

**Questões da Verticalização Urbana na  
França e no Brasil: projeto highrise**

**Problèmes de Verticalisation Urbaine  
en France et au Brésil: projet highrise**

colloque “nature et ville: regards croisés  
franco-lusophones”  
Université de Tours

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Instituto de Arquitetura e Urbanismo  
Universidade de São Paulo  
Tours, 14jun2018



# High-Rise Living and the inclusive city



Context, Hypothesis and Objectives



Lines of Investigation and Working Tasks



Data Modelling: Social Indicators and Cartography



Work in Progress



Preliminary Conclusions



# Context and Hypothesis

●● Lyon and São Paulo,  
\_ transdisciplinary work that addresses verticalization, inclusiveness and the logic of production of the contemporary city

\_ lessons to be drawn, singularities and similarities: urbanity and public urban life

In the contemporary city, a cultural phenomenon that responds to parameters that point toward an era of transition, the urban space is a product and reproducer of the dynamics that guide its time; a living cultural space produced by social relations that are neither neutral nor uniform. In this context, where regulatory capitalism and entrepreneurial municipalities are participating in the promotion of singular urbanization processes to control the urban space, we analyse issues related to residential vertical urbanism and the privatization of the urban space. In the contemporary scenario, residential high-rises are more than an architectural solution: commodities of a global market where capital flows, fixed by developers (and municipalities), of a particular strategy of reproduction of the urban space: space as a business, a productive element and a condition of capital reproduction.

●● *"To sum up, our research question is the following one: **what capacity is left to produce an inclusive city, in a context where regulatory capitalism and entrepreneurial municipalities are participating in the promotion, to a large extent, of urbanization processes with favorable conditions for developers to control the urban space in which residential high-rises tend to separate, to segregate instead of including?"***



# Lines of Investigation and Working Tasks

## ●● Investigation focused on

- \_ processes of production of the contemporary city
- \_ urban morphology, urban patterns and public life
- \_ verticalization and inclusiveness

## ●● Highrise Working and Transversal Tasks

- \_1. Diagnosis: Spatio-temporal assessment of residential high-rises at two scales: Brazil and Europe at “continental scale”, and Sao Paulo and Lyon at infra-urban scale.
  - \_2. Building and regulating residential high-rise buildings in the neo-liberal city
  - \_3. Representations and imaginaries of the residential high-rise: past, present and trajectories
  - \_4. Living the high-rise: new paradigms of urban space, new lifestyles
- \_ Academic Seminars and Congress

High-Rise Living and the inclusive city

# Data Modelling



# Technical procedures for filtering and area selection

## 1st scale: CONTINENTAL

(Source: Emporis)

Europe, South America.

Capitals

## 2nd scale: REGIONAL (Source:

Emporis)

Brazilian metropolitan regions

## 3rd scale: LOCAL

Metropolitan region and São

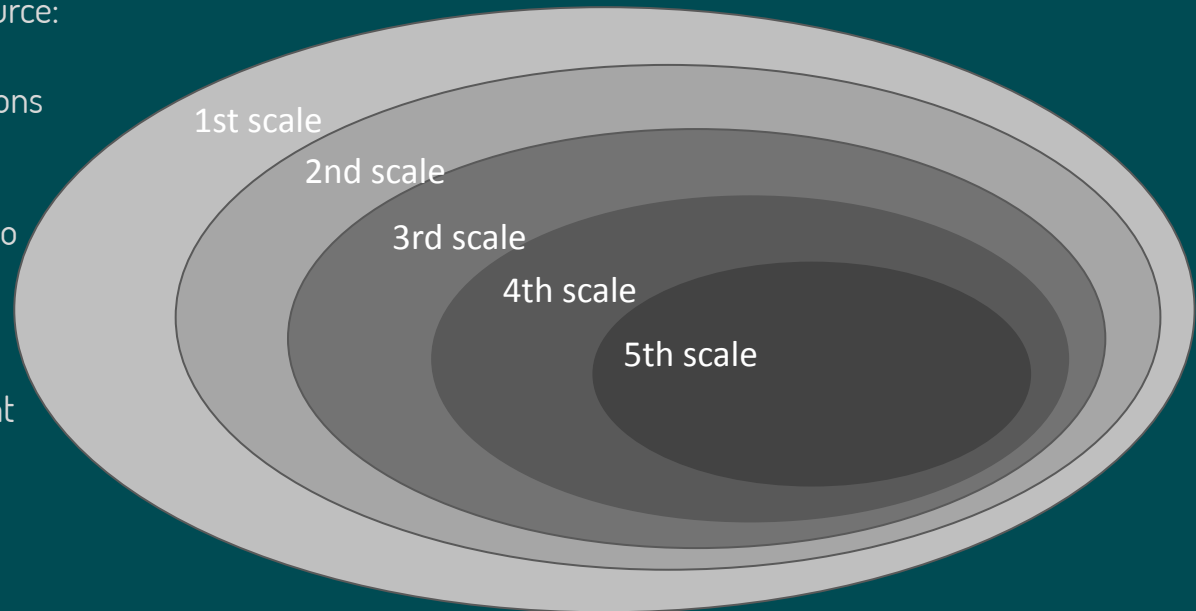
Paulo's municipality

## 4th scale: INTRA URBAN

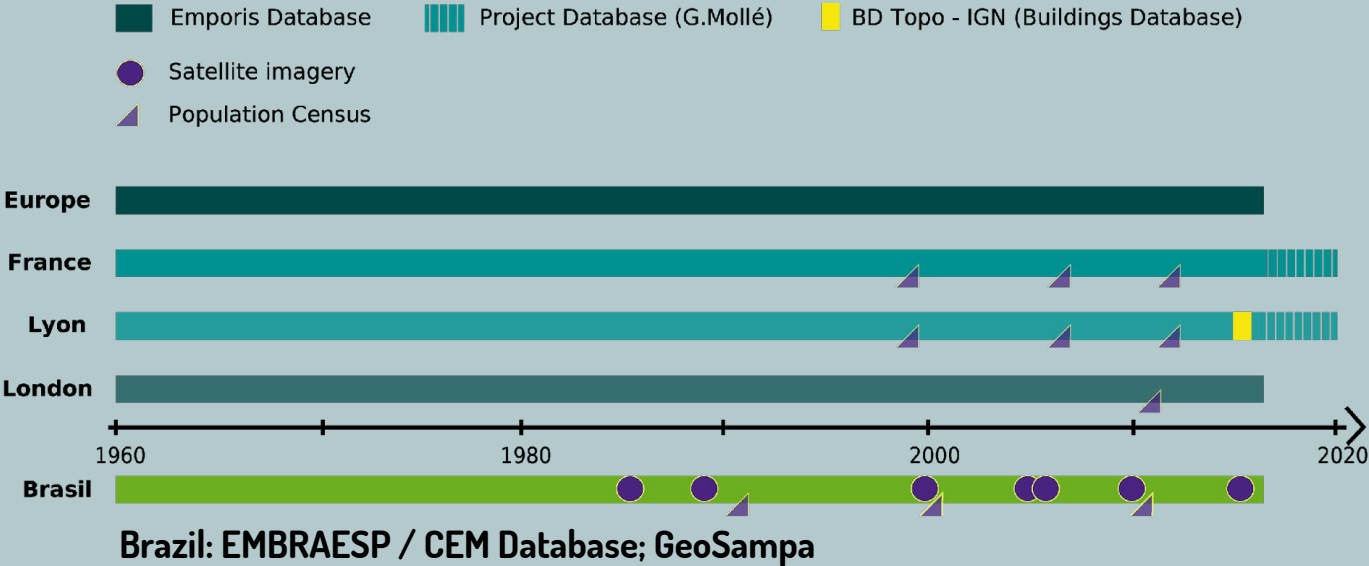
Use of human development  
units (UDH):

## 5th scale: REAL ESTATE DEVELOPMENT

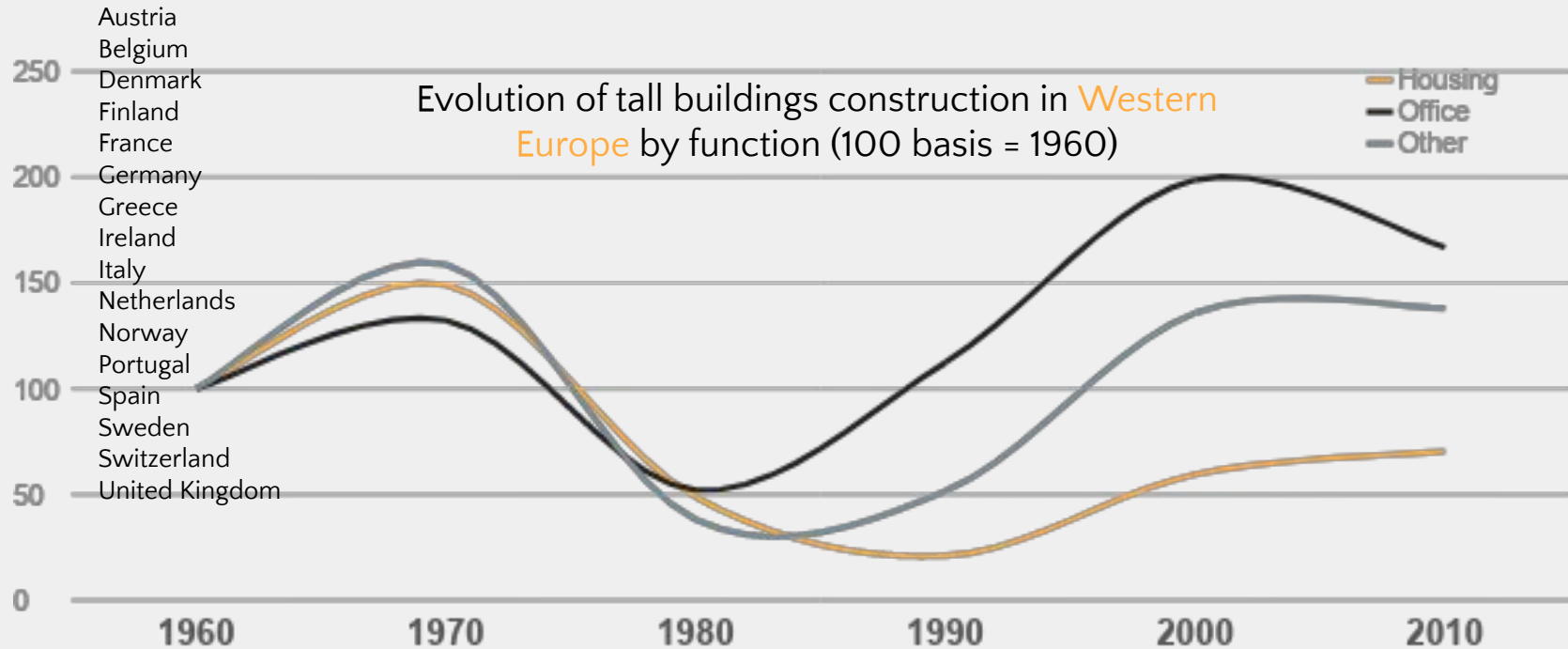
(Morphological Analysis)



# HIGHRISE : An overview of data's availability

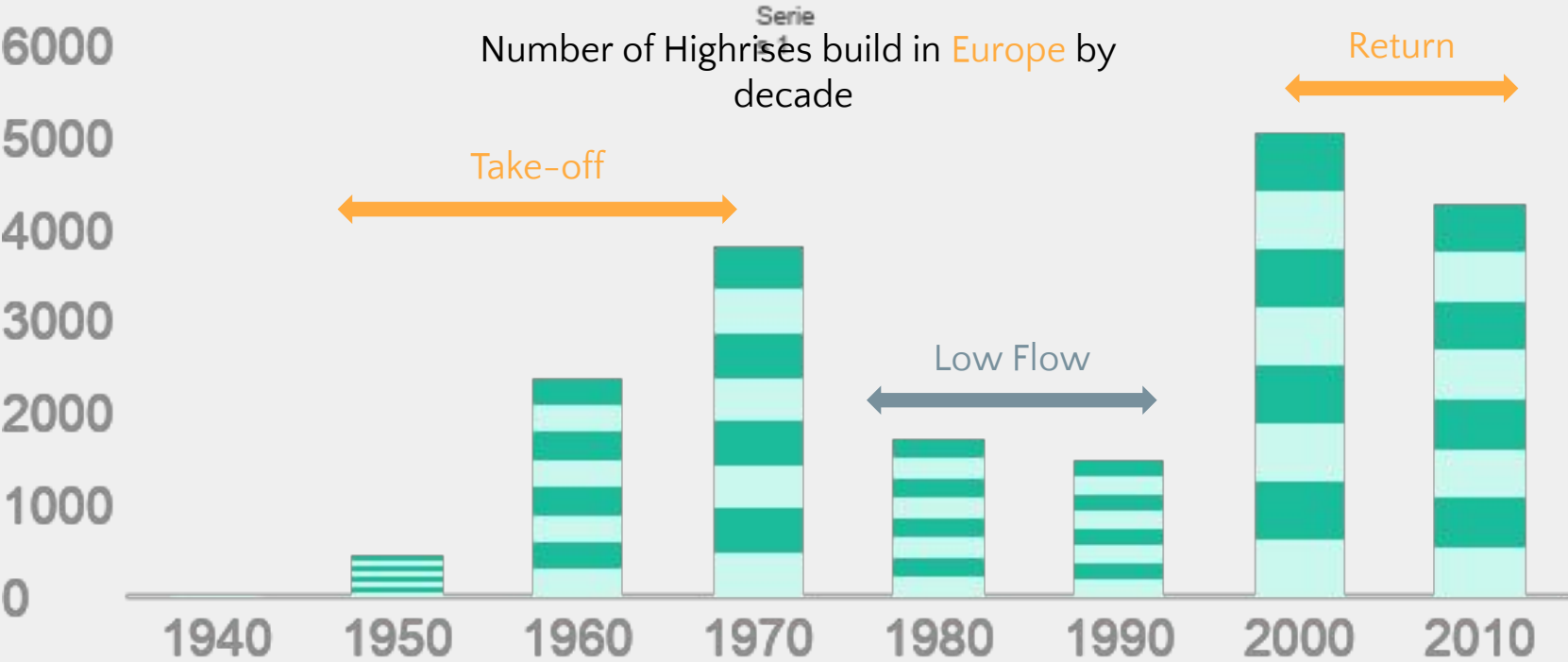


# Western Europe (Part 4)



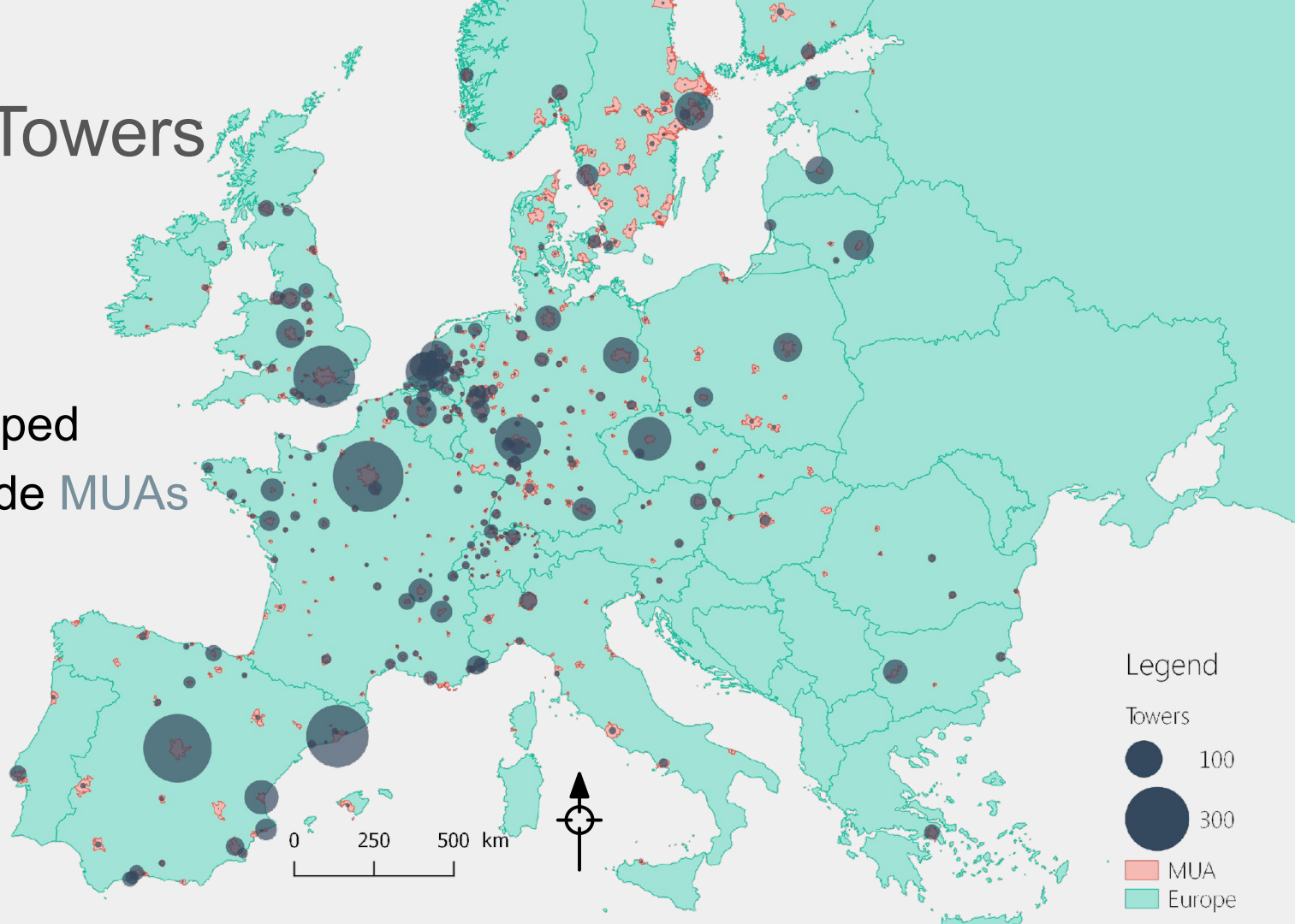


# Temporality of Buildings (Europe)

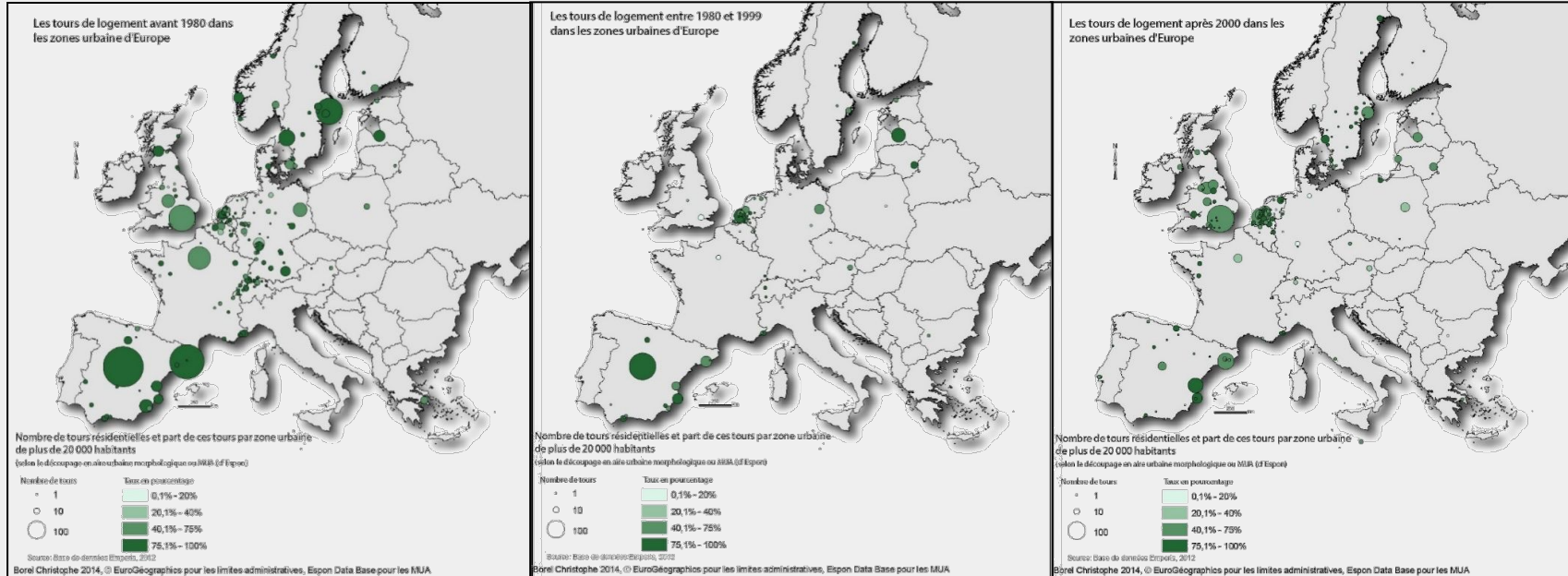


# MUA's Towers

8 244 Stamped  
Towers inside MUAs



# Number of tall buildings constructions And Part of Housing tall buildings In Morphological Urban Areas



The trend of housing construction is the **major** part of the global trend...

... but the part of housing construction tend to be reduced since 2000

# Highrise Residential Towers

South America

1<sup>st</sup> Scale: CONTINENTAL  
[Emporis Database]

ARGENTINA  
Buenos Aires/Córdoba/Rosário

BRASIL  
Belém/Belo Horizonte/Brasília/Campinas/Campo Grande/Cuiabá/Curitiba/Florianópolis/Fortaleza/Goiânia/Manaus/Porto Alegre/Porto Velho/Recife/Rio de Janeiro/Salvador/Santos/São Paulo/Vitória

BOLÍVIA  
La Paz

COLÔMBIA  
Bogotá/Cáli/Medellín

CHILE  
Santiago

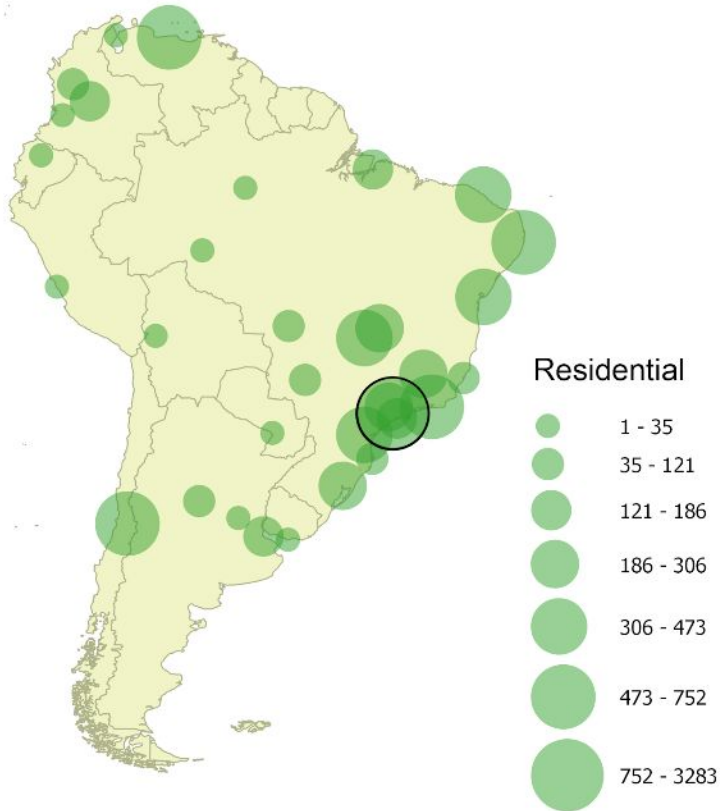
EQUADOR  
Quito

PARAGUAI  
Asunción

PERU  
Lima

URUGUAI  
Montevideo

VENEZUELA  
Caracas/Maracaibo

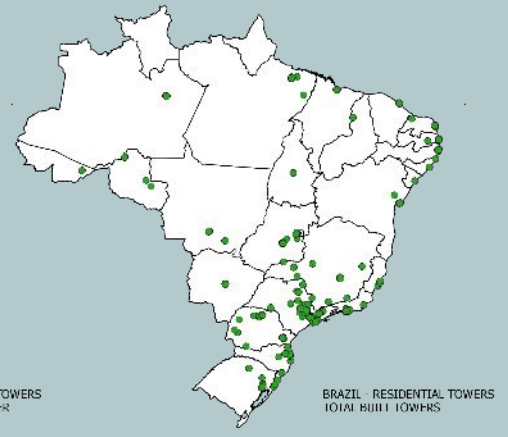
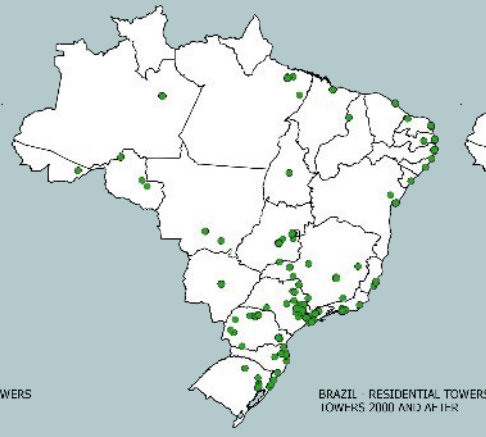
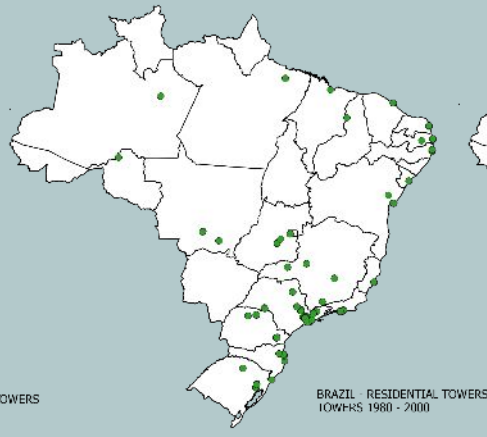
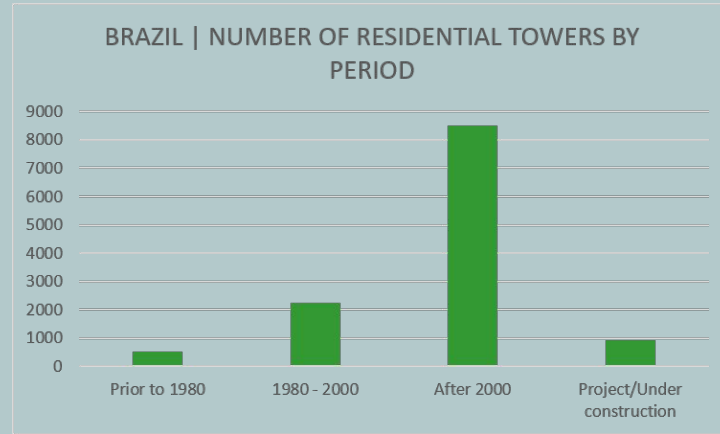
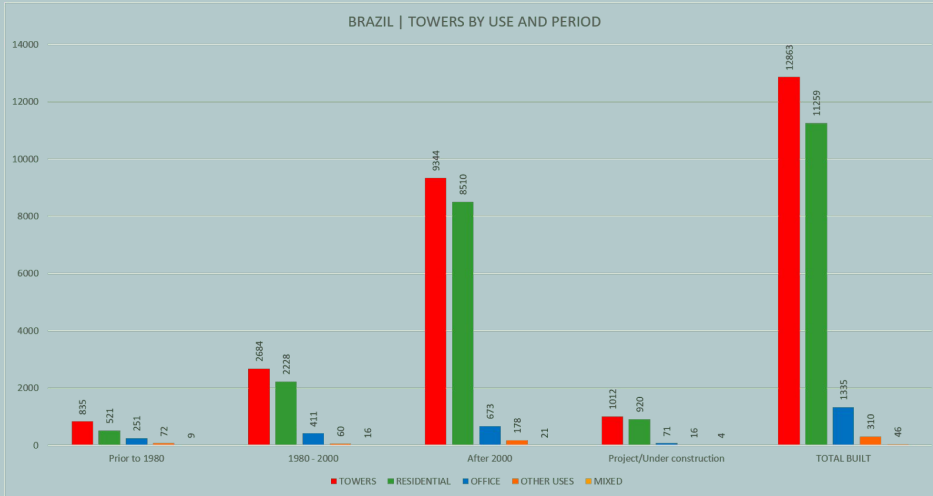


9.616 Stamped Towers inside  
the **big cities and capitals**

# Highrise Residential Towers

Brazil

2<sup>nd</sup> Scale: REGIONAL - [Emporis Database]



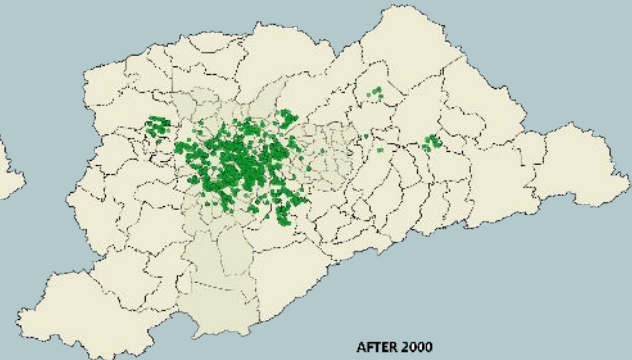
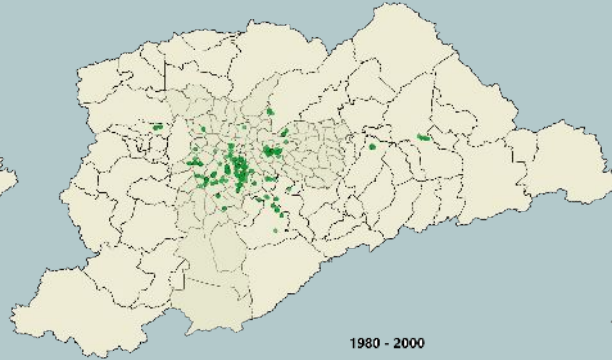
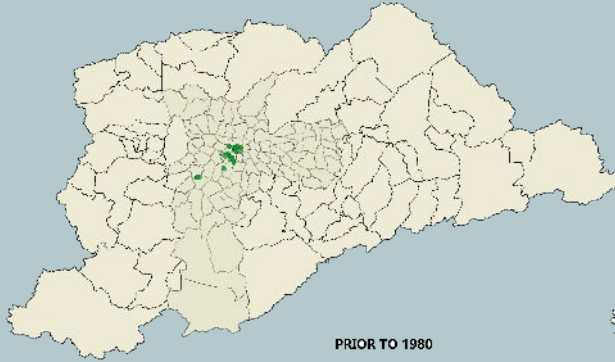


# Highrise Residential Towers

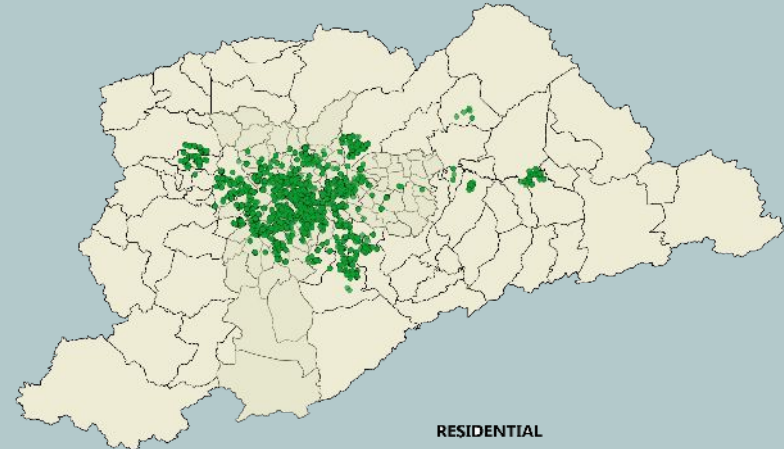
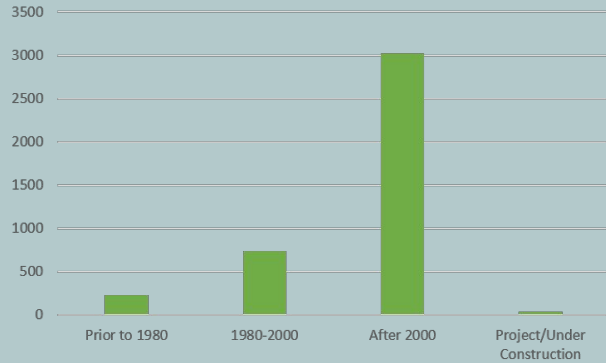
RMSP

3<sup>rd</sup> Scale: LOCA

[Emporis Database]



GREATER SÃO PAULO | NUMBER OF RESIDENTIAL TOWERS BY PERIOD



High-Rise Living and the inclusive city

# Data Modelling and Social Indicators



# Technical procedures for filtering and area selection

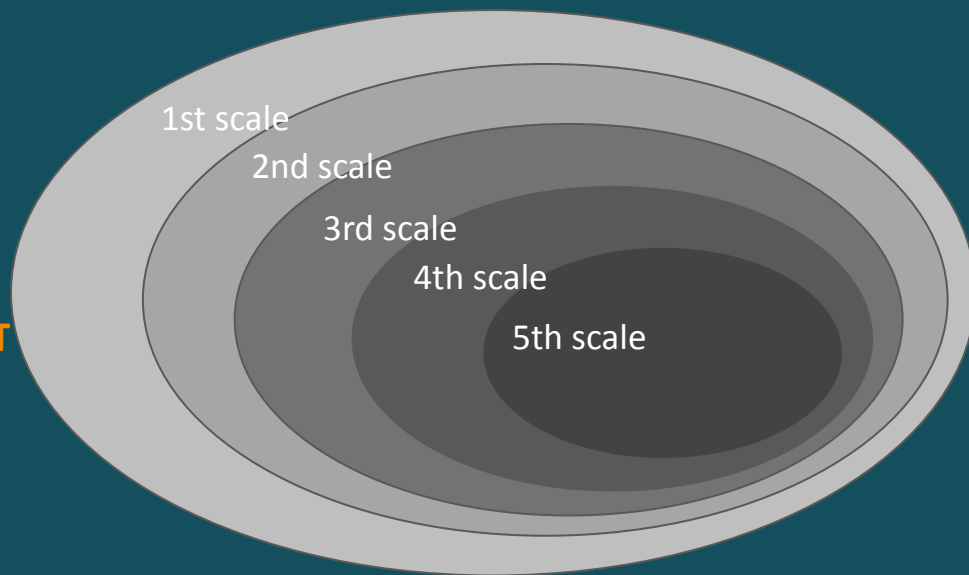
**1st scale: CONTINENTAL** (Source: Emporis)  
Europe. South America. Capitals

**2nd scale: REGIONAL** (Source: Emporis)  
Brazilian metropolitan regions

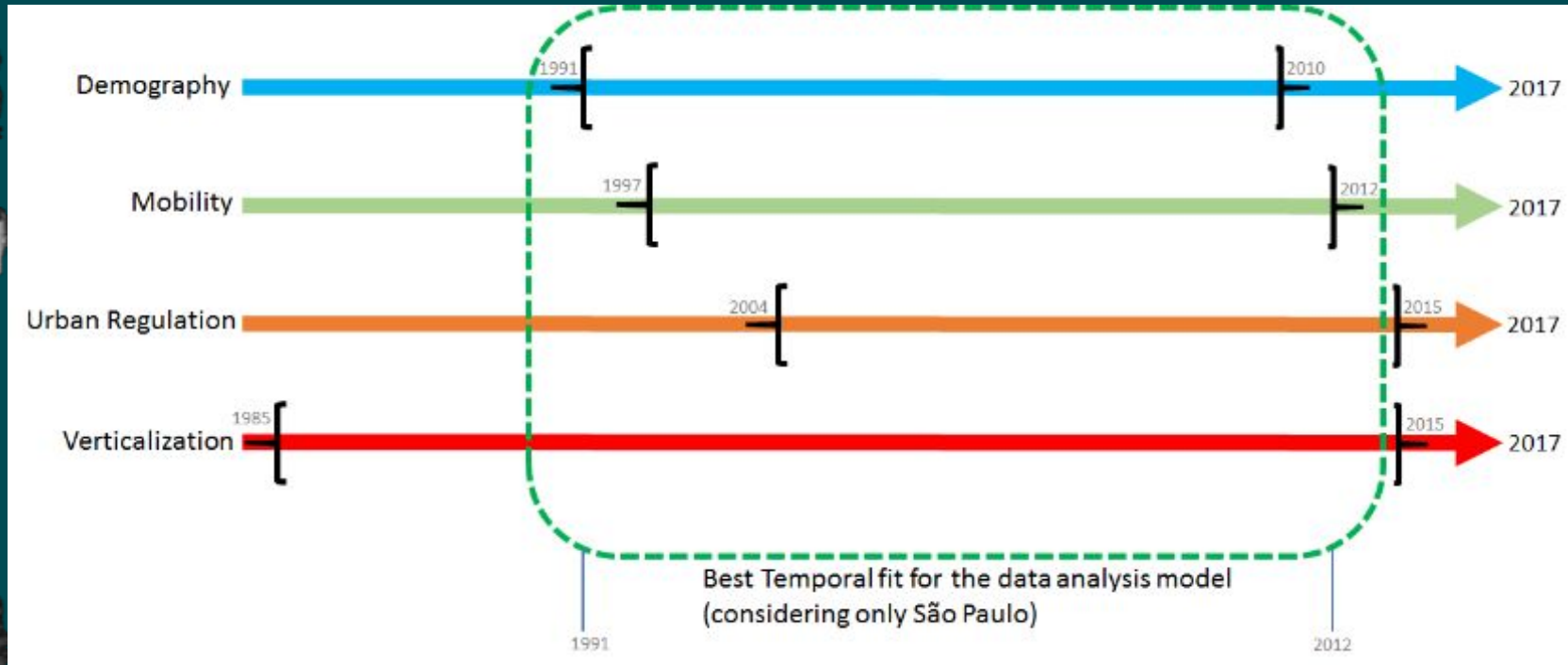
**3rd scale: LOCAL**  
Metropolitan region and São Paulo's  
municipality

**4th scale: INTRA URBAN**  
Use of human development units (UDH):

**5th scale: REAL ESTATE DEVELOPMENT**  
(Morphological Analysis)



# Data Analysis Model | Time Frame of Analysis



**Starting point \_ Data analysis model:**

Demography; Mobility; Urban regulation and Infrastructure; Verticalization

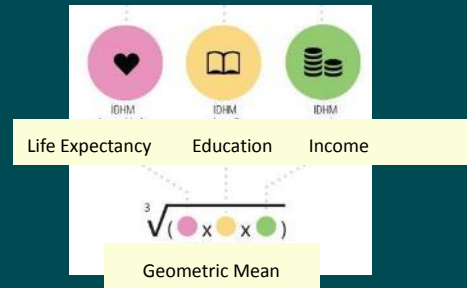
Space-time changes in the studied area

# Procedures | IDH-M (HDI-M)

## Proposal:

Use of IDH and IDHM, universal indicator that can be applied to Brazil and France.

IDH: Life Expectancy; Education; and Income



## To be Observed!

Considering the three dimensions adopted it is necessary to check: aggregation criteria; homogeneous zones; and the procedures' replicability in different scales and places; IDH criteria.



# IDH

	LONGEVITY	EDUCATION		INCOME
		Adult population	Population of young people	
<b>IDH (PNUD)</b>	Life expectancy at birth	Mean years of Schooling 25+	Expected years of schooling	The national mean income per capita (US\$ ppp2005)
<b>IDH-M (Brasil)</b>	Life expectancy at birth	18+ with primary education completed	5-6 attending school 11-13 attending the final years of primary education 15-17 with primary education completed 18-20 with secondary education completed	Monthly income per capita (R\$ Aug/2010)
<b>IDH-2 (France)</b>	Life expectancy at birth(M/W)	15+ out of school with diploma	///	Median tax household income per consumption unit (in €, translated into \$US and ppp)

# High-Rise Living and the inclusive city


Data Modelling, Territorial Unity of Analysis and Cartography



# Procedures | UDH-M (HDI-M): comparative table of geographical scales



	Continental	Regional	Local	Intra-urban	Real Estate devt
São Paulo	South America Capital citis (source Emporis)	Brazilian metropolitan regions (source Emporis)	Metropolitan region and São Paulo's municipality	Use of human development units (UDH / UDH-M)	individual real estate ventures and their area of immediate influence
Lyon	Europe (source Emporis)	France (Emporis + Geoffrey Mollé)	Metropolitan area of Lyon	IRIS (616) (zoning for census)	only for residential towers post 2015 (8 projects)
London	Europe (source Emporis)		Greater London municipality	MSOA (913) (zoning for census)	only a selection of projects



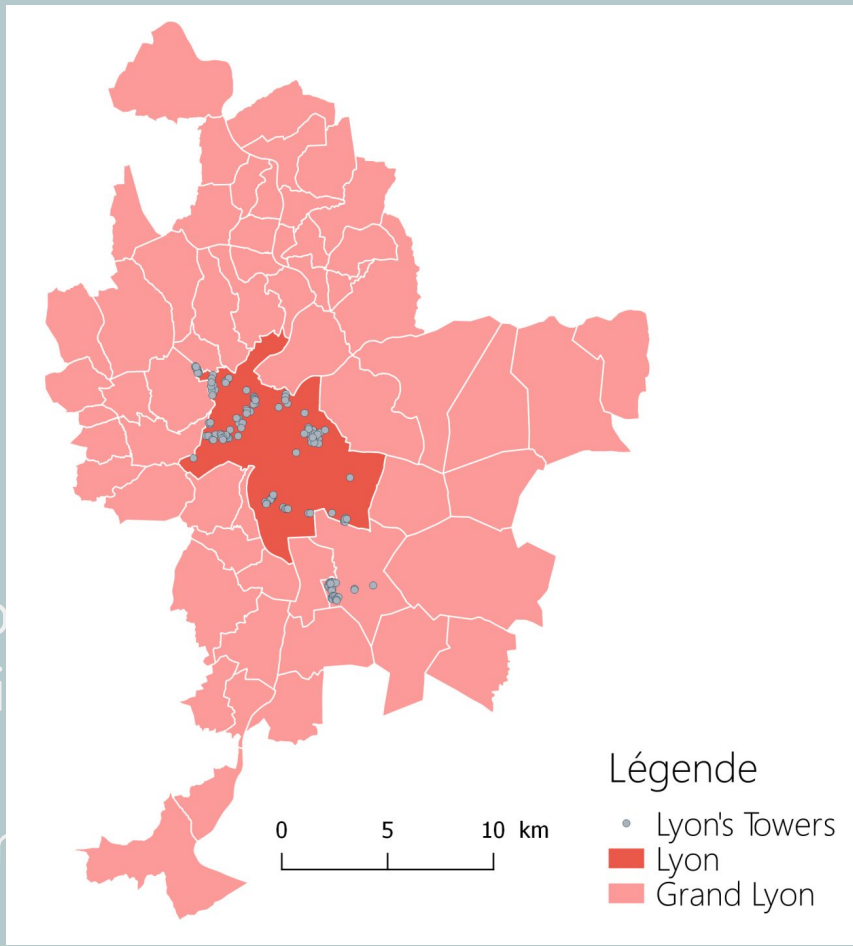
High-Rise Living and the inclusive city

# Cartography: First Approach

1 551 000 inhab

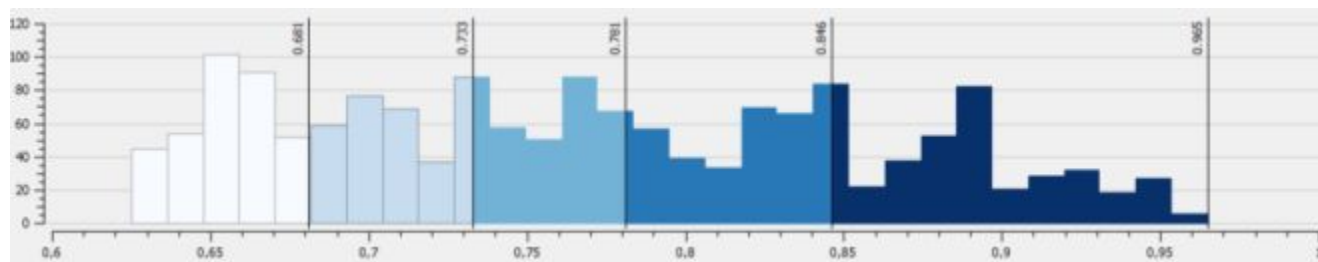
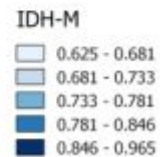
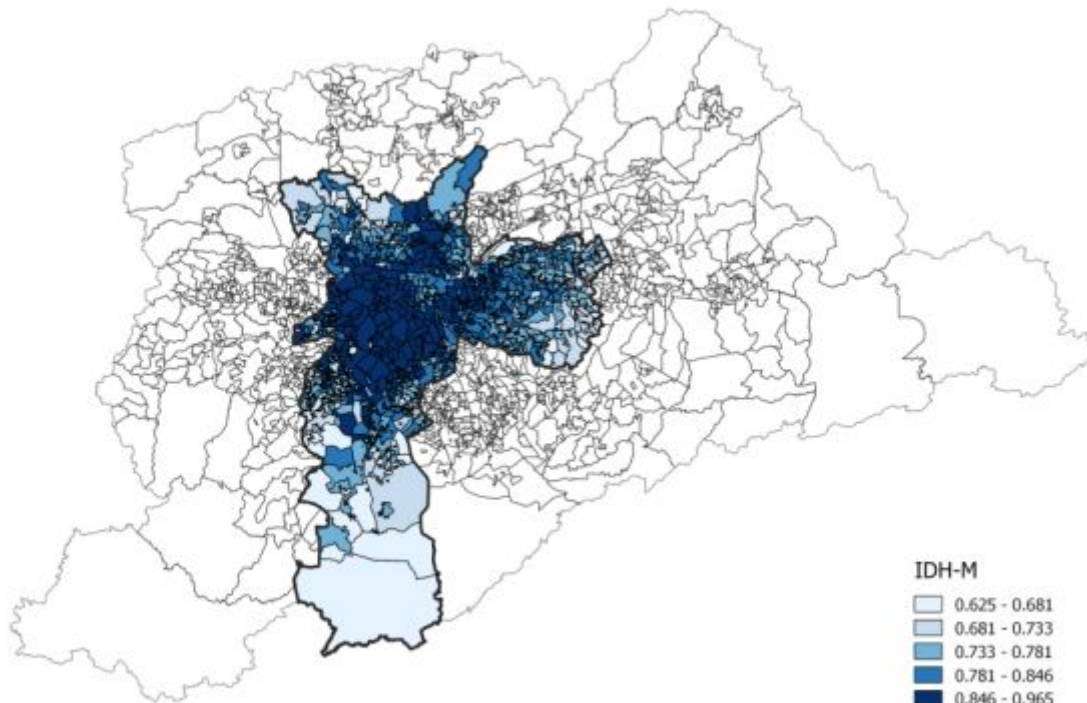
59 communi

~152 Tower



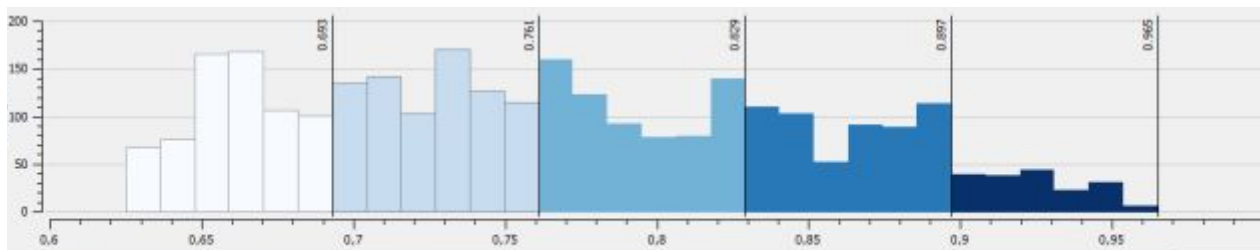
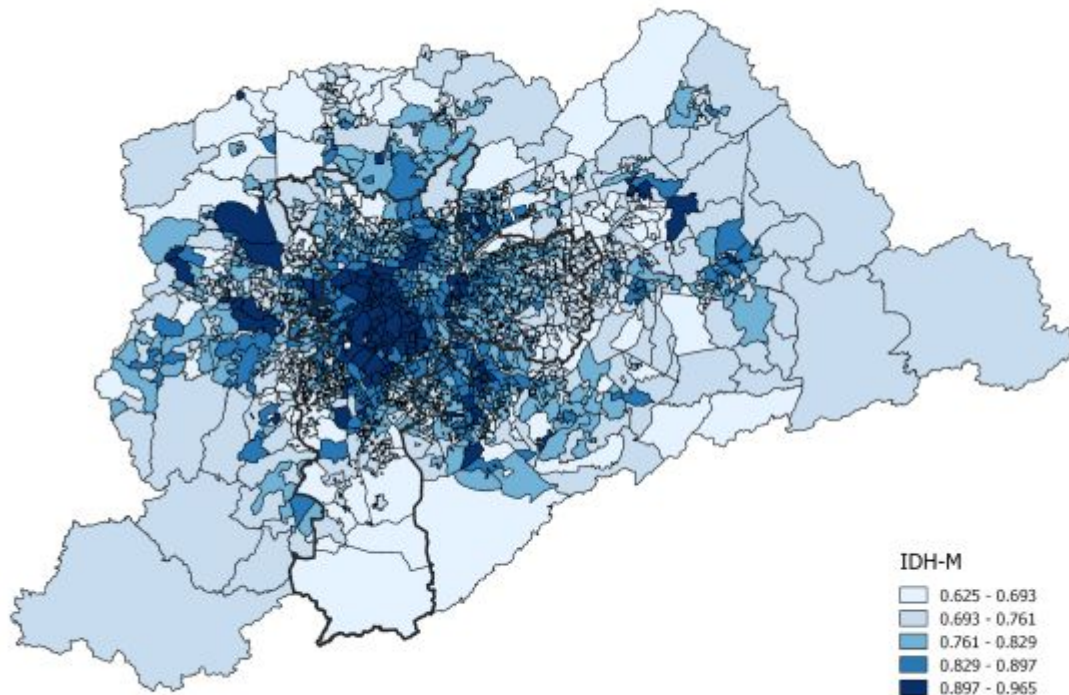


**IDH-M** | QUANTIL DISTRIBUÇÃO  
(equal number of highrises)  
São Paulo Municipal Area



# IDH-M | DISTRIBUTION BY EQUAL INTERVALS

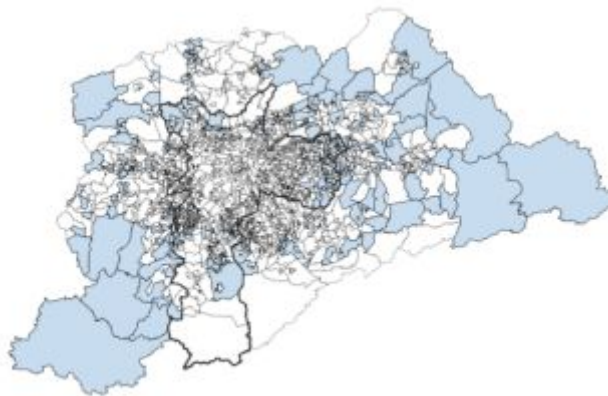
São Paulo | Metropolitan Region



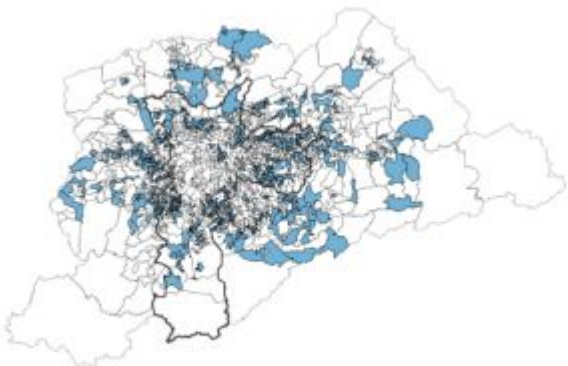
**IDH-M** | QUANTIL DISTRIBUTION  
(equal number of highrises)  
RMSP



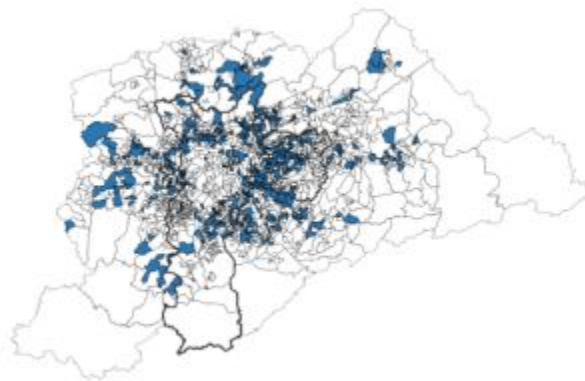
IDH-M: 0,625 – 0,681



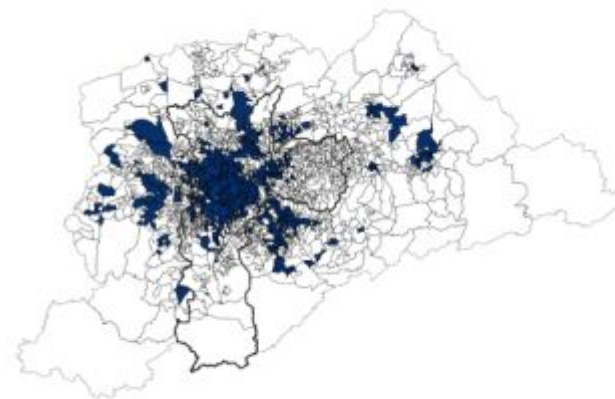
IDH-M: 0,681 – 0,733



IDH-M: 0,733 – 0,781



IDH-M: 0,781 – 0,846



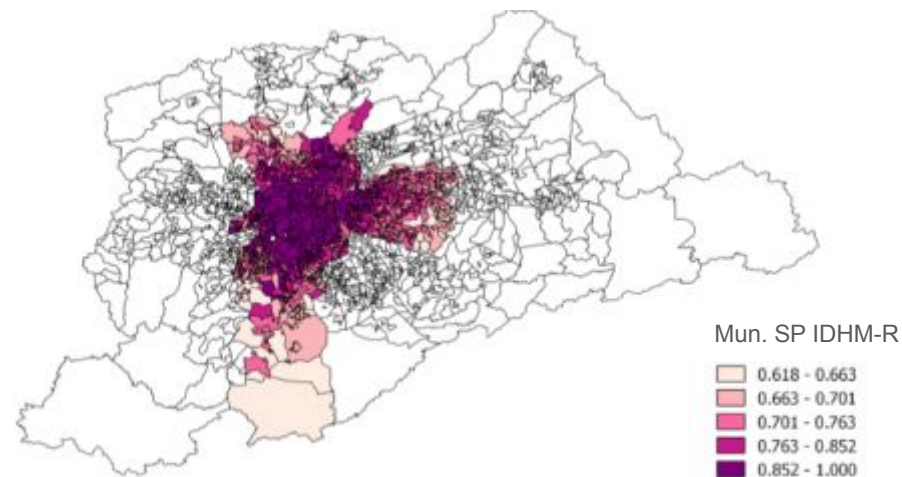
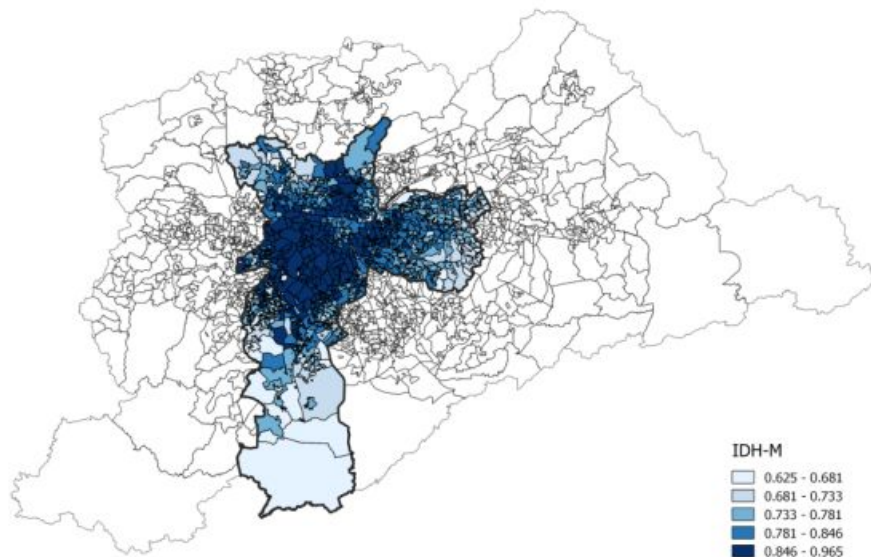
IDH-M: 0,846 – 0,965

# IDHM-E | IDHM-R | IDHM-L

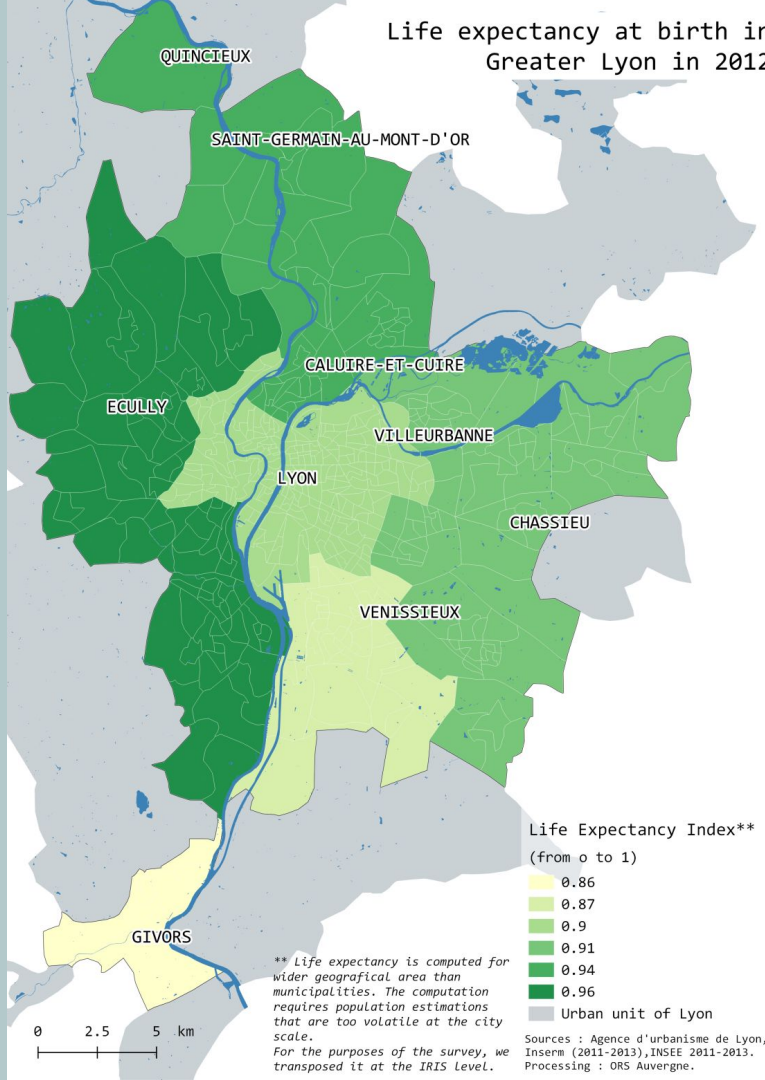
## QUANTIL DISTRIBUÇÃO

(equal number of highrises)

São Paulo Municipal Area



# Life expectancy at birth in Greater Lyon in 2012







High-Rise Living and the inclusive city  
Methodology and Cartography: Final



## Selection of study areas by HDI-M and VERTICAL RESIDENTIAL VENTURES

### DATA USED:

\_ Vertical Residential Highrises 1985-2013 - CEM ( $\geq 50\text{m}$  or 10 floors)

\_ IDH-M

### DICTIONARY:

UDH - Human Development Unit

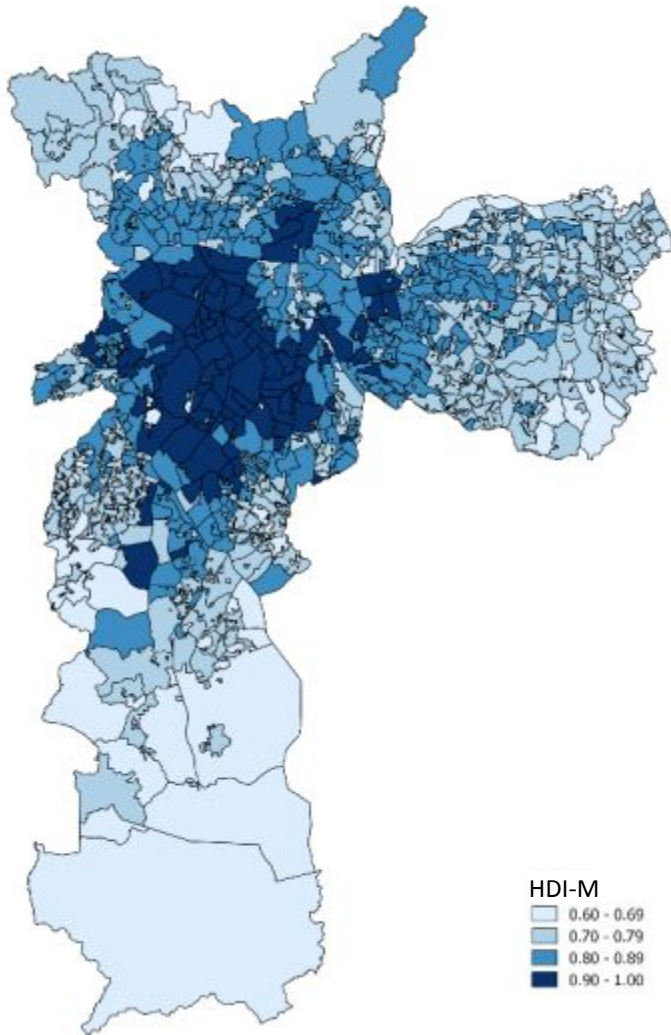
VD - Venture Density: Number of residential highrise / HDU Area (ha)

**The HDUs that present the highest densities of ventures (VD) within a range of HDI-M will be those that best represent the accumulation of verticalization characteristic of this range.**

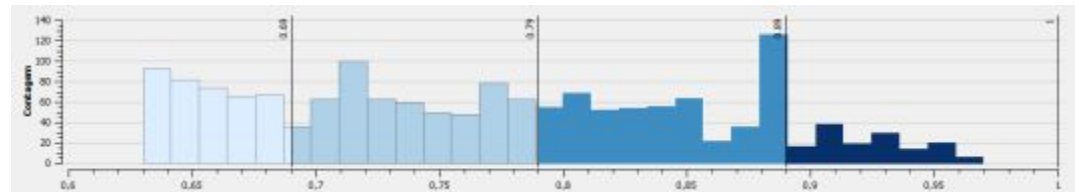
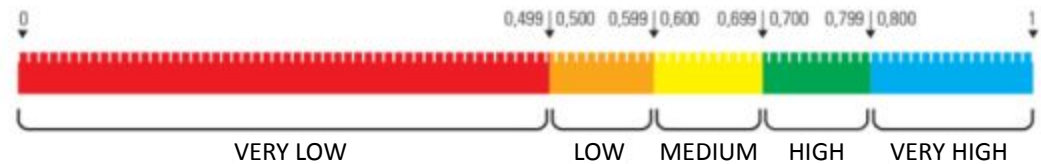
### PROCEDURES:

- 1) Overlap of vertical residential ventures to UDH polygons
- 2) Calculation of VD for each UDH
- 3) Distribution of the IDH-M in bands
- 4) Find, for each IDH-M band, the UDHs with the highest venture densities

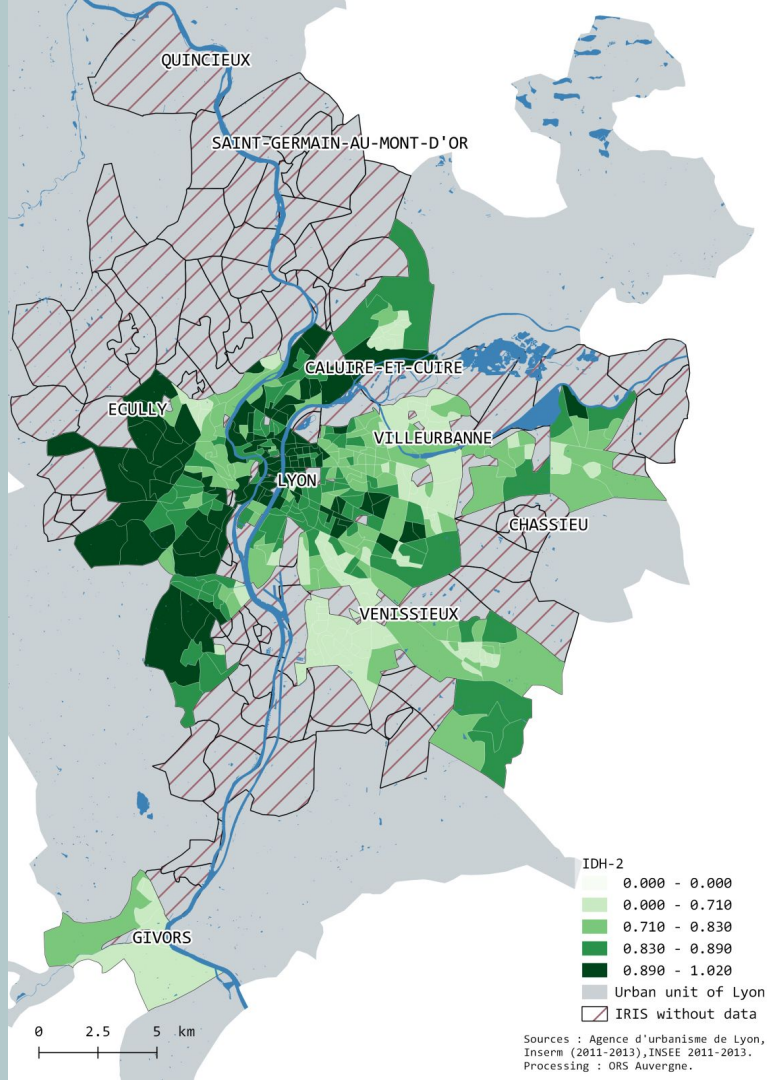
# IDH-M distribution by bands



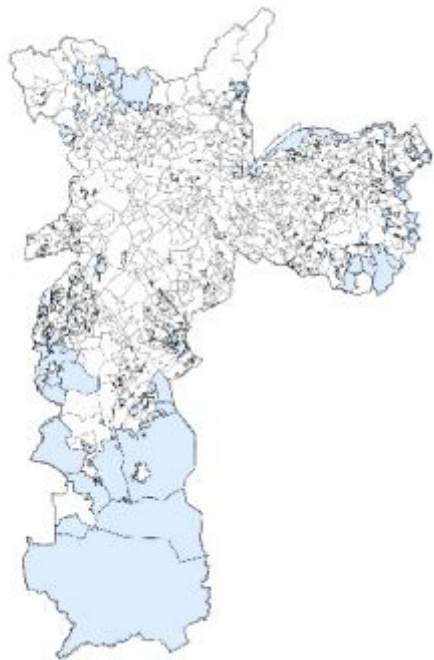
Range of municipal human development



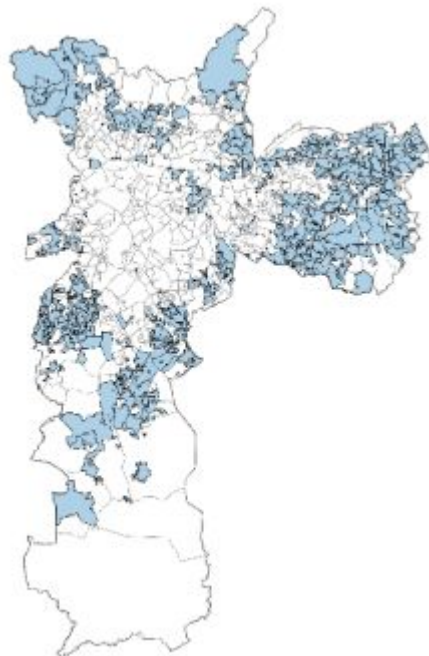
# IDH-2 for Iris in Greater Lyon



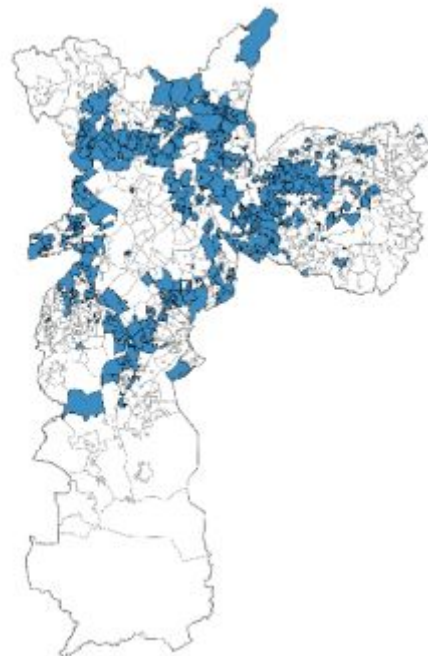
**IDH-M**  
distribution by bands



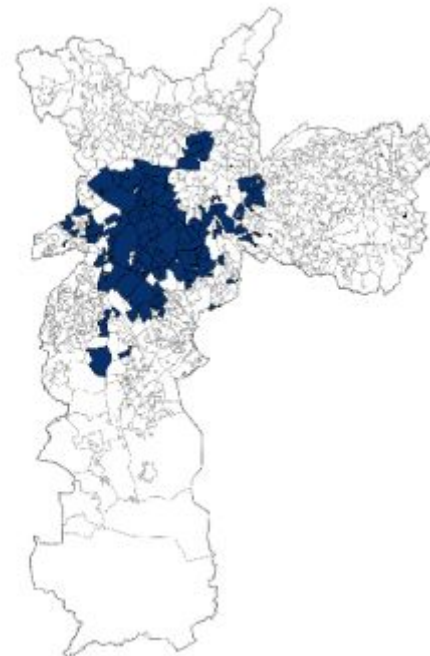
**0.60 - 0.699**



**0.70 - 0.799**



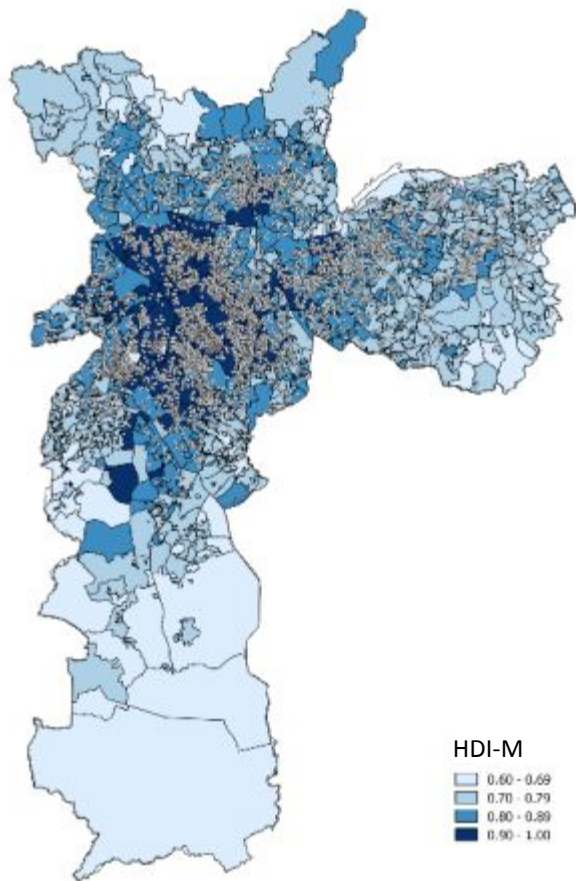
**0.80 - 0.899**



**0.90 - 1.0**

## IDH-M

highrises and selection



New Vertical Residential Highrise



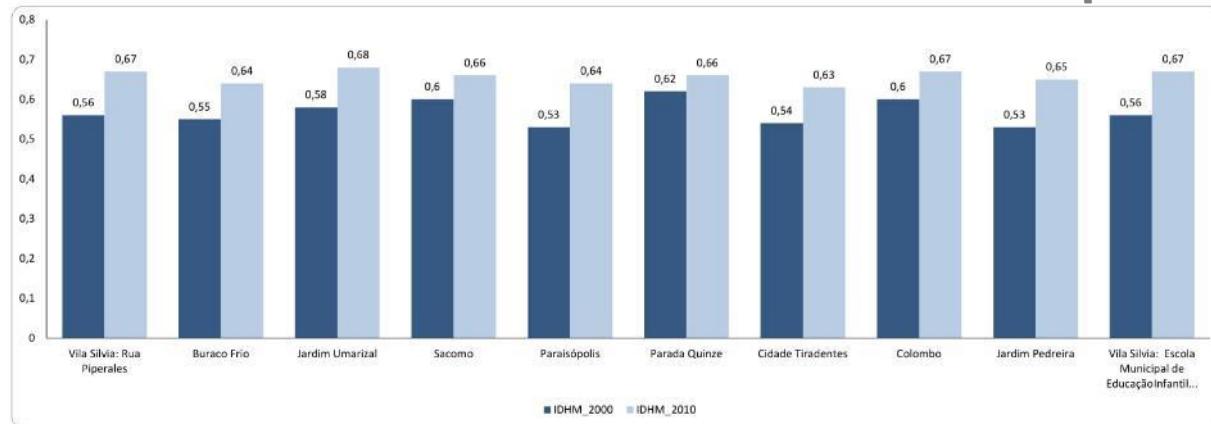
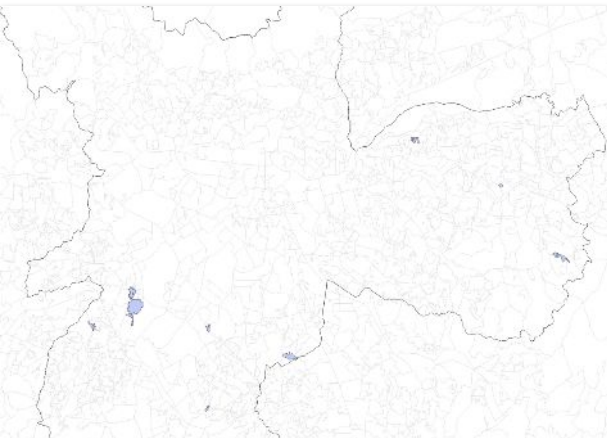
Selected UDHs

**13.248** residential highrises in the city of São Paulo

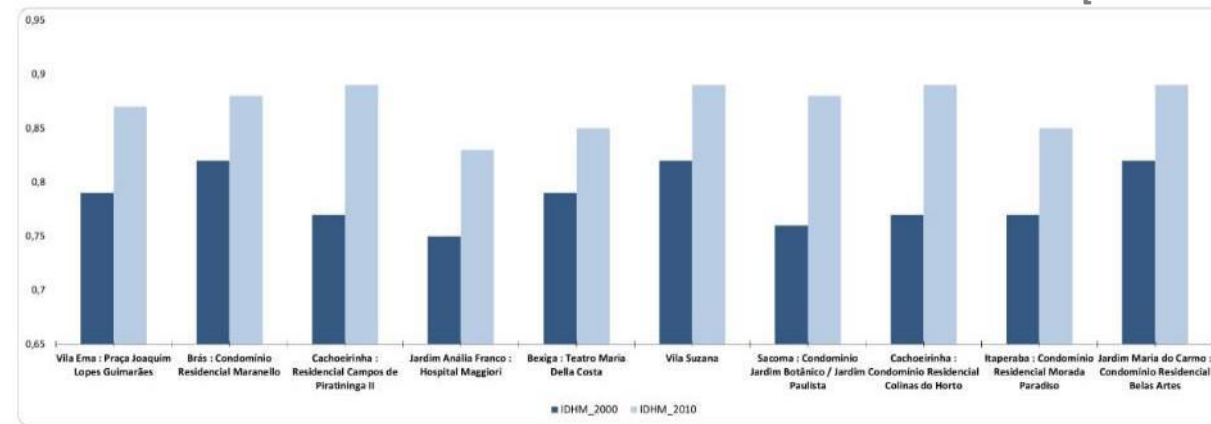
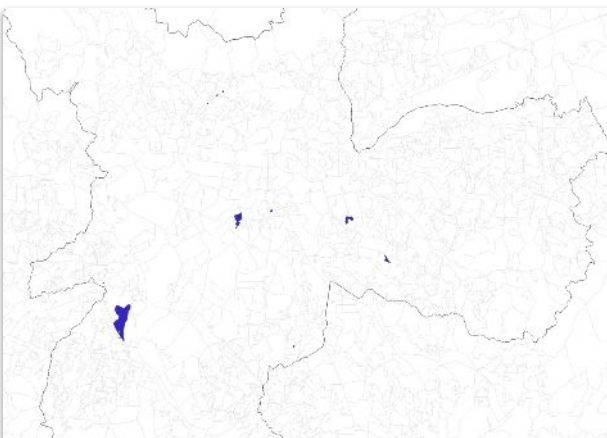
**10 HDUs** selected for each IDH-M range



## HDI EVOLUTION [BAND 1]

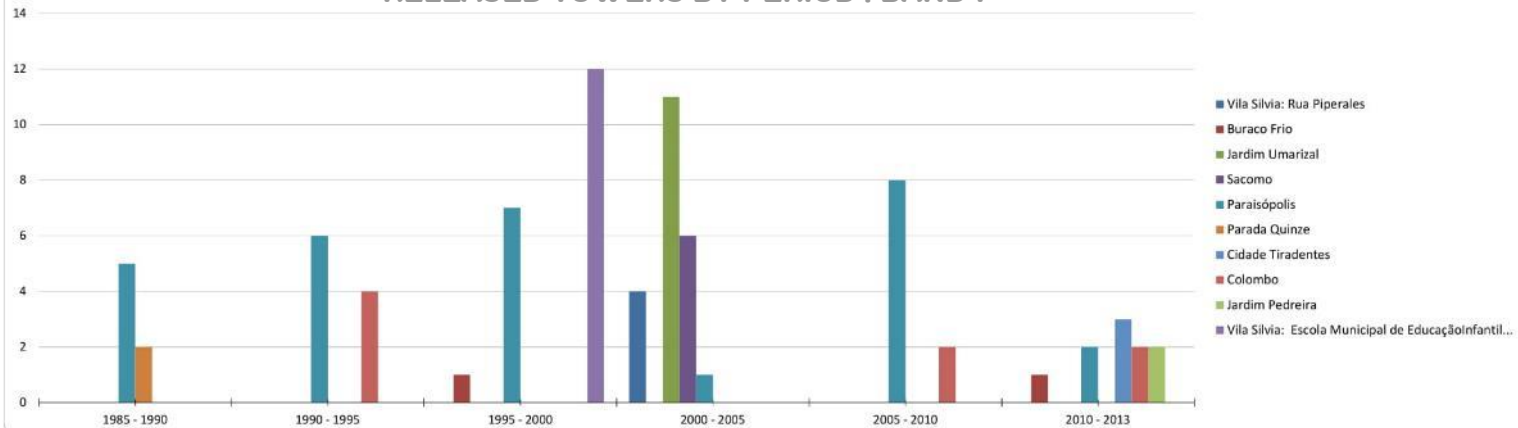


## HDI EVOLUTION [BAND 3]

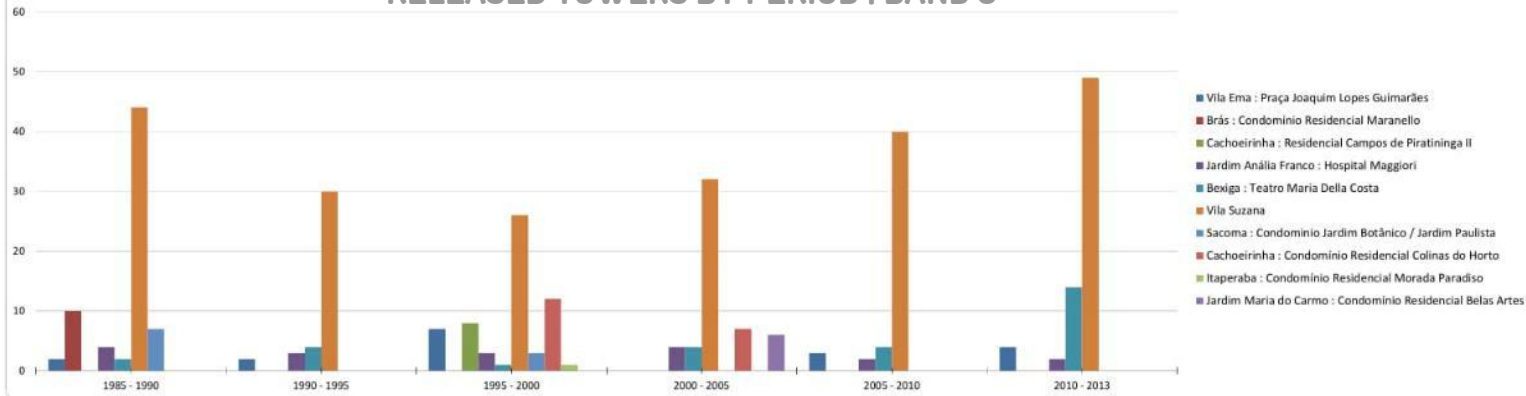




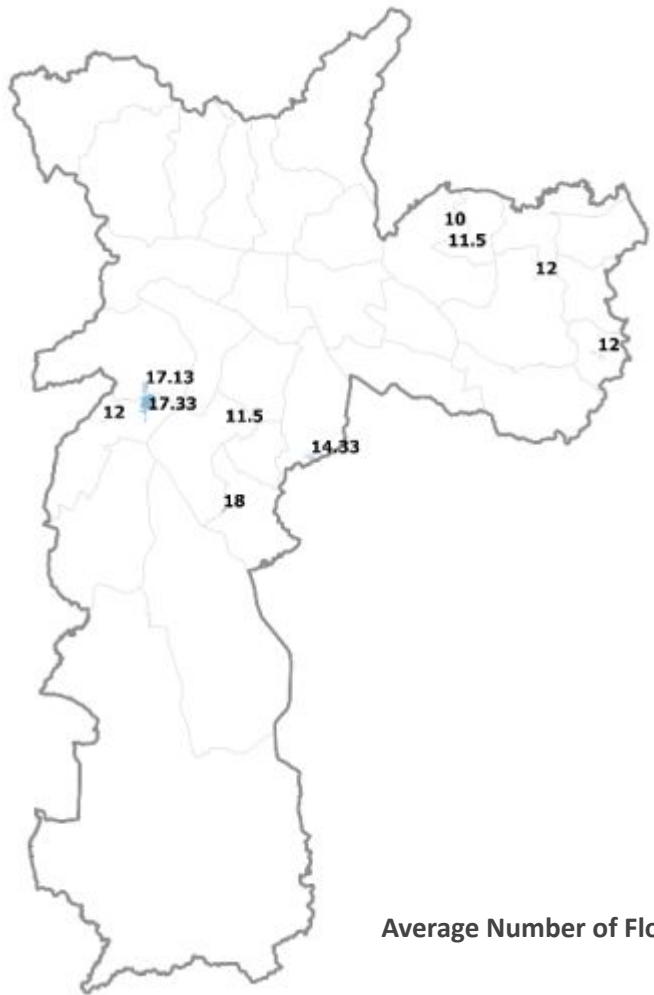
## RELEASED TOWERS BY PERIOD | BAND 1



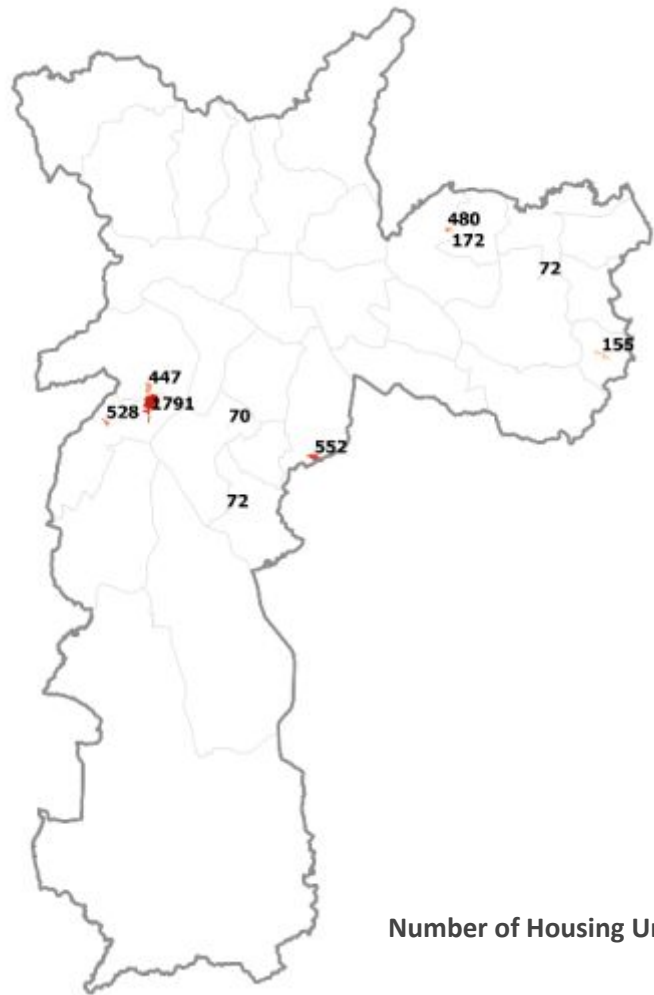
## RELEASED TOWERS BY PERIOD | BAND 3



**IDH-M**  
0,60 - 0,699

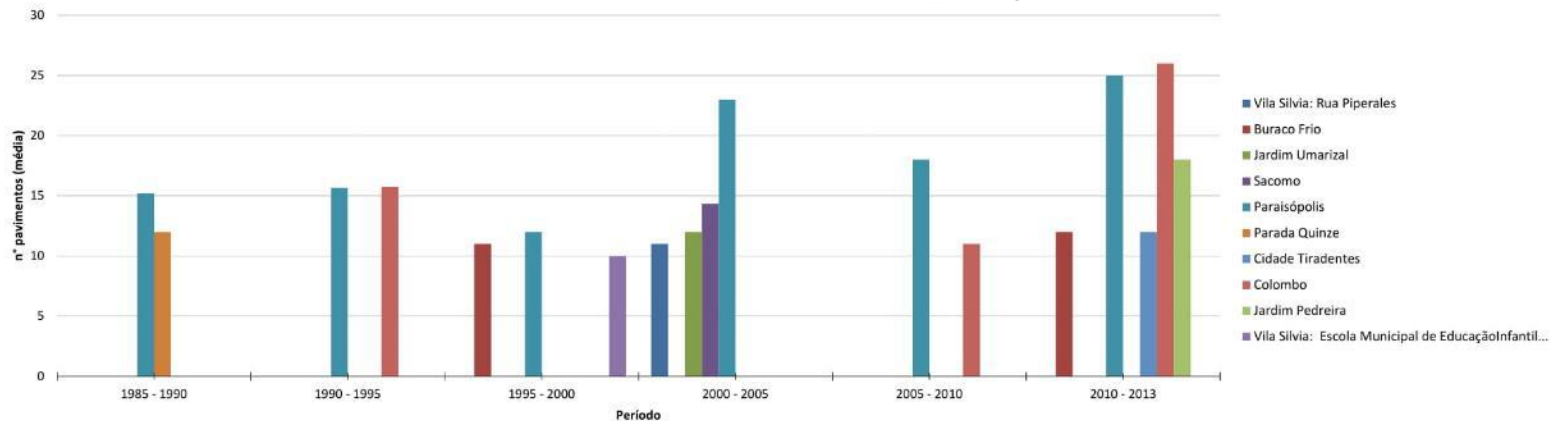


Average Number of Floors/UDH

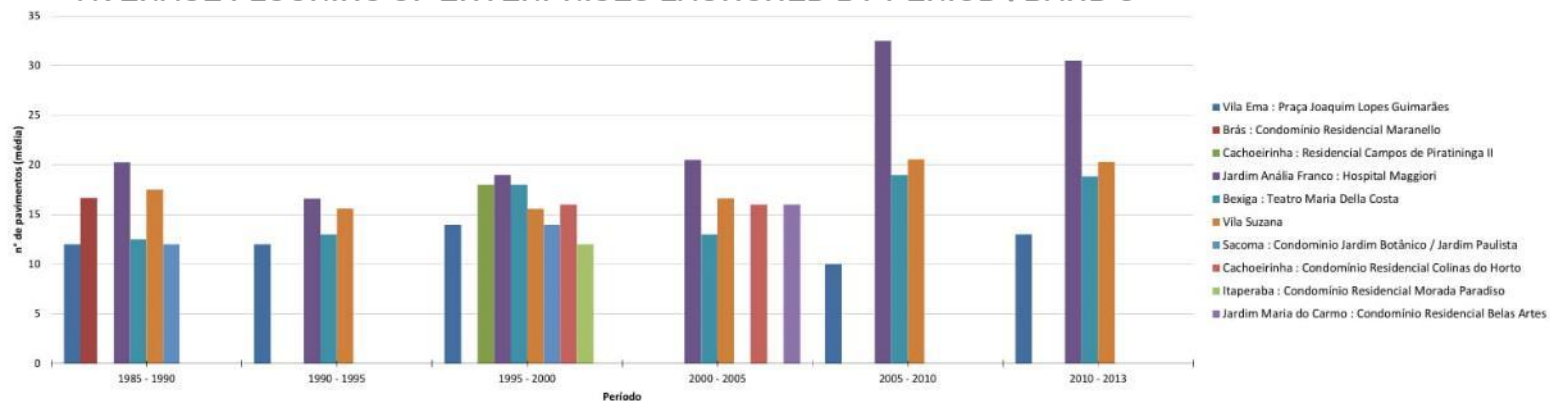


Number of Housing Units/UDH

## AVERAGE FLOORING OF ENTERPRISES LAUNCHED BY PERIOD | BAND 1



## AVERAGE FLOORING OF ENTERPRISES LAUNCHED BY PERIOD | BAND 3



# URBAN TRANSFORMATIONS



2005




2010



2015



Campo Belo district - Urban Operation Água Espreada



High-Rise Living and the inclusive city  
Selected UDHs



Selection of a representative **HDU** of each **HDI** range

### **DATABASE USED:**

\_ Geosampa

### **DICTIONARY:**

UDH- Human Development Unit

VD – Highrise, venture Density (number of new buildings, amount of real estate ventures):  $VD / UDH \text{ area (ha)}$

### **CRITERIA**

Selection of the 10 UDHs with higher density of new buildings (real estate ventures) in each of the four defined IDH-M's bands. New filter based on the criteria of number of units (housing) and average floor number. Criteria determinant for the selection of representatives UDHs in each UDH range.

After, to each of the selected UDHs, in order to verify and better test the proposed approach, we developed a preliminary work of characterization of the study area. **Observing the intraurban insertion 4 main axes** were considered: verticalization (vertical ventures by period); demography (population density and income); mobility (public transport lines, terminals, stops); infrastructure (equipment and green areas) and regulation (zoning and urban operation).

### **PROCEDURES:**

Superimpose (overlap) the information obtained from the Geosampa database to the boundaries of the selected UDHs.



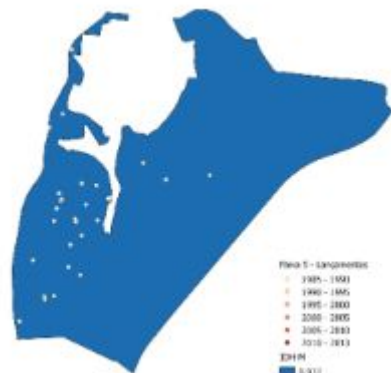
### RANGE 3

#### Vila Suzana – Vila Andrade

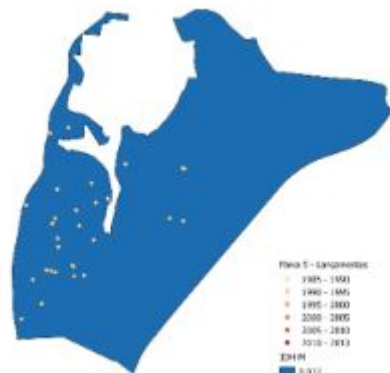
VD-density (ventures/ha): 1,16



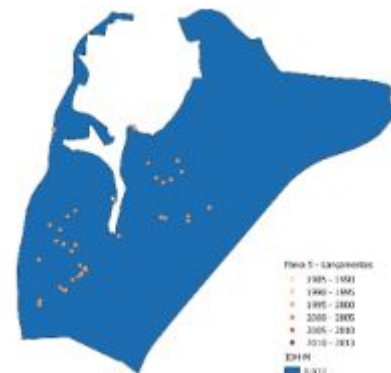
1985-1990



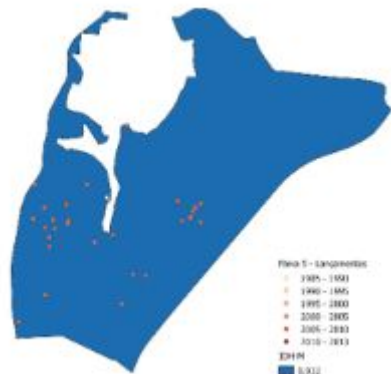
1990-1995



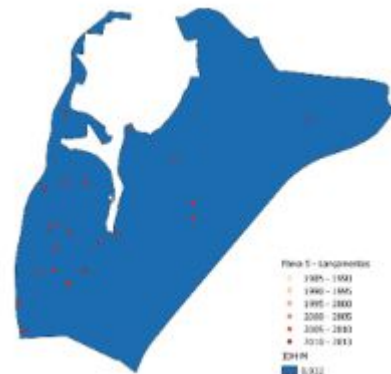
1995-2000



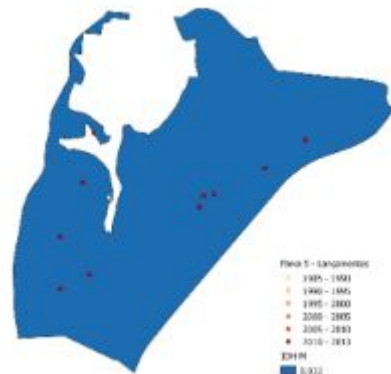
2000-2005



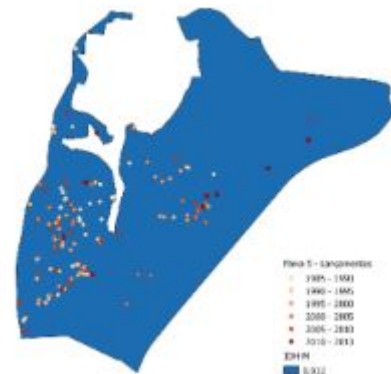
2005-2010



2010-2013



1985-2013

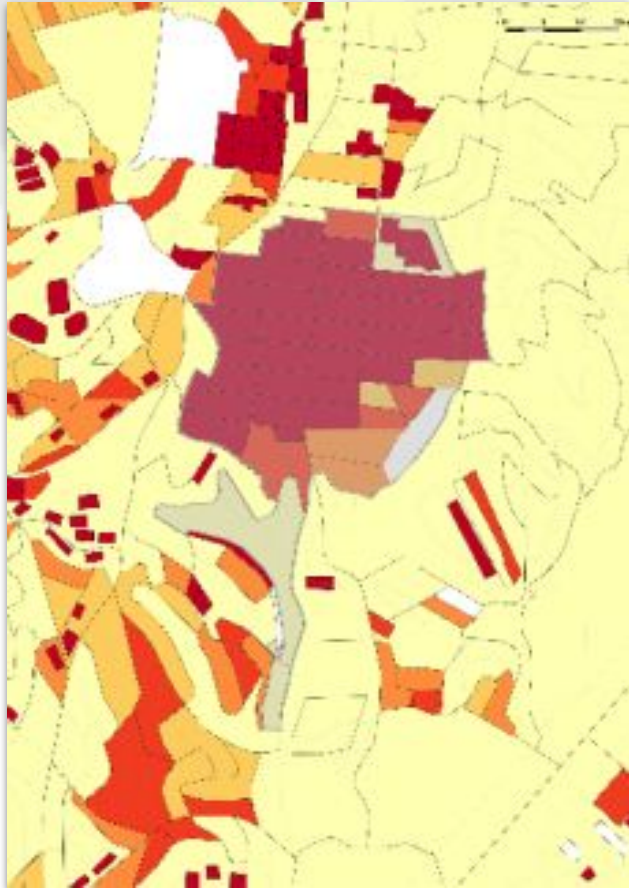




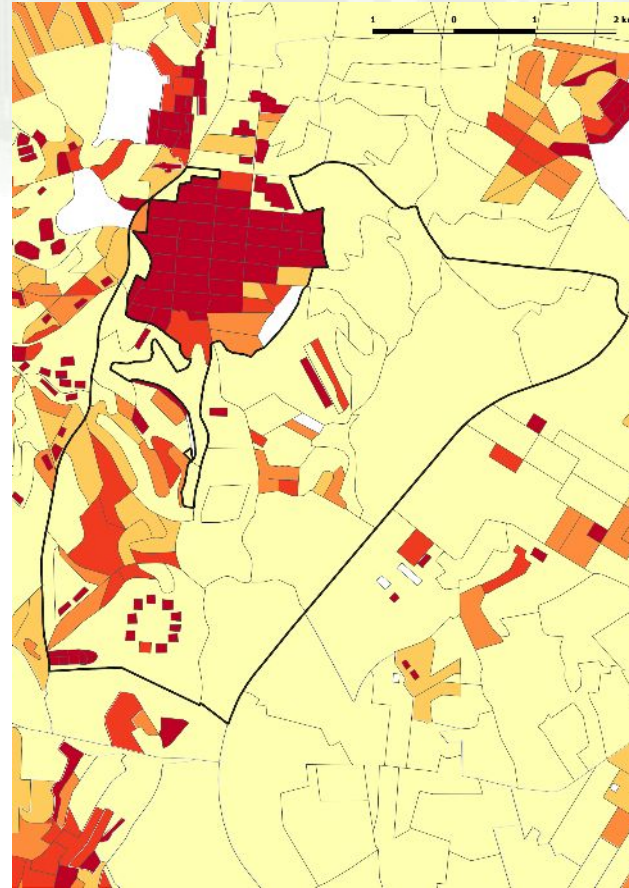
# DEMOGRAPHY

demographic density

Paraisópolis

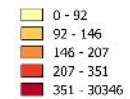


Vila Andrade



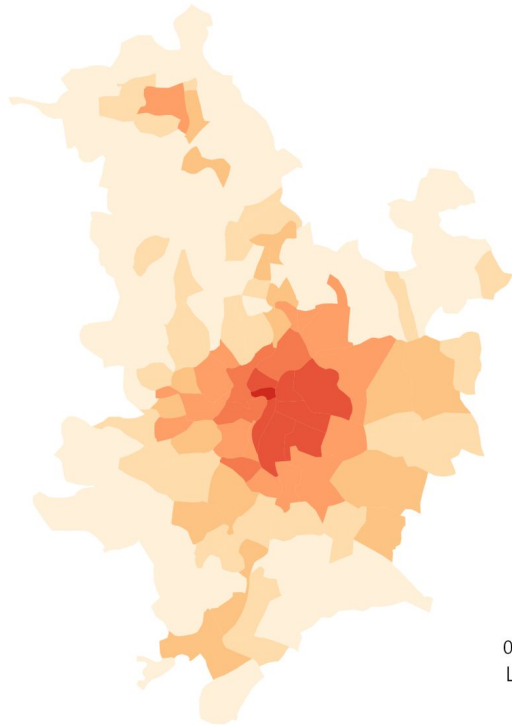
income  
Infrastructure and legislation  
public equipments and areas  
mobility

Demographic density

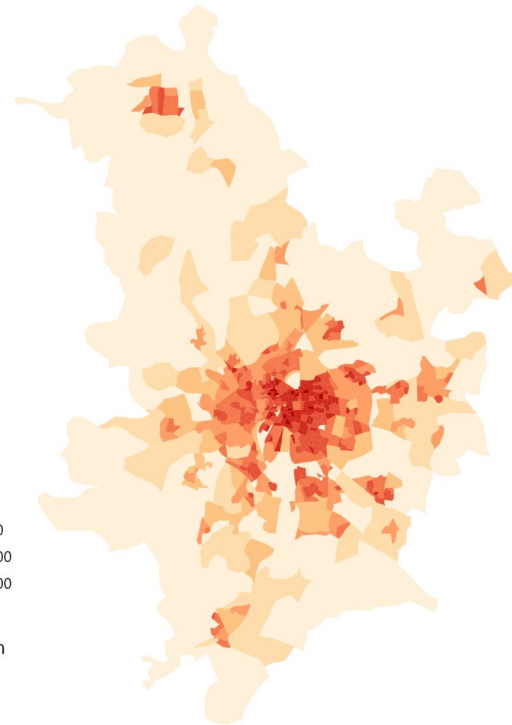


# Densities in the Urban Unity

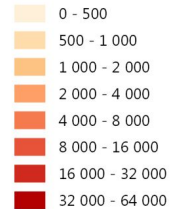
Communes



Iris



Densité (hab/km<sup>2</sup>)

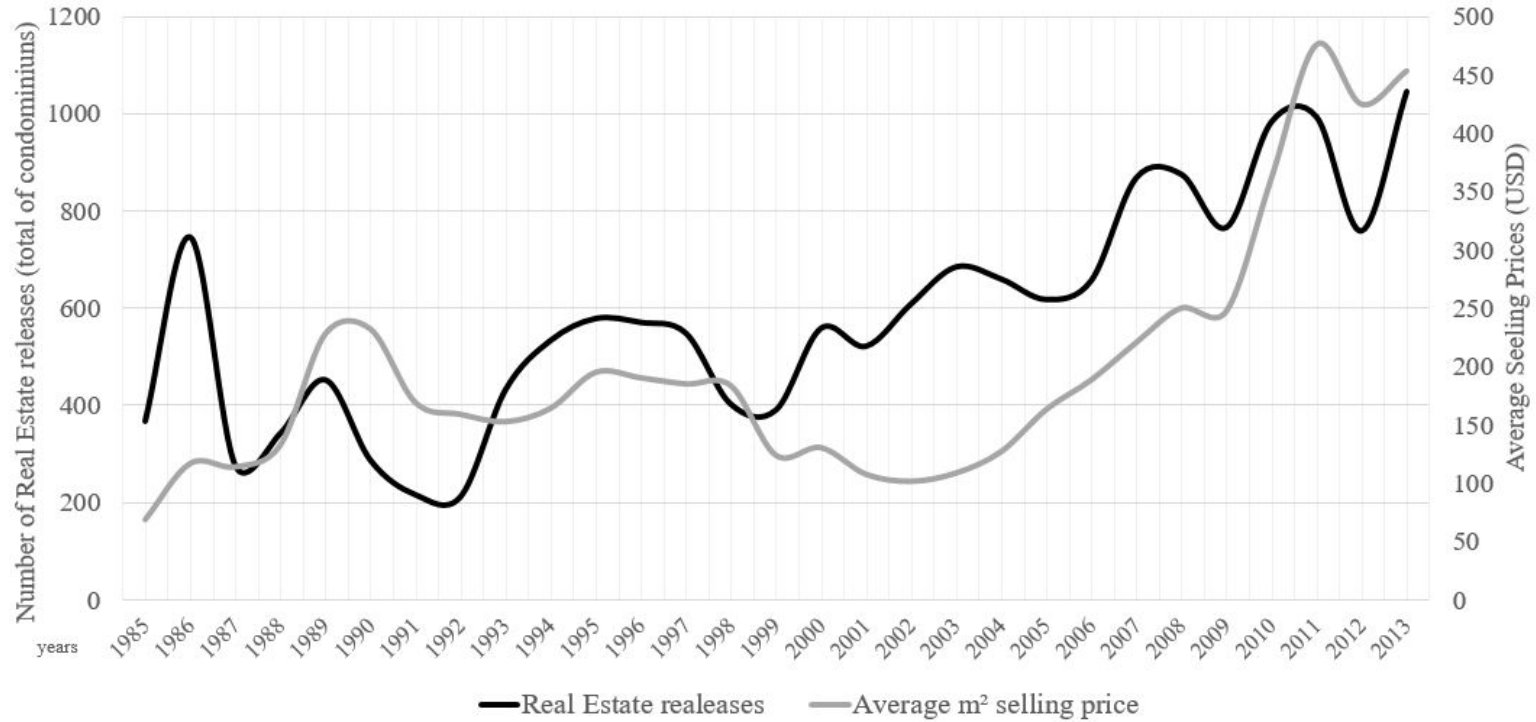


0 5 10 km

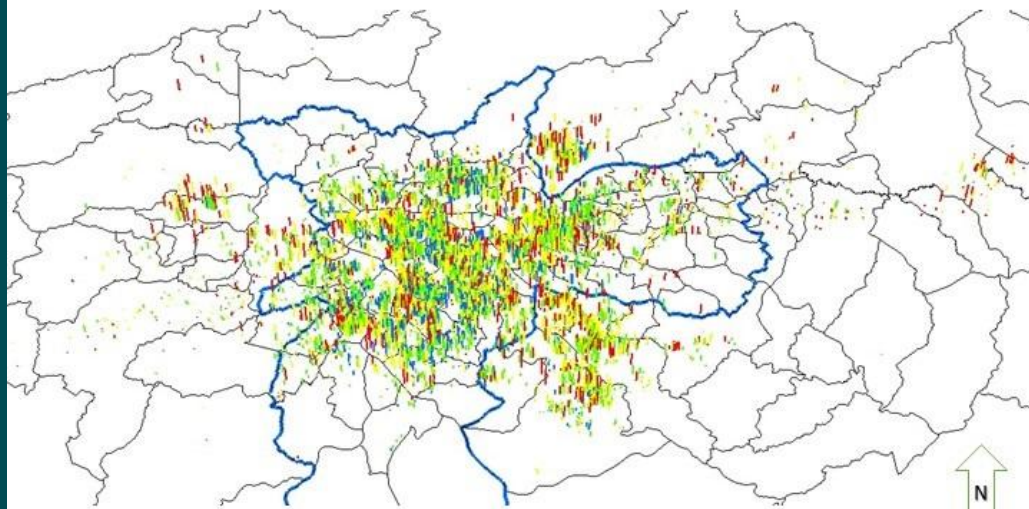


High-Rise Living and the inclusive city  
Work in Progress I

Vertical Real Estate releases versus average raw selling prices by year in SPMR (1991 – 2010)







Legend

Dot weighted  
by number of floors

Skyline views: 1985 -  
2011



1985 - 1990



1991 - 2000



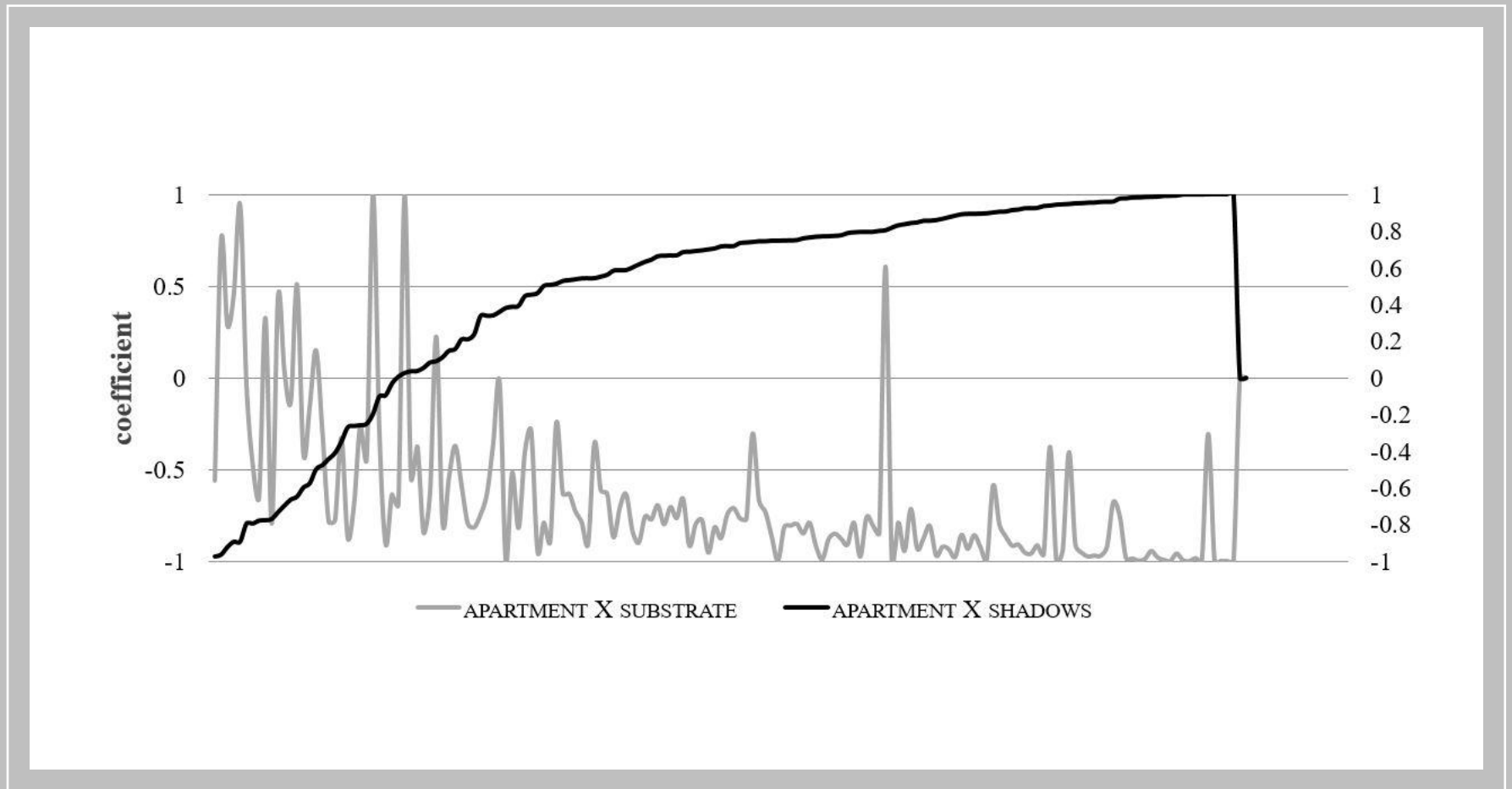
2001 - 2008



2009 - 2011



Correlations between the extracted Endmembers and apartment-type houses (aggregated by census tracts): 1986 – 2015



The pixels of the Ibirapuera Park in São Paulo in a Landsat 8 image of 01/09/2013. Adapted from NASA, 2013 (Growth of São Paulo, Brazil, July 9, 2014 - <http://earthobservatory.nasa.gov/IOTD/view.php?id=83987>).



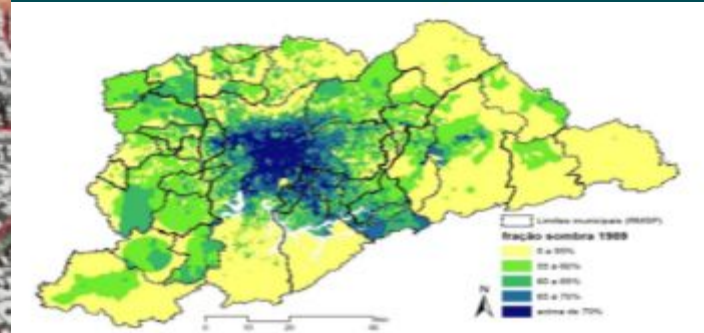
Is it possible to relate these physical records of the changes, accumulations and ruptures in the urban space that the orbital images capture, to the socio-political processes that direct them?

How the changes in the spatial patterns of formal and informal housing over time in the São Paulo Metropolitan Region (SPMR) are detected and recorded by satellite images?

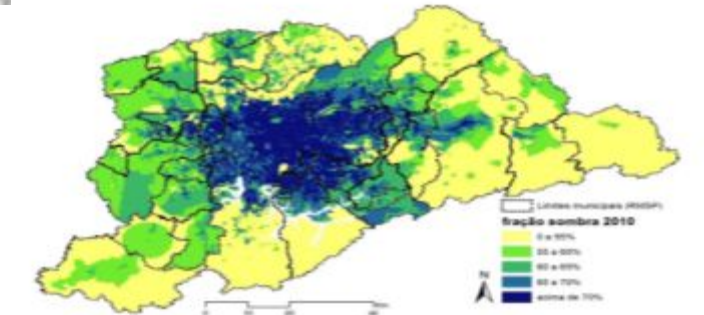




# Space-time analysis of the verticalization processes (spectral analysis of satellite images)



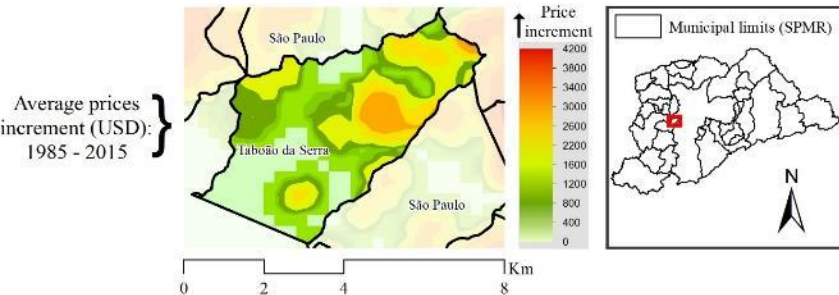
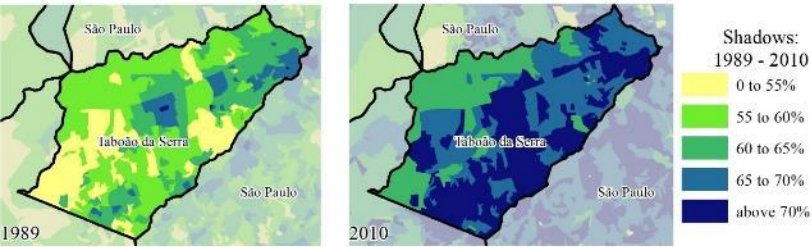
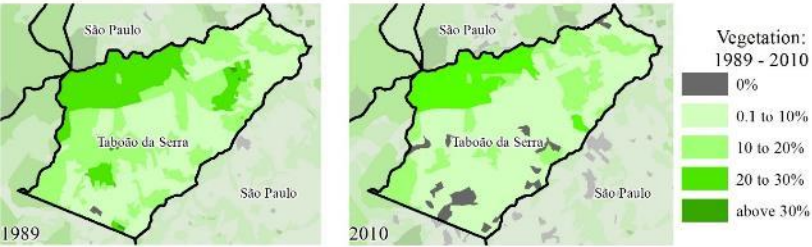
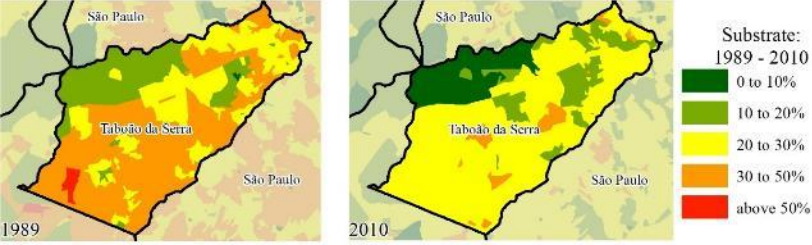
MAPA 21: DISTRIBUIÇÃO DA FRAÇÃO SOMBRA. 1989. FONTE: ELABORAÇÃO DO AUTOR.



MAPA 22: DISTRIBUIÇÃO DA FRAÇÃO SOMBRA. 2010. FONTE: ELABORAÇÃO DO AUTOR.

Check the following item for **Atlas** to map the nuances of urban inequality and in addition, modeling this inequality trends in space and time

# Taboão da Serra city example: fractions alteration along the time compared to land price increase



The prices increase map shows the movement of the land speculation process. This trend showed a strong spatial correlation with the real estate high-rise building. This also explains the growing space trend eviction over the slums to the increasingly peripheral areas.

The satellite images can tell this story too. As stated, the verticalized areas show an inverse correlation between substrate and shadow fractions and, at the same time, illustrate spatial correlation to the increased prices areas. So, the urban structure change shown on the imagery reflects the social and political alteration and variability, showing it up in the urban space



High-Rise Living and the inclusive city  
Work in Progress II

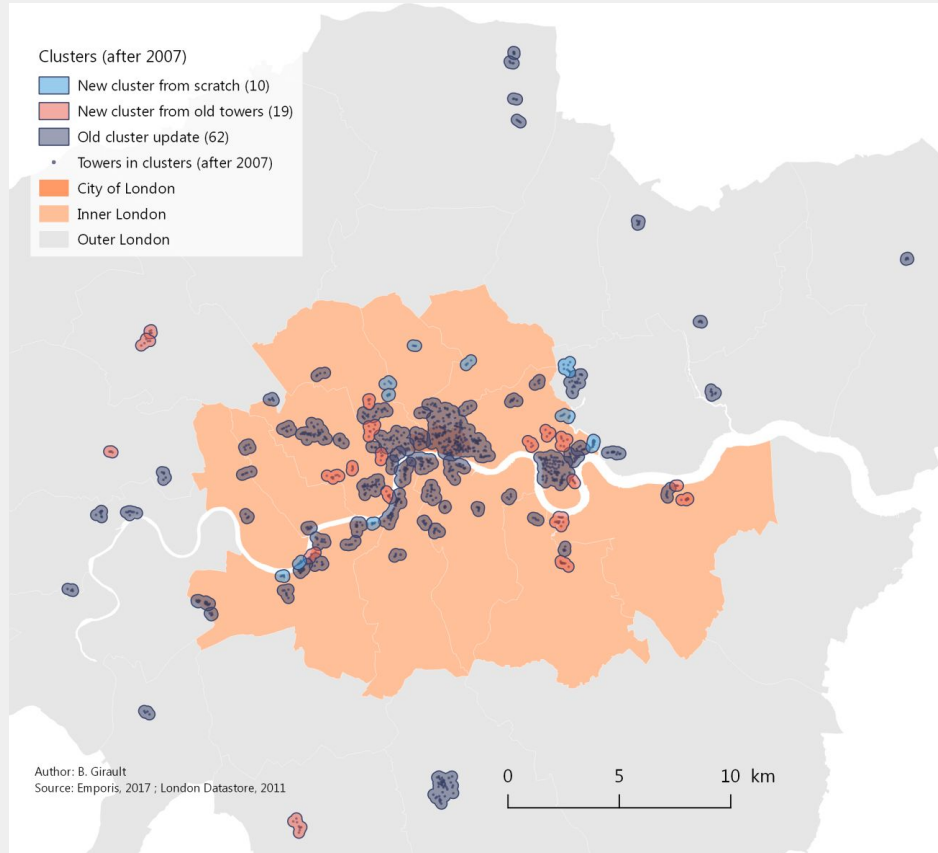


# Type of towers' concentration after 2007

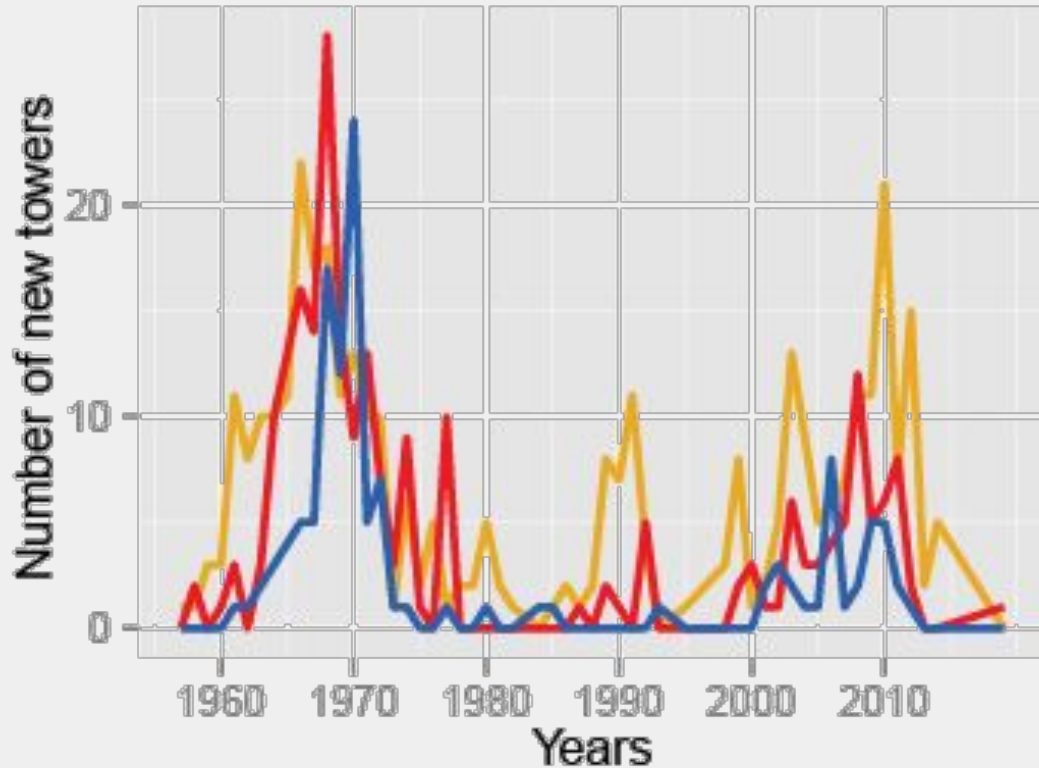
## Evolution of the clusters (before/ after 2007)

91 clusters

- 10 new clusters
- 19 from existing towers
- 7 fusion of clusters



# Timescales over space

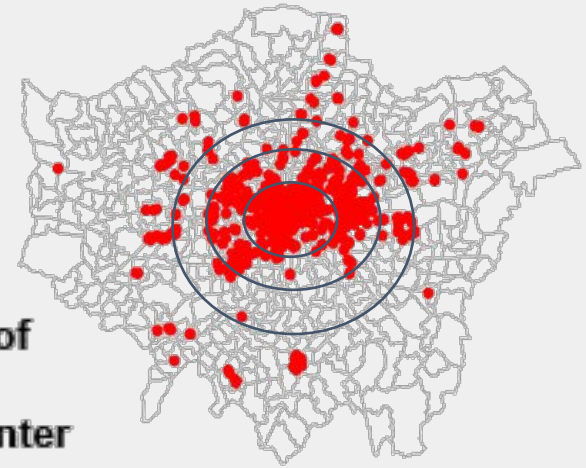


**Classes of distance to the center**

0-5km

5-10km

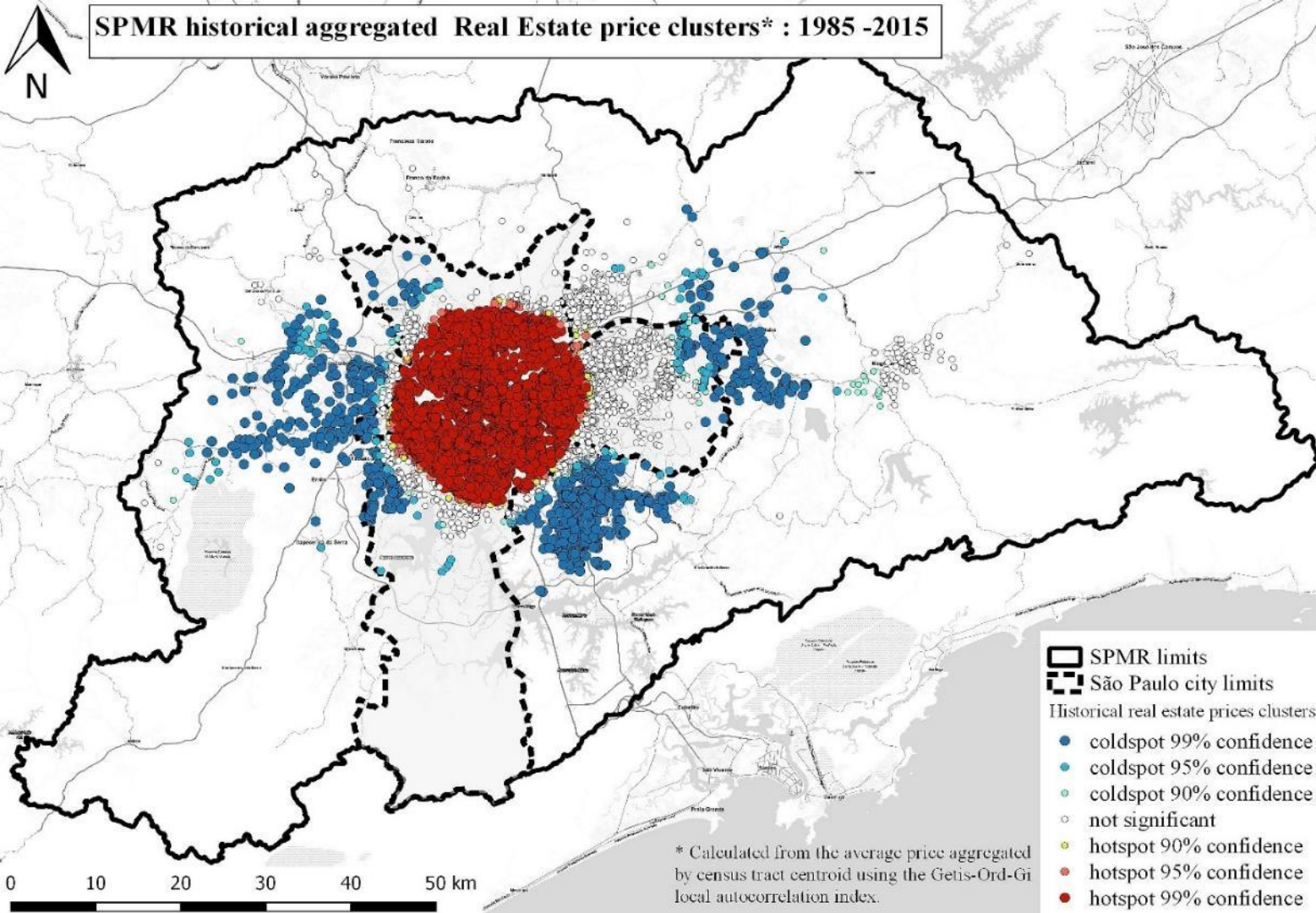
>10km



1960-1970: from center to periphery

After 2000: re-focus on the center

# SPMR historical aggregated Real Estate price clusters\* : 1985 -2015

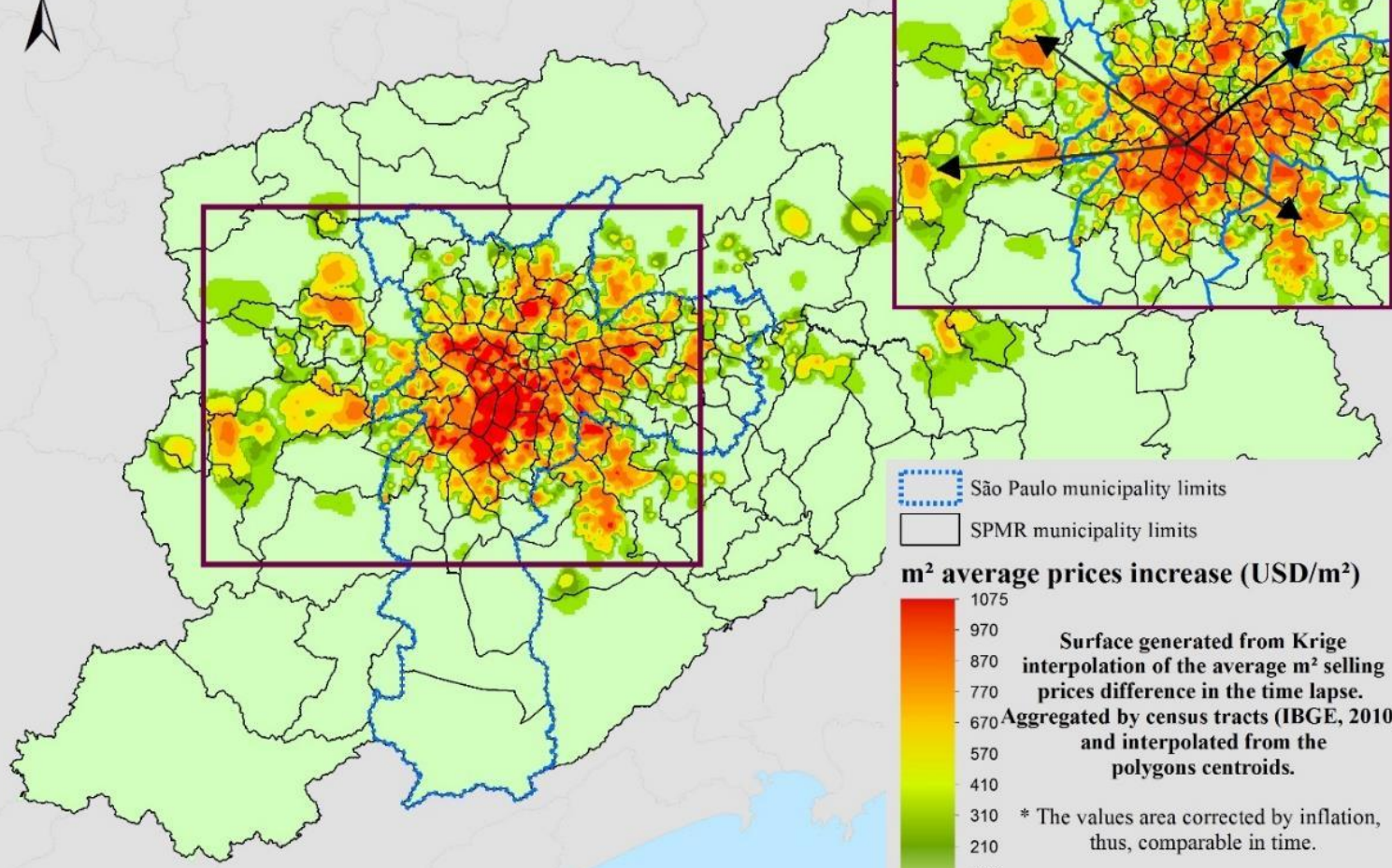




Historical price clusters  
in the SPMR by the  
Getis-Ord-Gi<sup>2</sup>  
algorithm



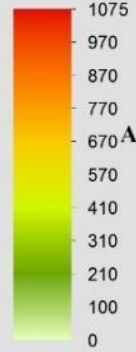


# Vertical Real Estate Time Period: 1985 - 2015



-  São Paulo municipality limits
-  SPMR municipality limits

## m<sup>2</sup> average prices increase (USD/m<sup>2</sup>)



Surface generated from Krigé interpolation of the average m<sup>2</sup> selling prices difference in the time lapse. Aggregated by census tracts (IBGE, 2010) and interpolated from the polygons centroids.

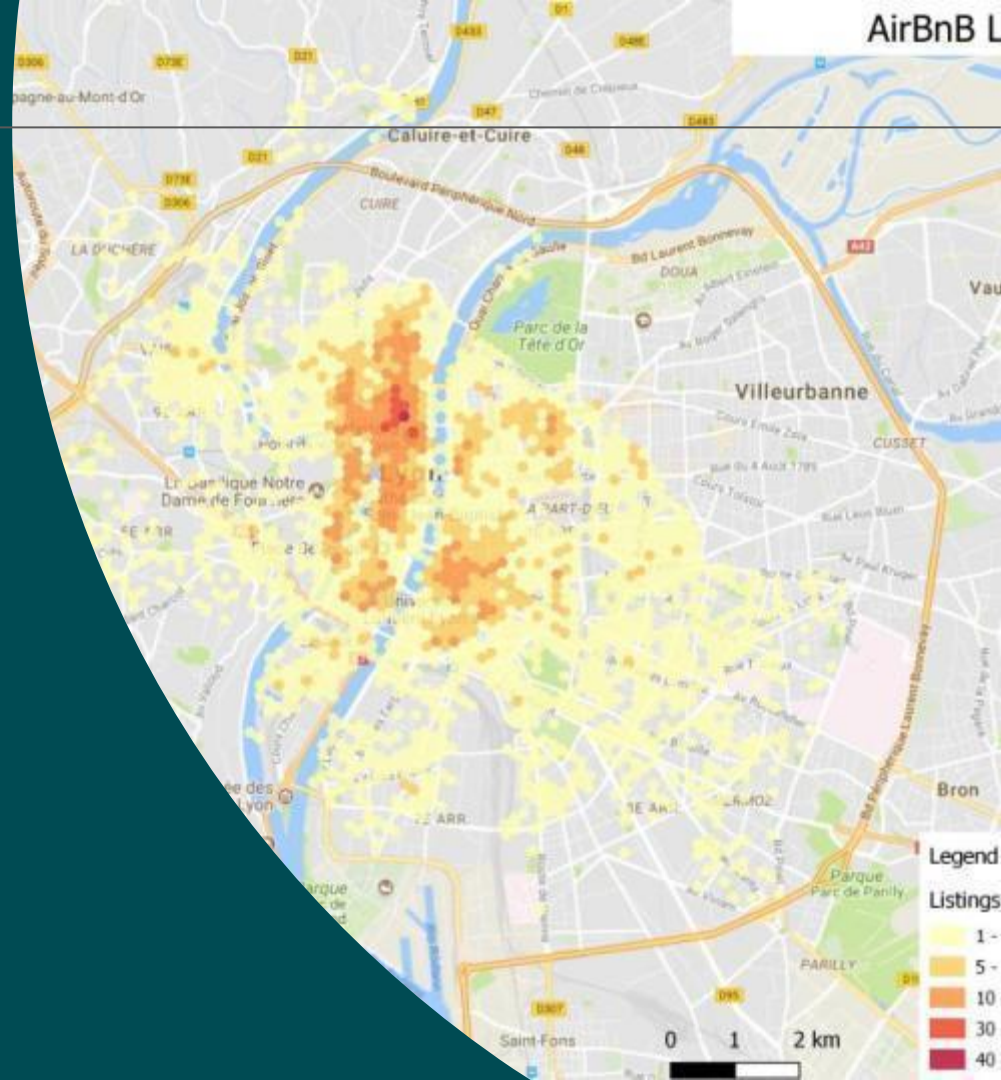
\* The values area corrected by inflation, thus, comparable in time.

Commercial values (of sale) by the real estate developers.

SPMR m<sup>2</sup> selling price increase: 1985 to 2015, visualized trough the *isotimas* method. USD currency exchange rate from 2015/12/31

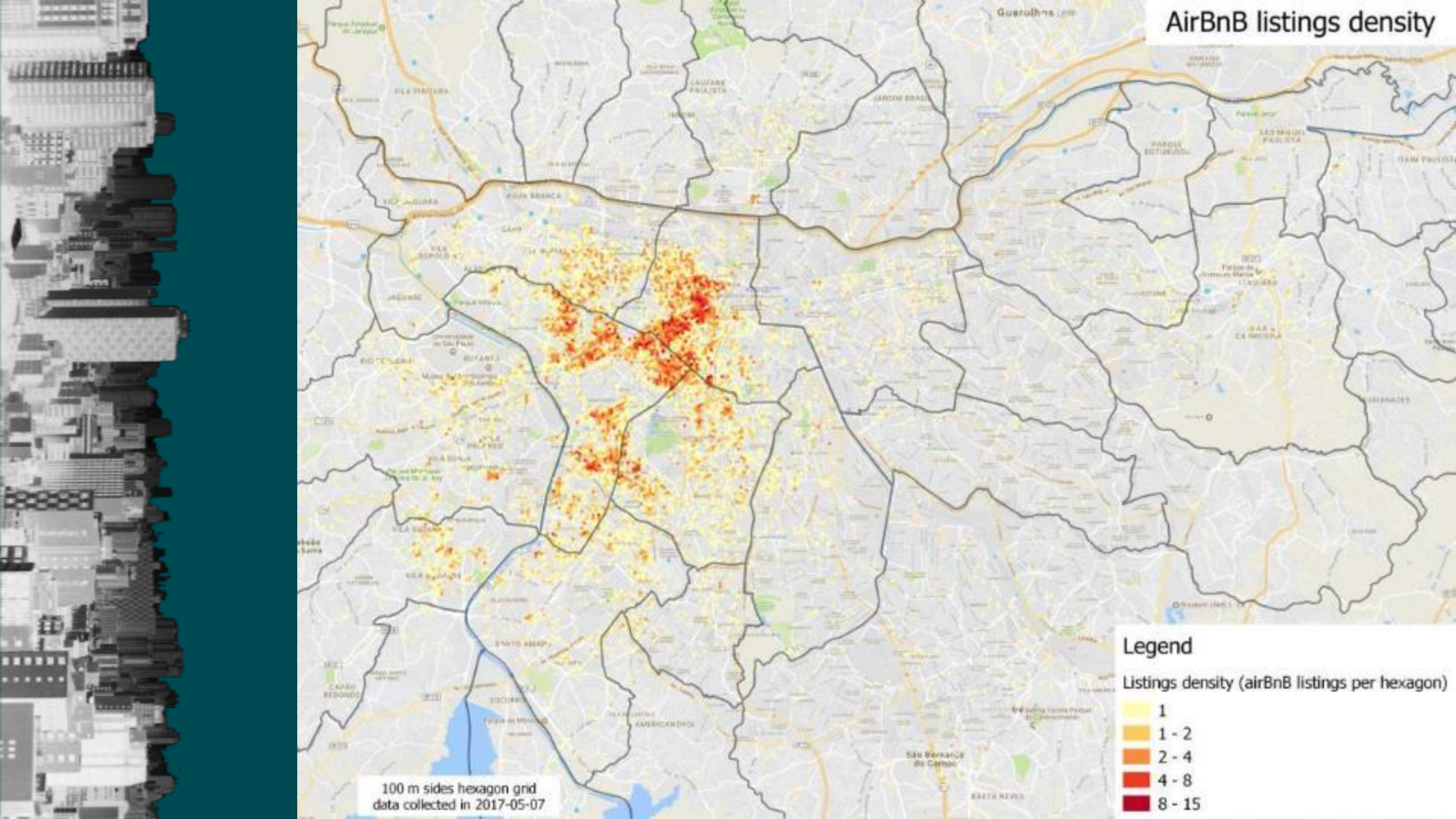
# AirBnB Price Analysis

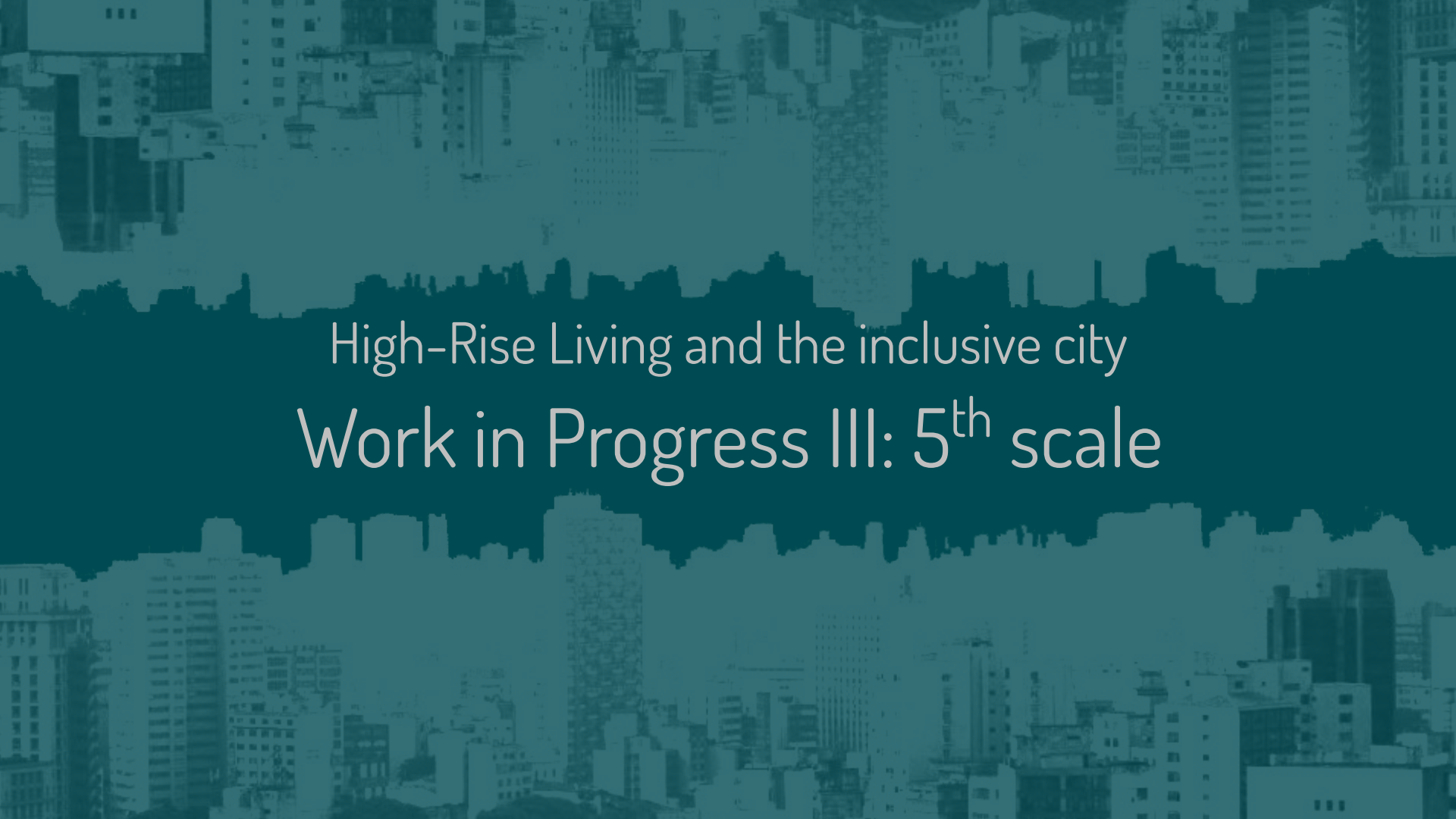
Preliminary results of the developed methodology indicates that possible spatial analysis of verticalizations processes are sufficient for the development of the HIGHRISE project. Therefore, AirBnB Price Analysis methodology is still under development and must be checked, but the first results seem to express a direct correlation between land prices, housing prices and verticalization. Therefore, it must be evaluated if it may be used, or not, as an alternative to space-time analysis without land prices.





# AirBnB listings density





High-Rise Living and the inclusive city  
Work in Progress III: 5<sup>th</sup> scale

# Interviews: Ethnographical Approach

## Access to the interviewees

- Casual encounter through contact in the field;
- Preliminary contacts for the dissemination of research and information;
- Diversify access to interviewees from the indication of contacts.

## Interview Method

- Effect of snowball: from one interview to another by postmen, caretakers, professionals, various contacts etc;
- When presenting the research: do not present the details of the hypothesis and research questions;
- Demonstrate clearly that the survey comprises people from different profiles and points of view;
- Photography observation
- Clarify that the research is anonymous and provide contact with researchers and the Highrise Page.

## Theoretical Criteria

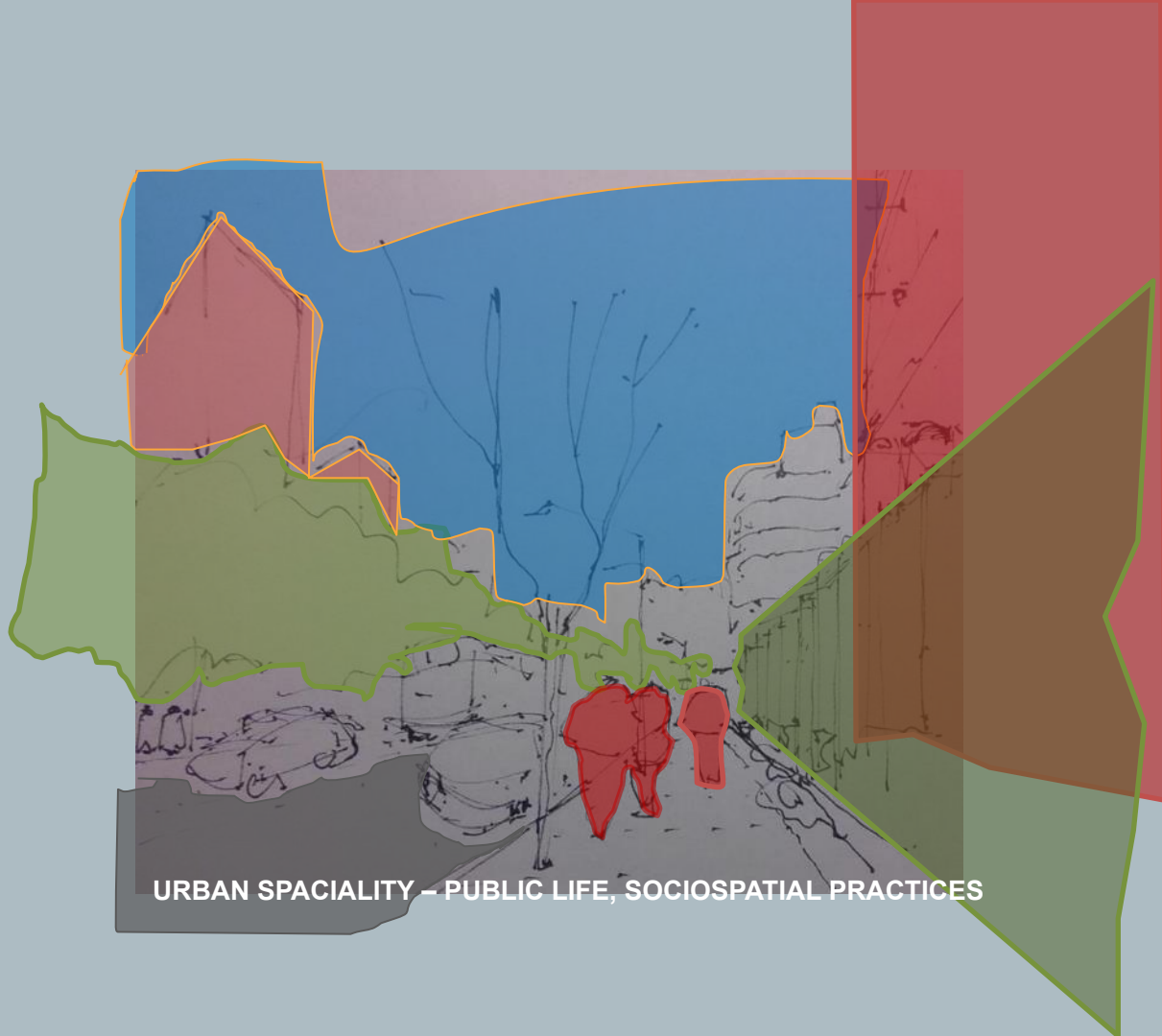
- Morphological and Typological Aspects: georeferenced data (Mappin and Fulcrum):
- dimensions of analysis (contextual, cultural and architectural)
- Urban fabric: public space and street level (continuity, rupture, fragmentation, new uses and practices);

## Pragmatic Criteria

- Ease of access: developers, stakeholders, inhabitants, promoters

Focus on buildings that have a distinct relationship with the urban fabric and new typologies.

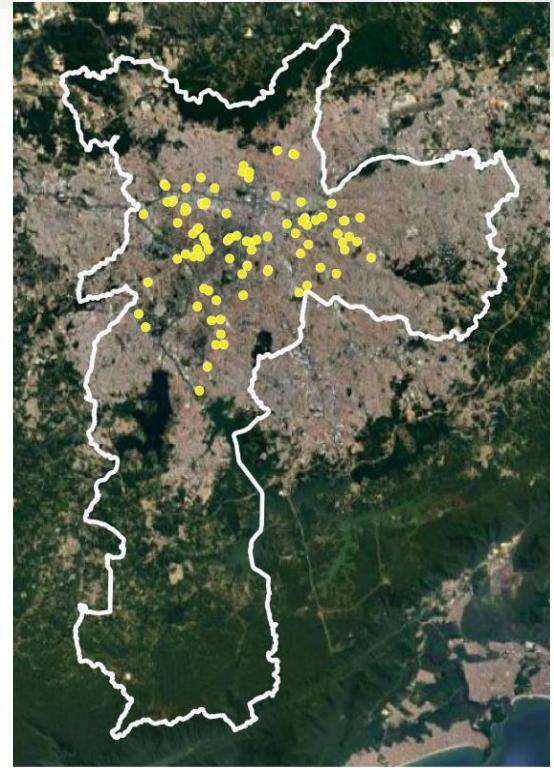
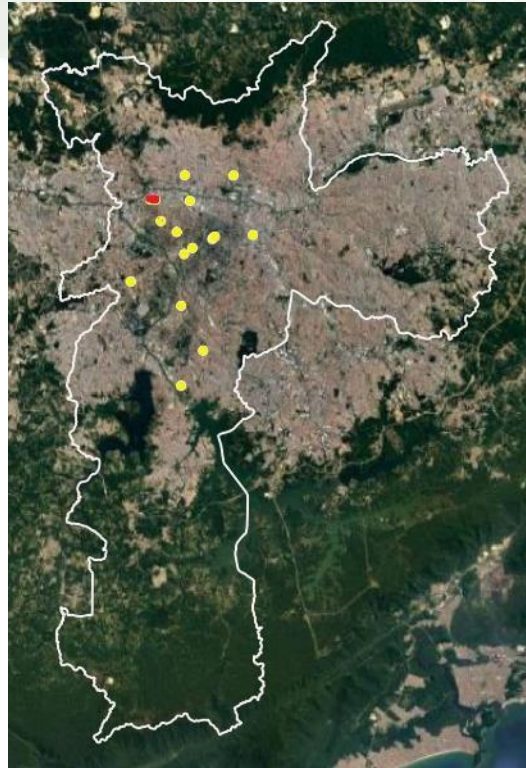




URBAN SPACIALITY – PUBLIC LIFE, SOCIOSPATIAL PRACTICES

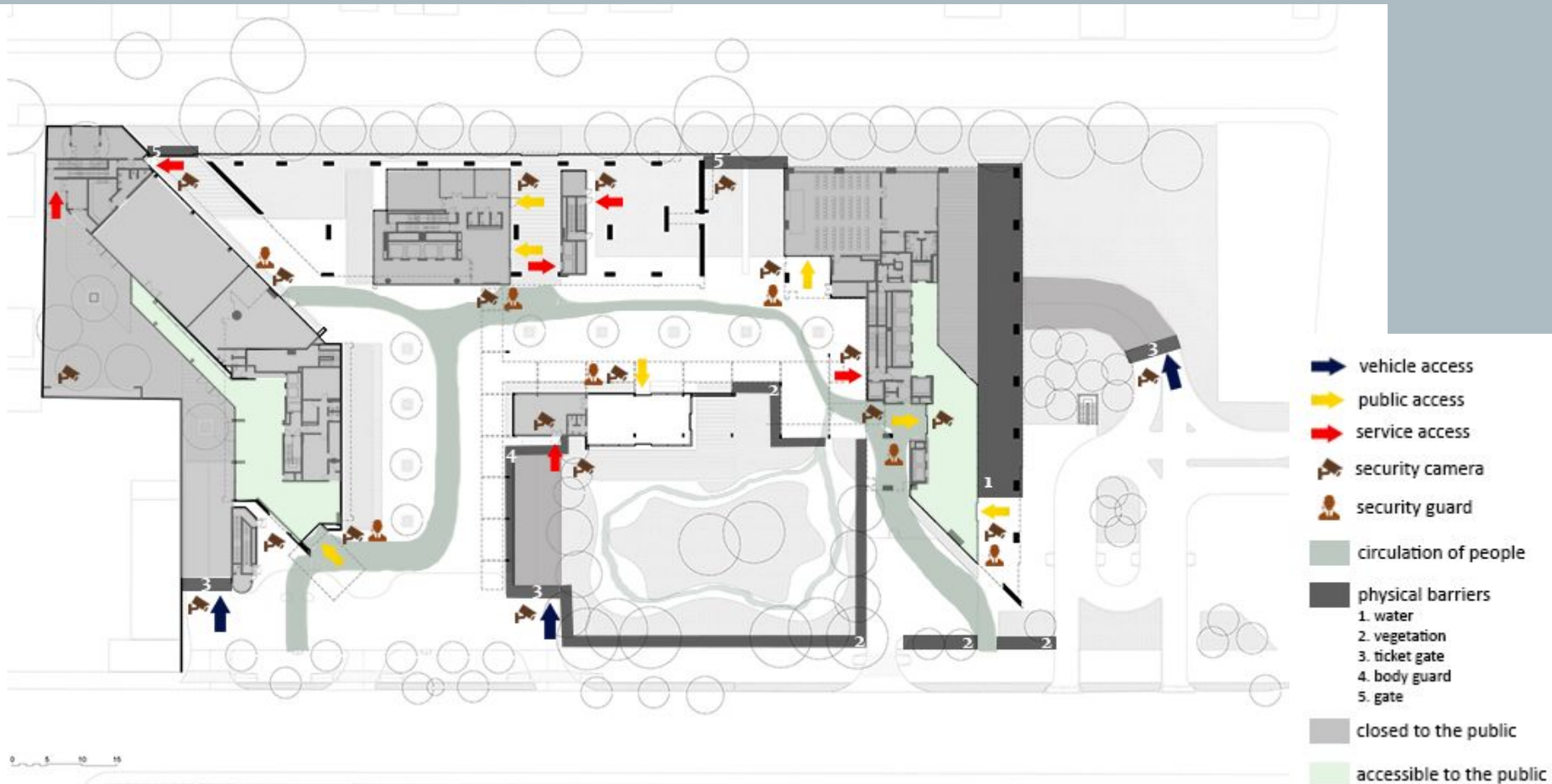


SPOT 393



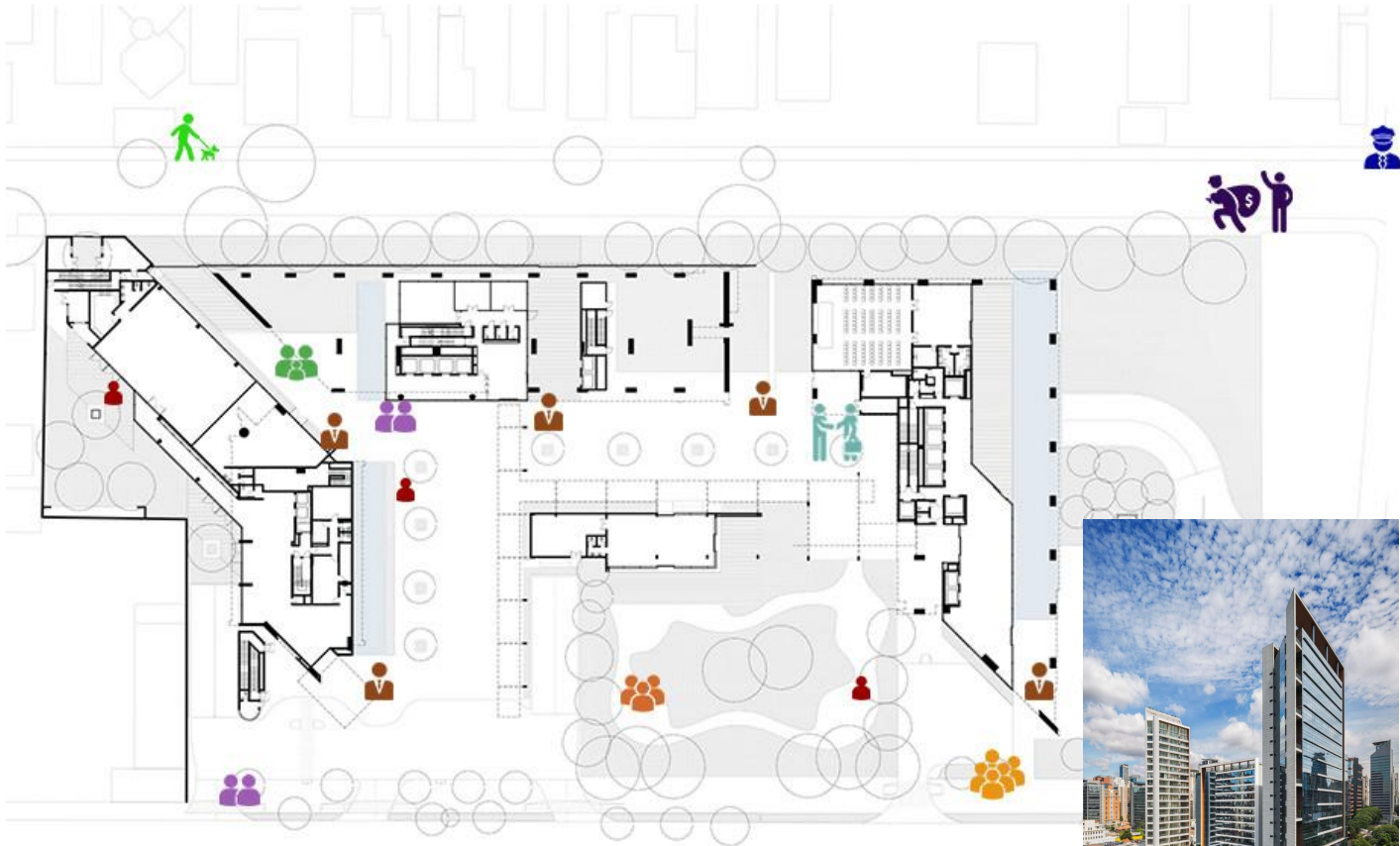
# Building Implantation FL4300

## Flows and Control of Circulation



# Building Implantation FL4300

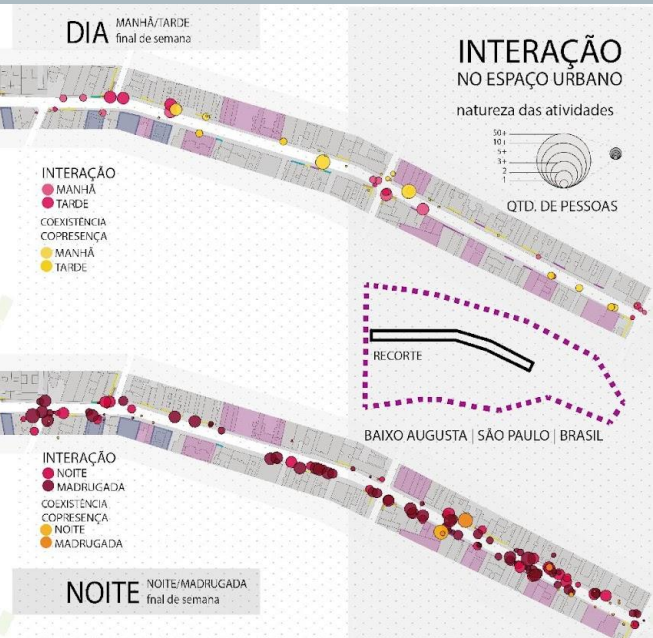
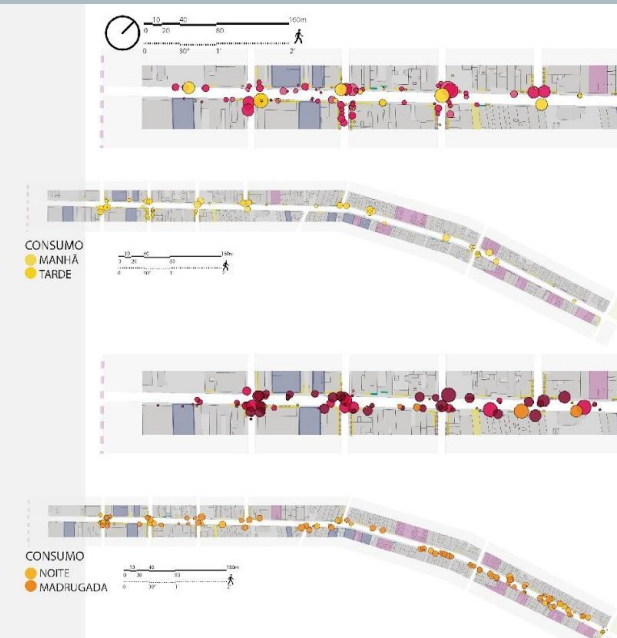
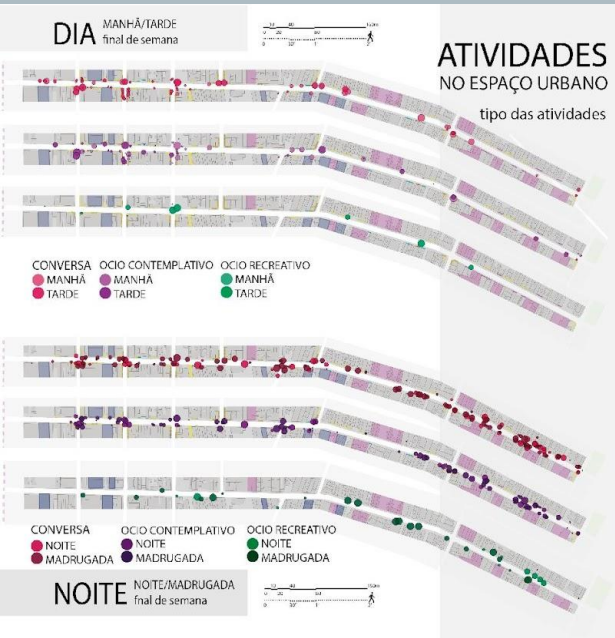
## Flows and Control of Circulation



-  Contemplative situation
-  Talking situation (group of people)
-  Talking situation (2 people)
-  Family outing
-  Walking with the dog
-  Work meeting
-  Conflict situation
-  Security public service
-  Security private service



# SocioSpatial Practices: Activities



# SocioSpatial Practices: Movements

**NOITE** NOITE/MADRUGADA  
semana/final de semana



**LEGENDAS REPETITIVOS**

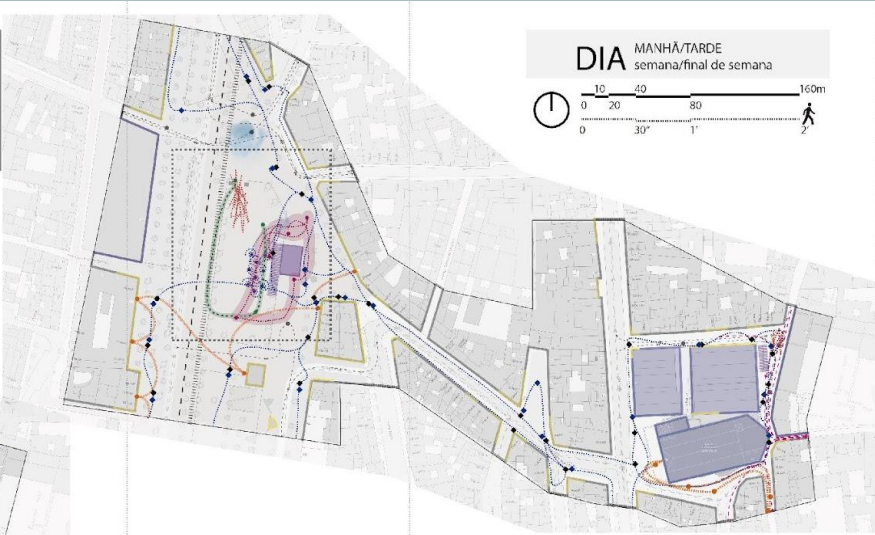
**TRAJETOS JOVENS NOTURNOS**

- trajetos recorrentes
- pontos de encontro (sociabilização)

**TRAJETOS AMBULANTES DIURNOS E NOTURNOS**

- trajetos recorrentes
- pontos de abordagem
- compra/venda
- doação

**DIA** MANHÃ/TARDE  
semana/final de semana



**LEGENDAS REPETITIVOS**

**TRAJETOS DIÁRIOS**

- pedestres (faixa)
- bicicletas (faixa)
- bicicletas (diário) (crianças)
- veículos motorizados
- veículos motorizados (em área de pedestre)

**PRÁTICAS RECREATIVAS**

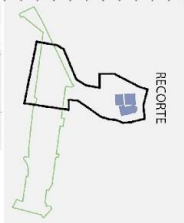
- prática esportiva (crianças)(diária)
- prática lúdica com água (quinzenal)
- prática religiosa (pós-missa)(semanal)

**EVENTUAIS**

**TRAJETOS DIVERSOS**

- protesto (contra poluição)
- prática artística (encenação teatral)
- prática recreativa (despedida de solteira)

**MOVIMENTOS**  
NO ESPAÇO URBANO

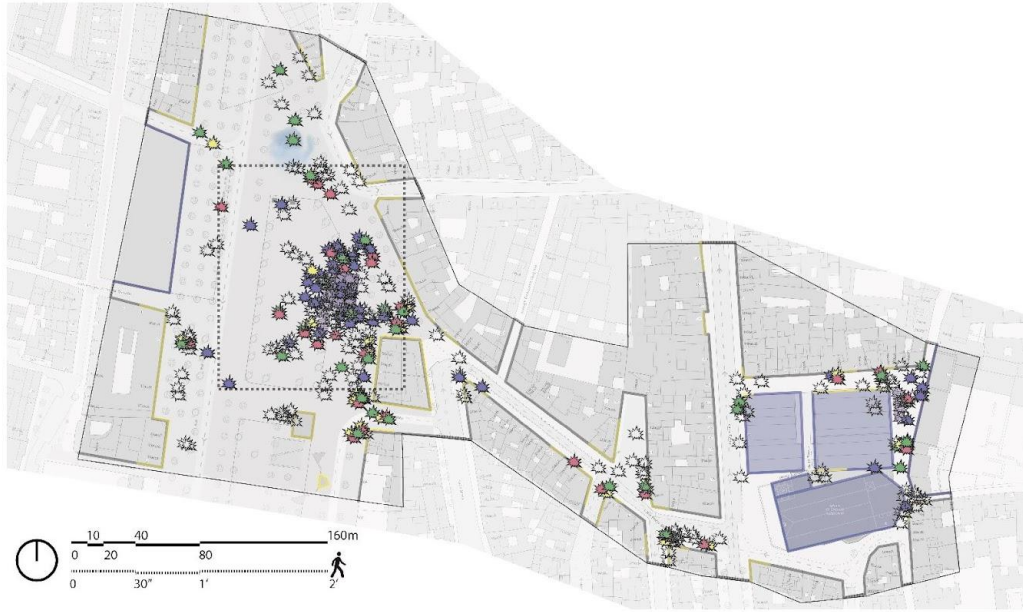


ALAMEDA DE HÉRCULES  
E MERCADO DE FERIA  
SEVILHA | ESPANHA



# SocioSpatial Practices: Conflicts

DIA/NOITE semana  
final de semana



DIA MANHÃ/TARDE  
semana/final de semana



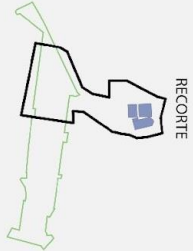
NOITE NOITE/MADRUGADA  
semana/final de semana



## TENSÕES NO ESPAÇO URBANO

- nível 1 e 2  
muito baixo e baixo  
☀ todos os tipos
- nível 3, 4, 5  
médio, muito alto  
🚗 veículos motorizados  
e não-motorizados
- 🐕 animais domésticos
- 🍷 álcool, cigarro,  
drogas ilícitas
- 👤 justaposição/sobreposição  
de atividades

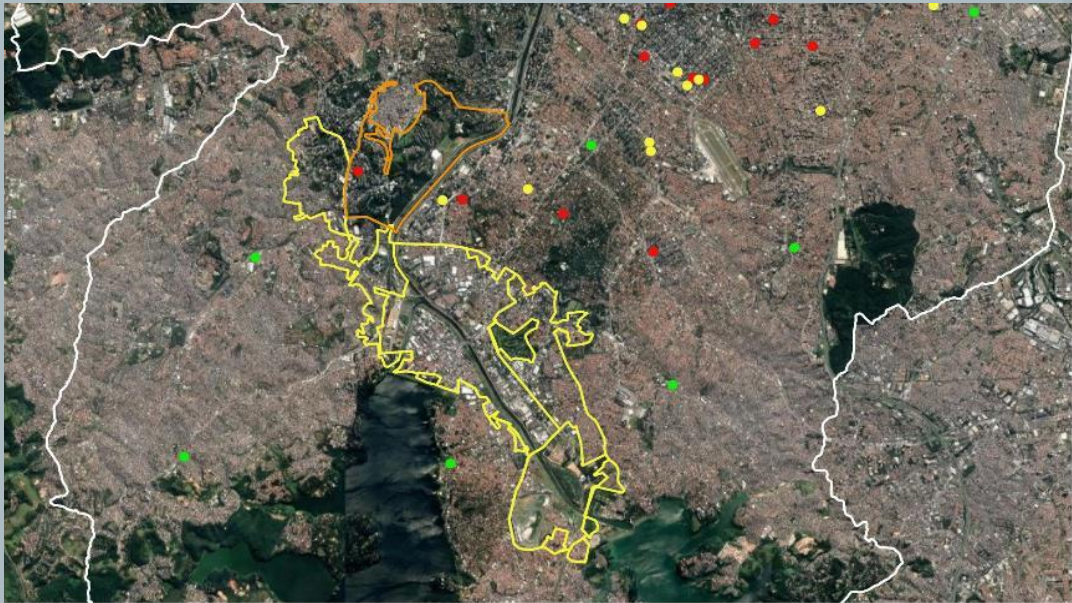
## LEGENDAS



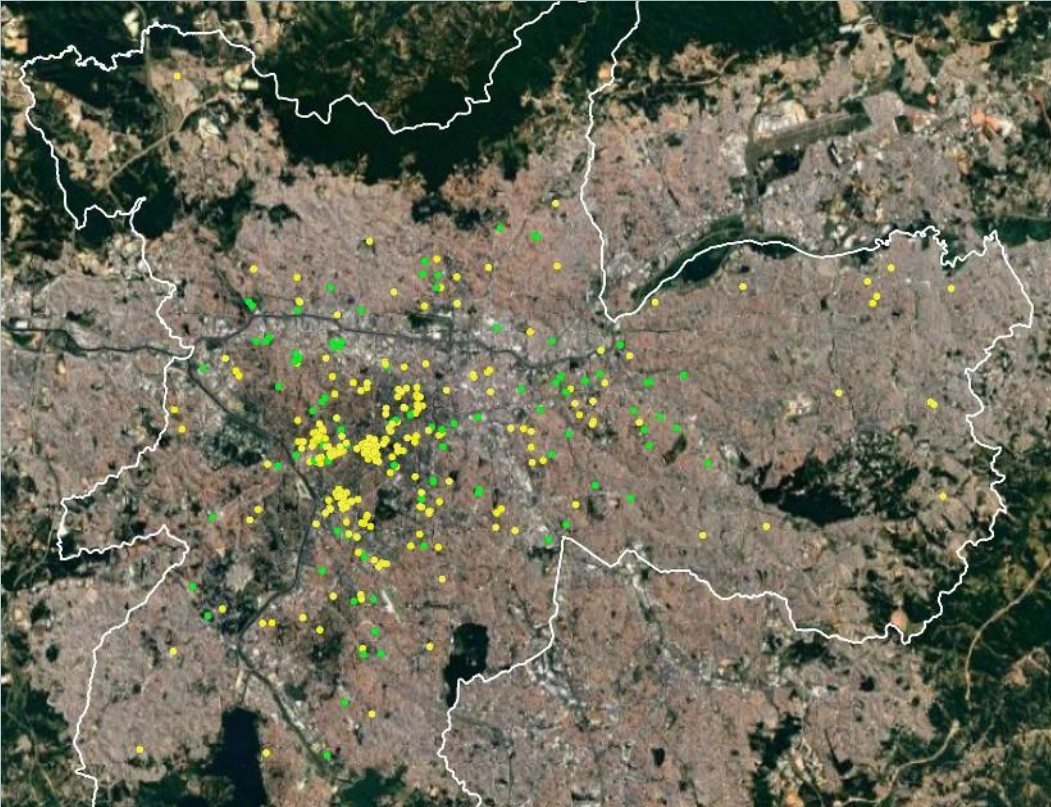
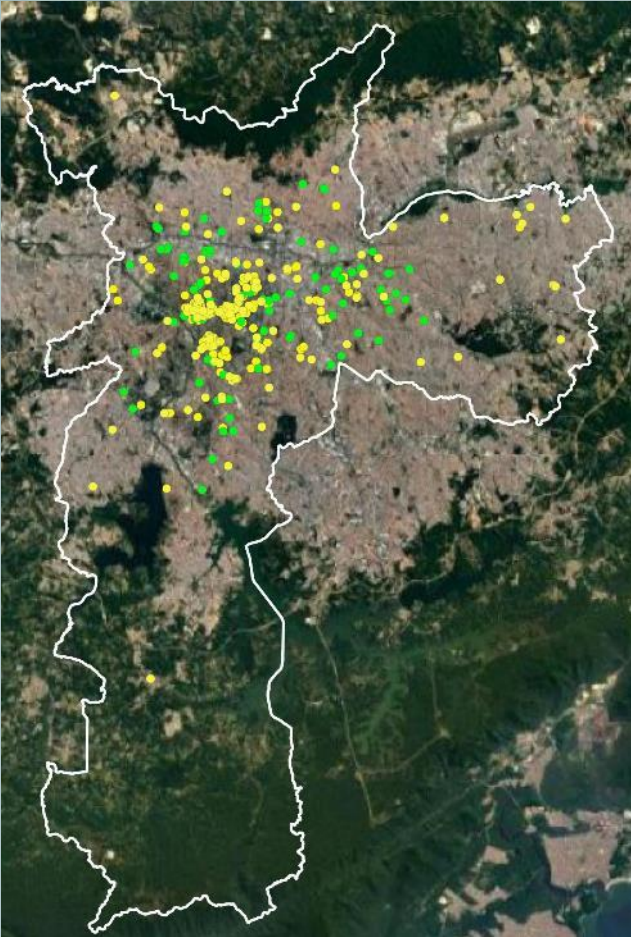
ALAMEDA DE HÉRCULES  
E MERCADO DE FERIA  
SEVILHA | ESPANHA

# PARKLETS

Vila Andrade  
Arco Jurubatuba limits





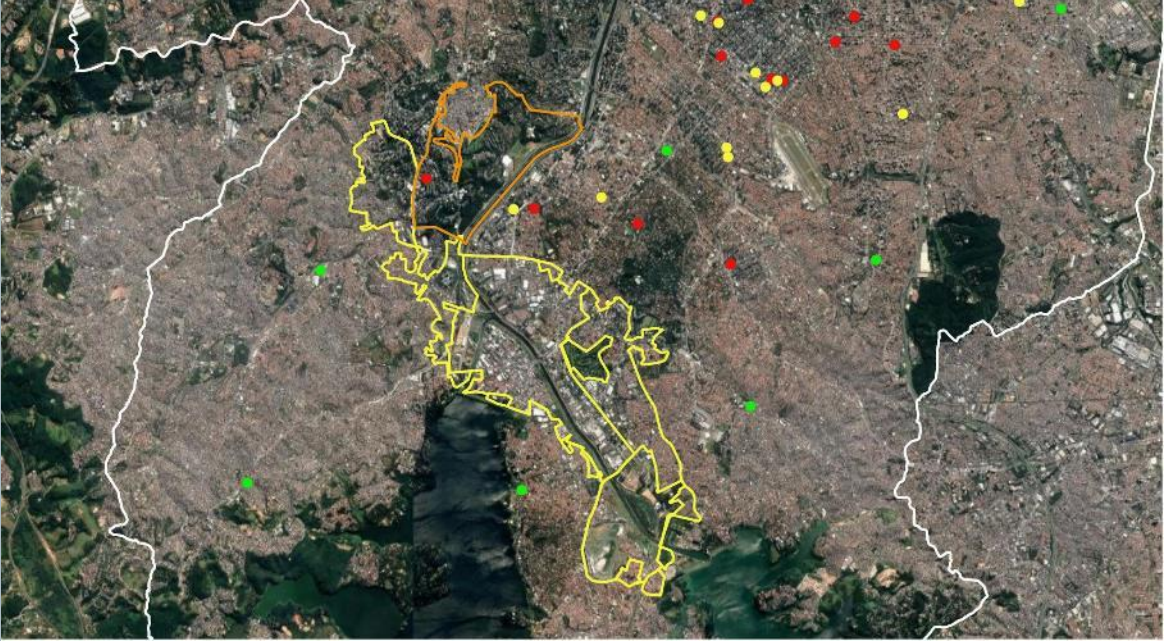
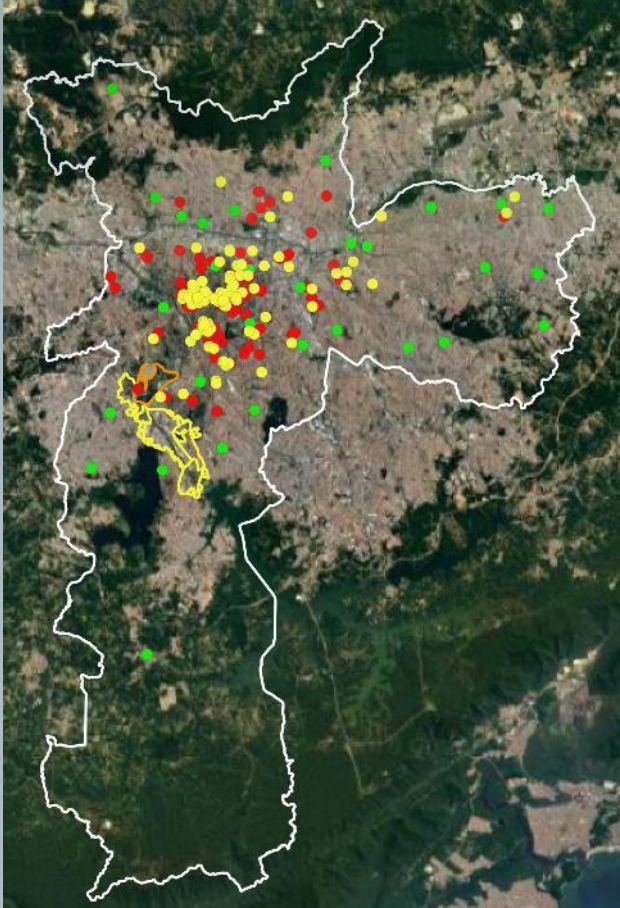


- New Releases
- Parklets



# PARKLETS

Vila Andrade  
Arco Jurubatuba limits

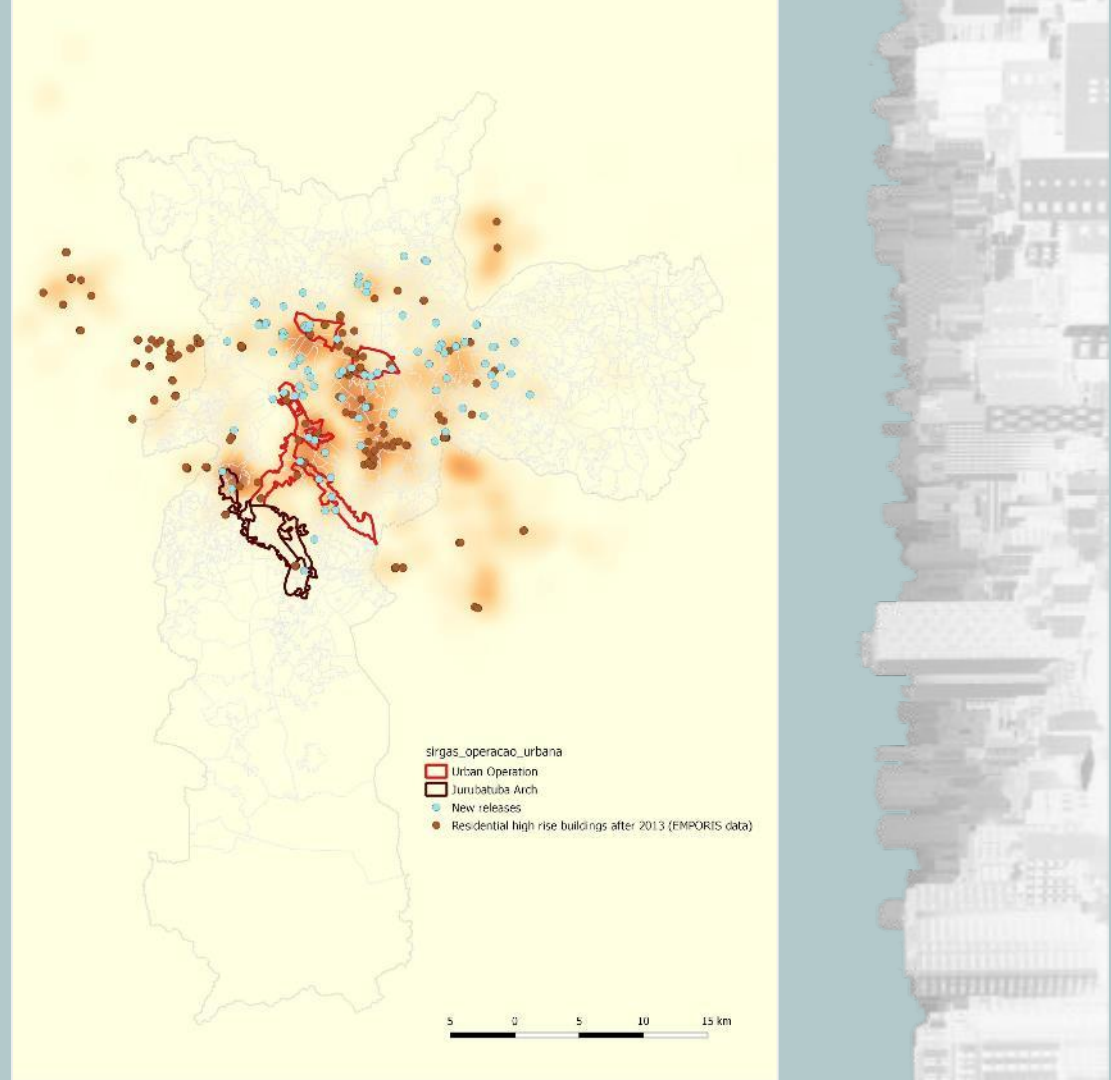


- Deferred parklets
- Proposed parklets
- Municipal parklets

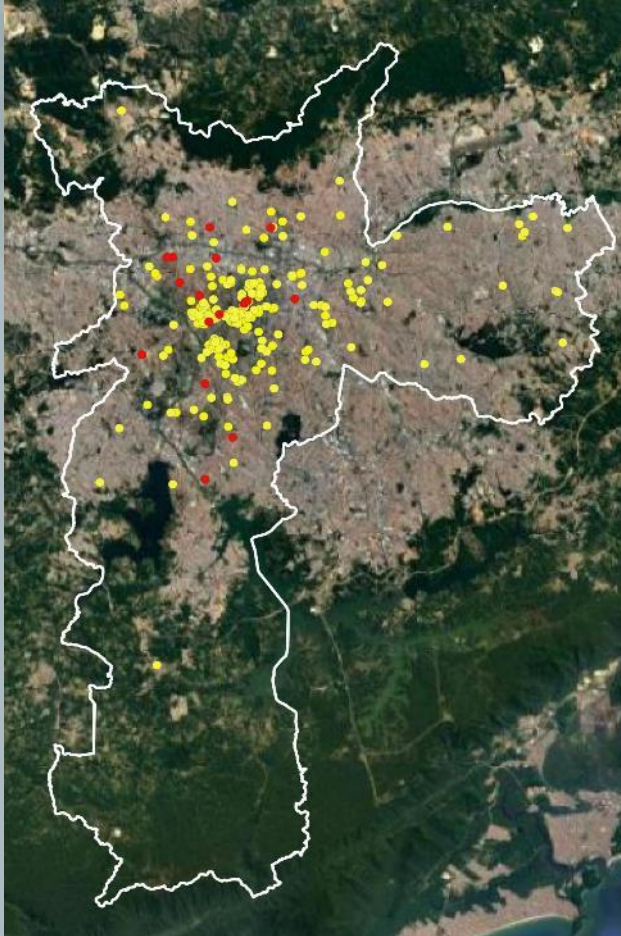
# VERTICALIZATION

Releases after 2000  
Urban Instruments

- Heat map of residential high rise buildings launched after 2000 (CEM database)
- New releases collected on real states websites
- Residential High Rise buildings launched after 2013 (EMPORIS database)







\_ Identify spaces under process of brandification and street marketing, specially those which are made by construction companies and developers

**OBJECTIVE:** Verify if there is any correlation between the production of highrise buildings and the presence of these companies in the production and management of “public” spaces

\_ Identify temporary urban interventions (pop-ups) which are supported by these companies and their location in the urban territory

**OBJECTIVE:** Verify if there is any correlation between new housing typologies (cohousing, microhousing) and the location of temporary urban interventions

- Iconic Buildings
- Parklets



# Preliminary Conclusions

# Preliminary Conclusions

●● in a city that is a complex and particular process of physical (material), social (human) and cultural (mental) elements, the highrise contribution depends as much in social-political and economical processes as in architectural design

●● highrise buildings may contribute to a inclusive and sustainable city? so far, what we can say in relation to this matter is that it may be better than the urban sprawl depending on the concept of urban life and citizenship (should the city be a place for expectations, frustrations, fights and pleasure expressing contradictions and confrontations in the public space?)

●● the city is more than the sum of its parts, it is more than the agglutination of its buildings. It is not only a question of understanding the urban transformations according to the determined by the legislations, but of observing these instruments as part of a model of action that involves the cooperation between several agents in the decision-making process and introduces new practices in urban policies.

●● both São Paulo and Lyon, although its cultural and social singularities, present a tendency of a homogeneous urban tissue - urbanalization (Muñoz) and planetary



projeto highrise  
Problèmes de Verticalisation Urbaine en France et au  
Brésil: projet highrise

Aurelièn Gentil  
César Simoni  
Christian Montès  
Huana Carvalho  
Juliana Esteves  
Julio Pedrassoli  
Héleène Mathian  
Luiana Cardoso  
Lucas Melchior  
Maíra Daitx  
Manoel Rodrigues Alves  
Manuel Appert  
Marcel Fantin  
Milena Sartori  
Ruy Sardinha

**Thank you**

Manoel Rodrigues Alves

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Universidade de São Paulo

*Double Eye*. Olafur Eliasson's Eye(s). Berlin. Verão 2004

