

Locational patterns of warehouses in 74  
cities around the world, a comparative  
meta-analysis

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# Objectives of the research

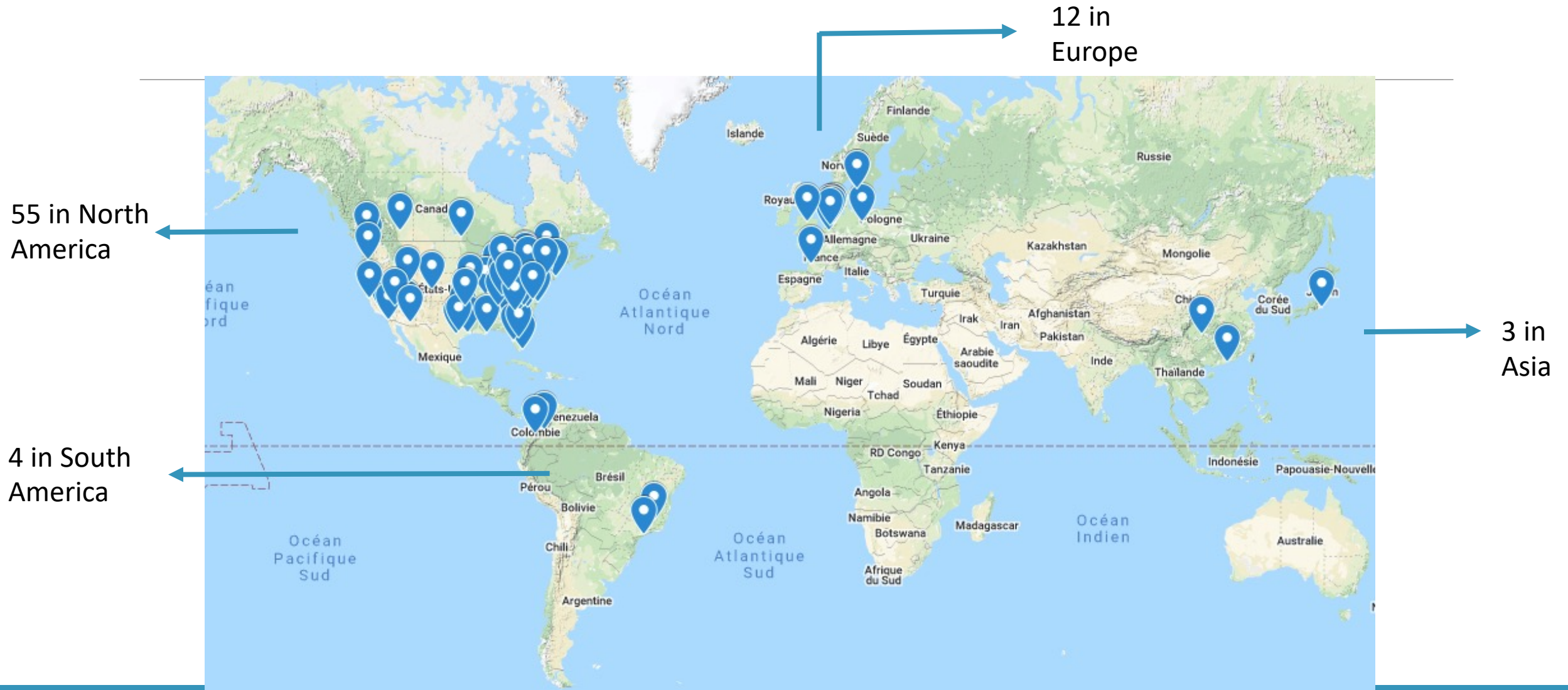
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- ❖ To work on the Chair Logistics City's Topic 1.1
  - ❖ To provide a cleaned and more comprehensive database related to freight facilities in large metropolitan areas
  - ❖ To make comparative analyses regarding location factors related to logistics facilities and issues raised based on secondary sources
  - ❖ To provide novel elements in the study of locational patterns of freight facilities in metropolitan areas
  - ❖ To identify the status of freight in planning, land use and zoning policies

# Case studies characterization

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# 74 case studies



# 74 case studies

Name of studied metro area	Country
Albany MSA	USA
Atlanta metro area	USA
Austin MSA	USA
Belo Horizonte	Brazil
Berlin	Germany
Birmingham MSA	USA
Bogotá	Colombia
Bordeaux MA	France
Boston MSA	USA
Brussels	Belgium
Buffalo MSA	USA
Calgary	Canada
Cali	Colombia
Charlotte MSA	USA
Chicago	USA
Chongqing	China
Cincinnati MSA	USA
Cleveland MSA	USA
Columbus MSA	USA
Dallas MSA	USA
Dayton MSA	USA
Denver MSA	USA
Detroit MSA	USA
Flevoland	Netherlands
Gothenburg (MEA)	Sweden

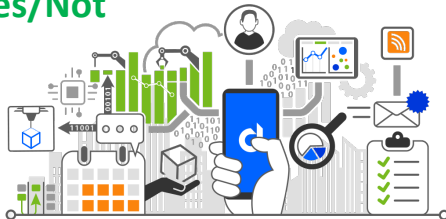
Name of studied metro area	Country
Gothenburg (VGC region)	Sweden
Grand Rapids MSA	USA
Greensboro MSA	USA
Greenville MSA	USA
Halifax	Canada
Houston MSA	USA
Indianapolis MSA	USA
Kansas City MSA	USA
Las Vegas MSA	USA
Los Angeles	USA
Louisville MSA	USA
Miami MSA	USA
Milwaukee MSA	USA
Montreal	Canada
Nashville MSA	USA
New Orleans MSA	USA
New York MSA	USA
Noord Holland (Amsterdam)	Netherlands
Orlando MSA	USA
Paris (all WH) 2004 - 2012	France
Paris (parcel/express)	France
Philadelphia MSA	USA
Phoenix	USA
Pittsburgh MSA	USA
Portland MSA	USA

Name of studied metro area	Country
Raleigh MSA	USA
Richmond MSA	USA
Rochester MSA	USA
Salt Lake City MSA	USA
San Antonio MSA	USA
San Diego MSA	USA
San Francisco MSA	USA
Seattle	USA
Shenzhen	China
St. Louis MSA	USA
Tampa MSA	USA
The Randstad Region	Netherlands
Tokio (TMA)	Japon
Torono GGH	Canada
Torono GTA	Canada
Tucson MSA	USA
Tulsa MSA	USA
Utrecht	Netherlands
Vancouver	Canada
Virginia Beach MSA	USA
Washington DC MSA	USA
Winnipeg	Canada
Zuid Holland (Rotterdam)	Netherlands

# Key data retrieved

## Key indicators

- Name of studied metro area
- Size of studied metro area (km<sup>2</sup>)
- Number of municipalities
- Type of metropolitan area:  
Polycentric/Monocentric
- **Megaregion: Yes/Not**
- **Type of city/region: Gateway**
- Type of land use control:  
Local/Metro/Regional
- Focused Study or general
- **Surfaces area data availability:  
Yes/Not**



- Name of warehouse data source
- Time period studied for logistics sprawl analysis
- Population (millions)
- Population density (inhabitants/km<sup>2</sup>)
- Number of warehouses
- Number of warehouses per million people
- Number of warehouses per 1000 km<sup>2</sup>
- Average size of warehouses (m<sup>2</sup>)
- Average distance of warehouses to centre of gravity (km)

- **Change in population over the years (millions)**
- % Change of the number of WH over the years
- **Logistic sprawl: Change in average distance of WHs to centre of gravity (over the years) (km)**
- **Urban Rent Prices per year (EUR/m<sup>2</sup>)**
- **Suburban Rent Prices per year (EUR/m<sup>2</sup>)**

First year

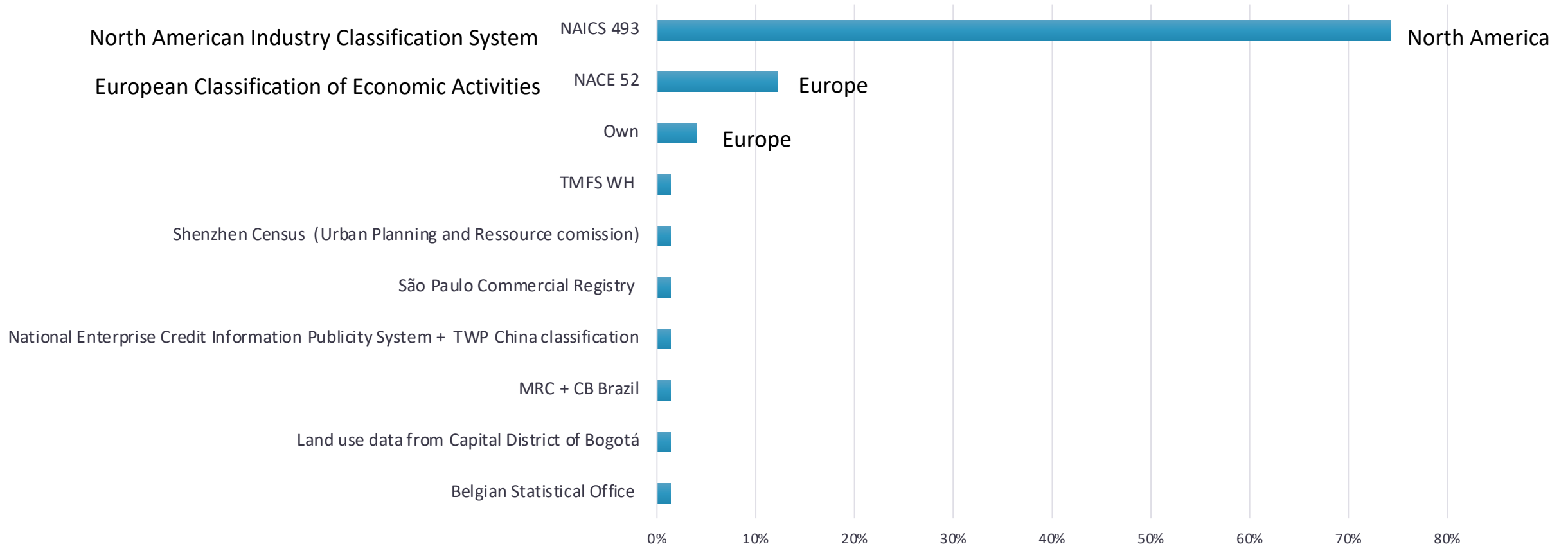


Last year



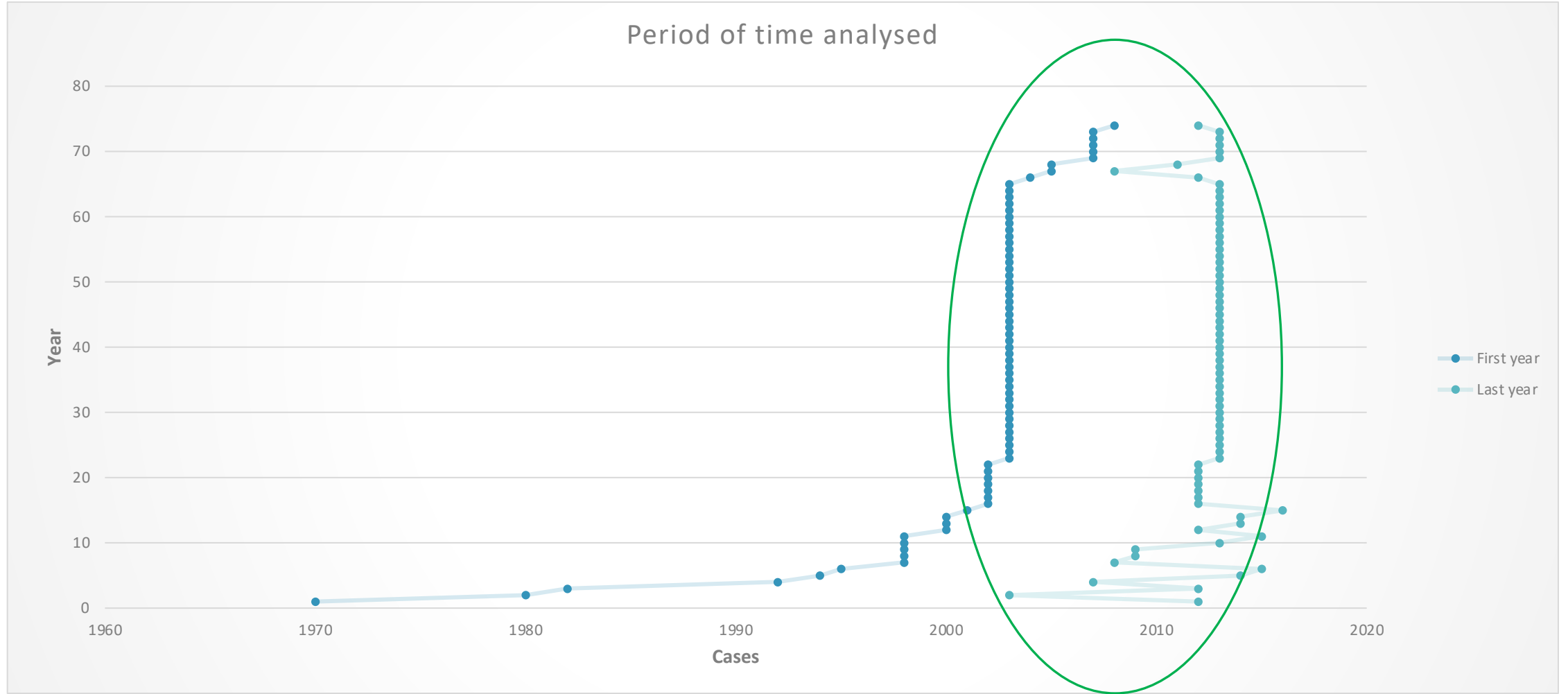
# Warehouse data source

Warehouse data source



# Years under study

98%



2002 - 2013



# Data issues

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- ❖ Databases are different: Ex. NAICs vs NACE codes (Type of logistic facilities → 3PL or warehouses insourced).
- ❖ Periods of time analysed are different.
- ❖ Regional areas into examination can be different.
- ❖ Insufficient data regarding location factors (ex. land prices).

# Hypotheses

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# Hypotheses: Static analysis

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**H1:** There are more warehouses/pop in large and medium cities than in smaller cities

	Small cities	Medium and large cities
Average number of WH per million of people first year	74	99
Average number of WH per million of people last year	83	200

Type of cities:

- Small: <1M Inhabitants
- Medium: Between 1M and 5M Inhabitants
- Large: More than 5M Inhabitants

# Hypotheses: Static analysis

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**H2:** There are more warehouses in global hub cities (or Gateways) than in « regular » cities

	Other cities	Gateways
Average number of WH first year	82	215
Average number of WH last year	87	547

**H3:** There are more warehouses in cities that belong to a Mega-regions than in « regular » cities.

	Other cities	Mega-regions
Average number of WH of people first year	112	198
Average number of WH of people last year	334	444

# Hypotheses: Dynamic analysis

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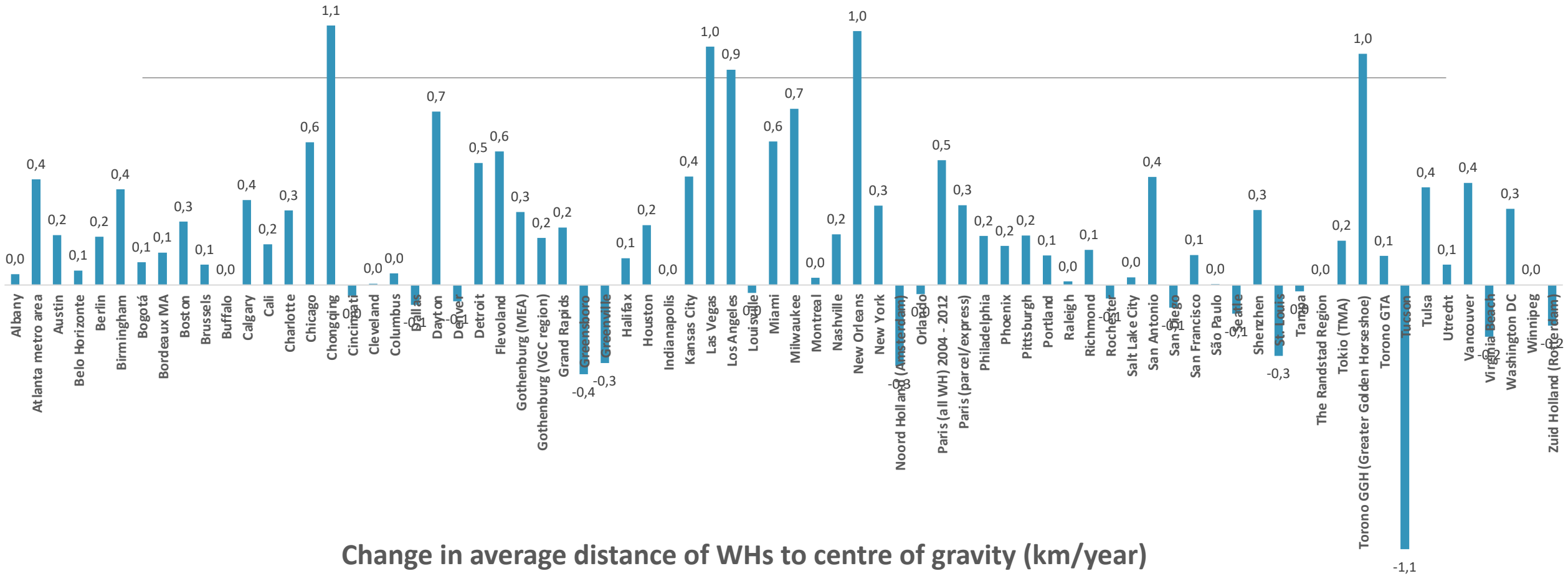
**H4:** The increase in the number of warehouses over time is larger in medium and large cities than in smaller cities

	Small cities	Medium and large cities
Average increase in the number of WH over the time	35%	59%

**H5:** The increase in the number of logistics facilities over time is positively related to the importance of the role of global logistics hub (or Gateways) played by an urban area

	Other cities	Gateways
Average increase on the number of WH over the time	15%	73%

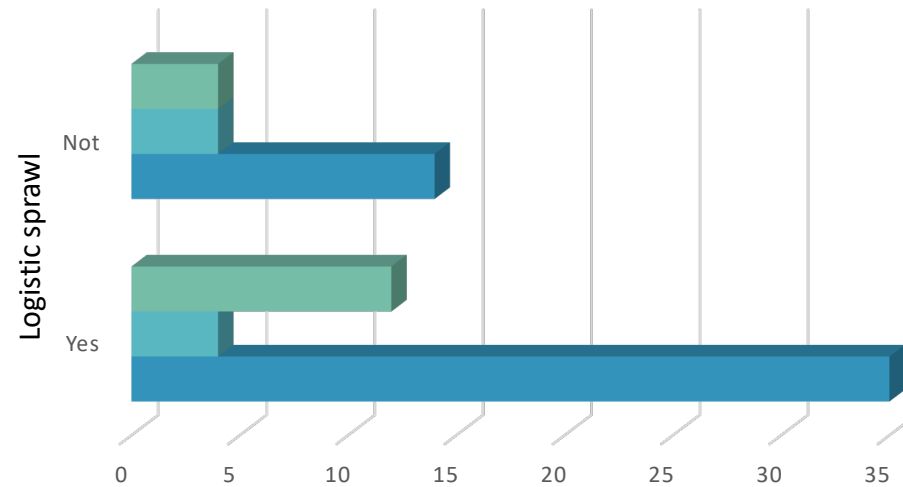
# Hypotheses: Logistic sprawl



# Hypotheses: Complex analyses

**H6:** Logistics sprawl is positively related to the differential in land/rent values for logistics land uses between suburban and central areas in an urban region.

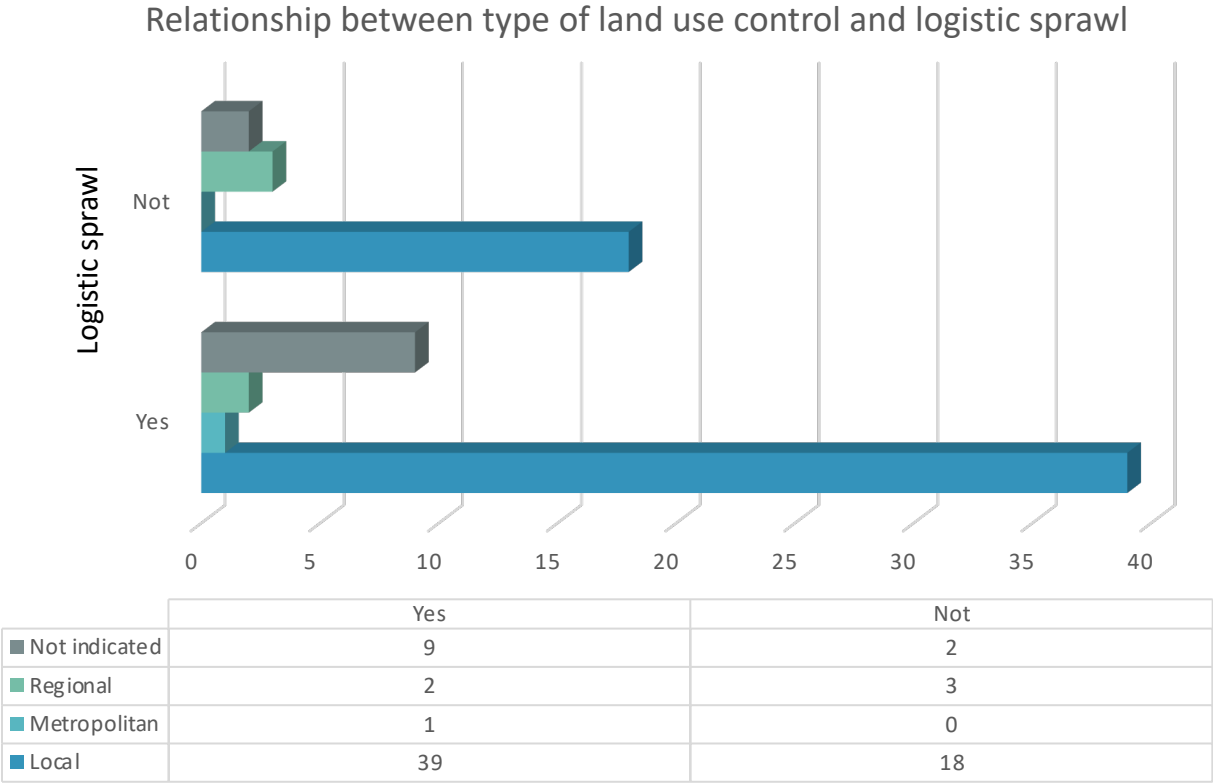
Relationship between logistic sprawl and increase of rent price in urban compared to suburban areas



	Yes	Not
■ NA	12	4
■ Decrease on rent price	4	4
■ Increase on rent price	35	14

# Hypotheses: Complex analyses

**H7:** Logistics sprawl is negatively related to the degree of regional logistics land use control.





# Key conclusions

Hypotheses	Validated	Conclusion
H1	Yes	There are more warehouses/pop in medium and large cities than in smaller cities.
H2	Yes	There are more WHs in global hub cities (or Gateways) than in « regular » cities
H3	Yes	There are more warehouses in cities that belong to a Mega-regions than in « regular » cities.
H4	Yes	The increase in the number of warehouses over time is larger in medium and large cities than in smaller cities
H5	Yes	The increase in the number of logistics facilities over time is positively related to the importance of the role of global logistics hub (or Gateways) played by an urban area.
H7	Yes	Logistics sprawl <u>could be</u> positively related to the differential in land/rent values for logistics land uses between suburban and central areas in an urban region.
H8	Not possible	Logistics sprawl is <u>not always</u> negatively related to the degree of regional logistics land use control.