SmartStay Solutions

2024F-T3 BDM 3035 - Big Data Capstone Project 01
(Prepared By Group 7)

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List of Topics:

- Industry Analysis
- Problem Definition
- Differentiation & Value Proposition
- Data Gathering
- Project Components & Wireframes
- Future Outlook & Next Steps
- Conclusion

Industry Analysis - Airbnb Marketplace

- **Overview of Airbnb:**
  - Founded in 2007 in San Francisco
  - Revolutionized the hospitality industry by connecting hosts with travelers seeking unique accommodations
- **Key Statistics:**
  - Over 8 million active listings
  - Present in 100,000+ cities across 200+ countries
  - Competes with traditional lodging services
- **Business Model:**
  - Operates on a Consumer-to-Consumer (C2C) model
  - Revenue through service fees:
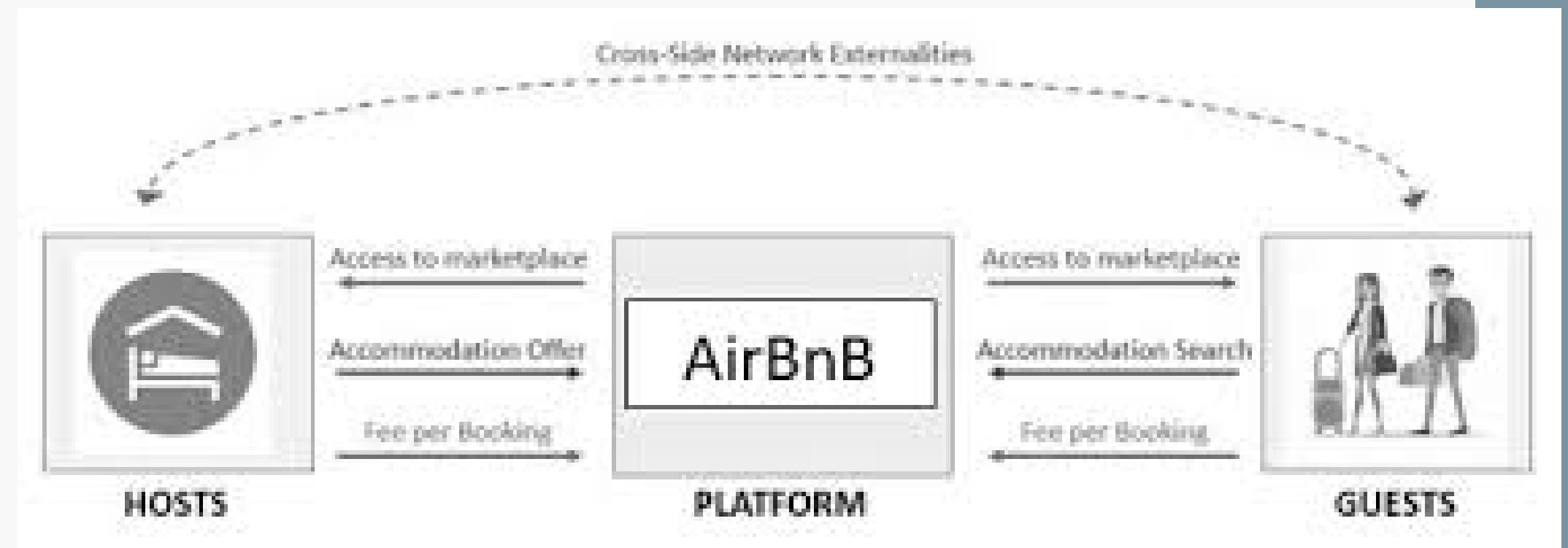   - Guests: 6-12%
    - Hosts: 3%

Industry Analysis - Operational Aspects & Impact

Host-Guest Interaction:

- Hosts list properties with descriptions, photos, and pricing
- Guests search using filters: location, price, amenities, property type

Booking Process:

- Secure transactions and communications via the platform
- Enhances trust and safety

Industry Analysis - Operational Aspects & Impact

Economic Impact:

- Airbnb's 2022 Economic Impact Report:
  - Contributed over $200 billion to global GDP
  - Supports local economies by driving tourism and creating jobs
- **Vacation Rental Market Size**:
  - Valued at **$74.64 billion** in 2021
  - Expected CAGR of **5.3%** from 2022 to 2030 (Grand View Research, 2023)

AIRBNB

Industry Analysis - Flow Diagrams

Booking Process Flow:

| Guest Search | → | Booking Request | → | Host Approval | → | Payment Processing | → | Stay and Review |

Pricing Decision Flow:

| Market Analysis | → | Demand Forecasting | → | Price Adjustment | → | Monitoring |

Problem Definition - Challenges Faced by Hosts

Inefficient Pricing Strategies:

- **Problem:** Reliance on static pricing; doesn't account for market fluctuations

- **Evidence:** Hosts using static pricing earn up to 30% less revenue (Journal of Hospitality and Tourism Technology, 2022)

Limited Competitive Analysis:

- **Problem:** Insufficient insights into competitors' strategies

- **Evidence**: 60% of hosts struggle to adjust prices to market conditions (Skift Research, 2023)

Lack of Location Intelligence

- **Problem:** Struggle to select optimal locations for listings due to insufficient data and analysis tools.

- **Evidence:** Listings in suboptimal locations experienced 40% lower occupancy rates. (AirDNA's 2023)

Inadequate Amenity Optimization:

- **Problem:** Lack of tools for amenity recommendations based on demand

- **Evidence:** 70% of travelers willing to pay more for unique amenities or prime locations (Skift Research, 2023)

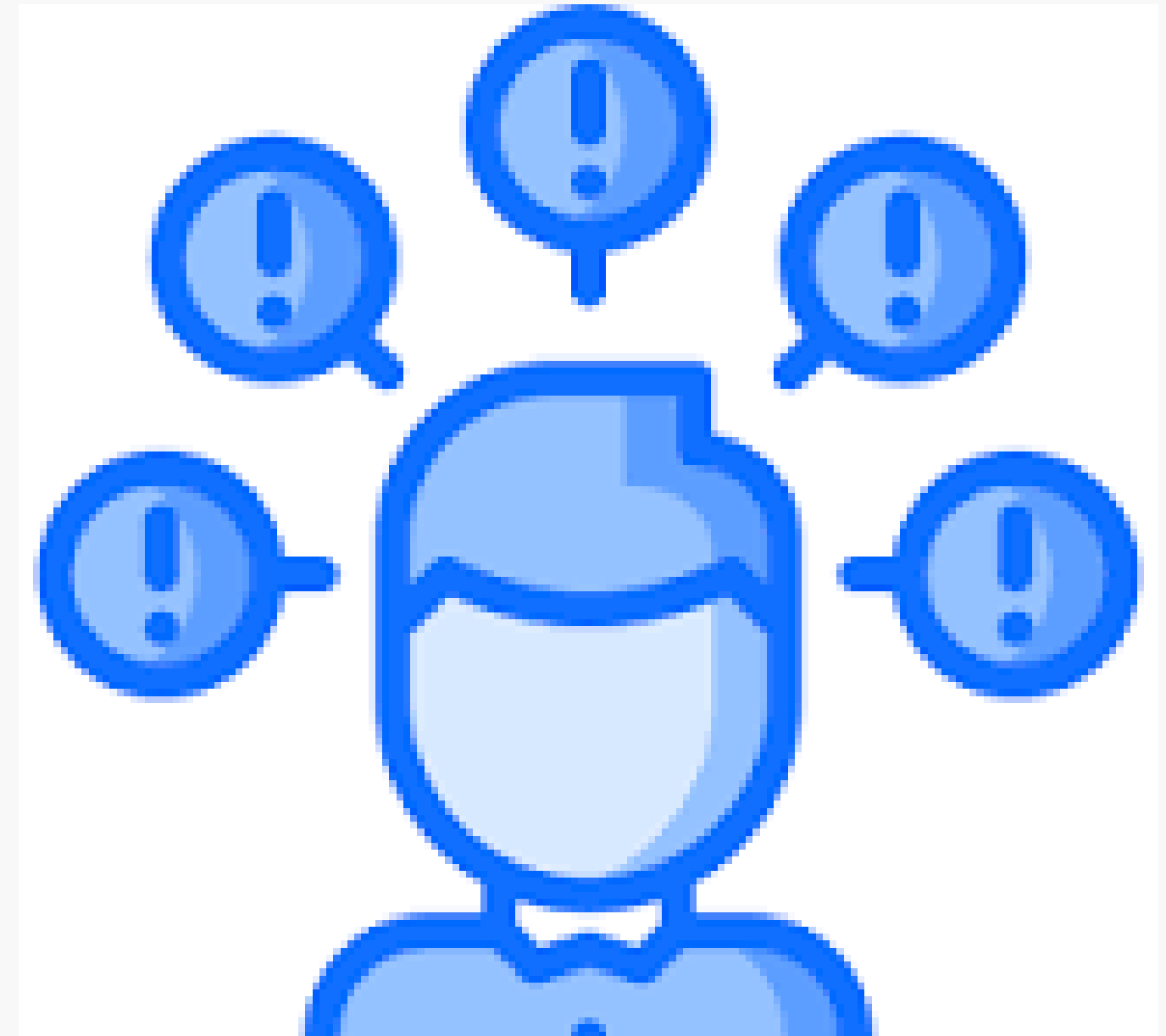# *Problem Definition - Need for a Comprehensive Solution*

Growing demand for a tool integrating:

- Dynamic pricing
- Location intelligence
- Amenity recommendations
- Competitive analysis

Opportunity for Hosts:

- Optimize listings
- Improve occupancy rates
- Maximize revenue in a competitive market

Differentiation & Value Proposition - Benefits to Users

- **Advanced Dynamic Pricing**:
  - AI-driven algorithms adjusting rates in real-time
- **Review-Based Optimization**:
  - Incorporates guest reviews into pricing algorithm
- **Comprehensive Location Intelligence**:
  - Detailed analysis of socio-economic factors and competition
- **User-Friendly Interface**:
  - Intuitive design for easy navigation
- **Integrated Analytics Dashboard**:
  - Real-time performance insights
- **Amenity Recommendations**:
  - Suggestions based on market demand and guest preferences

Data Gathering

Country/City	File Name	Description
Toronto	listings.csv.gz	Detailed Listings data
Toronto	calendar.csv.gz	Detailed Calendar Data
Toronto	reviews.csv.gz	Detailed Review Data
Toronto	listings.csv	Summary information and metrics for listings in Toronto (good for visualisations).
Toronto	reviews.csv	Summary Review data and Listing ID (to facilitate time based analytics and visualisations linked to a listing).
Toronto	neighbourhoods.csv	Neighbourhood list for geo filter. Sourced from city or open source GIS files.
Toronto	neighbourhoods.geojson	GeoJSON file of neighbourhoods of the city.

Primary Data Source: Inside Airbnb
- Provides detailed data on Airbnb listings worldwide
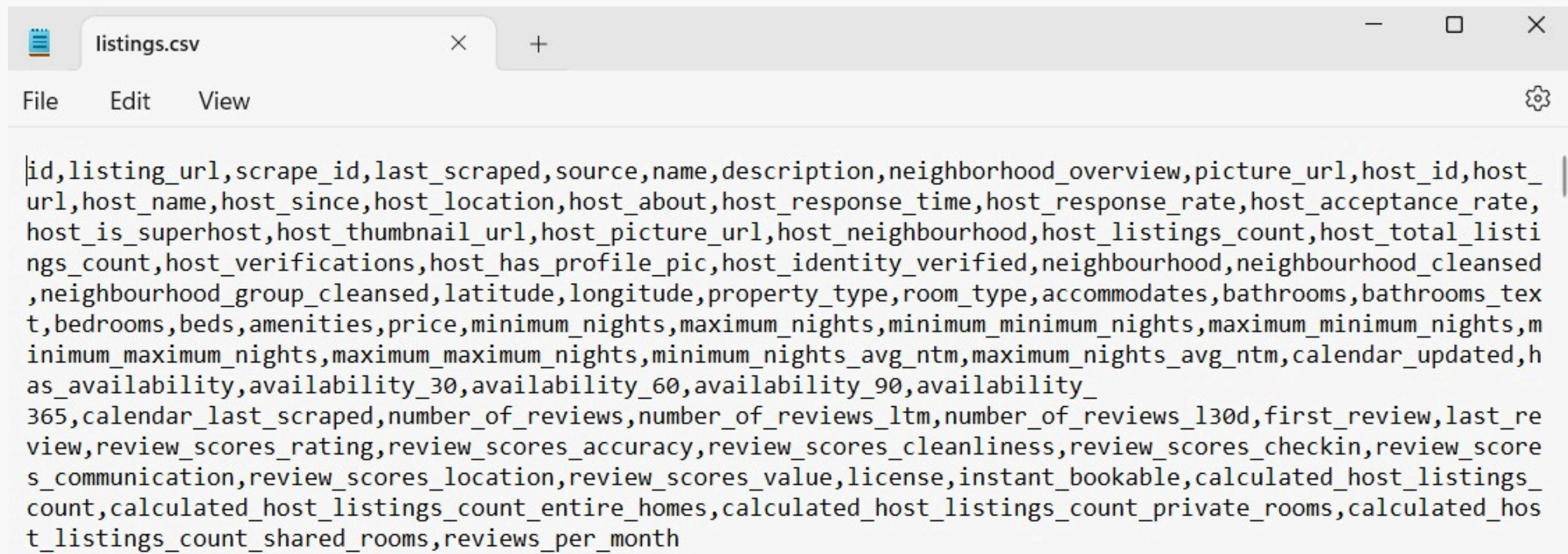- Essential for market dynamics, pricing trends, occupancy rates

Link: Inside Airbnb

Data Characteristics

- **Listings Data (listings.csv):**
  - Detailed file with 74 fields and summary file with 16 fields and crucial information such as listing ID, host details, property characteristics, pricing, and availability
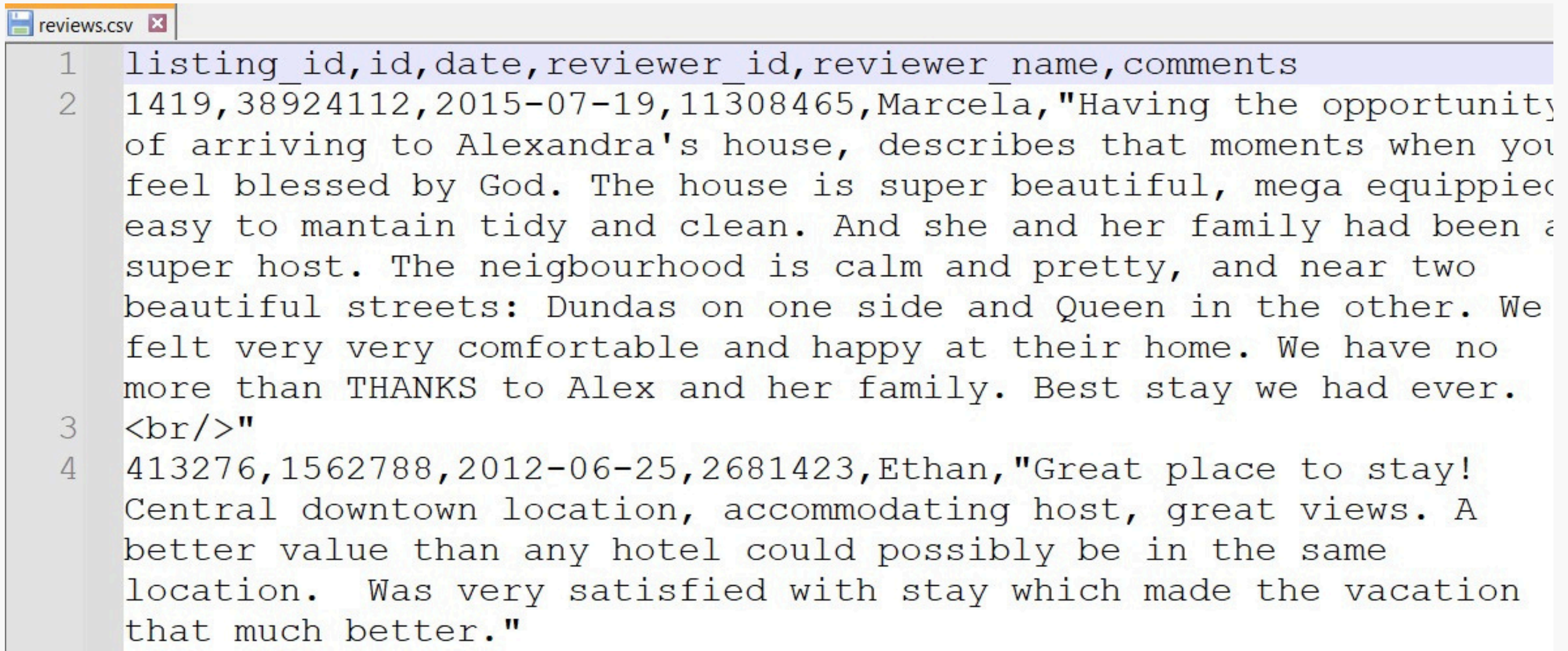
listings.csv   ×   +

File   Edit   View

```
id,listing_url,scrape_id,last_scraped,source,name,description,neighborhood_overview,picture_url,host_id,host_
url,host_name,host_since,host_location,host_about,host_response_time,host_response_rate,host_acceptance_rate,
host_is_superhost,host_thumbnail_url,host_picture_url,host_neighbourhood,host_listings_count,host_total_listi
ngs_count,host_verifications,host_has_profile_pic,host_identity_verified,neighbourhood,neighbourhood_cleansed
,neighbourhood_group_cleansed,latitude,longitude,property_type,room_type,accommodates,bathrooms,bathrooms_tex
t,bedrooms,beds,amenities,price,minimum_nights,maximum_nights,minimum_minimum_nights,maximum_minimum_nights,m
inimum_maximum_nights,maximum_maximum_nights,minimum_nights_avg_ntm,maximum_nights_avg_ntm,calendar_updated,h
as_availability,availability_30,availability_60,availability_90,availability_
365,calendar_last_scraped,number_of_reviews,number_of_reviews_ltm,number_of_reviews_l30d,first_review,last_re
view,review_scores_rating,review_scores_accuracy,review_scores_cleanliness,review_scores_checkin,review_score
s_communication,review_scores_location,review_scores_value,license,instant_bookable,calculated_host_listings_
count,calculated_host_listings_count_entire_homes,calculated_host_listings_count_private_rooms,calculated_hos
t_listings_count_shared_rooms,reviews_per_month
```

Data Characteristics

- **Reviews Data (reviews.csv):**
  - Includes fields like listing ID, review ID, date, reviewer details, and comments


```
reviews.csv ✕
1    listing_id,id,date,reviewer_id,reviewer_name,comments
2    1419,38924112,2015-07-19,11308465,Marcela,"Having the opportunity
     of arriving to Alexandra's house, describes that moments when you
     feel blessed by God. The house is super beautiful, mega equipped
     easy to mantain tidy and clean. And she and her family had been a
     super host. The neigbourhood is calm and pretty, and near two
     beautiful streets: Dundas on one side and Queen in the other. We
     felt very very comfortable and happy at their home. We have no
     more than THANKS to Alex and her family. Best stay we had ever.
3    <br/>"
4    413276,1562788,2012-06-25,2681423,Ethan,"Great place to stay!
     Central downtown location, accommodating host, great views. A
     better value than any hotel could possibly be in the same
     location.  Was very satisfied with stay which made the vacation
     that much better."
```
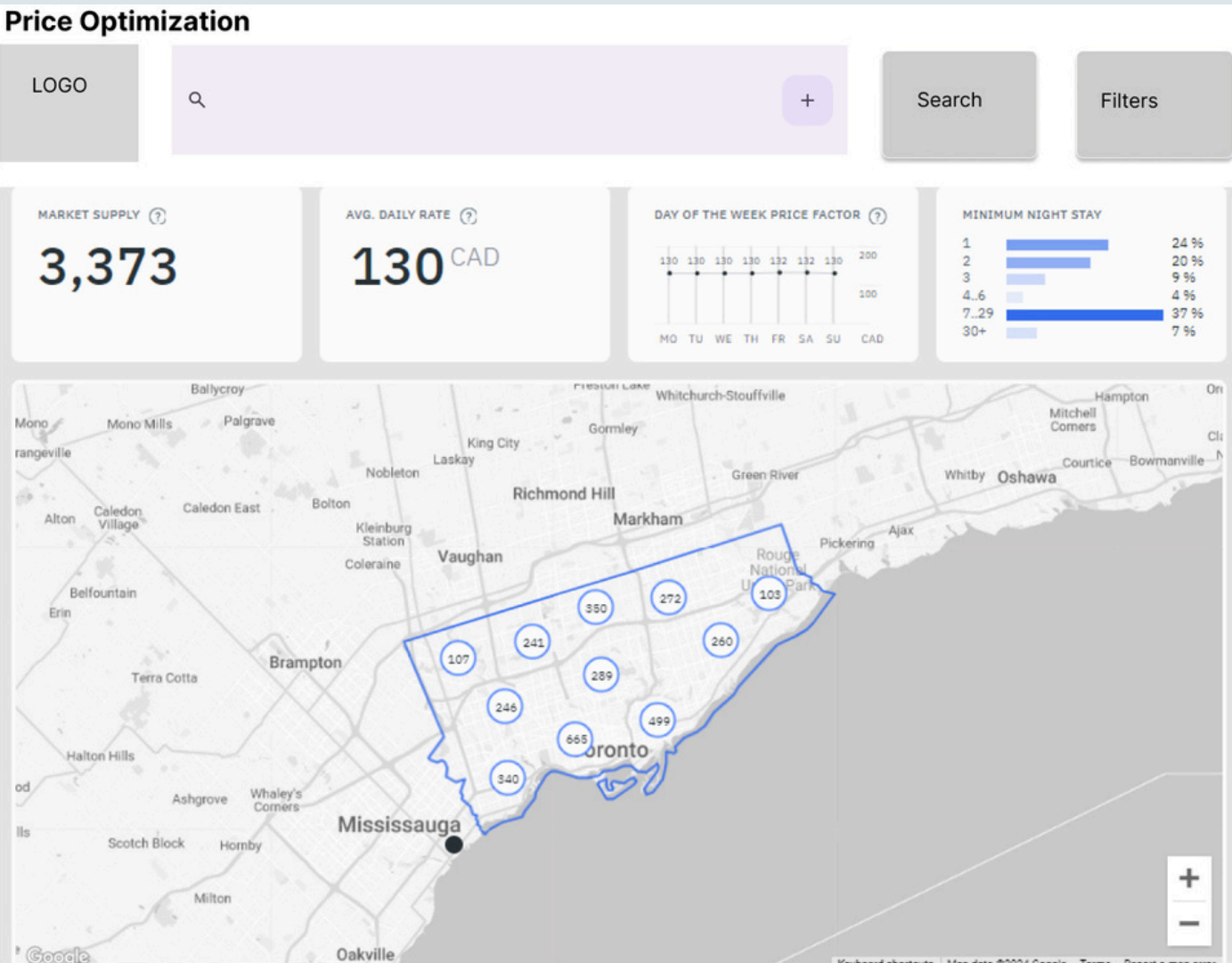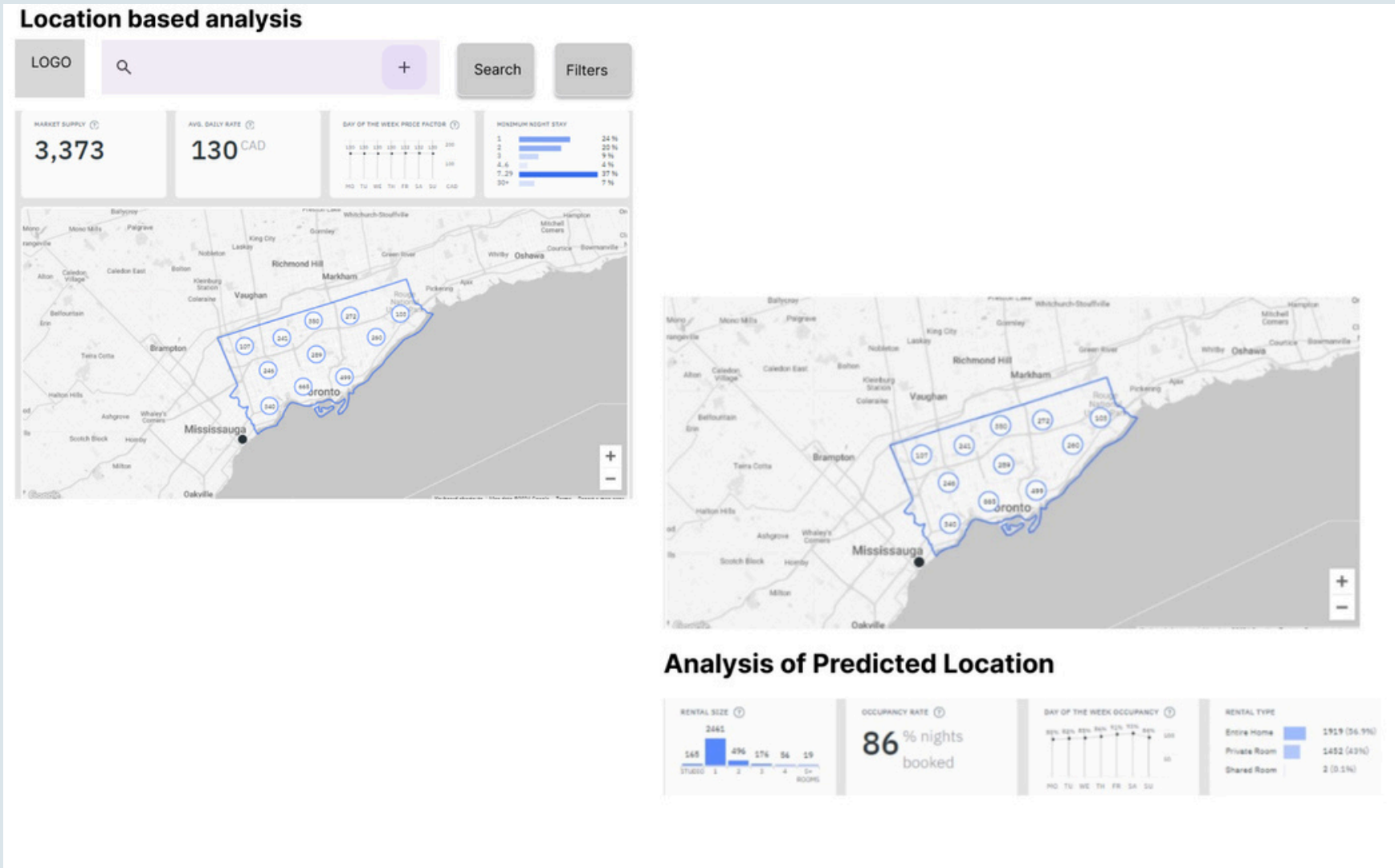
Data Characteristics

- **Calendar Data (calendar.csv)**
    - Daily data for the next 365 days: availability, pricing

	A	B	C	D	E	F	G	H	I
1	listing_id	date	available	price	adjusted_	minimum	maximum_nights		
2	146601	########	f	$100.00		28	1125		
3	146601	########	f	$100.00		28	1125		

Wireframe of the Project

Future Outlook & Next Steps

- **Data Integration:**
  - Implement robust data pipelines for real-time updates

- **Performance Metrics** :
  - Establish KPIs to measure effectiveness

- **Prototype Development :**
  - Create functional prototype demonstrating core features

- **Algorithm Refinement** :
  - Fine-tune algorithms based on testing and feedback

Conclusion

- Emphasize the potential impact on the short-term rental market

- "SmartStay Solutions aims to empower Airbnb hosts with data-driven insights to maximize their success."

Thank you