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Agglomeration Economies and Evolving Urban Form

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Introduction

- The historical importance of agglomeration economies and cities
- The agglomeration economies debate
- Metro level, sub-metro level agglomeration
- Case study of LA

Role and nature of agglomeration economies

- Duranton and Puga (2004)
  - Sharing
    - Infrastructure and facilities
    - Intermediate inputs
    - Labor pooling
  - Matching
    - Firms and intermediate suppliers
    - Labor
  - Learning
    - Formal and informal knowledge exchange
- Other factors
  - Consumer city (Glaeser et al, 2001)
  - Amenities and high human capital labor (Florida, 2002)

Do agglomeration economies matter in the information age?

For	Against
Virtual communications reinforce face-to-face	Increasing substitutability of virtual communications
Information economy more dependent on access to knowledge exchange	Shift to information based economy – less physical exchange
Sharing and matching economies continue to matter	Declining transport costs
Transport costs no longer declining	Value of proximity declines, other location factors become more important

Agglomeration at what scale?

- Most research on agglomeration economies assume metropolitan level effects
  - As average density declines, suggests decline in agglomeration benefit
- What about sub-metropolitan level?
  - What if agglomeration works at more localized level (in addition to traditional concept of localization economies)?
  - Are employment centers evidence of a different form of agglomeration economies?

Polycentric cities

- Growing evidence of polycentricity
  - Not just Los Angeles
  - New York, Chicago, Houston, San Francisco, and more
- A result of path dependence, durability of built environment, or something else?
- By theory, subcenters emerge when, at the margin, agglomeration costs exceed benefits (Fugita and Ogawa, 1982)

A different type of agglomeration economies

- Multiple agglomeration clusters, of different sizes and densities….
  - Give firms more choices, hence better matching
  - Distribute activity, reducing costs relative to a single center
  - Build on metro level agglomeration benefits

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An exploration of employment centers and evidence of agglomeration

Los Angeles case study

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Two questions

- Persistence
  - Are employment centers a long term characteristic of large metro areas?
  - Are they gaining or losing influence?
- Evidence of agglomeration
  - Are there functional differences?
  - Evidence of specialization, sharing, etc?

Los Angeles Case Study

- The second largest metro area in US
- Some basic information
  - Los Angeles region = urbanized portion of the Los Angeles Consolidated Metropolitan Statistical Area (CMSA)
  - Five counties
    - Los Angeles, Orange, Riverside, San Bernardino, Ventura
  - 2010 population: 18 million
  - 2010 employment: 7 million
  - 88,000 KM^2

Data

- Longitudinal Employment and Household Dynamics (LEHD) 2010
  - Employment, 2 digit NAICS, census tracts, converted to traffic analysis zones (TAZs)
- US Census 2010 population
- Southern California Association of Government (SCAG) regional transportation network

Center definitions

- 10/10:
  - Clusters of zones that have density of at least 10 jobs/acre and together have at least 10,000 jobs.
  - Corresponds to 95th percentile of the job density distribution
- 20/20
  - Clusters of zones that have density of at least 20 jobs/acre and together have at least 20,000 jobs
  - Corresponds to 99th percentile of the job density distribution

Question 1: Persistence

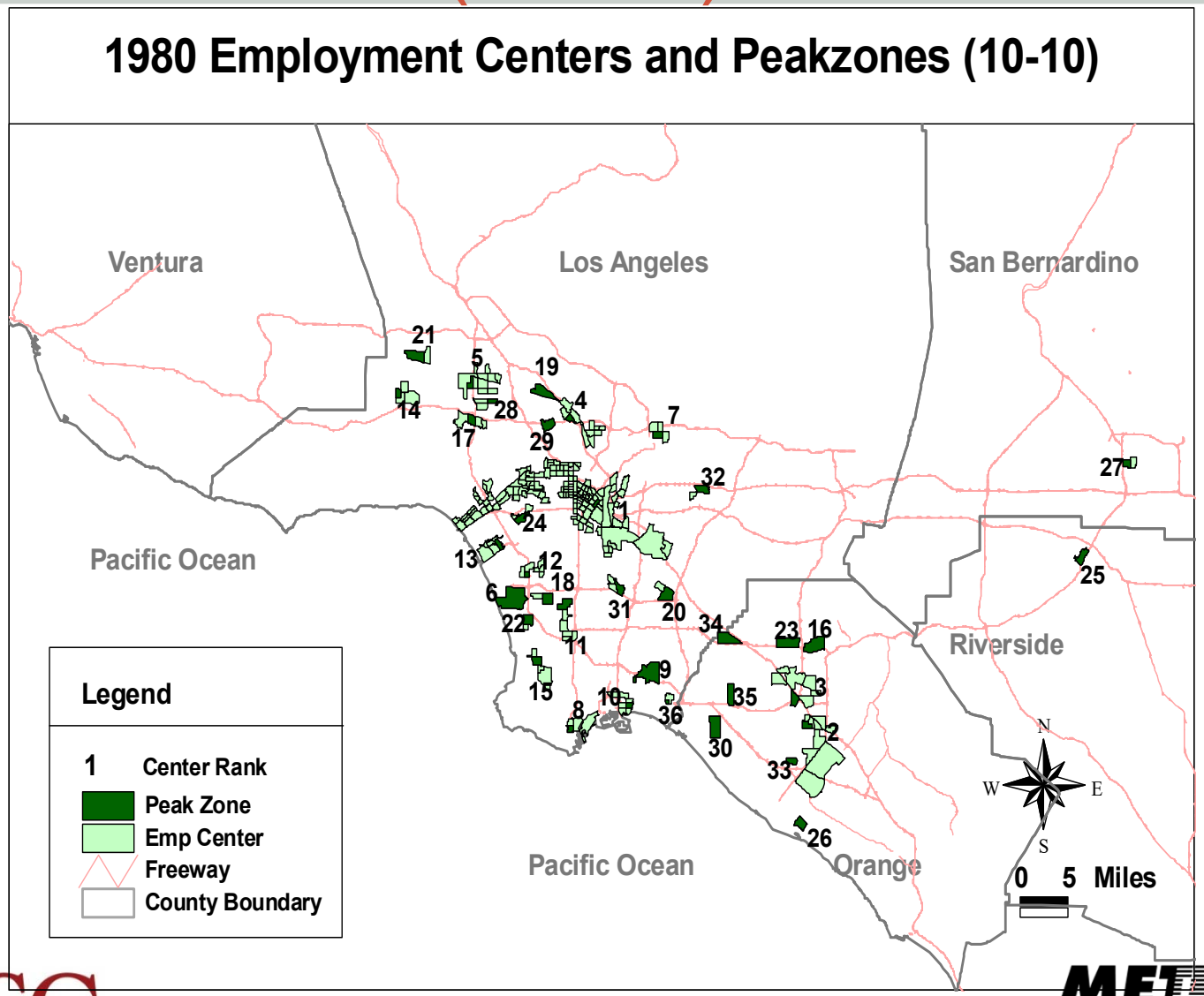
- Compare centers from 1980 – 2010
- Data from different sources
- Over that period
  - Population increased 63%
  - Several business cycles/recessions
    - Savings and loan crisis 1980s, aerospace industry losses 1990s, dot-com bubble 2000, rise of social media, great recession
  - TTI index of travel delay/commuter increased 60%

10/10 centers, 1980 – 2010

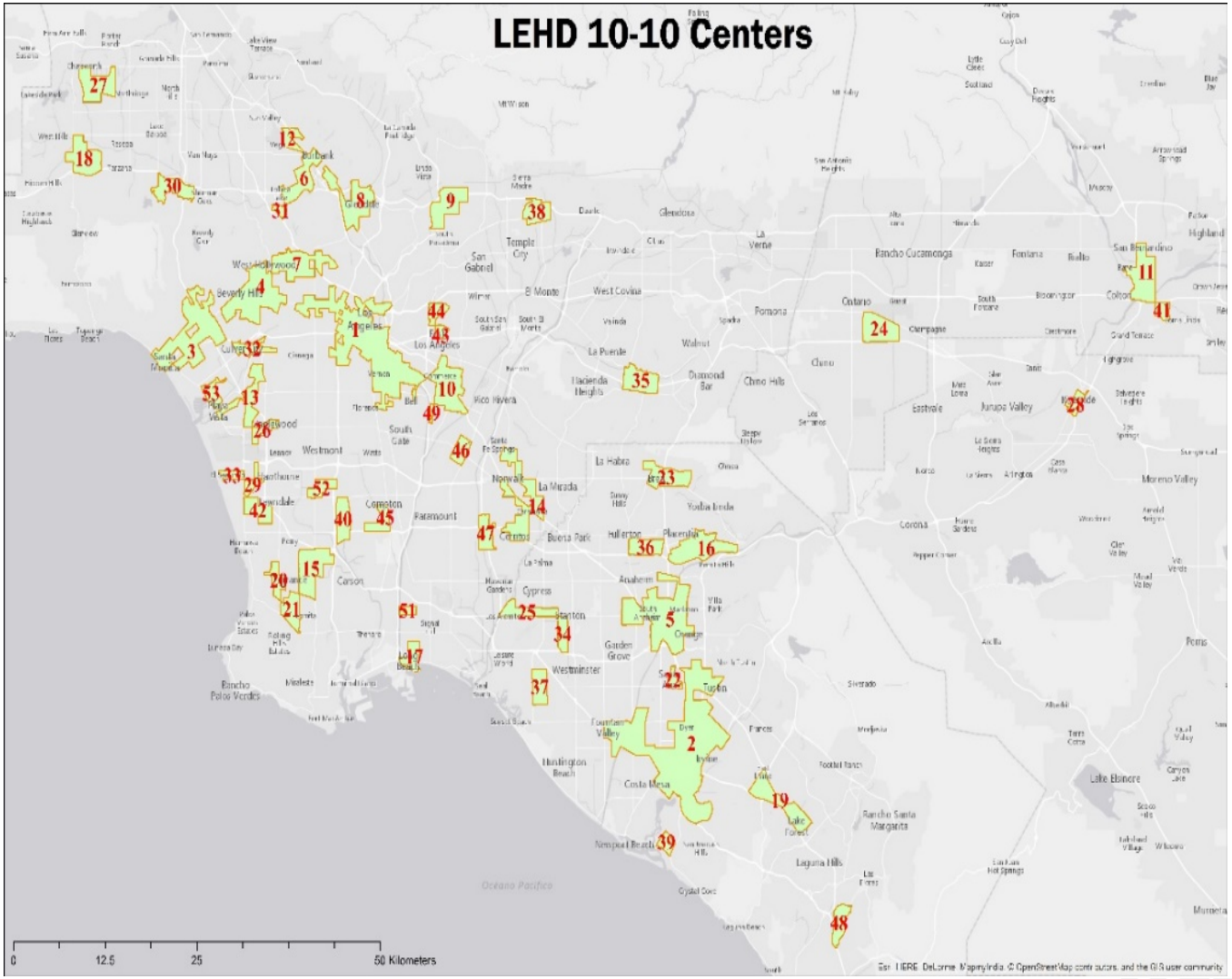
Year	Data source	Tot emp (1,000s)	Tot pop (1,000s)	Tot acres (100)	N centers	Share emp (%)	Share area (%)
1980	UTPP	4,651.8	10,703.9	2,263.3	32	32.0	3.1
1980	SCAG	5,388.1	11,192.0	5,061.5	36	40.3	2.1
1990	SCAG	6,874.7	14,011.6	5,061.5	46	39.1	2.6
2000	SCAG	7,241.5	15,681.0	5,061.5	48	37.5	3.3
2000	NETS	8,296.7	16,373.6	3,928.3	53	42.5	4.4
2010	LEHD	6,969.8	17,468.0	5,257.3	49	36.1	2.3

Remarkable stability

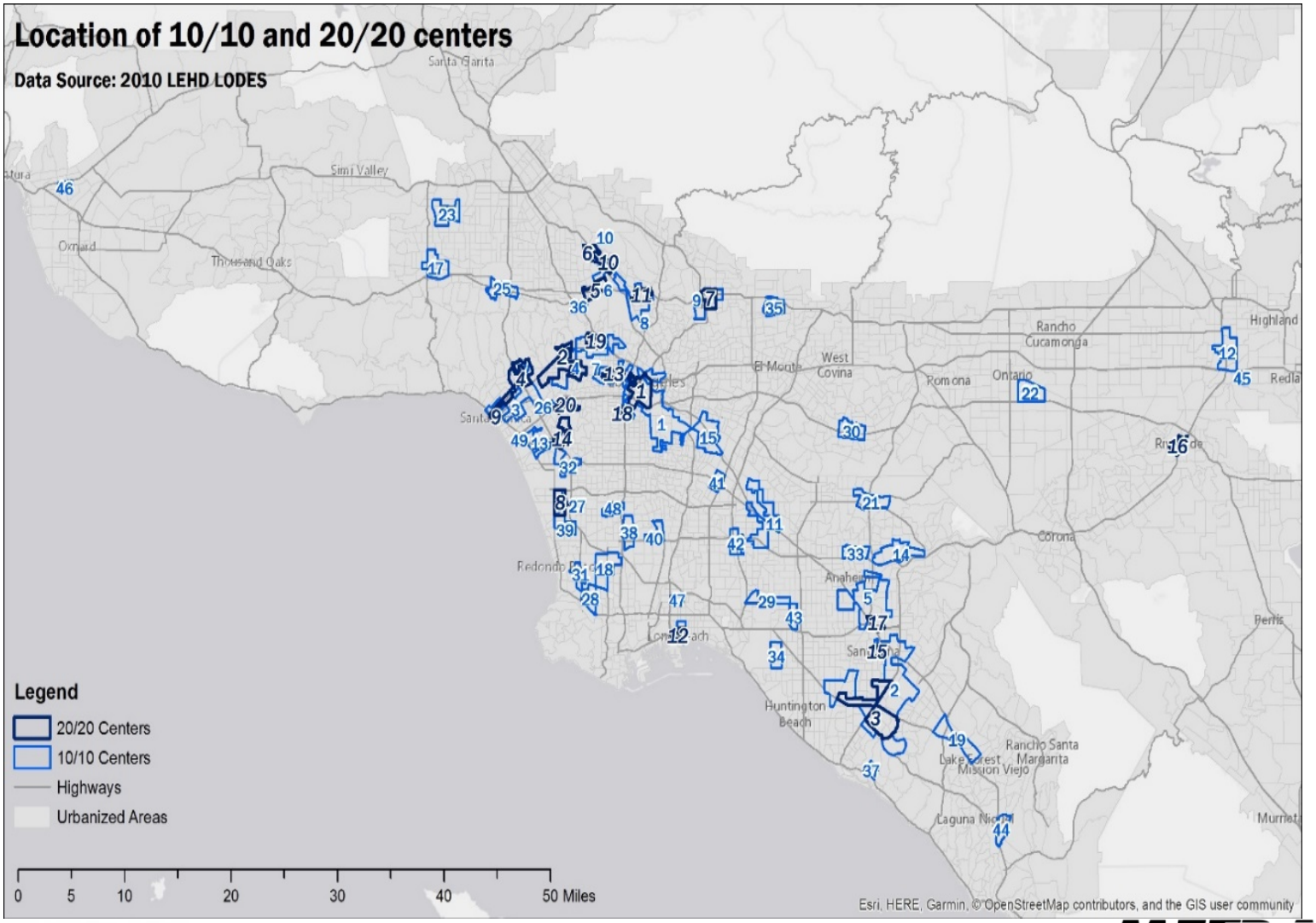
1980 centers (UTPP)



2010 centers (LEHD)



Question 2: Agglomeration economies



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Specialization: Inside vs outside centers

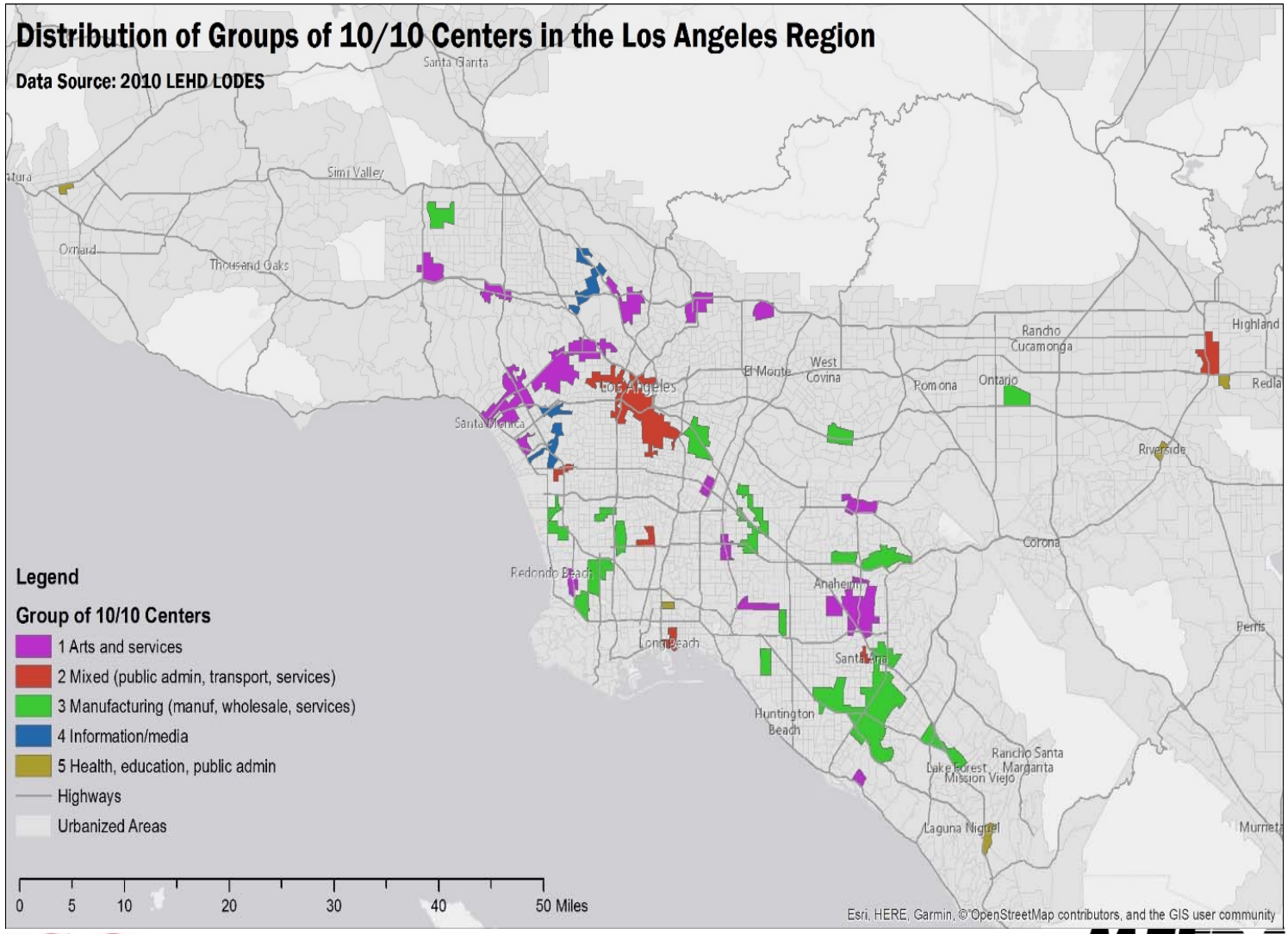
Sector	10/10 Centers	outside 10/10 Centers	20/20 Centers	outside 20/20 Centers
Utilities	0.5%	0.6%	0.6%	0.6%
Construction	2.2%	4.6%	0.9%	4.5%
Manufacturing	8.9%	5.9%	3.8%	6.3%
Wholesale Trade	5.5%	3.9%	3.7%	4.1%
Retail Trade	9.5%	12.5%	7.7%	12.4%
Transportation and Warehousing	2.4%	2.6%	2.0%	2.6%
Information	5.9%	1.4%	10.0%	1.5%
Financial Activities	5.1%	2.6%	5.5%	2.8%
Real Estate and Rental and Leasing	2.2%	2.0%	2.2%	2.0%
Professional and Business Services	8.2%	4.4%	11.3%	4.5%
Mgmt of Companies and Enterprises	1.6%	0.8%	1.7%	0.8%
Administrative and Support	7.6%	5.3%	7.2%	5.5%
Educational Services	6.9%	13.8%	7.1%	13.3%
Health Care and Social Assistance	11.9%	11.6%	13.2%	11.5%
Arts, Entertainment, and Recreation	2.2%	2.0%	2.3%	2.0%
Accommodation and Food Services	8.3%	10.7%	8.5%	10.6%
Other Services	6.4%	12.0%	4.8%	11.7%
Public Administration	4.6%	1.9%	6.8%	2.0%

Specialization: between centers

Cluster analysis, 10/10 centers

Cluster group, main industry components	N of centers, examples
Group 1 Arts and services **Arts, finance, prof services, retail**	16 Westwood/Santa Monica, Hollywood, Pasadena, Newport Beach
Group 2 Mixed **Public admin, transport, services**	6 Downtown LA, Long Beach, Santa Ana
Group 3 Manufacturing **Manufacturing, wholesale, transp, mgmt. services**	17 Commerce, Irvine Spectrum, Hawthorne
Group 4 Information **Information/media**	5 Burbank, Culver City
Group 5 Public services **Health, public admin**	5 Riverside

10/10 centers by cluster group



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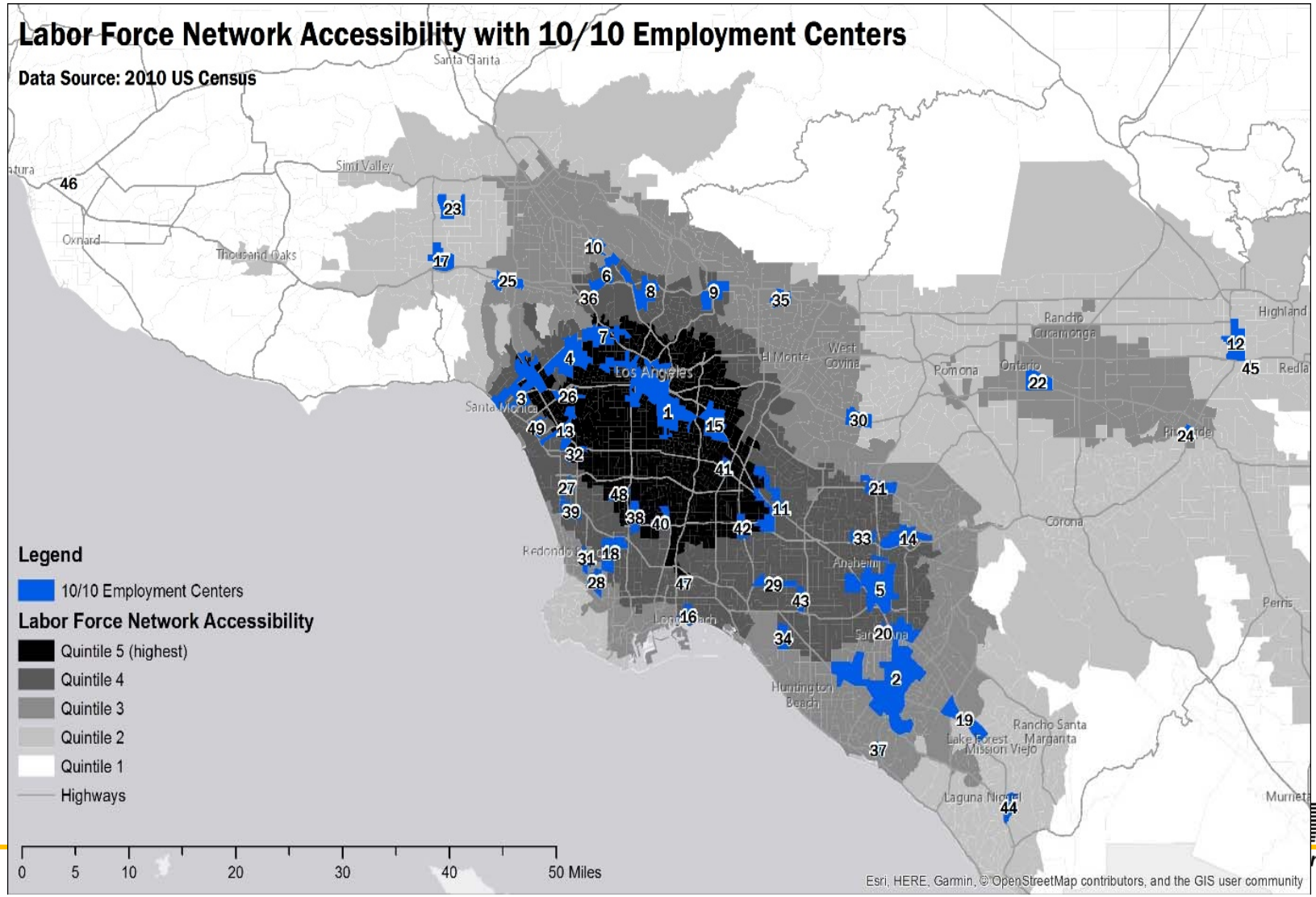
10/10 cluster group descriptives

Group	N	Ave emp	Ave density (emp/acre)	Ave peak density
1: Arts and services	16	56,589	29.1	60.7
2: Mixed	6	92,670	29.1	132.4
3: Manufacturing	17	43,745	14.7	15.9
4: Information/media	5	48,624	37.4	77.2
5: Public services	5	14,571	22.3	24.9

Distinction between manufacturing centers, information centers

Labor pooling: 10/10 centers and labor force access



Observations

- Persistence
  - Stability of centers
  - Consistency re share of total employment, share of area
  - Geography of larger centers consistent over time
  - No evidence of decline

Observations

- Agglomeration
  - Specialization
    - Differences inside and outside centers
    - Differences greater for 20/20 centers
    - Differences between centers
  - Sharing
    - Specialization, complementary sectors at the center level
    - Infrastructure, labor pool sharing at regional level
  - Learning
    - Presence of 20/20 centers

Conclusions

- Polycentric cities make sense
  - Variety in scale, level of agglomeration
  - Regional scale + local diversity
  - Cost and productivity benefits
  - Facilitator of mega-regions
- Complexity, connectedness of urban space economy

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THANK YOU

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