MANAGING AND DELIVERING AN ANALYTICS PROJECT

IMPACT OF COVID-19 ON AIRBNB

MGMT 58500 – IT Project Management
Team 7

PURDUE UNIVERSITY

TEAM MEMBERS

Tvisha Goswami

Ayan Basak

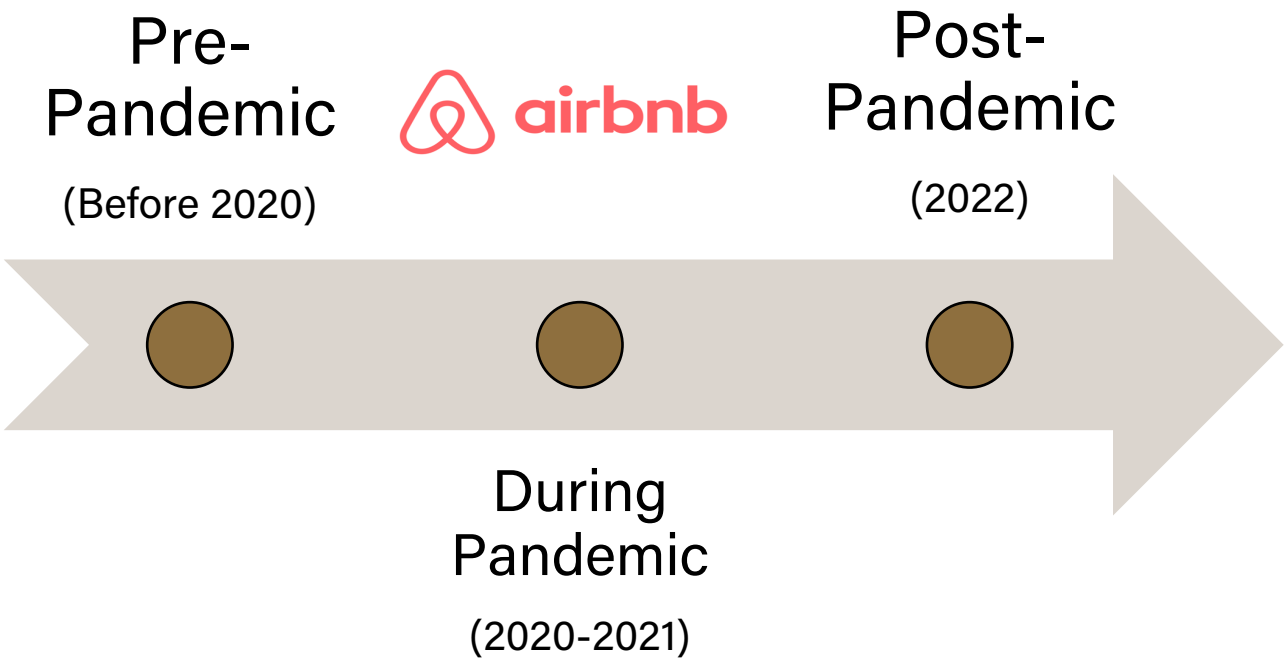
Keerthana Nemili

Abhishek Nambiar

Harshit Pant

Project Scope

Airbnb's Journey - The aim of this project is to analyze how Covid-19 affected Airbnb's business.



PROJECT PLANNING

User Stories

User 1: Data Scientist
Need: Derive meaningful insights from limited data
Benefit: To study the impact of Covid19 on Airbnb and take preventive measures for the future

User 2: Project Manager
Need: Ensure all tasks are planned and performed smoothly
Benefit: Achieve the targeted goal within the deadline

User 3: Marketing Manager
Need: Utilize insights for marketing strategies
Benefit: To increase number of bookings and revenue

User 4: Data Analyst
Need: Analyze different performance indicators
Benefit: Attribute the importance of the major factors that affected Airbnb during the pandemic

Acceptance Criterion

User 1: Data Scientist
Acceptance Criterion: The reviews have been analyzed to get the positive and negative sentiments. Analysis for how the number of listings, availability and price has changed has been completed.

User 2: Project Manager
Acceptance Criterion: The roadblocks for todays tasks have been eliminated.

User 3: Marketing Manager
Acceptance Criterion: Promotional strategies and pricing strategies created after careful analysis of this data so that Airbnb can maximize revenue and profit.

User 4: Data Analyst
Acceptance Criterion: The structured data taken from the data scientist's analysis has been visualized so that it can be easily interpreted by senior stakeholders.

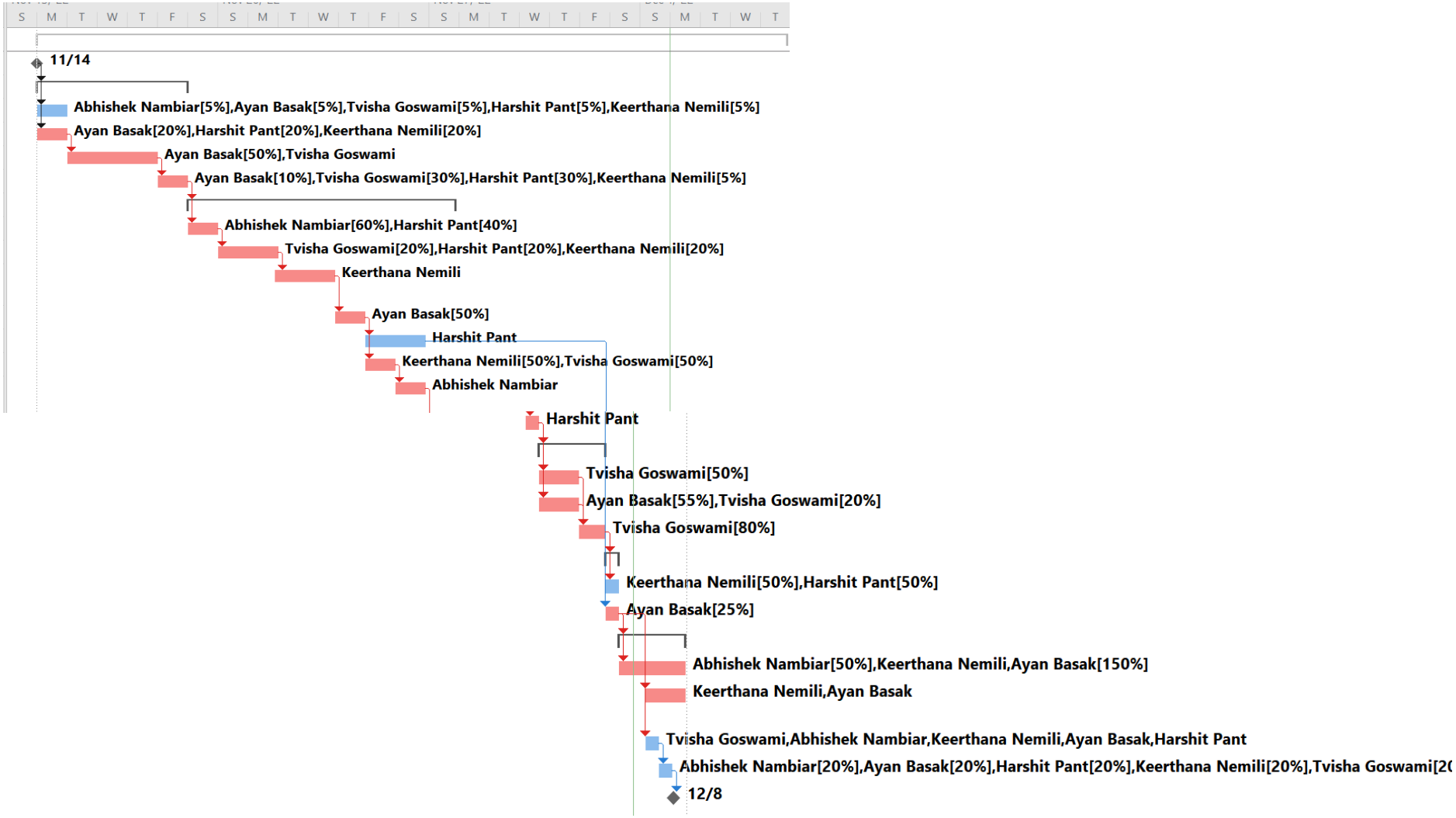
Work Breakdown Structure

From the User Stories we create a Work Breakdown Structure to make the team members aware of the different tasks to be performed to achieve the deliverable

Task Number	Task Name	Duration	Predecessors	Task Number	Task Name	Duration	Predecessors
1	Start Project	0d		15	Review plan with team	1d	14
2	Initiating tasks	5d	1	16	Executing tasks	5d	15
3	Initial meeting with team	1d	1	17	Perform EDA	3d	15
4	Draft Project Requirements	1d	1	18	Data Analysis Tasks	3d	15
5	Fetch data	3d	4	19	Create Tableau Dashboard	2d	17,18
6	Review data with team	1d	5	20	Controlling tasks	1d	19
7	Planning tasks	7d	6	21	Enter actuals	1d	19
8	Estimate task durations	1d	6	22	Adjust plan, if needed	1d	12
9	Develop WBS in MS Project	2d	8	23	Closing tasks	5d	22
10	Define user stories and acceptance criteria	2d	9	24	Prepare final project report	5d	22
11	Assign resources	1d	10	25	Prepare final insights and plan futur	3d	22
12	Create Kanban board	2d	11	26	Prepare final project PPT	1d	22
13	Enter cost information	1d	11	27	Present final project to class	1d	26
14	Review Gantt and PERT chart information	1d	13	28	End Project	0d	24

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base Calendar
1	Ayan Basak	Work		AB		100%	$50.00/hr	$60.00/hr	$0.00	Prorated	Standard
2	Tvisha Goswami	Work		TG		100%	$40.00/hr	$50.00/hr	$0.00	Prorated	Standard
3	Abhishek Nambiar	Work		AN		100%	$30.00/hr	$40.00/hr	$0.00	Prorated	Standard
4	Keerthana Nemili	Work		KN		100%	$50.00/hr	$60.00/hr	$0.00	Prorated	Standard
5	Harshit Pant	Work		HP		100%	$40.00/hr	$50.00/hr	$0.00	Prorated	Standard

Gantt Chart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11/14
Abhishek Nambiar[5%],Ayan Basak[5%],Tvisha Goswami[5%],Harshit Pant[5%],Keerthana Nemili[5%]
Ayan Basak[20%],Harshit Pant[20%],Keerthana Nemili[20%]
Ayan Basak[50%],Tvisha Goswami
Ayan Basak[10%],Tvisha Goswami[30%],Harshit Pant[30%],Keerthana Nemili[5%]
Abhishek Nambiar[60%],Harshit Pant[40%]
Tvisha Goswami[20%],Harshit Pant[20%],Keerthana Nemili[20%]
Keerthana Nemili
Ayan Basak[50%]
Harshit Pant
Keerthana Nemili[50%],Tvisha Goswami[50%]
Abhishek Nambiar
Harshit Pant
Tvisha Goswami[50%]
Ayan Basak[55%],Tvisha Goswami[20%]
Tvisha Goswami[80%]
Keerthana Nemili[50%],Harshit Pant[50%]
Ayan Basak[25%]
Abhishek Nambiar[50%],Keerthana Nemili,Ayan Basak[150%]
Keerthana Nemili,Ayan Basak
Tvisha Goswami,Abhishek Nambiar,Keerthana Nemili,Ayan Basak,Harshit Pant
Abhishek Nambiar[20%],Ayan Basak[20%],Harshit Pant[20%],Keerthana Nemili[20%],Tvisha Goswami[2(
12/8

Kanban Board

File Automation Forms

Project Kanban Board

Card View · Filter · Level 2 · View by Status

Uncategorized (0)

Backlog (3)

Closing tasks
Prepare final insights and plan future analysis
AB Ayan Basak
12/02/22
12/04/22

Closing tasks
Prepare final project report
AR KN
12/02/22
12/06/22

Closing tasks
Prepare final project PPT
KN Keerthana Nemili
12/02/22
12/02/22

To do (3)

Executing tasks
Data Analysis Tasks
AB TG
11/26/22
11/28/22

Executing tasks
Create Tableau Dashboard
TG Tvisha Goswami
11/29/22
11/30/22

Planning tasks
Create Kanban board
H hpant@purdue.edu
11/23/22
11/24/22

In Progress (3)

Executing tasks
Perform EDA
TG Tvisha Goswami
11/26/22
11/28/22

Planning tasks
Develop WBS in MS Project
AR H
11/20/22
11/21/22

Planning tasks
Define user stories and acceptance criteria
KN Keerthana Nemili
11/20/22
11/21/22

Completed (4)

Initiating tasks
Initial meeting with team
AR AB H KN TG
11/14/22
11/14/22

Initiating tasks
Fetch data
AB TG
11/15/22
11/17/22

Initiating tasks
Review data with team
H KN TG
11/18/22
11/18/22

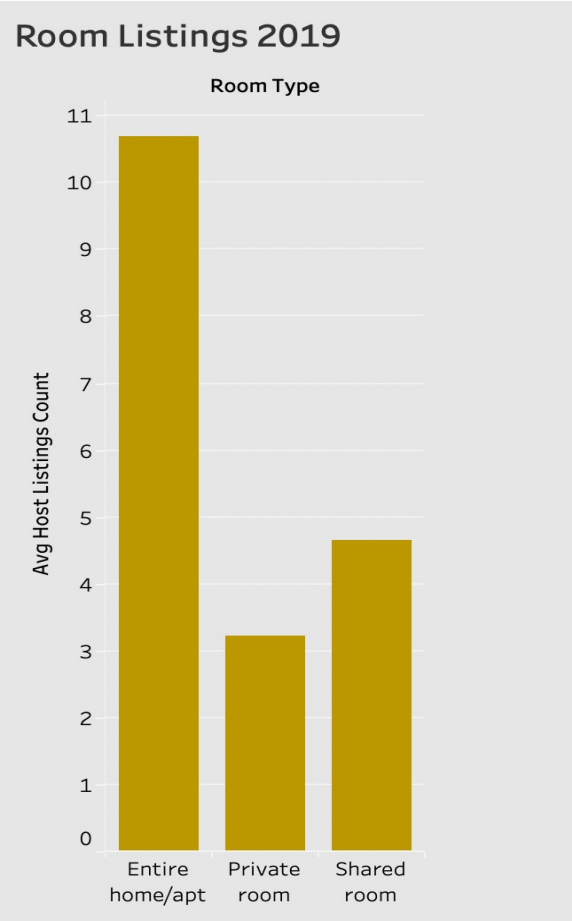
Planning tasks
Estimate task durations
AR H
11/19/22
11/19/22

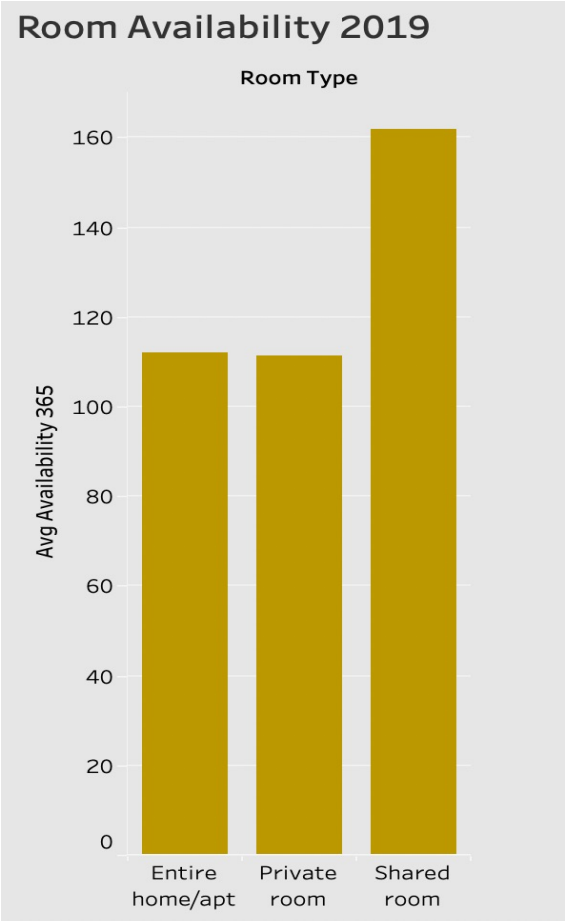
INSIGHTS & FINDINGS

PRE-PANDEMIC

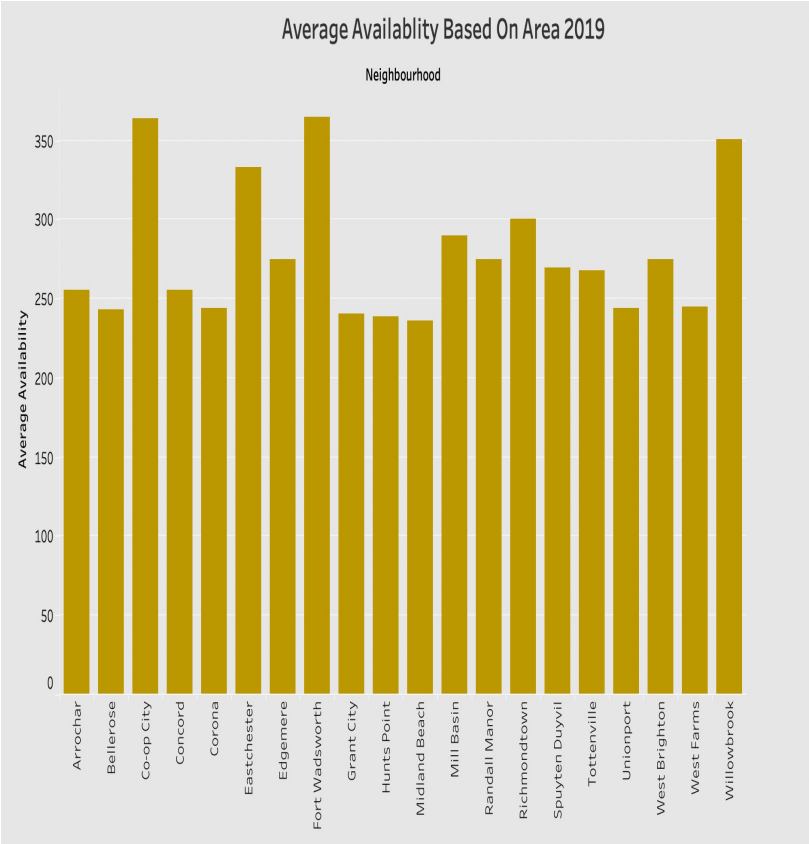
How was Airbnb before the Pandemic?

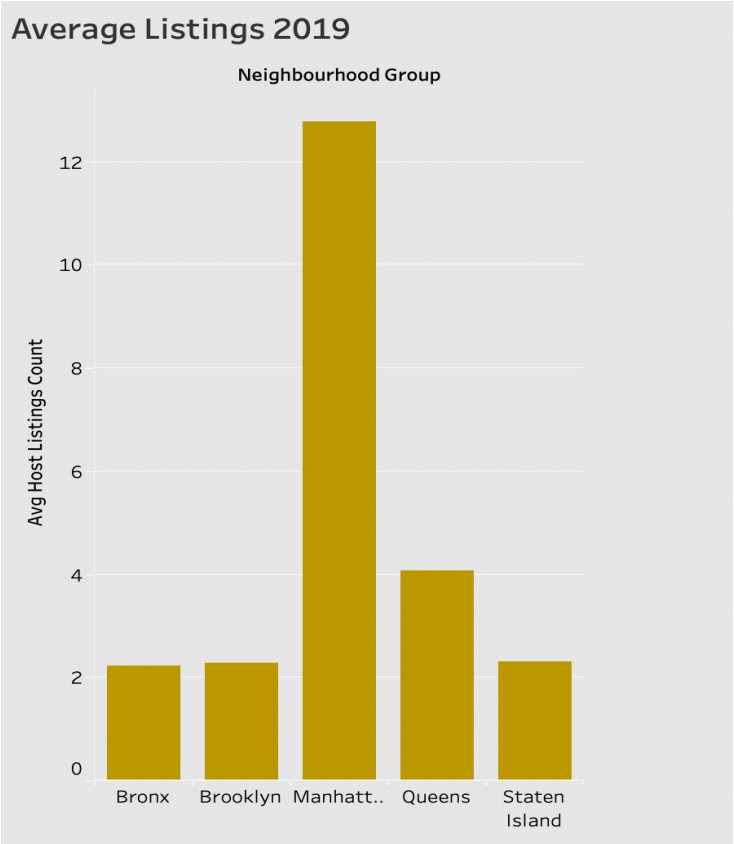
Room Listings and Availability – New York





How was Airbnb before the Pandemic?





DURING THE PANDEMIC

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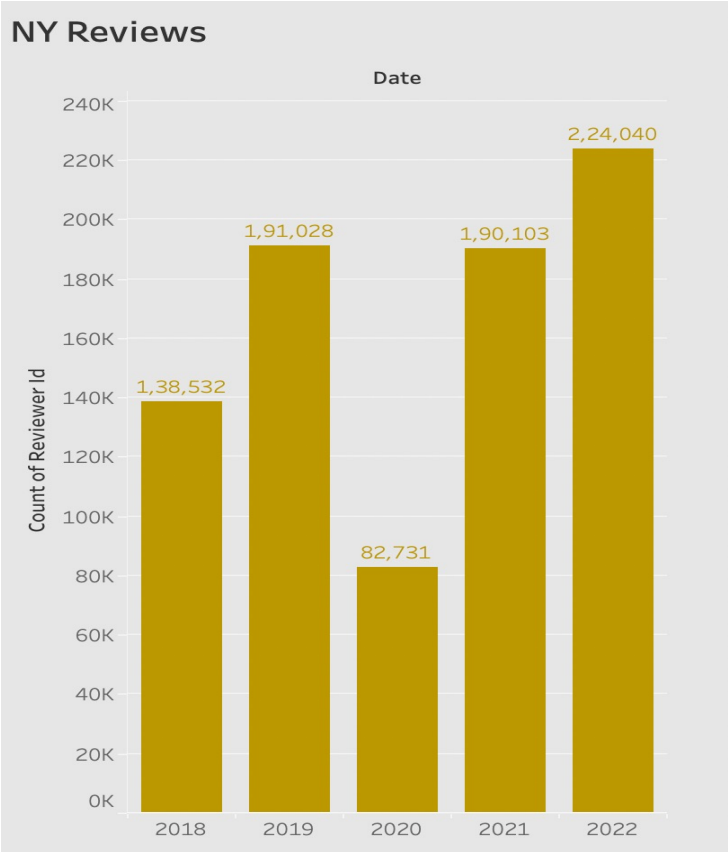
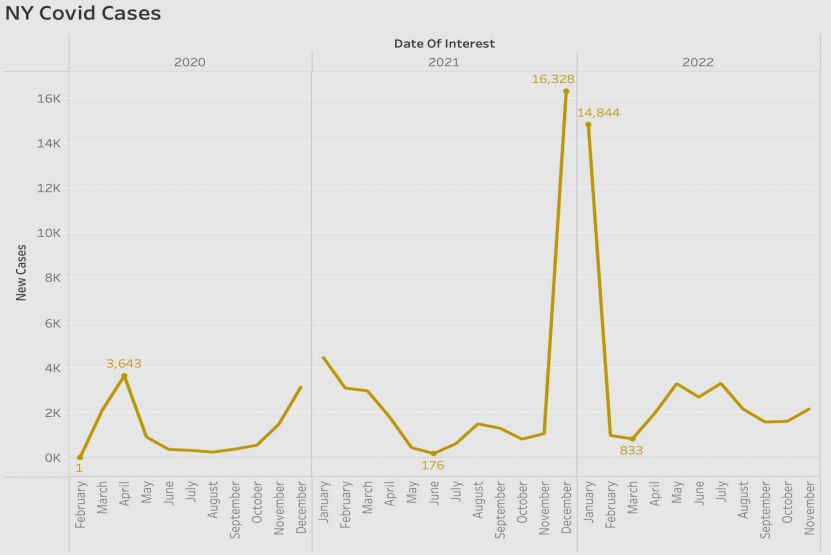
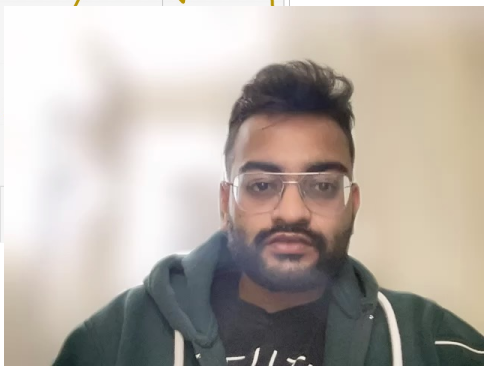
How hard has Airbnb been hit by the Pandemic?

NY Reviews







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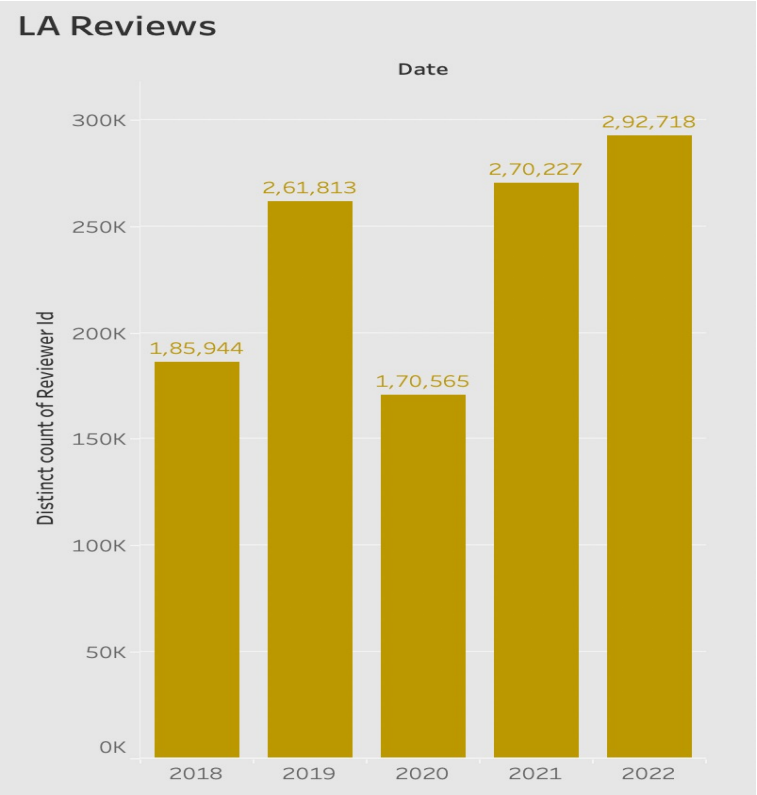
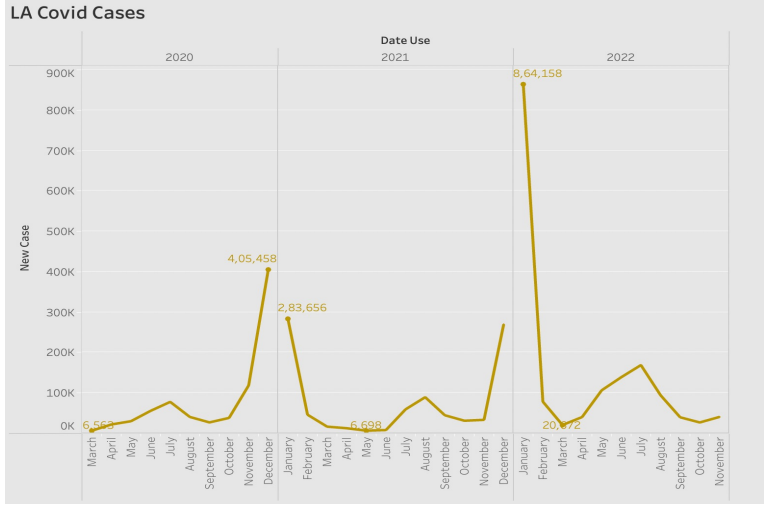
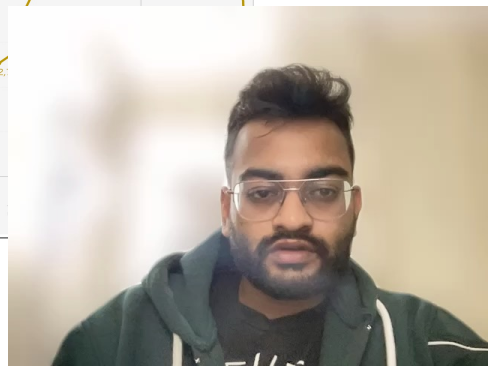
How hard has Airbnb been hit by the Pandemic?

LA Reviews







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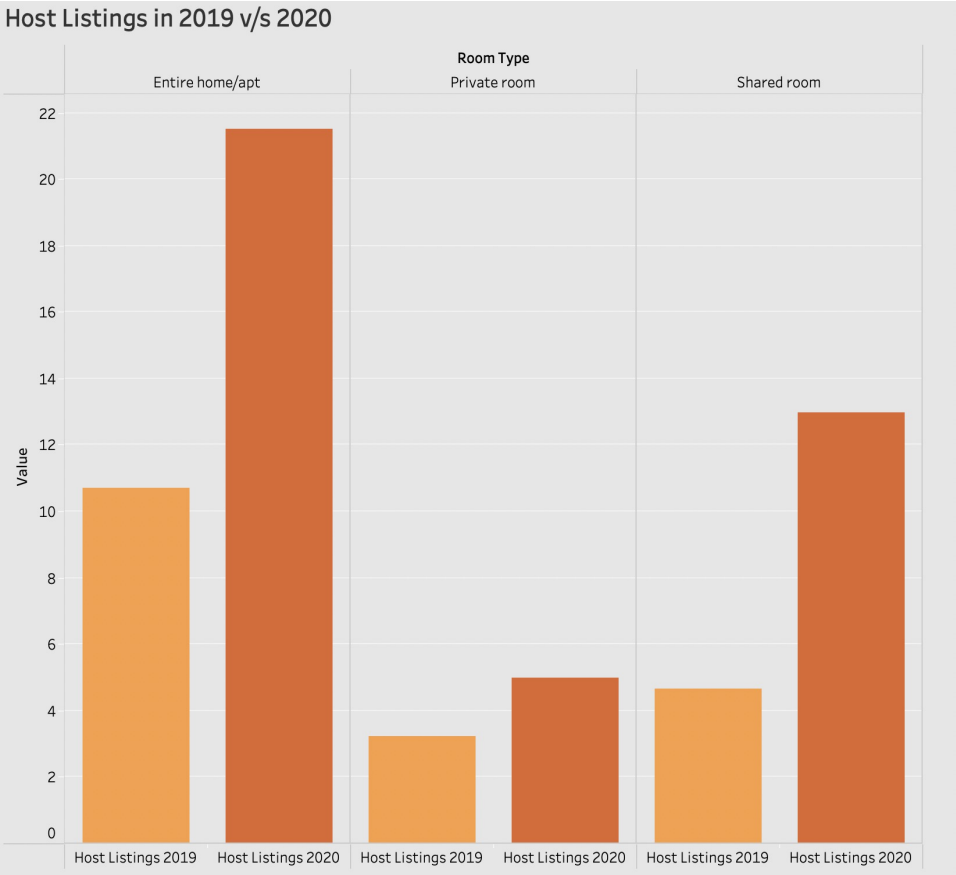
Data Analysis

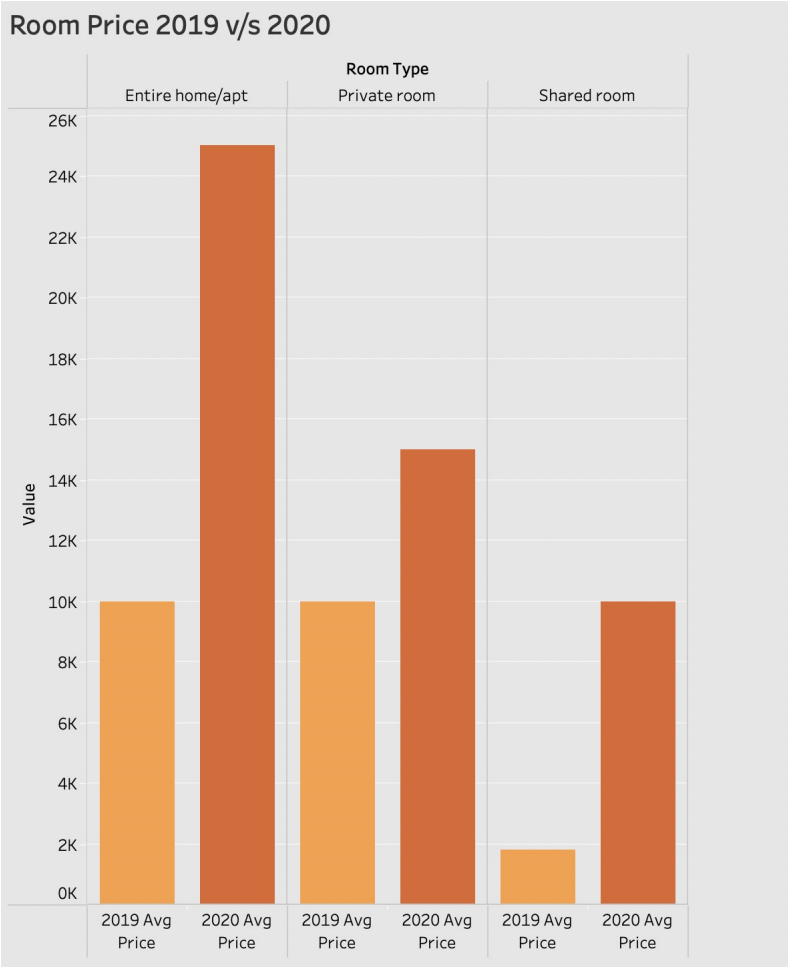
How hard has Airbnb been hit by the Pandemic?



Bar Chart distribution shows a considerable increase in the number of listings. This can be due to people seeking an extra source of income from the properties. The entire home/apt has a 113% increase, the shared room has a 92% increase and Private rooms have a 188% jump.

Data Analysis

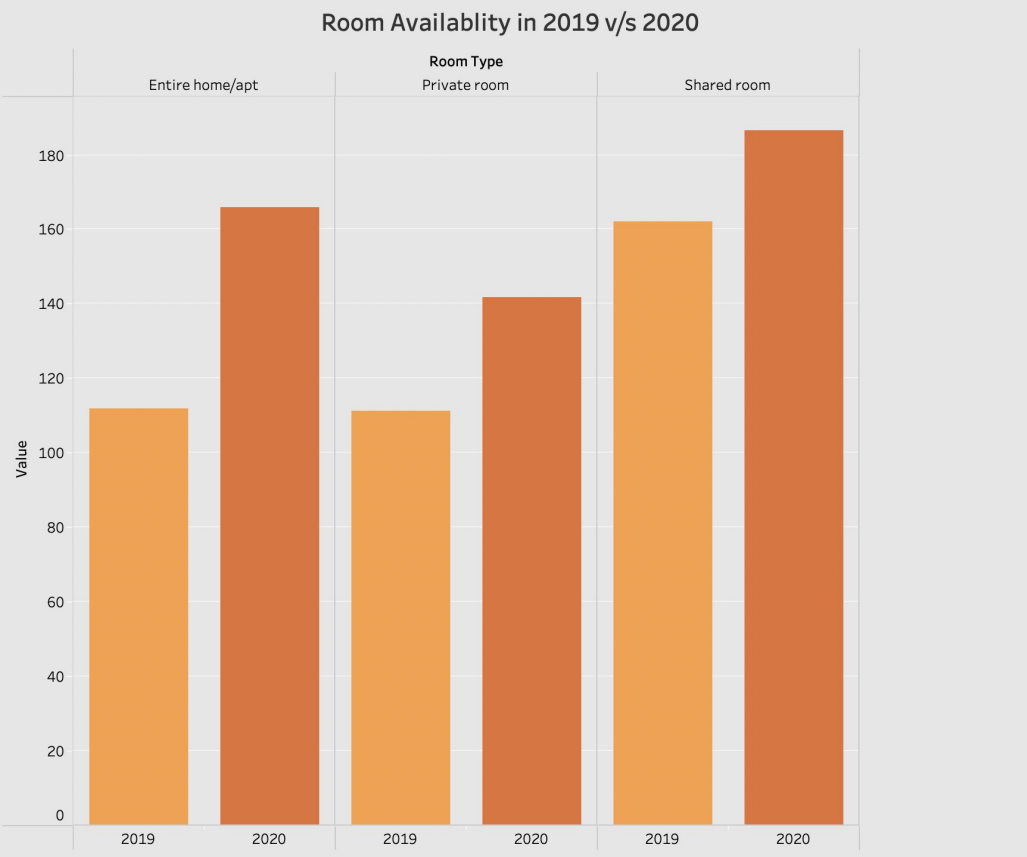
How hard has Airbnb been hit by the Pandemic?



Bar Chart distribution shows a considerable increase in the price of listings. This can be attributed to the overhead charges to comply with pandemic protocols such as sanitization and cleanliness. The entire home/apt has a 125% increase, the shared room has a 400% increase and Private rooms have around a 50% jump.

How hard has Airbnb been hit by the Pandemic?

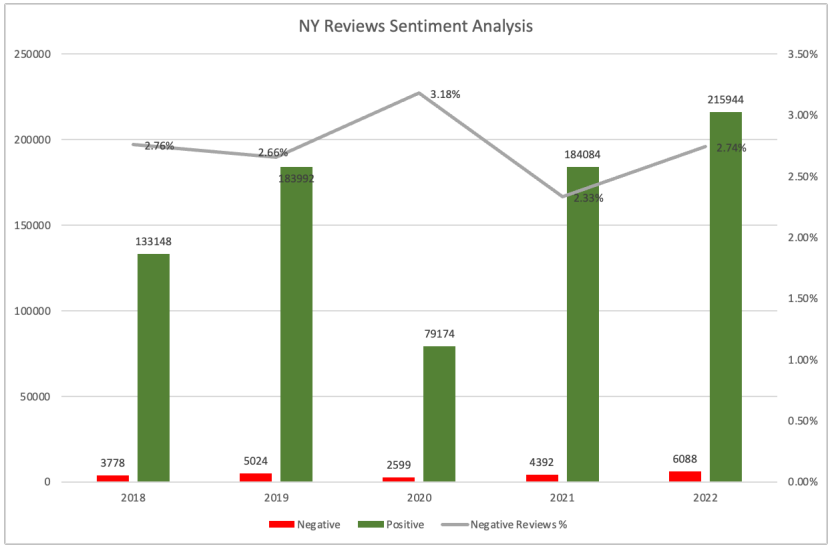
Availability Before and During Pandemic



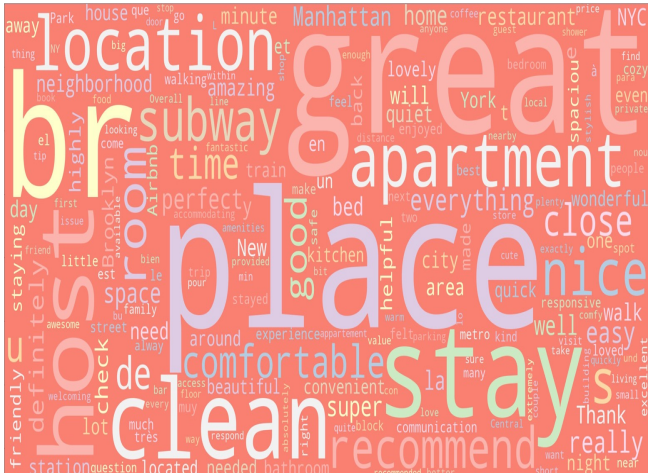
There is an increase in room availability from 2019 to 2020.
The entire home/apt category has the highest increase in availability at 60% followed by private rooms, at 22%.

Sentiment Analysis - Changing Customer Experience

NY Reviews



Word cloud – Overall Reviews


great
place
stays
clean
nice
apartment
location
subway
host
room
comfortable
recommend
close
time
everything
perfect
space
Manhattan
restaurant
neighborhood
amazing
quiet
lovely
helpful
good
easy
walk
Thank
really
super
bed
kitchen
city
area
quick
New
York
Airbnb
Brooklyn
staying
friendly
definitely
highly
minute
home
NYC
Wonderful
excellent
spacious
cozy
beautiful
convenient
communication
metro
bathroom
located
needed
experience
apartment
amenities
accommodating
walking
walkable
safe
check
need
around
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welcoming
responsive
comfy
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friend
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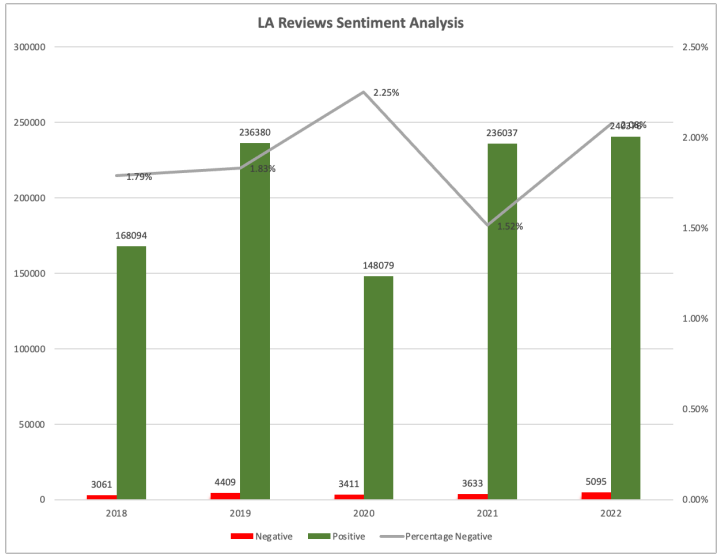
Sentiment Analysis - Changing Customer Experience

LA Reviews



Word cloud – Overall Reviews

Word cloud – Negative Reviews

LA	Negative	Positive	Negative Reviews %
2018	3061	168094	1.79%
2019	4409	236380	1.83%
2020	3411	148079	2.25%
2021	3633	236037	1.52%
2022	5095	240376	2.08%

POST - PANDEMIC

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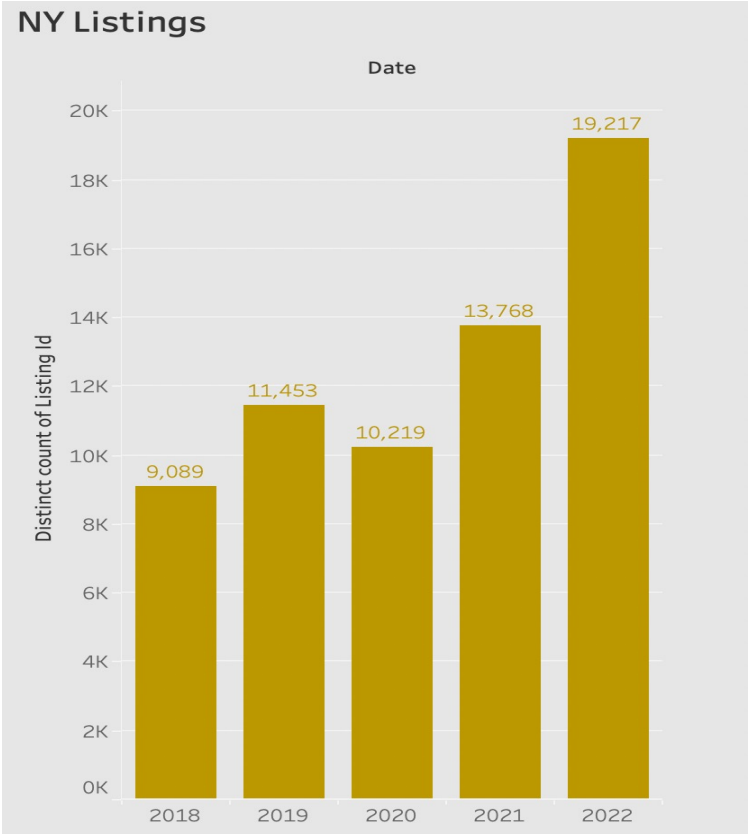
Post Pandemic

Number of Listings for New York and Los Angeles



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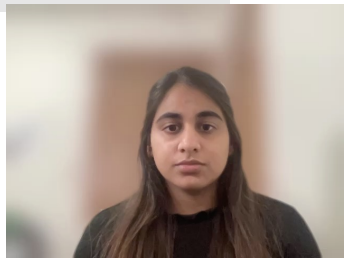

Key Takeaways

- Although the number of listings fell during the month of April 2020 when the pandemic just started, there is an observable increase in host listings for the entire year of 2020. This might be due to renters seeking extra sources of income
- There was a sharp increase in the average price of listing from 2019 to 2020. Possible reasons for this might be the overhead charges to comply with pandemic protocols
- Room availability was higher during covid possibly due to an increase in the number of listings and a lesser number of vacationers.
- The general sentiment of Airbnb reviews is positive. The slight uptick in negative reviews for the covid year can be attributed to factors such as failed pre-bookings and booking refunds. Improper sanitization of rooms and breach of covid protocols could also have contributed to the same.

Future Work

- Performing in depth analysis of bookings and revenue data of Airbnb for these cities and assess if there was a drop in sales during covid times. This data can also be used to create marketing and pricing strategies for the future in case there would be another pandemic like situation
- The sales data can also be used to check for seasonal trends in bookings
- Conducting customer surveys and using the results to improve the quality of services offered and assess what are the most important factors for users
- NLP analysis on reviews can be further fine-tuned and used to derive consumer insights to better position Airbnb for unexpected situations in future

THANK YOU