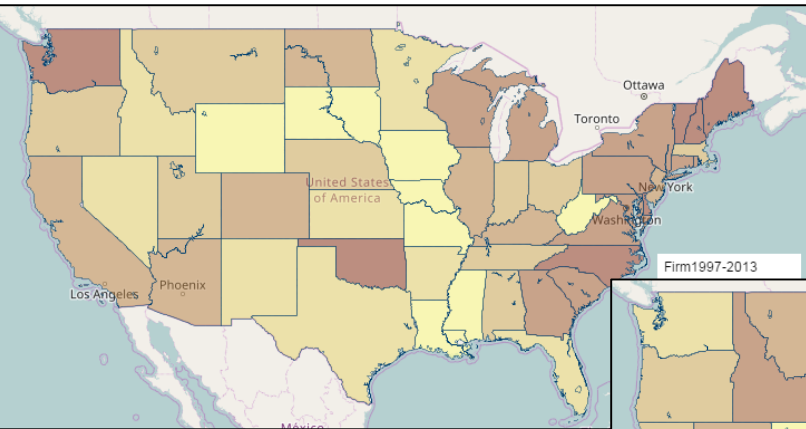
Spatial Data Center of University of Michigan (2017), Business Data 1997-2013, Firm Level Employees 2013, 38: Measuring, Analyzing, And Controlling Instruments, Photographic, Medical And Optical Goods; Watches And Clocks, 3841: SURGICAL AND MEDICAL INSTRUMENTS_2013 By State. Statistical Map Library by Spatial Data Center of University of Michigan. Country: US. Region: Nation Map-ID: 120131fba3841_2013

Spatial Data Center of University of Michigan (2017), Business Data 1997-2013, Firm Level Sales 2013, 38: Measuring, Analyzing, And Controlling Instruments, Photographic, Medical And Optical Goods; Watches And Clocks, 3841: SURGICAL AND MEDICAL INSTRUMENTS_2013 By State. Statistical Map Library by Spatial Data Center of University of Michigan. Country: US. Region: Nation Map-ID: 120131fba3841_2013

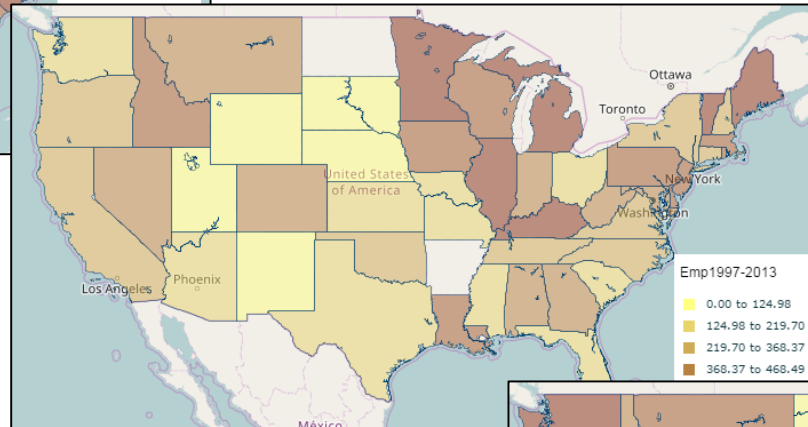
The Spatial Inequality of Growth

3841: SURGICAL AND MEDICAL INSTRUMENTS (1997 – 2013)

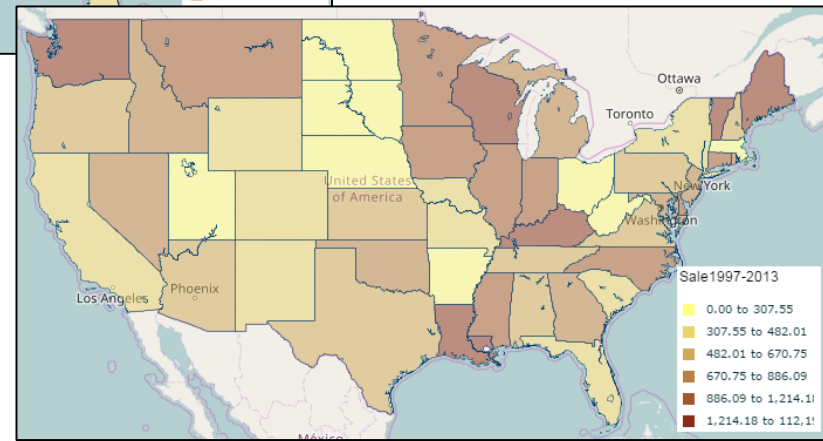
Growth of Firms



Growth of Employees

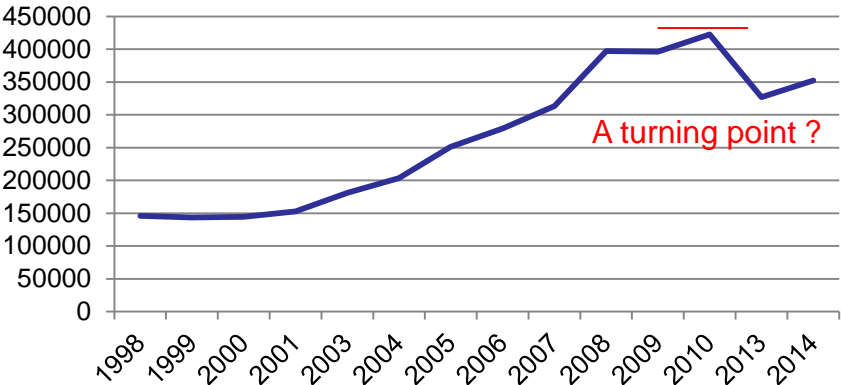


Growth of Sales

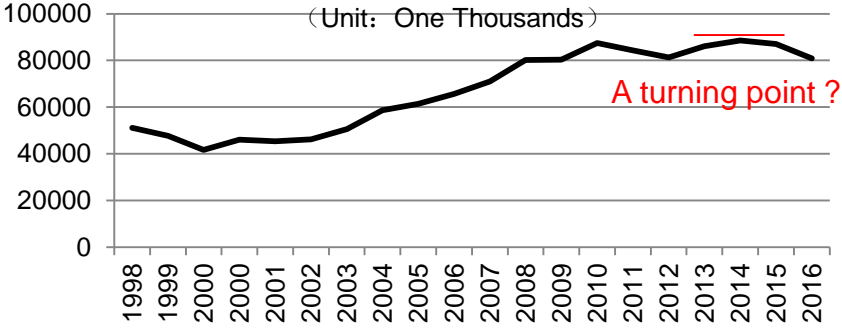


The Trends of Manufacture in China

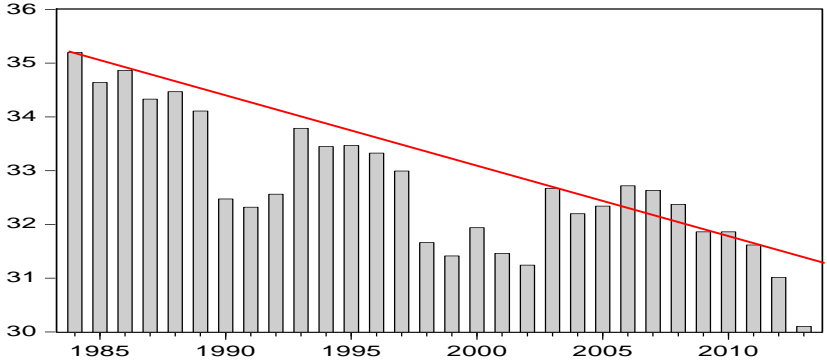
The Number of Manufactures in China: 1998-2014



The Employees of Manufactures in China: 1998-2016
(Unit: One Thousands)



The Percentage of Manufacture of GDP (1984~2013)

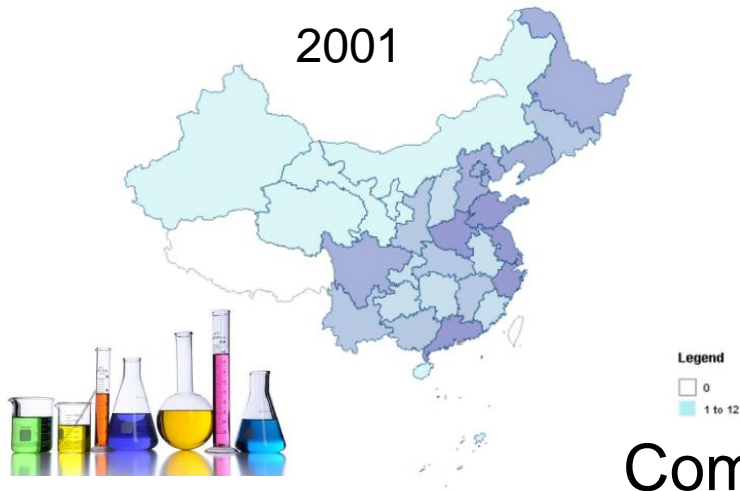


Changing Industrial Landscape: China

Chemical Additive (01-08)

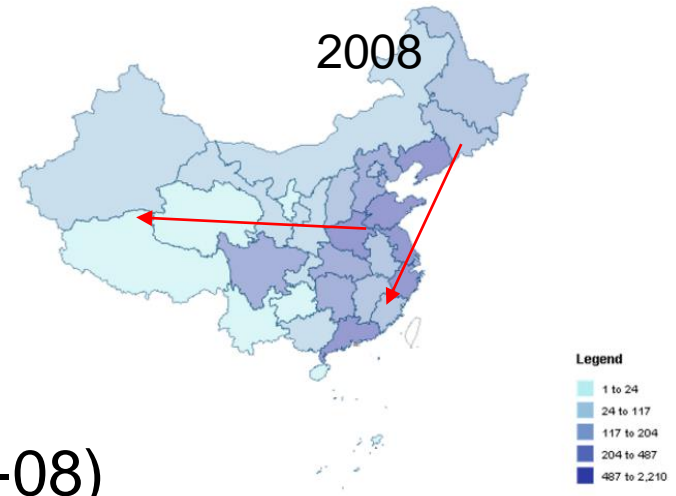
Chemical Additive By Province

2001



Chemical reagents and additives manufacturing By Province

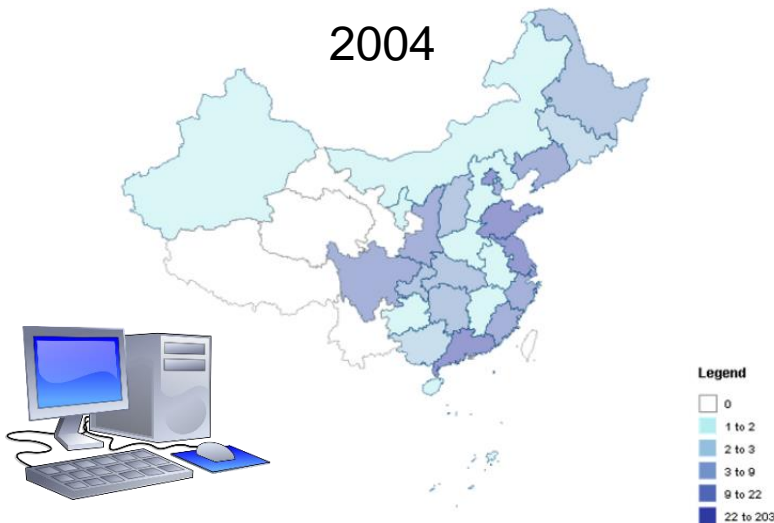
2008



Computer (04-08)

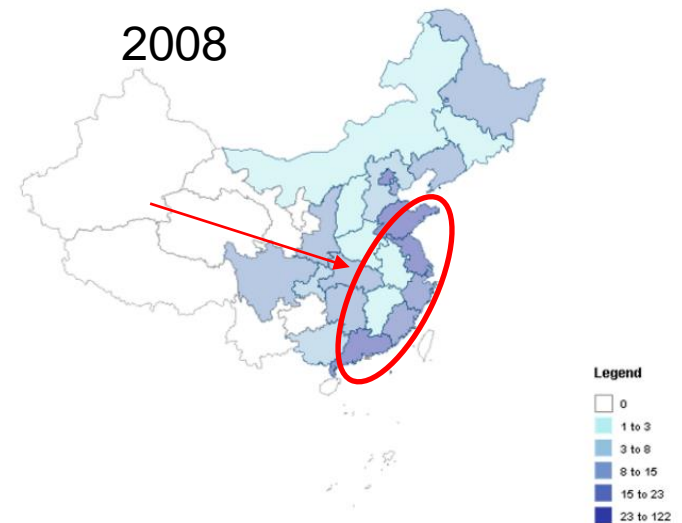
Integrated Computer manufacturing By Province

2004



Integrated Computer manufacturing By Province

2008



Questions to be Explored

- ❑ **Which** industries are growing or shrinking in terms of number of business, employees and sales?
- ❑ **Where** industries are growing or shrinking in terms of number of business, employees and sales?
- ❑ **What** are the relations between different industries in terms of their changes in space and time?

Data: China

Province

Prefecture

County

Township

ZIP

Sq Km Grid

- **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 (GRID)
 - Night-Time data (GRID)
 - Transportation (railway, highway, roads)
 - Rivers and Lakes
- **Health Surveys**

Data: US



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

Economic Census (State, Metropolitan, County)

- **Business Data** (State, Metropolitan, County, Tract, CCD, Place)
- **Establishments** (individual business and organizations)
 - Firm level records (more than 13 million records with 85 fields for each business)

China Data Online

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

Health Statistics

- National Statistics
- Provincial Statistics
- City Statistics
- County Statistics
- Monthly Industrial Data
- Yearly Industrial Data
- Statistical Datasheets

Census Data Books

- Population Census
- Economic Census
- Industrial Census

The screenshot shows the homepage of the China Data Online website. The browser address bar displays <https://www.china-data-online.com/>. The page features a dark blue header with the logo for 'ALL CHINA DATA CENTER' and 'China Data Online 中国数据在线'. Below the header, there is a navigation menu with links for Home, Data Products, Database Demo, Dictionary, Support, Contact, Q&A, Citations, My Account, and Logout. The main content area is organized into several sections:

- CHINA SPATIAL DATA**: Includes links for China Geo-Explorer II, China Geo-Explorer I, and China Map Library.
- CHINA STATISTICS**: Includes links for Monthly Statistics, National Statistics, Provincial Statistics, City Statistics, County Statistics, Monthly Industrial Data, Yearly Industrial Data, Statistics on Map, Statistical Datasheets, and Statistical Charts.
- CENSUS DATA**: Includes links for Census Maps, All Census Data, Economic Census 2004, Industrial Census 1995, Census 1982, Census 1982 (10%), Census 1990, Census 1995 (1%), Province 2000, County 2000, Census 2005 (1%), and Census Data Search.
- FREE CHINA MAPS**: Includes links for 2000 Population Census, Pop & Env (1990-1999), Pop & Env (2000), and Atlas of Industrial Census.
- SAMPLE DATA**: Includes links for Major Indicators, Industrial Surveys, Monthly Report, and Census Data.

On the right side of the page, there is a sidebar with a section titled 'Investment in Fixed Assets for the First Three Months of 2019'. This section contains a pie chart showing the distribution of investment across three industries:

Industry	Percentage
Primary industry	2.36%
Secondary industry	32.81%
Tertiary industry	65.02%

Below the pie chart, there is a section titled 'Latest China Statistical News' with several news items:

- Total Retail Sales of Consumer Goods in March 2019 (4/18/2019)
- Industrial Production Operation in March 2019 (4/17/2019)
- Investment in Fixed Assets for the First Three Months of 2019 (4/17/2019)
- Producer Prices for the Industrial Sector for March 2019 (4/12/2019)
- Consumer Prices for March 2019 (4/12/2019)
- The Gross Imports and Exports in the First Quarter of 2019 (4/12/2019)

Monthly and Yearly Industrial Statistics

- **Coal Mining & Petroleum and Natural Gas, and Nuclear Fuel Processing**

- Ferrous Metal Mining & Non-ferrous Metal Ores Mining
- Agricultural and Sideline Foods Processing
- Food Production
- Wine, Drinks and Refined Tea Manufacturing Industry
- Tobacco Products Processing
- Textiles and Clothing, Apparel Industry
- Papermaking and Paper Products
- Medical and Pharmaceutical Products
- Chemical Fiber, Rubber and Plastic Products Industry
- Nonmetal Mineral, Ferrous Metal and Non-ferrous Metal Smelting
- Electrical Machinery and Equipment Manufacturing
- Waste Comprehensive Utilization of Resources Industry
- Electricity and Heating Production and Supply Industry
- Fuel Gas Production and Supply
- Water Production and Supply



Coal Mining:

General Analysis on Industry

- Basic condition
- Assets and Debts
- Losses and Profits
- Economic Benefit Indicators

Imports and Exports

- Coal
- Anthracite
- Coking coal
- Other bituminous coal

Output of Main Products

- Washed Coal
- Washed coal

Monthly Output of Natural Crude Oil

Natural Crude Oil--Petroleum and Natural Gas Extraction

(Region:All China Unit:10000 tons)

Time	This Month		Accumulated to This Month	
	Year-on-year Rise(%)	Year-on-year Rise(%)	Year-on-year Rise(%)	Year-on-year Rise(%)
2005,11	1,484.00	2.4	16,591.38	4.1
2005,12	1,492.50	0.5	18,083.89	3.9
2006,01	1,567.98	3.4	1,567.98	3.4
2006,02	1,404.69	1.4	2,972.68	2.5
2006,03	1,571.72	0.1	4,544.59	1.7
2006,04	1,512.50	2.6	6,055.41	1.9
2006,05	1,571.98	2.5	7,626.79	2.0
2006,06	1,531.48	2.2	9,166.40	2.1
2006,07	1,573.56	1.9	10,739.67	2.0
2006,08	1,554.25		12,293.17	1.8
2006,09	1,499.45	1.0	13,792.85	1.7
2006,10	1,549.91	0.6	15,338.04	1.5
2006,11	1,509.09	3.0	16,842.44	1.6
2006,12	1,525.16	2.0	18,367.59	1.7
2007,01	1,609.47	2.7	1,609.47	2.7
2007,02	1,434.09	2.3	3,043.53	2.5
2007,03	1,564.74	-0.3	4,604.14	1.5
2007,04	1,540.71	2.0	6,144.80	1.6
2007,05	1,605.45	2.0	7,750.44	1.6
2007,06	1,572.16	2.5	9,330.98	1.7
2016,03	1,737.35	-3.9	5,155.05	-1.8
2016,04	1,658.70	-5.6	6,813.70	-2.7
2016,05	1,687.10	-7.3	8,500.60	-3.7
2016,06	1,657.90	-8.9	10,158.60	-4.6
2016,07	1,672.30	-8.1	11,834.90	-5.1
2016,08	1,644.90	-9.9	13,479.80	-5.7
2016,09	1,597.50	-9.8	15,077.70	-6.1
2016,10	1,605.10	-11.3	16,682.40	-6.7
2016,11	1,609.00	-9.0	18,291.30	-6.9
2016,12	1,677.20	-7.7	19,968.50	-6.9

Population Census Data

- > 2,000 demographic variables in 2000 population Census
- > 50,000 towns and townships

Geographical Levels:

Country
|
Province
|
Prefecture
|
County
|
Township

2000 Census data variables:

- General Information
- Nationalities
- Age Structure
- Household Structure
- Education
- Fertility
- Deaths
- Marriage
- Migration
- Housing Status
- **Industries and Occupations**

Economic Census Data

> Cover about 900 economic sectors with more than 7 million business units

Industries

- 852 industries

Products

- 3 primary products

Ownerships

- 23 different industries

Revenue

- 15 revenue ranges

Employment

- 10 employment ranges

Employment

1

1-19

20-49

50-99

100-499

500-999

1000-4999

5000-29999

30000-49999

50000+

Revenue

(in 10,000 Yuan)

0-30

30---50

50---100

100--300

300--500

500--1000

1000-3000

3000-5000

5000-10000

10000-30000

30000-50000

50000-100000

100000-150000

150000-200000

200000 and over

Business Unit Classification

2004, 2008 & 2013 Business and Private Units 单位数与个体经营户数

	2004		2008		2013	
	(in 10,000)	(%)	(in 10,000)	(%)	(in 10,000)	(%)
1. Legal Unit 法人单位	516.9	100	709.9	100	1085.7	100
Enterprise 企业法人	325	62.9	495.9	69.9	820.8	75.6
Government 机关、事业法人	90	17.4	95.9	13.5	103.7	9.6
Non-profit org 社会团体法人	101.9	19.7	118.1	16.6	161.1	14.8
2. Economic Unit 产业活动单位	682.4	100	886.4	100	1303.5	100
Manufacture 第二产业	167.5	24.6	230	25.9	287.5	22.1
Service 第三产业	514.9	75.4	656.4	74.1	1015.9	77.9
3. Private 个体经营户	3921.6	100	2873.7	100	3279.1	100
Manufacture 第二产业	588.7	15	253.8	8.8	188.3	5.7
Service 第三产业	3332.9	85	2619.9	91.2	3090.8	94.3

Industrial Classification (18 Categories)

行业分类	Industrial Classification
1. 农、林、牧、渔业	1. Farming, Forestry, Animal Husbandry and Fishery
2. 采矿业	2. Mining and Quarrying
3. 制造业	3. Manufacturing
4. 电力、燃气及水的生产和供应业	4. Production and Distribution of Electric Power, Gas and Water
5. 建筑业	5. Construction
6. 交通运输、仓储和邮政业	6. Transport, Storage and Post
7. 信息传输、计算机服务和软件业	7. Information Transmission, Computer Services and Software
8. 批发和零售业	8. Wholesale and Retail Trade
9. 住宿和餐饮业	9. Hotel and Restaurants
10. 金融业	10. Financial Intermediation
11. 房地产业	11. Real Estate
12. 科学研究、技术服务和地质勘查业	12. Scientific Research, Technical Service and Geologic Prospecting
13. 水利、环境和公共设施管理业	13. Management of Water Conservancy, Environ. and Public Facilities
14. 居民服务和其他服务业	14. Services to Households and Other Services
15. 教育	15. Education
16. 卫生、社会保障和社会福利业	16. Health, Social Security and Social Welfare
17. 文化、体育和娱乐业	17. Culture, Sports and Entertainment
18. 公共管理和社会组织	18. Public Management and Social Organization

Industrial Classification: (2 digits)

7. 信息传输、计算机服务和软件业	Information Transmission, Computer Services and Software
电信和其他信息传输服务业	Telecommunications and Other Information Transfer Services
计算机服务业	Computer Services
软件业	Software Industry
8. 批发和零售业	Wholesale and Retail Trade
批发业	Wholesale
零售业	Retail Trade
9. 住宿和餐饮业	Hotel and Restaurants
住宿业	Hotel
餐饮业	Catering Services
10. 金融业	Financial Intermediation
银行业	Banking
证券业	Securities
保险业	Insurance
其他金融活动	Other Financial Activities
11. 房地产业	Real Estate
租赁和商务服务业	Leasing and Business Services
租赁业	Leasing Services
商务服务业	Business Services
12. 科学研究、技术服务和地质勘查业	Scientific Research, Technical Service and Geologic Prospecting
研究与试验发展	Research and Experimental Development
专业技术服务业	Professional Skill Services
科技交流和推广服务业	Services of Scientific and Technological Exchange and Popularization
地质勘查业	Geological Prospecting
13. 水利、环境和公共设施管理业	Management of Water Conservancy, Environ. and Public Facilities
水利管理业	Management of Water Conservancy
环境管理业	Management of Environment
公共设施管理业	Management of Public Facilities
14. 居民服务和其他服务业	Services to Households and Other Services
居民服务业	Resident Services
其他服务业	Other Services

Industrial Classification: (4 digits)

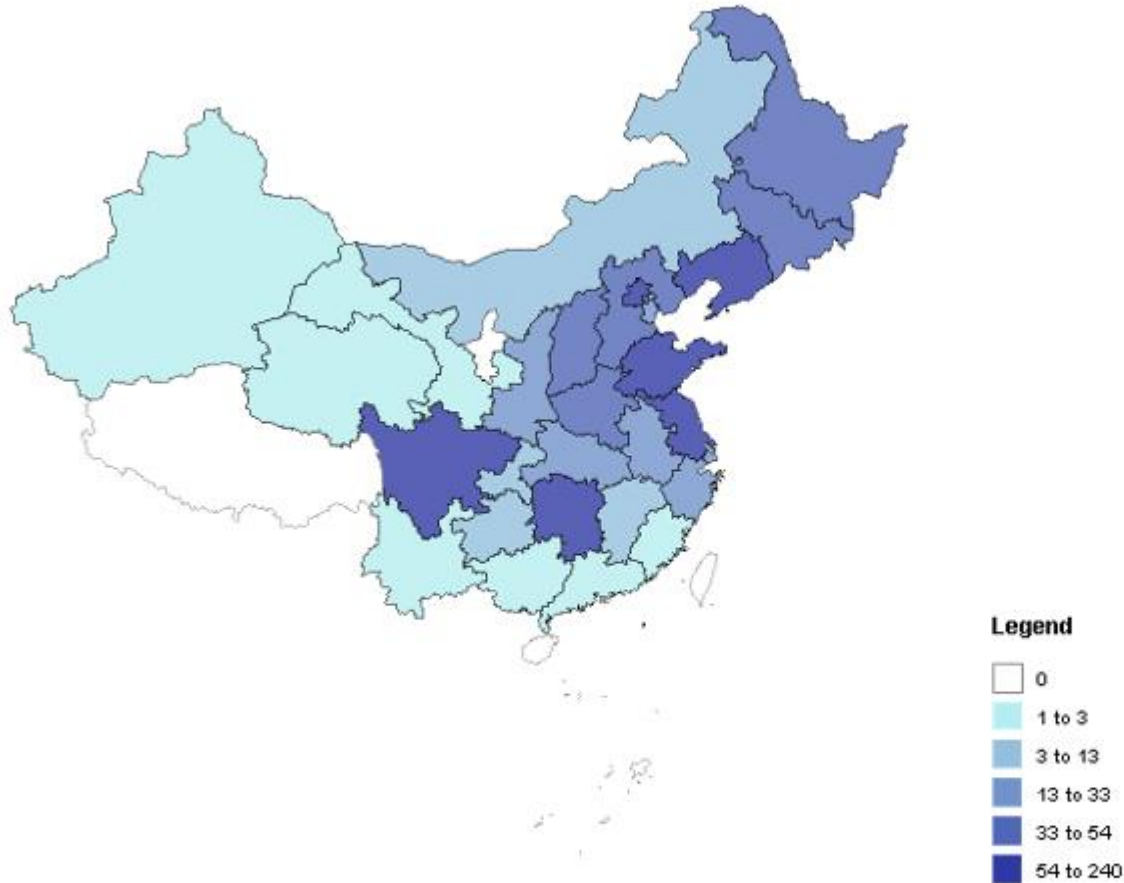
7. Information Transmission, Computer Services and Software

信息传输、计算机服务和软件业

7.1. 电信和其他信息传输服务业 Telecommunications and Other Information Transfer Services	7.1.1 固定电信服务	Fixed telecommunications services
	7.1.2 移动通信服务	Mobile telecommunications services
	7.1.3 其他电信服务	Other telecommunication services
	7.1.4 互联网信息服务	Internet Information Services
	7.1.5 有线广播电视传输服务	Cable television transmission services
	7.1.6 无线广播电视传输服务	Radio and TV transmission services
	7.1.7 卫星传输服务	Satellite transmission services
7.2. 计算机服务业 Computer Services	7.2.1 计算机系统服务	Computer system services
	7.2.2 数据处理	Data processing
	7.2.3 计算机维修	Computer maintenance
	7.2.4 其他计算机服务	Other computer services
7.3. 软件业 Software Industry	7.3.1 基础软件服务	Based software services
	7.3.2 应用软件服务	Application software services
	7.3.3 其他软件服务	Other software services

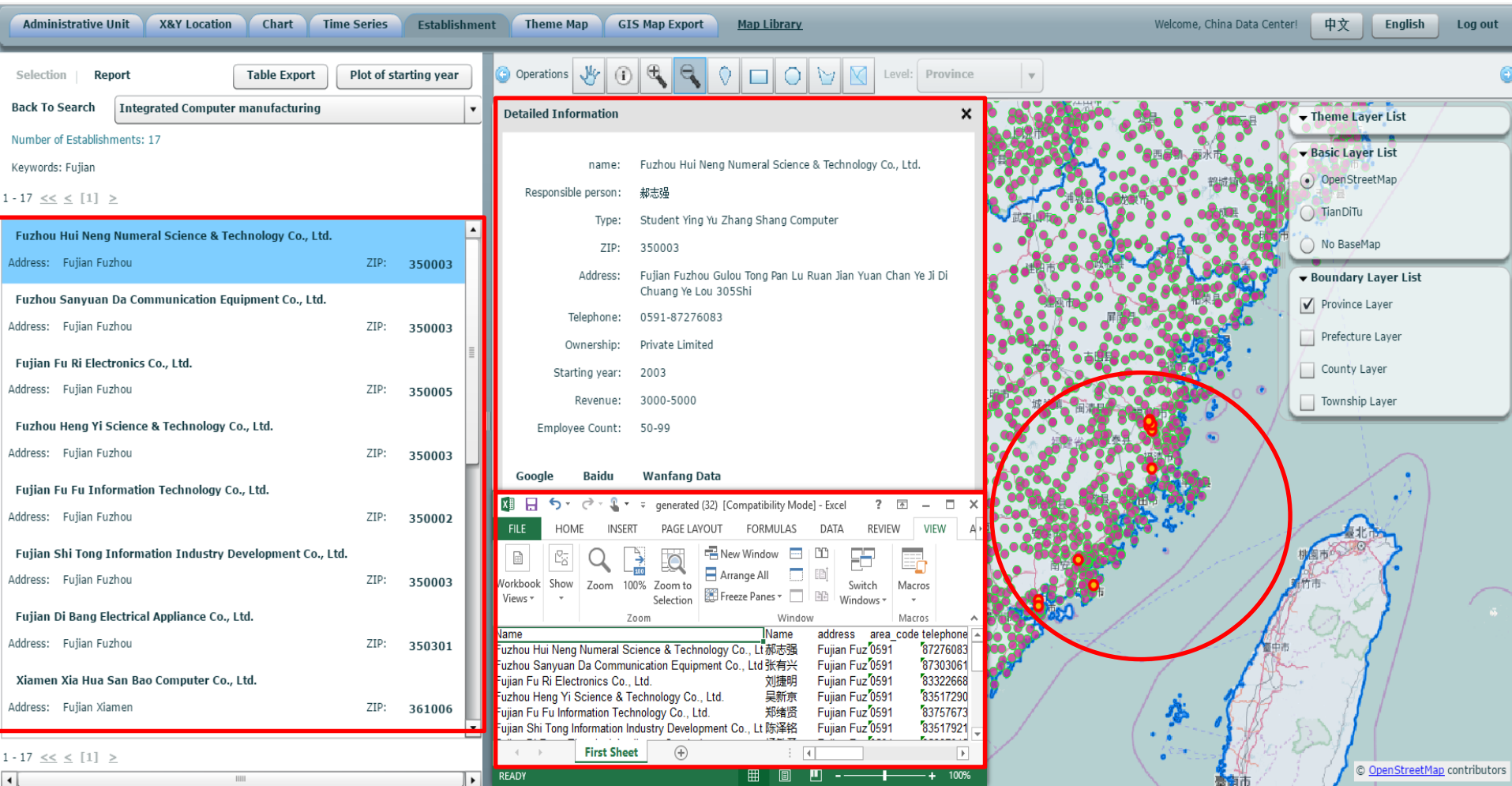
Railway Rolling Stock Manufacturing Accessories From Census 2008

Railway rolling stock manufacturing accessories By Province



All China Market Research (2019). Economic Census 2008, Manufacturing, Manufacture of Transport Equipment, Railway rolling stock manufacturing accessories By Province. Statistical Map Library by All China Market Research. Country: China. Region: Nation Map-ID: 8620081in_3713_08_00

Spatial Distribution of Computer Manufacturing from Economic Census 2004



China Geo-Explorer

chinageoexplorer.org/cge/cityclient167/#

Administrative Unit X&Y Location Chart Time Series Establishment Theme Map GIS Map Export

Welcome, UM Asia Library! 中文 English Log out

Map Export Reset

Theme map export options

Base Year: 2000 2010 2000-2010

Extent: All Regions Selected Regions

Level: Province City County Town

The theme map at this level starts displaying at zoom 1

Upload your data

Find:

Operations

Level: Province

Theme Layer List

- Urban Population
 - 508,325 to 6,018,417
 - 6,018,417 to 9,958,833
 - 9,958,833 to 12,350,296
 - 12,350,296 to 17,397,837
 - 17,397,837 to 22,356,574

Basic Layer List

- OpenStreetMap
- TianDiTu
- No BaseMap

Boundary Layer List

- Province Layer
- Prefecture Layer
- County Layer
- Township Layer

Census 2010
 Census 2000
 Economic Census 2008
 Economic Census 2004
 Basic Unit Census 2001
 Industry Census 1995
 Land Use
 Nighttime lights

Theme Map Options

Classification list

No.	Color	Classification Value
1		508,325 to 6,018,417
2		6,018,417 to 9,958,833
3		9,958,833 to 12,350,296
4		12,350,296 to 17,397,837
5		17,397,837 to 22,356,574
6		22,356,574 to 47,906,715

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US Geo-Explorer

usgeoexplorer.org/uge/ugeclient43/#app=b79d&b7c8-selectedIndex=1

Administrative Unit X&Y Location Chart Time Series Establishment Theme Map GIS Map Export

Group: Single group Multi-groups [Upload Data](#)

Level: State County Tract Block
 Metropolitan CCD Place Any area

Region Customized Report Standard Report

Output: [HTML](#) [PDF](#) [CSV](#) [Excel](#) [Word](#) 19 index selected

Report type: Summary Compare Original

Find:

- 76: Miscellaneous Repair Services
- 78: Motion Pictures
- 79: Amusement And Recreation Services
- 80: Health Services
 - 8011: OFFICES AND CLINICS OF MEDICAL DOCTORS_2013
 - 8021: OFFICES AND CLINICS OF DENTISTS_2013
 - 8031: OFFICES AND CLINICS OF OSTEOPATHIC PHYSICIANS_2013
 - 8041: OFFICES AND CLINICS OF CHIROPRACTORS_2013
 - 8042: OFFICES AND CLINICS OF OPTOMETRISTS_2013
 - 8043: OFFICES AND CLINICS OF PODIATRISTS_2013
 - 8049: OFFICES OF HEALTH PRACTITIONER_2013
 - 8051: SKILLED NURSING CARE FACILITIES_2013
 - 8052: INTERMEDIATE CARE FACILITIES_2013
 - 8059: NURSING AND PERSONAL CARE, NEC_2013
 - 8062: GENERAL MEDICAL AND SURGICAL HOSPITALS_2013
 - 8063: PSYCHIATRIC HOSPITALS_2013
 - 8069: SPECIALTY HOSPITALS, EXCEPT PSYCHIATRIC_2013
 - 8071: MEDICAL LABORATORIES_2013
 - 8072: DENTAL LABORATORIES_2013
 - 8082: HOME HEALTH CARE SERVICES_2013
 - 8092: KIDNEY DIALYSIS CENTERS_2013
 - 8093: SPECIALTY OUTPATIENT CLINICS, NEC_2013
 - 8099: HEALTH AND ALLIED SERVICES, NEC_2013
- 81: Legal Services
- 82: Educational Services
- 83: Social Services
- 84: Museums, Art Galleries, And Botanical And Zoological Gardens
- 86: Membership Organizations
- 87: Engineering, Accounting, Research, Management, And Related Services

Operations Level: CCD

Presidential Election Data
 Census Data 1970-2010

- Census 2010
- Census 2000
- Census 1990
- Census 1980
- Census 1970

 Economics Census 1986-2012
 Business Data 1997-2013

- Firm Level Total 2013
- Firm Level Total 2012
- Firm Level Total 2011
- Firm Level Total 2010
- Firm Level Total 2009
- Firm Level Total 2008
- Firm Level Total 2007
- Firm Level Total 2006
- Firm Level Total 2005
- Firm Level Total 2004
- Firm Level Total 2003

Theme Layer List

Basic Layer List

- Open Street Map

Reference Layer

- State
- County
- Tract

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Primary Functions

Data Selection

- By administrative units (province, city, county, township)
- By groups
- By location (X&Y) and spatial range (km or miles)
- By time-series statistics (province, city and county)
- By establishments (province, city, county and ZIP)

Reporting

- Summary report
- Comparison report
- Original data report

Export

- Data tables (Excel)
- Reports (Excel, Word, PDF)
- GIS maps (Shape)
- Maps (PDF)

Map Library with Metadata

- Pre-defined maps
- Easy links between maps of different spatial levels
- Easy links to related industries

Online Analysis (I)

□ Which industries

- Growing?
- Shrinking?

➤ Functions:

- Reports

Administrative Unit -> Select region & index (1995-2008)

-> Export Table (Excel, CSV, HTML)

- Charts

Chart -> Economic Census -> Select a level (nation)

-> Select index

Online Analysis (II)

□ Where industries

□ Growing?

□ Shrinking?

➤ Functions:

▪ Reports

Administrative Unit -> Select region & index (1995-2008)

-> Export Table (Excel, CSV, HTML)

▪ Charts

Chart -> Economic Census -> Select a level (province, city)

-> Select index & region

▪ Map

Theme Map -> Select a base year -> Select a level (province, city, county, township) -> Select index

Online Analysis (III)

❑ What are relations between different industries:

❑ Positive?

❑ Negative?



Functions:

- Charts

Chart -> Economic Census -> Select a level (nation, province, city) -> Select index & region -> Export Excel table

- Map Library

Map Library -> Select level (nation, province, city or county) -> Search (keyword, date, place) -> Select a map -> Select industry from the list of industries by relevance

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

Contact

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