Skilled Tradable Services

Fabian Eckert, Princeton
Sharat Ganapati, Georgetown
Conor Walsh, Yale

DISCLAIMER:

“Any opinions and conclusions expressed herein are those of the author and do not necessarily represent the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential information is disclosed.”

Superstar Wage Trends across Workers, Regions, and Firms

- Wage inequality in the U.S. has risen substantially since 1980
- Recent research has highlighted various dimensions of inequality

  $\mapsto$ The largest wage gains since 1980 have accrued to the...

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- This paper:

  Documents: "Skilled Tradable Services" drive all three patterns

  Argues: Superstar effects (Rosen ('78)) offer unified explanation

The Narrative: Non-rivalry + Tradability

- Problem-solving ability is non-rival, but subject to communication frictions
- The Shock: Aggregate Decline in Communication costs
  - Across Industries: Those specializing in problem solving benefit

    $\mapsto$ Redistribution: wages rise, employment falls
  - Within Industries: amplification of productive advantages

    $\mapsto$ Right education, region, firm becomes more important

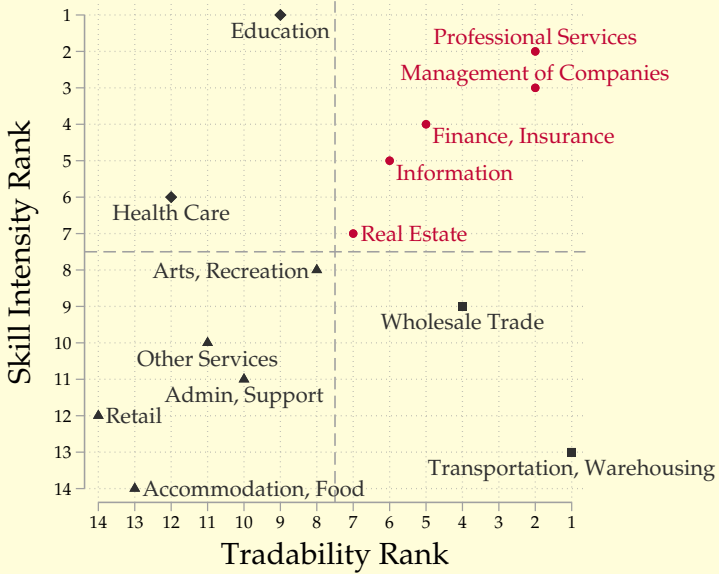
What Are Skilled Tradable Services?

- Which service industries should be subject to the mechanism?
- Empirical measures for theoretical properties:

  $\mapsto$ Skill-Intensity: Share of college workers in workforce.

  $\mapsto$ Tradability: International export share of total sectoral output.

- Skilled Tradable Services: highest ranking in both measures


Skill Intensity Rank
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Education
Professional Services
Management of Companies
Finance, Insurance
Information
Health Care
Real Estate
Arts, Recreation
Wholesale Trade
Other Services
Admin, Support
Retail
Transportation, Warehousing
Accommodation, Food
14 13 12 11 10 9 8 7 6 5 4 3 2 1
Tradability Rank

Skilled Tradable Services $\mapsto$ STS

I. STS FACTS

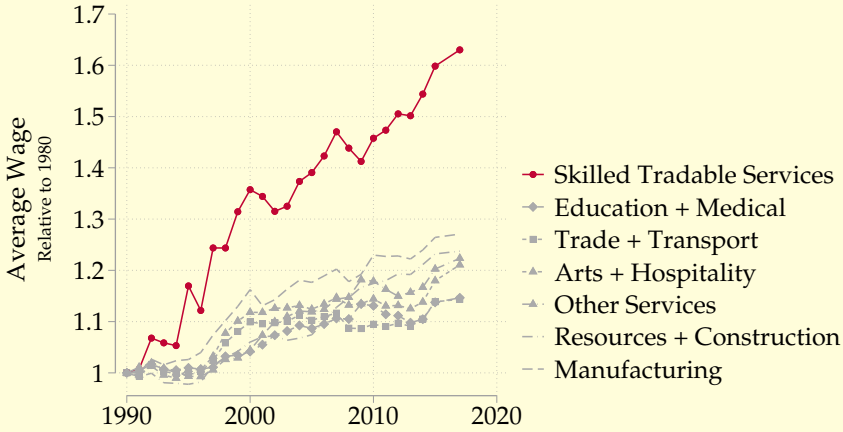
II. THEORY/EXPLANATIONS

III. STATISTICAL DECOMPOSITIONS

Data Sources

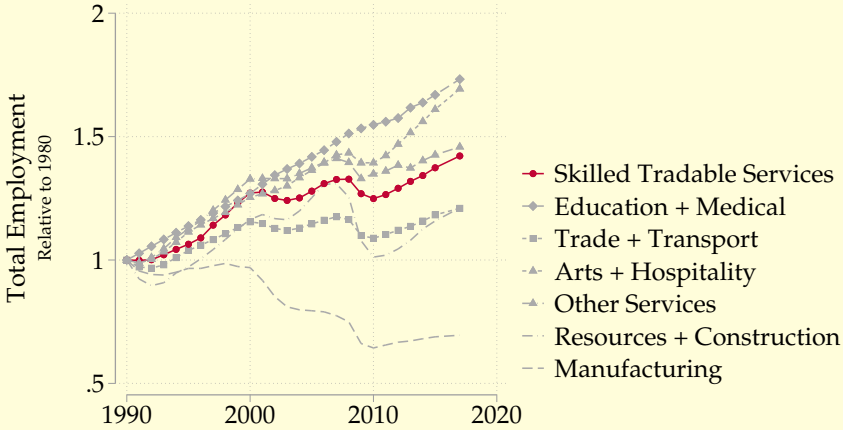
- We document our facts throughout three data sources:
  - LBD: Payroll, employment, zip code for most establishments since 1980
  - $\mapsto$ Source: Business Register, tax records
  - QCEW: Payroll+employment, tabulated for county+industry since 1990
  - $\mapsto$ Source: Unemployment Insurance Program receipts
  - Decennial Census+ACS: Microdata on wages, hours, industry since 1980
  - $\mapsto$ Source: Survey, legal obligation to respond

Fact I: STS Wages much Grew Faster than Rest of Economy



Breakout By Sub-Industries

Fact I: STS Employment Grew Only Moderately



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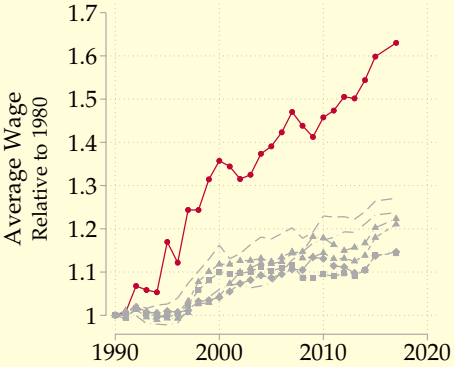
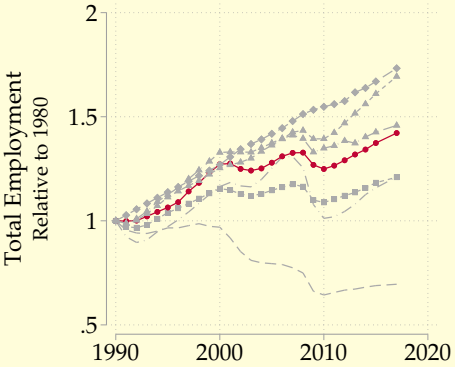
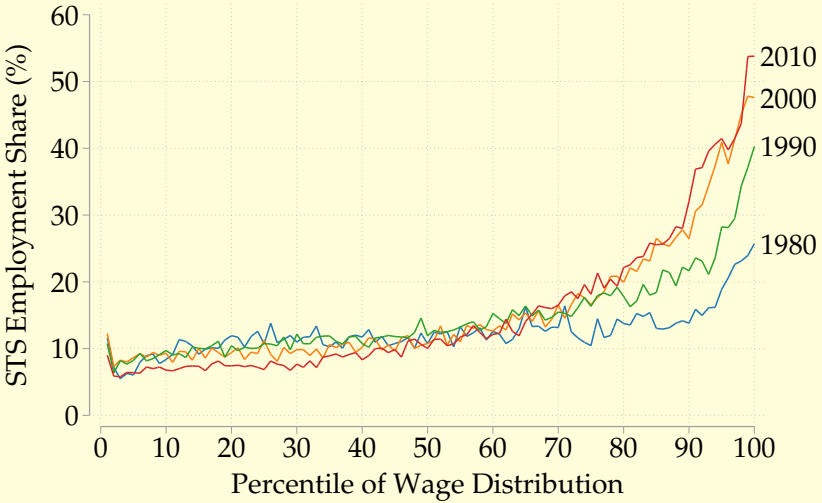
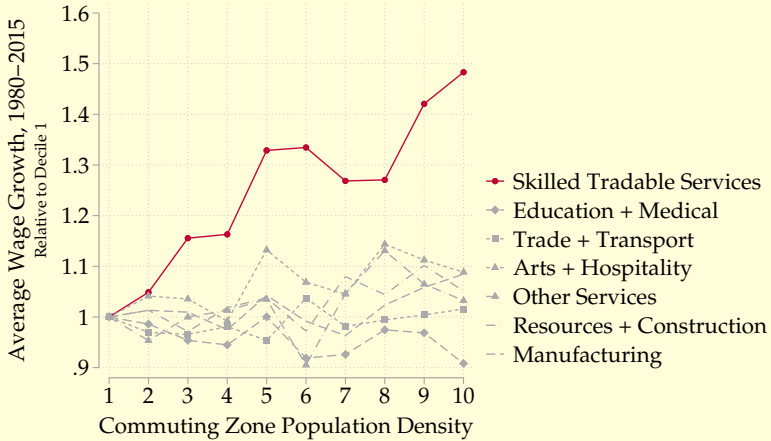




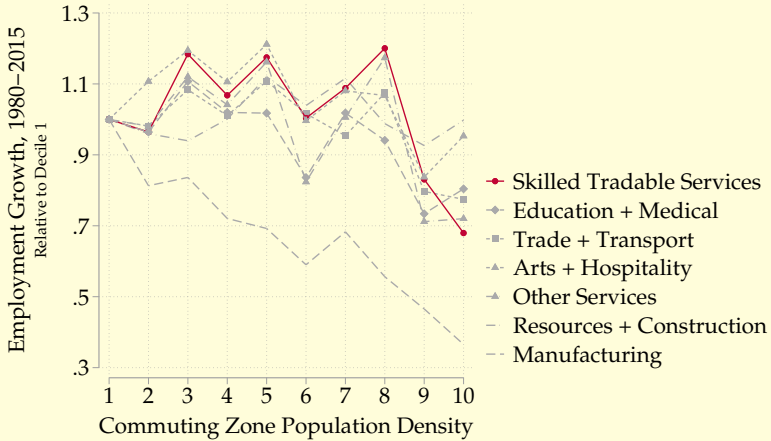
Fact II: Highest-earning Americans Increasingly Work in STS



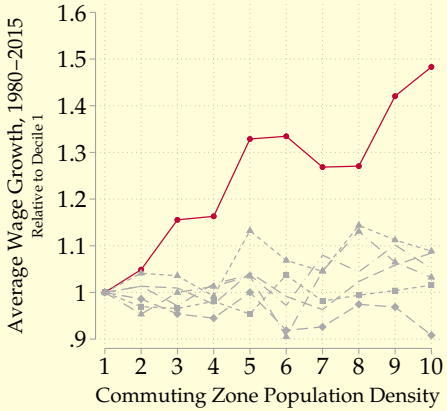
Fact III: Only STS Wage Growth Increases in Density

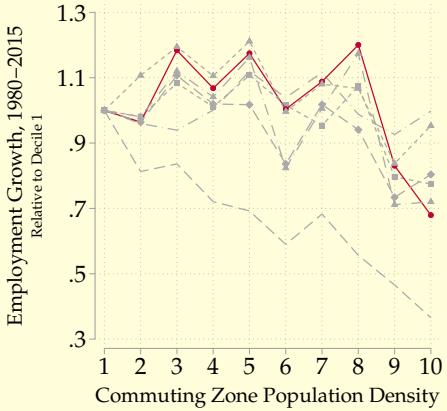


Fact III: STS Employment Growth Does Not Increase in Density

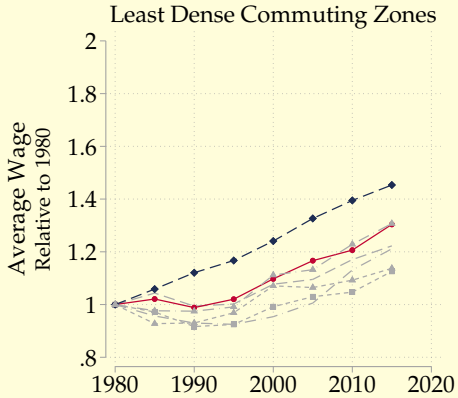


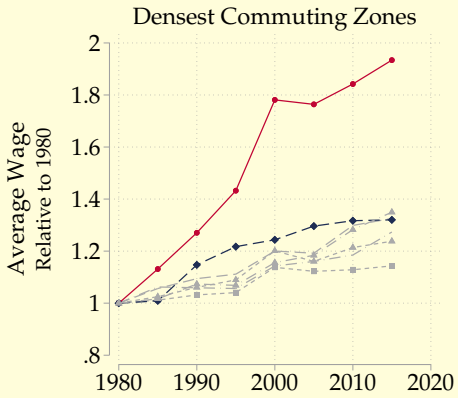
Fact III: STS Wage - Not Employment - Growth Biased Towards Density



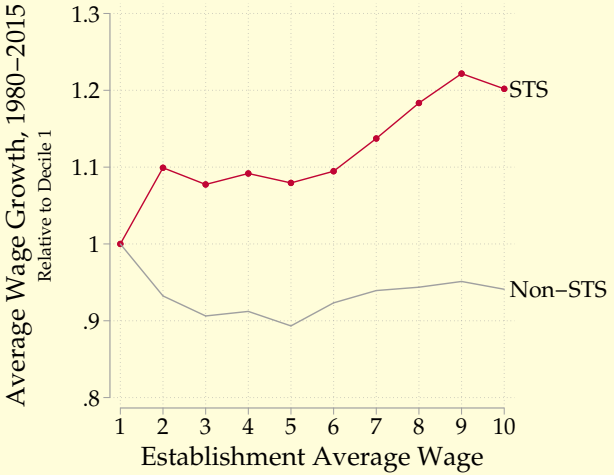


Fact III: Comparing Skilled Tradable with Non-Tradable Industries





Fact IV: Highest-paying STS establishments raise wages most



Skilled Tradable Services: Transforming High-Skill Labor Markets

- STS exhibit fastest wage growth in aggregate - employment is almost flat
- Skilled Tradable Services (STS) growth patterns:
  - $\mapsto$ Workers: STS increasingly employs most skilled
  - $\mapsto$ Regions: STS wage - not employment - growth biased towards density
  - $\mapsto$ Establishments: Highest-paying STS establishments raise wages most
- What can explain these patterns?

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Explanations?

- House/Local Prices?

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- Superstar Dynamics?

Workers as Problem Solvers

- We build on assignment model by Garicano and Rossi-Hansberg.
- To produce a unit of output workers "originate" a problem in $[0, 1]$.

  $\mapsto$ Agents of type s can solve problems in the interval $[0, q_s]$.
- "Originating" a problem cost a unit of time.

  $\mapsto$ Expected output of a worker of type s in one time period: q_s.
- There are low and high skill workers $s \in \{l, h\}$, s.t. $q_l < q_h$

  $\mapsto$ Skill premium without collaboration: q_h / q_l

Non-rivalry and Communication

- Workers can pass tough problems to "STS workers" specializing in them.

  $\mapsto$ Communication costs per problem: $\bar{h} = h \times \tau$

  $\mapsto$ h general cost, τ cross-regional cost.

- Result: Only high-skill workers ever specialize in problem solving.

  $\mapsto$ In a unit of time they can help n low-skill workers:

$$n(1 - q_l)\bar{h} = 1 \Rightarrow n = /1(1 - q_l)\bar{h}$$

- $\bar{h}$ highlights the interaction of non-rivalry and trade.

  $\mapsto$ As τ falls, a single skilled workers solves more problems

Dense Regions have Productive Advantage

- Two regions, dense (c=D) and sparse (c=S).
- The dense region has a fundamental advantage $h^D < h^S$

  $\mapsto$ Communication is easier when workers are tightly packed
- Mass of low-skill and high-skill workers in the economy, M_s
- The utility of a type s individual in location c:

$$U_s^c = w_s^c (m_s^c)^\eta$$

  where m_c^s and w_s^c are mass and wage of type s workers in location c

Assumptions and Results

- Assumptions:
  - Communication within sparse location is prohibitively costly.
  - Low-skill workers cannot move across regions.
- Predictions as interregional communication costs fall:

  $\mapsto$ STS worker wages rise, low-skill worker wages stagnate

  $\mapsto$ The fraction of high-skill workers who lead teams rises

  $\mapsto$ STS wages grow fastest in dense location despite high-skill inmigration

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Statistical Decompositions

- We focus on two aggregate outcomes between since 1980:

  $\mapsto$ "Rise of Superstar Cities": Steepening of Wage-Density Gradient

  $\mapsto$ "Increase in Wage Inequality": Rise in 90/50 percentile wage ratio

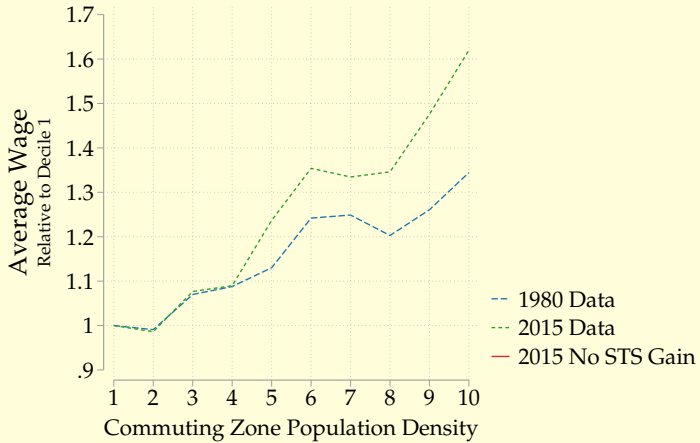
- Conduct two empirical counterfactuals:

  $\mapsto$ Wage-Density Gradient in 2015...

  $\mapsto$ 90/50 earnings ratio in 2010...

  ... if STS wages had grown like economy-wide average

The Rise Of Superstar Cities



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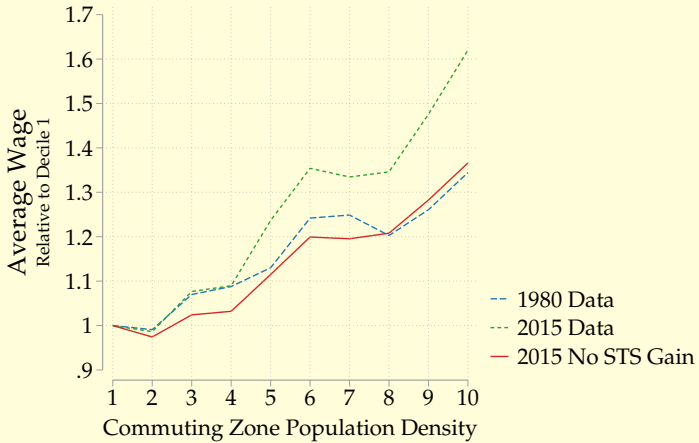
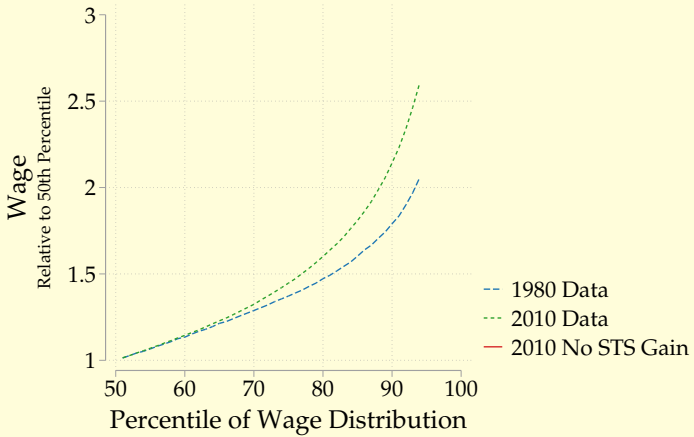


Increase in Wage Inequality



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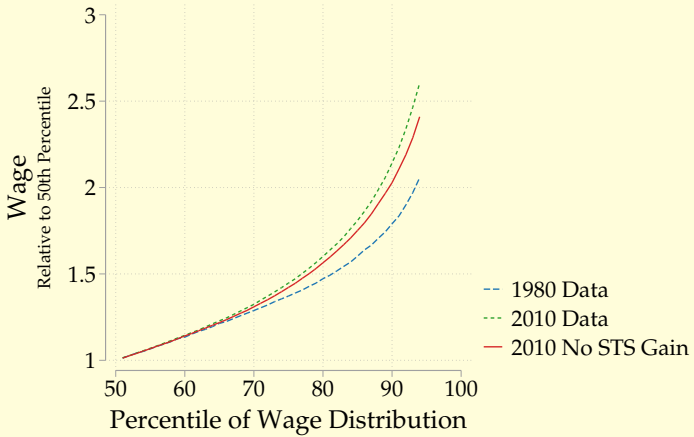

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  - $\mapsto$ Rising rents in the densest Cities
  - $\mapsto$ Increased Sorting of High-skill workers in to the densest Cities
  - $\mapsto$ Regional Divergence high-skill wage growth
  - $\mapsto$ Rising return to skill in the aggregate

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How can non-superstar workers and regions participate in STS growth?

APPENDIX

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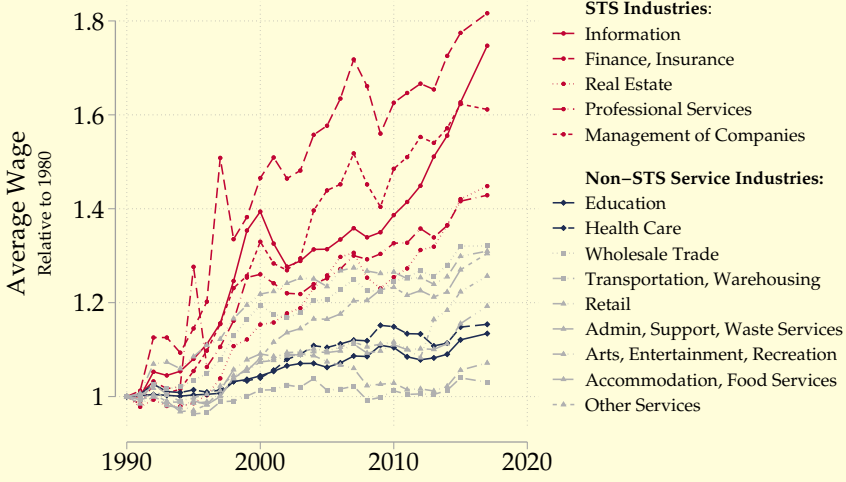

Back

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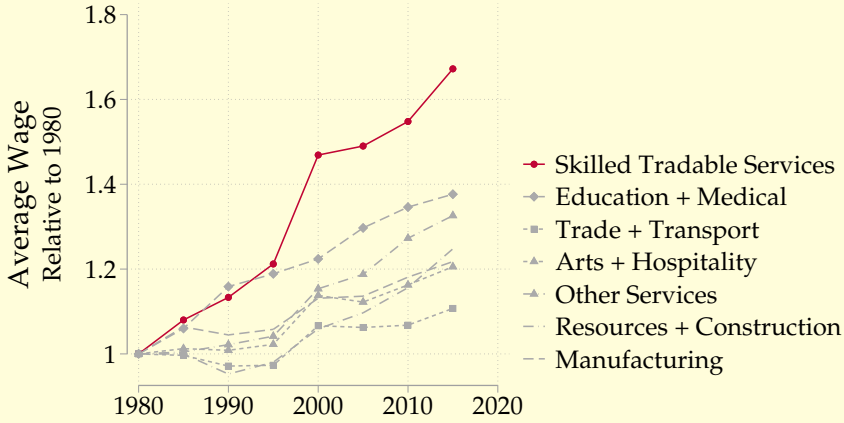

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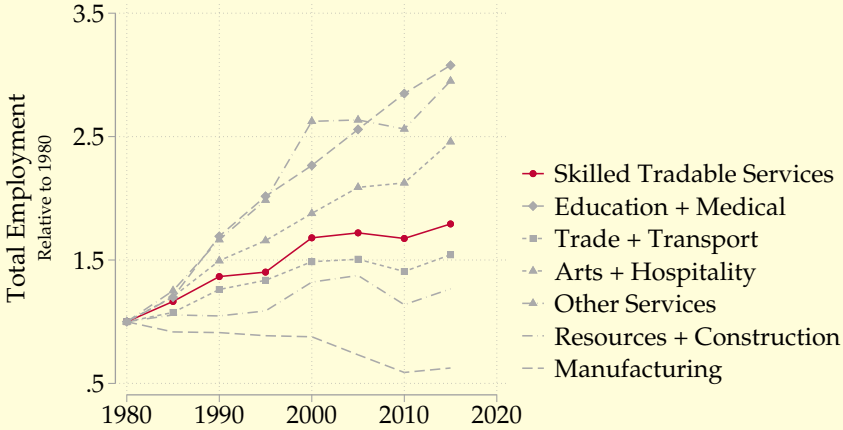

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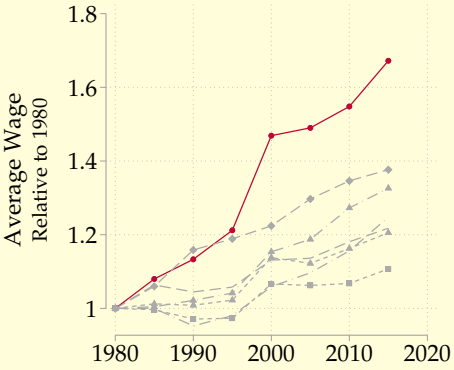
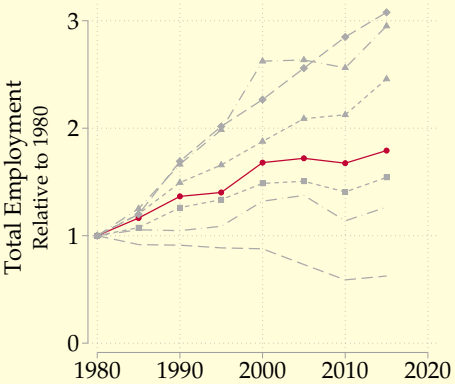
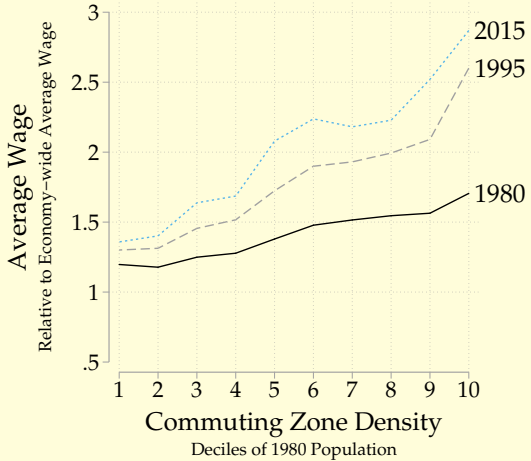
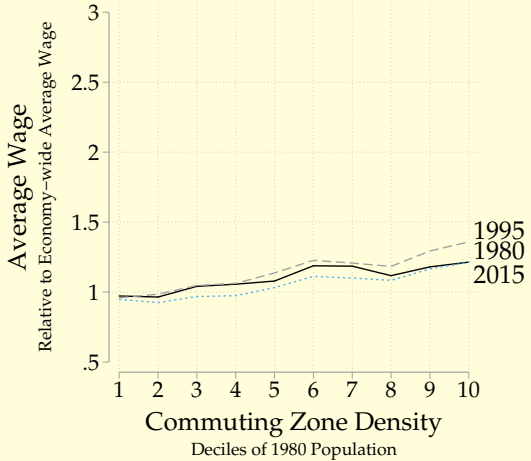




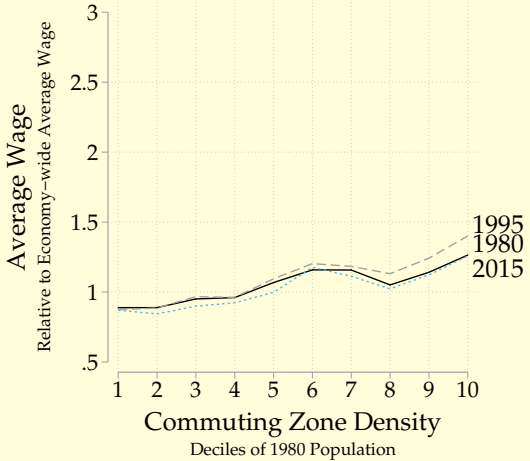
Wage-Density Gradient Over Time: STS



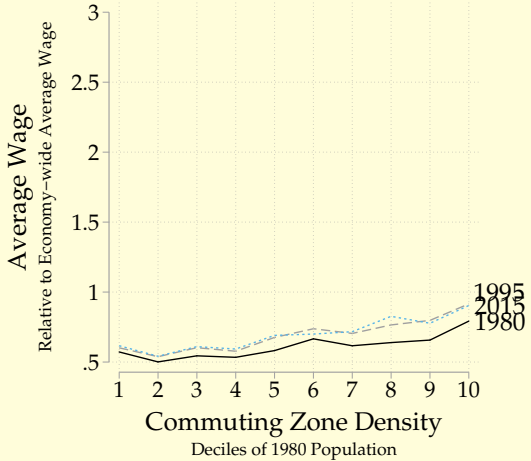
Wage-Density Gradient Over Time: Non-STS



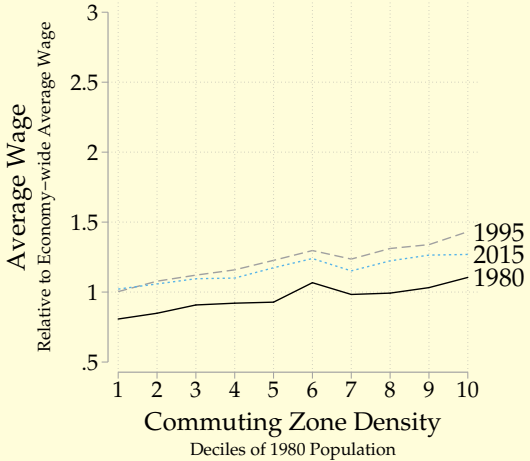
Wage-Density Gradient Over Time: Trade+Transport



Wage-Density Gradient Over Time: Arts+Hospitaliy



Wage-Density Gradient Over Time: Education+Medical



Wage-Density Gradient Over Time: Resources+Manufacturing