

The Regional Transportation and Energy Impact of Land Recycling in Urban China

Karen R. Polenske

August, 2007 Beijing, China

China Planning Network (CPN) Conference

中国城市土地循环利用对区域发展的影响—区域交通及能源使用

普可仁

2007年8月 中国城市交通国际论坛 北京

麻省理工学院 城市研究与规划系

Department of Urban Studies and Planning
Massachusetts Institute of Technology
Cambridge, Massachusetts, USA

© Karen R. Polenske

Special thanks to Li Xin, Chen Zhiyu and other MIT land-recycling team members

Deindustrialization and Transportation

去工业化和交通

- Deindustrialization and economic restructuring affect transportation in many ways 去工业化和经济重构影响交通
 - Energy Consumption 能源消耗
 - Inter- and Intraregional Mobility 区域内和区域间通行
 - Travel Patterns 出行方式
 - Transportation and Infrastructure Facilities 交通和基础设施设备

Deindustrialization and Regional Restructuring in China 中国的去工业化和区域重构

- **Restructuring the Economy 经济结构重建**
 - Industry restructuring and innovation
产业结构重建及产业更新
 - Real estate development
房地产开发

- **Reshaping the Built Environment 建成环境的再塑**
 - Land-use patterns
土地利用模式
 - Infrastructure and transportation capacity
基础设施容量

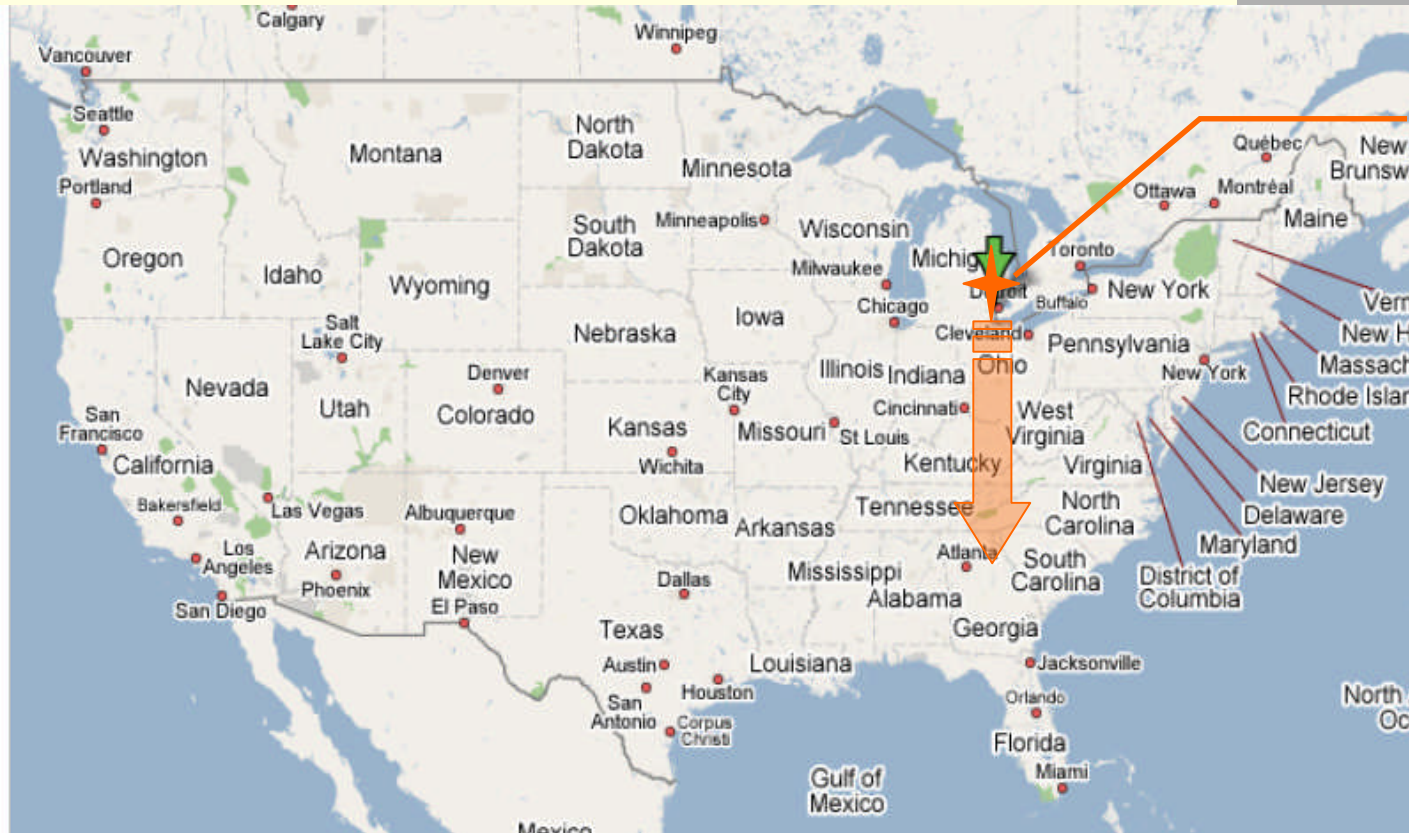
U.S. Deindustrialization

美国的去工业化

- **U.S. deindustrialization was detrimental to a region's economy unless the region adjusted its economic structure to the new environment.**
- 美国的去工业化的经历说明了：如果某区域未根据新的变化而主动调整其经济结构，去工业化过程就会阻碍该地区经济的发展。

U.S. Deindustrialization: Detroit

美国的去工业化: 底特律



Location
of Detroit
底特律
的位置

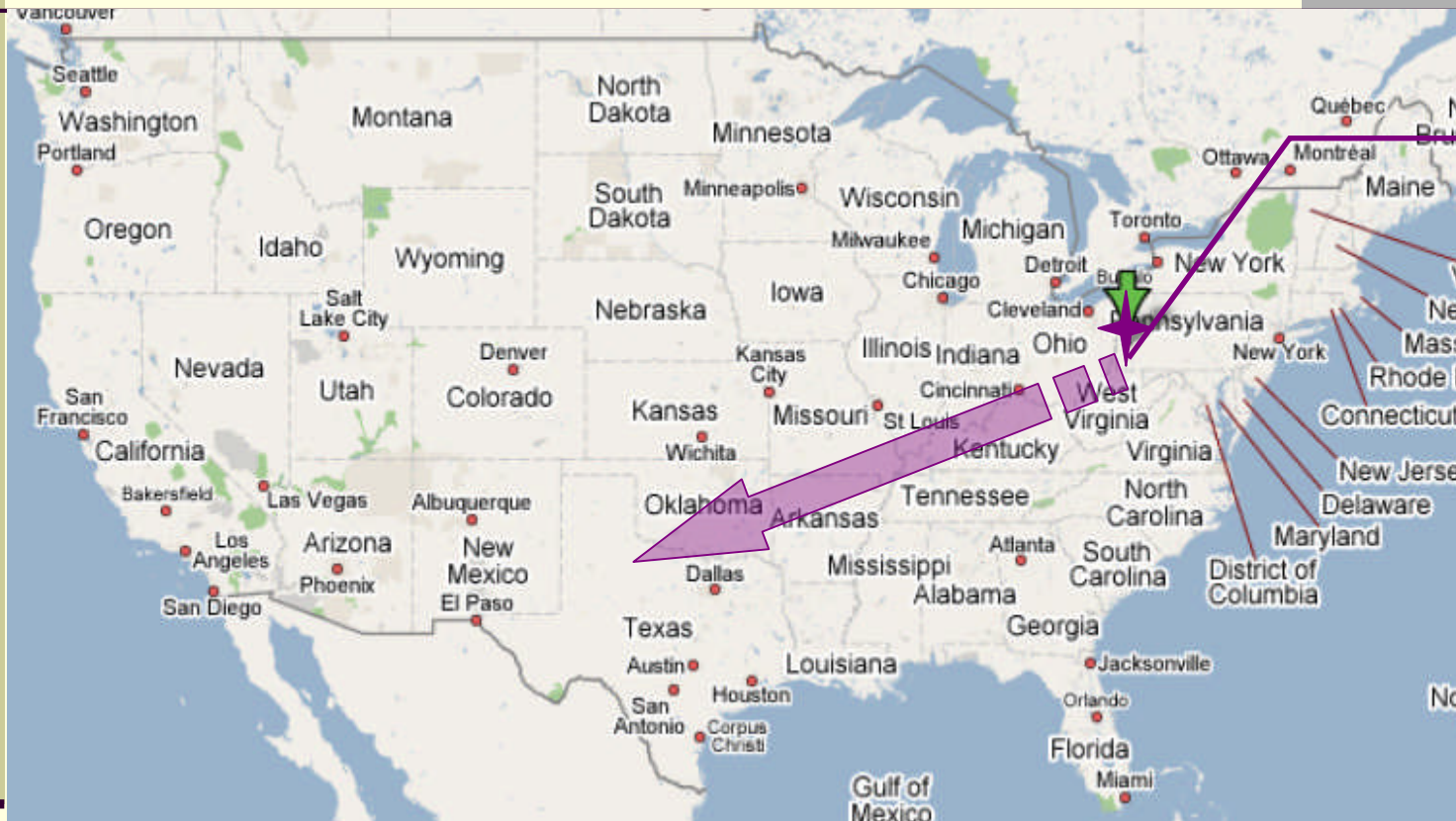
Source:
google map

Auto firms moved to the South since the 1950s

自1950年代起, 汽车工业向南迁徙

- Transportation cost 交通成本
- Labor cost 劳动力成本

U.S. Deindustrialization: Pittsburgh 美国的去工业化: 匹兹堡



Location of
Pittsburgh
匹兹堡
的位置

Source:
google map

Steel firms moved to the Midwest and South

钢铁公司向中西部和南部迁徙

- Lost its comparative advantage of abundant coal supply
- Development of electric-arc furnace technologies
- Mini mills rely on scrap metal

Chinese Deindustrialization Traits 中国去工业化特点

- **Recent phenomenon** 最近的现象
- **Large-scale** 大规模
- **Government-led relocation decision** 政府主导
- **Simultaneous restructuring of economic structure** 与经济重构同时发生
- **Housing market booming** 房地产市场发展
- **Some underemployment or unemployment results** 造成部分失业的结果
- **People often lose social safety net** 人们失去原有社会安全网

Deindustrialization Process in Beijing (1985-2005)

北京的去工业化过程 1985-2005

	1985 (10 Years)	'94 '95 (5 Years)	05/99 06/99 2005* (7 Years)
Total Relocated Project 搬迁项目数	65	59	134*
Total Land Converted (m ²) 被转换土地面积	316,000	1,718,000	6,130,000*
Relocated projects per year 每年搬迁项目数	6	12	19*
Land Converted per year (m ²) 每年被转换土地面积	32,000	344,000	1,022,000*

Note: *: No data were available after 2000; data used for this period are from 1999 proposal by the Beijing Economic Committee

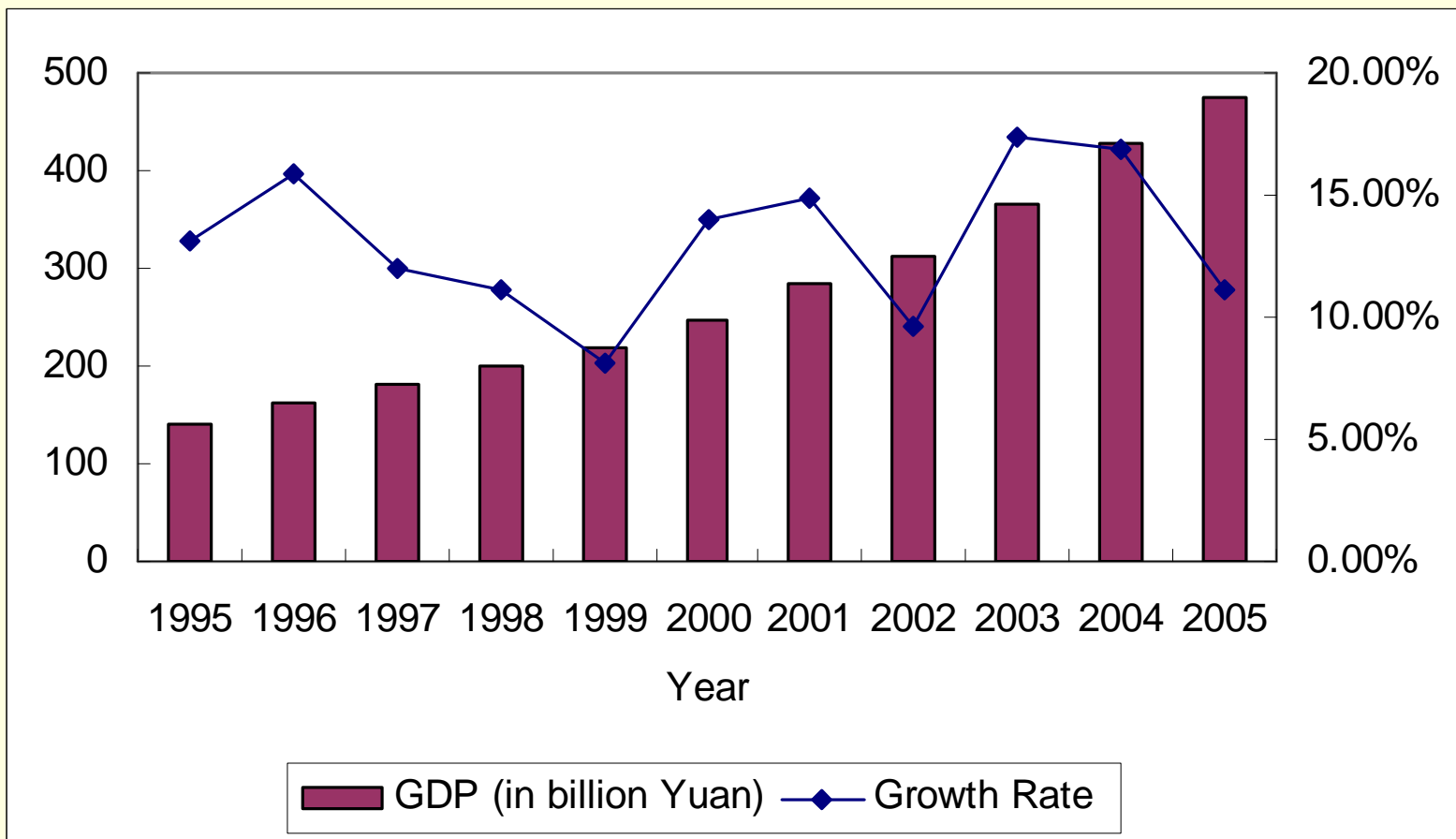
Sources: <Industry Relocation Newsletter>, Beijing Economic Committee, Beijing Development and Reform Committee, 2000

Beijing Statistics

北京数据

GDP and Growth Rate in Beijing, 1995-2005

GDP和增长率, 1995- 2005



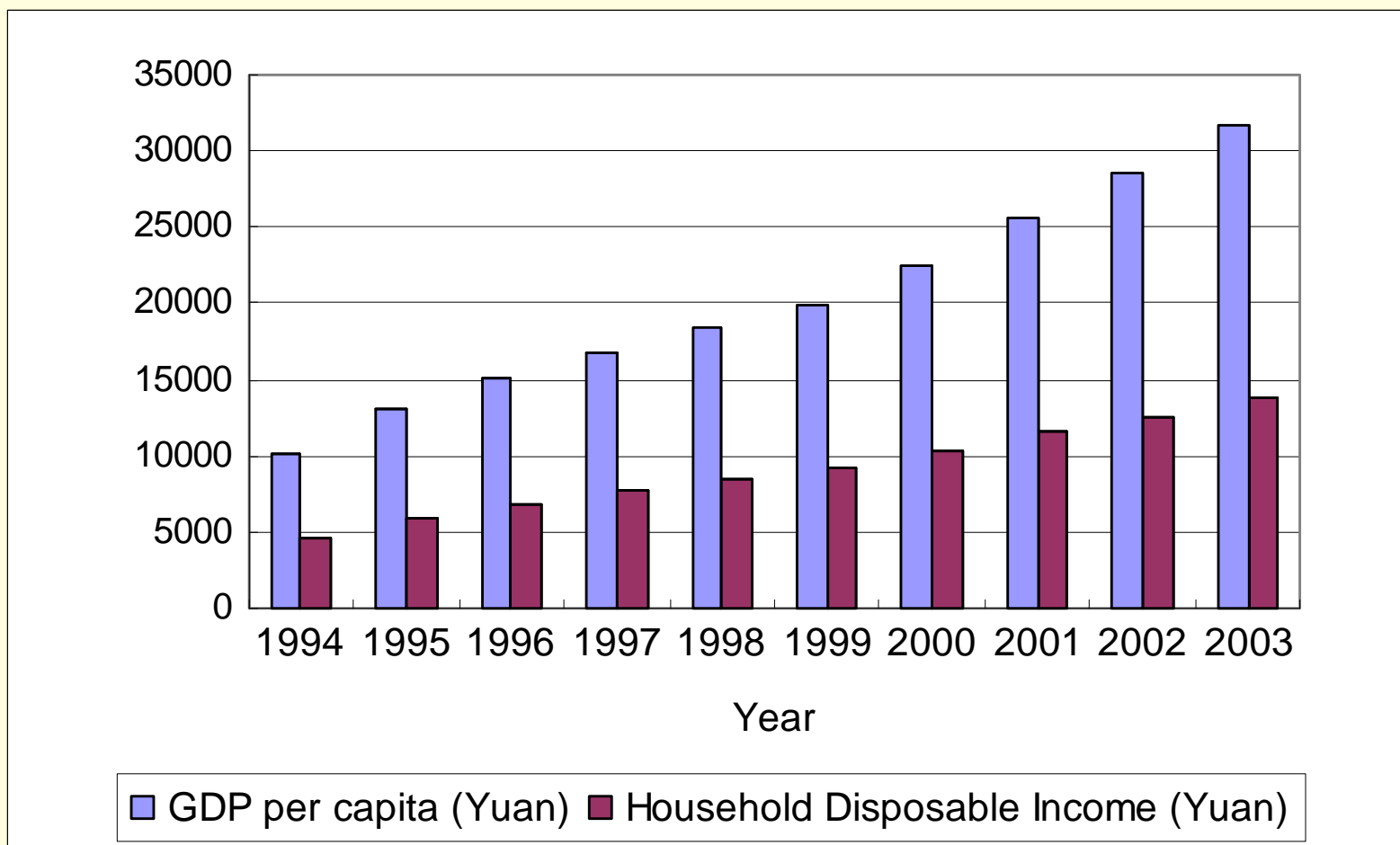
Source: Beijing Statistics Bureau, 2005

Beijing Statistics

北京数据

GDP/capita and Household Disposable Income in Beijing, 1994-2003

人均GDP和家庭可支配收入 1994- 2003

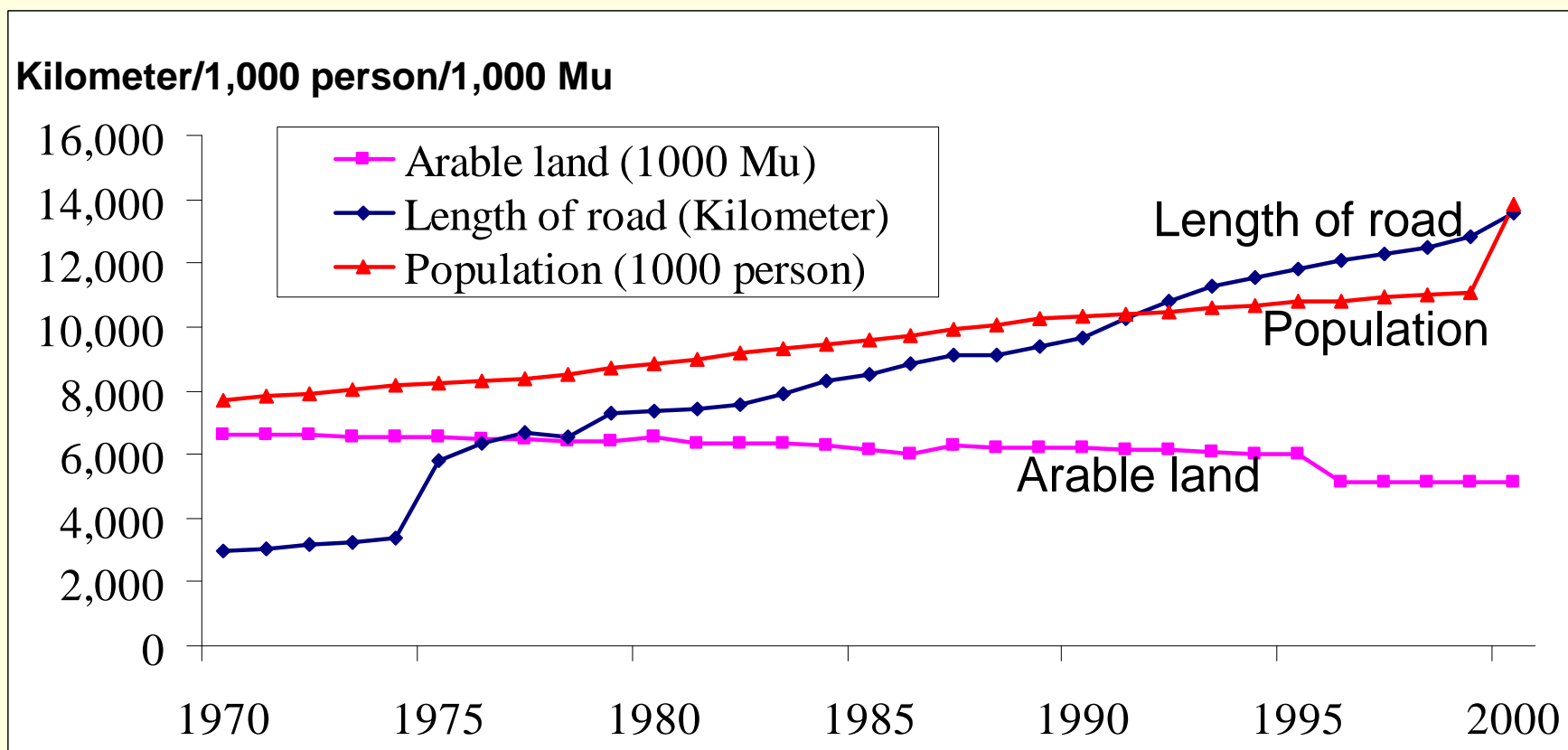


Source: Beijing Statistics Bureau, 2005

Beijing Statistics

北京数据

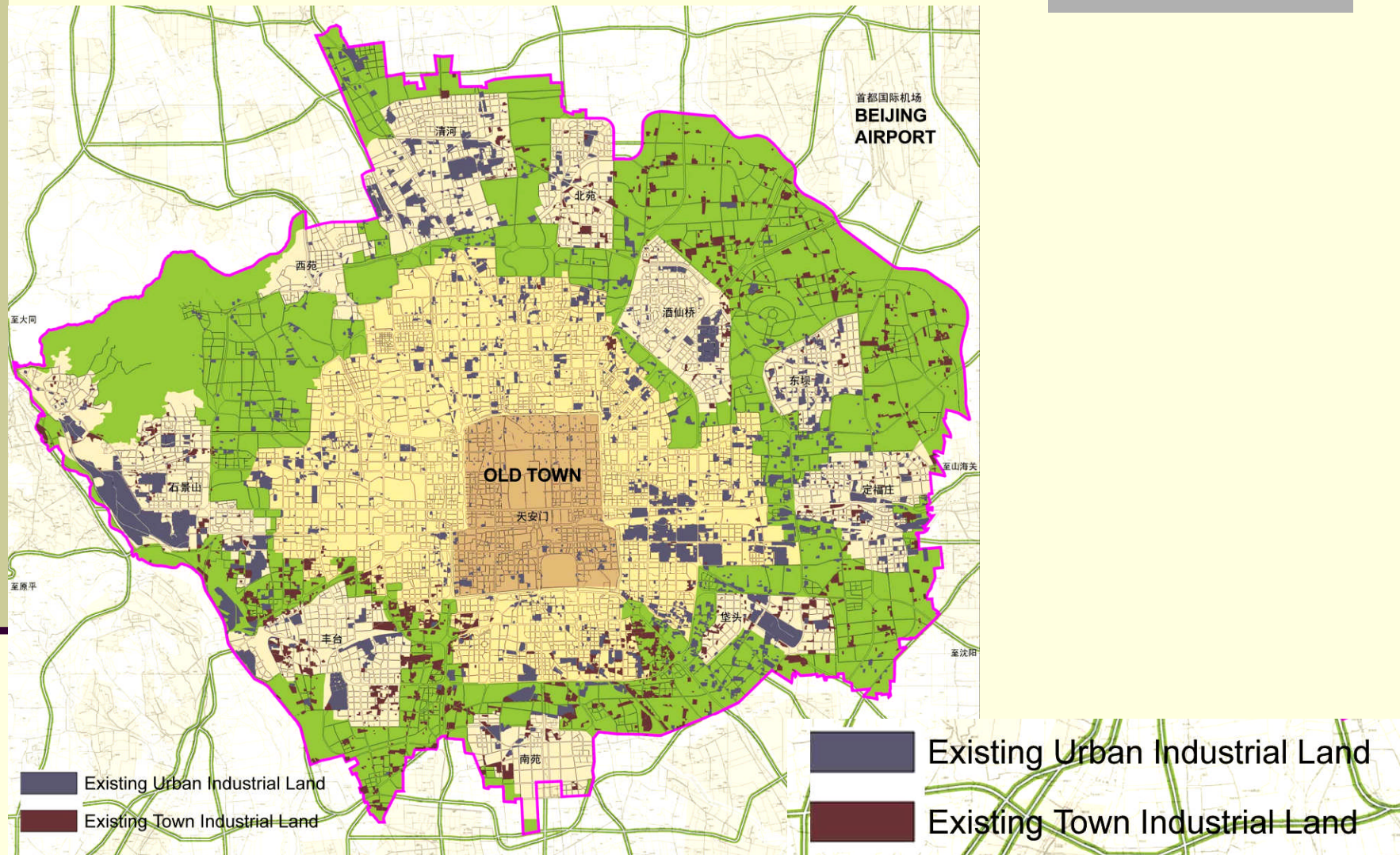
Length of road, population, and arable land in Beijing, 1970-2000
道路长度、人口、耕地数量, 1970-2000



Data source: The International Food Policy Research Institute (IFPRI).

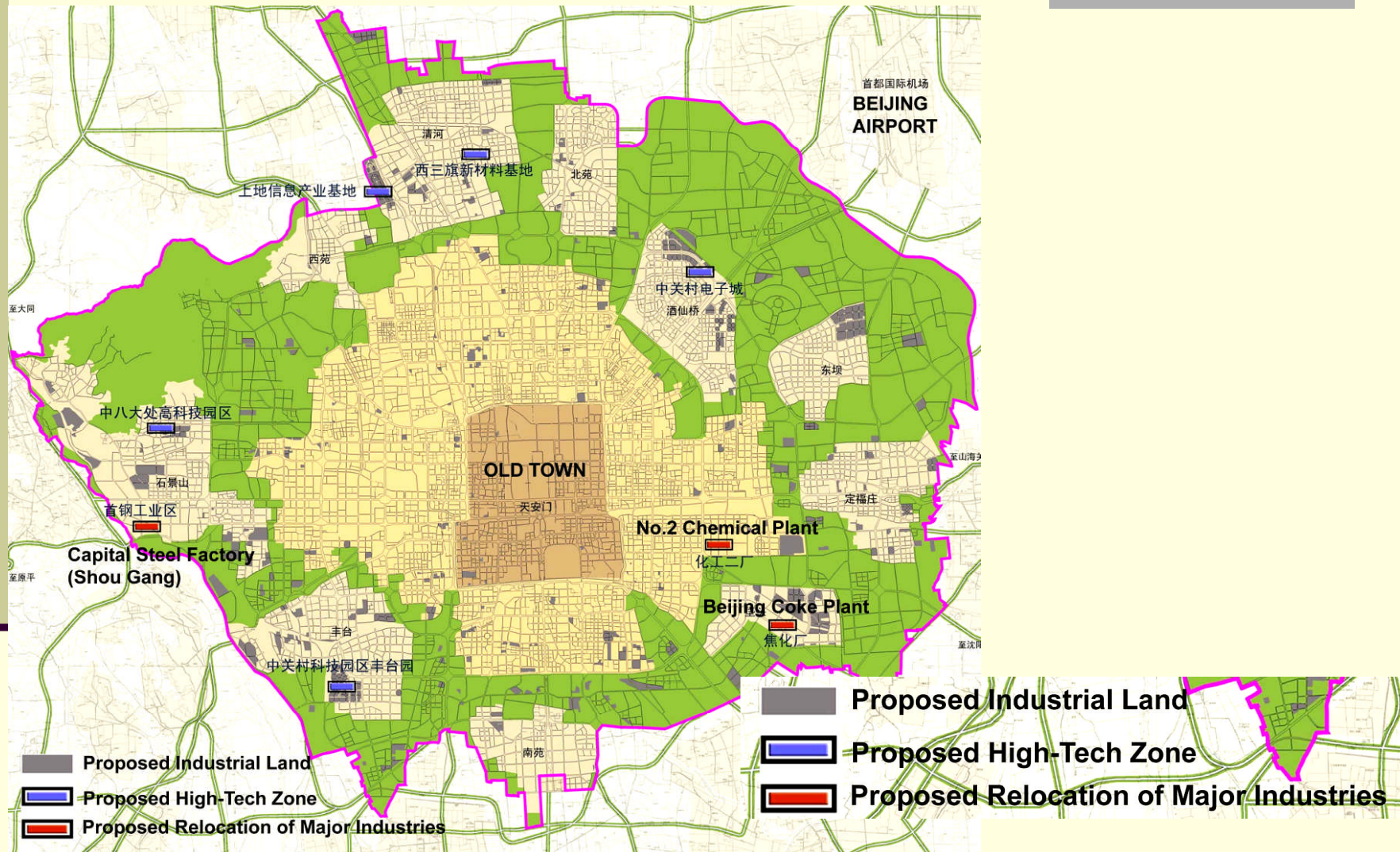
Existing Industrial Land Location in Beijing (2003)

2003年北京现状工业用地分布



Proposed Industrial Land Location in Beijing (2020)

2020年北京规划工业用地分布



Source: Beijing Master Plan (2004- 2020)

Inter- and Intra-regional Impacts

区域内/区域间影响

Origin city
原处城市

Intra-Regional 区域内

- infrastructure 基础设施
- transportation 交通
- housing 住房
- labor market 劳动力
- fiscal 财政
- environment 环境



Inter-Regional 区域间

- freight transport (supply chain) 货物 (供应链)
- commuting (public transit) 通行 (公共交通)

Destination city
目标城市

Intra-Regional

- infrastructure
- transportation
- housing
- labor market
- fiscal
- environment

Key issues (1)

关键问题 (1)

- **Land-use changes** 土地用途变更
 - Apartment, office building, shopping center etc.
住宅、办公楼、购物中心
 - New public-transit demand resulting from new land uses
新的公共交通需求
 - Conversion of public infrastructure, such as electricity, gas, water, and sewer
基础设施的更新
- **Labor market** 劳动力市场
 - Labor supply and demand geographical mismatch
劳动力供应和需求的空间错位
 - Housing-job mismatch
住房和工作的错位
 - Job-accessibility issues
工作可达性

Key issues (2)

关键问题 (2)

- **Transportation 交通**
 - Commuting of workers from Beijing to new locations 上班通行人口
 - Freight transport infrastructure—road, railway, airport, and port. 货物运输基础设施
- **Community and economic development 社区和经济发展**
- **Environment protection 环境保护**
- **Energy use 能源使用**

Transportation Issues 交通问题

- **Regional Mobility** 区域出行
- **Transportation Pattern** 交通方式
- **Transportation and Energy Use** 交通和能源使用

INTER-regional Mobility

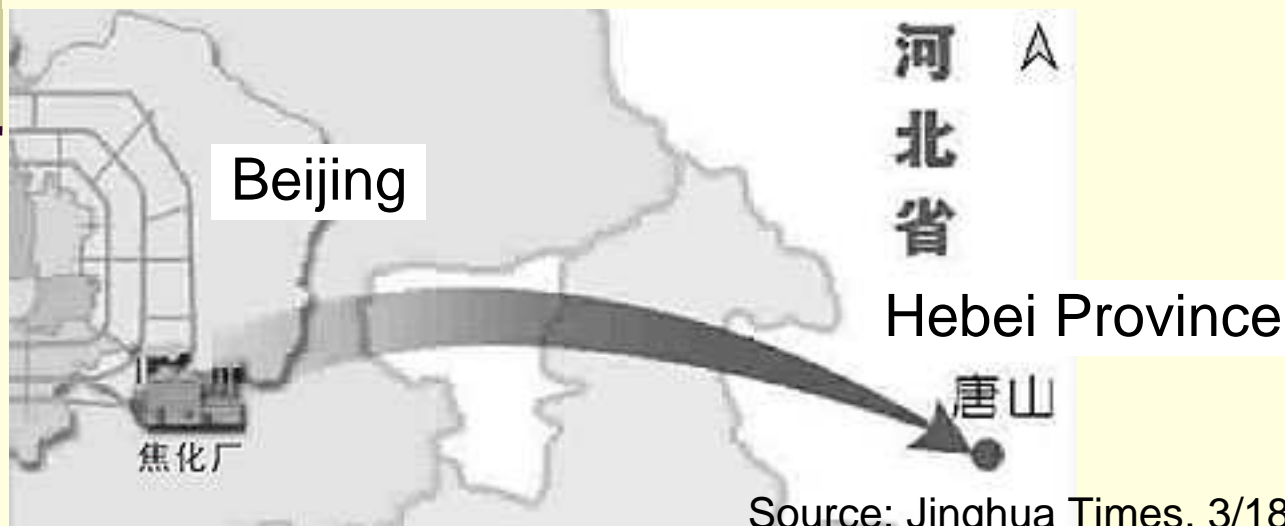
跨区域出行

Cases: 案例

- **Beijing *FaTou* Cokemaking Plant:** 北京垡头焦炭厂
 - o From Beijing to Tangshan, Hebei province
- **Beijing *Shougang* Iron and Steel Plant:** 北京首钢
 - o From Beijing to *Cao FeiDian*, Tangshan, Hebei Province

Challenges: 挑战

- Municipal revenue generation 地方城市财政
- Regional competition of major industries 区域间的城市竞争
- New regional infrastructure needed for industry relocation 新的区域基础设施



Source: Jinghua Times. 3/18/2005

INTRA-regional Mobility 区域内出行



Cases: 案例

- **Beijing No. 2 Chemical Plant:** 北京第二化工厂
 - o From downtown to suburb, **Fangshan District, Beijing**
- **Beijing *Jing Mian* Textile Plant:** 北京京棉集团
 - o From downtown to suburb, **Shunyi District, Beijing**

Challenges: 挑战

- New development on old site produces different travel demand
原有地块上的新开发造成不同的出行需求
- New plant at outskirts produces large commuting population
在郊区的新厂址造成大量的通行人口
- Reshaping urban form and regional-growth mechanisms
重塑城市结构和区域发展机制

Transportation Pattern

交通方式

Freight Traffic: 货物交通

- Supply-chain management (e.g., Beijing *Shougang*)
供应链管理
- Regional transportation connection
区域交通衔接

Commuting Traffic: 通行交通

- Affordable public-transportation system for low- and middle-income commuters
给中低收入居民提供可支付的公共交通系统
- New social services required for new plant area and residents
新厂址区域的社会服务设施的重新建立

Transportation and Energy Use

交通和能源使用

Background 背景

- Proposed 20% deduction of energy intensity (energy use per unit of output) in 11th-Five-Year Plan
十一五提出全社会节能20%
- Energy-intensity decrease of 67% in China from 1978-2004.
中国的能源使用强度在1978至2004年期间降低67%

Challenges 挑战

- New travel pattern requires more energy use
新的出行方式需要更多的能源使用
- Plant relocation leads to energy re-allocation
工业的搬迁引起能源使用的再分配

Thank you!

谢谢!