Pricing Strategy Airbnb based on Negative Reviews

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Introduction

Firsly, we cleaned the raw dataset. The descriptions of the variables are mentioned below. Based on this cleaned dataset, we executed a text analysis. The results of this analysis are shown in a sentiment plot. Furthermore, we did a topic analysis to check what topics are spoken of the most. These results are shown in the sentiment topic plot below. To conclude, we performed a regression analysis. The results are shown in model summary. Also, we briefly describe the results in the section below. To conclude, we visually checked the correlation between price and sentiment (compound).

Note: our results are based on a prototype sample. The results can differ when conducting it on the whole dataset.

Variable Descriptions

The cleaned dataset "gen/temp/airbnb.csv", consists of the following variables.

ID ID is a numeric variable. Every listing has an unique ID.

Name Name is a character variable. Name of the listing.

Neighbourhood Neighbourhood is a factor variable. The neighbourhood in which the listing is located. There are 22 classified neighbourhoods.

Room Type Room type is a factor variable. There are 4 possible room types.

Accommodates Accomodates is a numeric variable. Accommodates is the number of guests that can stay in the listing.

Comments Comments is a character variable. Comments are the reviews about the listing.

Year Year is a numeric variable. Year is the year the review is written.

Price Price is a numeric variable. Price is the price in dollars per night.

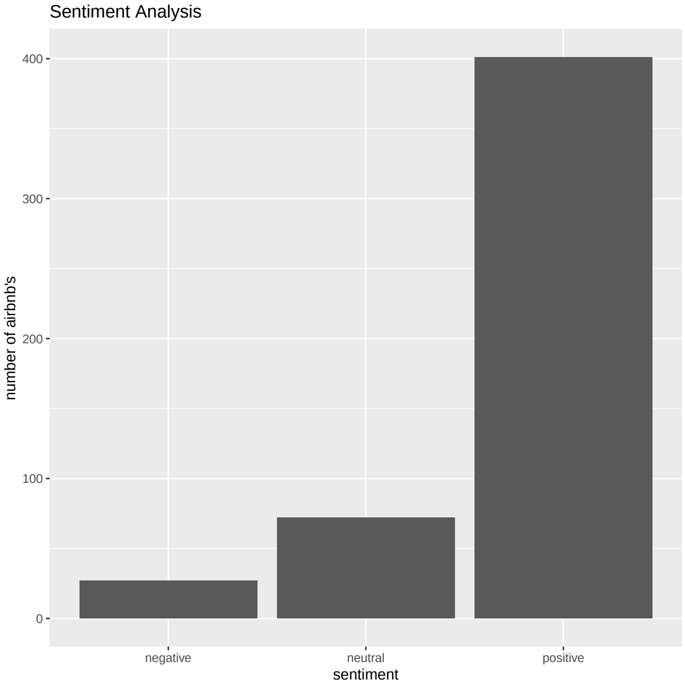
```
## Rows: 226895 Columns: 8
```

```
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (4): name, neighbourhood, room_type, comments
## dbl (4): id, accommodates, year, price
```

```
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
##        id               name           neighbourhood       room_type
##  Min.   :    2818   Length:226895      Length:226895      Length:226895
##  1st Qu.: 7276869   Class :character   Class :character   Class :character
##  Median :17519833   Mode  :character   Mode  :character   Mode  :character
##  Mean   :17400701
##  3rd Qu.:24732648
##  Max.   :51316529
##   accommodates      comments              year          price
##  Min.   : 1.000   Length:226895      Min.   :2018   Min.   :   4.0
##  1st Qu.: 2.000   Class :character   1st Qu.:2018   1st Qu.:  79.0
##  Median : 2.000   Mode  :character   Median :2019   Median : 105.0
##  Mean   : 2.692                      Mean   :2019   Mean   : 128.8
##  3rd Qu.: 4.000                      3rd Qu.:2019   3rd Qu.: 150.0
##  Max.   :16.000                      Max.   :2021   Max.   :7999.0
```

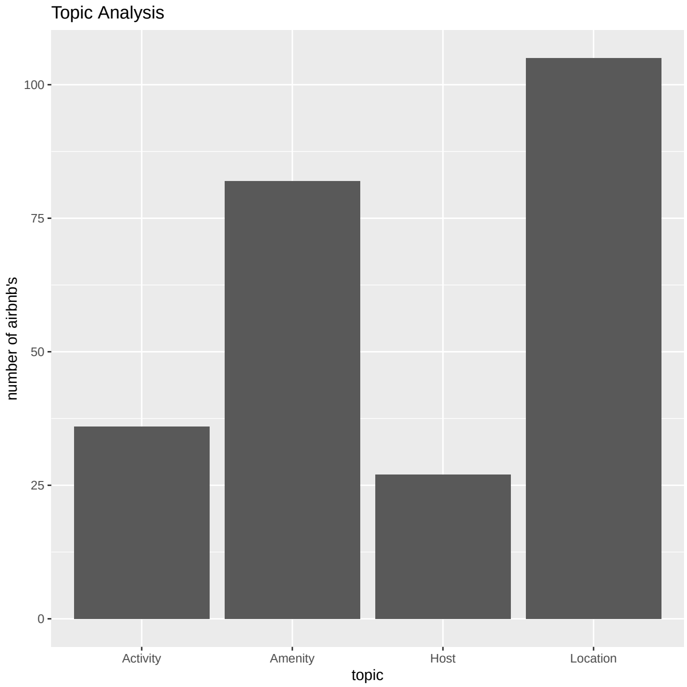
Sentiment Analysis



Based on the plot above, which is generated in the text_analysis.R script, we can see the following: - The vast majority of reviews in the Airbnb dataset is defined positive. - Only a very small part of the reviews in this same dataset is considered negative.

Therefore, we can conclude that the majority of reviews created by Airbnb guests has a positive nature.

Topic Analysis



Noticeable is that most reviews are about Location and Amenity. A relatively small number is about Activity and Host.

The plot above shows the topics most often mentioned in the reviews written by Airbnb guests. Remarkable is that most reviews are about Location and Amenity. A relatively small number is about Activity and Host.

Regression Analysis

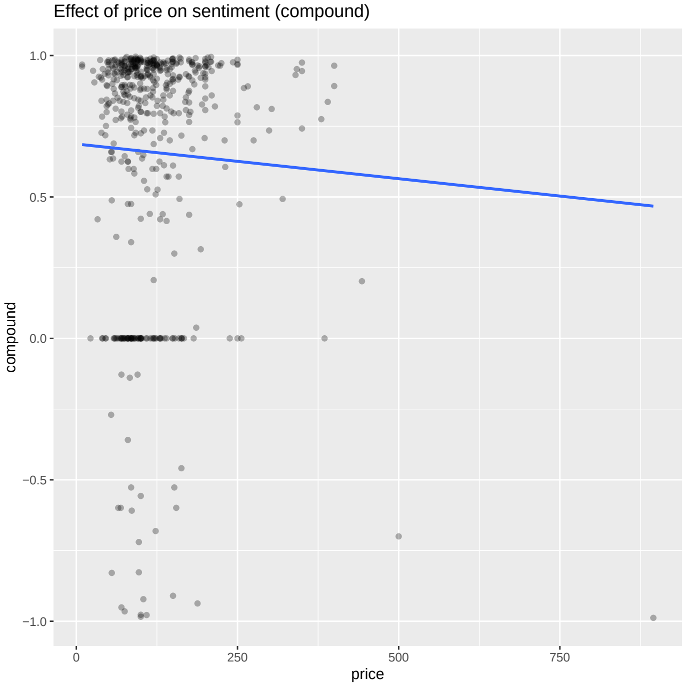
Model Summary

```
## Rows: 500 Columns: 10

## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (5): name, neighbourhood, room_type, comments, sentiment
## dbl (5): id, accommodates, year, price, compound

##
## i Use ‘spec()‘ to retrieve the full column specification for this data.
## i Specify the column types or set ‘show_col_types = FALSE‘ to quiet this message.
```

The effect of price on compound (sentiment) is non significant, with a p-value of .372. There is very little variation explained by the model, resulting in a R square of .002.

	Model 1
(Intercept)	0.687
	(0.040)
price	0.000
	(0.000)
Num.Obs.	500
R2	0.002
R2 Adj.	0.000
AIC	649.2
BIC	661.8
Log.Lik.	−321.595
F	0.798

Plot Price and Compound



As we expected based on the regression results, there is visually no correlation to be seen between price and compound (sentiment). Also, as earlier mentioned in one of the intermediate plots, most reviews are labeled as positive.

However, since only a limited sample size has been used in this analysis, one should be careful about rejecting this hypothesis. A significant relationship could still be identified when analyzing the full dataset.