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Project Part I

Professor Milan Miric
DSO 574 - Using Big Data: Opportunities & Challenges

22 February 2020

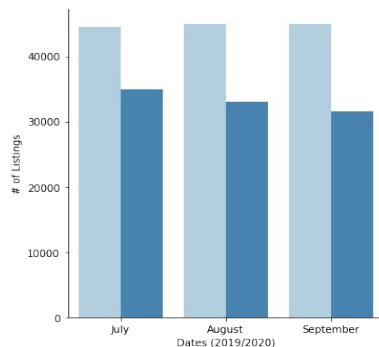


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Macro Level: Analysis for Number of Listings, Minimum Nights, and Mean Price

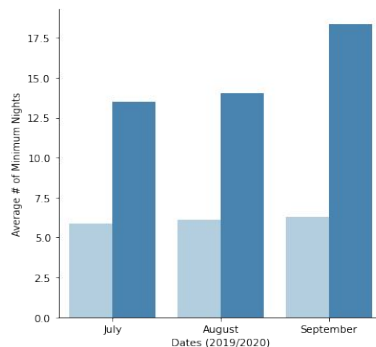
Snapshot comparison for July, August, and September of 2019 & 2020 across all listed properties in Los Angeles

Covid
Pre
Post



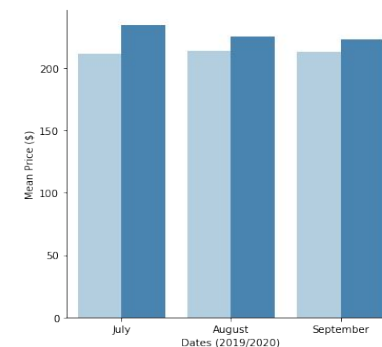
Volume of Listings

- Monthly listings have decreased dramatically across LA; by at least 15% for the months examined
- The most noticeable change occurred in September, in which # of listings dropped by 30%



Mean # of Minimum Nights

- The average number of minimum nights has increased 2 to 3 fold from the summer months in 2019 to those in 2020
- September again had the most significant difference gap, where average min. nights increased from 6 to 18 nights



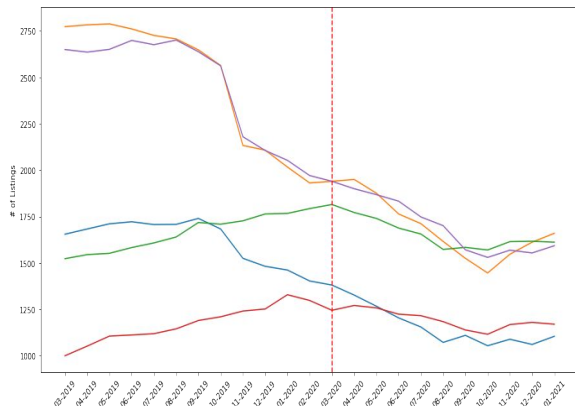
Mean Listing Price

- Surprisingly, overall prices have not decreased since Covid but have increased across months examined. We hypothesize this could be due to property owners trying to recoup lost profits or increases in cleaning fees
- The changes were not as dramatic relative to the other two variables examined, mean prices increased 10.8%, 5.5%, and 4.5% for July, August and September respectively

Top Five Neighborhoods: Analysis for # of Listings, Min. Nights, and Mean Prices

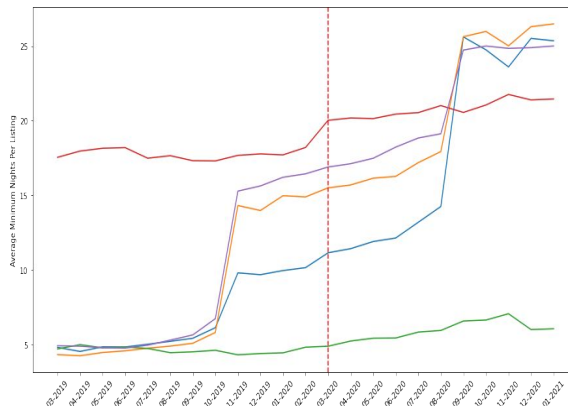
Plotting for values one year prior to Covid up until the most recent data available

-- Covid



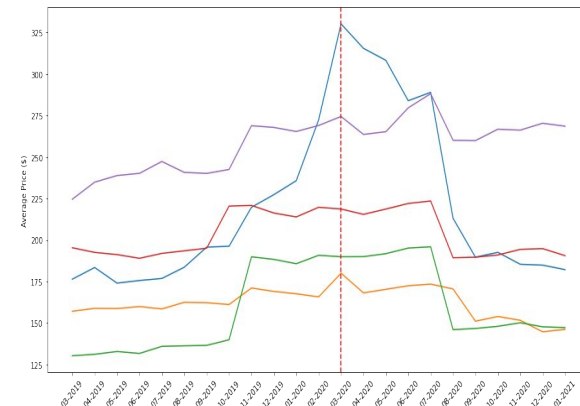
Monthly Avg. Volume of Listings

- Listings were on a downward trend for three of the five areas in the months leading up to Covid
- Post-Covid, all areas have faced a consistent downward trend in listed properties
- Santa Monica and Long Beach were the neighborhoods least affected, with # of listings dropping by 9.4% and 11.1% respectively
- The # of listings for the latest 3 months have stabilized and indicate a turnaround for all neighborhoods



Monthly Avg. # of Minimum Nights

- Minimum nights set by hosts have increased dramatically in all areas apart for Long Beach (Minor increase from 4.9 to 6.1 nights)
- Greatest jump is seen from July 2020 to August 2020
- This trend started prior to the emergence of Covid, and has continued since then



Monthly Avg. Listing Price

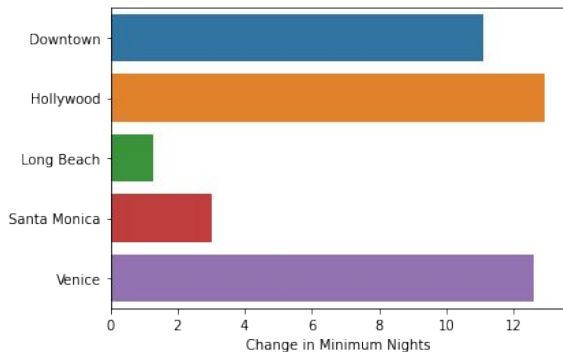
- Downtown faces the biggest drop since Covid, with monthly average listing price dropping from a peak of \$330 to \$182
- Other neighborhoods remained fairly stable in the first few months of the pandemic, with prices even increasing up until August
- Strong downturn occurred for all areas in August, which is traditionally one of the most popular months
- Prices have stabilized since September 2020

Linear Regression Models: Simple linear regression using Covid (Binary) as an independent variable

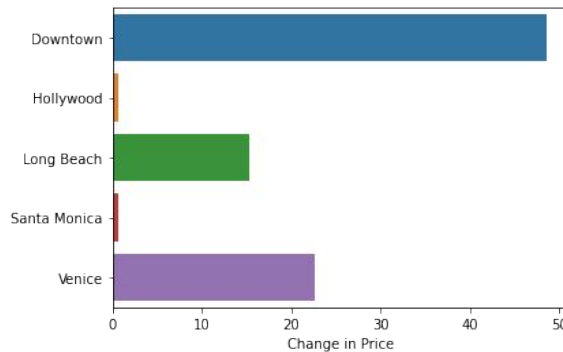
Predicting Min. Nights & Price for all LA listings as well as for the top five neighborhoods. Using data from Mar. 2019 - Jan. 2021.

Variable (All LA Listings)	Coefficient Value	Statistically Significant?	Interpretation
Minimum # of Nights	7.76	Yes	The presence of covid raised the overall average # of minimum nights required by 7.76 nights
Listing Price	13.67	Yes	The presence of covid raised the overall average listing price by \$13.67

Minimum # of Nights (Coefficient Values)



Listing Price (Coefficient Values)



Insights

- Both minimum nights and listing price have changed across all neighborhoods due to Covid
- Covid was statistically significant in predicting minimum nights for all neighborhoods
- Covid was statistically significant in predicting price for all neighborhoods but Hollywood and Santa Monica; indicating those neighborhoods were least affected by Covid
- Hollywood, Venice, and Downtown were most impacted by Covid for minimum nights required
- Downtown, Venice, and Long beach were most impacted by Covid for price