

MEASURING THE EFFECTS OF BRAND MIX IN RETAIL RENTS: A CASE STUDY ISTANBUL

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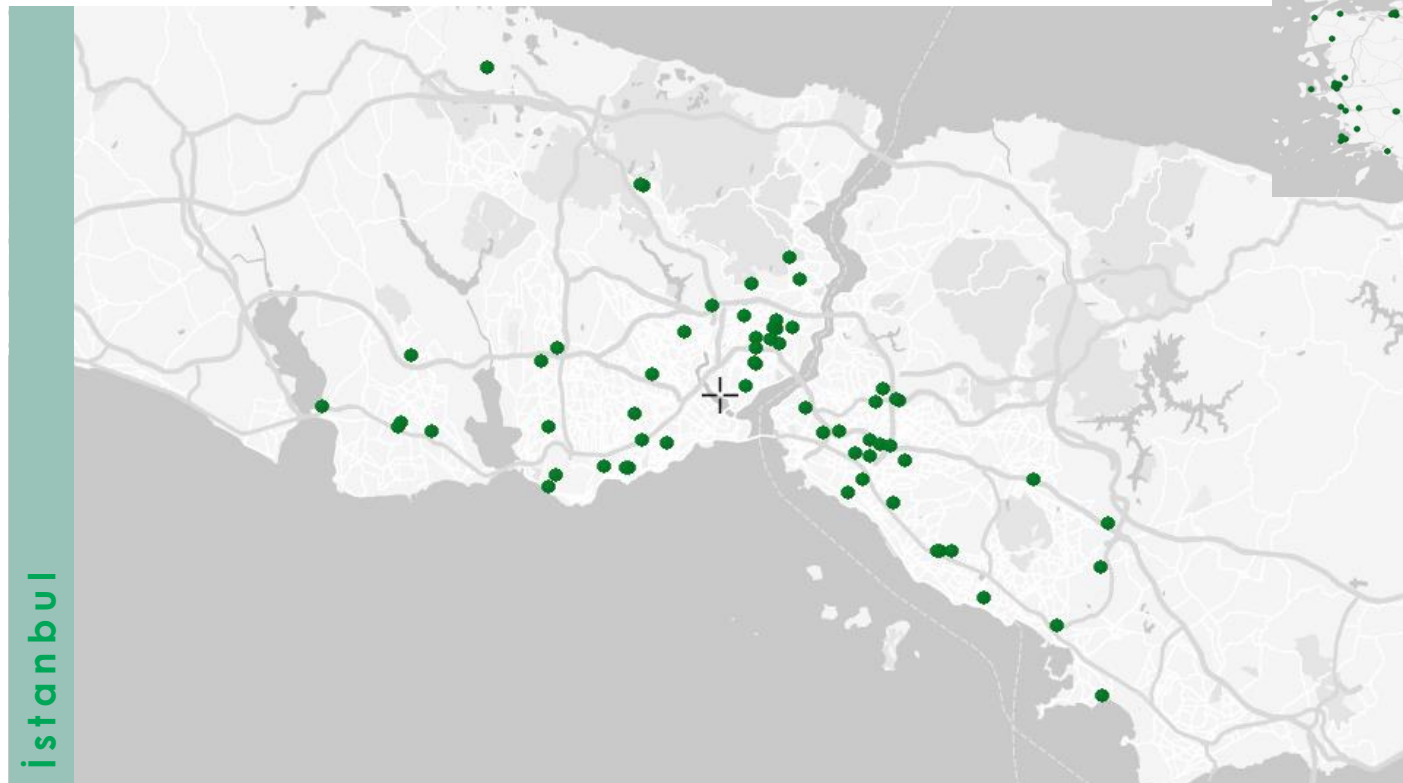


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01 | PROBLEM

POINTS OF A RETAIL BRAND OFTEN LOCATED ON RETAIL STREETS



Source: Maptriks GIS tool



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Choosing a location on Retail Streets means **being next to many other brands**.

This allows you to reach **more users and foot traffic**. And of course, this costs firms **higher rents**.

It is very difficult to predict the rents on the retail streets.

What if it is necessary to predict the whole of Turkey?

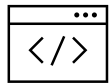
02 | LITERATUR REVIEW

Variables Used in Previous Retail Rents Studies

Author	Publish Year	Study Term	Study Area	Variables
Zhang et all.	2020	1996 - 2011	Netherlands	Rental Area, Brand Mix, Distantanceto transportation, Age
Jeong and Kim	2007	May 2003	96 Trade Areas in South Korea	Volume of Passing Pedestrians (as demand part) and store number (as supply part)
Koster et all.	2019	2003-2015	Netherlands	Number of Passing Pedestrians (as demand part) and vacancy rate (as supply part)
Nase et all.	2016	1994-2019	Belfast City	Urban design quality
Liang and Wilhelmsson	2011	August 2009	Shangai	Location, Rental Area, Age
Seo et all.	2019	2014	Phoenix	Distance from networks
Han and Kim	2014	Q1 2011	Central Cities in South Korea	Location (Floor), Area (City Center or Not), Are, Rental Area

03 | DATA

DATA COLLECTION



Dataset obtained from sahibinden.com in May 2021.

16822 First stage data: covers all Turkey and all commercial posts

Manual
Address
Control



6865 Limited data: within the borders of Istanbul Province

Manual function and
floor location control



2852 Retail areas with a maximum of two floors and accessible from the street

DATA SOURCE

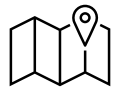
sahibinden.com

sahibinden.com is a sales/rental advertisement site established in 2000. sahibinden.com is the market leader in its field.

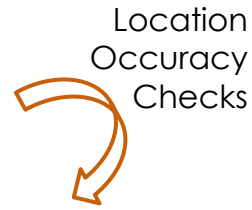
Real estate is the biggest category on the website and 844,300 real estate sales/lease advertisements are listed as of June 2022 on sahibinden.com.

03 | DATA

DATA COLLECTION



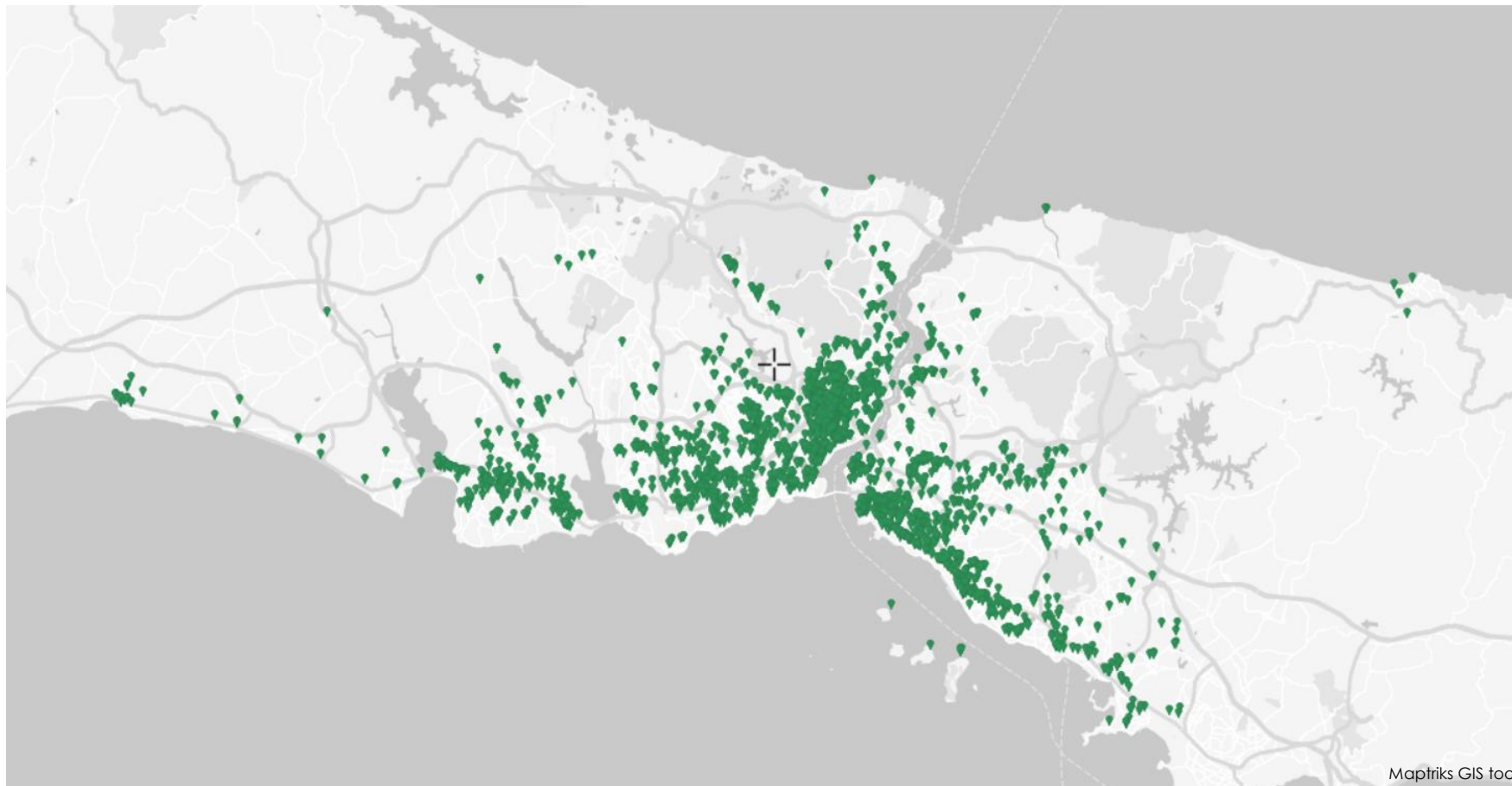
Observations were mapped using coordinates



Location
Accuracy
Checks

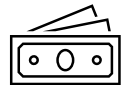
2606

Final dataset



04 | DATA

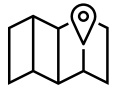
The following variables in dataset were included in the study;



Monthly Asking Rent (TL/sqm/month)



Gross Lease Area (sqm)



Location (Coordinates, for catchment areas)



Floor Location and Number of Floors



Building Age



Number of Public Buildings and Number of Transportation Stations



Brand Mix Index

03 | DATA

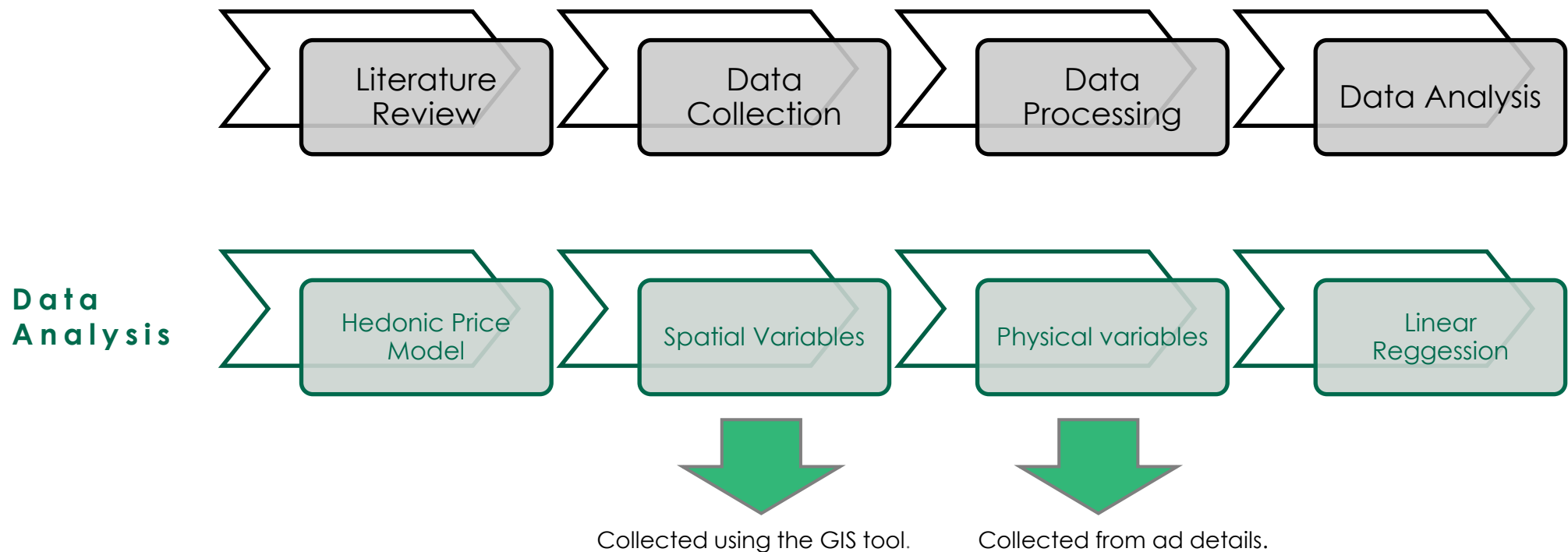
Descriptive Analysis

	Rent	Floor Location	No of Floor	GLA	Age	No of Public Building	No of Station	Brand Mix Index
Min. :	3.00	0.00	0.00	4.00	1.00	0.00	0.00	0.13
1st Qu.:	25.00	1.00	1.00	80.00	1.00	1.00	2.00	0.27
Median :	44.00	1.00	1.00	150.00	15.00	15.00	4.00	0.35
Mean :	84.33	0.86	0.93	266.30	16.68	16.68	4.63	0.39
3rd Qu.:	90.00	1.00	1.00	300.00	29.00	4.00	6.00	0.45
Max. :	1500.00	1.00	1.00	5200.00	100.00	25.00	58.00	1.00

04 | METHODOLOGY

Research question: Can data linked to the accessible environment of the candidate point also be used for rent estimation?

Hypothesis: Brands or brand mix within access area of the candidate point affect the rental value.



04 | METHODOLOGY

DATA PROCESSING



Floor Location and Number of Floors Labelling

Floor Location

Floor Location	Value
1st Floor (Yüksek Giriş)	0
Ground Floor	1
Basement	0

Number of Floor

No of Floor	Value
One Floor	1
Ground & 1st Floor	0
Ground & Mezzanine	0
Ground & Garden	0
Ground & Basement	0

04 | METHODOLOGY

DATA PROCESSING

Brand Mix Index

To measure the brand mix of a shopping street, sector classification was made using NACE codes. In the analysis, 10 different categories were created according to NACE codes*.

Herfindahl Index was used to define Brand Mix.

The highest value in the Herfindahl index is 1. While the Index is at its highest level, it is in the same NACE classification of all retail properties in the catchment area.

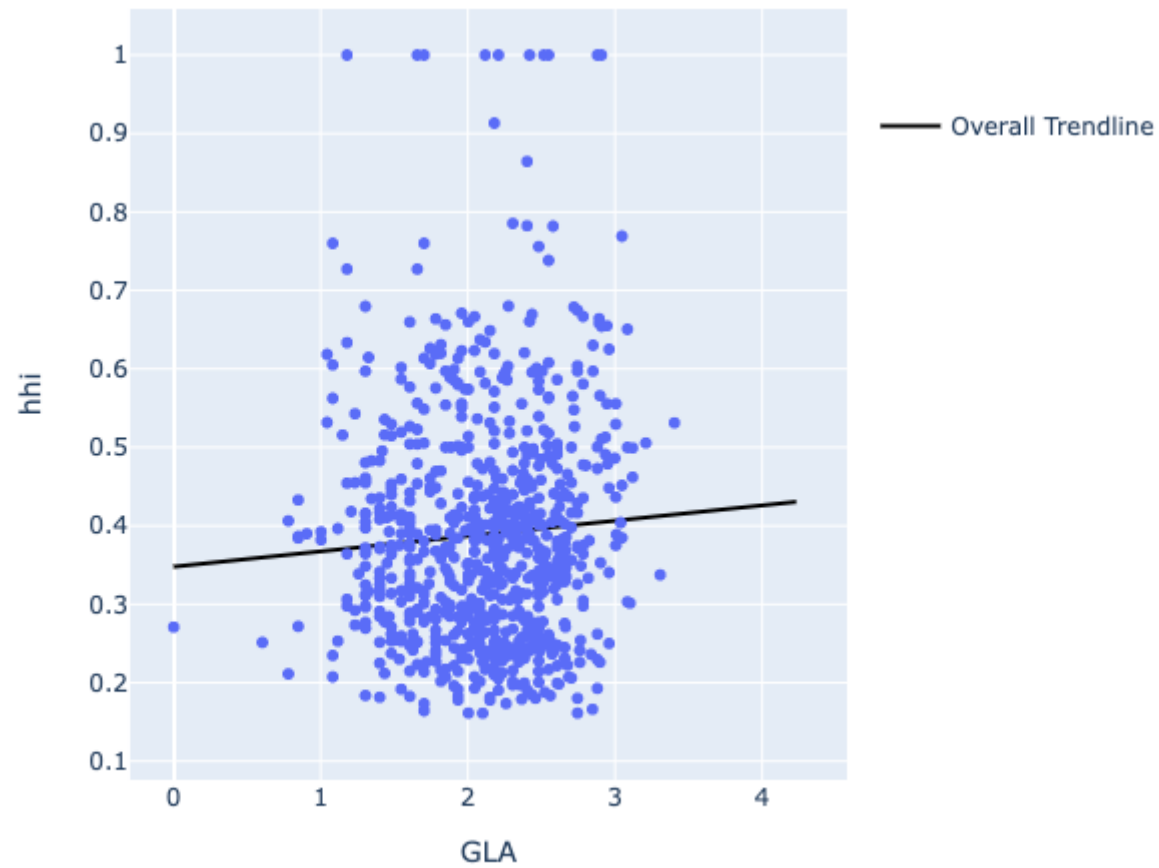


*The category list is given in Appendix 1.

**The Herfindahl Index has been previously used to measure brand or tenant mix. See, e.g., Des Rosiers et al. (2009), Ambrose et al. (2016) and Zhang et al. (2020)

05 | ANALYSIS

GLA and Brand Mix Graphical Analysis



Not: Overall Trend = the overall trend of the log function of the Monthly Unit Rent, **GLA** = log function of Gross Leaseable Area, **hhi** = Herfindahl Index

05 | ANALYSIS

**Unit Rent
(TL/sqm/Month)**

**Floor Location
Label (0 -1)**

**Number of Floor
Label (0-1)**

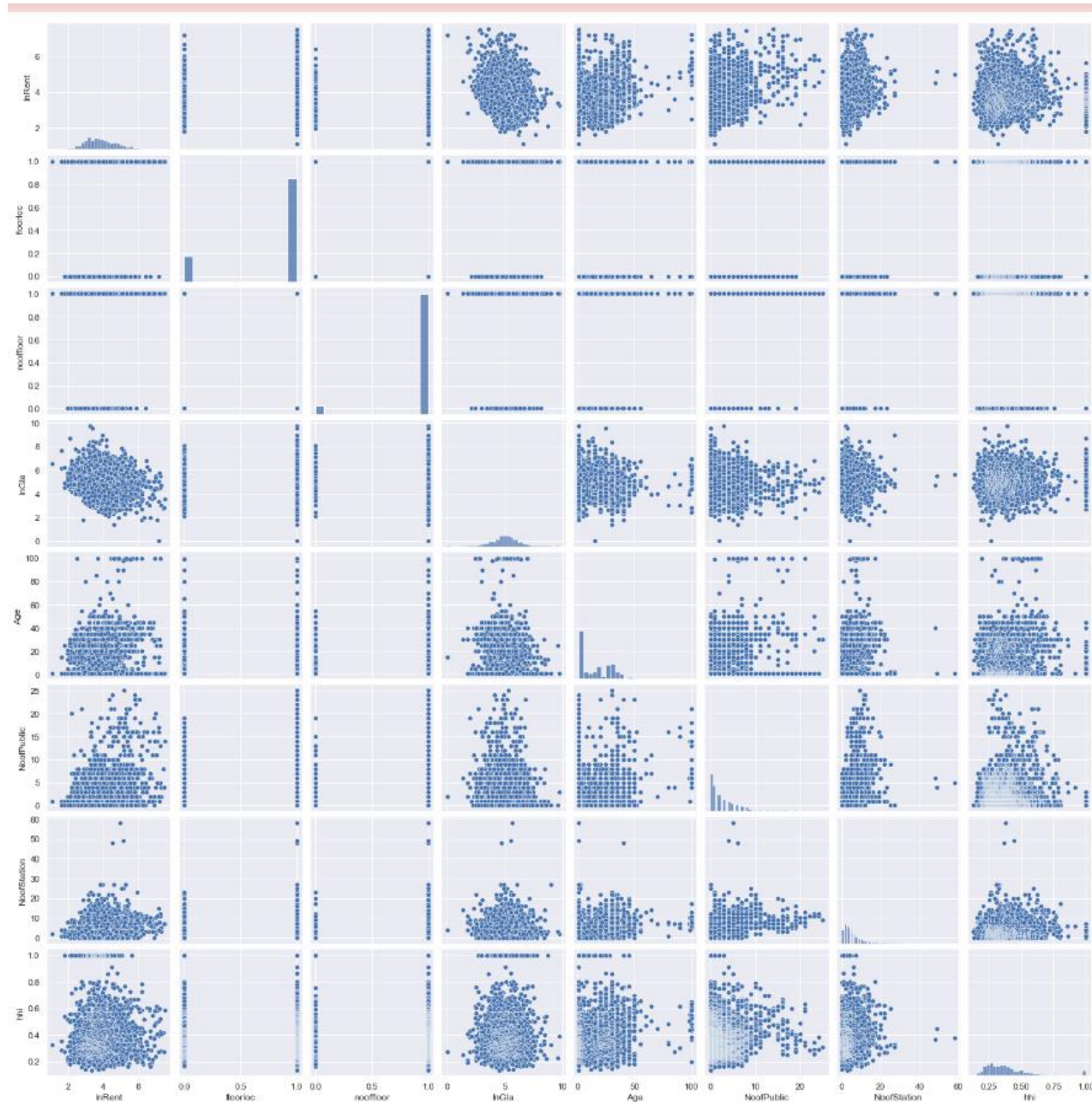
**GLA
(sqm)**

**Building Age
(0-100)**

**Number of
Public Buildings**

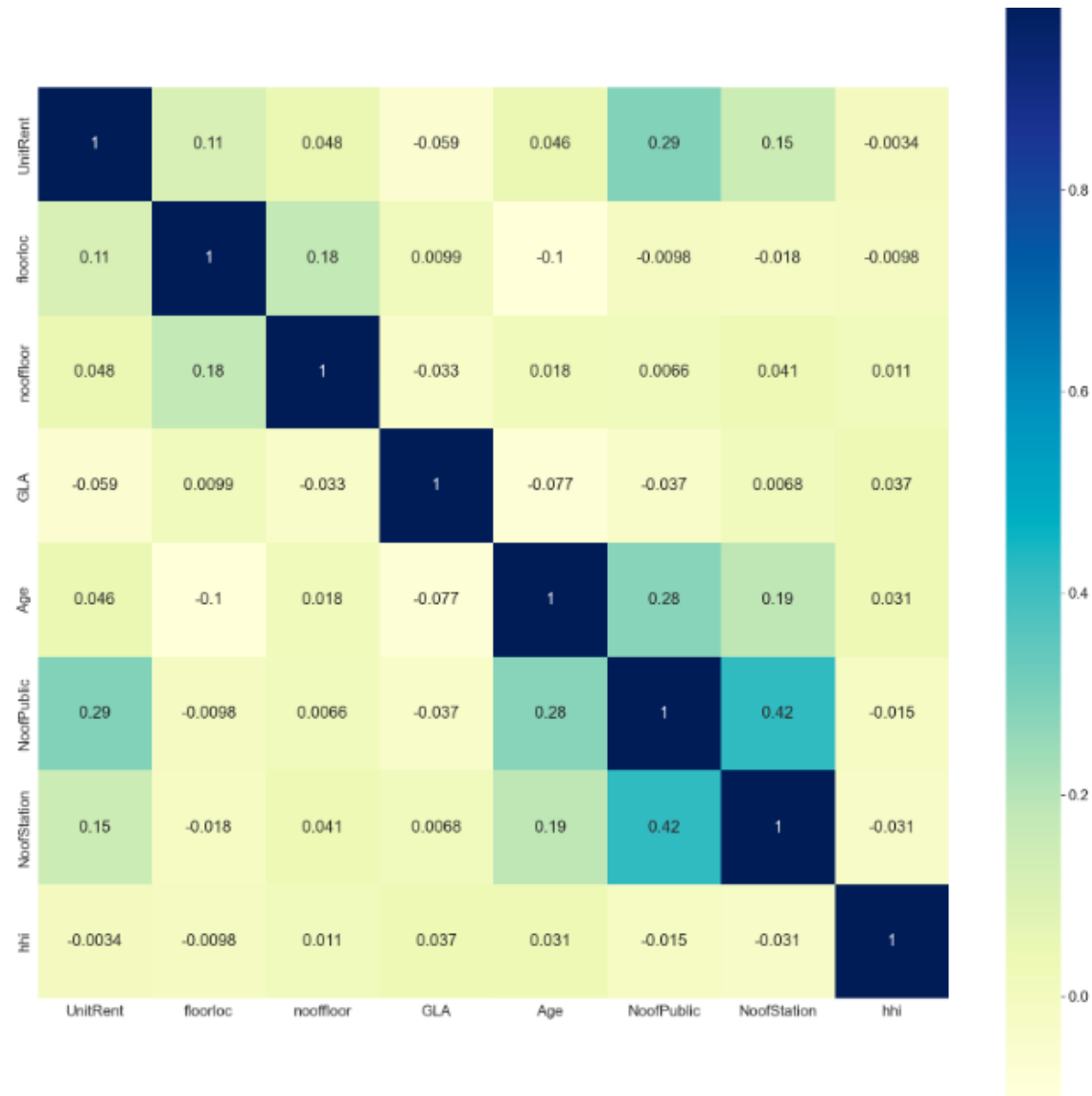
**Number of
Transportation**

**Brand Mix Index
Herfindahl Index (0-1)**



05 | ANALYSIS

Correlation Matrix



Not: **UnitRent**= log function of the Monthly Unit Rent, **floorloc** = Floor Location, **nooffloor** = Number of Floor, **GLA** = log function of Gross Leaseable Area, **Age** = Building Age, **noofpublic** = Number of Public Building, **noofstation** = Number of Transportation Station, **hhi** = Herfindahl Index

06 | RESULTS

HEDONIC MODEL

$$[Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t}]$$

Y = Unit Rent = log function of the Monthly Unit Rent

X₁ = GLA = log function of Gross Leasable Area, **X₂ = age** = Building Age, **X₃ = hhi** = Herfindahl Index for Brand Mix, **X₄ = noofstation** = Number of Transportation Station, **X₅ = noofpublic** = Number of Public Building, **X₆ = floorloc** = Floor Location, **X₇ = nooffloor** = Number of Floor

Residuals:	Min	1Q	Median	3Q	Max
	-3,1276	-0,6195	-0,0904	0,4997	3,3815

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	3,907271	0,118772	32,912	<2e-16	***
GLA	-0,141115	0,016062	-8,786	<2e-16	***
age	-0,003734	0,001073	-3,481	0,000508	***
hhi	0,122756	0,098109	1,251	0,210968	
noofstation	0,025358	0,004308	5,887	5,45e-09	***
noofpublic	0,075487	0,005123	14,735	<2e-16	***
floorloc	0,423889	0,042806	9,902	<2e-16	***
nooffloor	0,061590	0,068574	0,898	0,369191	

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0,363 on 2606 degrees of freedom

Multiple R-squared: 0,1952

Adjusted R-squared: 0,1931

F-statistic: 90,31 on 7 and 2606 DF, p-value: <2,2e-16

06 | RESULTS

- As the gross leasable area grows, unit rent levels are negatively affected. A 10% increase in GLA reduces Unit Rent by 1,3%.
- As the age of the building increases, rental levels are negatively affected. A year increase in buildings' age reduces Unit Rent by 0,4%.
- Being close to public transport stations positively affects the unit rent. Adding a public transport station in the catchment area would increase Unit Rent by $e^{0,025} - 1 = 2,6\%$.
- Being in the area where public institutions are concentrated has a positive effect on the unit rent. Adding a public building in the catchment area would increase Unit Rent by $e^{0,075} - 1 = 7,8\%$.
- Being on the ground floor has a positive effect on store rents. Being at street level creates a 52,8% increase in Unit Rent.

06 | RESULTS

- Being on a single floor affects the rent positively if the store is at the entrance level from the street. However, according to the model outputs, the number of floors of the store is not a significant variable for predicting the Unit Rent.
- The brand mix index produced with the Herfindahl Index was not significant predictor of unit rent. However, as the index grows, the unit rent tends to increase. It should also be taken into account that the tendency to aggregation rather than brand mix may have a positive effect on rent.
- The model can be tried again by producing a brand mix index with alternative indexes (eg Shannon Index). In general, the model does not statistically significant. The model can be updated with the distance to public institutions and public transport.

THANK YOU

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07 | REFERENCES

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