

# Urban Revival in America

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# Objectives

1. **Document** the recent revival of America's urban areas.
  - ▶ Focus on urbanization of the college-educated.
2. **Explain:** Identify the factors driving urban revival.
  - ▶ Focus on determinants of college-educated location choices within cities.

# Approach & Results

- Establish a set **stylized facts** on urban revival: who, when, where?
  - ▶ **Recent** phenomenon (2000-2010)
  - ▶ **Localized** in downtown areas of mostly large cities
  - ▶ Driven by **younger cohorts**: college-educated 18-45 year olds
- Explain urban revival by estimating a tract level **residential choice model**.
  - ▶ **Changing preferences (especially for amenities) matter** more than changing environment.
- Test **additional hypotheses** using CBSA-level regressions
  - ▶ National trends in household formation and mortgage markets do not explain urban revival.

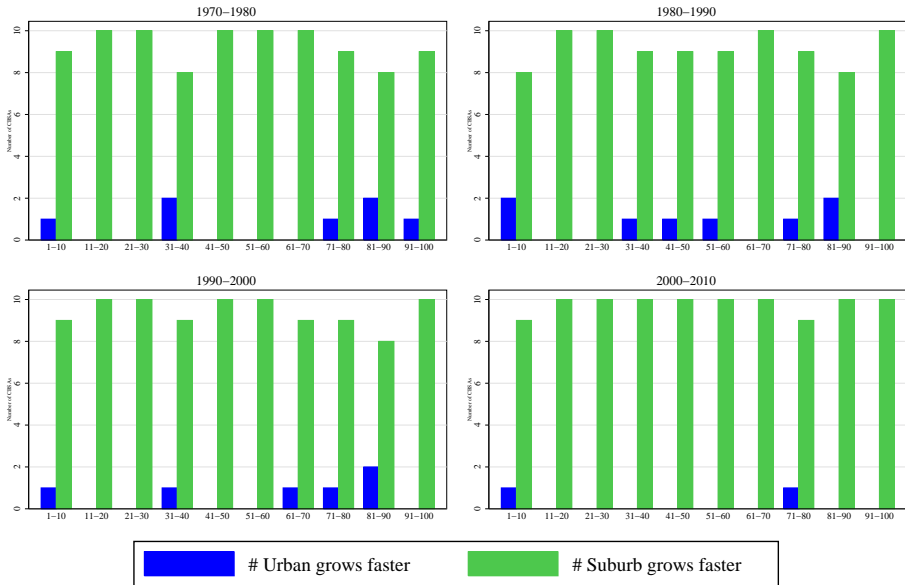
# Stylized Facts

**Is the population growing faster in the urban or suburban areas of a CBSA?**

- Data: Census and ACS tables by census tract, LTDB for geographical consistency.
- Urban definition: Set of tracts closest to CBD accounting for 5% of CBSA pop'n.

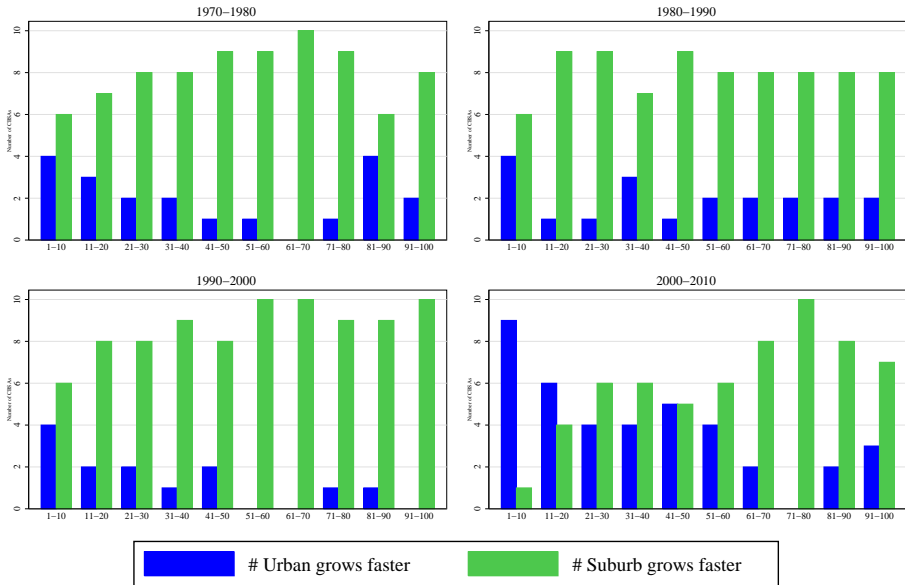
# Downtown vs Suburban Growth, Total Population

by CBSA population rank (groups of 10)



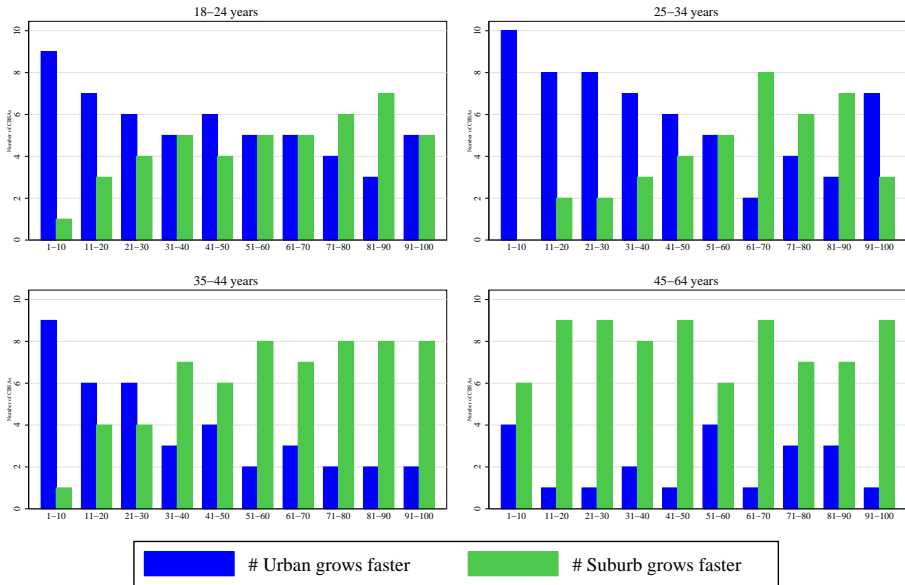
# Downtown vs Suburban Growth, College Educated

by CBSA population rank (groups of 10)



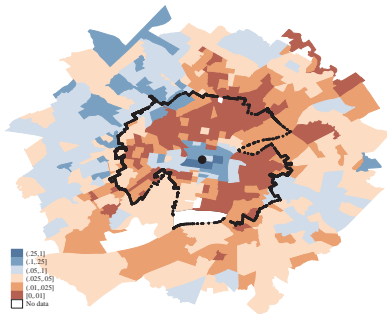
# Downtown vs Suburban Growth, College Educated, 2000–2010

by CBSA population rank (groups of 10)

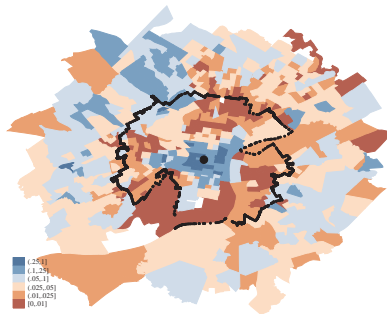


# Young College-Graduates in Philadelphia (2000 vs. 2010)

25–34 college share of population in 2000  
(Philadelphia–Camden–Wilmington, PA–NJ–DE–MD)



25–34 college share of population in 2010  
(Philadelphia–Camden–Wilmington, PA–NJ–DE–MD)





# Stylized Facts: Magnitudes

- Reversal of college-educated residential choice in 2000-2010
  - ▶ Coming from 25-45 year old group (i.e. no millenials or baby-boomers).
- College-educated growing faster downtowns in 50 largest CBSAs:
  - ▶ 25-34 group grew 44% downtown vs. 14% in the suburbs.
  - ▶ 35-44 group grew 30% downtown vs. 10% in the suburbs.
  - ▶ Despite constant downtown and growing suburban population
  - ▶ *Large changes in downtown demographic composition!*
- Downtowns contain only 5% of population, but:
  - ▶ Account for 24% of growth in 25-34 year old college-educated population.
  - ▶ Account for 11.5% of growth in 35-44 year old college-educated population.

# Stylized Facts: Commute Patterns

- Percentage growth in population living and working at different distances from CBD

**All Workers in All CBSAs**

Distance between Workplace and CBD (miles)

	[0, 1)	[1, 2)	[2, 4)	[4, 8)	[8, 16)	[16, 32)	32+	All
[0, 1)	-14.83	-14.87	-12.66	-3.44	7.17	9.65	16.26	-12.73
[1, 2)	-13.92	-12.73	-14.38	-6.94	3.42	6.45	6.57	-31.54
[2, 4)	-11.30	-9.70	-10.38	-6.02	0.92	3.48	9.38	-23.63
[4, 8)	-2.35	-0.27	-3.21	-3.53	1.52	5.05	5.61	2.82
[8, 16)	9.76	12.58	8.60	7.91	2.25	8.79	13.14	63.03
[16, 32)	21.98	25.11	22.01	22.09	15.25	2.51	13.55	122.49
32+	33.33	41.09	34.27	38.18	40.58	30.50	11.06	229.03
All	22.67	41.21	24.24	48.24	71.10	66.43	75.59	

## High-Income Workers in Largest 10 CBSAs

Distance between Workplace and CBD (miles)

	[0, 1)	[1, 2)	[2, 4)	[4, 8)	[8, 16)	[16, 32)	32+	All
[0, 1)	80.98	99.49	115.48	114.23	94.81	70.30	77.11	652.40
[1, 2)	96.31	70.52	64.35	88.98	68.63	58.25	67.63	514.68
[2, 4)	87.02	95.29	62.77	76.43	57.65	44.41	62.61	486.18
[4, 8)	78.05	98.72	46.54	47.27	42.33	32.64	35.95	381.50
[8, 16)	62.31	75.27	38.00	34.21	25.50	33.04	35.71	304.02
[16, 32)	47.24	55.32	31.90	33.88	26.30	28.08	40.29	263.01
32+	82.40	89.72	56.49	63.17	59.66	48.69	41.18	441.31
All	534.29	584.32	415.54	458.16	374.88	315.42	360.48	

Notes: Percentage growth is created using 2002 and 2011 LODES data. The top 10 CBSAs are New York, Los Angeles, Chicago, Dallas, Philadelphia, Houston, Washington, Miami, Atlanta, and San Francisco. Middle-Income workers earn \$1250-3333 per month and high-income workers earn more than \$3,333 per month.

# Residential Choice Model

## **Why are young professionals urbanizing?**

- Residential location choice model based on the workhorse monocentric city model.
  - ▶ Households trade off amenities, proximity to jobs, and house prices.
- Extended to allow for changes in location choices to be driven by either:
  - ▶ Changing environment (e.g., improvements in amenities).
  - ▶ Changing preferences (e.g., changing tastes for amenities).

# Estimating Equation

$$\begin{aligned}\Delta \ln \tilde{s}_j^d = & \alpha_{2010}^d \Delta \tilde{\mathbf{A}}_j + \Delta \alpha^d \tilde{\mathbf{A}}_{j,2000} + \beta_{2010}^d \Delta \tilde{\mathbf{T}}_j + \Delta \beta^d \tilde{\mathbf{T}}_{j,2000} \\ & + \gamma_{2010}^d \Delta \tilde{p}_j + \Delta \gamma^d \tilde{p}_{j,2000} + \sigma^d \Delta \ln \tilde{s}_{j|c(j)}^d + \Delta \tilde{\xi}_j^d + \varepsilon_{jt}^d\end{aligned}$$

- Dependent variable:  $\Delta \ln \tilde{s}_j^d$ 
  - ▶ 2000-2010 change in the national share of age-education group  $d$  residing in tract  $j$  in CBSA  $c$  relative to the change in share residing in a national base tract.
- Regressors:  $\tilde{\mathbf{A}}_j, \tilde{\mathbf{T}}_j, \tilde{p}_j$ 
  - ▶ Coefficient on changes in characteristics (e.g.  $\Delta \tilde{\mathbf{A}}_j$ ) captures level of preferences.
  - ▶ Coefficient on levels of characteristics (e.g.  $\tilde{\mathbf{A}}_{j,2000}$ ) captures change in preferences.
- Technical notes:
  - ▶ Nested logit and error terms:  $\sigma^d \Delta \ln \tilde{s}_{j|c(j)}^d + \Delta \tilde{\xi}_j^d + \varepsilon_{jt}^d$
  - ▶ Identification: Time-invariant tract unobservables cancel out. Changes are instrumented.

# Residential Tract Variables

- House price index from Zillow for **all homes** ( $\Delta\tilde{p}_j, \tilde{p}_{j,2000}$ )
- Job location from LODES ( $\Delta\tilde{T}_j, \tilde{T}_{j,2000}$ )
  - ▶ Inverse distance-weighted job opportunities **in three wage groups** from tract  $j$ .
  - ▶ Average distance travelled to work for tract  $j$  resident.
- Amenity indexes ( $\Delta\tilde{A}_j, \tilde{A}_{j,2000}$ )
  - ▶ 11 categories of consumption amenities (restaurants, apparel stores, food stores, etc.) from the universe of establishments from NETS.
  - ▶ School district quality rankings from schooldigger.com.
  - ▶ Violent crime from Uniform Crime Reports.

# Parameter Estimates

Variable	25-34, College Educated		25-34, Non-college Educated	
	Change [1]	Level [2]	Change [3]	Level [4]
House Price Index	0.02***	-0.005	-0.07***	-0.003
Cohort Share	—	-0.04***	—	0.06
Job Opportunities – Low Inc.	-0.14***	-0.06***	-0.41***	-0.23***
Job Opportunities – Mid Inc.	-0.06**	0.04**	-0.13**	0.05
Job Opportunities – High Inc.	0.2***	0.05***	0.45***	0.14***
Avg. Travel Distance	0.1***	0.04***	0.41***	0.19***
Population Density	—	-0.07***	—	-0.16***
College share	—	-0.11***	—	-0.1***
Within-CBSA share	0.57***	—	0.16	—
Theater	-0.17***	-0.12***	0.009	0.04
Museums	0.04**	0.06***	0.08**	0.13***
Movie Theaters	-0.03*	-0.003	-0.27***	-0.2***
Outdoor activities	0.12***	0.06***	0.06*	0.02
Sports	-0.07***	-0.11***	-0.05	-0.08
Restaurants	-0.04	-0.03	0.07	0.12**
Bars	-0.11***	-0.12***	0.04	0.04
Personal Services	-0.03	0.01	-0.37***	-0.54***
General Merchandise Stores	-0.04***	-0.04*	0.03	0.02
Food Stores	0.07***	0.18***	0.21***	0.36***
Apparel Stores	0.01	0	-0.13***	-0.16***
R-squared	0.706		-0.123	
Observations	31,818		37,350	

# Interpretation of Coefficients

- Young college and non-college have different preferences.
  - ▶ College more attracted to certain amenities like theaters and restaurants, to job opportunities, and less sensitive to high house prices.
  - ▶ These differences are often becoming more pronounced from 2000 to 2010
- Young and middle-age preferences differ from that of older people (not shown).
  - ▶ Younger people more attracted to amenities like theaters, restaurants, drinking places and apparel stores.
  - ▶ These differences are often becoming more pronounced from 2000 to 2010

# Model Performance

## **Can preferences that we estimate explain our stylized facts?**

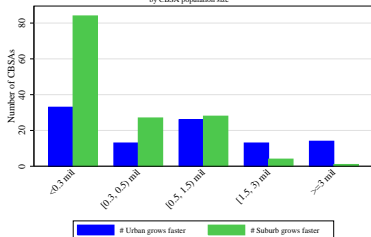
- Use fitted values from the model to predict, for different groups, the growth in urban and suburban areas of each sample CBSA.
  - ▶ Recall: The model didn't contain any control for proximity to CBD or city size.



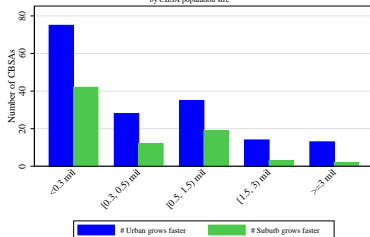
## Actual

## Model

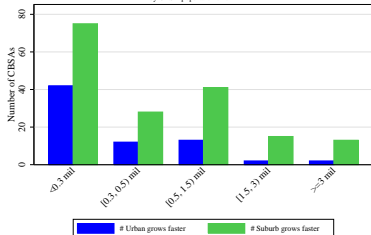
Urban vs Suburban Growth (Actual), 25–34, college, 2000–2010  
by CBSA population size



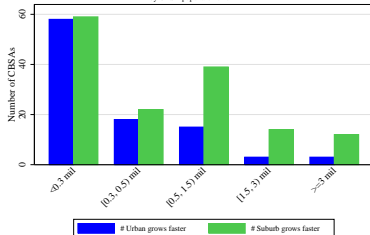
Urban vs Suburban Growth (All regressors), 25–34, college, 2000–2010  
by CBSA population size



Urban vs Suburban Growth (Actual), 25–34, non-col, 2000–2010  
by CBSA population size



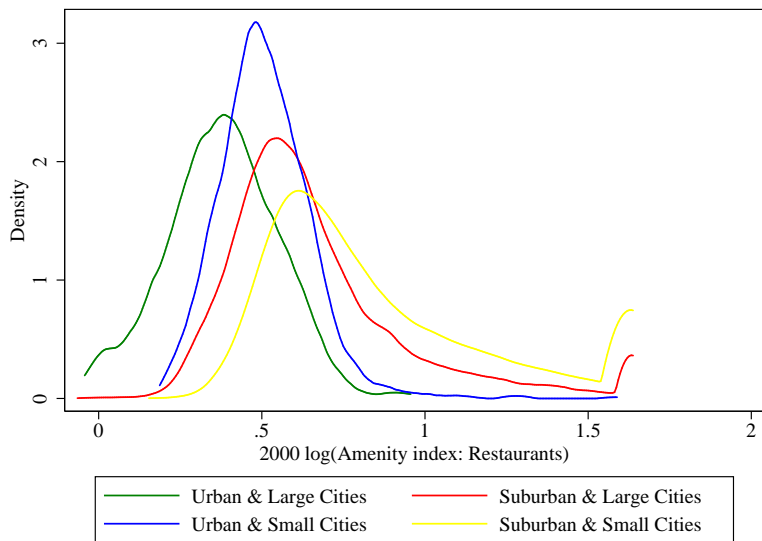
Urban vs Suburban Growth (All regressors), 25–34, non-col, 2000–2010  
by CBSA population size



# Which variables explain urban revival?

- In order to explain the urbanization of the college-educated, a variable must have:
  1. Higher (lower) values in urban than suburban census tracts.
  2. Positive (negative) college coefficient.
- What variables explain faster urbanization of college vs non-college?
  1. Higher (lower) values in urban than suburban census tracts.
  2. Larger (smaller) coefficient for college than non-college.
- What variables explain faster urbanization of college vs. non-college in large cities?
  1. Relatively larger urban-suburban differential for variable in large cities.
  2. Larger (smaller) coefficient for college than non-college.

# Which variables explain urban revival?



Note: Data are at tract level.

# Which variables explain urban revival?

## 25-34 year old college-educated vs 25-34 year old non college-educated

Variable	Coefficient		Mean Value		Contribution [5] = ([2]-[1])*([4]-[3])
	Non-College [1]	College [2]	Suburban [3]	Urban [4]	
Theater	0.13	-0.57***	0.69	0.44	0.17
Bars	0.07	-0.28***	0.77	0.38	0.14
Restaurants	0.23**	-0.08	0.73	0.43	0.10
Food Stores	0.98***	0.67***	0.58	0.35	0.07
Δ Personal Services	-2.3***	-0.25	0.00	0.03	0.05
Job Opportunities -- Low Inc.	-0.41***	-0.14***	-1.10	-0.91	0.05
General Merchandise Stores	0.07	-0.16*	0.54	0.35	0.04
Sports	-0.26	-0.5***	0.57	0.39	0.04
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Δ General Merchandise Stores	0.23	-0.41***	-0.04	-0.02	-0.01
Δ Restaurants	0.35	-0.27	-0.02	0.00	-0.01
Δ Food Stores	1.95***	0.9***	-0.01	0.00	-0.02
Δ Bars	0.12	-0.51***	0.01	0.04	-0.02
Job Opportunities -- High Inc.	0.15***	0.07***	-1.76	-1.49	-0.02
Apparel Stores	-0.38***	0	0.68	0.43	-0.10
Movie Theaters	-0.63***	-0.01	0.60	0.43	-0.10
Personal Services	-1.23***	0.04	0.56	0.32	-0.30

# Which variables explain urban revival in big cities?

## 25-34 year old college-educated vs 25-34 year old non college-educated

Variable	Coefficient		Urban-Suburban Differential		Contribution [5] = ([2]-[1])*([4]-[3])
	Non-College [1]	College [2]	Small Cities [3]	Large Cities [4]	
Personal Services	-1.23***	0.04	-0.29	-0.21	0.10
Theater	0.133	-0.57***	-0.20	-0.28	0.06
Job Opportunities -- Low Inc.	-0.41***	-0.14***	0.08	0.25	0.05
Δ Avg. Travel Distance	0.21***	0.07***	0.03	-0.16	0.03
Δ House Price Index	-0.15***	0.08***	-0.01	0.09	0.02
General Merchandise Stores	0.07	-0.16*	-0.17	-0.21	0.01
Δ Sports	-0.37	-0.77***	0.02	0.00	0.01
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Bars	0.07	-0.28***	-0.41	-0.37	-0.01
Δ Personal Services	-2.3***	-0.25	0.03	0.02	-0.02
Job Opportunities -- High Inc.	0.15***	0.07***	0.11	0.38	-0.02
Movie Theaters	-0.63***	-0.01	-0.15	-0.18	-0.02
Restaurants	0.23**	-0.08	-0.35	-0.28	-0.02
Δ Theater	0.05	-1.18***	-0.01	0.00	-0.02
Δ Movie Theaters	-1.31***	-0.21*	0.05	0.00	-0.05

# Summary of Results

- Many variables, especially service and entertainment amenity levels, explain why young college grow faster downtown than in suburbs, and more so than old or non-college.
- Fewer variables explain why this growth is faster in large cities.
  - ▶ Fitted value of model shows that it overpredicts college-educated growth in medium-sized cities.
- Changes in variables rarely explains urban revival.
  - ▶ Most amenities have grown faster in the suburbs over the last decade.
- Changes in preferences seem to explain urban revival.
  - ▶ Often existing preferences becoming more pronounced.

# Conclusions

- **Changes in preferences matter more than changes in environment.**
- Explanations?
  - ▶ Changing composition of amenities
  - ▶ Changing composition of young and college-educated demographic group
  - ▶ Complementarities between technology and urban amenities