



Airbnb stay

WITH

CAPECASA FINDERS

TAGLINE

**RECOMMENDING THE BEST PRICE**

&

**STAY OPTIONS IN CAPETOWN**

# **CAPECASA FINDERS TEAM**

**KEVIN MURIITHI**

**FESTUS MUCHEMI**

**ERIC MUEMA**

**PETER MBUTHIA**

# BUSINESS UNDERSTANDING

- THE PROJECT DEVELOPS A RECOMMENDER SYSTEM FOR CAPE TOWN AIRBNB LISTINGS TO ASSIST HOSTS IN OPTIMIZING PRICING, OCCUPANCY, AND GUEST SATISFACTION USING INSIDE AIRBNB DATA.
- IT SUGGESTS OPTIMAL PRICES BASED ON LISTING FEATURES, GUEST SENTIMENT, AND OCCUPANCY PATTERNS, HELPING HOSTS SET COMPETITIVE AND PROFITABLE PRICES.



## DATA DESCRIPTION

KEY DATA FILES INCLUDE:

- LISTINGS.CSV: CONTAINS DETAILS ABOUT EACH LISTING, SUCH AS PROPERTY TYPE, LOCATION, AMENITIES, AND HOST INFORMATION.
- CALENDAR.CSV: SHOWS THE AVAILABILITY AND PRICING FOR EACH LISTING OVER TIME.
- REVIEWS.CSV: PROVIDES GUEST FEEDBACK, WHICH IS USED TO DERIVE SENTIMENT SCORES.



## KEY COLUMNS

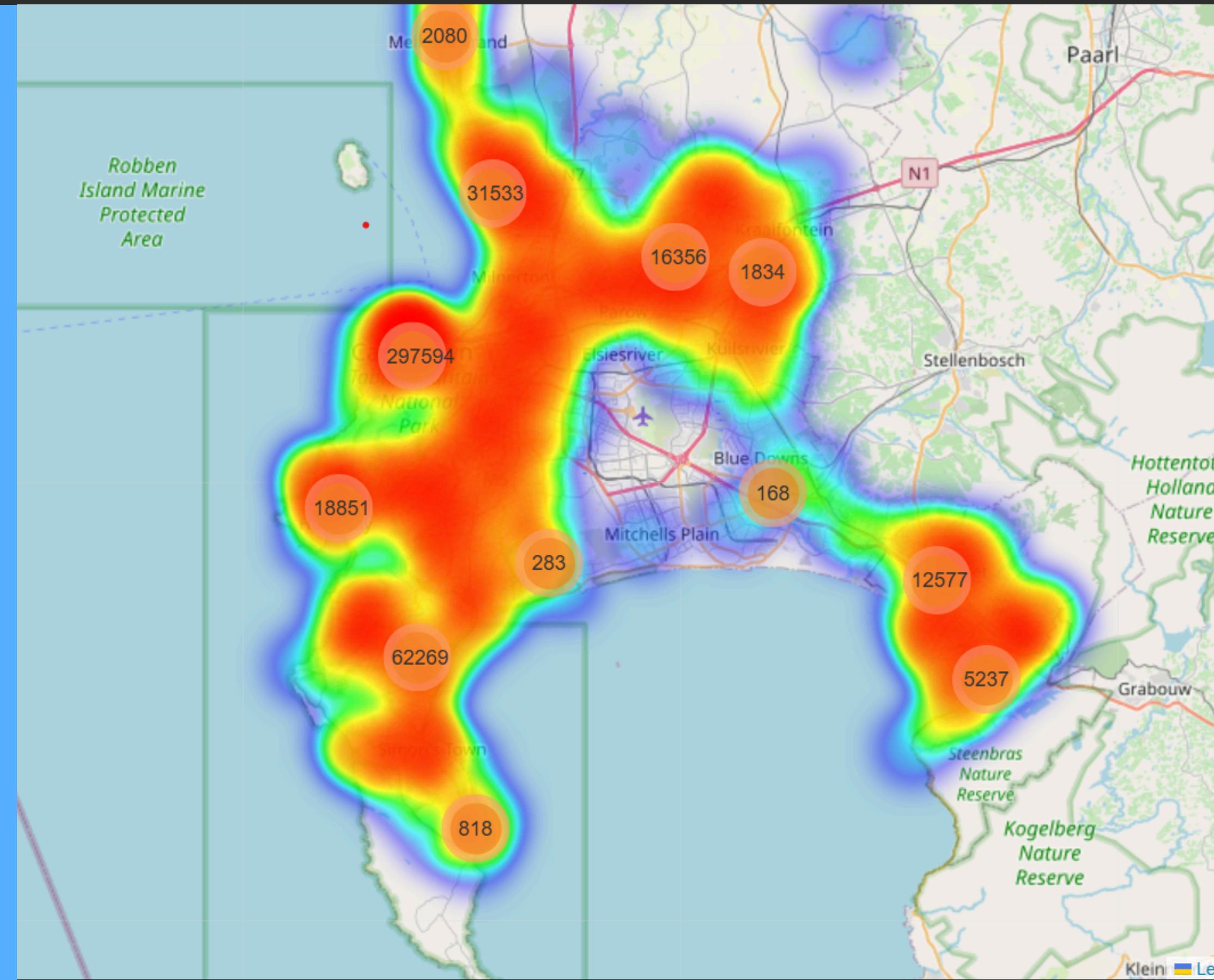
- PROPERTY DETAILS: PROPERTY\_TYPE, ACCOMMODATES, BATHROOMS, BEDROOMS, AND BEDS.
- HOST INFORMATION: FIELDS LIKE HOST\_ID, HOST\_RESPONSE\_RATE, HOST\_IS\_SUPERHOST, AND HOST\_LISTINGS\_COUNT.
- PRICING AND OCCUPANCY: COLUMNS SUCH AS PRICE, AVAILABILITY, AND NUMBER\_OF\_REVIEWS.
- GUEST SENTIMENT: DERIVED FROM GUEST COMMENTS USING SENTIMENT ANALYSIS TO SCORE THE EMOTIONAL TONE OF EACH REVIEW.



# EXPLORATORY DATA ANALYSIS

## INSIGHTS

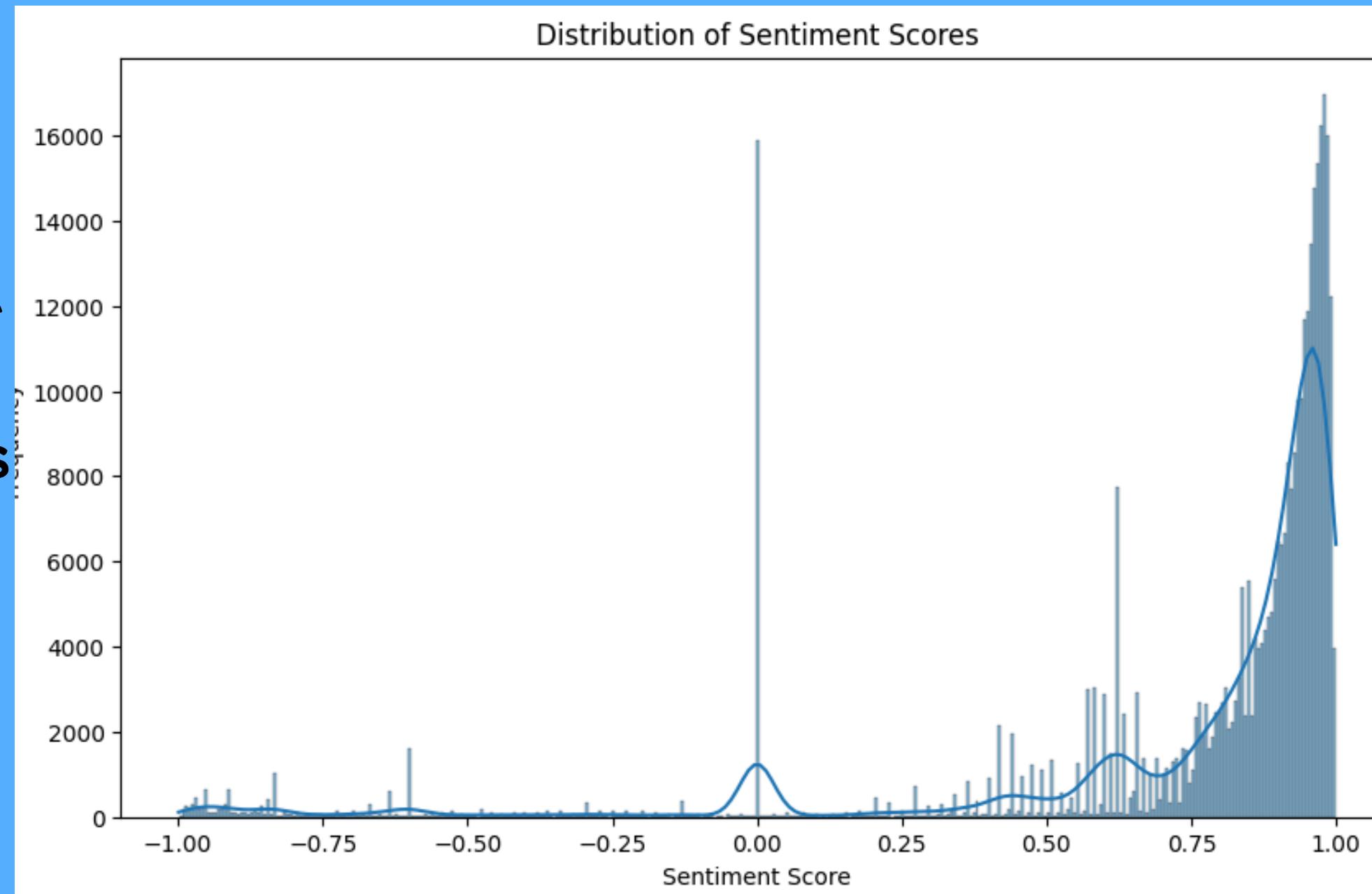
THE HEATMAP INDICATES THAT THE HIGHEST CONCENTRATION OF LISTINGS (297,594) IS IN CENTRAL CAPE TOWN. AIRBNB LISTINGS ARE PRIMARILY LOCATED IN TOURIST-FRIENDLY COASTAL AREAS AND THE CITY CENTER, WITH MUCH LESS ACTIVITY IN INLAND REGIONS.



# EXPLORATORY DATA ANALYSIS

## INSIGHTS

THE SENTIMENT ANALYSIS SHOWS A STRONG POSITIVE SKEW, WITH MOST COMMENTS RANGING FROM 0.5 TO 1, INDICATING GENERAL POSITIVITY. A SPIKE AROUND THE 0 SCORE SUGGESTS MANY NEUTRAL COMMENTS, WHILE NEGATIVE SENTIMENTS ARE INFREQUENT, REFLECTING FEW STRONGLY NEGATIVE REMARKS.





## BEST MODEL

- METRICS: EVALUATED USING ROOT MEAN SQUARE ERROR (RMSE) AND MEAN ABSOLUTE ERROR (MAE).
- PERFORMANCE SUMMARY:
  - TRAIN RMSE: 0.32, TEST RMSE: 0.54
  - TRAIN MAE: 0.21, TEST MAE: 0.32
  - $R^2$ : 0.77

## CONCLUSION

### BEST MODEL SELECTION: LIGHTGBM

- METRICS: EVALUATED USING ROOT MEAN SQUARE ERROR (RMSE) AND MEAN ABSOLUTE ERROR (MAE).
- PERFORMANCE SUMMARY:
  - TRAIN RMSE: 0.32, TEST RMSE: 0.54
  - TRAIN MAE: 0.21, TEST MAE: 0.32
  - $R^2$ : 0.77



## RECOMMENDATION

1. OPTIMIZE PRICING BASED ON MODEL RECOMMENDATIONS CONSIDERING LOCATION, AMENITIES, AND DEMAND.
2. ENHANCE GUEST SATISFACTION BY MAINTAINING QUALITY AND PROVIDING EXCELLENT CUSTOMER SERVICE TO BOOST SENTIMENT SCORES.
3. USE DATA INSIGHTS TO MARKET LISTINGS WITH HIGH OCCUPANCY, POSITIVE SENTIMENT, AND COMPETITIVE PRICING TO ATTRACT GUESTS.



**LINK**

**WITH THE FOLLOWING LINK CAPECASA RECOMMENDER SYSTEM HELPS YOU FIND THE BEST PRICE FOR STAY IN  
CAPE TOWN [HTTPS://CAPECASA-AIRBNB.STREAMLIT.APP/](https://capecasa-airbnb.streamlit.app/)**



An aerial photograph of Cape Town, South Africa, showing the city nestled at the foot of the Twelve Apostles mountain range. The foreground is filled with the dense urban sprawl of Camps Bay, with numerous white houses built on rocky hillsides overlooking the deep blue Atlantic Ocean. A winding coastal road follows the curve of the bay. In the background, the iconic peaks of Signal Hill and Lion's Head rise prominently against a clear blue sky.

Welcome to  
Cape Town