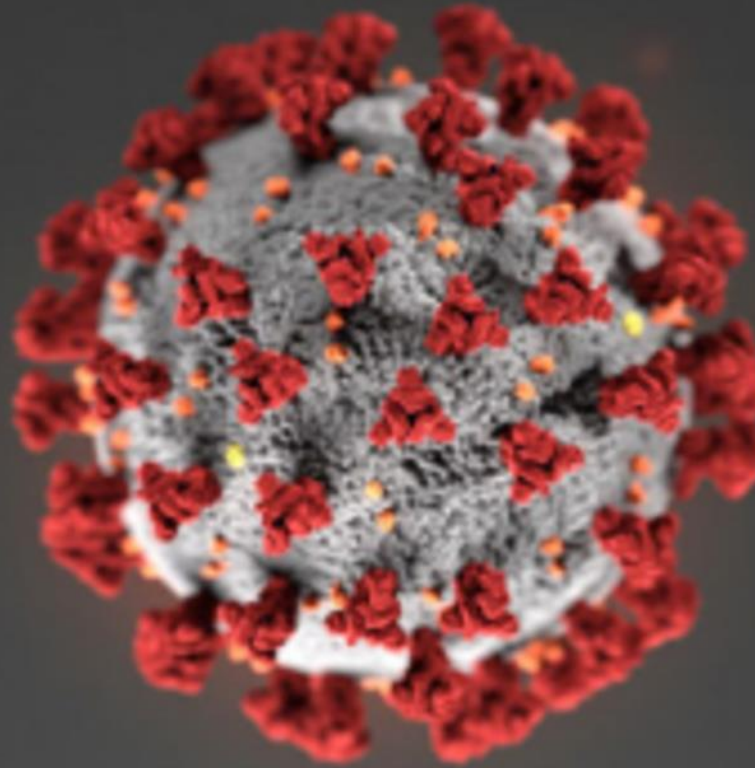


Airbnb Listings in Toronto: The Impact of COVID-19

Group Assignment: Big Data
Technology – Summary Report

Group 2:

Aravind Kakarala
Daniel Adam Cebula
Dong Hyun Ko
Cynthia Fung
Juraj Polakovic
Su Wang



April 2020

Introduction

OBJECTIVE

Brian Chesky, the CEO of Airbnb stated in an article published in Jan'2021 that AirBnB would need to evolve and adjust to a post pandemic world where travel would no longer be the same (**Halpern**). It has been discussed that Airbnb has been made a model for resilience that has survived the related economic shock of the pandemic. Was Chesky and his fellow founders able to evolve Airbnb successfully to survive through a global pandemic? Group 2 would like to perform preliminary pandemic analysis by comparing Airbnb listings in Toronto, pre and post COVID-19 pandemic. The comparative analysis in which we would like to present our findings would entail a point in time comparison of months January and February in the year 2020 and 2021. To perform our analysis, we will be leveraging several toolsets that we have not used before.

Data Preparation

DATA SOURCE

Inside Airbnb - [link](#)

- Inside Airbnb provides an independent, non-commercial set of tools and data allowing a user to explore their platforms usage in cities around the world.
- By analyzing publicly available information about a city's Airbnb listings, this tool provides filters and key metrics to inform users how their usage competes with the residential housing market.

DATA PROCUREMENT

Tools

For the procurement process, as previously mentioned, toolsets that are new to Group 2 were used. Koalas, a Pandas API for PySpark for DataFrame manipulations was leveraged instead of PySpark. SQL Hive in Azure Databricks for ELT was also used accompanied by connections to Microsoft Power BI.

For details pertaining to the data procurement process and analysis please refer to the GitHub repository - [link](#)

Extracting and Loading Data

After data was extracted from Inside Airbnb in .csv format, Databricks Community Edition was utilized to load the data files.

For more details please refer to the following published notebook - [link](#)

Data Cleansing

The initial state of the data required cleansing before it could be used for analysis. Throughout the data, many of the variables were categorical which needed to be converted to a numerical value to be fed into an analytical model. To ensure proper formatting was applied, column checks were also made along the way, which facilitated data merges. For efficiency, any data tables not relevant or required for the analysis were dropped.

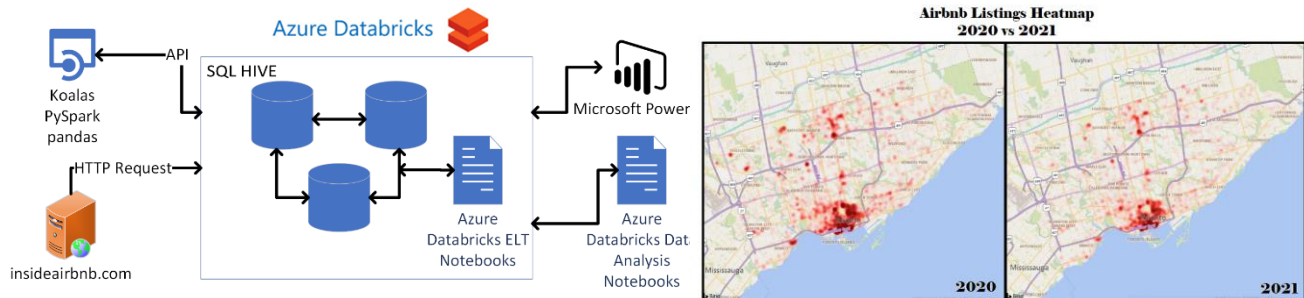
For more details please refer to the following published notebook - [link](#)

Analysis

Tools

For the analytics stage, machine learning was applied using MLlib. A connection was also established to Azure Databricks instance to Power BI Desktop to generate visuals to better interpret our findings.

For better understanding please find below to the left a flow diagram of the data procurement process and analysis. Also, below to right, please find one of the visuals created using these tools.



Conclusions

We find that Airbnb adapted well to the changing circumstances in travel due to the Global Pandemic. Key findings and conclusions from the comparative analysis of Airbnb Toronto data for the periods Jan-Feb'2020 and Jan-Feb'2021 include:

- 1) There were more Airbnb listings for Toronto during Jan-Feb 2020 compared to Jan-Feb 2021.
- 2) There were more bookings in Jan-Feb 2021 than during Jan-Feb 2020.
- 3) In 2021, Bookings were more popular with accommodations that constituted entire homes or listed private rooms.

Airbnb was able to take advantage of the changing travel preferences of the consumer that included a shift away from large hotels with their numerous shared spaces and elevators and to more private accommodations. As the consumer preferences for travel accommodations continue to evolve, we find that Airbnb is able to respond in a nimble manner to cater to the changing needs and live up to its status as a "Disruptor" in the Travel and Accommodation industry.

References

Curry, David. *Airbnb Revenue and Usage Statistics (2021)*. 28 February 2021. 09 April 2021.

Halpern, Ashlea. *How Airbnb Could Change After the Pandemic—For the Better*. 20 May 2020. 10 April 2021.