

# Skilled Tradable Services

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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.”

# Rise of Wage Inequality across Workers, Regions, & Firms

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- Recent research has highlighted various dimensions of inequality
  - ↳ The largest wage gains since 1980 have accrued to the...  
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  - ↳ The largest wage gains since 1980 have accrued to the...
    - ...most skilled workers, densest labor markets, most productive firms
- This paper...
  - ...documents: “Skilled Tradable Services” drive all three patterns
  - ...argues: Superstar effects (Rosen ('81)) offer unified explanation

## The Narrative: Non-rivalry + Tradability

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- 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  
↳ Redistribution: wages rise, employment falls
  - **Within Industries:** Amplification of productive advantages  
↳ Right education, region, firm becomes more important



# What Are Skilled Tradable Services?

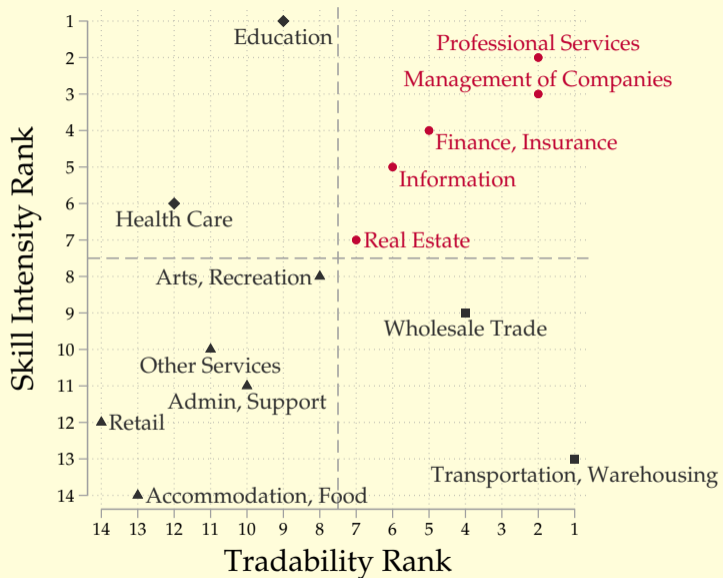
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- Which service industries should be subject to the mechanism?
- Empirical measures for theoretical properties:
  - ↳ **Non-rivalry**: Share of college workers in workforce.
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- **Skilled Tradable Services**: highest ranking in both measures



**Skilled Tradable Services  $\mapsto$  STS**

# **I. STS FACTS**

II. EXPLANATIONS - THEORY

III. STATISTICAL DECOMPOSITIONS

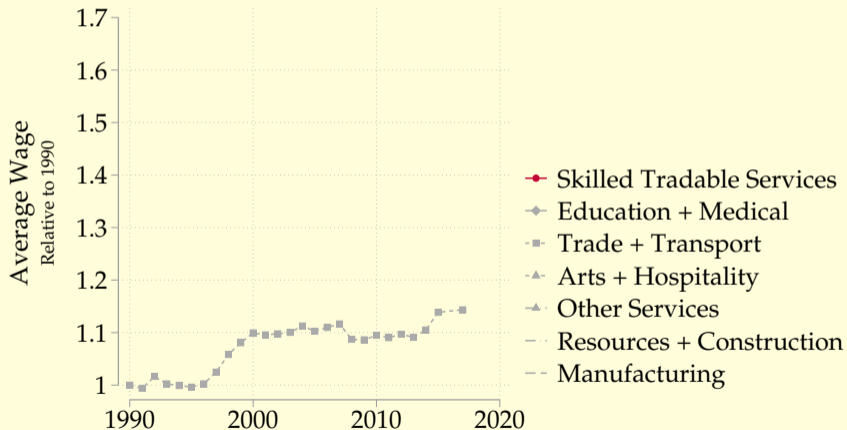
# Data Sources

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

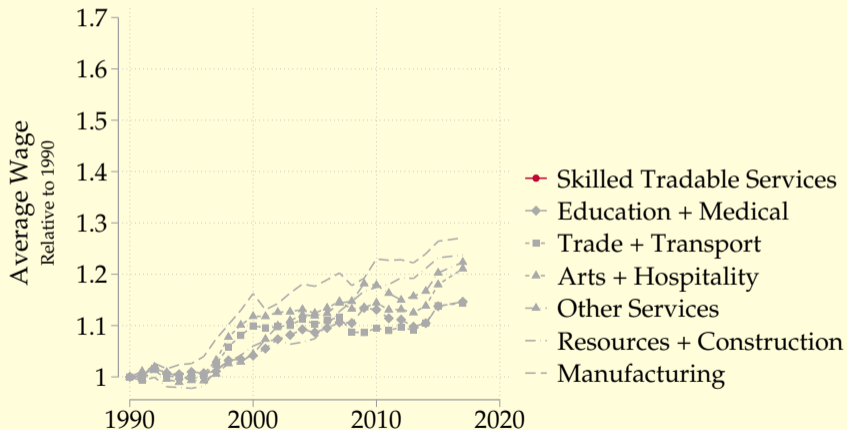
**Fact I: Aggregate**

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

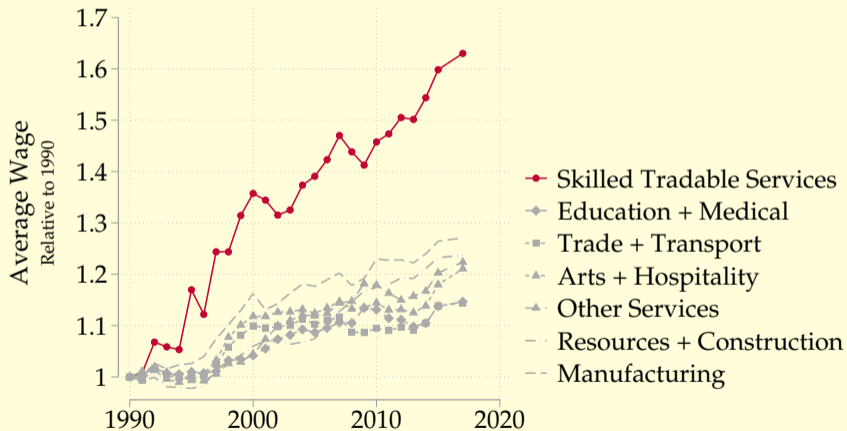




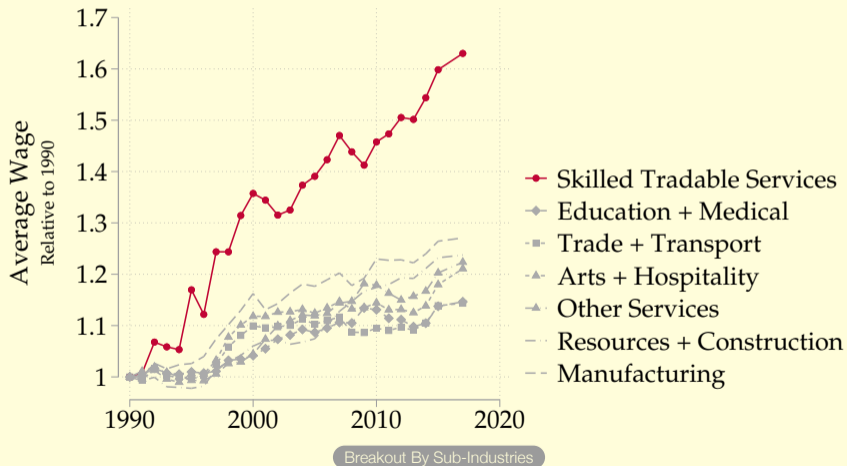
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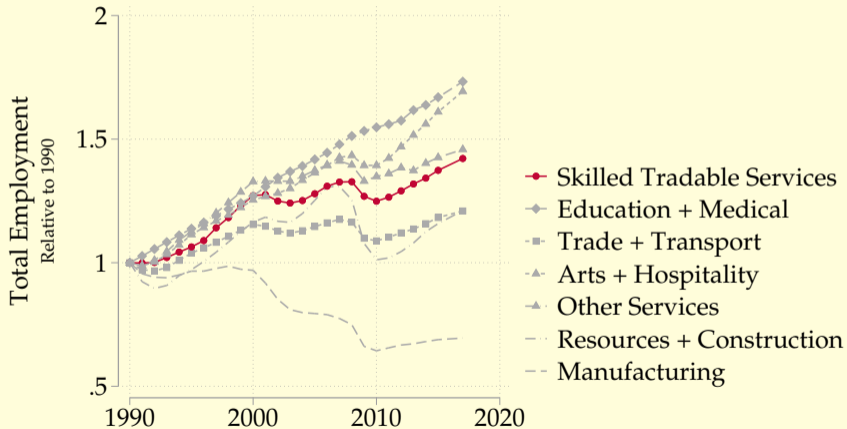
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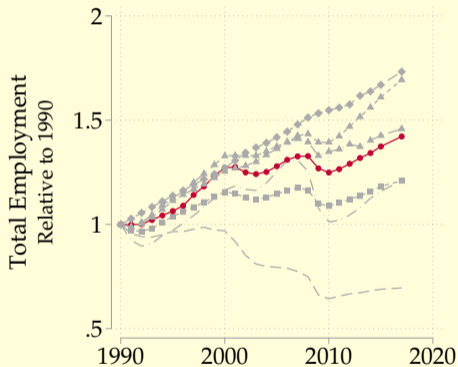
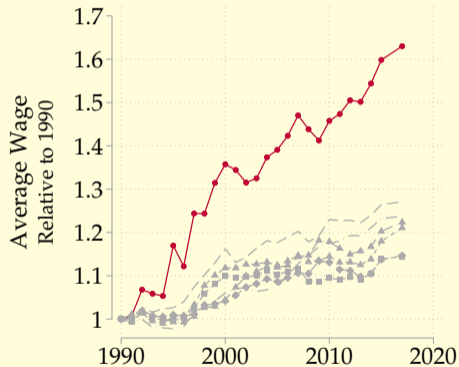
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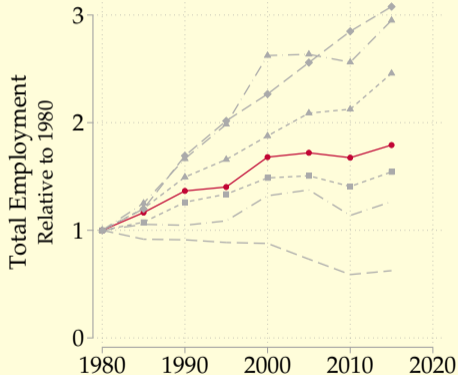
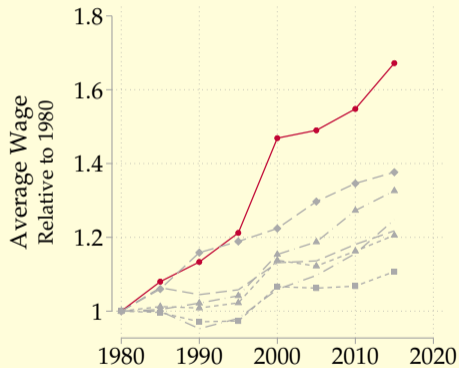
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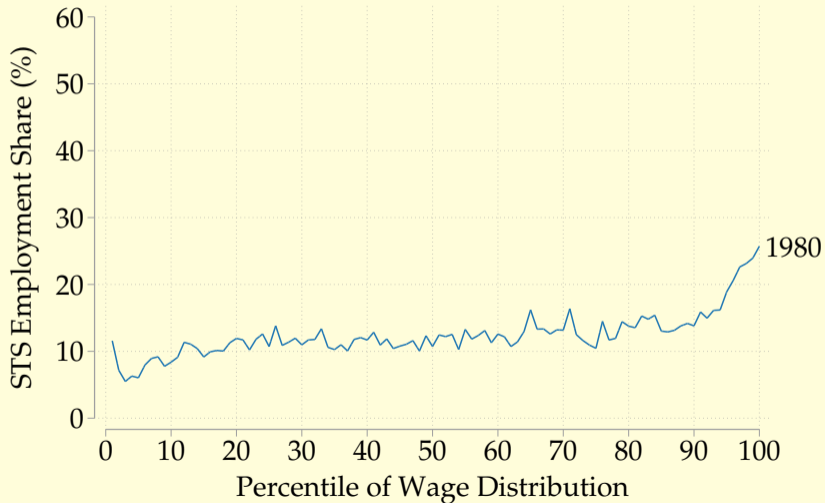


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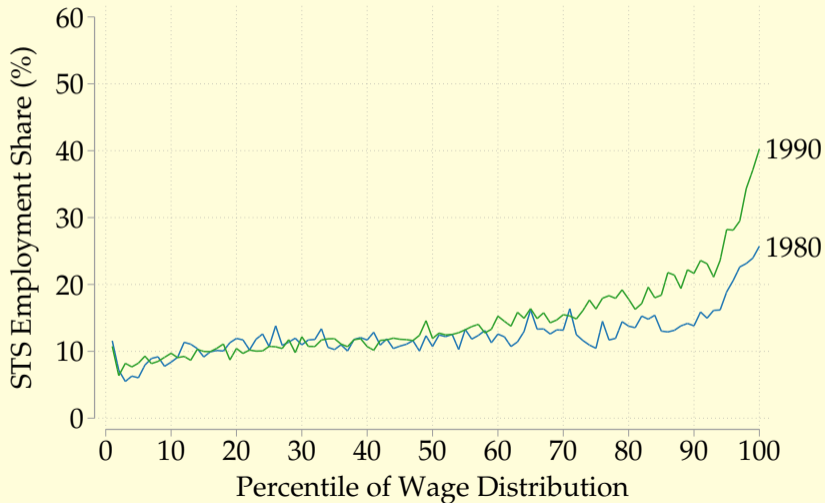
## **Fact II: Workers**

## Fact II: The Highest-earning Workers are Increasingly in STS

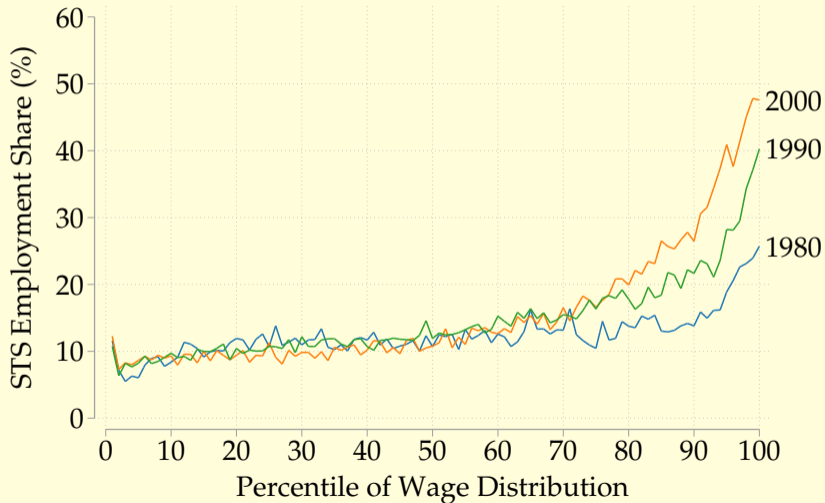




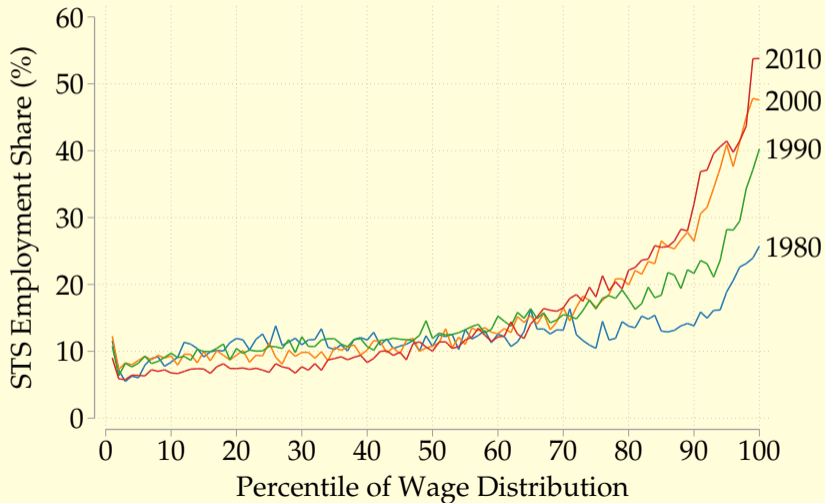
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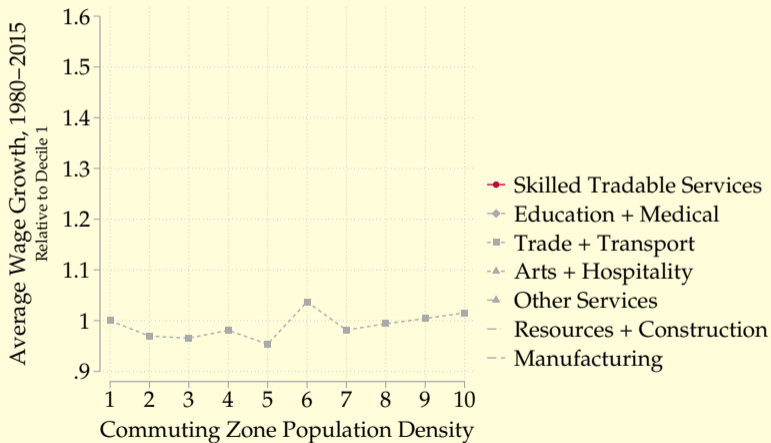


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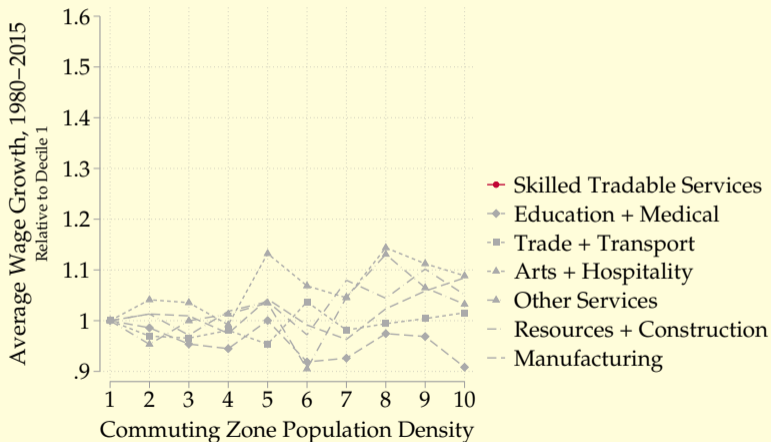


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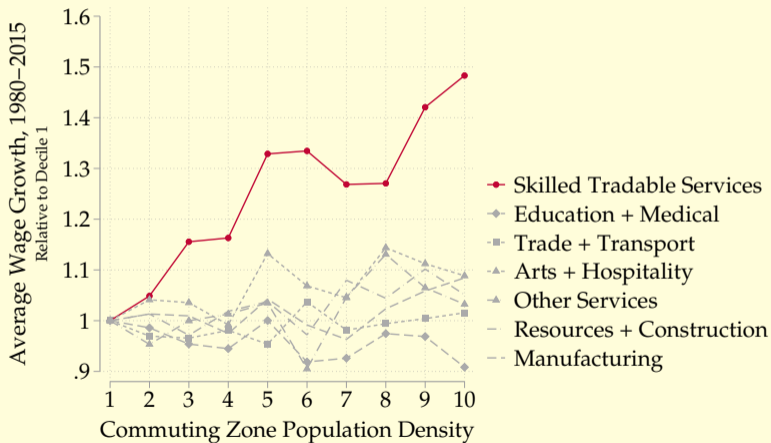
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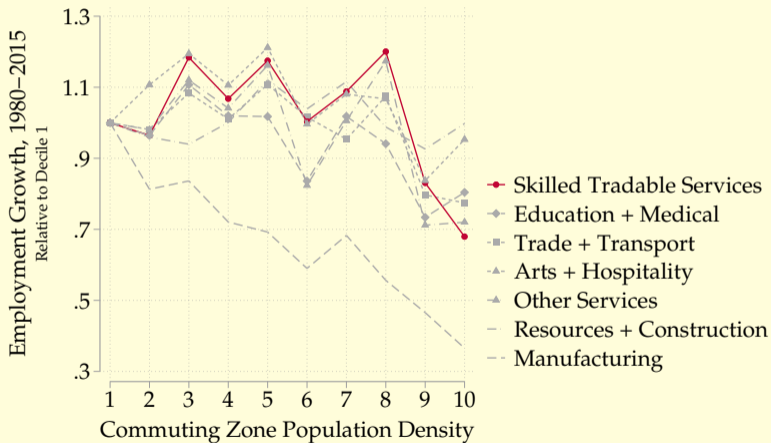
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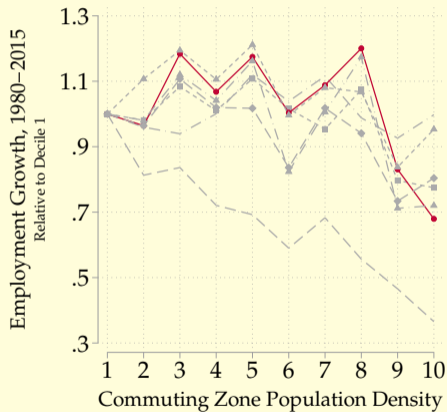
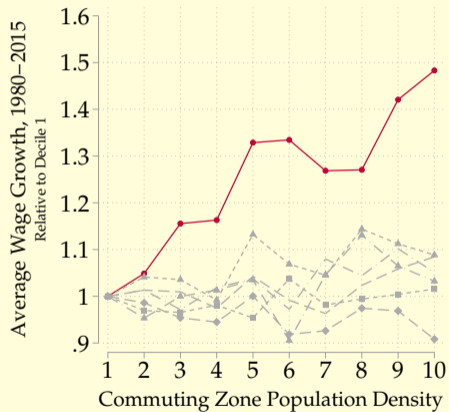


## Fact III: STS Employment Growth Does Not Increase in Density

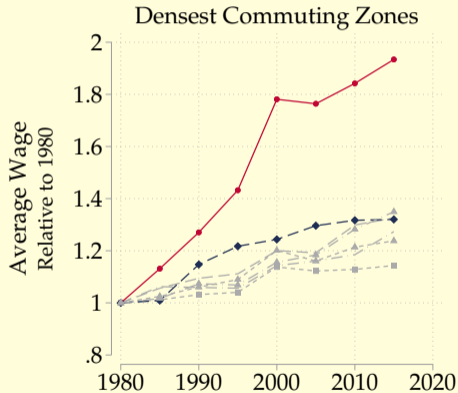
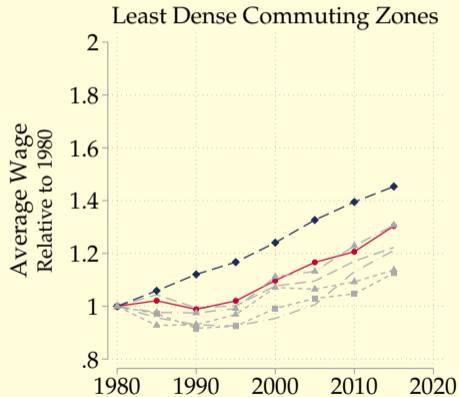




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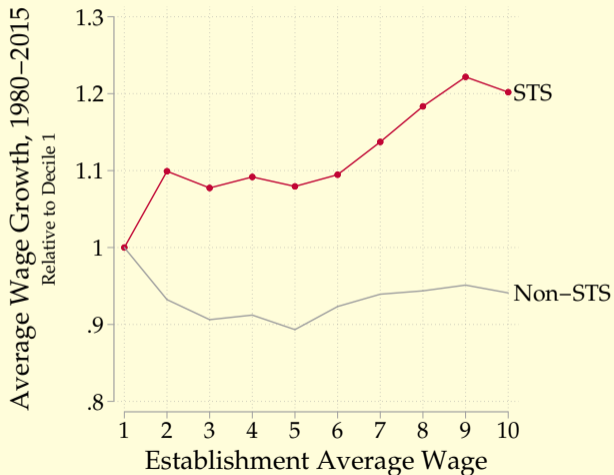


## Fact III: Comparing Skilled Services - Tradable vs. Non-Tradable



# **Fact IV: Establishments**

## Fact IV: Highest-paying STS Establishments Raise Wages Most



# Skilled Tradable Services: Transforming High-Skill Labor Markets

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- **Aggregate**: fastest wage growth - employment is almost flat
- Skilled Tradable Services growth patterns:
  - ↳ **Workers**: increasing employment share among most skilled
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**What can explain these patterns?**

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# Explanations?

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- Superstar Dynamics?

# Workers as Problem Solvers

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- We build on assignment model by Garicano and Rossi-Hansberg.
- To produce a unit of output, workers need to...
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  - ↳ Expected output of a worker of type  $s$  in one time period:  $q_s$ .
- Fixed mass of low-/high-skill workers  $s \in \{l, h\}$ , s.t.  $q_l < q_h$



# Non-rivalry & Tradability

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- Workers can specialize in tough problems originated by others.

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

↳  $h$  general cost,  $\tau$  **cross-regional** cost.

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- **Result:** Only high-skill workers ever specialize in problem solving.  
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- $\bar{h}$  highlights the interaction of **non-rivalry** and **tradability**.

↳ As  $\tau$  falls, a single skilled workers solves more problems

# Dense Regions have Productive Advantage

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- The dense region has a fundamental advantage  $h^D < h^{ND}$ 
  - ↳ Communication is easier when workers are tightly packed

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↳ Communication is easier when workers are tightly packed
- Indirect utility of type  $s$  workers in location  $c$ :

$$V_s^c = w_s^c \times (m_s^c)^\eta \quad \text{where} \quad \eta < 0$$

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

# Assumptions & Results

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  - Low-skill workers cannot move across regions.
- **Predictions** as interregional communication costs ( $\tau$ ) fall:
  - ↳ STS worker wages rise, low-skill worker wages stagnate
  - ↳ More high-skill workers specialize in problem solving
  - ↳ STS wages grow fastest in dense location despite high-skill immigration

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# Statistical Decompositions

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- We focus on two aggregate outcomes between since 1980:
  - ↳ “Rise of **Superstar Cities**”: Steepening of Wage-Density Gradient
  - ↳ “Increase in **Wage Inequality**”: Rise in 90/50 percentile wage ratio

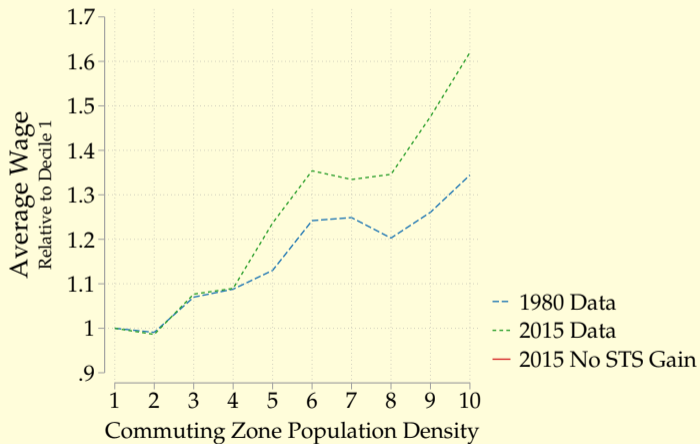
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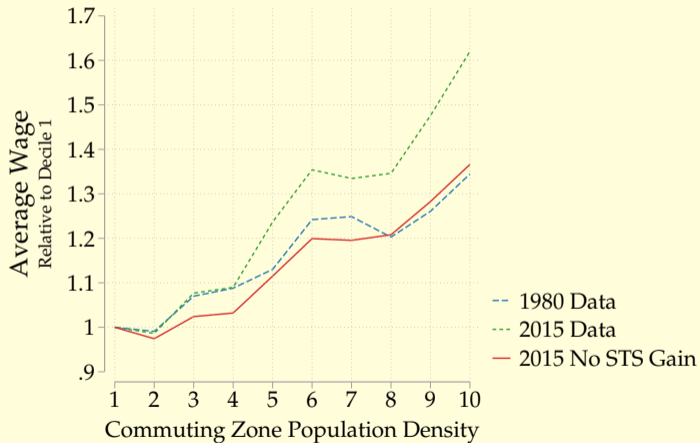
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- Conduct two empirical counterfactuals:
  - ↳ Wage-Density Gradient in 2015...
  - ↳ 90/50 wage ratio in 2010...

... if STS wages had grown like non-STS average

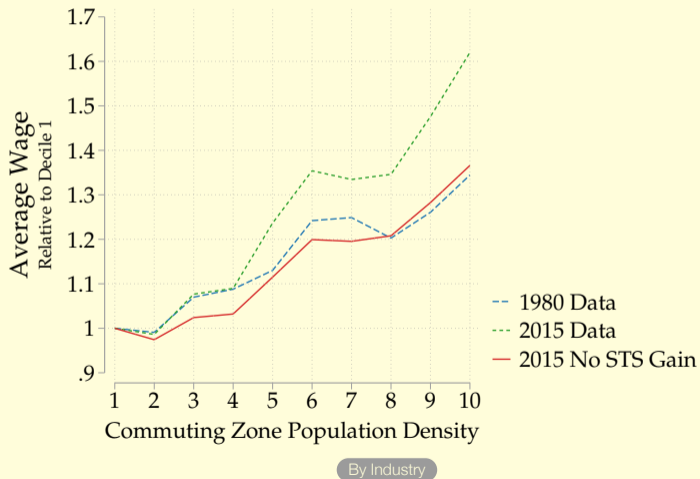
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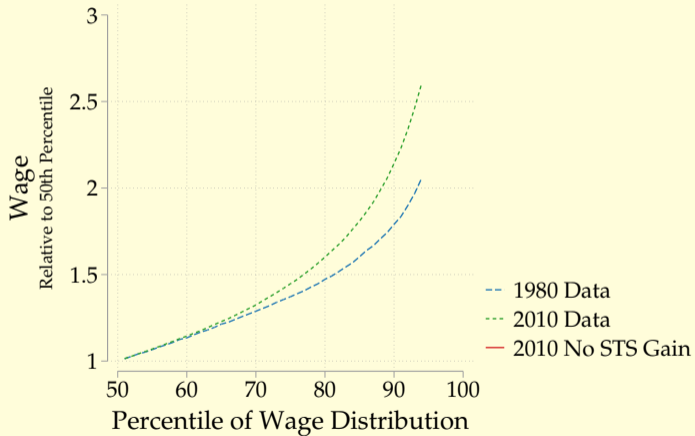
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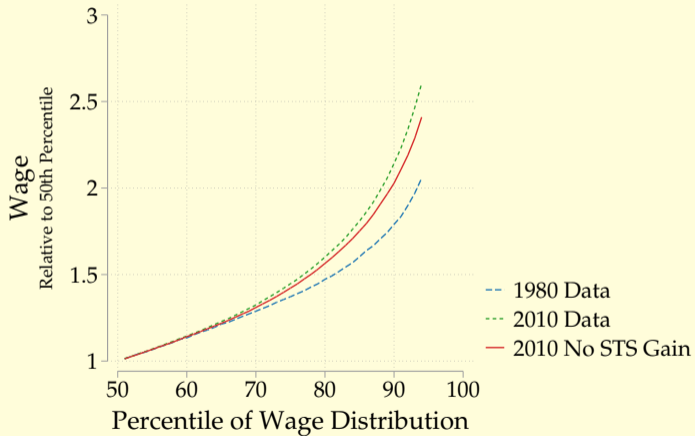
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# Increase in Wage Inequality



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# Concluding Remarks

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  - ↳ **Rising return to skill** in the aggregate

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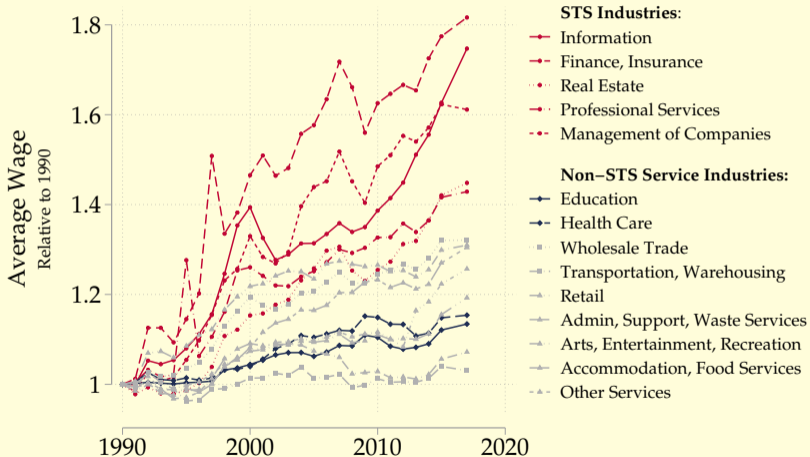
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How can non-superstars participate in STS growth?

# **APPENDIX**

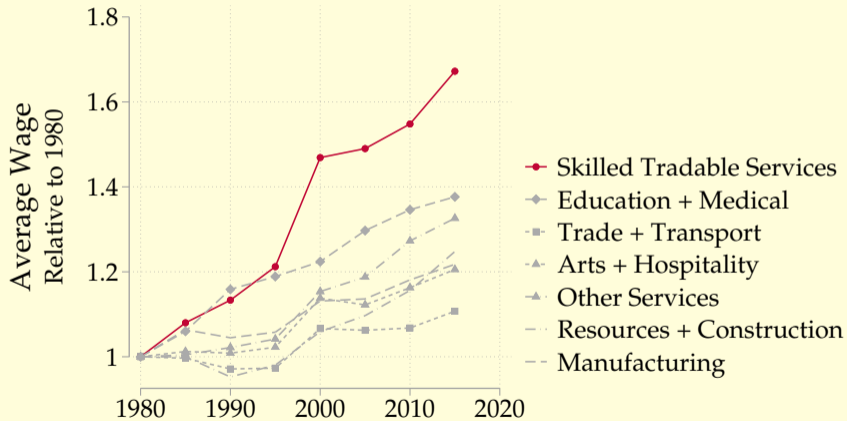
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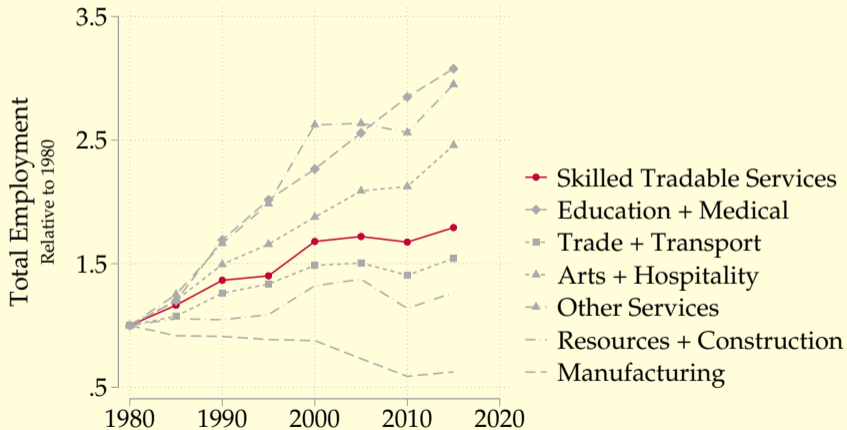
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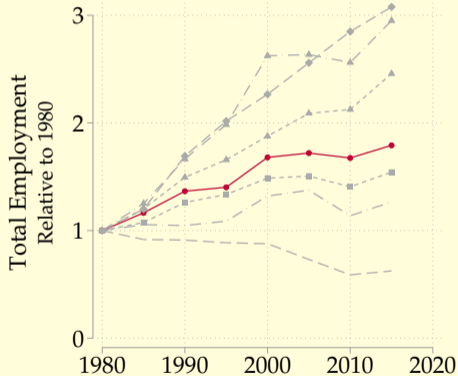
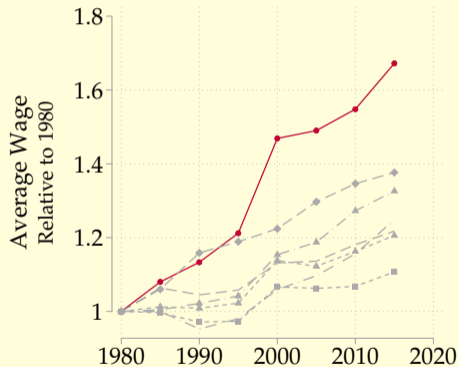
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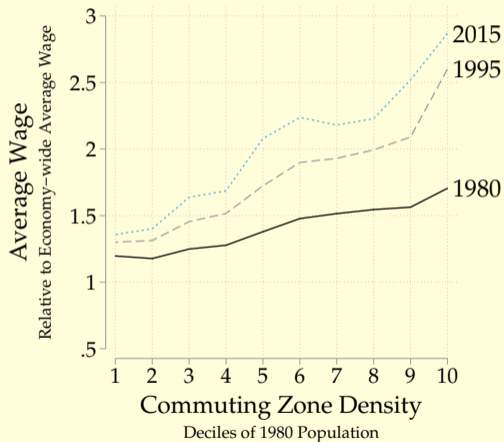
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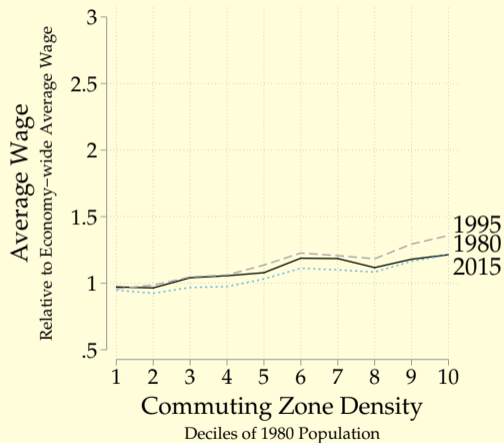
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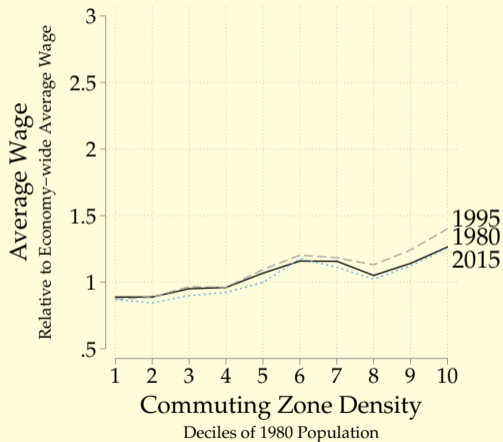
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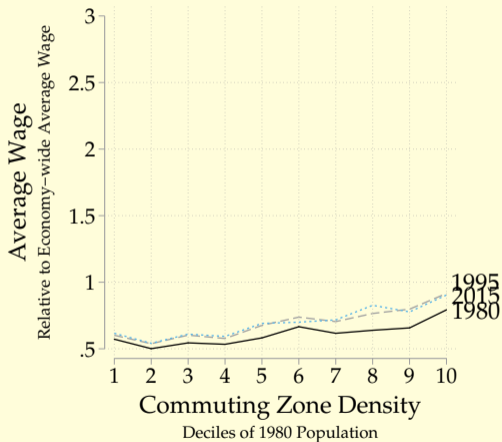
# Wage-Density Gradient Over Time: Non-STS



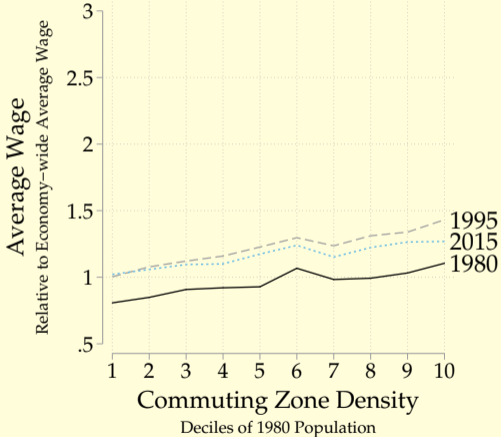
# Wage-Density Gradient Over Time: Trade+Transport



# Wage-Density Gradient Over Time: Arts+Hospitality

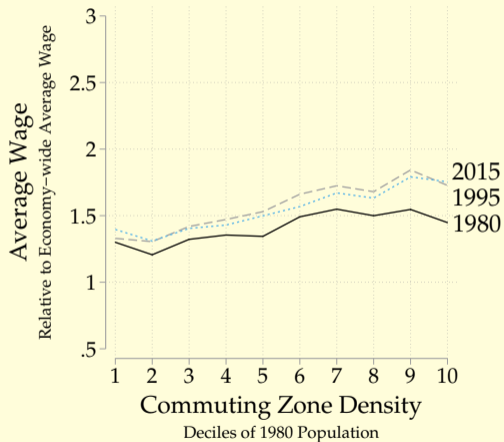


# Wage-Density Gradient Over Time: Education+Medical





# Wage-Density Gradient Over Time: Resources+Manufacturing



[Return](#)