Massachusetts Institute of Technology

Determining Local Advantages & Disadvantages

11.438 Economic Development Planning

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What is a “Locational Advantage”?

- Something you are better at than other places?
- Something you want to be better at than other places?
- Something you should be better at than other places?
- How you define it affects how you measure it

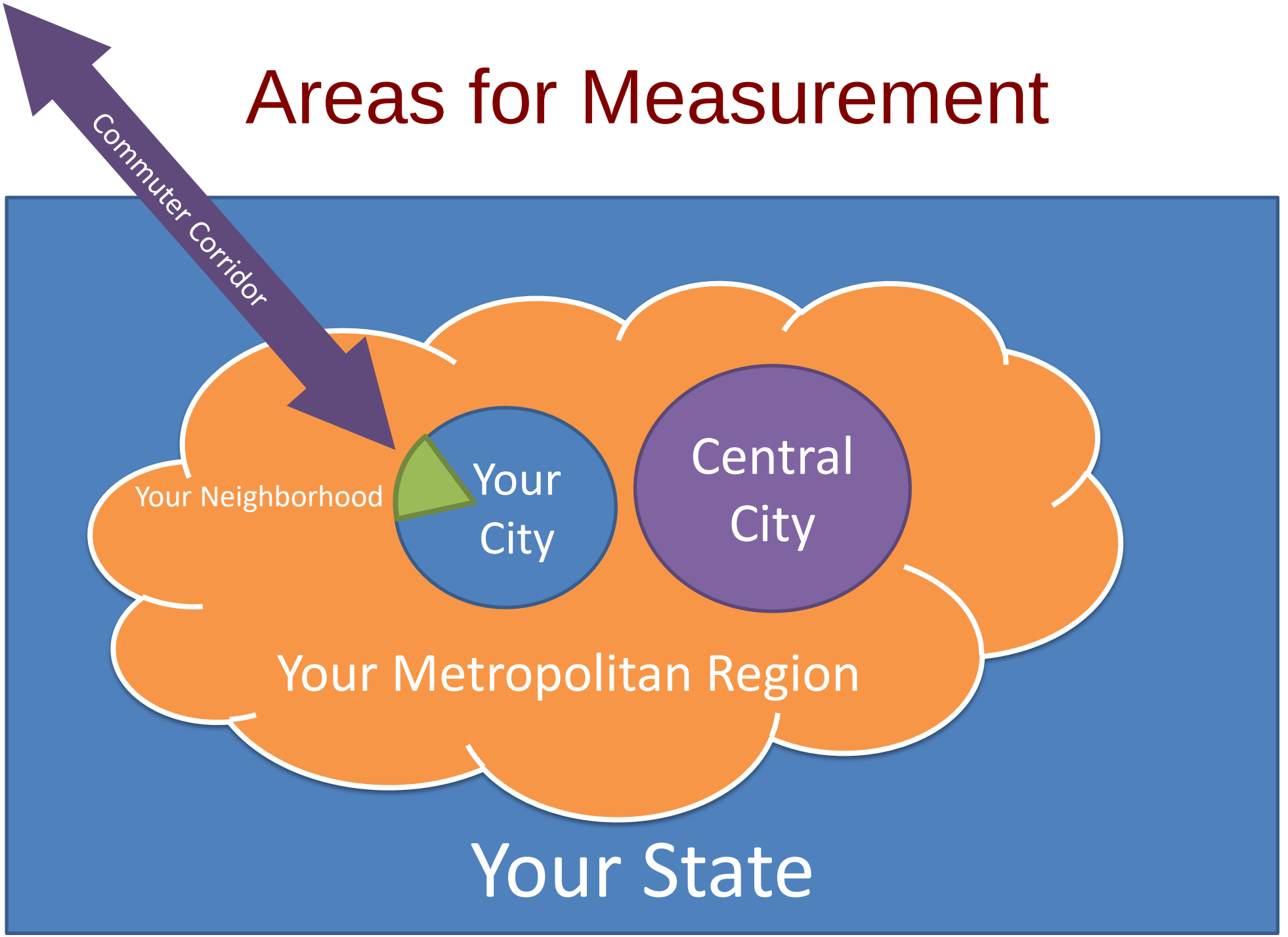
What do places want to have as their advantages?

- “Hip”
- “Artsy”
- High tech
- Working class jobs
- What they always were good at
- Others?

What about Disadvantages?

- Not something places like to talk about
- Affordability
- Access
- Quality of Life
- Job/Skill Mismatch
- Overly dependent on one sector

Areas for Measurement



Tools for Measurement

- May be affected by what data you can gather
- In collecting data, make sure the benefits are worth the costs
- Order of Magnitude data can be fine
- Qualitative as well as quantitative
- Choose wisely, these tools will affect your decisions

Quantitative: Economic Base Analysis

- "Base" jobs import money to the region
- "Non-base" jobs support "base" jobs
- Doesn't directly answer what your advantages are but helps quantify their impacts

$E^T = E^B + E^L$

$r = E^L / E^T$

$E^T = 1/(1-r) \times E^B$

1/(1-r) is the *Economic Base Multiplier (>1)*

Quantitative: Economic Base Analysis

- How do you decide which jobs are “Base”?
- Assumptions can bias results

	Jobs	Case #1	Case #2	Case #3
Auto Manufacturing	5400	Base	Base	Base
Tool Fabrication	2300	Non-Base	Base	Base
Services	1600	Non-Base	Non-Base	Non-Base
Restaurant	2500	Non-Base	Non-Base	Base
Hotel	800	Non-Base	Non-Base	Non-Base
Construction	1400	Non-Base	Non-Base	Non-Base
TOTAL	14000			
Economic Base Multiplier		2.59	1.82	1.37

Quantitative: Location Quotients

- Way of determining regional advantages and disadvantages
- How much more of a job type do you have than the larger economy?
- Need to pick “you” and the “larger economy”
- Need to pick your units of measurement

Quantitative:
Location Quotients

$$\frac{e_{ir} \ / \ e_r}{E_{ir} \ / \ E_r}$$

e_{ir} is the number of jobs in an industry in your region

E_{ir} is the number of jobs in an industry in your region

e_r is the number of jobs in your region

E_r is the number of jobs in the area

Quantitative: Location Quotients

$$\frac{e_{ir} \,/\, e_r}{E_{ir} \,/\, E_r}$$

Study Industry has 100 jobs in your city
Your city has 1000 jobs
Study Industry has 2400 jobs in region
Region has 48000 jobs

$$\frac{100 \,/\, 1000}{2400 \,/\, 48000} = \frac{0.10}{0.05} = 2.0$$ ←So what?

Toledo and Ohio Example: Ohio

NAICS Sector	Number	Sector /Total	Value of Sales	Sector /Total	Annual Payroll	Sector /Total	Employees	
Mining, quarrying, and oil and gas extraction	640	0.003	$ 3,861,915	0.004	$ 584,751	0.004	9,682	0.002
Manufacturing	14,482	0.067	$ 313,629,976	0.333	$ 33,135,414	0.208	627,124	0.157
Wholesale trade	14,266	0.066	$ 252,194,948	0.268	$ 12,812,370	0.080	229,244	0.057
Retail trade	36,531	0.168	$ 153,553,997	0.163	$ 13,099,318	0.082	549,152	0.137
Transportation and warehousing	6,966	0.032	$ 23,709,475	0.025	$ 6,649,313	0.042	158,891	0.040
Information	3,956	0.018			$ 5,606,926	0.035	90,083	0.023
Finance and insurance	17,443	0.080			$ 16,208,897	0.102	241,719	0.060
Real estate and rental and leasing	9,932	0.046	$ 16,132,740	0.017	$ 2,441,785	0.015	60,966	0.015
Professional, scientific, and technical services	23,961	0.110	$ 35,970,815	0.038	$ 14,219,917	0.089	233,876	0.058
Administrative & support & waste management & remediation	13,081	0.060	$ 21,156,042	0.022	$ 9,980,639	0.063	362,944	0.091
Educational services	1,943	0.009	$ 1,066,774	0.001	$ 375,222	0.002	15,568	0.004
Health care and social assistance	28,237	0.130	$ 80,915,693	0.086	$ 33,140,983	0.208	798,770	0.200
Arts, entertainment, and recreation	3,810	0.018	$ 5,431,838	0.006	$ 1,977,297	0.012	60,704	0.015
Accommodation and food services	23,432	0.108	$ 20,652,777	0.022	$ 5,742,747	0.036	437,293	0.109
Other services (except public administration)	18,851	0.087	$ 13,221,455	0.014	$ 3,491,259	0.022	127,366	0.032
TOTAL FOR OHIO	217,531		$ 941,498,445		$ 159,466,838		4,003,382	

Toledo and Ohio Example: Toledo

NAICS Sector	Number	Sector /Total	Value of Sales	Sector /Total	Annual Payroll	Sector /Total	Employees	Sector /Total
Utilities	8	0.002						
Manufacturing	295	0.061	$ 11,102,319	0.463	734,418	0.207	11,821	0.128
Wholesale trade	249	0.051	$ 2,592,823	0.108	188,592	0.053	3,832	0.041
Retail trade	935	0.192	$ 2,837,079	0.118	282,724	0.080	13,004	0.140
Transportation and warehousing	136	0.028	$ 420,119	0.018	132,718	0.037	2,915	0.031
Information	90	0.018			109,129	0.031	2,231	0.024
Finance and insurance	316	0.065			178,569	0.050	3,086	0.033
Real estate and rental and leasing	237	0.049	$ 2,219,247	0.093	127,794	0.036	1,823	0.020
Professional, scientific, and technical services	452	0.093	$ 652,546	0.027	227,816	0.064	4,173	0.045
Administrative & support & waste management & remediation	290	0.059	$ 409,656	0.017	193,857	0.055	8,457	0.091
Educational services	33	0.007	$ 10,447	0.000	3,187	0.001	154	0.002
Health care and social assistance	694	0.142	$ 2,718,022	0.113	1,074,610	0.304	23,389	0.252
Arts, entertainment, and recreation	84	0.017	$ 269,187	0.011	68,248	0.019	3,387	0.037
Accommodation and food services	632	0.130	$ 485,885	0.020	141,095	0.040	11,286	0.122
Other services (except public administration)	431	0.088	$ 272,275	0.011	77,355	0.022	3,072	0.033
TOTAL FOR TOLEDO	4,874		$ 23,989,605		3,540,112		92,630	

Location Quotients for Toledo

NAICS Sector	LQ # Est	LQ Sales	LQ Payroll	LQ Emp #
Utilities	0.56			
Manufacturing	0.91	1.39	1.00	0.81
Wholesale trade	0.78	0.40	0.66	0.72
Retail trade	1.14	0.73	0.97	1.02
Transportation and warehousing	0.87	0.70	0.90	0.79
Information	1.02		0.88	1.07
Finance and insurance	0.81		0.50	0.55
Real estate and rental and leasing	1.06	5.40	2.36	1.29
Professional, scientific, and technical services	0.84	0.71	0.72	0.77
Administrative & support & waste management & remediation	0.99	0.76	0.87	1.01
Educational services	0.76	0.38	0.38	0.43
Health care and social assistance	1.10	1.32	1.46	1.27
Arts, entertainment, and recreation	0.98	1.94	1.55	2.41
Accommodation and food services	1.20	0.92	1.11	1.12
Other services (except public administration)	1.02	0.81	1.00	1.04

Shift-Share Analysis

- Breaks job growth in region into three components to help control for external factors:

1. National Growth Effect
2. Industrial Mix Effect
3. *Regional Shift*

Input-Output Analysis

- More of a full model of the regional economy
- Each sector has a row and a column for where they get “inputs” from other sectors and where they produce “outputs”
- Allows changes in demand to ripple through system

Input-Output Analysis

Thousands of Dollars	Raw Materials	Manufacturing	Services	FINAL DEMAND (NET OUTPUTS)
Raw Materials (Extraction)	220	50	75	50
Manufacturing	650	75	50	400
Services	100	75	30	240
TOTAL INPUTS	970	200	155	

Qualitative Analysis

- Different from assumptions or aspirations
- Can be based on survey results or observations
- Can be combined with quantitative analysis as well
- May be hard to document

“Business Angels”

- Often economic growth is driven by a place-based investor
- Attached to a location or interested in its economic success
- Not a “natural” economic advantage *per se*
- Can also be a place-based foundation or non-profit

Locational Advantage in a Post-Locational World

- How do you measure locational advantage in an era of telecommuting and scattered site offices?
- Are there enough “bricks and mortar” jobs that the old models still work?
- Can you build a ship or car remotely?
- What about the digital divide?
- Does this go back to the Creative Class argument?

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