# Concentration of economic activities in $19^{th}$-century Paris

Antonin Bergeaud

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# Introduction

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  - ▶ Industrial specialization and diversification (Kemeny and Storper, 2015)

# Introduction

- Empirically, the spatial organization of economic activities takes time

- Historical data are useful and often used (Redding and Turner 2015; Donaldson and Hornbeck, 2016; Berkes, 2016)

- France in the $19^{th}$ century is a great setup $\longrightarrow$ lot of data (most of them not collected!)
  - Patent data (Bergeaud and Verluise, 2022)
  - Firm census (Chanut et al., 2000)
  - Education data (Squicciarini, 2020)
  - Transport, infrastructure

- New data from the *Annuaires de Paris* will be very useful
  - Many different activities
  - Annual data
  - Long-run!

# Classification of occupations

- How to chose categories to match activities to?
  - ▶ List of occupations: *"La structure professionnelle en France au début du XIXeme siècle"* (Houdaille, 1970) ⟶ not suitable for industry
  - ▶ List of industries: *" Statistique de l'industrie à Paris : résultant de l'enquête pour 1847-1848"* (Chambre de Commerce de Paris, 1851) ⟶ only manufacturing

- Mixing production and selling business in common categories

- 20 categories based on a mix of manual labelling and list of industries: Textile, Food, Catering (hotel), Chemistry, Leather, Transportation, Metal, Admin, Goldsmith (jewellery), Construction, Art, Health, Printer (paper), Finance, Justice, Beauty, Education, Property (owners), Other Manufacturing (wood furniture), Tobacco

# Implementation

- Input a short description for each category

- Add manually labeled examples (1000 so far)
  - ▶ Annotation guidelines
  - ▶ How to deal with typos?

- Calculate cosine distance of a given entry (activity) to each category using Doc2vec embedding
  - ▶ Standardization?
  - ▶ Validation
  - ▶ Robustness to typos

# Example

Example activity: *"Directeur du bureau correspond générale"*

| Name | Score | Name | Score | Name | Score |
|------|-------|------|-------|------|-------|
| Textile | -0.672 | Metal | -0.632 | Printer (paper) | 1.379 |
| Food | -0.193 | **Admin** | **2.102** | Finance | 1.659 |
| Catering | 0.531 | Goldsmith | -1.366 | Justice | -1.488 |
| Chemistry | -0.979 | Construction | 0.428 | Beauty | -0.282 |
| Leather | -1.420 | Art | 0.371 | Education | 0.875 |
| Transportation | 0.508 | Health | 0.588 | Property | -0.344 |
| Other Manufacturing | -0.182 | Tobacco | -0.885 | | |

# Results



Figure: Number of entries by category
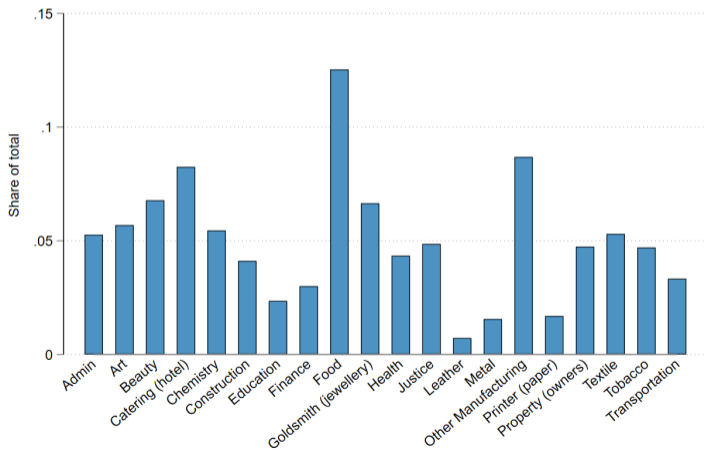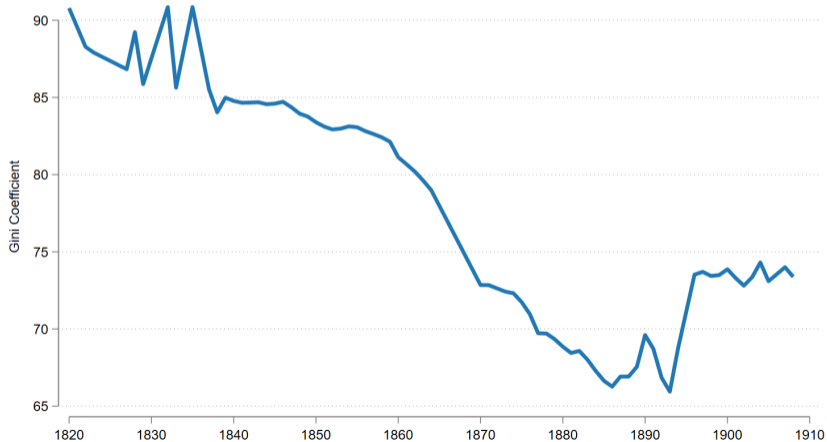
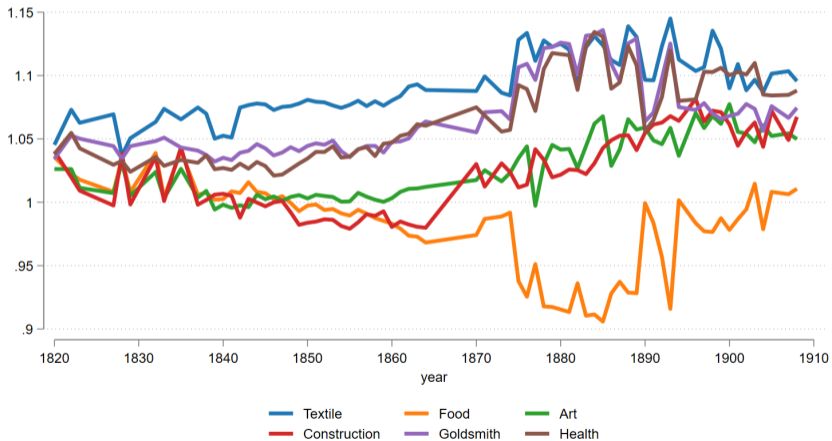# One example: Textile industry



(a) 1840
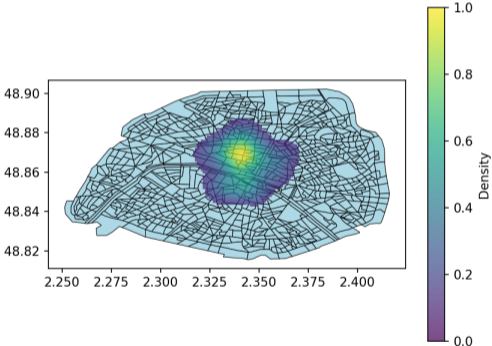
(b) 1900
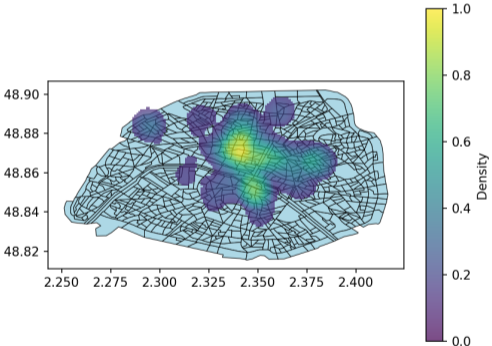
# Evolution of the concentration



Figure: Gini coefficient over IRIS

# Evolution of the concentration



Figure: Gini coefficient over IRIS

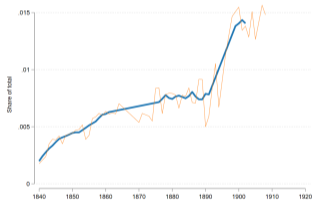# Further (economic) research questions

Agglomeration economies and industry clustering: How did the concentration of businesses within specific industries change over time, and what factors contributed to the formation of industry clusters in certain neighborhoods or districts in Paris?

- Effect of Hausmann's transformation of the city (1853-1870)
- Effect of 1870's war
- Effect of pandemics (cholera in 1832 and 1849)
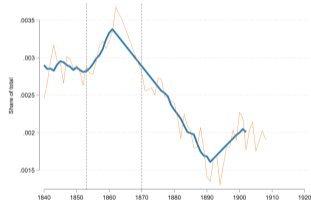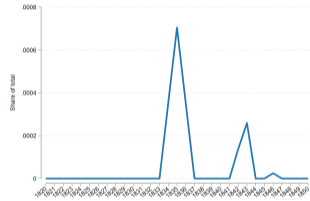- Department Store in the 1850s-1860s

# Example



(a) Architect and Maconery
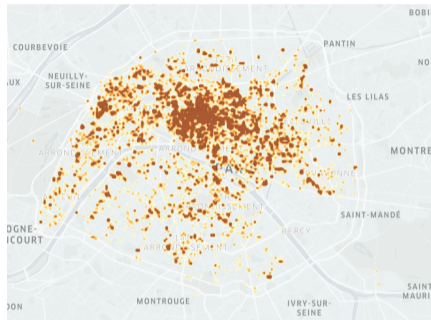


(b) Perfumer



(c) Cholera

# Further (economic) research questions

Transformation of economic activities due to technological change

- Patent data are available since 1790
- Very concentrated in Paris
- Anticipate technological change at the sector level (displacement of workers) from the text of patents
- Skill bias technological change (SBTC)

# Example

(d)



(e)

| numéro de brevet | type de brevet | date dépôt | déposant | profession | mandataire | commune | titre | |
|---|---|---|---|---|---|---|---|---|
| 000001 | Brevet d'invention | 16.10.1844 | AMIEUX Jean | cordonnier | | La Guillotière (69 | chaussures de santé | |
| 000002 | Brevet d'invention | 14.10.1844 | BARAULT Auguste | brasseur | | Chalon-sur-Saône | procédé propre à fabriquer une bière limpide et m | |
| 000003 | Brevet d'invention | 11.10.1844 | BARRIERE Bernard-l | ancien géomètre du cadastre conducteur | Limoges (87085) | instrument propre à reproduire les images photogr | |
| 000003 | Certificat d'addition | 14.05.1845 | BARRIERE Bernard-l | ancien géomètre du cadastre conducteur | Paris (75056) | instrument propre à reproduire les images photogr | |
| 000004 | Brevet d'invention | 14.10.1844 | BEJOT-GANDEL Pie | négociant | | Verdun (55545) | machine propre à la fabrication de la chandelle à l | |

# SBTC



(f) Engineer
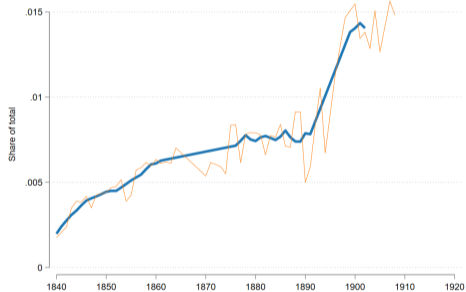
(g) Clogmaker
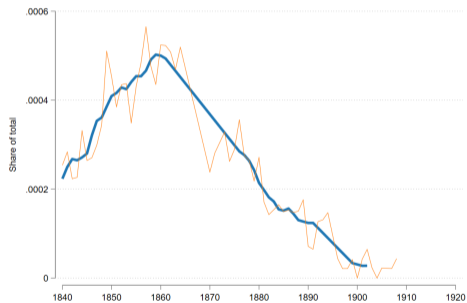
# Further (economic) research questions

- Innovation and knowledge spillovers
  - ▶ Discernible patterns in the location of innovative businesses?
  - ▶ Compare the two networks (patents and businesses)

# Further (economic) research questions

How did the development of metro system was impacted by the spatial distribution of businesses and industries across Paris?

- First project started in 1895

# Conclusion

- Very exciting data that could be very useful to answer some important economic questions (not only in urban eco)

- Need more work to clean and classify the data into relevant economic activities

- Let's collaborate!