



 **BUSINESS PROPOSITION**
FOR
AUSTIN AIRBNB MARKET

BY TEAM 15

GROUP MEMBERS

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PART 1

PREVIOUSLY

1.1 KAGGLE COMPETITION REVIEW

(i) Summary of data processing steps:

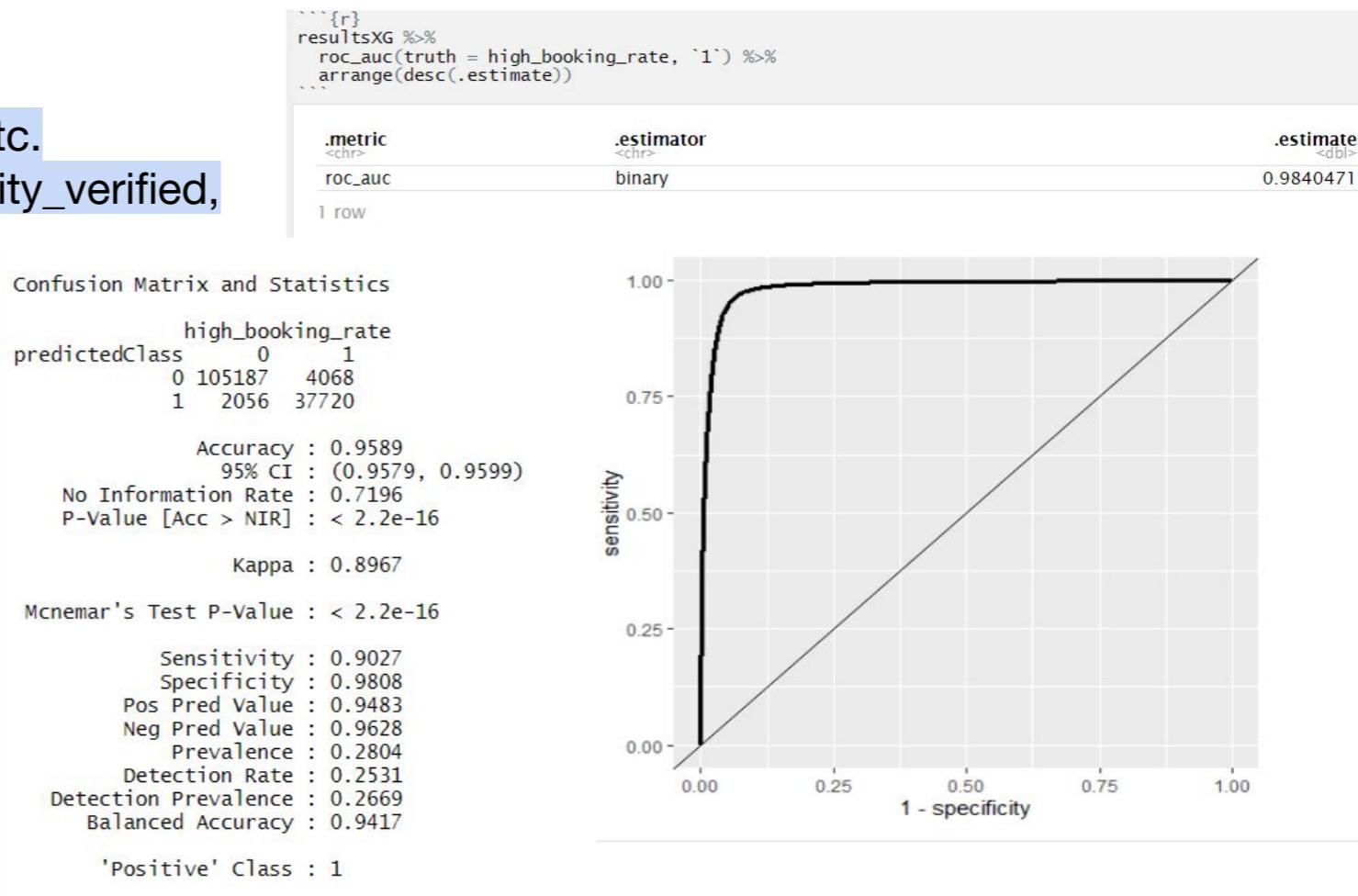
- Change Data Type and levels
- Fill with Mean:cleaning_fee, security_deposit, etc.
- Fill with mode: host_has_profile_pic, host_identity_verified, etc.

(ii) Final method used along with its parameters:

XGBOOST

(iii) Variables used in model:

accommodates	maximum_nights
availability_365	minimum_nights
bathrooms	price
bed_type	property_type
bedrooms	room_type
beds	security_deposit
cancellation_policy	host_identity_verified
cleaning_fee	host_is_superhost
extra_people	instant_bookable
guests_included	amenities_count



(iv) Performance (AUC) achieved:

We divided Train set further to validate our model before testing (80% Train, 20% Validation)
We got 98.40 % estimation on the Validation set and an accuracy of 94.17%

1.2 WHAT ARE THE BUSINESS REQUIREMENT?

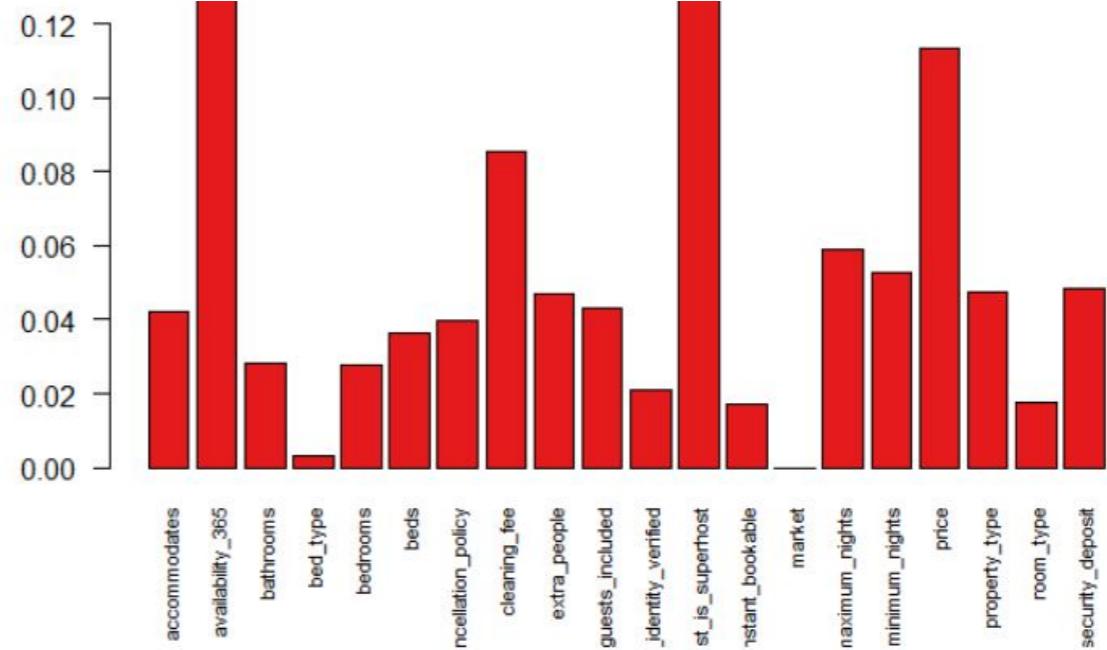
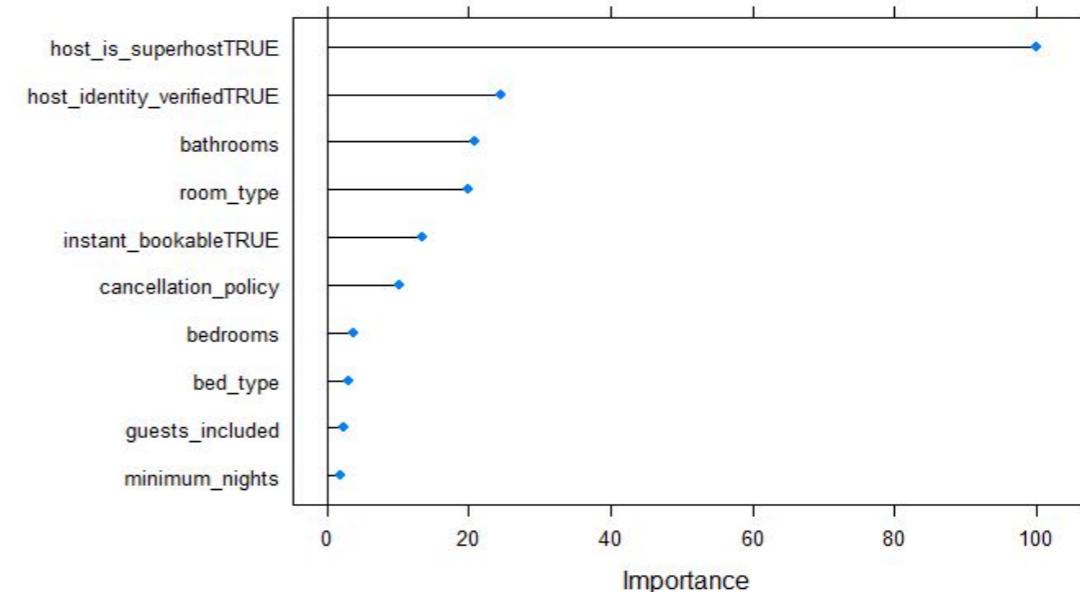
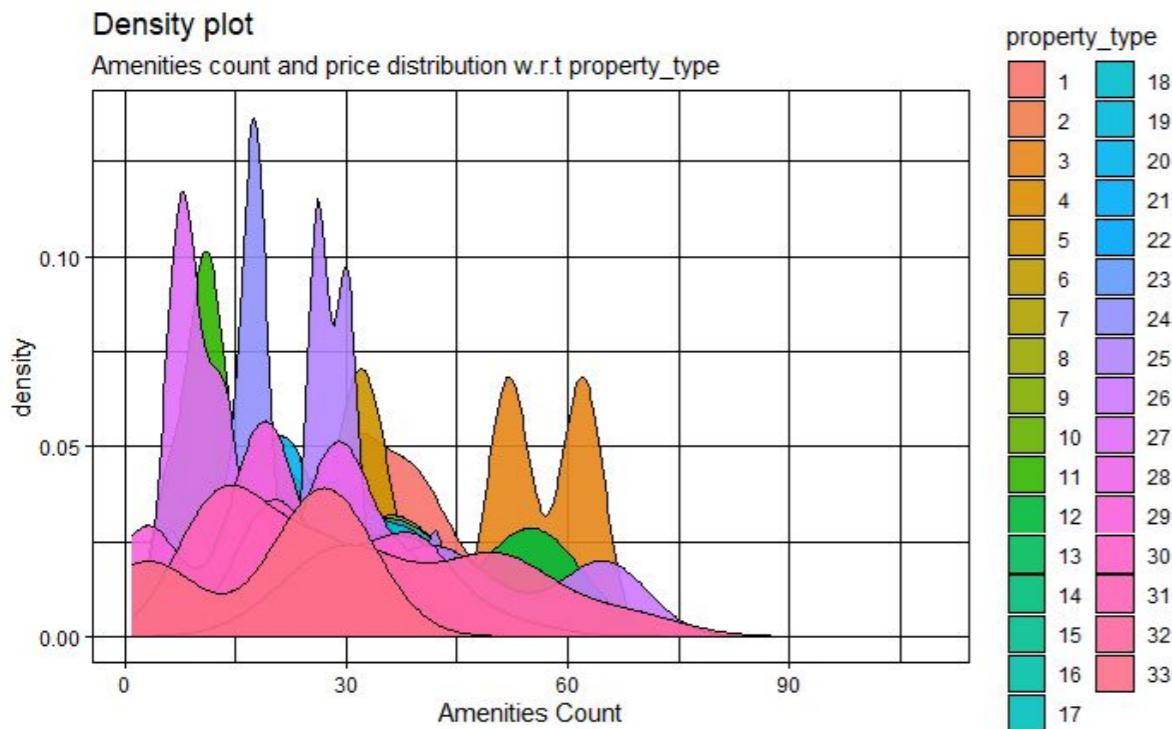
AS AN INVESTOR



- How to **purchase** the house that will achieve high booking rates?
- How to **price and manage** the house in a way to achieve high booking rate?
- How to **renovate** the house to achieve high booking rate?

WHERE SHOULD WE GO?

1.3 WHAT SHOULD WE COVER?

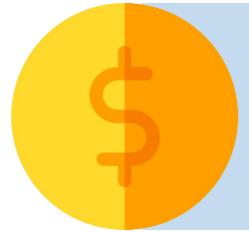


Lasso and Ridge give almost identical results and so the average of the two has been included above.

We advise the owners/ investors to focus more on the factors / features that are overlapping best features in the three models.

1.3 WHAT SHOULD WE COVER?

INCREASE BOOKINGS?



PRICE



EXTRA- PEOPLE



AMENITIES

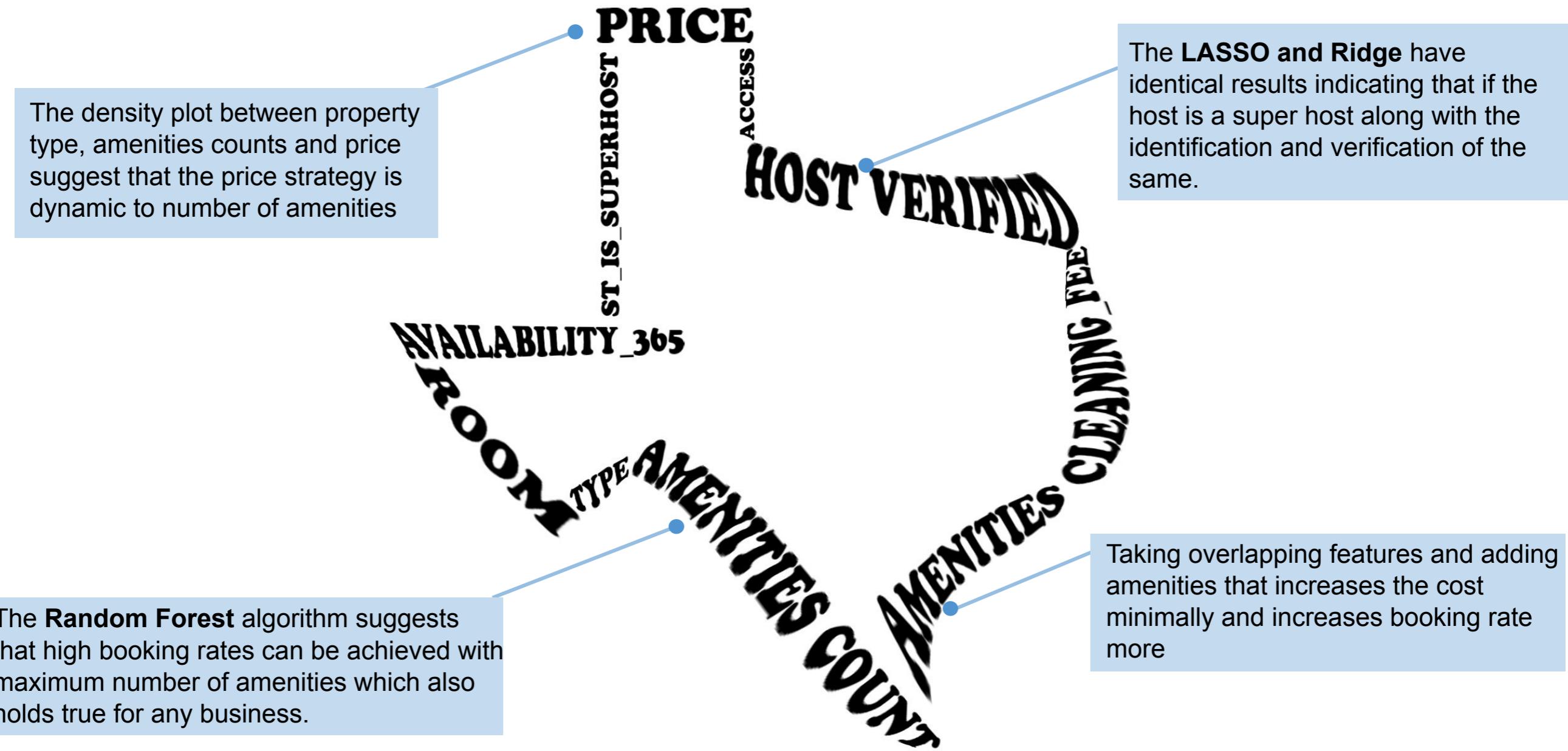


HOST-VERIFIED



PROPERTY TYPE

1.3 WHAT SHOULD WE COVER?

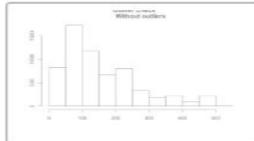
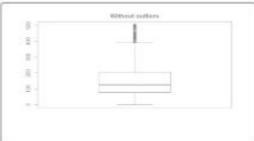
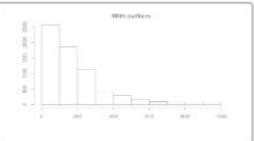
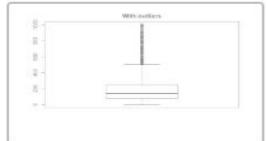


1.4 PREPARATION BEFORE WE GO

CREATE FUNCTION

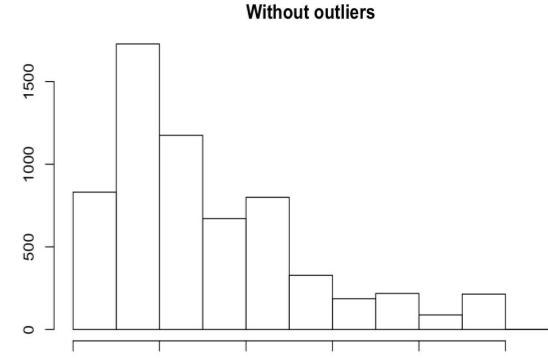
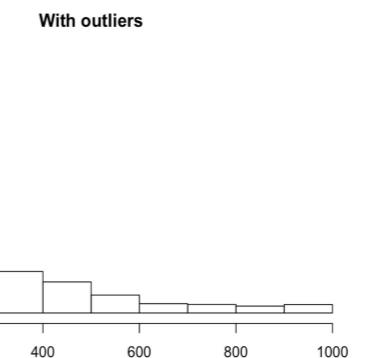
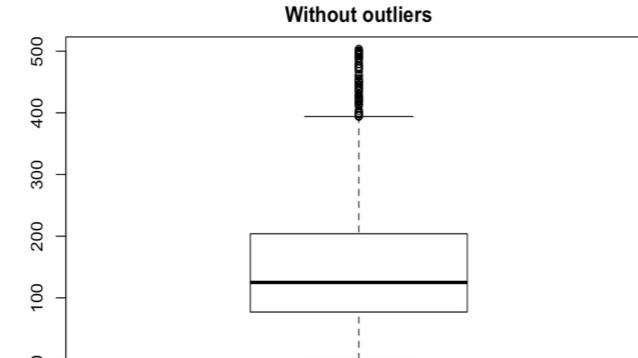
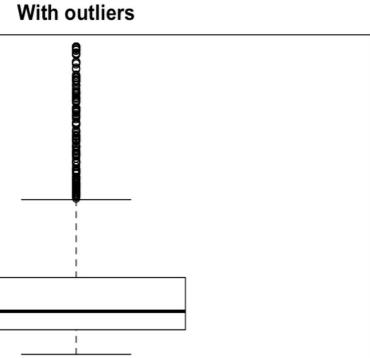
OUTLIER CHECK

- Check the general overview of object variable
- Create boxplot of this column with and without outliers.
- Decide whether to remove outliers.



```
outlierCheck <- function(dt, var) {  
  var_name <- eval(substitute(var), eval(dt))  
  na1 <- sum(is.na(var_name))  
  m1 <- mean(var_name, na.rm = T)  
  boxplot(var_name, main="With outliers")  
  hist(var_name, main="With outliers", xlab=NA, ylab=NA)  
  outlier <- boxplot.stats(var_name)$out  
  mo <- mean(outlier)  
  var_name <- ifelse(var_name %in% outlier, NA, var_name)  
  boxplot(var_name, main="Without outliers")  
  hist(var_name, main="Without outliers", xlab=NA, ylab=NA)  
  title("Outlier Check", outer=TRUE)  
  na2 <- sum(is.na(var_name))  
  cat("Outliers identified:", na2 - na1, "n")  
  cat("Propotion (%) of outliers:", round((na2 - na1) / sum(!is.na(var_name))*100, 1), "n")  
  cat("Mean of the outliers:", round(mo, 2), "n")  
  m2 <- mean(var_name, na.rm = T)  
  cat("Mean without removing outliers:", round(m1, 2), "n")  
  cat("Mean if we remove outliers:", round(m2, 2), "n")
```

Outliers identified: 495 nPropotion (%) of outliers: 7.9 nMean of the outliers: 731.85 nMean without removing outliers: 203.88 nMean if we remove outliers: 161.99 n



PART 2

**STRATEGIES FOR INVESTING IN
AUSTIN AIRBNB MARKET**

2.1 CITY BACKGROUND AND TOURISM INFORMATION

private downtown austin home 2 bed 2 living room kitchen

Most searched words when looking for an Airbnbs in Austin.



Austin, Texas is located in Central Texas and is the state capital.

Austin has both scenic, natural views and the hustle and bustle of big city life.

Live Music Capital of the world

No professional sports team



Hancock Golf Course

restaurants downtown Alamo Drafthouse Live Oak Brewing Company Zilker Park
Downtown Airport Barton Springs Hill Country food trucks
Town Lake Graffiti Park Chi'lantron Franklin Barbeque
Austin Convention Center The Tavern Saxton Pub
Hope Outdoor Gallery Perdernales Falls
University of Texas (UT) Boggy Creek Austin City Limits Festival

SXSW

Most Popular Attractions close to the Airbnb's in Austin.

2.2 AMENITIES - UPGRADES & RENOVATION

The Question: Can we use a single tangible Variable to help investors improve their properties?

Our Approach

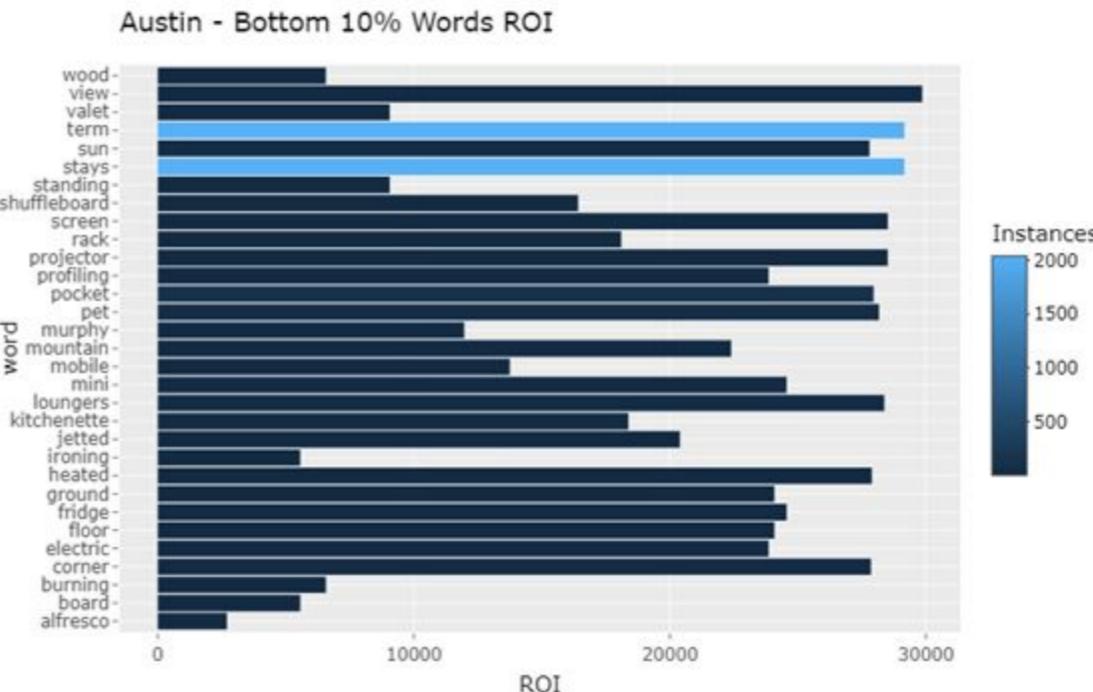
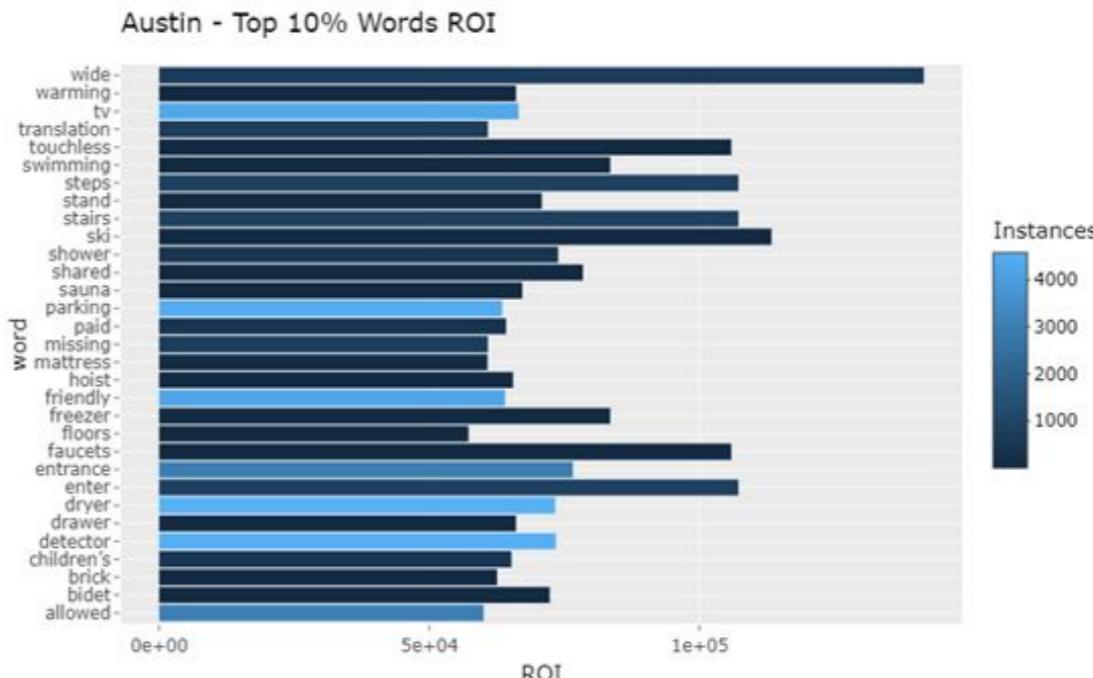
Use Amenities Label to Calculate ROI

- Most tangible aspect for an investor to change
 - Add a “wide” hallway
 - Ensure a smoke “detector” is installed
- All listings had an Amenities blurb
- Most viewed aspect of a listing outside of the property photos

Why ROI?

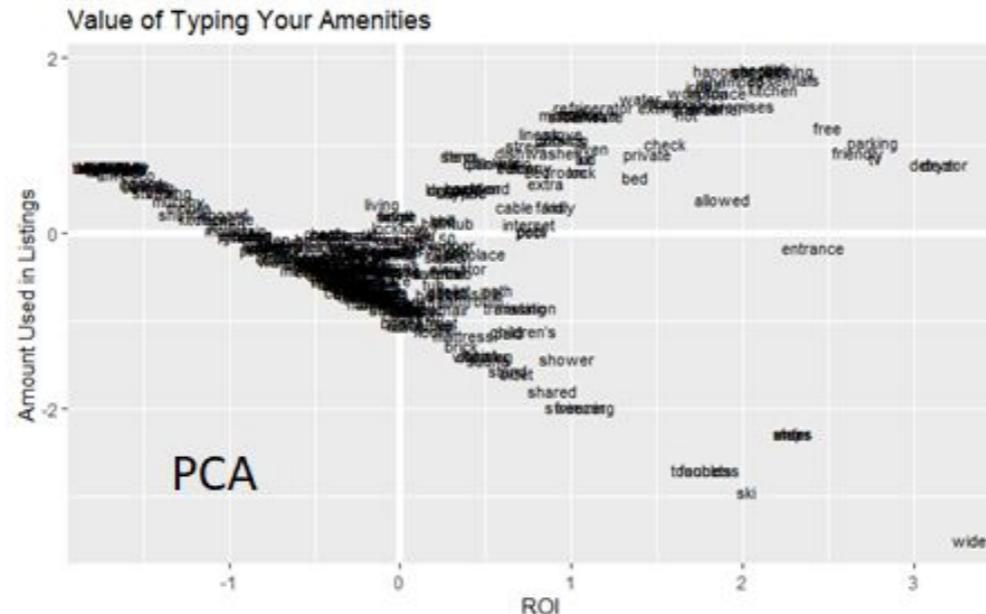
- Provides best idea of yearly income
- Property use assumptions can remain consistent for all the listings
- Offers value propositions per singular aspect of a property change that is not dependent on the actual property type
 - Used uni-grams to provide investors broader options for their specific property

$$ROI_{Word} = \frac{(\sum (Unavail * Price)_{ID})_{Word}}{n_{Word}}$$



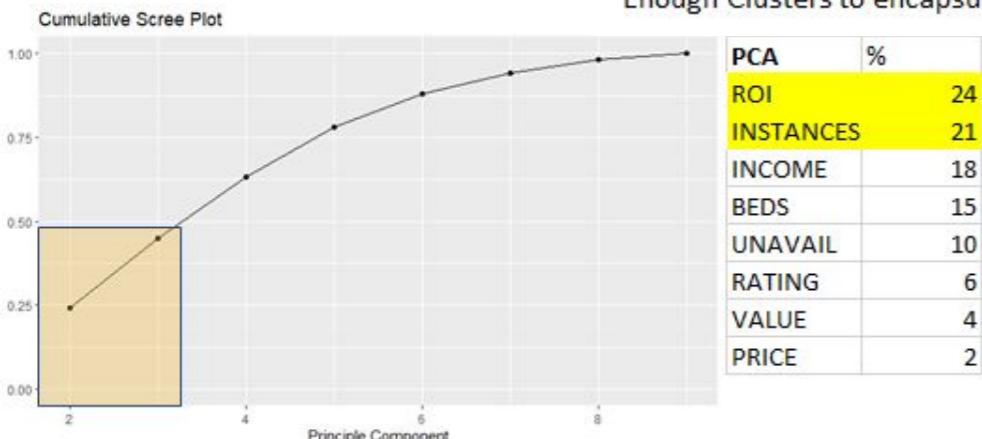
2.2 FURTHER ANALYSIS

Further Analysis: How can we combine these words into a “to-do” list?



PCA

Stay with ROI, Instances (45%)
There are outliers (Wide, Entrance)
Enough Clusters to encapsulate Wide



K Means

Use of 3 Clusters

Provides most discernabl

Cluster 1

Alludes to “easy fixes”

i.e. faucets, mattress, bidet, touchless

Cluster 2

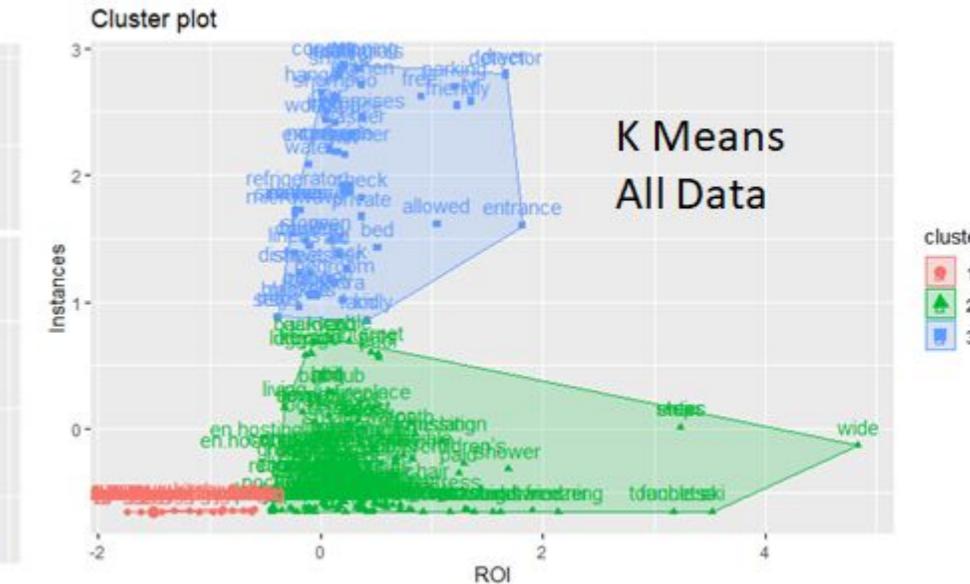
“Atmosphere” of the listing

i.e. friend

Cluster 3

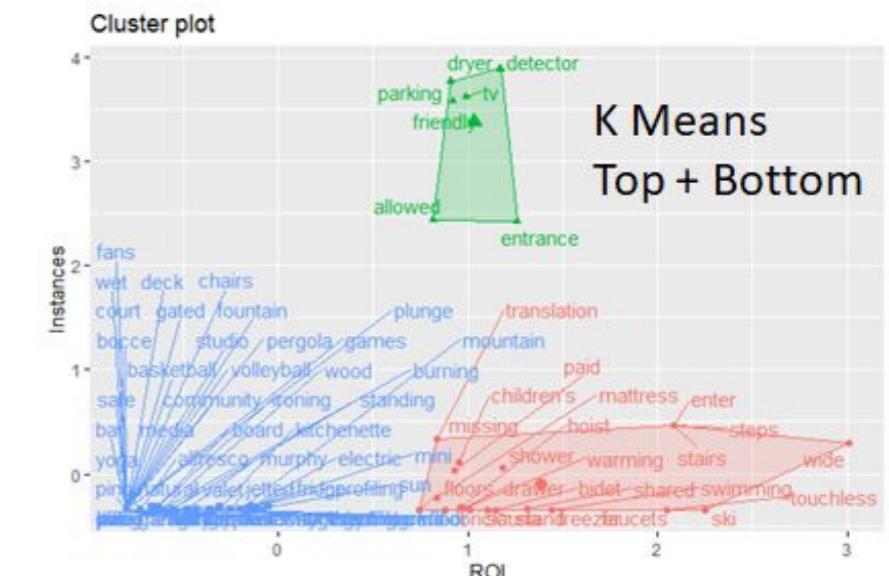
“Entertainment”

i.e. basketball, mountain, yoga, medi



K Means

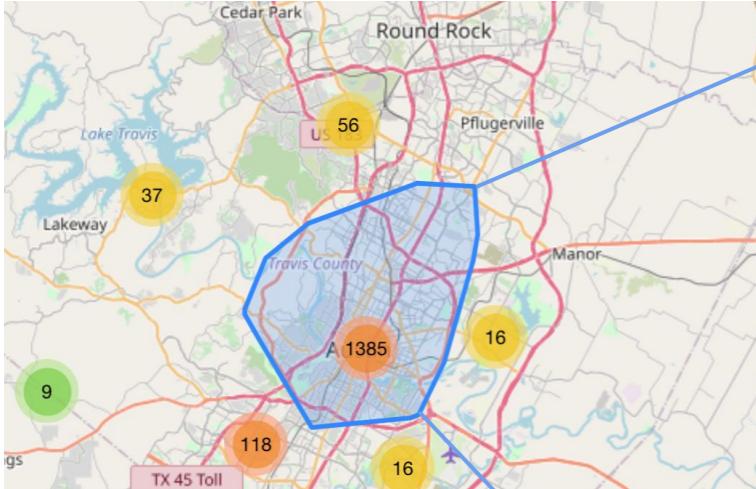
All Data



K Means Top + Bottom

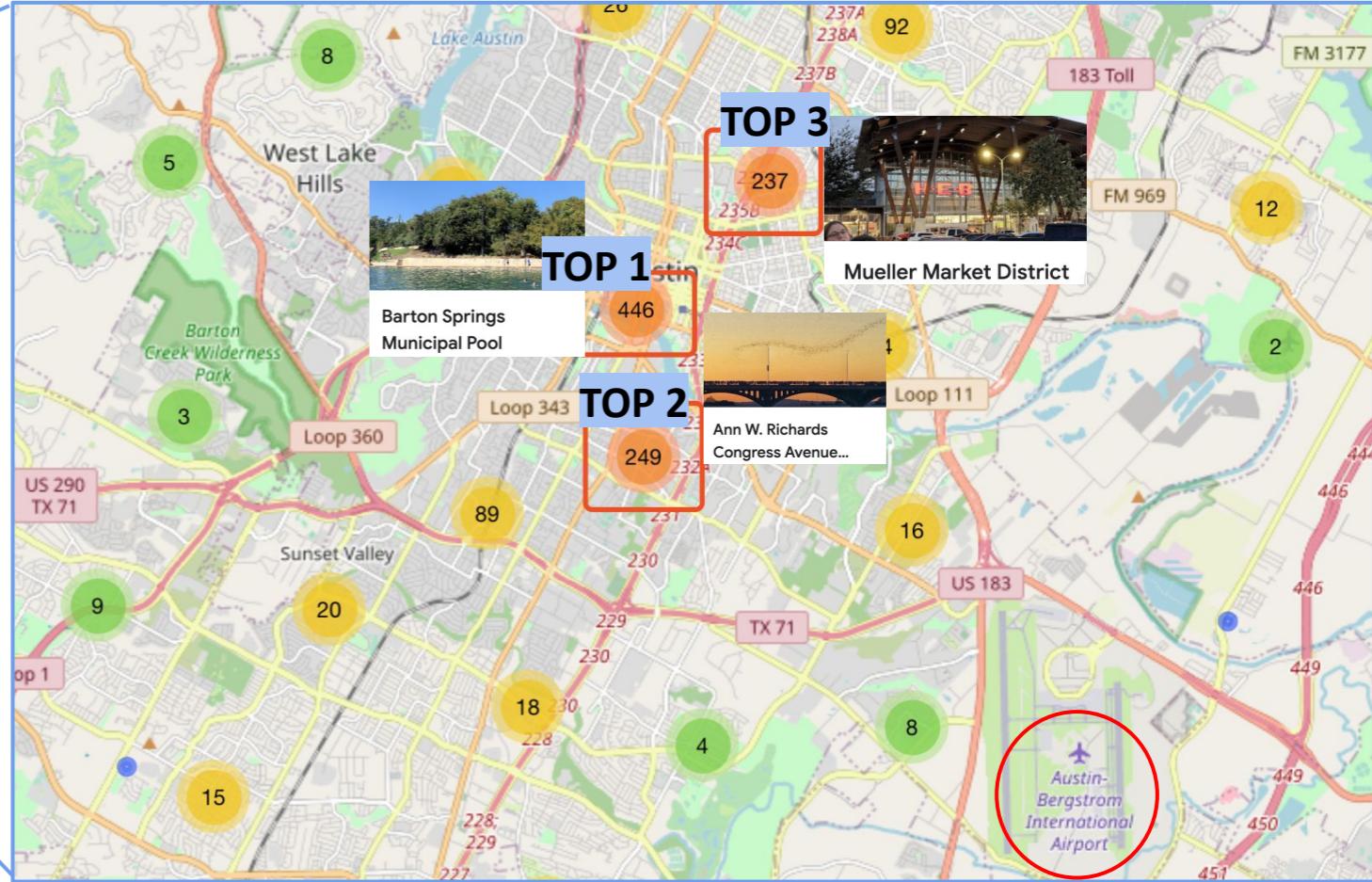
2.3 HOUSING PURCHASE - HOW IS DEMAND?

Location! Location! Location!



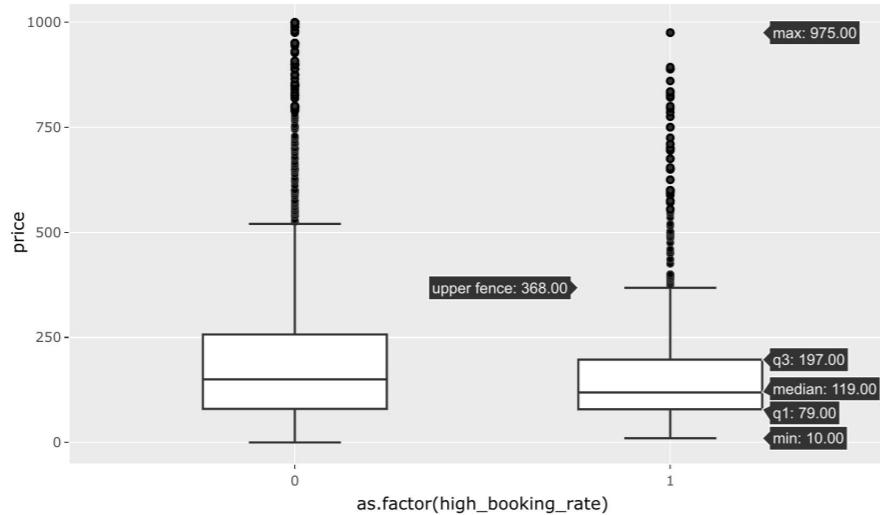
Findings:

1. Houses located in the **downtown** are in extremely high demand while small portion of the houses are in the rural area.
2. Specially, there is a **small peak of demand in the rural area**, which is around Canyon Lake, Comal County, Texas.
3. When we look at closely, we can see that **TOP 3 of houses** are unsurprisingly located near places of interests and shopping center.



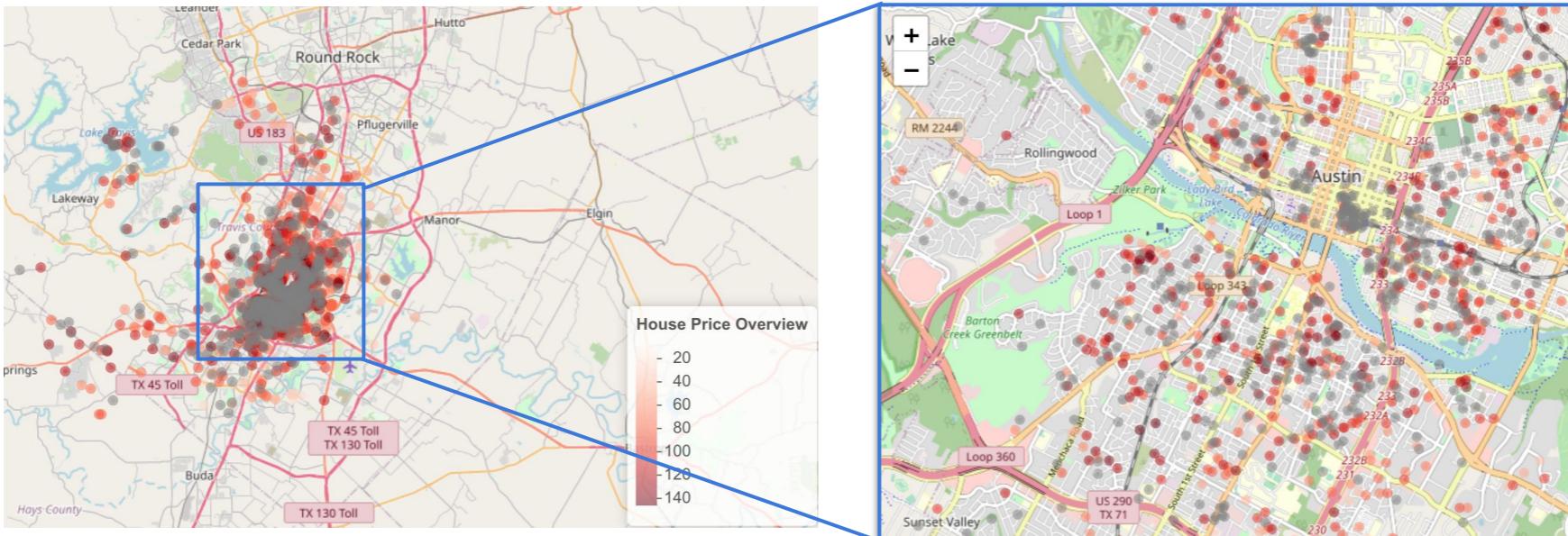
4. Last thing we should pay attention to is that it might **not be a wise decision** to buy/rent a houses near **Austin International airport**.

2.3 HOUSING PURCHASE - HOW IS PRICE?

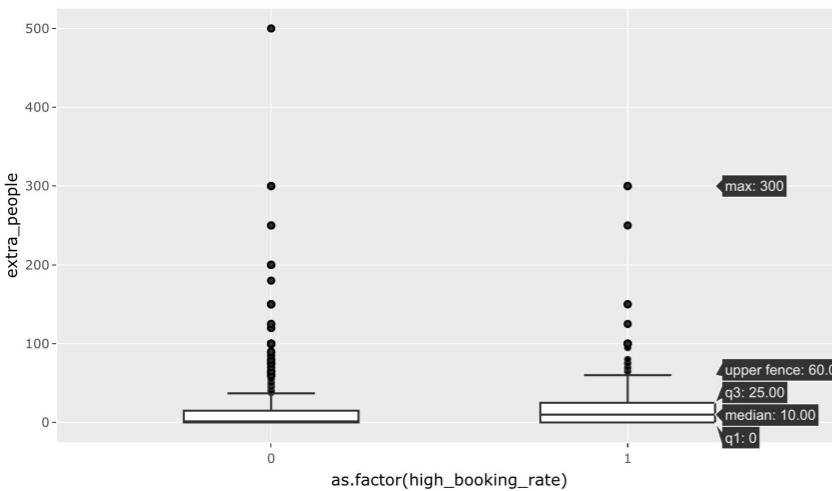
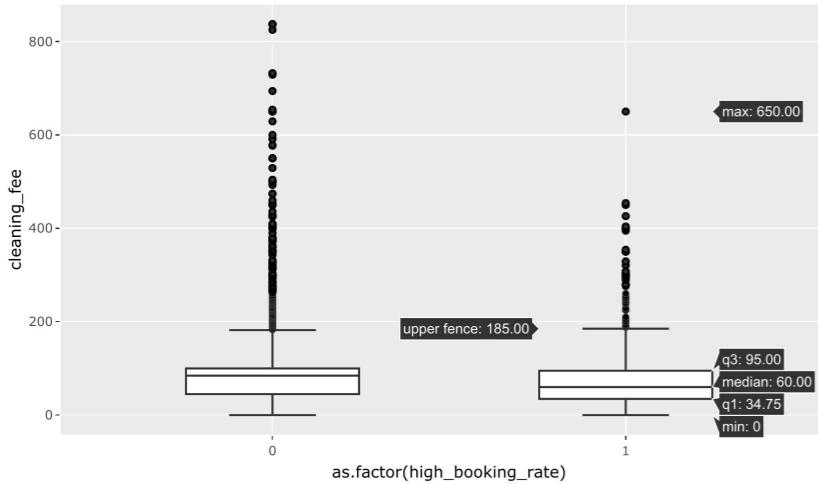


Findings:

1. The **price** for the most of the house is somewhere **between \$79 to \$197**, the average price is \$119 although there is a tiny portion of houses worth between \$368 and \$975.
2. At first glance, we can see that the houses located in the downtown is the most expensive. However, when we take a close look, **there is not an apparent pattern** of where the house tends to more pricey in the downtown.

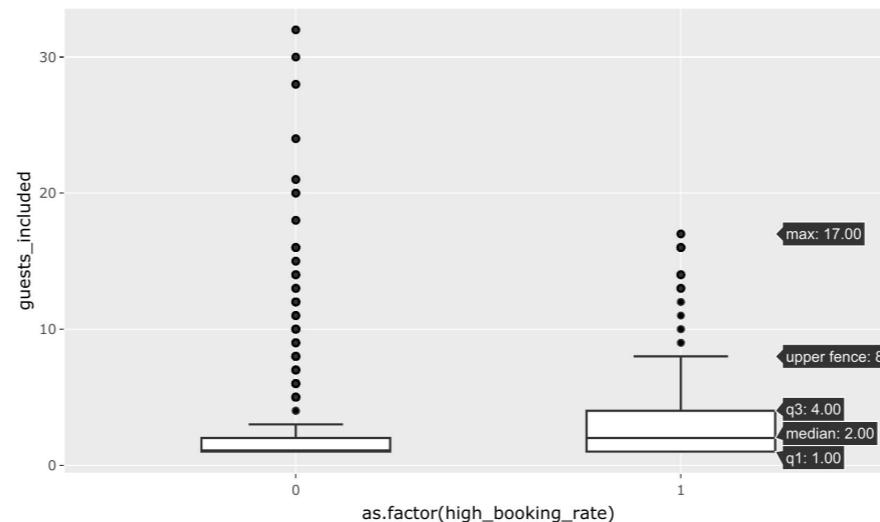


2.3 HOUSING PURCHASE - HOW IS PRICE?



Findings:

1. Airbnb residents tend to be fine with paying a cleaning fee of around \$60 after the whole stay and approximately \$10 for the extra per person.
2. Most of the houses with high booking rate tend to be allowed to live with 2 people.

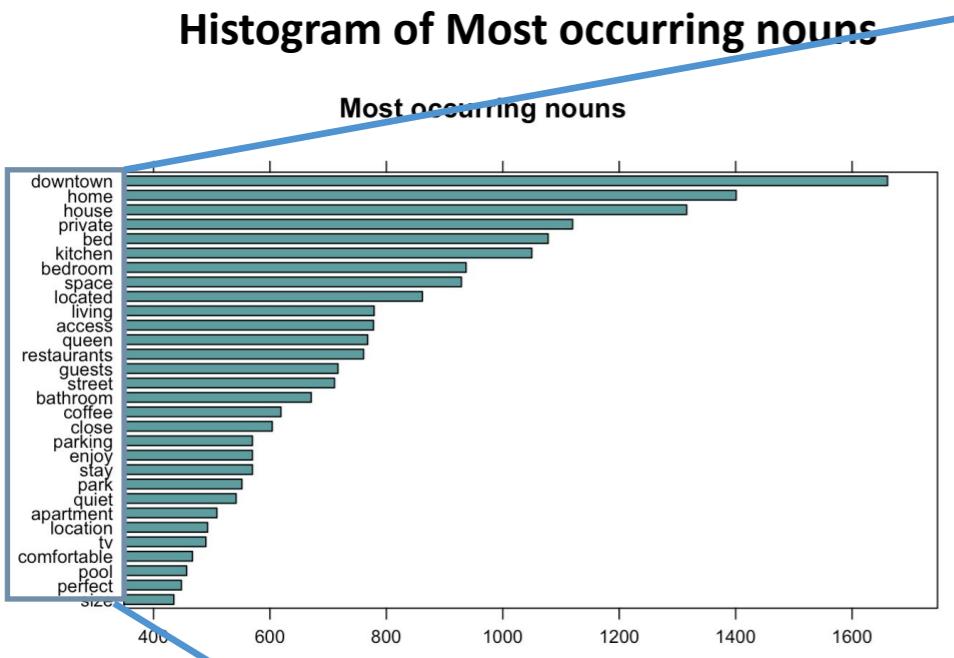


HOUSING PURCHASE STRATEGY:

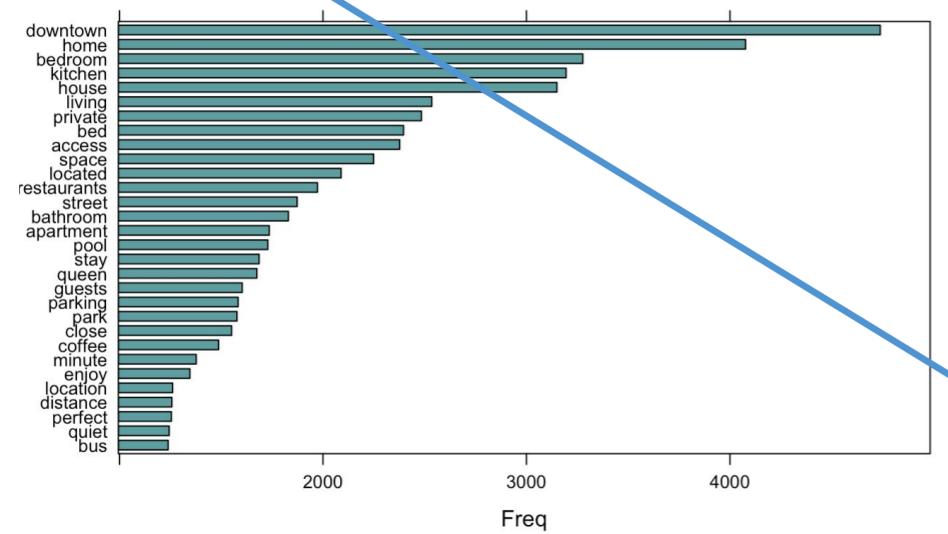
1. **Investing a house in the downtown** seems to be a safe decision, especially those near place of interest and shopping center.
2. **Creating a luxury house is not a great idea** due to the current fair market value.
3. Austin market seems to be good option for a green hand investor since you do not need to dig into too much in terms of the accurate location once it is in the downtown.
4. It is fine to ask for a reasonable cleaning fee and extra people fee and a room that can accommodates two persons will always be popular.。

2.4 HIDDEN SECRET ABOUT HOME DESCRIPTION

High
Booking
Rate

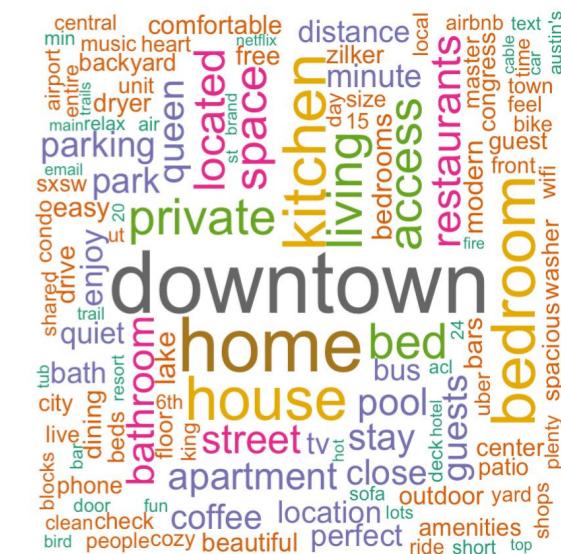


Not
High
Booking
Rate



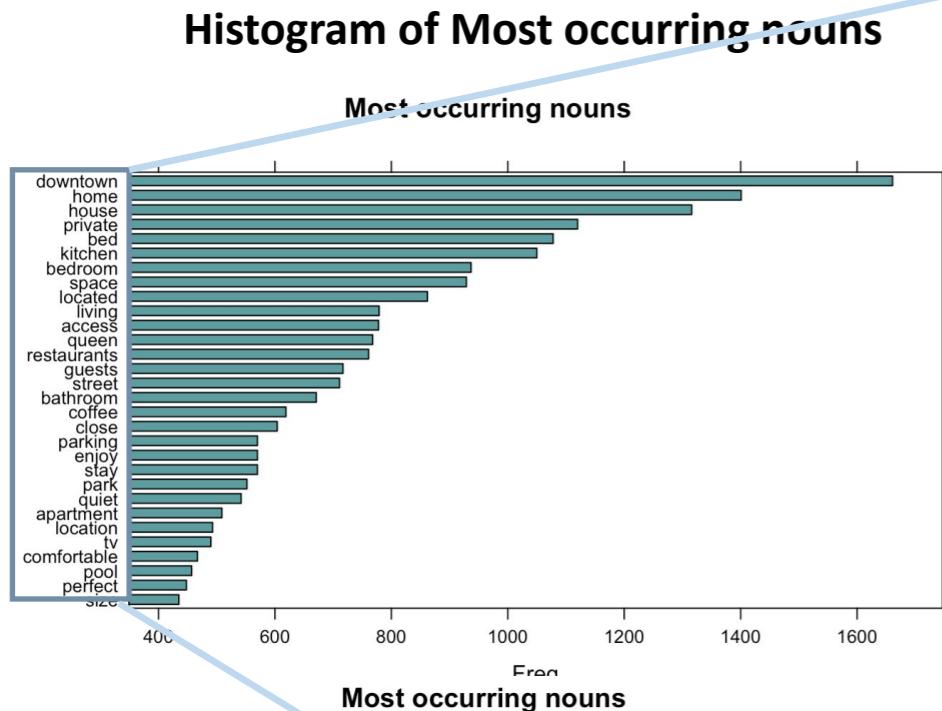
downtown
home
house
private
bed
kitchen
bedroom
space
located
living
access
queen
restaurants
guests
street
bathroom
coffee
close
parking
enjoy
stay
park
quiet
apartment
location
tv
comfortable
pool
perfect
size

Wordclouds

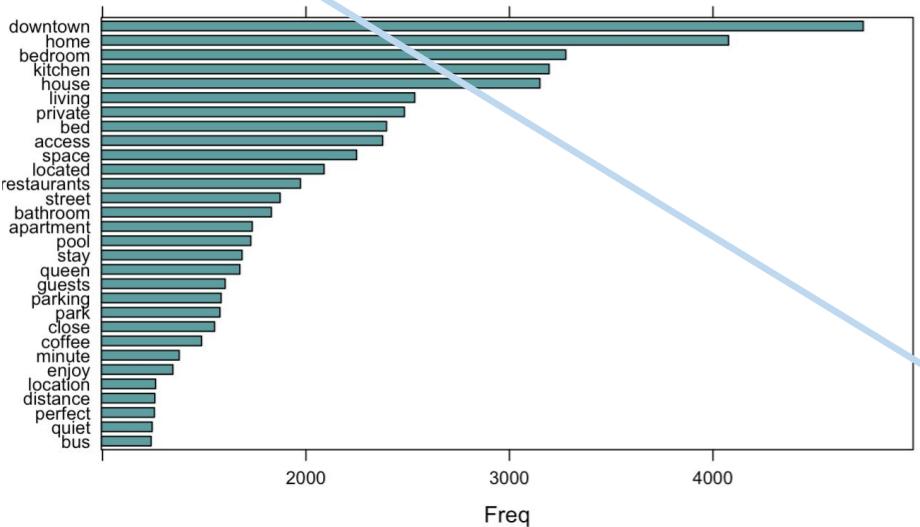


2.4 HIDDEN SECRET ABOUT HOME DESCRIPTION

High
Booking
Rate



Not
High
Booking
Rate



downtown
home
house
private
bed
kitchen
bedroom
space
located
living
access
queen
restaurants
guests
street
bathroom
coffee
close
parking
enjoy
stay
park
quiet
apartment
location
tv
comfortable
pool
perfect
size

- Host tends to describe the facilities in the house and the surrounding facilities of these house in the descriptions of their house.
- Host always mentions bedrooms, bathrooms and kitchen in description.

POOL

2.5 POPULAR ROOM TYPE

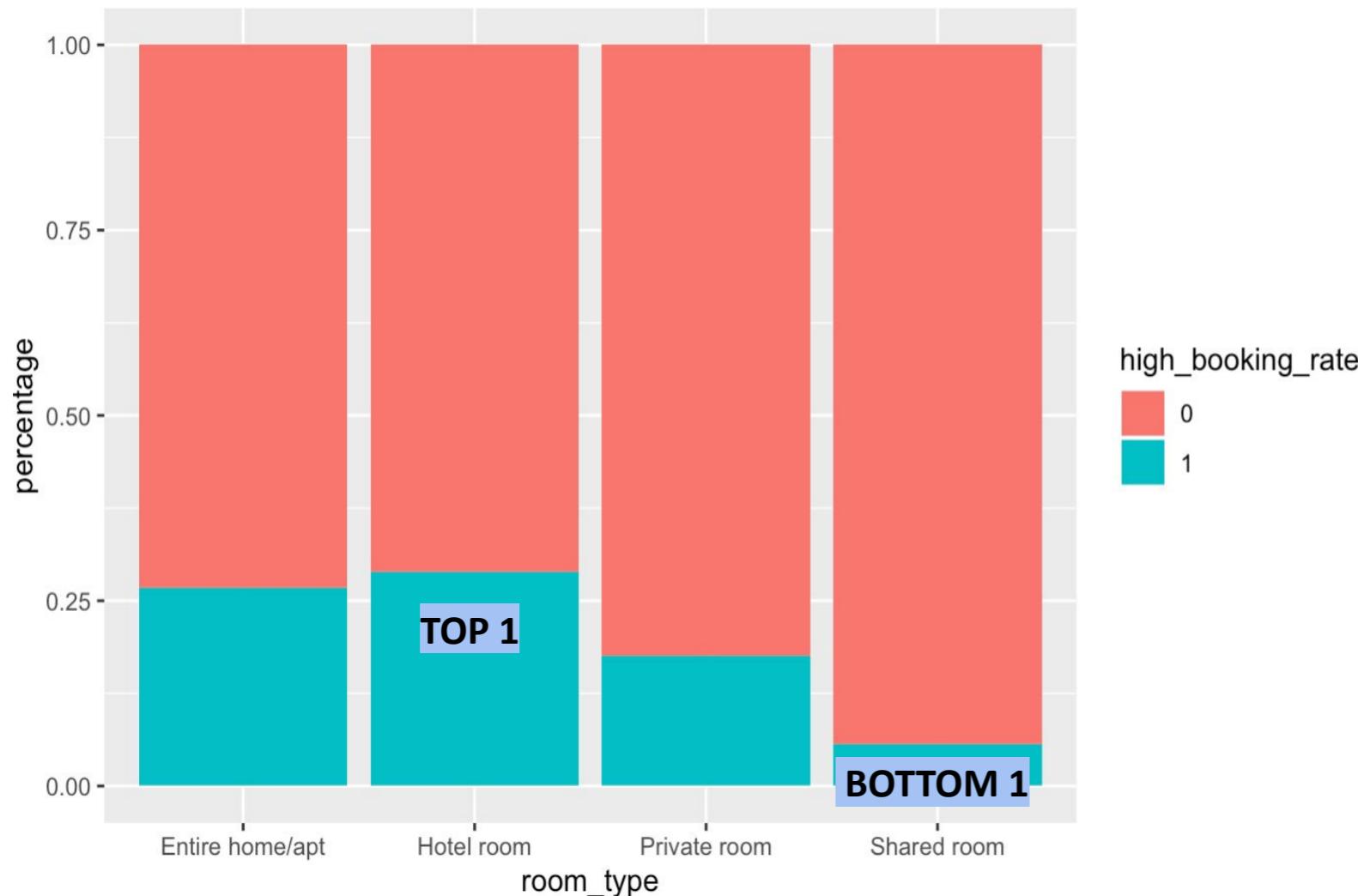


BELONG ANYWHERE

4 TYPES OF ROOM

- Entire home/apartment
- Hotel room
- Private room
- Shared room

2.5 POPULAR ROOM TYPE



room_type	high_booking_rate	category	all
<chr>	<dbl>	<int>	<int>
Entire home/apt	0	3696	5042
Entire home/apt	1	1346	5042
Hotel room	0	37	52
Hotel room	1	15	52
Private room	0	1265	1535
Private room	1	270	1535
Shared room	0	100	106
Shared room	1	6	106

- Most popular: **hotel room**
- Least popular: shared room



BELONG ANYWHERE



HOTEL
BELONG ~~ANYWHERE~~

PART 3

CONCLUSION

3.0 MAIN SUGGESTIONS



Austin Airbnb is specially good for green hand inventor.



Downtown would always be a safe choice.



Use amenities to differentiate the market



Around \$ 119 with a hotel room type



Don't forget a pool.

**THANKS
ANY QUESTIONS?**