

Moving Out

An analysis of real estate behavior during pandemic COVID-19



Jiaying Xue | Joel Salazar

Impacts of Coronavirus are everywhere. People must stay at home due to lockdown policies. Increased time at home leads to changes in property preferences [1]. The economic slowdown and increased unemployment forced people to reduce their expenses and move out of housing they can no longer afford [2].

We will use real estate big data to look out for trends in people's behavior under epidemic context [3]. This analysis will bring us insights into location pattern changes and price variations in the real estate offer.

DATA AVAILABLE

The two datasets involved:

- Property Data [4]. It has more than 2 million property advertisements records over a year of Argentina, Colombia, Ecuador, Peru and Uruguay.
- COVID-19 cases dataset [5]. Issued by WHO, and used to determine the Corona influence over the five countries.

STUDY AREA

The data is organized in columns and it is possible to filter by location into different administrative borders. We wanted to find a way to analyze the data for the five countries with similar criteria. Therefore, we filtered the data by the capital city, real estate activities tend to take



Fig. 1: Distribution of property data over the five countries.

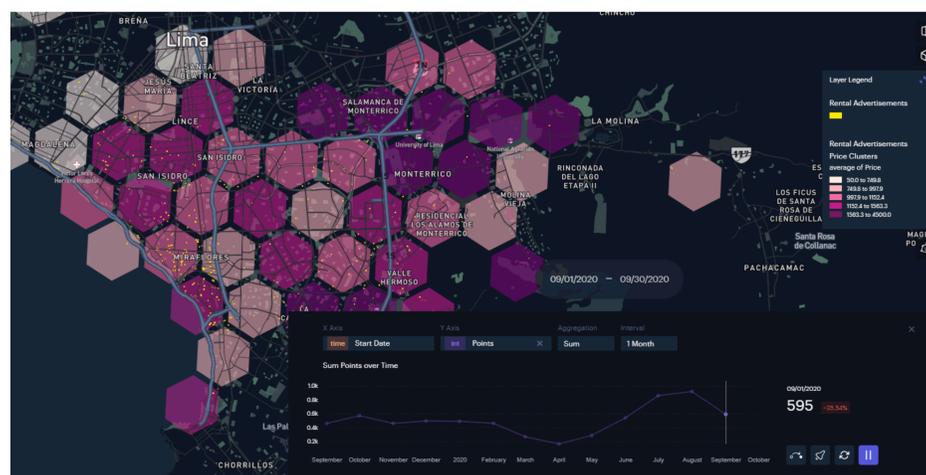


Fig. 2: An example of a map generated for the city of Lima, Perú. Each hexagon represents the average price in a radius of 1-kilometer. The monthly total of advertisements is shown in the bottom right graph.

place with a similar trend in this administrative boundary. The capital cities considered were Buenos Aires (Argentina), Bogotá (Colombia), Quito (Ecuador), Lima (Perú), and Montevideo (Uruguay).

ANALYSIS

Based on the data from WHO, the total cumulative cases in the five countries started to increase after May 2020. We then determine 1st May 2020 as a critical point in the timeline to explore the difference in the property market before and after the spread of Corona virus.

Two property types were selected for the analysis: house and apartment.

Moreover, from general statistical results, the ratio of rental advertisements had increased after May for all the five countries. On the opposite, the ratio of selling advertisements decreased after May. We decided to separate the dataset into the rental and selling market.

MAPS

In order to explore more patterns on the rental and selling market, we plotted the data into two maps for each type of transaction:

1. The total number of advertisements as points over hexagons representing areas with amounts of advertisements.

2. The total number of advertisements as points over hexagons representing average price of properties in the area.

Graduated colors were selected to indicate the value of each hexagon unit. The darker the color, the higher the number of advertisements published in the area or the higher the average price. The radius of the hexagon grid is 1-km for each of the five capital cities.

Dynamic monthly variations over time are visualized on the final Story-map.

SOFTWARE USED

We used python language to analyze and process the big data.

Unfolded Studio was used to generate and design the maps. As it is a web software to process big data it was friendly to interact with the csv files used.

The results are presented in an Esri Story-Map.

CONCLUSION

The rental market is completely different from the selling market. We successfully analyzed with the same criteria the five cities and found particularities on location pattern changes and price variations in the real estate offer for each city.

IMPRINT

Mapping Project
Winter Semester 2020/2021
Technische Universität München

Joel Salazar

Jiaying Xue

SUPERVISORS

Juliane Cron, M.Sc.

Dr.-Ing. Mathias Jahnke

KEYWORDS

COVID-19, Big Data, Real Estate, Location patterns

LINK

<https://arcg.is/1z4erL>



REFERENCES

- [1] D'Vera Cohn, About a fifth of U.S. adults moved due to COVID-19 or know someone who did (2020 July 6)
- [2] Cynthia Paez Bowman, Coronavirus mobbing study: people left big cities, temporary moves spiked in first 6 months of COVID-19 pandemic (2020 October 12)
- [3] Covid-19 and Latin American real estate: what are the silver linings?(2020 July 16)
- [4] Property Data: <https://www.properati.com.ec/data>
- [5] WHO Dataset: <https://covid19.who.int/?gclid>

This project was created within the Cartography M.Sc. programme – proudly co-funded by the Erasmus+ Programme of the European Union.



Technische Universität München



TECHNISCHE UNIVERSITÄT WIEN



TECHNISCHE UNIVERSITÄT DRESDEN



UNIVERSITY OF TWENTE



Erasmus+



cartographymaster.eu