Research Questions & Hypotheses

What characteristics affect the prices of Airbnb listings in Toronto and to what extent?

1. How does geographic location affect listing price?
   H1: Significant impact on price; listings near the CBD will have the highest price

2. How does property type affect listing price?
   H1: unique properties will have higher prices; expected relationship with location

3. How does listing capacity and amount of space affect listing price?
   H1: entire properties will have higher prices than private rooms and shared rooms

4. How do a host’s characteristics affect listing price?
   H1: high quality of service indicators correlate to higher prices

5. How do booking constraints affect listing prices?
   H1: constraints are expected to be negatively related to price

6. How do amenities affect listing prices?
   H1: presence of more amenities is related to higher prices
Methodology

Data Sets
1. Insideairbnb: site that scrapes city-level Airbnb data
2. City of Toronto’s GeoJSON file: for geographical analysis and mapping

Methods
1. Preliminary data exploration
   a. Price, Time Series, Reviews
   b. 6 Categories
2. Hedonic pricing model

Limitations on the Data
1. “price” represents asking prices not actual prices guests paid
2. Interior amenities depends on what was reported by
### Geographic Location

#### Median price of listings in every neighbourhood

![Map showing median price of listings in various neighbourhoods](image)

### Capacity and Space

#### Median price

![Bar chart showing median price for different types of accommodation](image)

<table>
<thead>
<tr>
<th>Neighbourhood</th>
<th>Coefficient</th>
<th>SE</th>
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<tbody>
<tr>
<td>Waterfront Communities</td>
<td>0.5384</td>
<td>0.092</td>
</tr>
<tr>
<td>Bay Street</td>
<td>0.4965</td>
<td>0.099</td>
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<td>Casa Loma</td>
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<td>Keelesdale-Eglinton West</td>
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<td>0.112</td>
</tr>
</tbody>
</table>

#### Median price of Airbnbs accommodating different number of guests

![Line chart showing median price for different numbers of guests](image)
Conclusion

Takeaways

- Largest Impacts: Geographic Location and Capacity/Space
- Smallest Impacts: Host Characteristics and Booking Constraints

Future directions

- Non-Airbnb amenities
  - Google API to find the distance of listings from certain attractions or transit.
  - Discover more in-depth relationships with location-based amenity characteristics and price
Appendix
Looking at Price...

- **Maximum price**: $13,164.00
- **Minimum price**: $12.00
- **Mean price**: $141.27
- **Median price**: $100.00
Background

1. Ontario’s capital and Canada’s most populous city; 2.7 million people in Toronto proper and 6.4 million in the GTA (2016)
2. 4th most populous city in North America
3. 43 million tourists per year
4. Airbnbs make up 0.8% of the city’s private dwellings
5. Experts believe that Airbnbs have a significant impact on housing prices in Toronto
6. >9,500 Airbnb listings in April 2019
7. Listings concentrated in the waterfront communities, one of the top 5 Airbnb locations in Canada
1. Geographic Location & Neighborhood

- **Number of listings in every neighbourhood**
- **Median price of listings in every neighbourhood**
- **Growth rate of listings in every neighbourhood from 2019-2020**

**Listings are concentrated in the downtown core of the city, particularly in the Waterfront communities.**

**The median price is highest in downtown Toronto, nearest the waterfront, tourist attractions, etc.**

**Growth in number of new listings is highest in the Leaside-Bennington neighborhood.**
2. Property Type

1. Majority of listings are apartments and houses
2. Property type is potentially correlated with neighborhood
3. Apartments are more common in the downtown area, where listings have the highest median price

Other type: cottages, treehouses, cabins, etc. Hotel: boutique, lifestyle (business certified)
3. Room Type, Size, and Space

1. Entire home and apartment listings are more attractive to guests because of safety and privacy
2. Shared rooms command a much lower price (similar to comparing hotels to hostels)
3. High variance in number of listings by room type
4. Host Characteristics

Variables: Superhost, verification, greeting, response rate, tenure (number of days as host)

- Average host has been active for ~4.5 years
- Superhost status and host verification are potentially related
- Little difference in median price for binary host characteristics
- Majority of hosts have high response rates
- Tenure and price are (loosely) positively related
5. Booking Constraints

Potential constraints: instantly bookable, minimum stay

1. Instantly bookable median price: $97
2. Standard booking median price: $100
3. Insufficient information on listings with long minimum stays, limiting our interpretation
4. Slightly positive correlation with log price and length of minimum duration