Potential Airbnb Investment in Amsterdam

Raphael Chen (2021)

Background Context

Amsterdam is known for its historical attractions and is the most populous city of the Netherlands (22 million tourists in 2019). [1]

Amsterdam's Airbnb market is growing rapidly over the years as more tourists are coming to Europe for holidays and sightseeing.

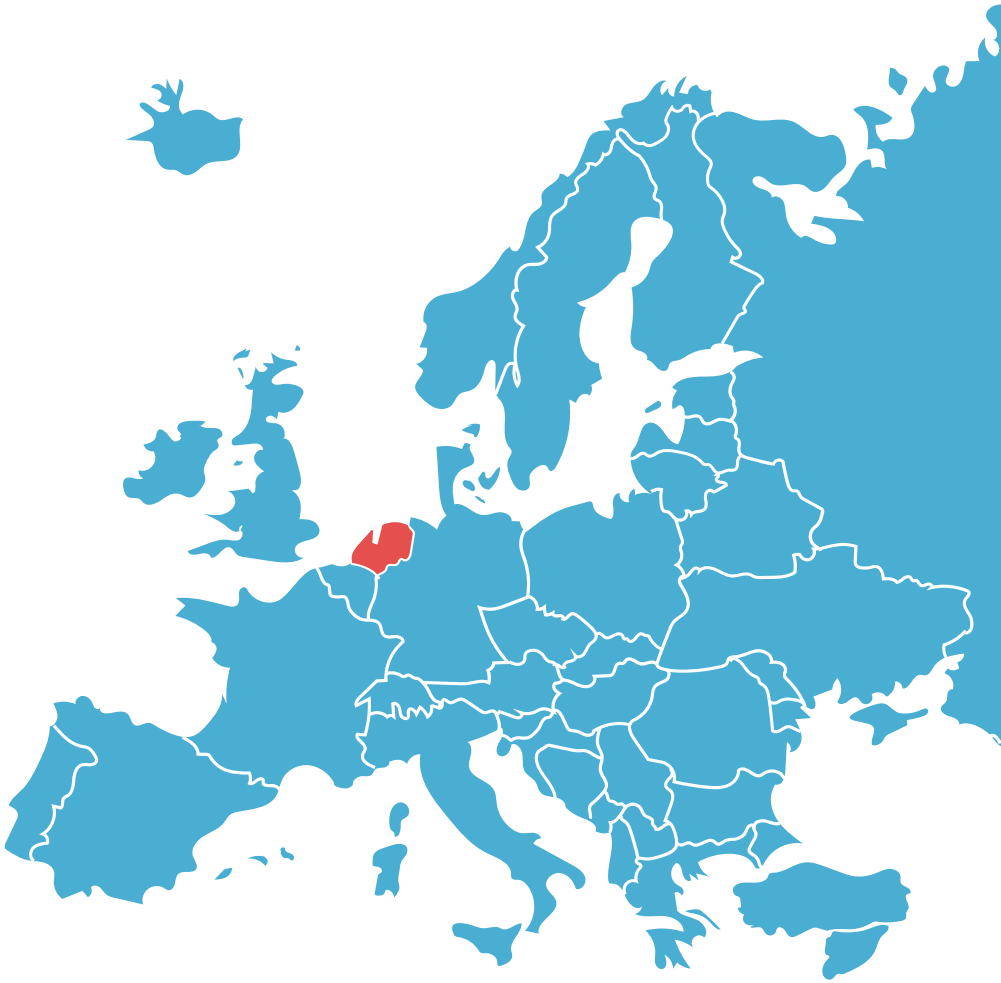
Main Objective: Investigate whether investors should invest in an Airbnb hotel in Amsterdam.

[1] https://www.dutchnews.nl/news/2021/04/best-case-scenario-tourists-to-amsterdam-around-half-of-2019-peak-this-year/

Problem Statement

(a) Invest or not to Invest in an Airbnb hotel in Amsterdam?

(b) If we should invest, which neighborhood should be invested?



Data Cleaning Methods

1. Identify any presence of null values and fill them using sensible logic. (E.g. Replace with mean value)
2. Rounding up values to the nearest integer (E.g. Bathrooms)
3. Remove duplicated listings and listings without any reviews
4. Standardized entry of “State” & “City” Columns

Bathrooms

```
In [8]: bathroomsList = list(airbnb["bathrooms"].unique())
        print(f"Distinct Bathrooms: {bathroomsList}")

Distinct Bathrooms: [2.0, 1.0, 1.5, nan, 4.0, 3.0, 0.0, 2.5, 0.5, 3.5, 8.0, 7.5, 5.0]
```

Rounding up the number of bathrooms to the nearest full integer as there is no such thing as a 0.5 bathroom.

```
In [9]: airbnb["bathrooms"] = round(airbnb["bathrooms"])
```

	Null Values
state	8
zipcode	173
bathrooms	69
bedrooms	14
beds	13
host_response_time	732
host_response_rate	732
review_scores_rating	1698
review_scores_accuracy	1709
review_scores_cleanliness	1709
review_scores_checkin	1708
review_scores_communication	1711
review_scores_location	1709
review_scores_value	1711

Standardise entry of "State" and "City" columns

E.g. North Holland *vs* Noord-Holland

Find out the distinct states under the "state" column

```
airbnb["state"].unique()
```

```
array(['North Holland', 'Noord-Holland', 'NH', 'Amsterdam',
       'Noord holland', 'Jordaan', 'Noordholland', 'Noord Holland', nan,
       'Jordaan Amsterdam', 'Holland', 'Nieuwe Hoogstraat',
       'Jordaan/center', 'GN', 'Nl', 'Olanda Settentrionale', 'NC', 'Bx'],
      dtype=object)
```

Replace some of the distinct states' name to North Holland

```
north_holland = ["Noord holland", "NH", "Holland", "Noord-Holland",
                 "Noordholland", "Noord Holland", "Nieuwe Hoogstraat",
                 "Olanda Settentrionale", "Nl", "NC", "GN", "Bx", np.nan]

# airbnb[airbnb["state"].isin(north_holland)]

airbnb["state"] = airbnb["state"].replace(north_holland, "North Holland")
airbnb["state"].unique()
```

```
array(['North Holland', 'Amsterdam', 'Jordaan', 'Jordaan Amsterdam',
       'Jordaan/center'], dtype=object)
```

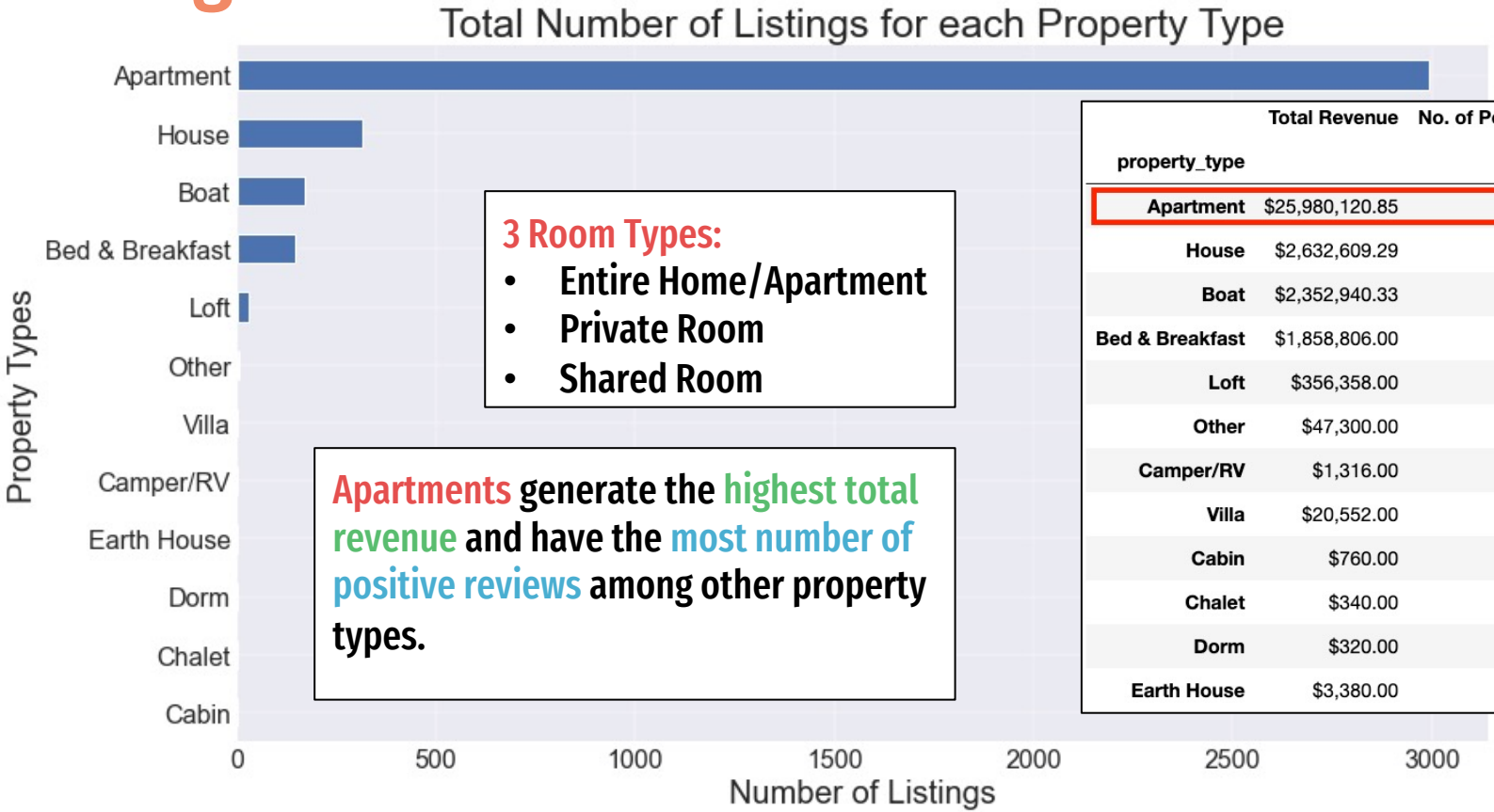
Insights Gathered from Data

host_name	total_revenue	number_of_listings
Ester	$129,156.00	1
Julian	$101,460.00	1
Lisa En Peter Paul	$93,480.00	1
Rogier	$88,200.00	1
Hanneke & Arjen	$85,050.00	1
Marie-Katrien	$84,000.00	1
Fred & Wietske	$83,160.00	1
Take & Eline	$81,120.00	1
Johan	$70,080.00	1
Rob	$68,000.00	1

```
number_of_reviews
review_scores_rating
review_scores_accuracy
review_scores_cleanliness
review_scores_checkin
review_scores_communication
review_scores_location
review_scores_value
```

Assumption: > 75th percentile for all review types is considered as "successful" host

Insights Gathered from Data



3 Room Types:

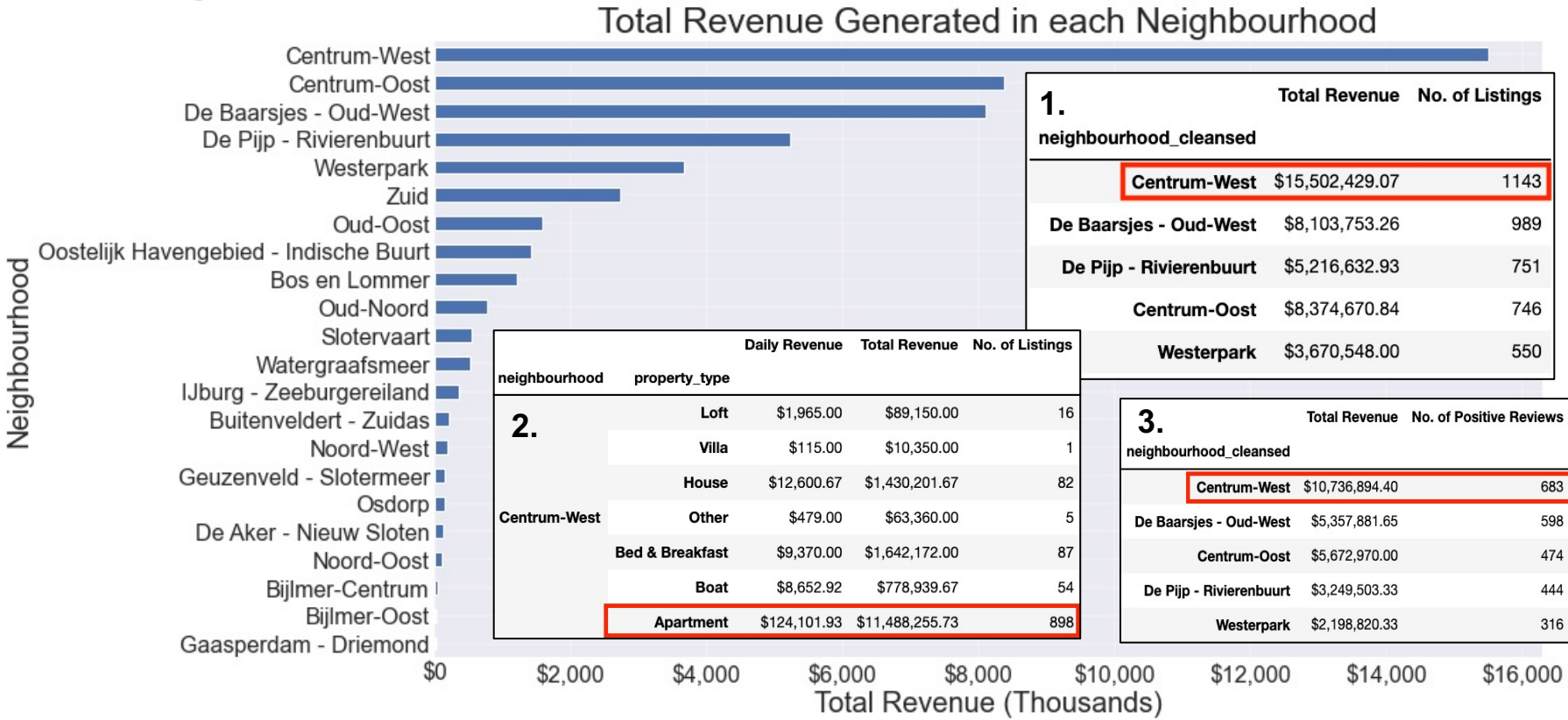
- Entire Home/Apartment
- Private Room
- Shared Room

Apartments generate the **highest total revenue** and have the **most number of positive reviews** among other property types.

property_type	Total Revenue	No. of Positive Reviews	Avg Rating
Apartment	$25,980,120.85	2991	97.74
House	$2,632,609.29	314	97.89
Boat	$2,352,940.33	171	97.74
Bed & Breakfast	$1,858,806.00	148	97.32
Loft	$356,358.00	31	97.84
Other	$47,300.00	6	98.00
Camper/RV	$1,316.00	3	98.67
Villa	$20,552.00	3	96.33
Cabin	$760.00	1	100.00
Chalet	$340.00	1	100.00
Dorm	$320.00	1	100.00
Earth House	$3,380.00	1	94.00

Assumption: Listing review score > Average review score is considered as a **positive review**

Insights Gathered from Data



1.

neighbourhood_cleansed	Total Revenue	No. of Listings
Centrum-West	$15,502,429.07	1143
De Baarsjes - Oud-West	$8,103,753.26	989
De Pijp - Rivierenbuurt	$5,216,632.93	751
Centrum-Oost	$8,374,670.84	746
Westerpark	$3,670,548.00	550

2.

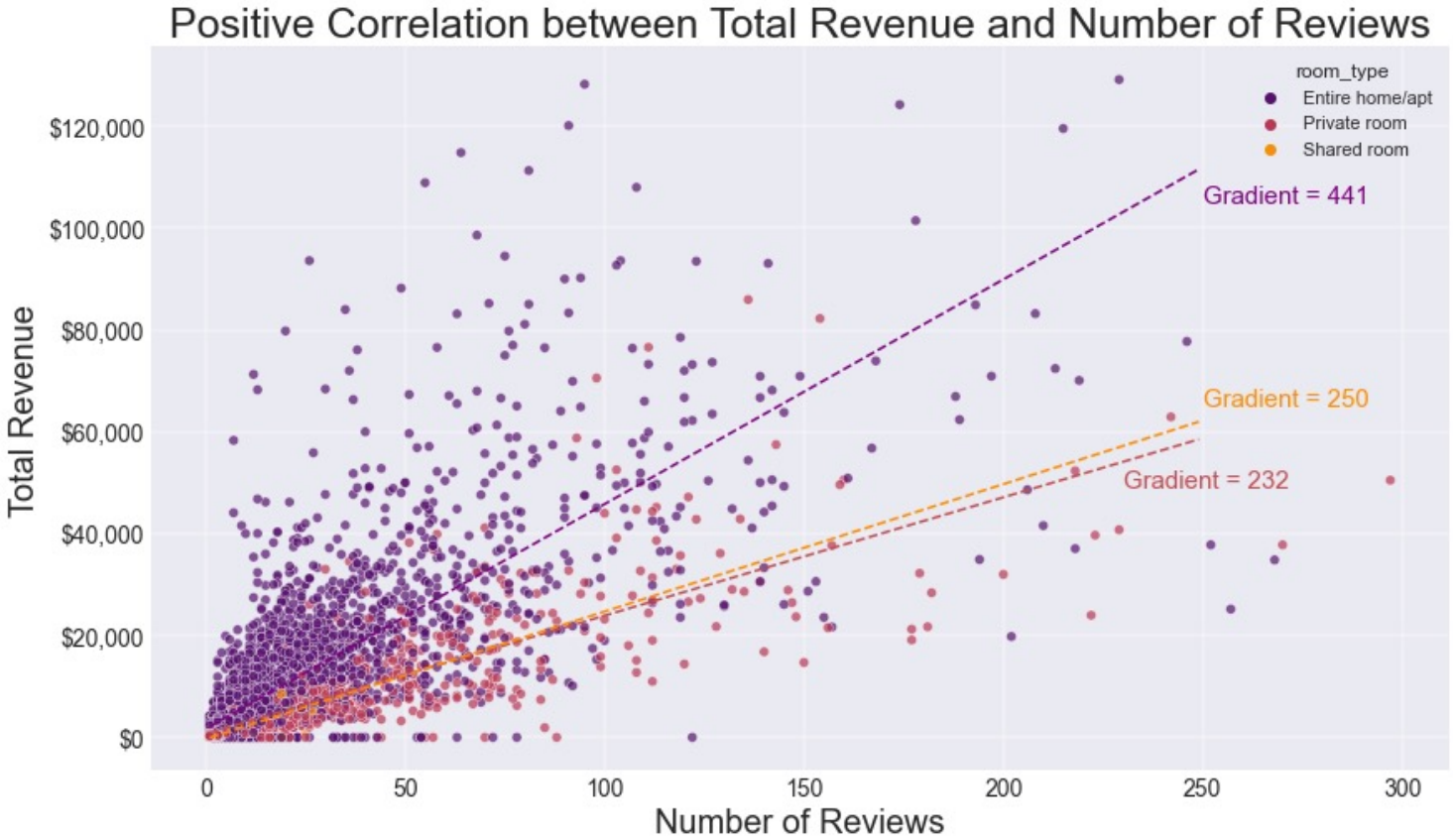
neighbourhood	property_type	Daily Revenue	Total Revenue	No. of Listings
Centrum-West	Loft	$1,965.00	$89,150.00	16
	Villa	$115.00	$10,350.00	1
	House	$12,600.67	$1,430,201.67	82
	Other	$479.00	$63,360.00	5
	Bed & Breakfast	$9,370.00	$1,642,172.00	87
	Boat	$8,652.92	$778,939.67	54
	Apartment	$124,101.93	$11,488,255.73	898

3.

neighbourhood_cleansed	Total Revenue	No. of Positive Reviews	Avg Rating
Centrum-West	$10,736,894.40	683	97.49
De Baarsjes - Oud-West	$5,357,881.65	598	97.81
Centrum-Oost	$5,672,970.00	474	97.68
De Pijp - Rivierenbuurt	$3,249,503.33	444	97.82
Westerpark	$2,198,820.33	316	97.76

Assumption: Listing review score > Average review score is considered as a positive review

Insights Gathered from Data



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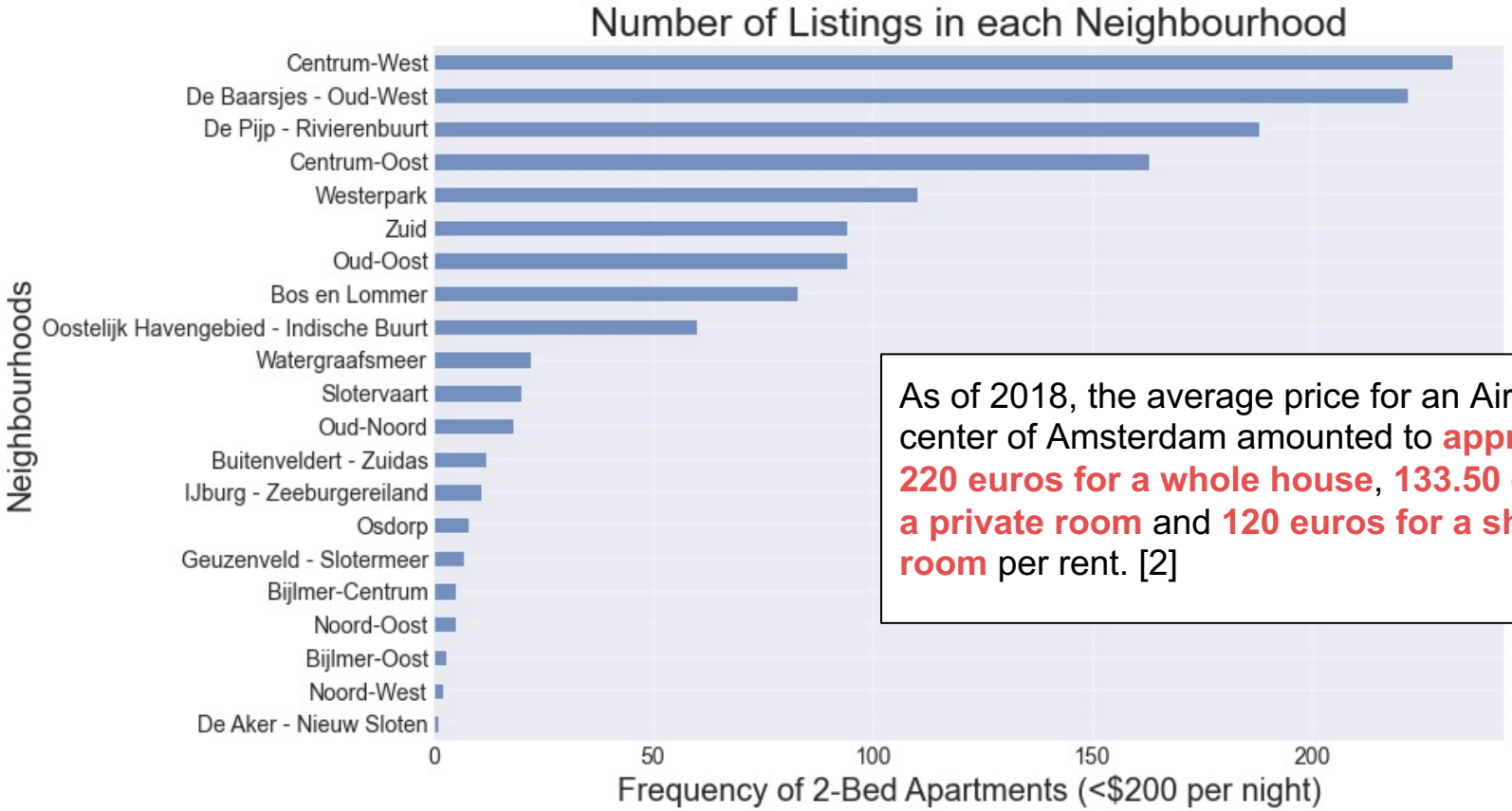
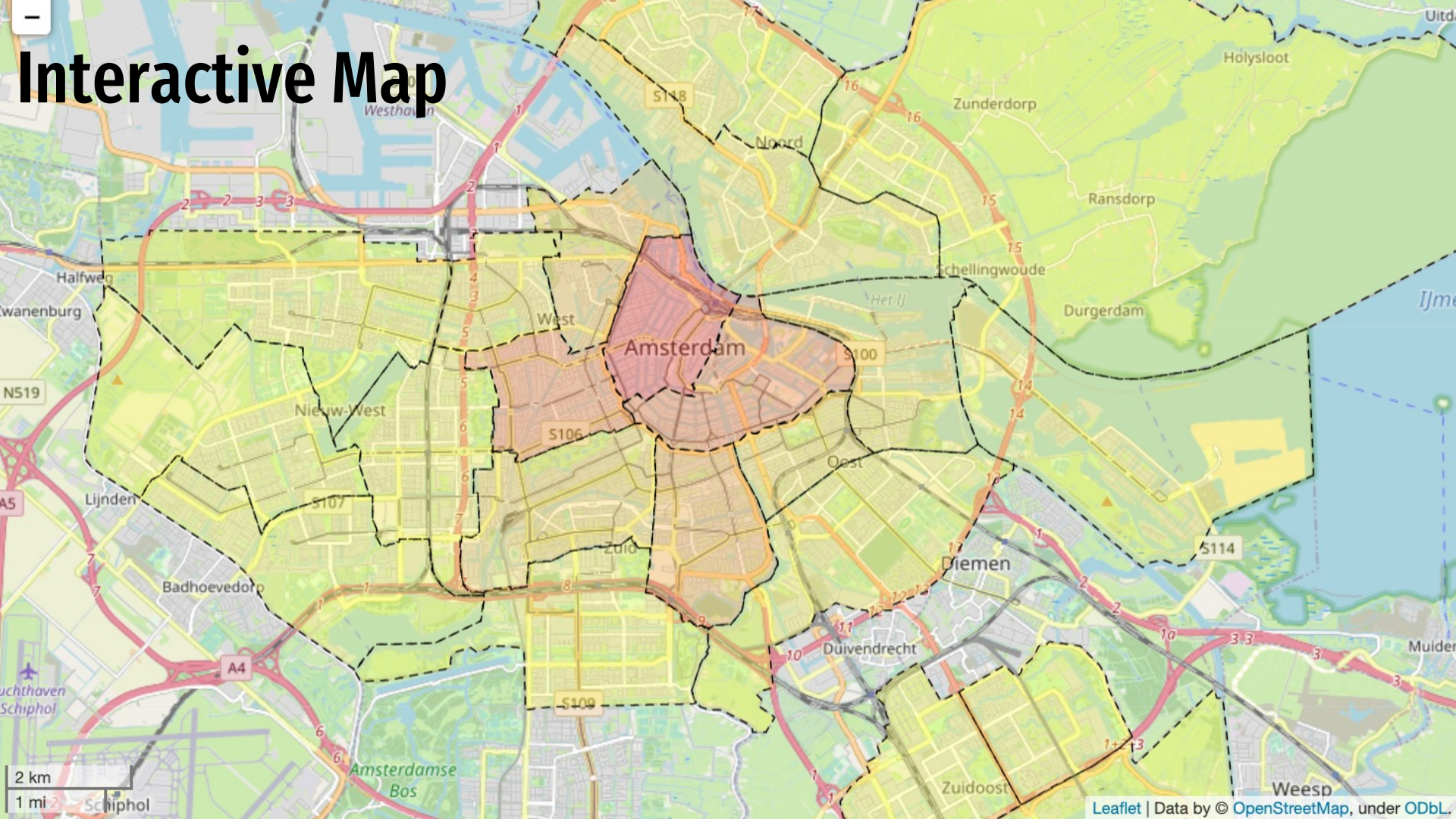


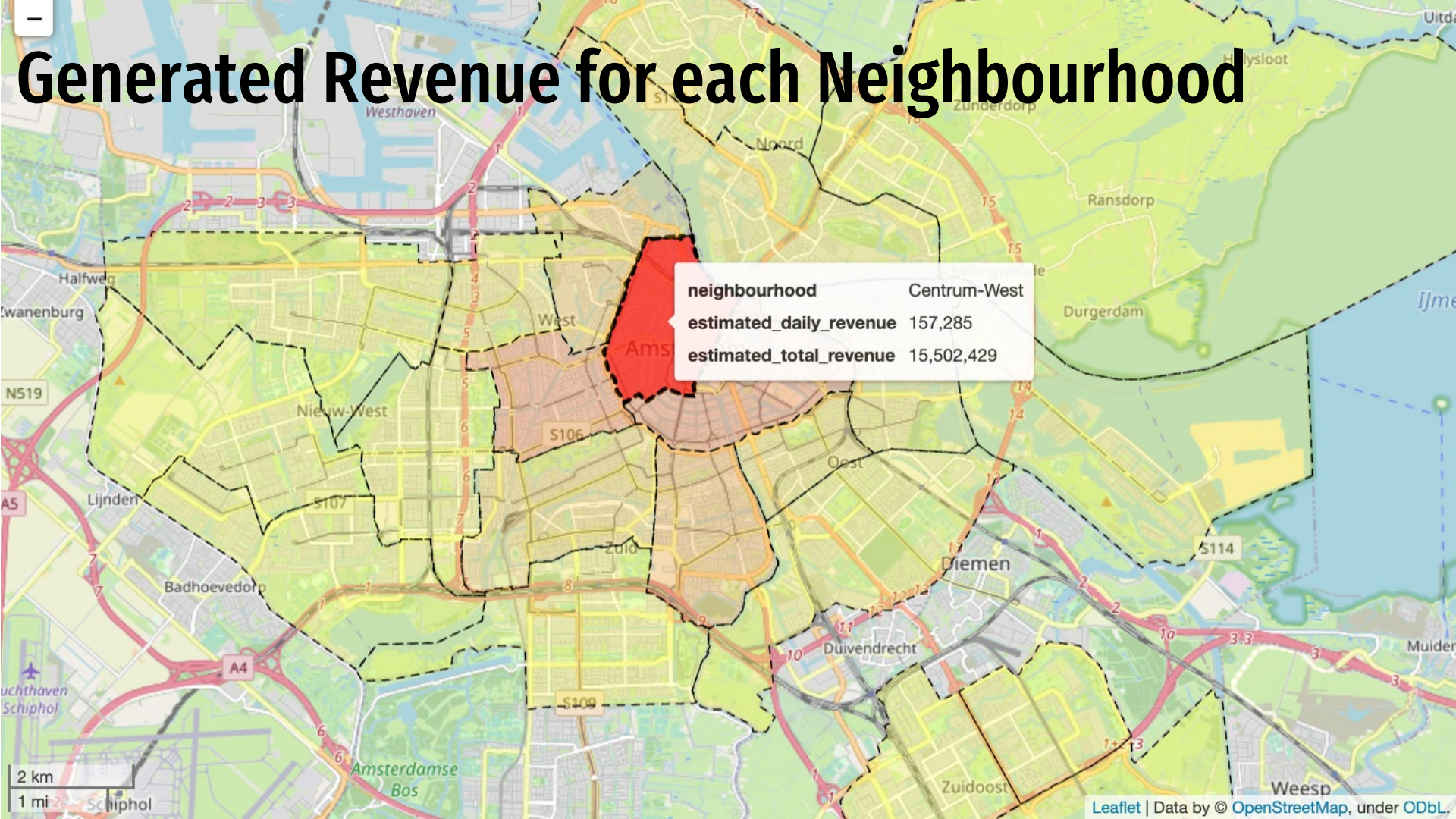
As of 2018, the average price for an Airbnb in the center of Amsterdam amounted to **approximately 220 euros for a whole house**, **133.50 euros for a private room** and **120 euros for a shared room** per rent. [2]

[2] Lock, S. “Netherlands: Average Price of Airbnb’s in Amsterdam, by Boroughs 2018.” *Statista*, 3 Feb. 2021, www.statista.com/statistics/643643/average-price-of-airbnbs-in-amsterdam-by-boroughs/. Accessed 15 Sept. 2021.

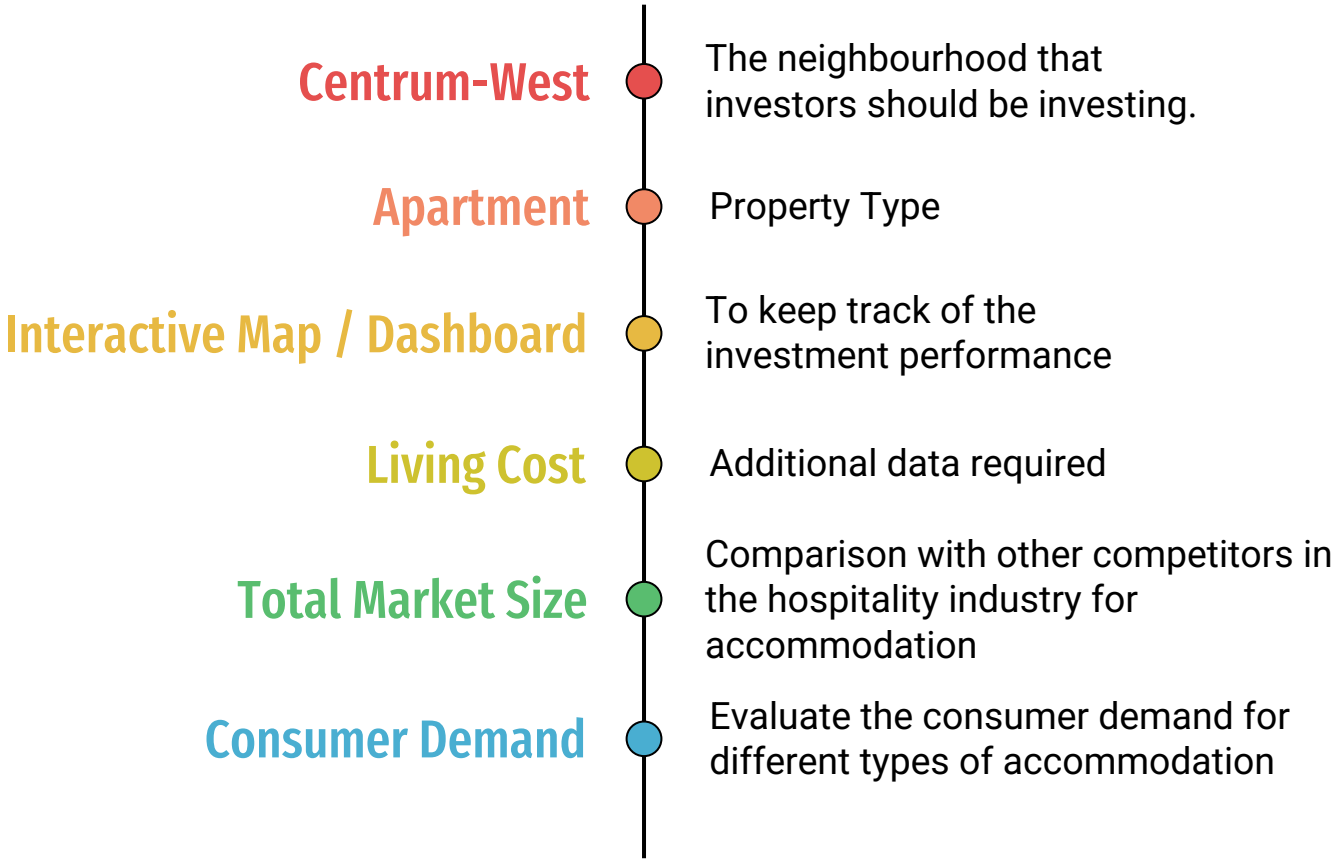
Interactive Map



Generated Revenue for each Neighbourhood



Summary & Recommendations



Thank you for your time!