

A nova face da especulação na América Latina

Fundos estrangeiros apostam duro em "habitações temporárias" para enca quadru anúncio

Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

“O turismo mata os bairros”: como o AirBnB afeta as cidades

Em busca do turismo global, cidades abriram suas portas. O turismo é uma atividade extremamente lucrativa para qualquer um que tiver uma casa ou apartamento para alugar. No entanto, isso pode ter consequências negativas para as comunidades locais.

Lisboa e Nova Iorque A situação exige uma resposta urgente para passar por mais incentivos fiscais à p medidas semelhantes às de Nova Ior

Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

CONTEXTUALIZATION



Airbnb and the sharing economy



Impact of short-term rentals on cities



Gentrification and Touristification



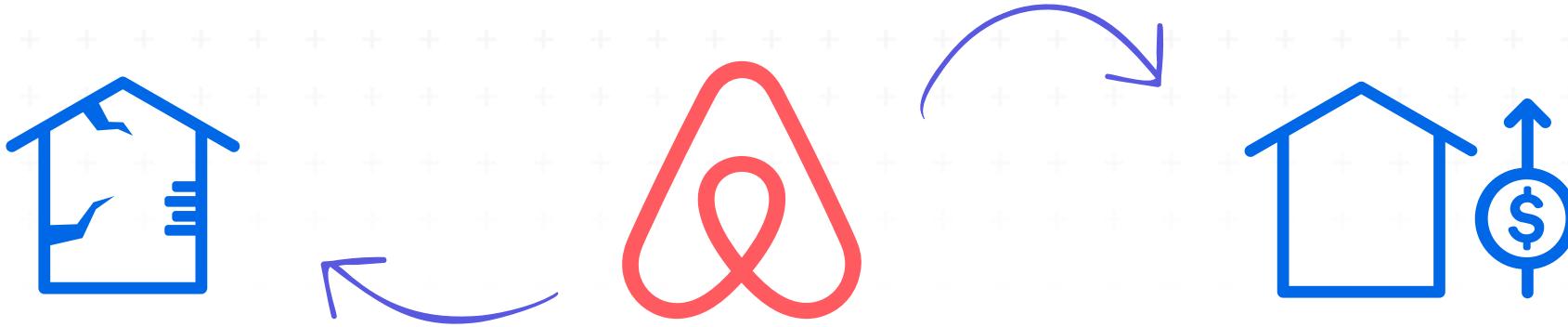
Airbnb as a gentrifying agent



Real Estate Speculation and Airbnb

Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

RELATIONSHIP BETWEEN AIRBNB AND GENTRIFICATION



Identification of underlying patterns

Impact of Airbnb on the transformation of urban areas

Implications for tourism and the local community

STUDY OBJECTIVES

Main Objective



To analyze the relationship between Airbnb, real estate speculation, and the resulting gentrification in tourist cities, using data from the cities of Lisbon and Rio de Janeiro.

Secondary Objectives



- 1
- 2
- 3

To understand the impacts of the shared accommodation model in these cities.

To provide relevant information for decision-making by public and private managers.

To contribute to the development of public policies and regulations that can mitigate potential negative impacts and maximize the benefits arising from this type of tourism.

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PROCESS

1

Methodology

2

Exploratory Analysis

3

Spatial Analysis

4

Machine Learning

METHODOLOGY

Data Source

We used Airbnb data from Inside Airbnb and rental data from Quinto Andar and Idealista.

Data Collection Process

- Web scraping for rental data
- Geolocation using Geopandas

Demographic Data

Censuses from INE (National Institute of Statistics) and IBGE (Brazilian Institute of Geography and Statistics).

Development Environment

Python.

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EXPLORATORY ANALYSIS

Techniques Used

Descriptive statistics,
data visualization, and
identification of outliers.

Outlier Elimination

Using the Interquartile
Range (IQR) method.

Objective

Understand the
distribution of the data
and identify patterns
and trends.

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SPATIAL ANALYSIS

Global Spatial Autocorrelation

Global Moran's Index (I).

Local Spatial Autocorrelation

Local Indicators of Spatial Autocorrelation (LISA).

Objective

Evaluate spatial patterns and dependencies of variables.

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MACHINE LEARNING

Gradient Boosting

Algorithm used for modeling.

XGBoost

Implementation of Gradient Boosting with scalability and interpretability.

Applications

Regression

Advantages

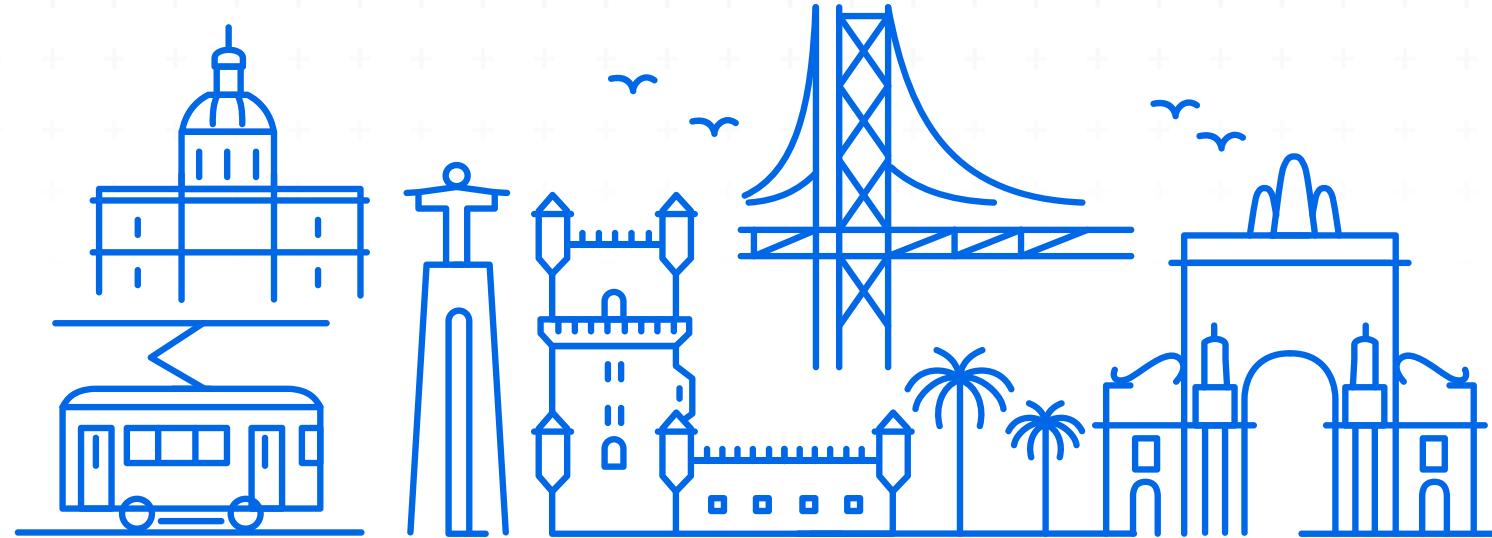
Handles complex data well, captures non-linear relationships, and provides insights into the importance of variables.

Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

IMPACT OF AIRBNB ON RENTAL PRICES

Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

LISBOA

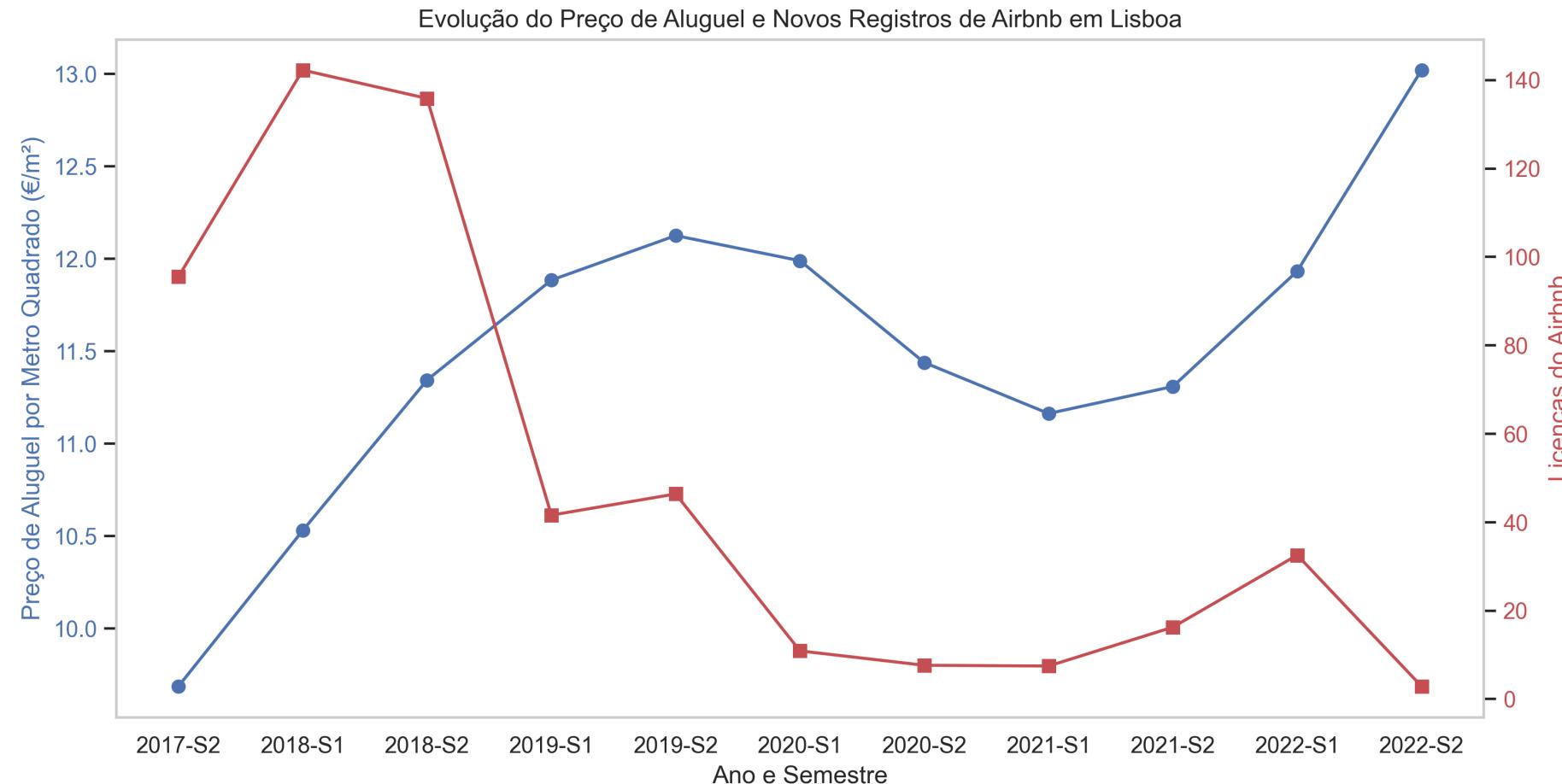


Data Source:

Census 2022, Inside
Airbnb, and LxHabita

Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

EXPLORATORY ANALYSIS | TEMPORAL TREND



Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

EXPLORATORY ANALYSIS | TEMPORAL TREND

Rent Price (m2)

2017: € 9,6 m2 → 2022: € 12,9 m2

An increase of

34%

Airbnb records

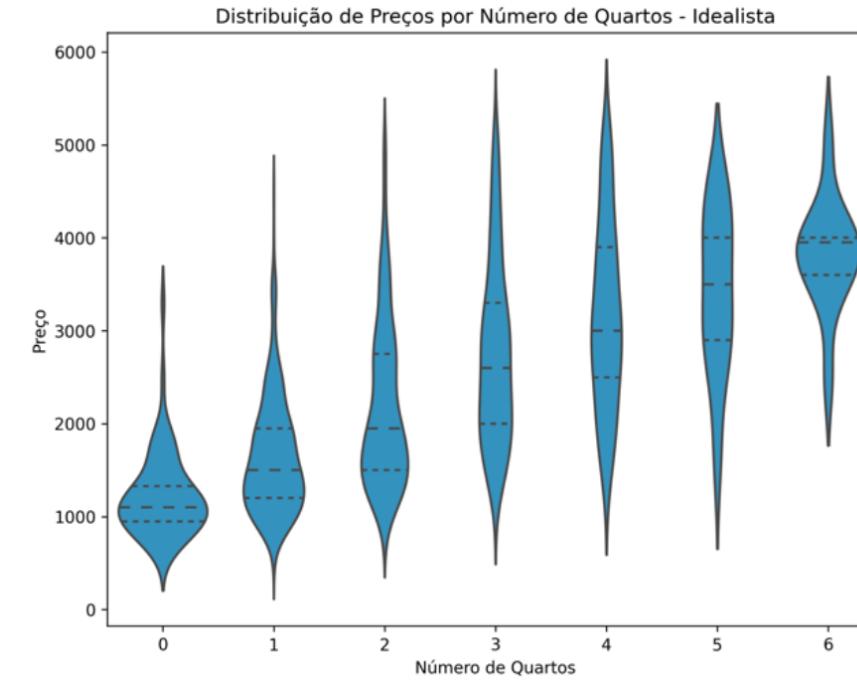
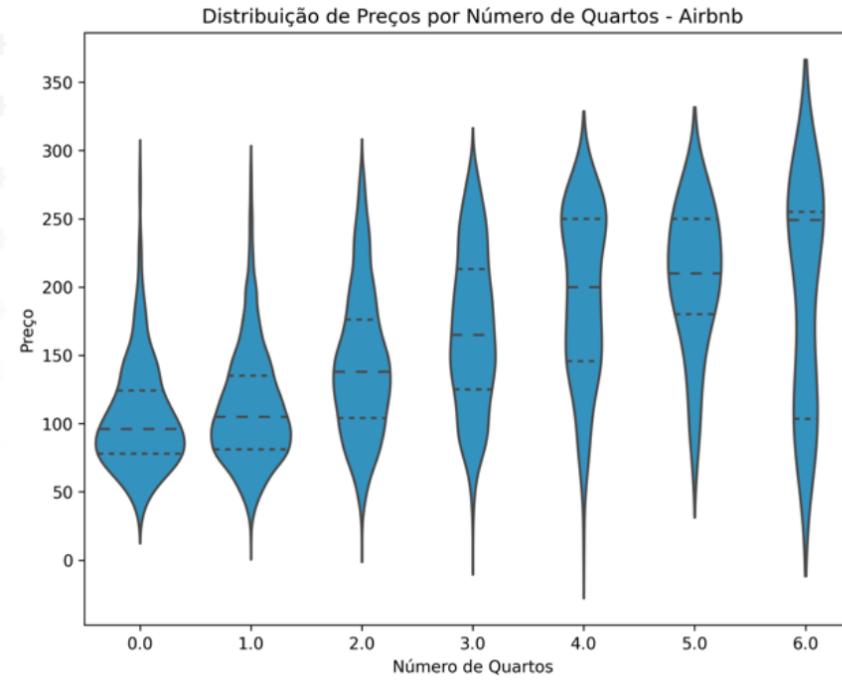
2017: 14231 → 2022: 30533

An increase of

115%

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EXPLORATORY ANALYSIS



Airbnb

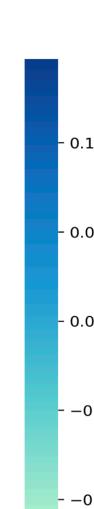
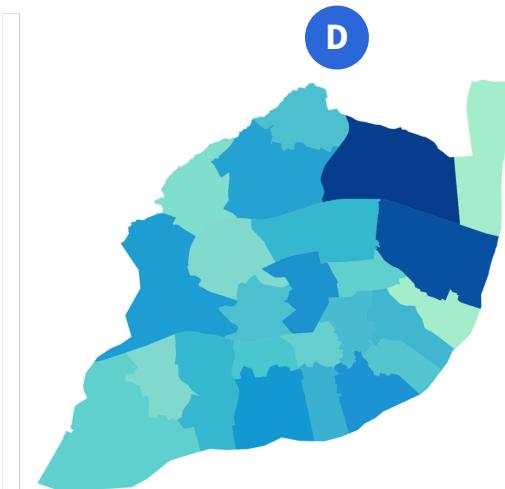
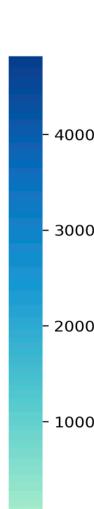
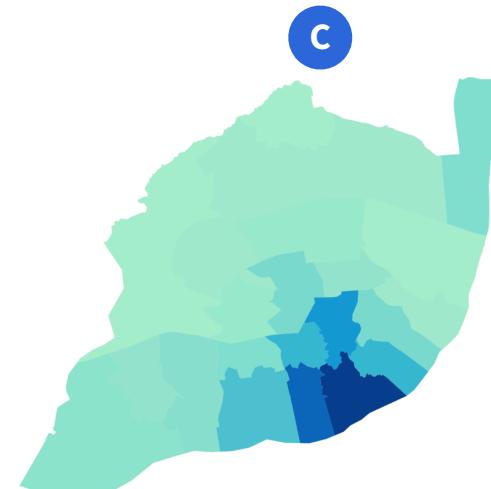
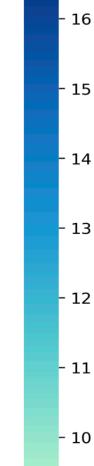
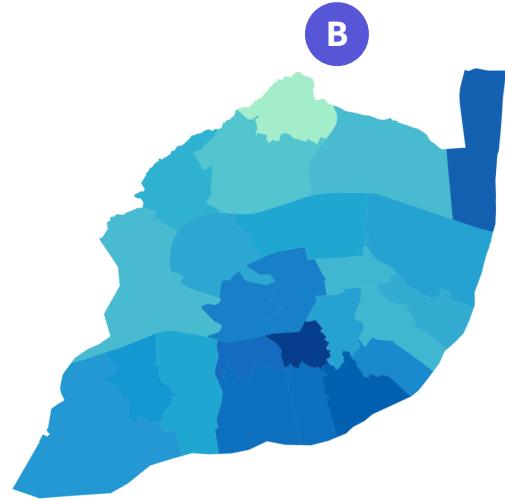
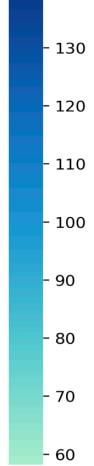
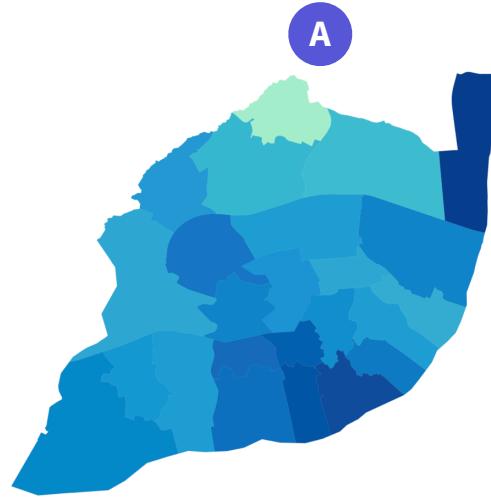
1,6
Rooms

Idealista

2,3
Rooms

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EXPLORATORY ANALYSIS



Average daily price of accommodations on Airbnb



Distribution of the average rent price per square meter



Number of licensed properties for operation on Airbnb by area



Variations in new rental contracts

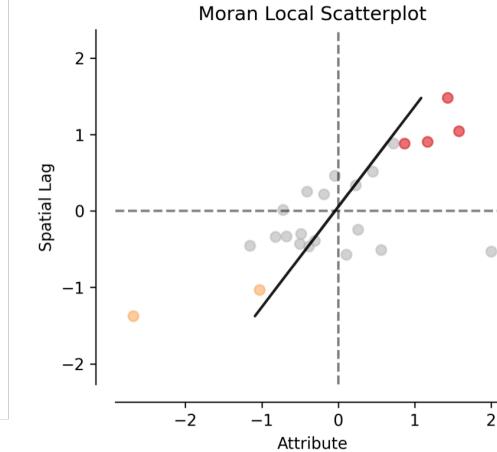
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LOCAL INDICATORS OF SPATIAL AUTOCORRELATION (LISA)

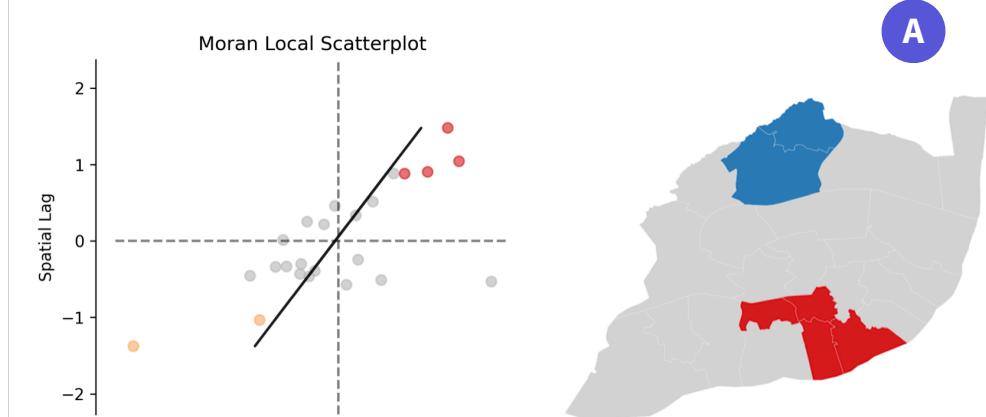
A

Airbnb: Average Price

HH (areas where property prices are consistently high and surrounded by high values) and LL (areas where prices are consistently low and surrounded by low values);



A

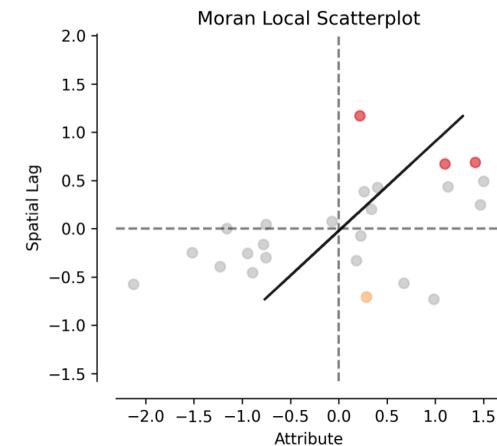


58.19, 92.21
92.21, 97.81
97.81, 107.62
107.62, 117.49
117.49, 138.41

B

Regular Rent: Average Price

HH and HL (areas of high prices surrounded by low prices).



B



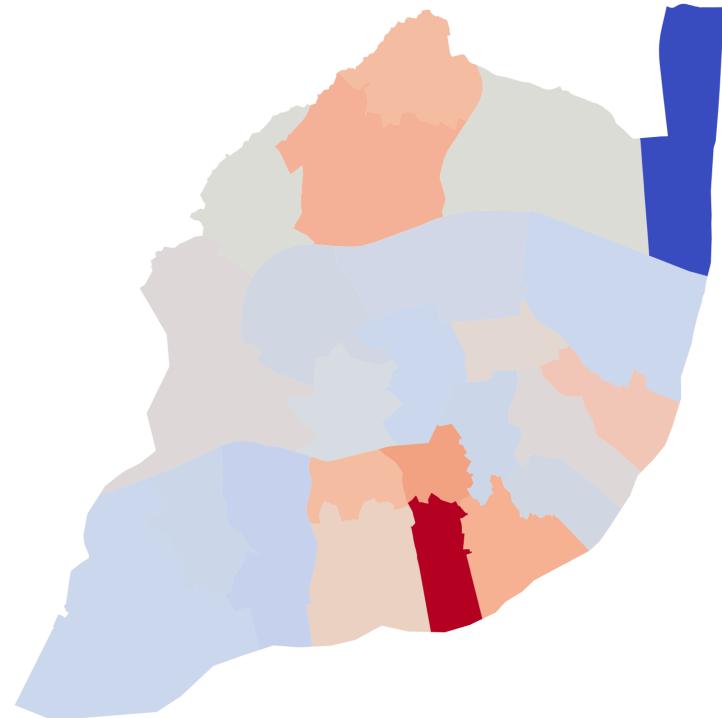
1199.88, 1694.34
1694.34, 2059.10
2059.10, 2181.88
2181.88, 2487.61
2487.61, 2679.31

Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

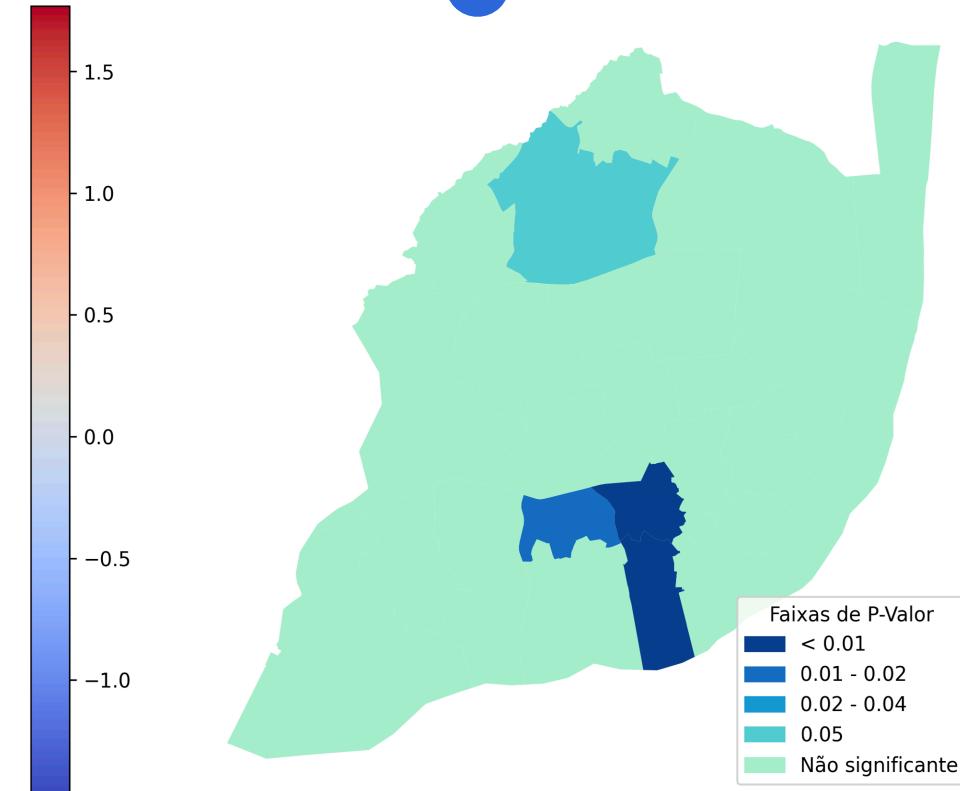
LOCAL BIVARIATE SPATIAL ANALYSIS

Average Price: Airbnb vs Regular Rent

A Índice de Moran Bivariado Local



B P-Values Locais



LISA: 0,23

p-value: 0,035

A

Positive spatial correlation in the northern regions, where there are lower values in both datasets, and in the central and historic center region, high values in both datasets;

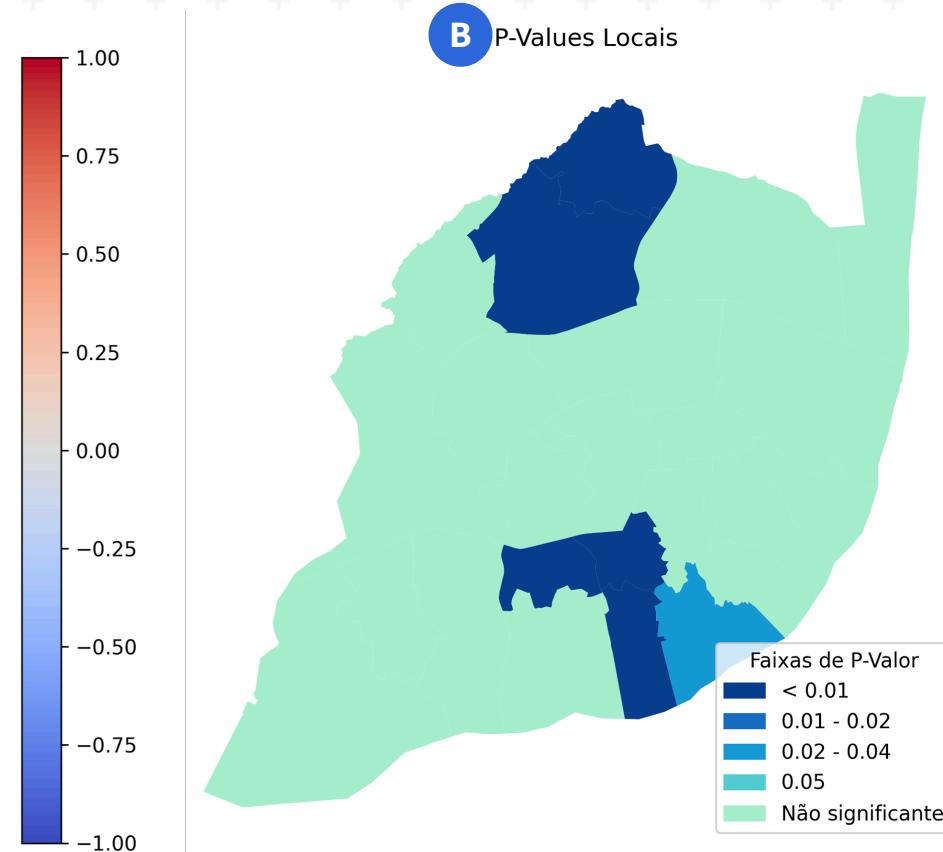
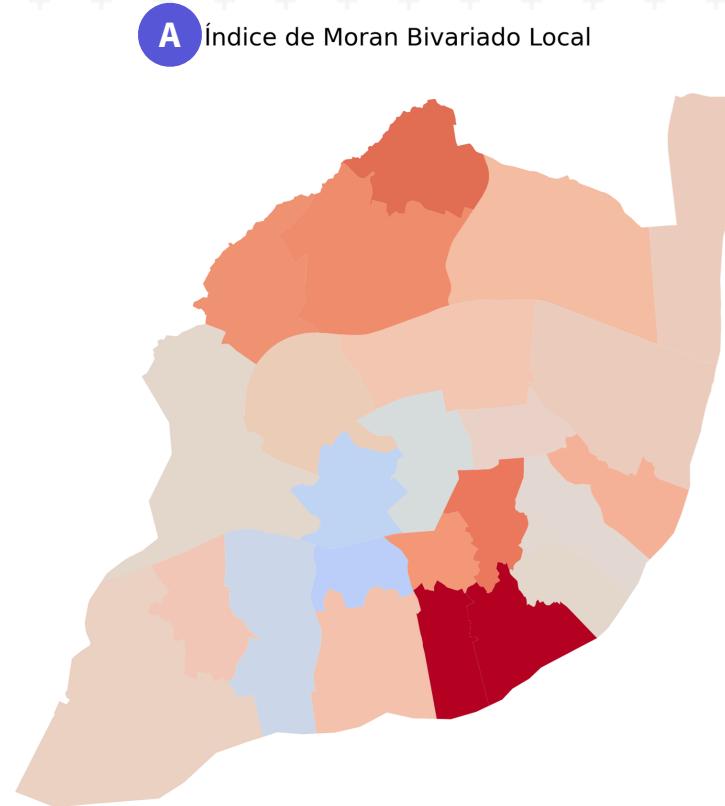
B

Significant correlation in the central region.

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LOCAL BIVARIATE SPATIAL ANALYSIS

Accumulated Licenses (Airbnb) vs. Rent/m²



LISA Bivariado: 0,463
p-value: 0,001

A Correlação espacial positiva nas regiões norte, em que há valores mais baixos em ambos os conjuntos de dados, e na região do centro histórico.

B correlação significativa na região central, centro histórico e norte.

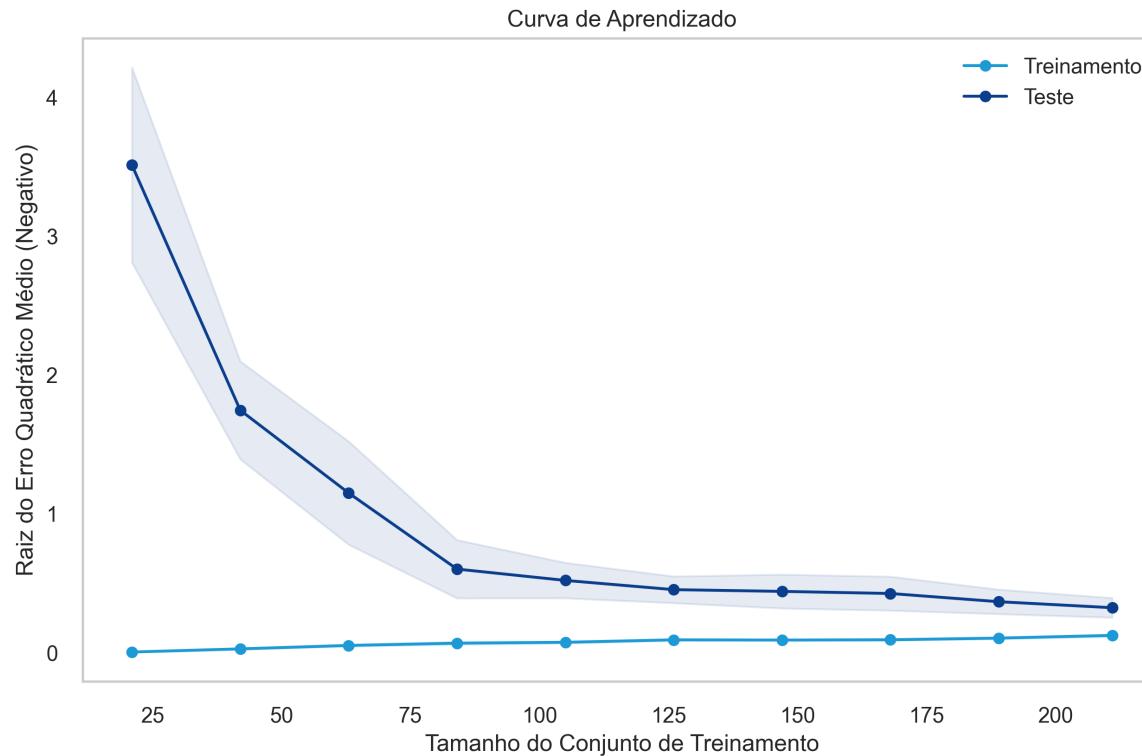
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MACHINE LEARNING

Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

MACHINE LEARNING | XGBOOST

Métrica	Treinamento	Validação Cruzada	Teste
Mean Squared Error [MSE]	0,1190	0,3238	0,3322
R-squared [R2]	0,9454	0,8530	0,8732



Hiperparâmetro	Valor
subsample	0,8
n_estimators	150
learning_rate	0,1
min_child_weight	3,0
max_depth	2,0

Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

MACHINE LEARNING | XGBOOST

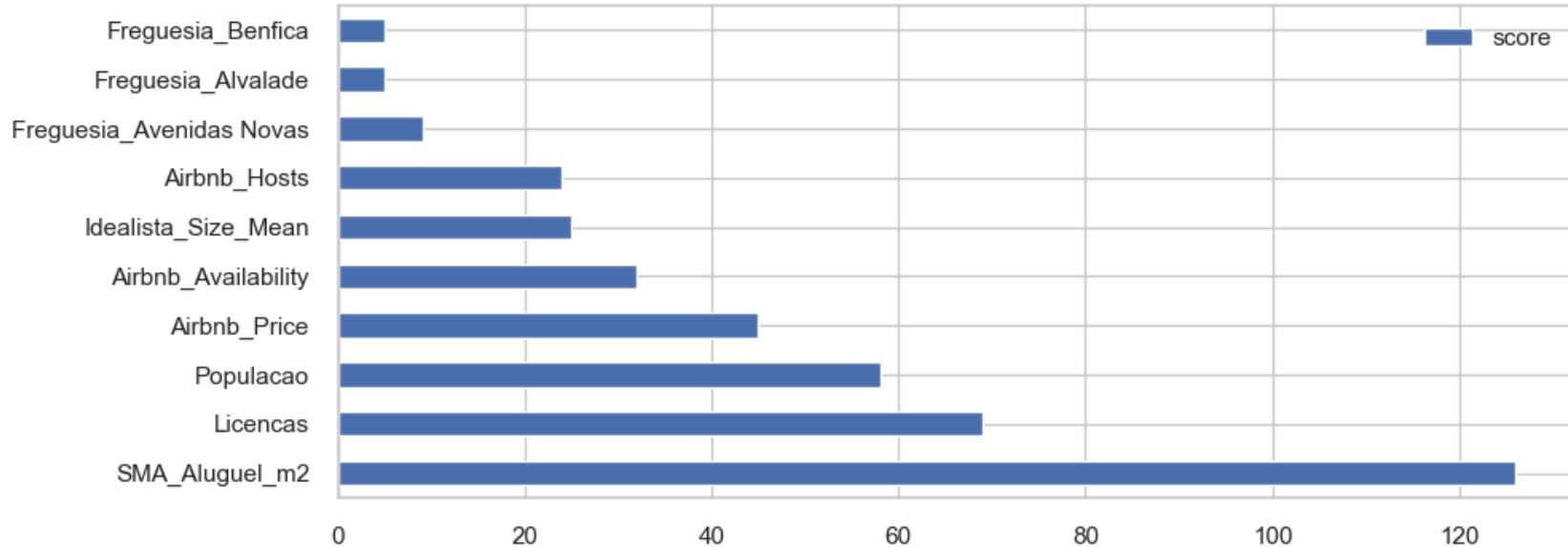
Gráfico de feature importance

Características mais relevantes:

Média móvel simples (SMA) dos preços de aluguel

Número de Licenças

Densidade Populacional



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RIO DE JANEIRO

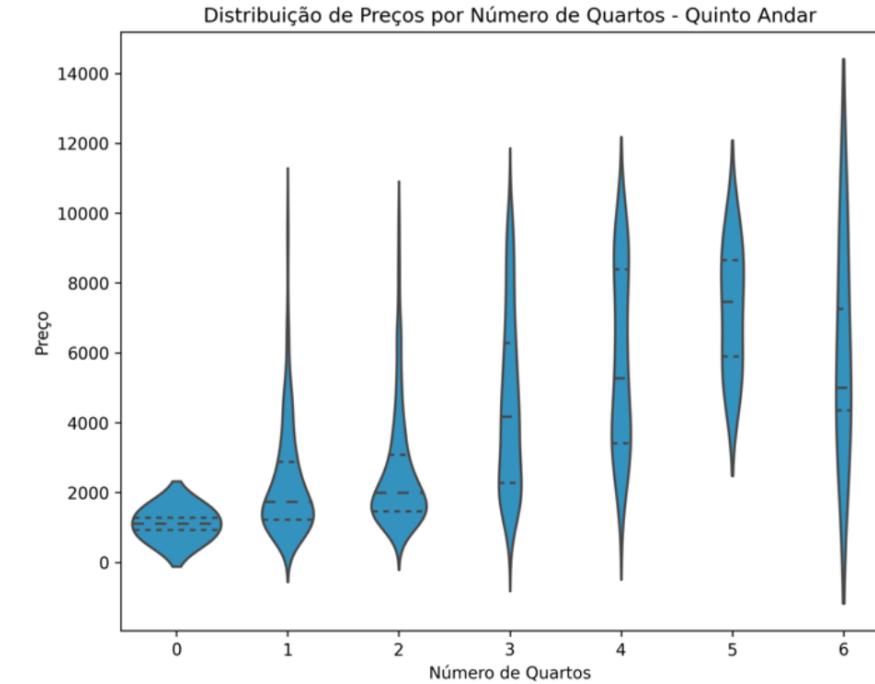
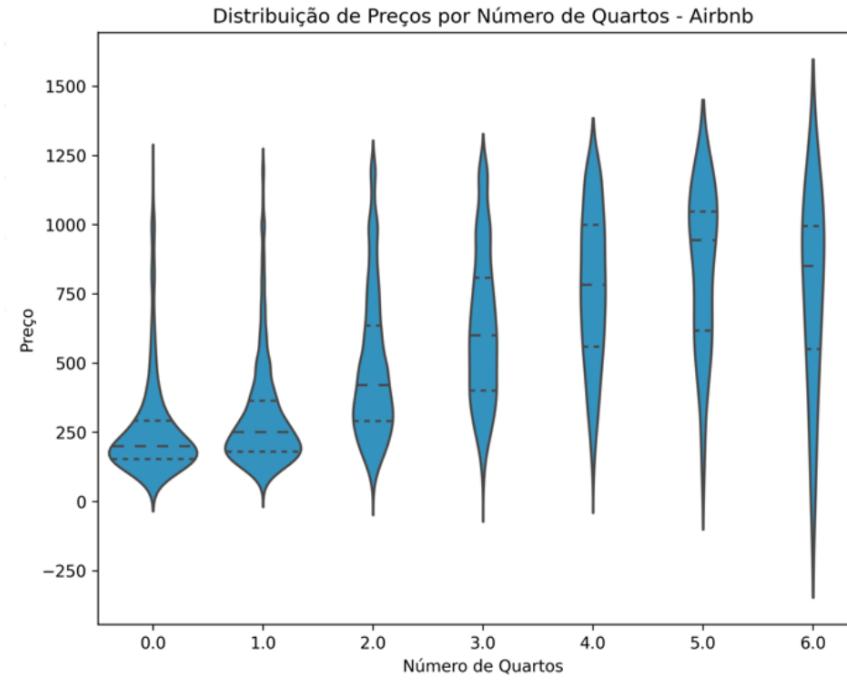


Fonte de dados:

Censo 2020, Inside Airbnb e
Web Scraping Quinto Andar

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ANÁLISE EXPLORATÓRIA



Airbnb

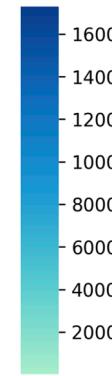
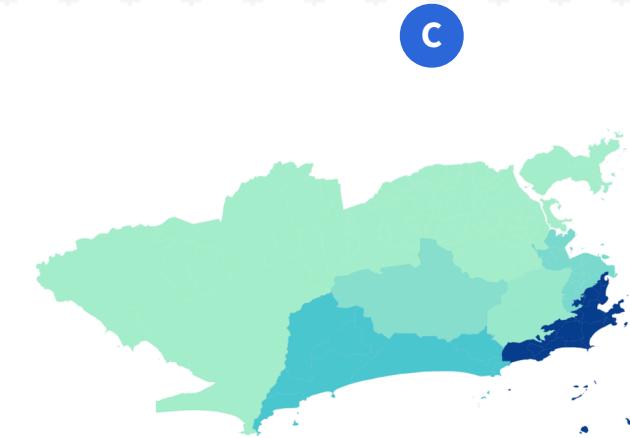
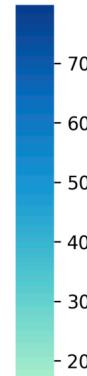
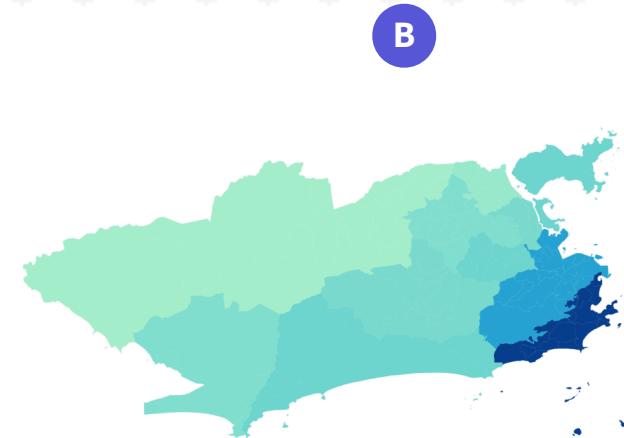
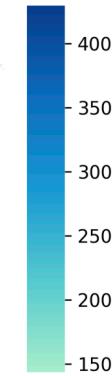
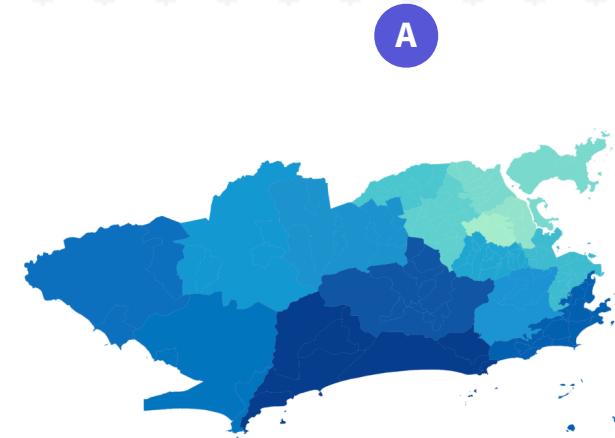
1,6
Quartos

Quinto Andar

2,1
Quartos

Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

ANÁLISE EXPLORATÓRIA



A | Preço médio diário das acomodações no Airbnb

B | Distribuição do preço médio do aluguel por metro quadrado

C | Número de propriedades licenciadas para operação no Airbnb por área

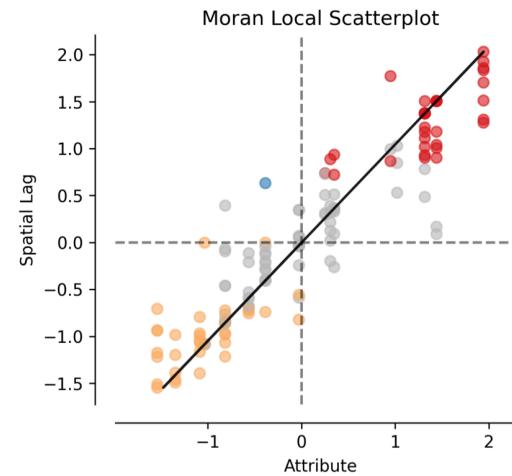
Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

ANÁLISE ESPACIAL LOCAL (LISA)

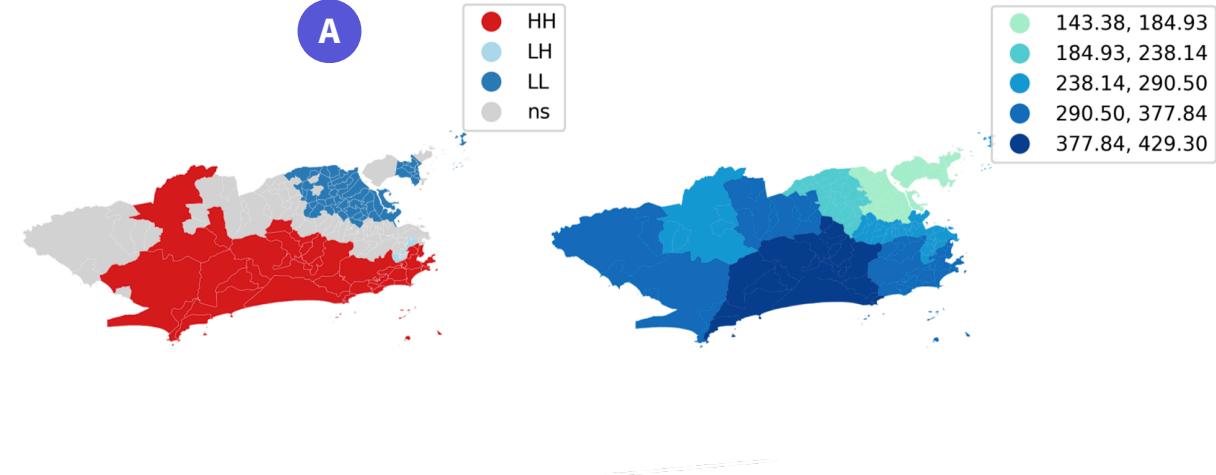
A

Airbnb: Preço Médio

HH (áreas onde os preços dos imóveis são altos e estão cercadas por valores altos), LH (áreas com preços altos cercada por áreas com preço baixo) e LL (preços são baixos e estão cercadas por valores baixos);



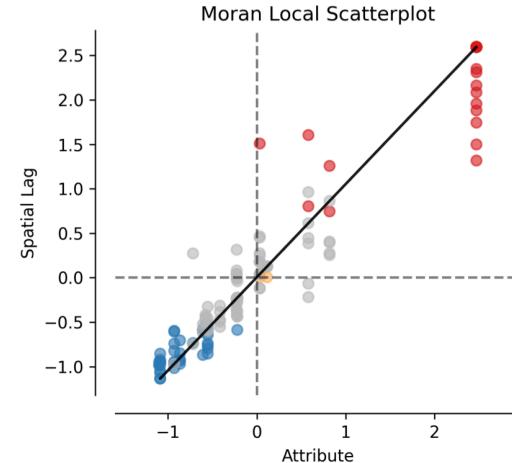
A



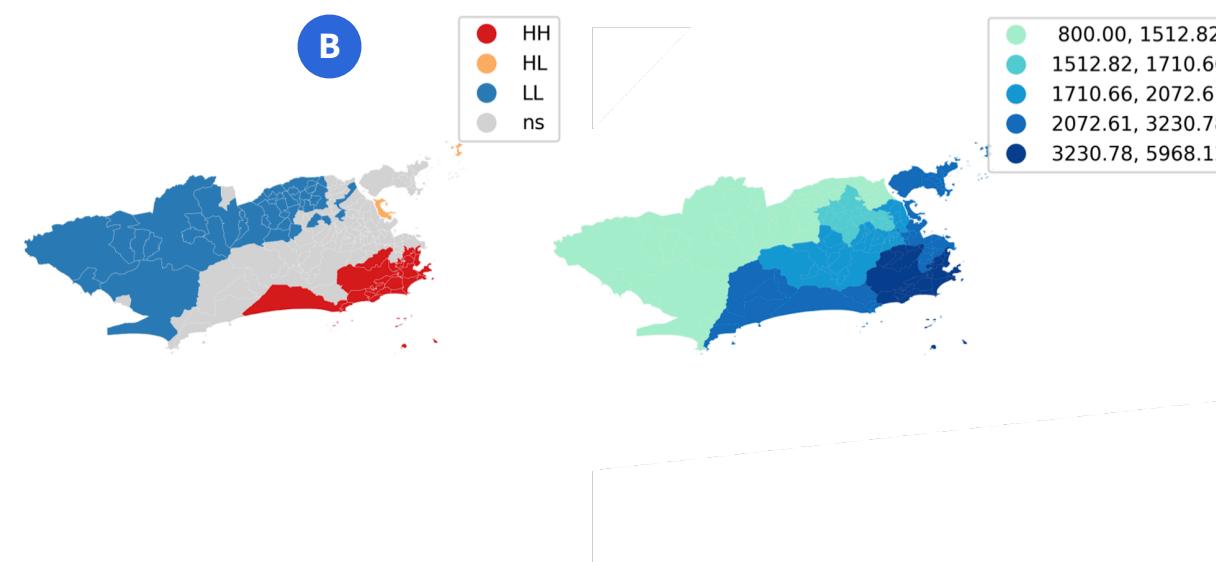
B

Aluguel Regular: Preço Médio

HH, HL (locais de preço alto cercado por preços baixos) e LL.



B



Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

ANÁLISE ESPACIAL LOCAL (BIVARIADO)

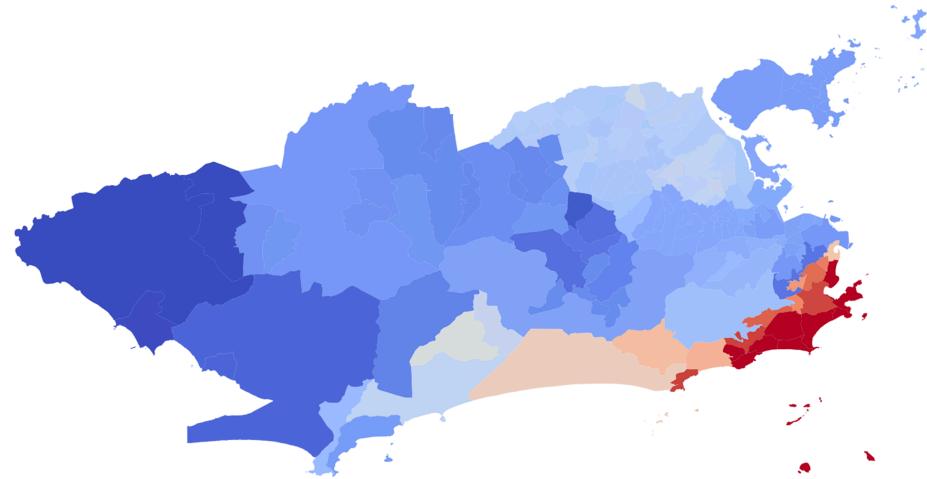
LISA: 0,45

p-value: 0,001

Preço Médio: Airbnb vs Aluguel Regular

A

Índice de Moran Bivariado Local

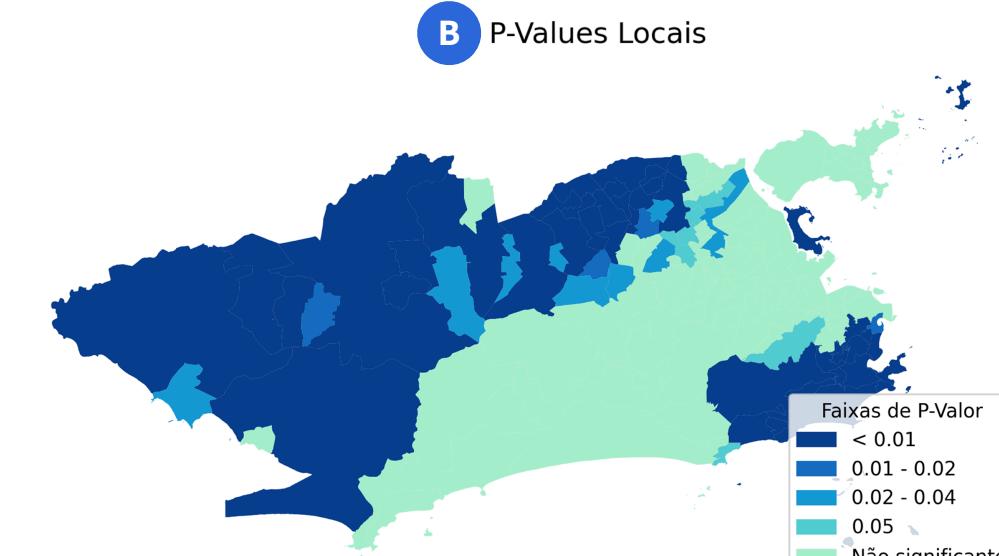


A

Correlação espacial positiva forte na zona sul e parte da zona oeste (Barra da Tijuca), e correlação negativa moderada na restante da zona oeste;

B

P-Values Locais



B

Correlação significativa na zona sul, parte da zona oeste e parte da zona norte.

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ANÁLISE ESPACIAL LOCAL (BIVARIADO)

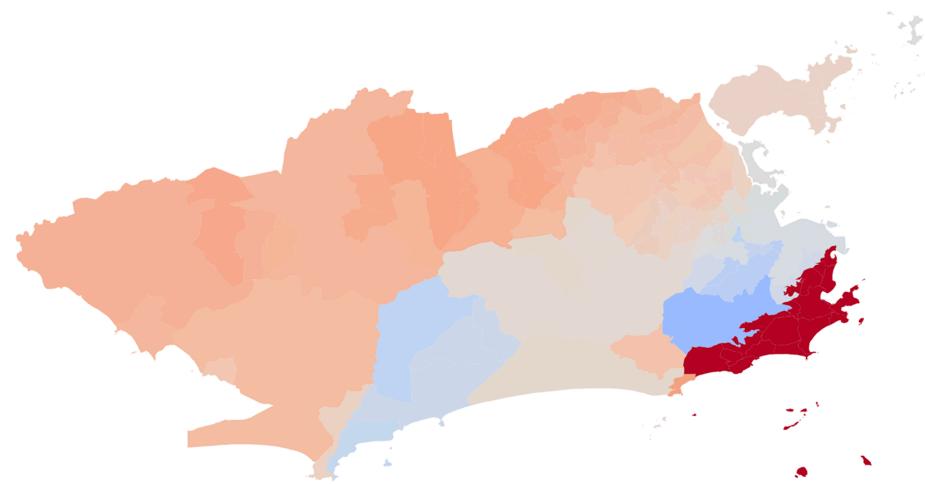
LISA: 0,82

p-value: 0,001

Licenças Acumuladas (Airbnb) x Aluguel/m²

A

Índice de Moran Bivariado Local

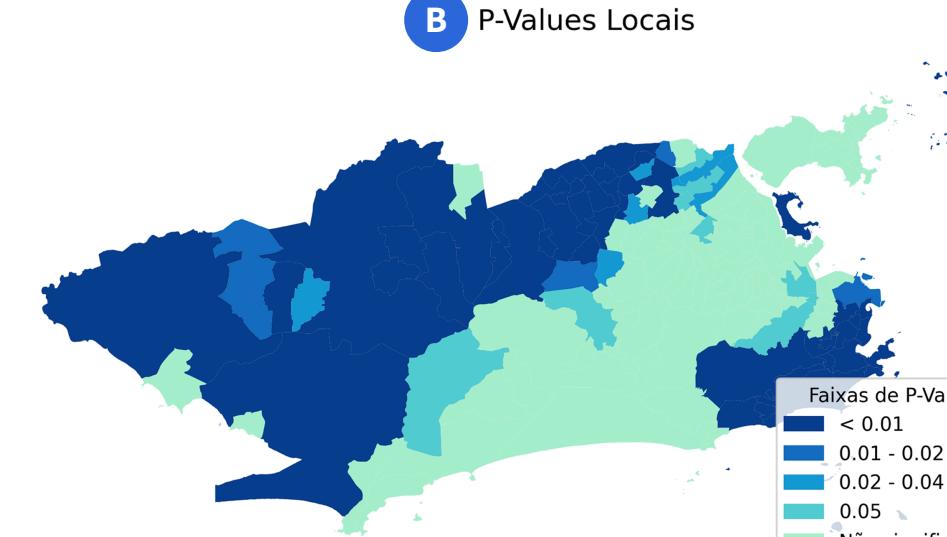
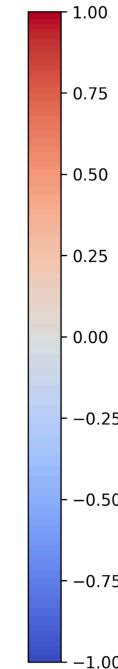


A

Correlação espacial positiva forte na zona sul e parte da zona oeste (Barra da Tijuca), e correlação negativa moderada na restante da região da Tijuca;

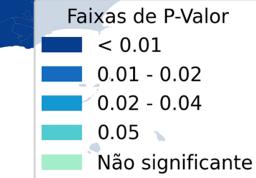
B

P-Values Locais



B

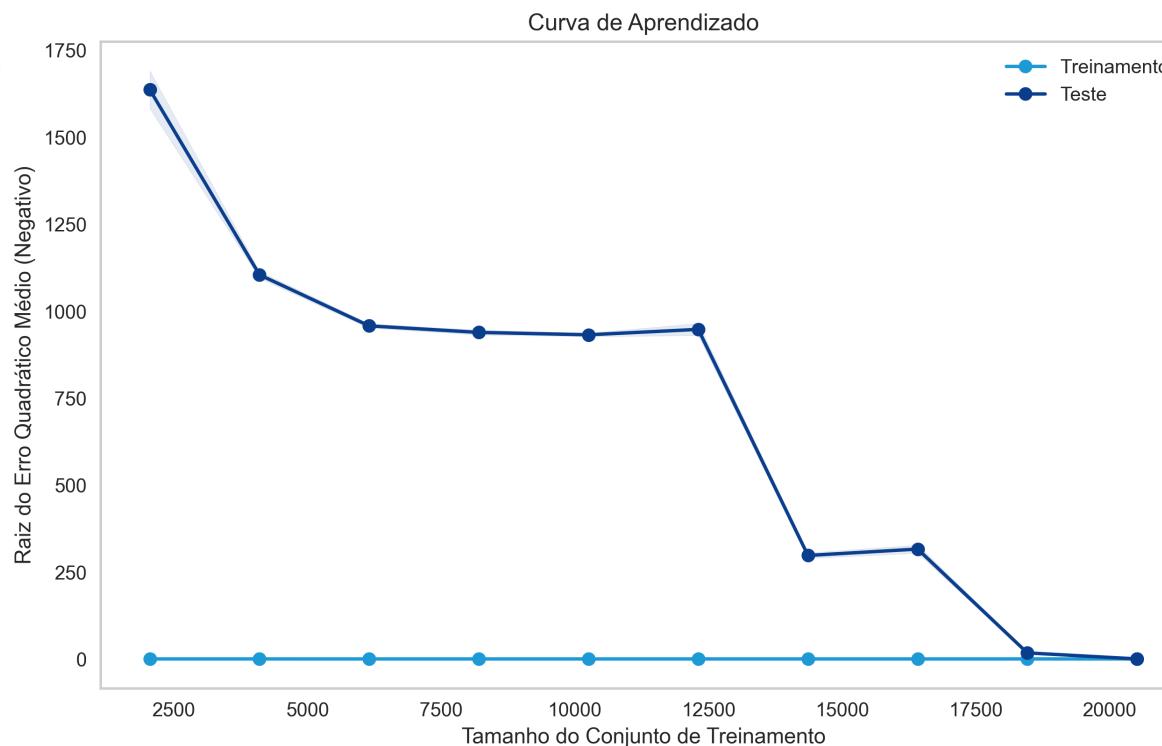
Correlação significativa na zona sul, parte da zona oeste e parte da zona norte.



Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

MACHINE LEARNING | XGBOOST

Métrica	Treinamento	Validação Cruzada	Teste
Mean Squared Error [MSE]	0,1210	0,1510	0,1205
R-squared [R2]	0,9998	0,9998	0,9998



Hiperparâmetro	Valor
max_leaves	50
subsample	0,6
n_estimators	50
learning_rate	0,1
min_child_weight	2,0
max_depth	5,0
colsample_bytree	0,5
reg_alpha	0,1

Relationship between Airbnb and real estate speculation in the cities of Lisbon and Rio de Janeiro

MACHINE LEARNING | XGBOOST

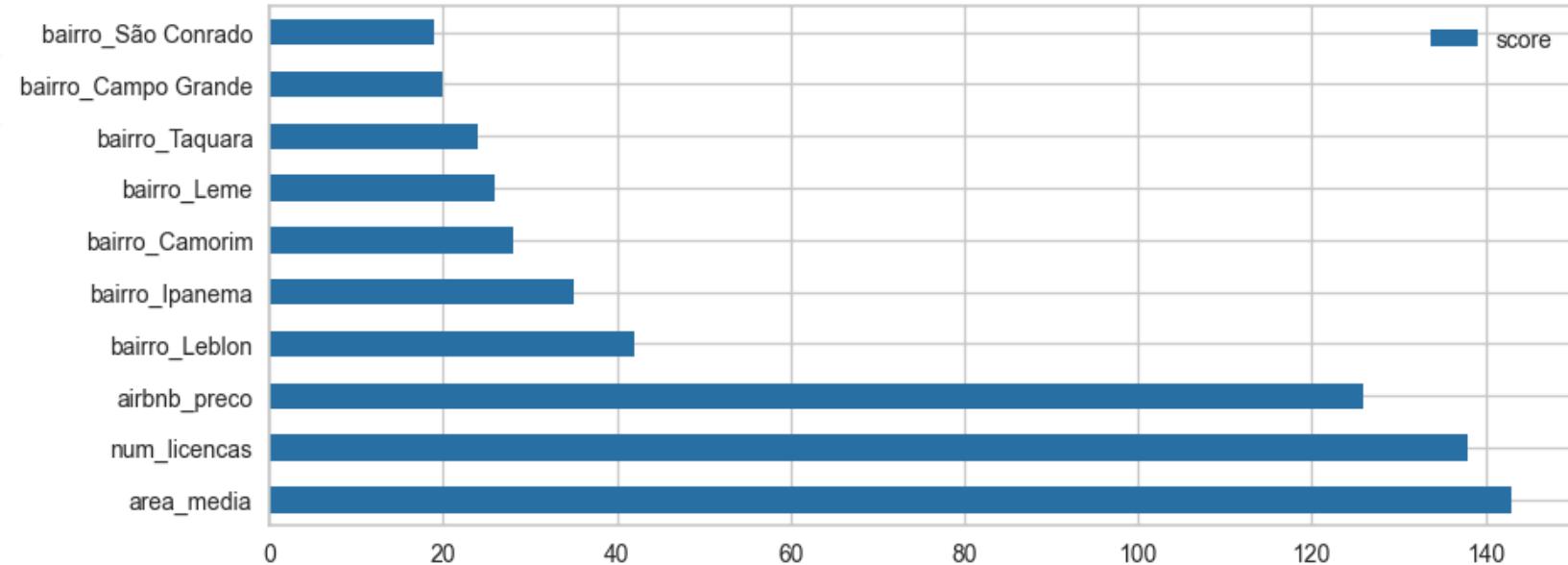
Gráfico de feature importance

Características mais relevantes:

Área média do imóvel

Número de Licenças

Preço do Airbnb

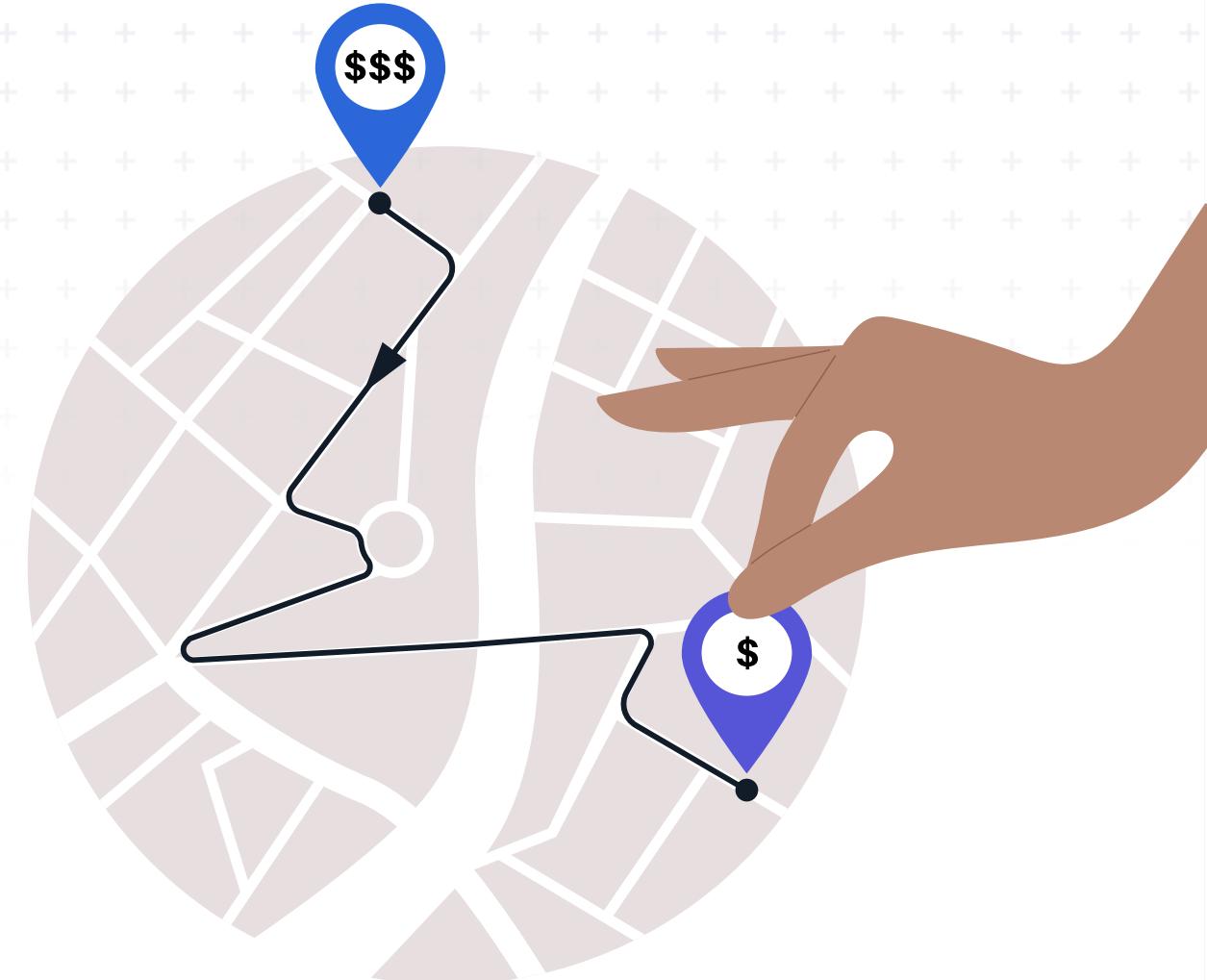


CONCLUSÃO

O aumento no número de licenças do Airbnb pode estar correlacionado com a diminuição da oferta de habitação permanente, resultando, assim, em um aumento nos preços dos aluguéis.

Além disso, o aumento no preço médio das acomodações listadas no Airbnb pode ser indicativo de uma demanda elevada por hospedagem na região, o que, por sua vez, pode criar a percepção de uma valorização do local.

Essa valorização, por sua vez, contribui para o aumento dos preços dos aluguéis na área.



CONSIDERAÇÕES FINAIS

Os resultados mostraram uma relação entre o número de imóveis licenciados e o valor do aluguel, além de autocorrelação espacial positiva entre valores médios de aluguel de longa e curta duração.

Estudos anteriores em cidades como Nova York, Paris e Lisboa mostraram resultados semelhantes, destacando o impacto do Airbnb nos mercados imobiliários.

Limitações incluem escassez de dados demográficos detalhados e desafios na análise da gentrificação devido à natureza complexa e subjetiva do fenômeno.

Destaca-se a importância da regulamentação do Airbnb para promover um crescimento sustentável e proteger as comunidades locais.

RECOMENDAÇÕES



Regulamentação do Airbnb

Destaca-se a importância da regulamentação para promover um crescimento sustentável e proteger as comunidades locais.



Educação da Sociedade

É fundamental educar a sociedade sobre os prós e contras do fenômeno do Airbnb e suas implicações nos mercados imobiliários e nas comunidades.