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HOW DOES URBAN MORPHOLOGY SHAPE PROFITABLE ACTIVITIES?

A comparative analysis of two areas in Barcelona and São Paulo

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ABSTRACT

The retail and services sectors play a crucial role in urban dynamics and can contribute to urban vitality and community cohesion. Small independent businesses are key elements in the development of a sustainable retail ecosystem and local economy boosting. This study investigates the relationship between plot sizes and the presence of local businesses versus high-capitalized companies in two street sections of Barcelona and São Paulo. It was found that Barcelona's section has larger plots and a stronger presence of big franchises, while São Paulo's section has smaller plots, with a higher prevalence of local businesses. These findings suggest a correlation between plot size and the level of localness in profitable activities in which the presence of big plots is related to the dominance of big companies over capital and land.

Keywords: plot size, retail, services, local economy.

Bloque temático: morfologías urbanas

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Introduction

The retail and services sectors (in this paper called “profitable activities”) are important players in the city's dynamic of fluxes and form (Araldi, 2020). Profitable activities usually gather spatially in the city as a result of a complex and dynamic process, influenced by many aspects such as historical background, geography, culture, density, income, public power, real estate agents, etc. (Bertaud, 2018; Sevtsuk, 2020).

Healthy urban centers, with many and diverse activities, contribute to city vitality since they have a certain area of influence that can attract people within a large radius (Jacobs, 1961; Bertaud, 2018; Sevtsuk, 2020; Lima *et al.*, 2024). An area with functional retail, more than a means to fulfill the need for goods and services, is important to improve community cohesion (Mazza and Rydin, 1997; Lima *et al.*, 2024).

The role of profitable activities is also related to local economic vitality. Small businesses are an important source of income for individuals in the community, who often spend their profits on other local businesses, boosting the local economy cycle. On the other hand, when high-capitalized companies take the place of small businesses, the capital that used to flow within the community begins to accumulate in the hands of outside agents. As a consequence of globalization, the penetration of big companies into local markets changed its traditional logic and is taking control of land and capital away from the community (Longstreth, 1997; Cachinho, 2011).

Envisioning contributing knowledge about how urban morphology characteristics can favor independent retailers and center vitality, the present work aims to understand the relation between plot size, number of businesses, and level of localness in profitable activities. To do so, two street sectors with high commercial activity, one in Barcelona (Spain) and the other in São Paulo (Brazil), were analyzed.

Profitable activities and the city

It is known that the presence of profitable activities contributes to city vitality and community cohesion (Jacobs, 1961; Gehl, 2013; Lima *et al.*, 2024), but to play this function, the commercial center has to be healthy and resilient. Profitable activities take place in the city in a complex process of co-evolution, tending to agglomerate as a network of interdependent agents. This ecosystem model creates and supports a healthy and resilient retail (Salgueiro and Cachinho, 2011; Wrigley and Dolega, 2011; Bobkova *et al.*, 2019; Sevtsuk, 2020).

There are some key elements involved in the maintenance of sustainable retail systems, and the shape of plots is one of the most important spatial characteristics to enable this condition (Efeoglu, Joutsiniemi and Mozuriunaite, 2023). Smaller plot sizes are related to profitable activity concentration because they induce proximity, which is a key aspect of market co-operation (Bobkova *et al.*, 2019). In the same sense, Efeoglu, Joutsiniemi and Mozuriunaite, (2023) found that small, high density and accessible plots create conditions for street-based retail and are related to the diversity, vitality, and longevity of independent stores. The same study found that big plots fail to promote commerce agglomeration in retail streets and are more related to isolated and disconnected profitable activities.

Another core element in the resilience of retail ecosystems is the presence of small and independent businesses (Wrigley and Dolega, 2011; Sevtsuk, 2020). Literature shows that smaller plots tend to favor the presence of these local agents while large plots seem to be an inviting space for big companies (Danenberg *et al.*, 2018; Sevtsuk, 2020; Efeoglu, Joutsiniemi and Mozuriunaite, 2023). In the same sense, small plot configurations were found to increase diversity in the activities, which is another key element of urban vitality and retail resilience (Bobkova *et al.*, 2019; Marcus and Bobkova, 2019; Sevtsuk, 2020).

High-activity areas normally have smaller plots also because of land prices. Commercial areas are places of great exposure to the public, which raises competitiveness and, consequently, land prices, which lead to smaller subdivisions of space (Webster and Lai, 2003). The increase in land prices can be a threat to

traditional independent retailers since they have poor competitive power when compared to high-capitalized companies (Efeoglu, Joutsiniemi and Mozuriunaite, 2023). The globalization of retail is enabling the penetration of these big companies into local retail, which is breaking local commerce ecosystem logic (Salgueiro and Cachinho, 2011). Considering the importance of local retailers to city vitality, community cohesion, and local economy, it is important that local governments draw strategies to favor the existence and resistance of these agents, and one of them can be through land structure and prices.

Methodology

1.1 Research clipping

To understand how land structure shapes profitable activities, an analysis was carried out in a street in Barcelona (Spain) and São Paulo (Brazil), two cities similar in their metropolitan characteristic and world relevance, but with very different urban forms. To ensure the choice of comparable areas, three variables were set. The first was the income level, since the purchasing power of the local public affects directly the kind of profitable activity happening in the area (Chiaradia *et al.*, 2009). As the two cities have different currencies and raw numbers would not be a reliable method to understand reality, the analysis was made using an intercity method designed by the authors for this specific case. Each city was divided into octiles, which means 8 income ranges that included 12,5% of the total population each. This kind of analysis makes it possible to categorize the city in its richer and poorer parts independently, without comparing them directly. In this sense, the areas that were inside the seventh section (from the lowest to the highest income) for each city were selected.

The second variable was density, known for its high capacity to regulate the market since the volume of activities is directly proportional to the demand, which is generated by inhabitants (Marcus, Pont and Bobkova, 2017). Considering the income pre-selection and that the research area should be high-density, the authors tested some density ranges until finding a number that resulted in overlapping these two requirements, which were 300 to 400 inhabitants/ha.

To choose between the eligible sectors, a space syntax analysis (Hillier and Hanson, 1984) was carried out, making it possible to understand the most used roads in the city scale (5 km), which consequently present higher profitable activities (Tsou and Cheng, 2013)

All the data was obtained from the Barcelona municipality (Barcelona municipality, no date) and IBGE census (IBGE, 2010) for density and income analysis, and Open Street Maps (OSM, 2024) for the space syntax calculation. It is important to say that the data from Barcelona municipality is new (2024 for density and 2020 for income), while the Brazilian data is still from the last census in 2010.

1.2 Analysis

The analysis carried out relates plot sizes, profitable activities, and the presence of franchises in the chosen sector. The data about the plots was obtained through Open Street Maps (OSM, 2024), and the activities were attributed to each plot using Google Street View (Google, 2024). In the cases in which more than one activity occupied the same plot, the surface occupied by each activity was estimated using Google Street View through the measurement of the façade extension. To discover if each business was local or a franchise the research relied on its websites and social media.

Results

The overlaying of density and income data resulted in figs. 1 and 2, which highlight the eligible areas with the light lines.

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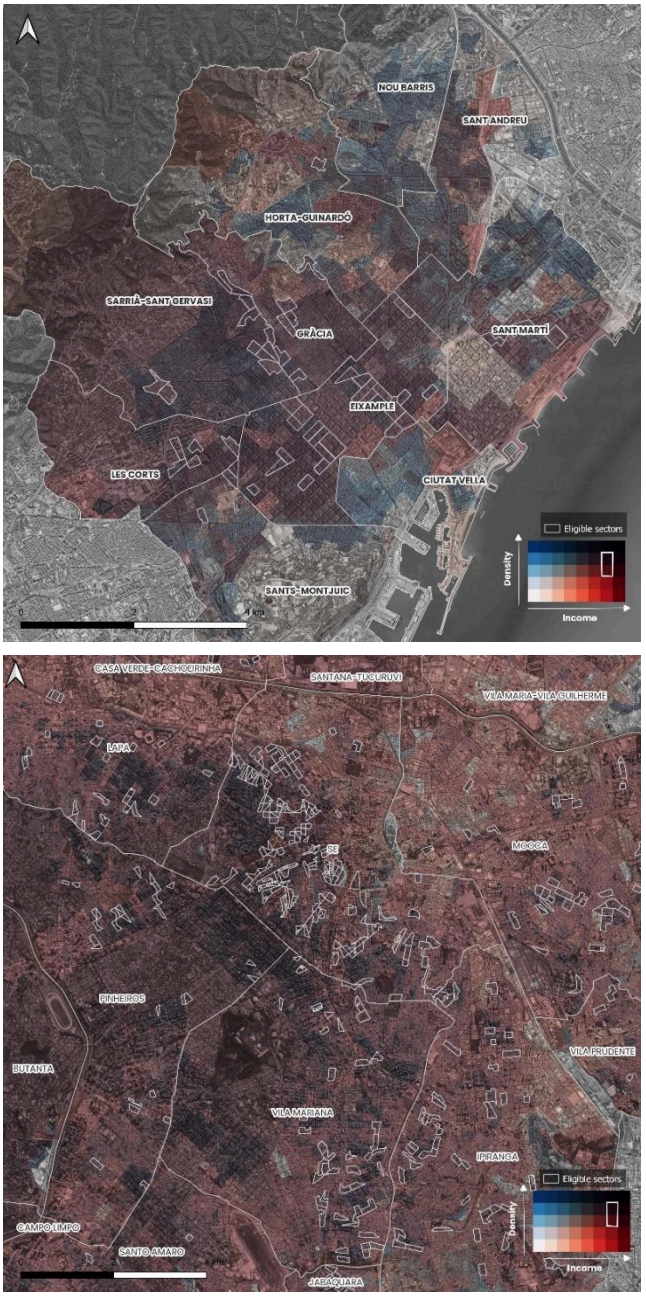

Figs. 01 and 02 Density, income level, and eligible census sectors in Barcelona and São Paulo. Source: Own elaboration based on data of Barcelona municipality (no date) and IBGE (2010).

With the eligible sectors (in black) as a base map, a space syntax analysis was conducted as a means to identify which of them were placed in the busier areas (Figs. 3 and 4).

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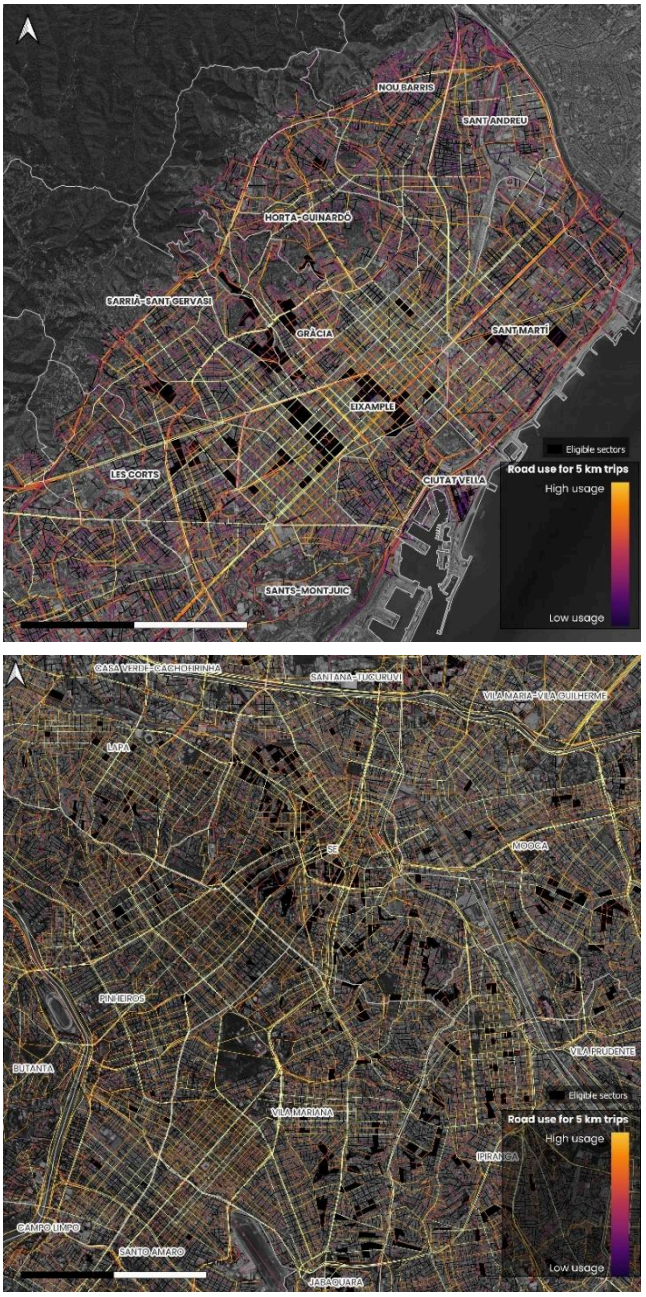

Figures 03 and 04 Space syntax analysis and eligible sectors in Barcelona and São Paulo. Source: Own elaboration based on data Open Street Maps and Space Syntax.

The street section chosen was the one that gathered eligible sectors and high usage for 5 km trips (Figs. 5 and 6). For Barcelona, the street chosen was Balmes Street, starting from its encounter with Diagonal Avenue, in a 550m section. For São Paulo, the street chosen was Augusta Street, in a 530 section close to Paulista Avenue.

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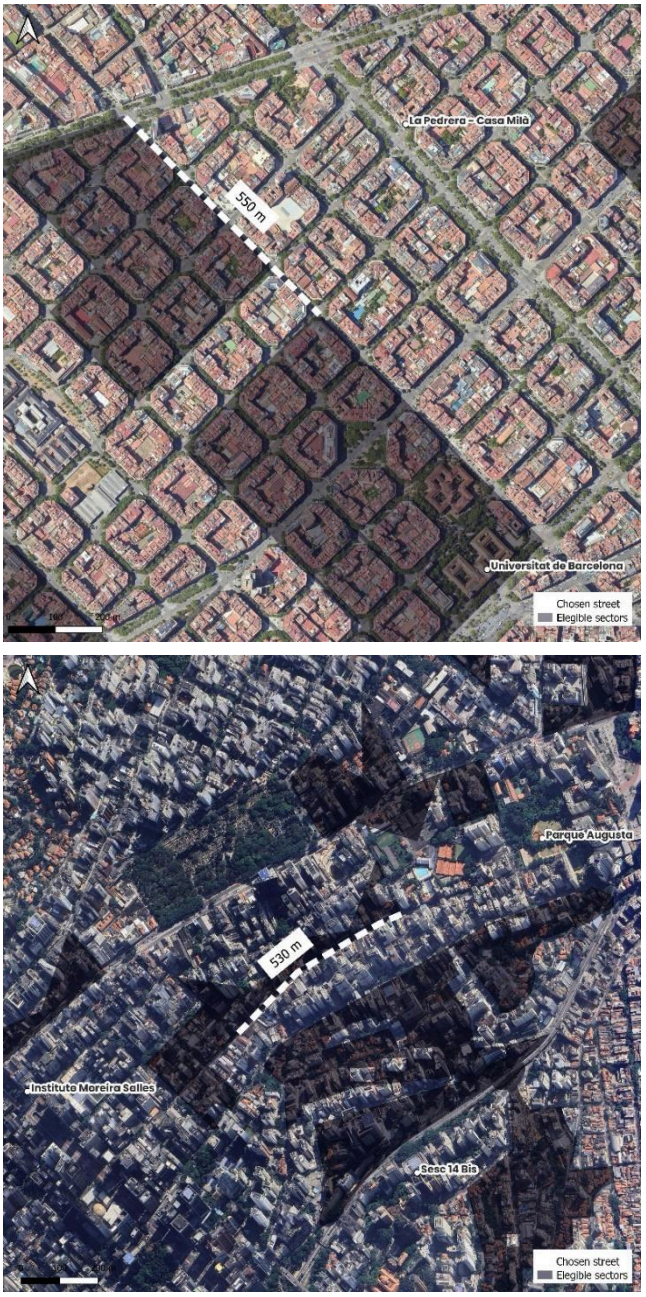

Figs. 05 and 06 Sections chosen for analysis - Balmes Street in Barcelona and Augusta Street in São Paulo. Source: Own elaboration based on Google Earth data

To start the analysis with the area dedicated to profitable activities, it was found that, in the street section chosen, Barcelona has 27.115,6 m² of constructed area (considering only ground floors), in which 17.409,8 m² is occupied with profitable activities (64%) (Fis. 7). In São Paulo, the street section has 23.821,3 m² of ground floor constructed area, being 14.511,2 m² dedicated to profitable activities (60,9%) Fig. 8).

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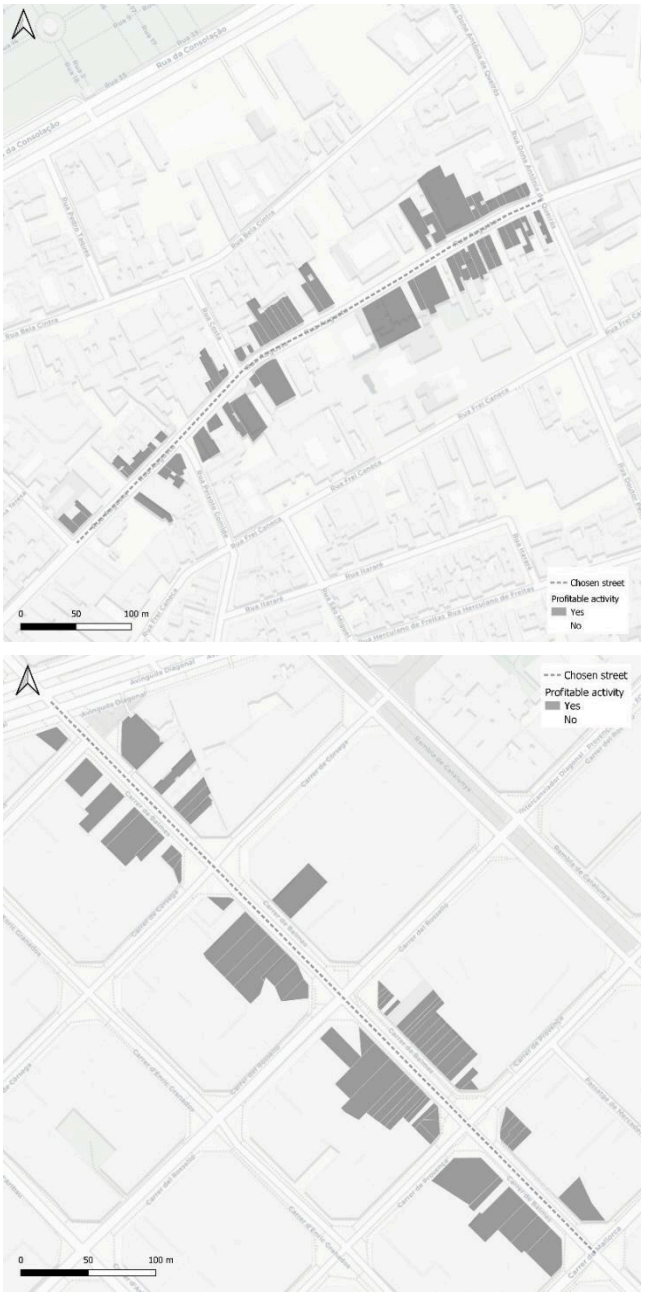

Figs. 07 and 08 Plots dedicated to profitable activities in Barcelona and São Paulo street sectors. Source: Own elaboration based on data of Open street maps and Google Earth.

In absolute numbers, Barcelona has 64 enterprises, and São Paulo 56 for the analyzed sections. When this number is related to the meters of street, the numbers are surprisingly close, with Barcelona presenting 0,12 enterprises/m (12 stores every 100 meters), and São Paulo 0,11 enterprises/m (11 stores every 100 meters).

The presence of mixed-use buildings -in which the profitable activities are placed on the ground floor and the other stories are for residential use- is very common in Barcelona, since 78% of the commercial area is placed in buildings with this typology (Fig. 9). In São Paulo, this configuration is not very common and takes place in only 28% of the commercial area (FiG. 10).

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Figs. 09 and 10 Profitable activities placed in mix-use buildings (red) for the street sections in Barcelona and São Paulo. Source: Own elaboration based on data of Open street maps and Google Earth.

The average size of commercial plots is 272 m² for Barcelona and 259 m² for São Paulo, but the reality of size distribution can be better understood in Figure 11:

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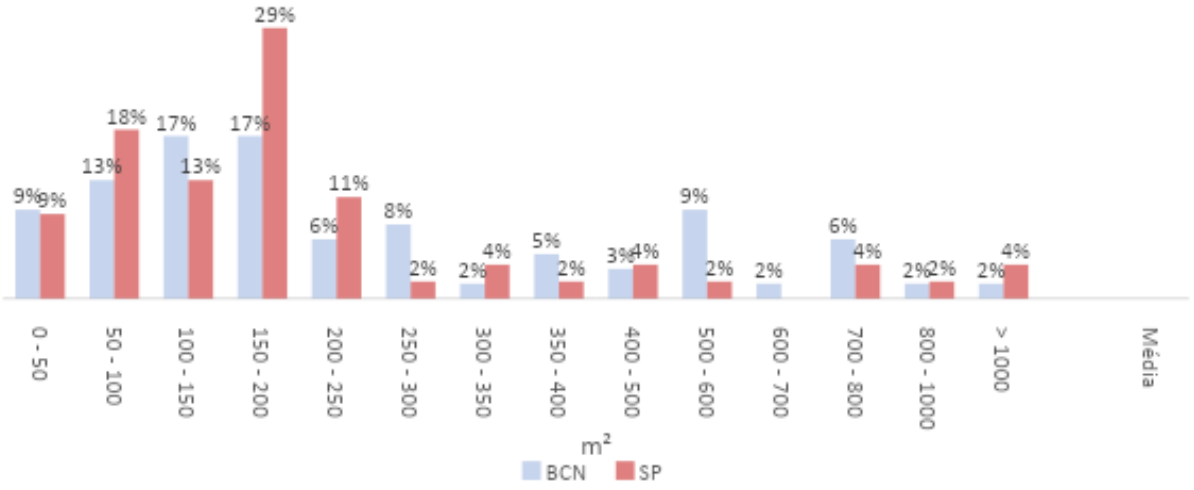

Fig. 11 Plot size distribution for the street sections in Barcelona (blue) and São Paulo (red). Source: Own elaboration based on data of Open street maps and Google Earth.

It can be seen that Barcelona presents a more equally distributed pattern, while São Paulo's plots are more concentrated in the 50 m² to 200 m² size. If the plots are categorized as small (0 - 100 m²), medium (100 – 300 m²), and big (> 300 m²), the plots can be distributed as Figures 12 and 13 show.

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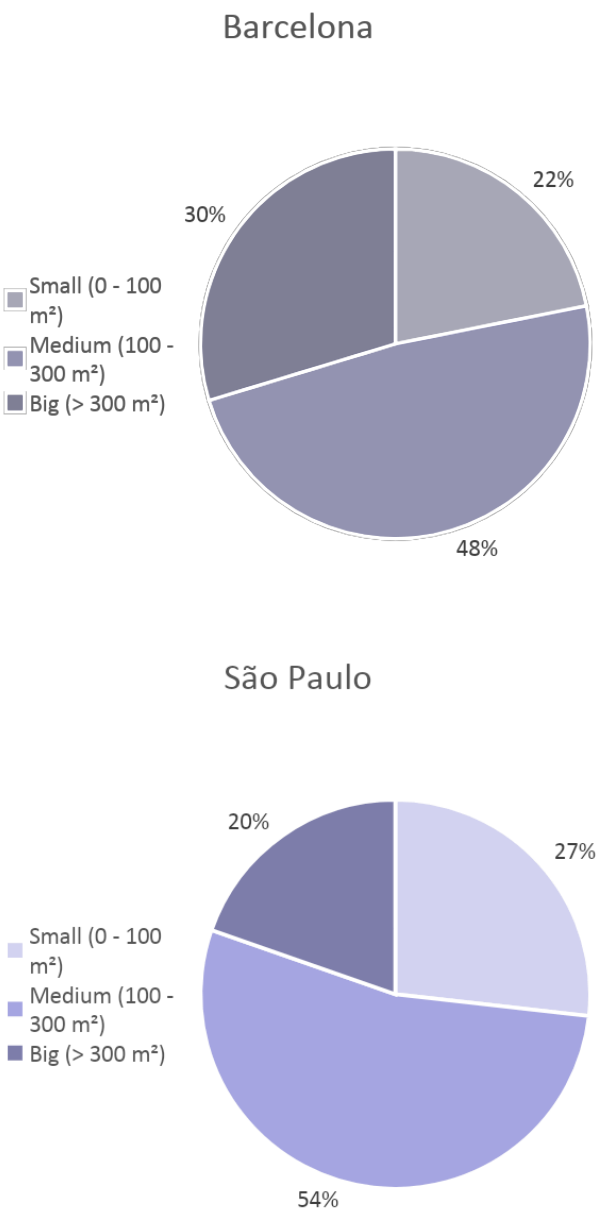

Figs. 12 and 13 Plot size categorization in small, medium, and big for the street sections in Barcelona and São Paulo. Source: Own elaboration based on data of Open street maps and Google Earth.

The graphs show that Barcelona has 5% fewer small and medium plots than São Paulo, which culminates in 10% more big plots in Balmes Street when compared to Augusta Street. In another analysis, it can be said that the analyzed section in Barcelona has 55% more plots bigger than 200 m² than São Paulo's section.

To relate plot size to the prevalence of local commerce, the stores in the sections were analyzed individually and categorized as local business (1 store), local franchise (1 – 10 stores), regional franchise (10 – 20 stores), and big franchise (more than 20 stores). The distribution for each city is presented in Figures 14 and 15.

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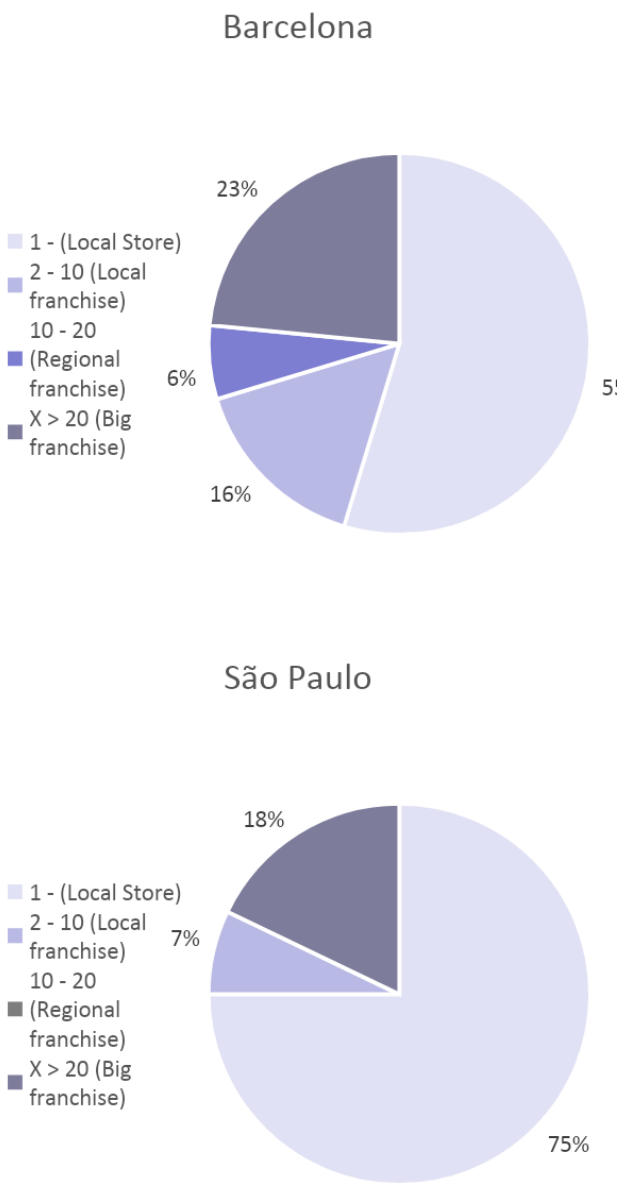

Figs. 14 and 15 Enterprise size categorization for the street sections in Barcelona and São Paulo. Source: Own elaboration.

São Paulo's section showed a big level of locality in retail, with 75% of local stores and 7% of local franchises. There were no regional franchises, and the 18% left is the share of big franchises. In Barcelona's section, the local stores represent 55% of the retail, which is 20% less than Augusta Street. The local franchises are more common, with a 16% share, but this higher percentage was not enough to make local business (local store + local franchise) bigger in Barcelona, since the category represents 71% of total retail, against 82% in São Paulo's case. The remaining percentage of Barcelona's business is divided into big franchises (23%) and regional franchises (6%). To summarize, it can be said that São Paulo presents a bigger level of locality in retail, which might be related to a higher presence of small and medium plots.

The plot sizes for the regional and big franchises are indeed bigger. The average plot size considering only these two categories is 345,8 m² for Barcelona and 307,9 m² for São Paulo, which means a 27% and 19% increase respectively when compared to the general plot size average. In another analysis, it was identified

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that, in Barcelona, although regional and big franchises represent 22% of the businesses, they control 37,7% of the constructed commercial area. For São Paulo, this asymmetry is less evident, since the big franchises represent 18% of the businesses and control 21,2% of the land (Figures 16 and 17).

Figs. 16 and 17: Localness of profitable activities for the sections in Barcelona and São Paulo. Source: Own elaboration.

Discussion

For the analyzed sections, Barcelona presents 14% more overall constructed areas, which can be explained by the lower presence of setbacks and vacant plots. Regarding the constructed area dedicated to profitable activities, the two cities presented close percentages, since the area in Barcelona is only 4% bigger than in São Paulo. This can be related to the fact that Barcelona's profitable activities are, in most cases (78%),

sharing the building with residences, which implies a better use of the space and a higher capacity to accommodate people and commerce. In São Paulo, on the other hand, the mixed-use is not very common, being the typology of only 28% of the buildings. Narvaez and Penn (2016) also found a positive relationship between profitable activities and mixed-use buildings.

When it comes to the number of enterprises, Barcelona has 64, and São Paulo 56, but, if related to the street size, both cities present approximately 11,5 enterprises/100 meters of street. This indicator contradicts the literature by showing that, although Barcelona presents urban characteristics that favor retail regarding compactness, absence of setbacks, and mixed-use buildings (Busquets, 2006; Jenks, 2019), this difference does not influence the amount of business. This find seems to emphasize the importance of plot size, since the similar amount of businesses in both cities might be explained by the land structure of the Barcelona analyzed sector, which presents 55% more plots bigger than 200 m² than the São Paulo.

Although the share of local stores is quite high in both cases (55% in Barcelona and 75% in São Paulo), this bigger plot configuration that appears in Barcelona is probably related to the 20% smaller proportion of local businesses. The question that remains is if this higher level of locality in retail that appears in São Paulo is due to the smaller plots, or because the high-capitalized doesn't have interest in the area.

The plot size categorized analysis indicated that the regional and big franchises are related to bigger plots. On average, regional and big companies are placed in plots 27% bigger in the Barcelona section and 19% bigger in the São Paulo section.

This asymmetry in plot sizes between small and big retailers culminates in a disproportional land control: in Barcelona, 22% of the businesses (regional and big franchises) control 37,7% of the area. Although the asymmetry is not too big, those numbers are an indication of the financial power of capitalized companies and the easiness with which these entities take control of the soil, a process well documented by Salgueiro and Cachinho (2011). This condition seems to be less imperative over São Paulo since the big franchises represent 18% of the businesses and control 21,2% of the land.

To summarize, the analysis indicates that the Barcelona section presents bigger plots, a smaller presence of local businesses, and a slight asymmetry in land control in favor of big companies. These three findings are probably related and convergent with the literature revised.

The variance found in land-retail relation in the two analyzed cities might be because, although the variables were set to select similar sectors, the two areas present significant differences. While Balmes Street is located in the vibrant and wealthy neighborhood of Eixample, Augusta Street suffers from the well-known process of downtown degradation in Brazilian cities. Also, Barcelona presents a more homogenous city quality among neighborhoods, while the traditional Brazilian social disparities problem materializes in the territory (Busquets, 2006; Ministério das Cidades, 2006).

All the mentioned aspects culminate in a reality in which land prices on Balmes Street are much higher than on Augusta Street. This condition makes it harder for local businesses to compete with high-capitalized companies, that tend to take over the land in valued areas as described by Efeoglu, Joutsiniemi and Mozuriunaite (2023) and Salgueiro and Cachinho (2011). In this sense, while local businesses can still afford Augusta Street, Balmes Street might be converging to a point in which the entity has to be at least a local franchise to be capitalized enough to establish in the area. This analysis raises awareness about the importance of land regulation policies to improve local economic resilience against big companies' penetration in valorized neighborhoods.

Conclusion

The analysis of profitable activities in urban settings, particularly focusing on two street sectors in Barcelona and São Paulo, reveals significant insights into the relationship between urban morphology, plot sizes, and the dynamics of local businesses versus big franchises.

The analyzed sectors in both cities presented similar levels of built area dedicated to profitable activities and amount of shops per meter of street, but they differed in the plot size structure and level of localness in retail. Barcelona presented bigger plot sizes, a more imposing presence of big companies, and a slight asymmetry in land control in favor of them, indicating a potential threat to local businesses and retail diversity. Conversely, São Paulo presented smaller plots, a higher prevalence of local businesses, and better equity in land control between big and small companies. This suggests a possible correlation between plot size and the dominance of big franchises, as the work found that the plots occupied by them are larger. On the other hand, smaller plot sizes seem to favor the presence of local and independent businesses, contributing to the local economy, community cohesion, and city vitality.

The analysis raises awareness about the maintenance of urban economic resilience against the encroachment of high-capitalized companies, particularly in valued neighborhoods. Although further studies are needed, recommendations might include strategies to regulate plot sizes and land prices to support the presence and sustainability of local businesses.

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