



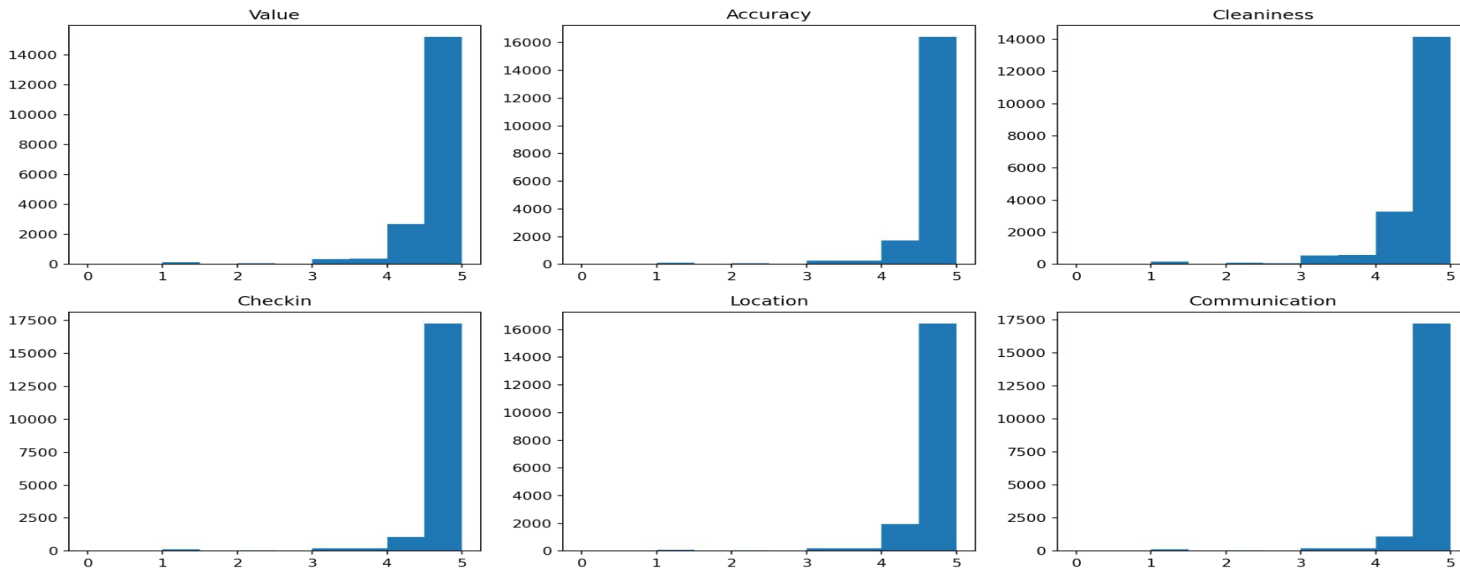
Topic Modelling for Reviews, Sources Affecting Guests' Positive and Negative Experiences

Why reviews matter?

- Reviews **helps guests** choose their travel plans wisely and enables hosts to open their homes with confidence and **attract guests**. In fact, Airbnb business is based on positive reviews. ([Link](#))
- The first thing to avoid when booking an Airbnb ([Link2](#))
 - Little or No Reviews :The first thing you need to be looking for in an Airbnb is GOOD REVIEWS!
- More good reviews → Higher ranking on Airbnb search
- Social proof → Most guests check reviews before booking their accommodation.

Why reviews matter?

- Guests can also provide star ratings with 1–5 stars on specific aspects of their experience.
- All review scores are highly positive scores. There is no scores less than 4.5 out of 5(see below graphs).



Methodology

Data

- NYC Listings Dataset, InsideAirbnb
- More than 80K Reviews

Data Cleaning & EDA

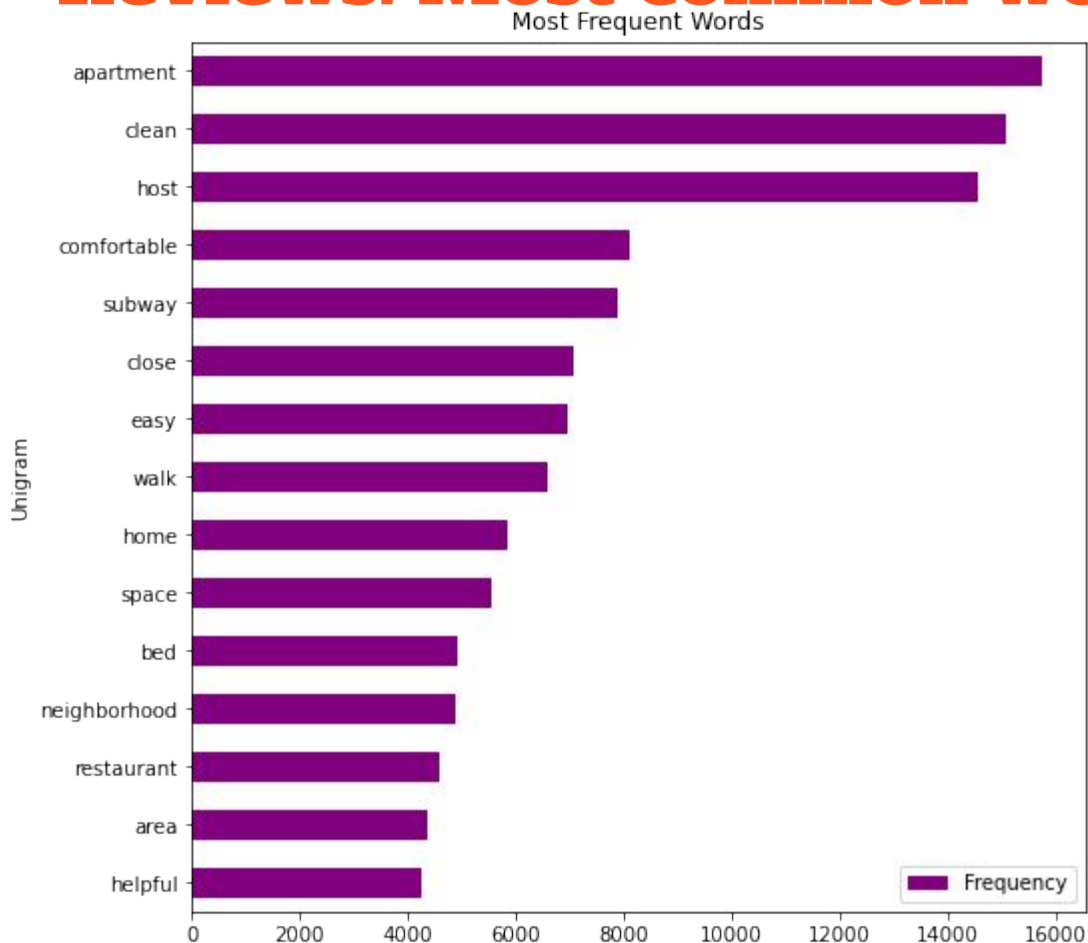
- Remove numbers, capital letters and punctuations
- Eliminate non-English reviews
- Lemmatize

Topic Modeling

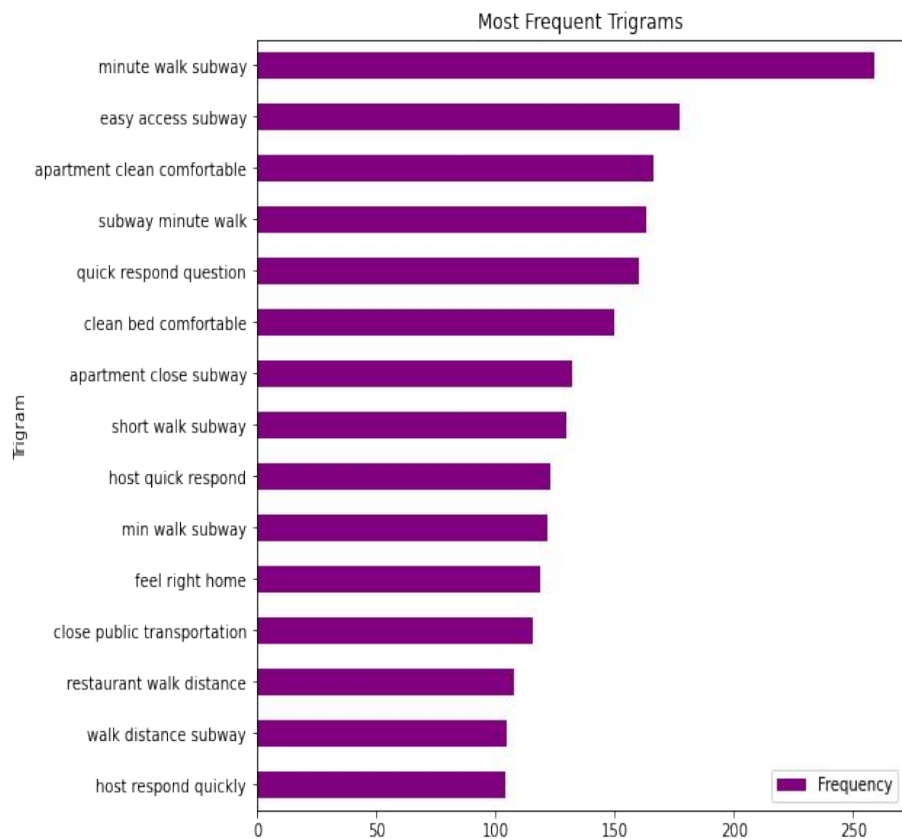
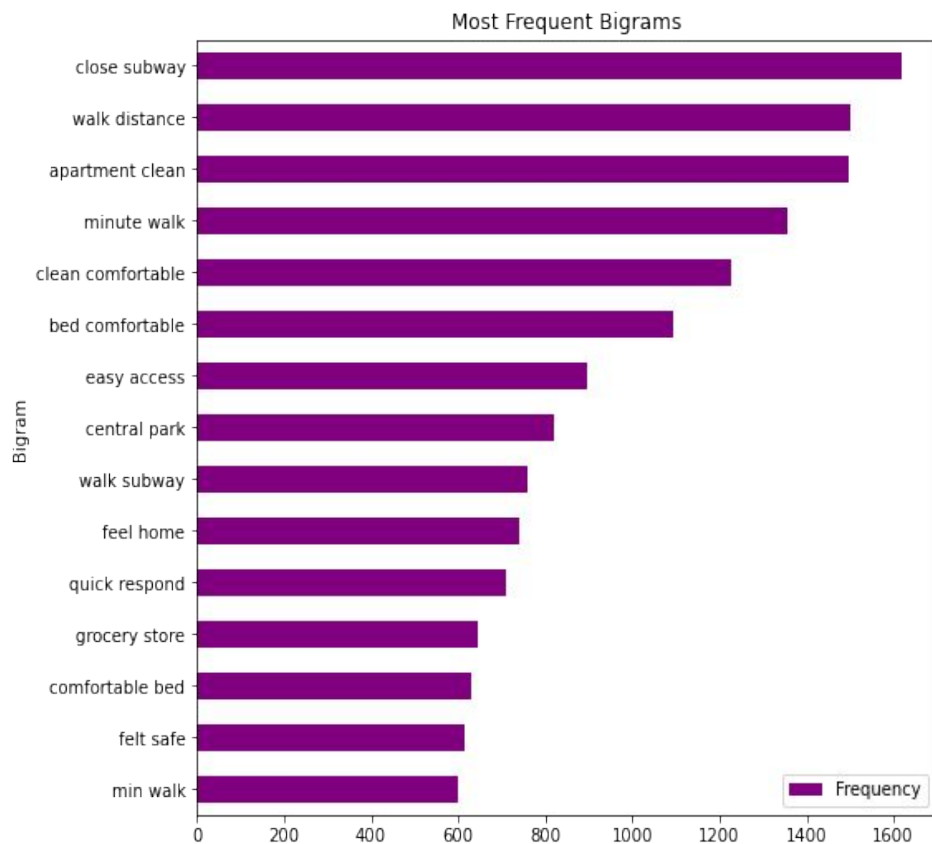
- TF-IDF Vectorizer
(ngram_range = (1, 2),
max_df = 0.8)
- Models :
 - NMF
 - SVD
 - LDA



Reviews: Most common words in reviews



Reviews: Most common words in reviews



Topic Modelling

- TF-IDF Vectorizer (ngram_range = (1, 2), max_df = 0.8)
- Models :
 - NMF
 - SVD
 - LDA
- Manually check the model with 5 -20 topics
- Compute coherence score c_v coherence for various number of topics to find the best value for the number of topics

TF-IDF / NMF 10 Topics

1. HOME, WALK, NEIGHBORHOOD, ENJOY, QUIET, AREA, HELPFUL, MINUTE, HOUSE, FRIENDLY
2. HOST, FRIENDLY, FRIENDLY HOST, CLEAN HOST, RESPONSIVE, HELPFUL, EXCELLENT HOST, HOST CLEAN, EXCELLENT, HOST RESPONSIVE
3. CLEAN, CLEAN HOST, CLEAN COMFORTABLE, APARTMENT CLEAN, CLEAN QUIET, HOST CLEAN, CLEAN SPACIOUS, QUIET, SPACIOUS, CLEAN COZY
4. APARTMENT, APARTMENT CLEAN, CLEAN APARTMENT, HOST APARTMENT, SPACIOUS, BEAUTIFUL APARTMENT, BEAUTIFUL, APARTMENT SPACIOUS, APARTMENT CLOSE, SPACIOUS APARTMENT
5. COMFORTABLE, CLEAN COMFORTABLE, BED, COMFORTABLE CLEAN, COMFORTABLE BED, BED COMFORTABLE, COMFORTABLE APARTMENT, SPACIOUS COMFORTABLE, COMFORTABLE SPACE, APARTMENT COMFORTABLE
6. HIGHLY, HOST HIGHLY, HIGHLY RECOMMENDED, RECOMMENDED, AMAZE, CLEAN HIGHLY, EXCELLENT, APARTMENT HIGHLY, COMFORTABLE HIGHLY, FANTASTIC
7. CLOSE, CLOSE SUBWAY, SUBWAY, CLEAN CLOSE, RESTAURANT, APARTMENT CLOSE, CLOSE TRAIN, CLOSE METRO, SHOP, TRAIN
8. EXPERIENCE, BEST, BEST EXPERIENCE, AMAZE, HOST EXPERIENCE, EXPERIENCE CLEAN, EXPERIENCE HIGHLY, NEW, EXCELLENT, NEW EXPERIENCE
9. EASY, COMMUNICATION, ACCESS, EASY ACCESS, VALUE, COMMUNICATE, EASY COMMUNICATE, CLEAN EASY, QUICK, EXCELLENT
10. SPACE, BEAUTIFUL, AMAZE, CLEAN SPACE, SPACE CLEAN, BEAUTIFUL SPACE, SPACE HOST, HOST SPACE, COMFORTABLE SPACE, STYLISH

TF-IDF / SVD 5 Topics

1. HOST, CLEAN, APARTMENT, COMFORTABLE, CLOSE, SUBWAY, EASY, SPACE, FRIENDLY, HIGHLY
2. HOST, FRIENDLY HOST, HOST HIGHLY, EXCELLENT HOST, HELPFUL HOST, AMAZE HOST, RESPONSIVE HOST, HOST RESPONSIVE, HOST HELPFUL, CLEAN HOST
3. CLEAN, HOST, CLEAN COMFORTABLE, CLEAN HOST, HOST CLEAN, CLEAN QUIET, COMFORTABLE CLEAN, CLEAN CONVENIENT, CLEAN COZY, CLEAN SPACIOUS
4. APARTMENT, APARTMENT CLEAN, CLEAN, CLEAN APARTMENT, HOST APARTMENT, SPACIOUS, BEAUTIFUL APARTMENT, APARTMENT SPACIOUS, SPACIOUS APARTMENT, EXCELLENT
5. COMFORTABLE, CLEAN COMFORTABLE, APARTMENT, HIGHLY, SPACE, BED, HOME, BED COMFORTABLE, COMFORTABLE BED, COMFORTABLE CLEAN

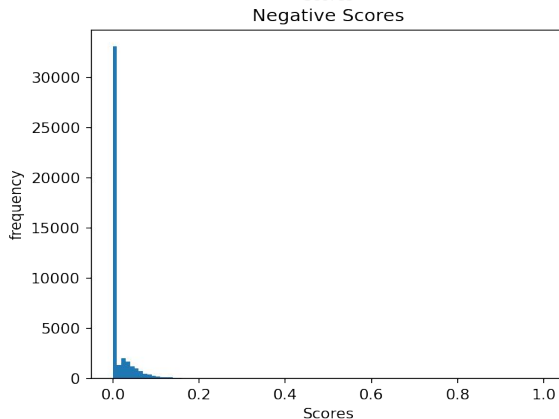
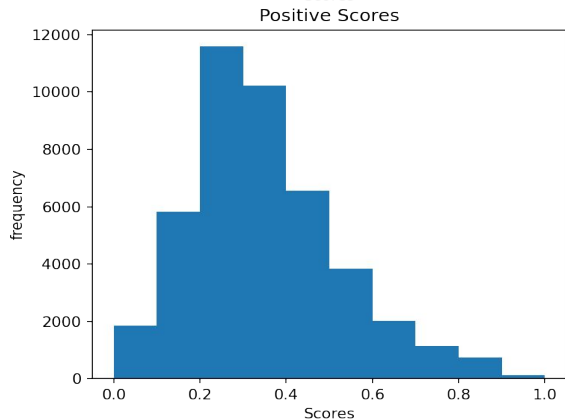
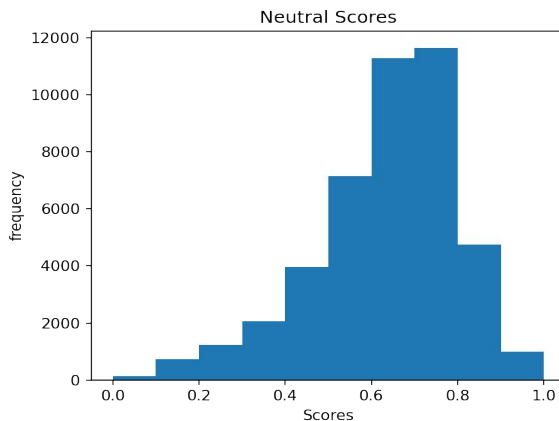
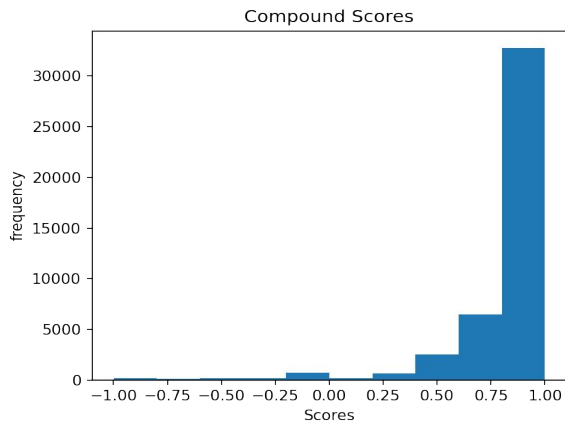
TF-IDF / LDA 5 Topics

1. SPACE, BED, COMFORTABLE, CLEAN, WALK, HOST, HOME, NEIGHBORHOOD, APARTMENT, RESTAURANT
2. APARTMENT, CLEAN, WALK, HOST, EASY, RESTAURANT, NEIGHBORHOOD, SUBWAY, CLOSE, COMFORTABLE
3. EASY, COMFORTABLE, CLOSE, CLEAN, SUBWAY, BED, WALK, APARTMENT, NEIGHBORHOOD, HOST
4. SUBWAY, HOME, WALK, RESTAURANT, CLOSE, CLEAN, APARTMENT, HOST, COMFORTABLE, NEIGHBORHOOD
5. HOST, NEIGHBORHOOD, CLEAN, WALK, SUBWAY, EASY, COMFORTABLE, CLOSE, APARTMENT, HOME

Next Steps

- Identify topic categories by exploring original reviews

Reviews: Sentiment Analysis/ VaderSentiment



- Most guest had pleasant experiences during their Airbnb stays.
- The negative scores were mostly close to zero.

Next Steps

- Separate positive and negative reviews and extract topics from each
- Identify topics associated with Airbnb user satisfaction and dissatisfaction