

Evolution of the urban structure of Paris during the 19th century.

Building a temporal typology of urban activity categories



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3rd SoDUCo - BnF Seminar, May 23, 2023

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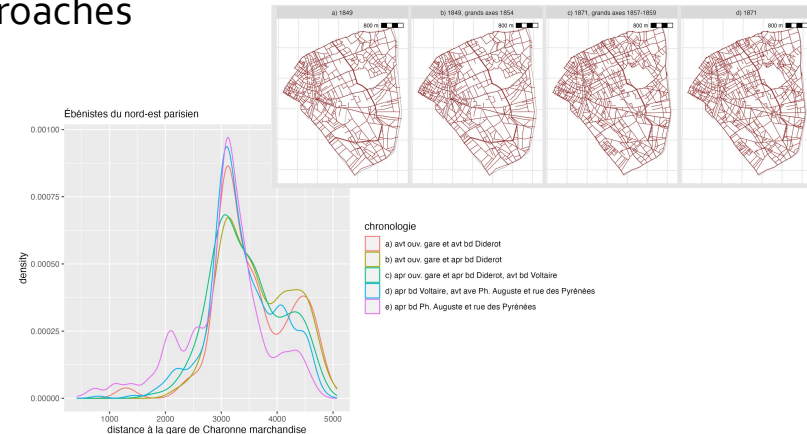
Introduction

Urban studies, “science of cities”

- R. Harris et M. E. Smith, « The History in Urban Studies: A Comment », *Journal of Urban Affairs*, vol. 33, n° 1, p. 99-105, 2011, doi: [10.1111/j.1467-9906.2010.00547.x](https://doi.org/10.1111/j.1467-9906.2010.00547.x)
- M. Batty, *The new science of cities*. Cambridge, Londres: Cambridge Mass., London: MIT Press, 2013
- M. Barthélemy, *The Structure and Dynamics of Cities. Urban Data Analysis and Theoretical Modeling*. Cambridge: Cambridge University Press, 2016

Activities in Paris during the 19th century: two approaches

- space-time with activity cases
- mainly temporal with a broad set of activities



General methodology



cross approach between data, definitions
and contemporary classification

Defining the corpus of directories

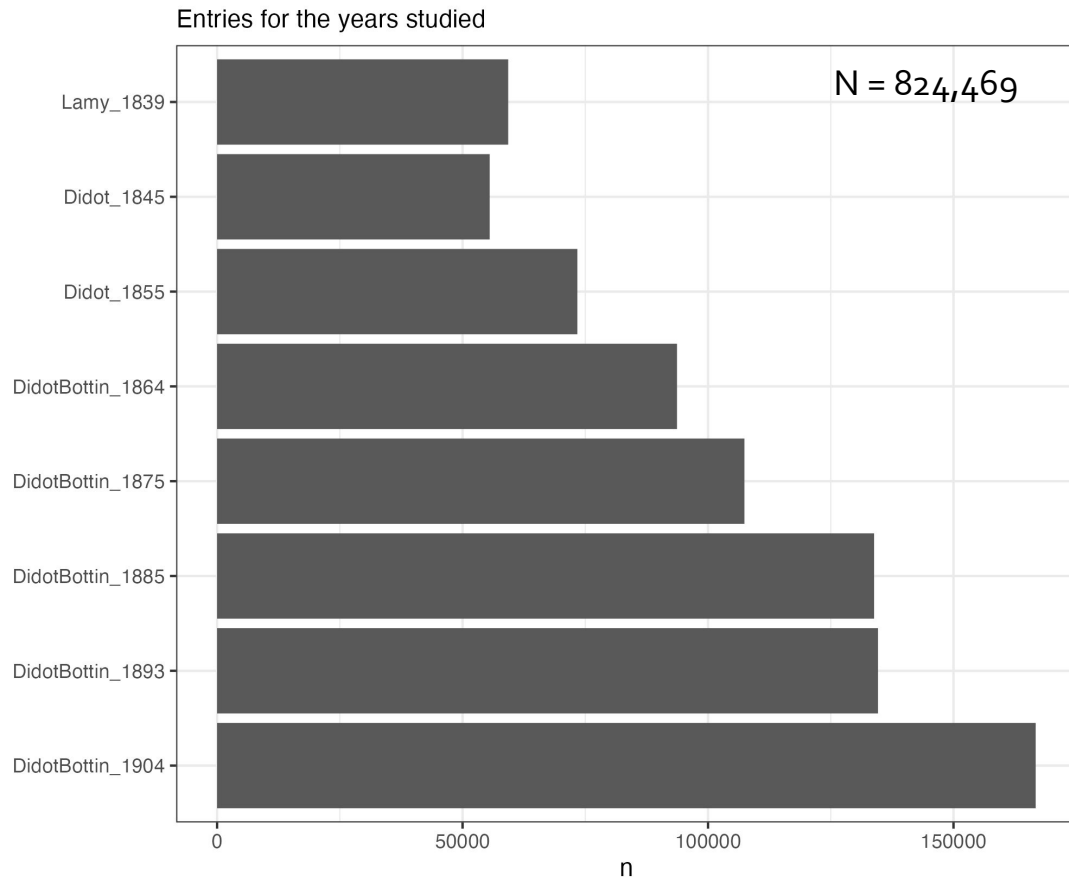
Temporal point of view

- > time step of about 10 years
- > chronological delineation defined by sources
- > specific dates according to the estimated quality of the data

Today

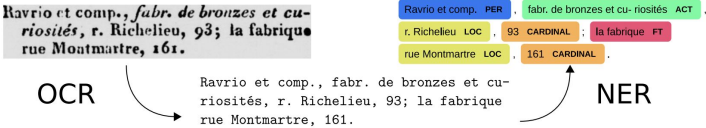
- > consistency with presentation in November

see: J. Gravier et M. Barthelemy, « Exploitation des données Soduco : premiers éléments de l'évolution des activités parisiennes au fil du siècle », in *2e Journée d'étude SoDUCo/BnF. Res(t)ituer les adresses des almanachs et annuaires commerciaux parisiens du XIXe siècle. Un corpus de localisations urbaines à grande échelle*, Paris, France: BnF Bibliothèque nationale de France, nov. 2022. [En ligne]. Disponible sur: <https://hal.science/hal-03961814>



Identifying activity name groups: a first draft with the soundex index

Activity as defined in DB

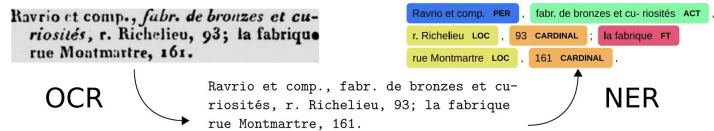


N. Abadie, E. Carlinet, J. Chazalon, et B. Duménieu, « A Benchmark of Named Entity Recognition Approaches in Historical Documents Application to 19th Century French Directories », in *Document Analysis Systems*, S. Uchida, E. Barney, et V. Eglin, Éd., in Lecture Notes in Computer Science. Cham: Springer International Publishing, 2022, p. 445-460. doi: [10.1007/978-3-031-06555-2_30](https://doi.org/10.1007/978-3-031-06555-2_30).

Step 1: applying soundex index on Activity

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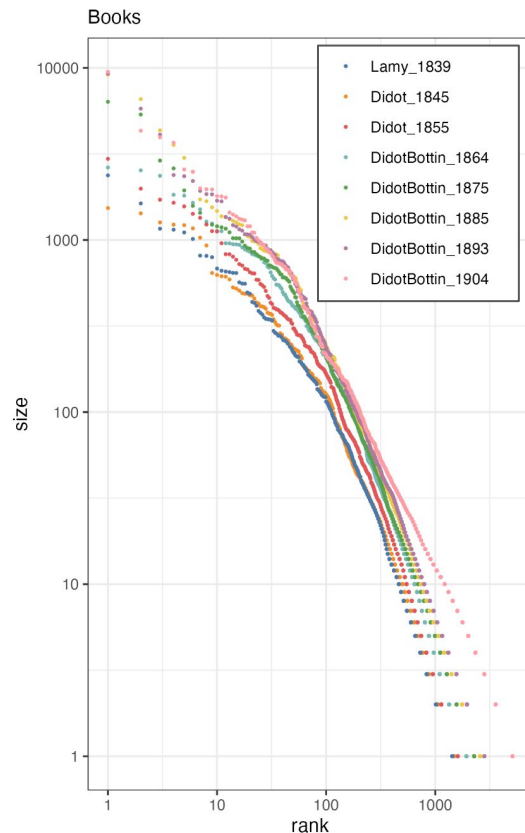
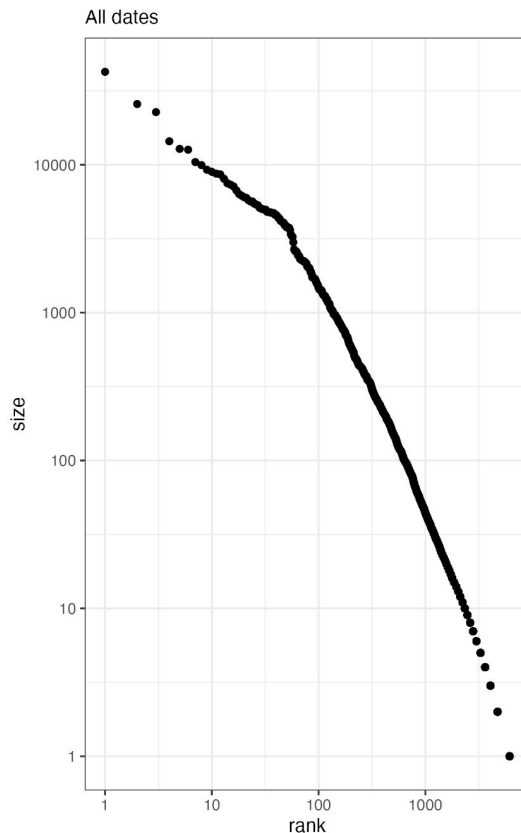
Step 2: selecting activities on frequency

170 activities:

~ 74.9% of entries

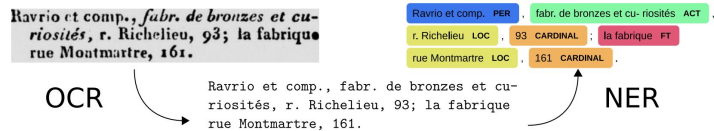
~ 76% of geolocated entries (points)

Activites after applying soundex index



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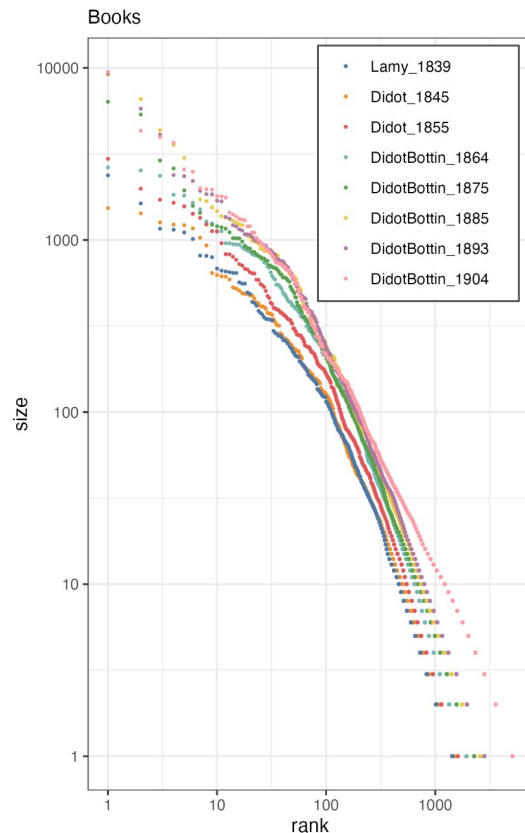
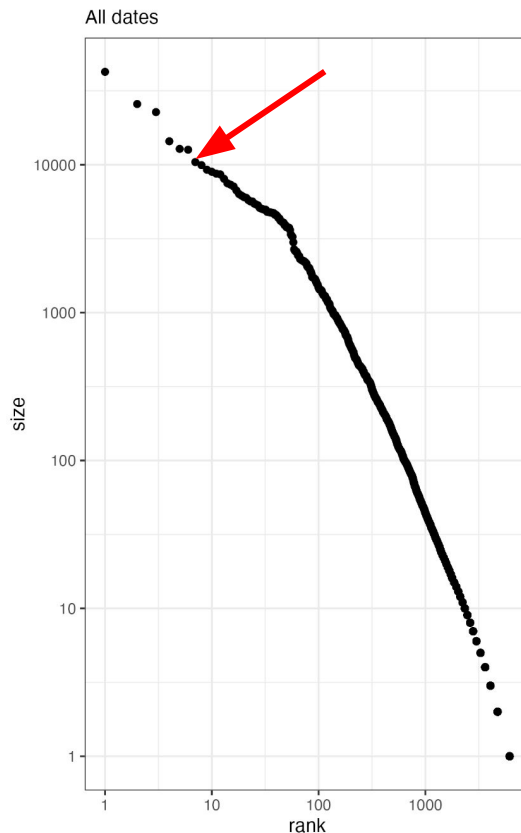
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~ 74.9% of entries

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Activites after applying soundex index



Exploring and defining the 170 activities by hand

Step 3: qualitative evaluation of the grouping of activities according to the soundex index

- > Systematic mapping
- > Systematic overview of tables

Step 4: defining each activity with:

- *Dictionnaire critique de la langue française* de Jean-François Féraud 1787-1788
- *Dictionnaire de l'Académie française*, 5e édition de 1798
- *Dictionnaire de l'Académie française*, 6e édition 1832-1835
- *Dictionnaire de l'Académie française*, 7e édition ~1878
- *Dictionnaire de l'Académie française*, 8e édition 1932-1935

- > What does the activity designation cover?
- > Does the designation change in terms of meaning over time?



Linking the 170 activities with a contemporary classification

Step 5: creating a typology inspired by North American Industry Classification System (NAICS - US Census Bureau)

Typology of 21 categories

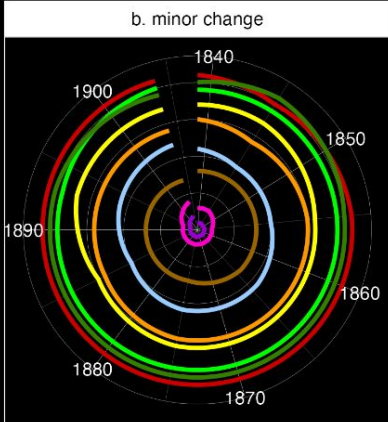
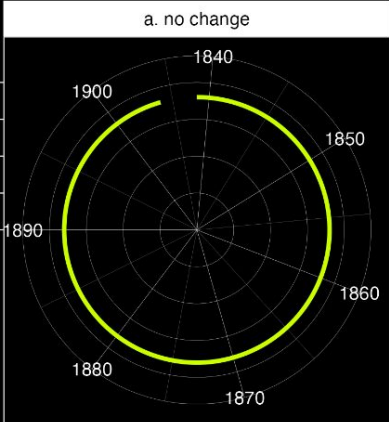
- 1 - Administrative and Legal Services
- 2 - Arts, Entertainment, and Recreation
- 3 - Building and Car Rental
- 4 - Clothing and clothing accessories manufacturers/retailers
- 5 - Construction and Public Works
- 6 - Cosmetics, Beauty Supplies, and Perfume Retailers
- 7 - Educational Services
- 8 - Engineering Services
- 9 - Finance and Insurance
- 10 - Food stores
- 11 - Full-Service Restaurants
- 12 - Health Practitioners
- 13 - Home Furniture and Supplies Manufacturers/Retailers
- 14 - Manufacturing
- 15 - No Activity, Living of Income
- 16 - Other retailers
- 17 - Public Administration
- 18 - Publishing Industries
- 19 - Related to Agricultural Activities
- 20 - Trade Agents and Brokers
- 21 - Wholesalers Trade

Main results



Structure of Paris activities over time

Overview with rank clocks

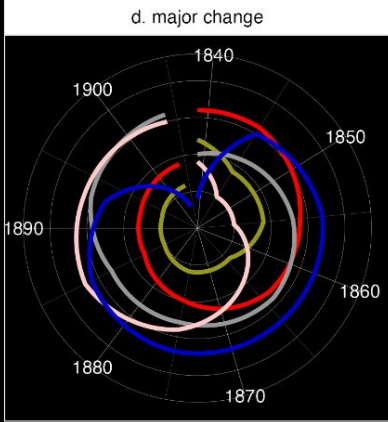
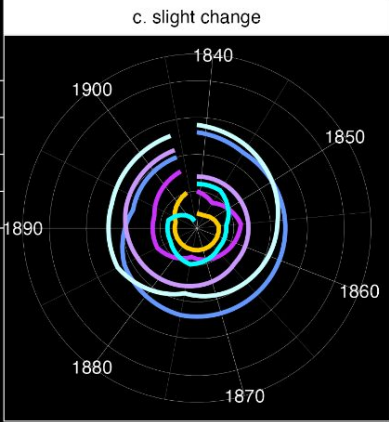


a. no change

- Home Furniture and Supplies Manufacturers/Retailers

b. minor change

- Arts, Entertainment, and Recreation
- Clothing and clothing accessories manufacturers/retailers
- Finance and Insurance
- Food stores
- Health Practitioners
- Manufacturing
- Other retailers
- Related to Agricultural Activities
- Wholesalers Trade



c. slight change

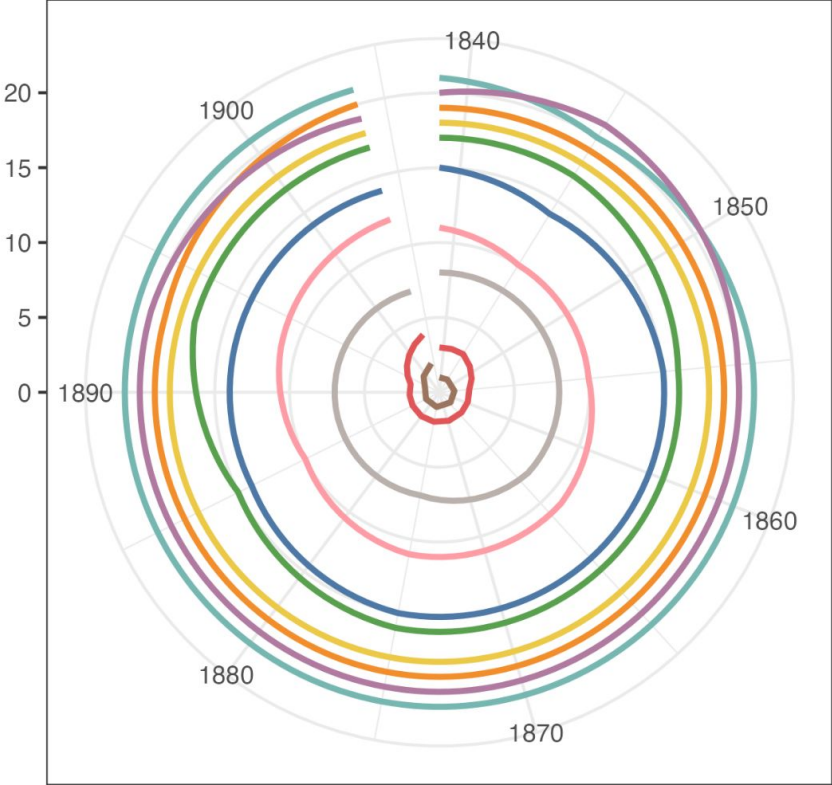
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d. major change

- Administrative and Legal Services
- Educational Services
- Engineering Services
- Full-Service Restaurants
- No Activity, Living of Income

Persisting activities over time

a. and b. categories



NAICS

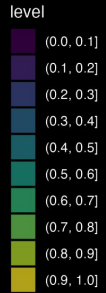
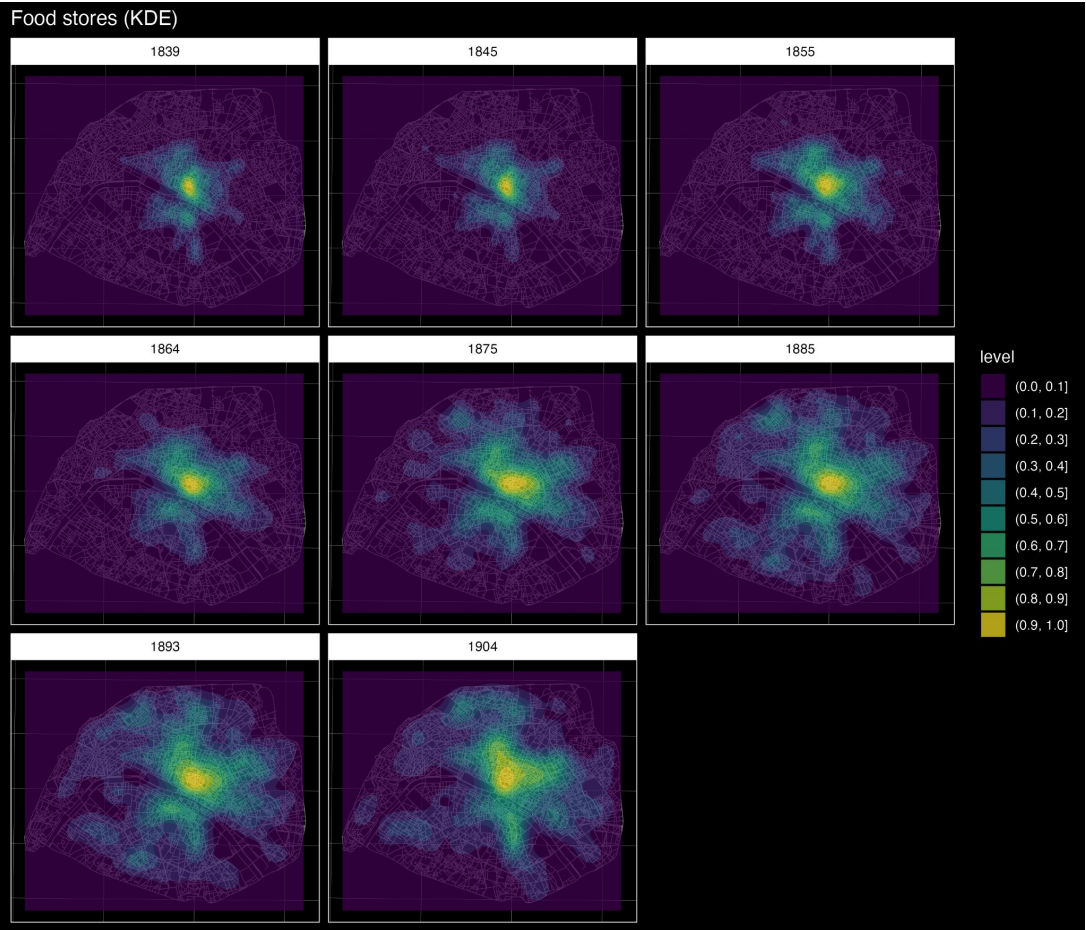
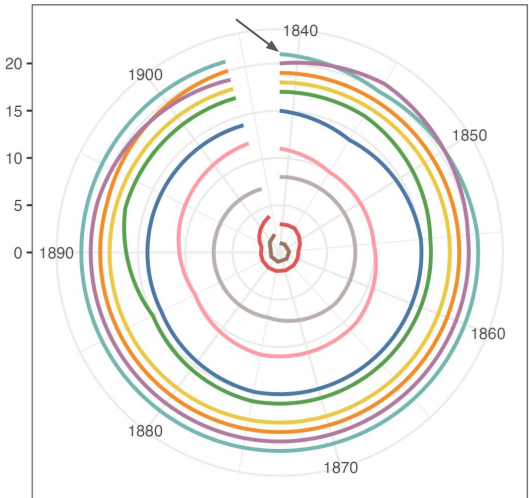
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Persisting activities: spatial changes

NAICS

- Arts, Entertainment, and Recreation
- Clothing and clothing accessories manufacturers/retailers
- Finance and Insurance
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a. and b. categories

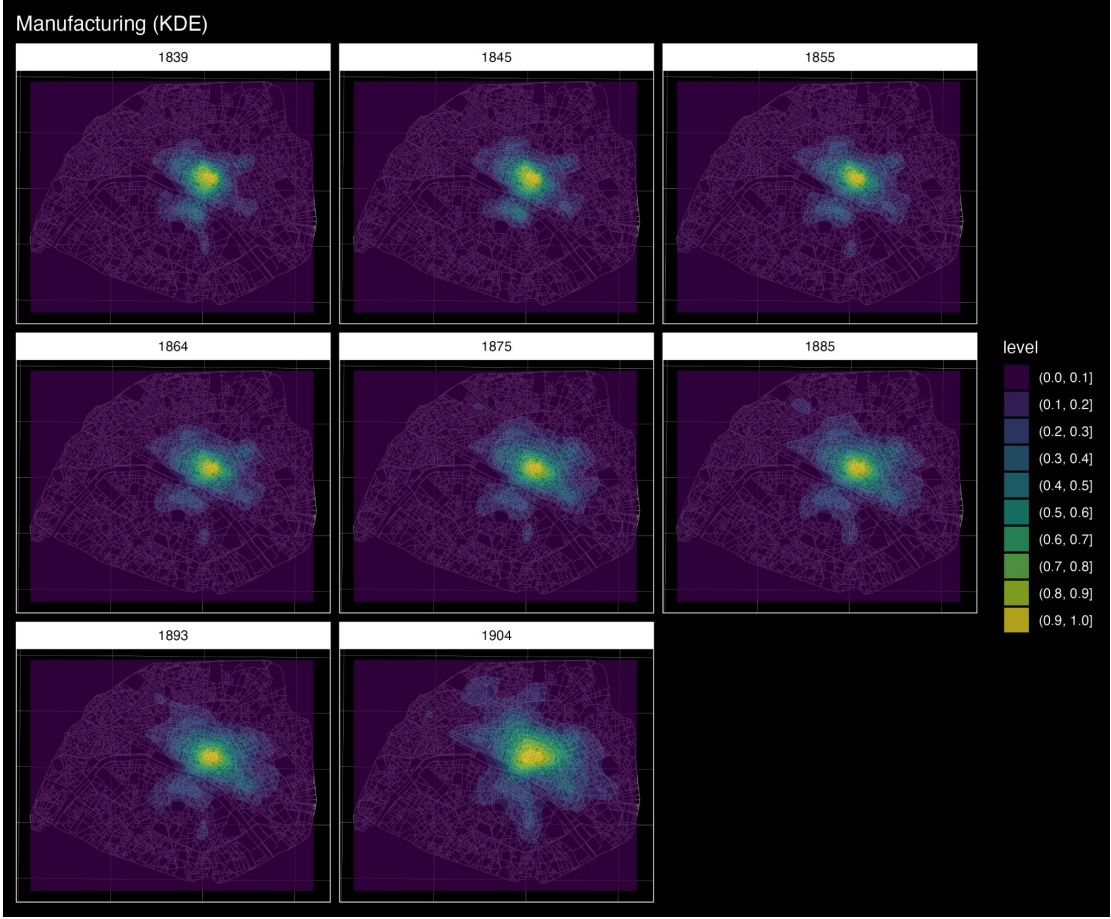
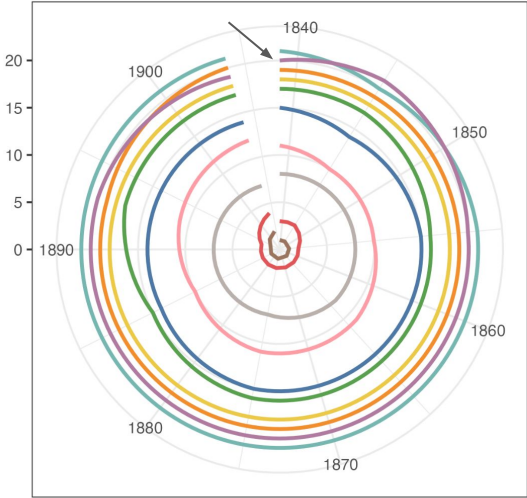


Persisting activities: little spatial changes

NAICS

- Arts, Entertainment, and Recreation
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- Finance and Insurance
- Food stores
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- Home Furniture and Supplies Manufacturers/Retailers
- Manufacturing**
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- Related to Agricultural Activities
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a. and b. categories

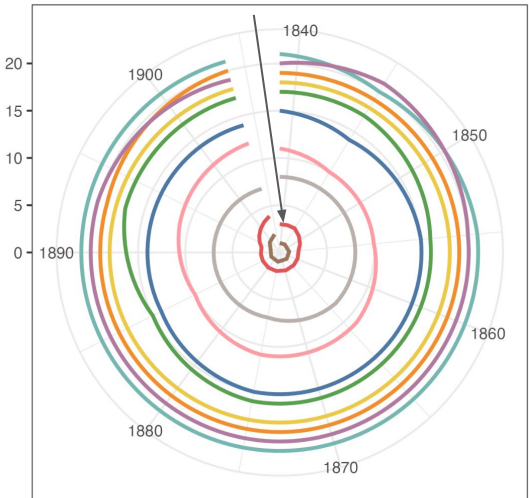


Persisting activities: little spatial changes

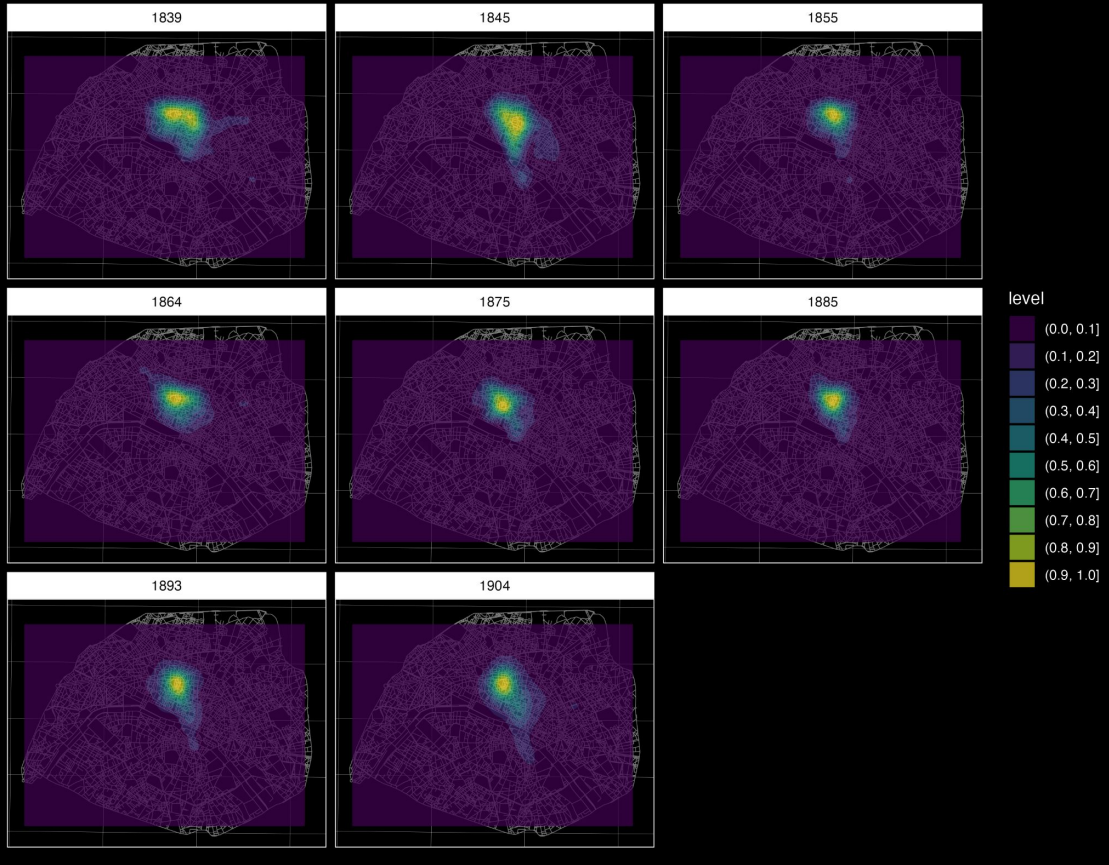
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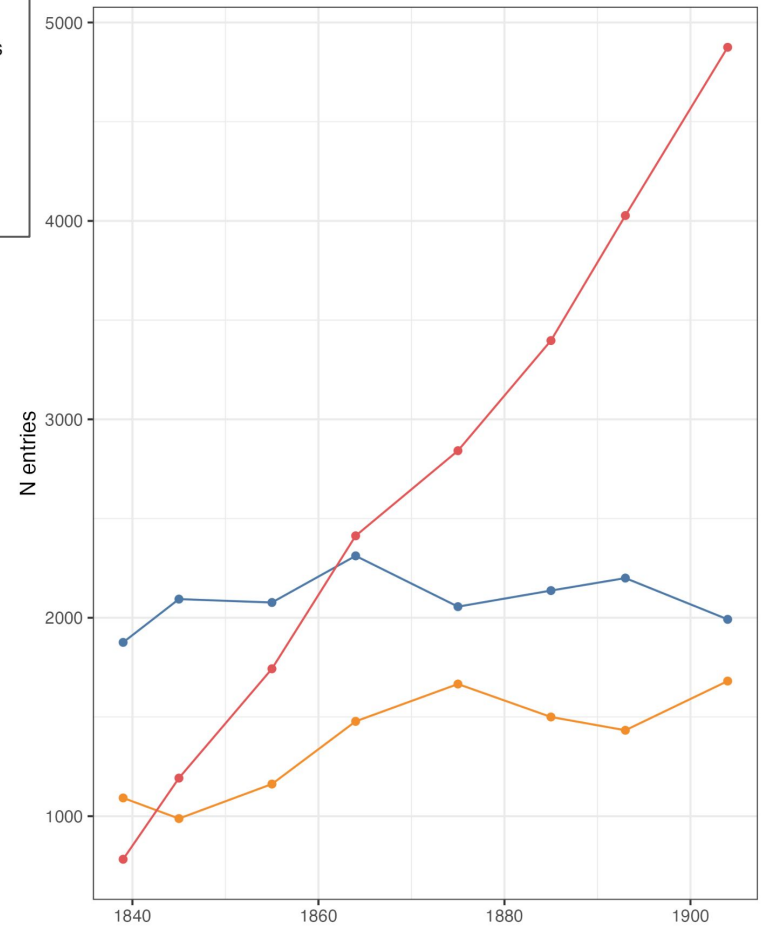
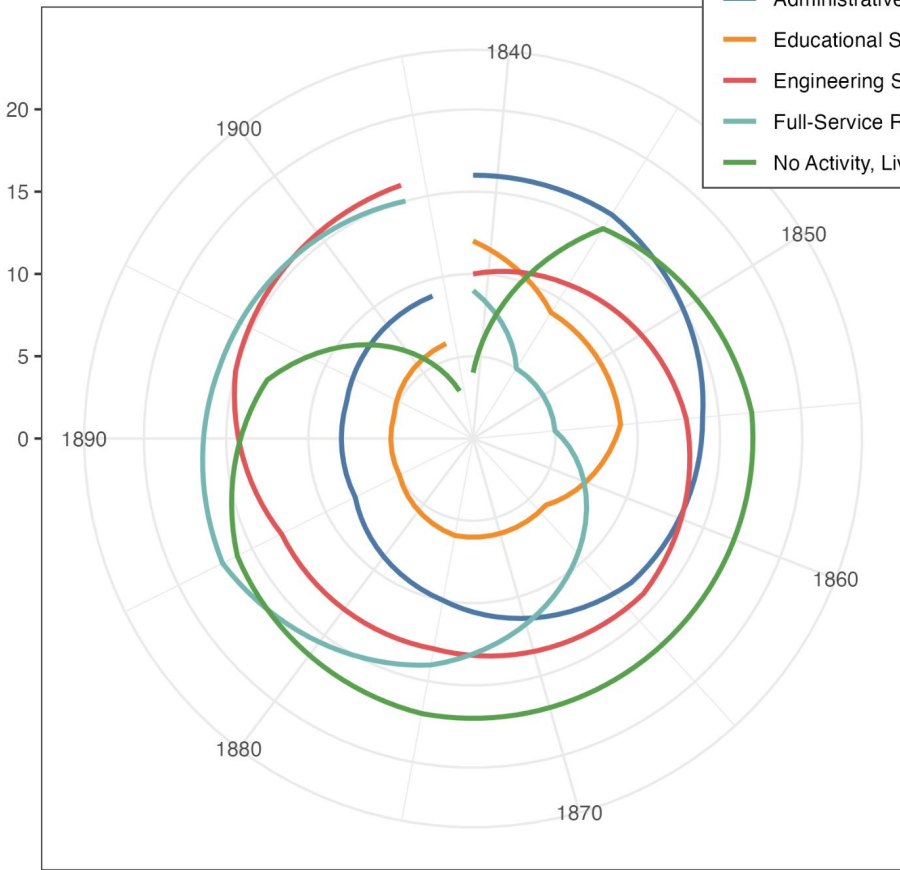


Finance and Insurance (KDE)



Activities that change a lot over time

d. category



Discussion/perspectives

Short term: expand the time frame of the study by adding directories before 1839 and after 1904

Mid-term: improving the grouping of activities (step 1 of methodology):

- quantitatively evaluating the quality of the soundex index
- testing Solenn Tual's methodology of token distances conducted on the case of photographers
(see: "Une approche pour la création d'un graphe spatio-temporel à partir des données extraites des annuaires: application aux photographes", [presentation](#))

Long-term: cross-classifying with other classifications:

- Didot in 1843
- Bertillon in 1891