airbnb Pricing in Washington, DC

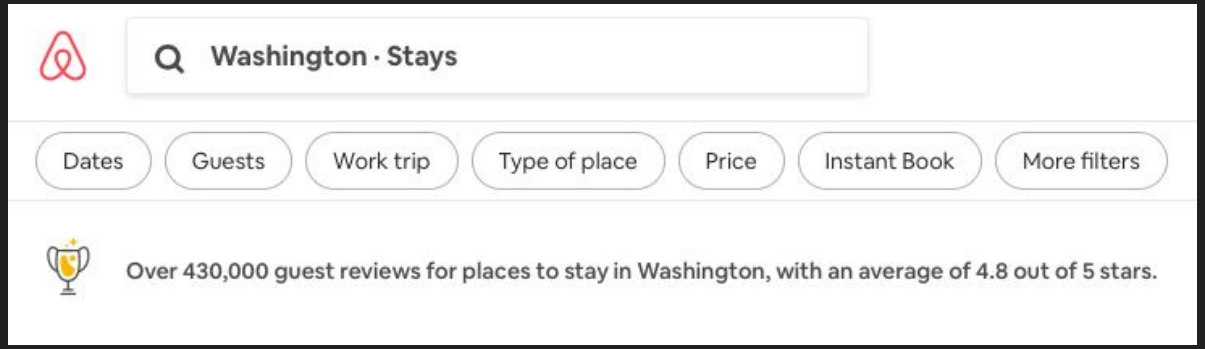
Aneesh Kodali and Joey Mathias

Background and Data Selection

- Client is trying to determine how to price a unit that is about to be added to Airbnb
- Data comes from InsideAirbnb, which scrapes airbnb.com regularly
- Data included:
  - Listings
  - Calendars
  - Neighborhoods
  - Reviews
- We used Listings file, which contained 106 columns
- Standardized/dummified columns, and split into training and test sets

Feature Selection

- Default features through Airbnb



- “More filters”
  - Amenities, beds, bedrooms, bathrooms

Feature Selection, Continued

- Neighborhoods - 39 values
  - Georgetown, Burleith/Hillandale
  - Near Southeast/Navy Yard
  - Capitol Hill/Lincoln Park
- Amenities - 90 values
  - Wifi
  - Gym
  - Dog(s)
- Property Type - 29 values
  - House
  - Apartment
  - Barn

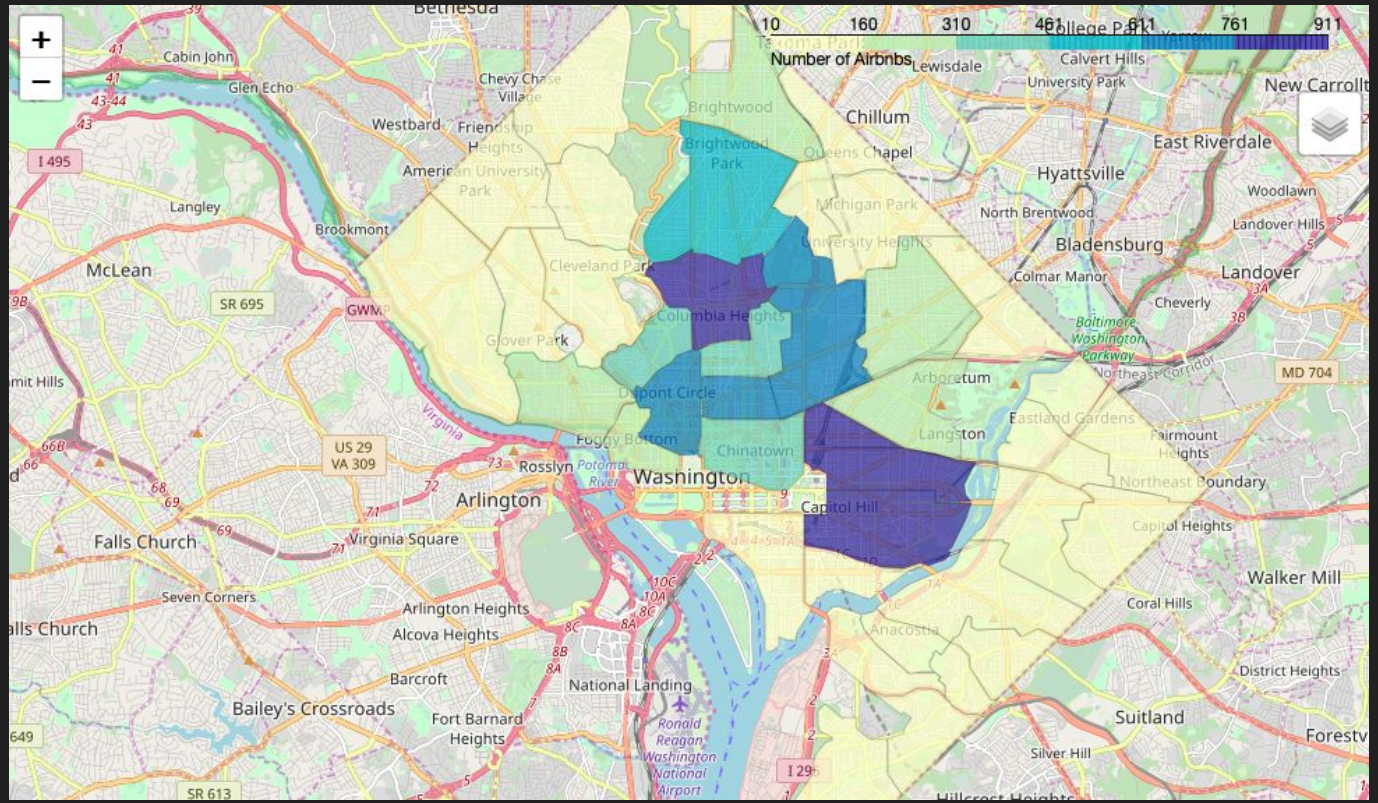
Model Tuning

Model	Simple	Simple, Refined	Ridge	Lasso
R-Squared	0.275	0.252	.264	.253
# Features	235	48	235	235

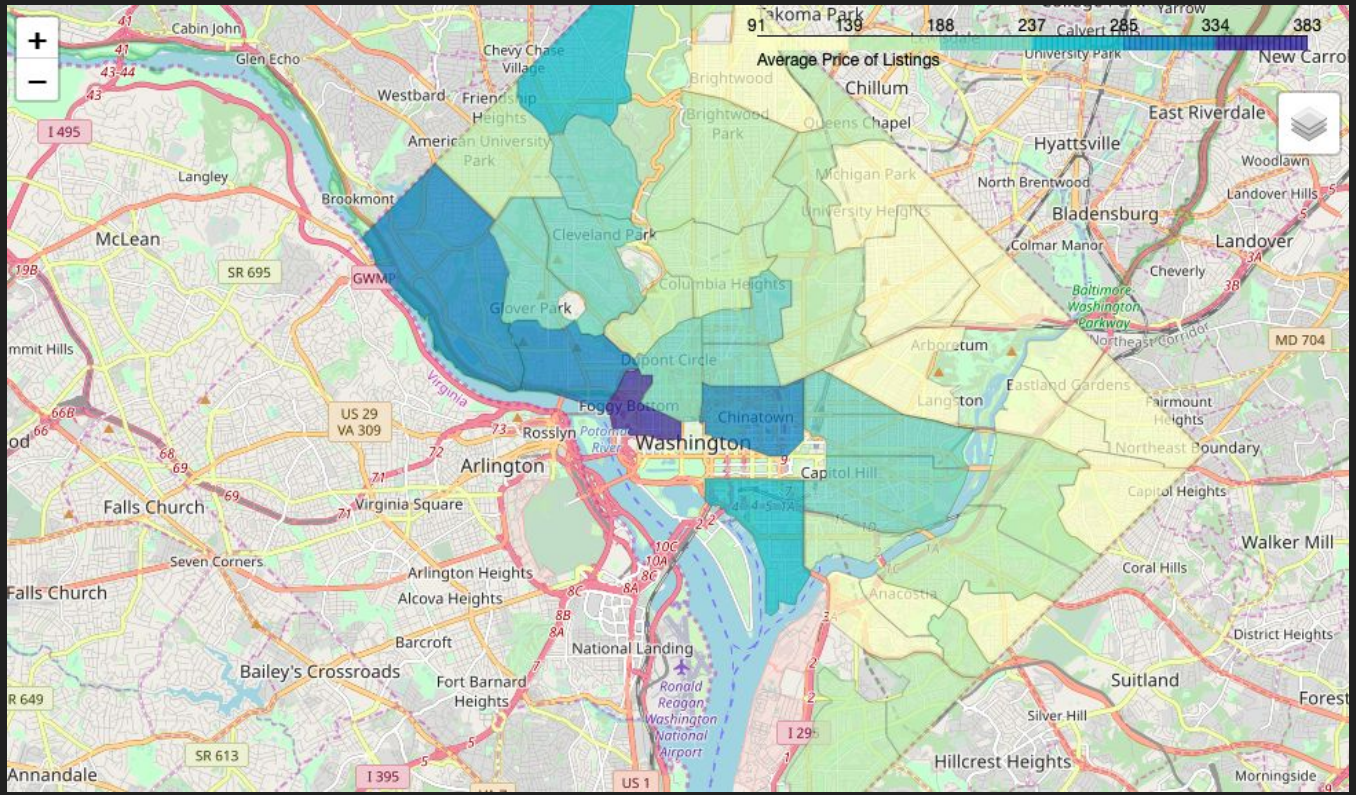
What Features Most Influence Price?

Feature	Coefficient	P-value
Neighborhood is West End, Foggy Bottom, GWU	214.65	.000
Neighborhood is Georgetown, Burleith/Hillandale	162.14	.000
Amenity - Has Waterfront	127.41	.041
Room Type - Shared Room	-163.82	.000
Amenity - Doorman	-69.60	.001

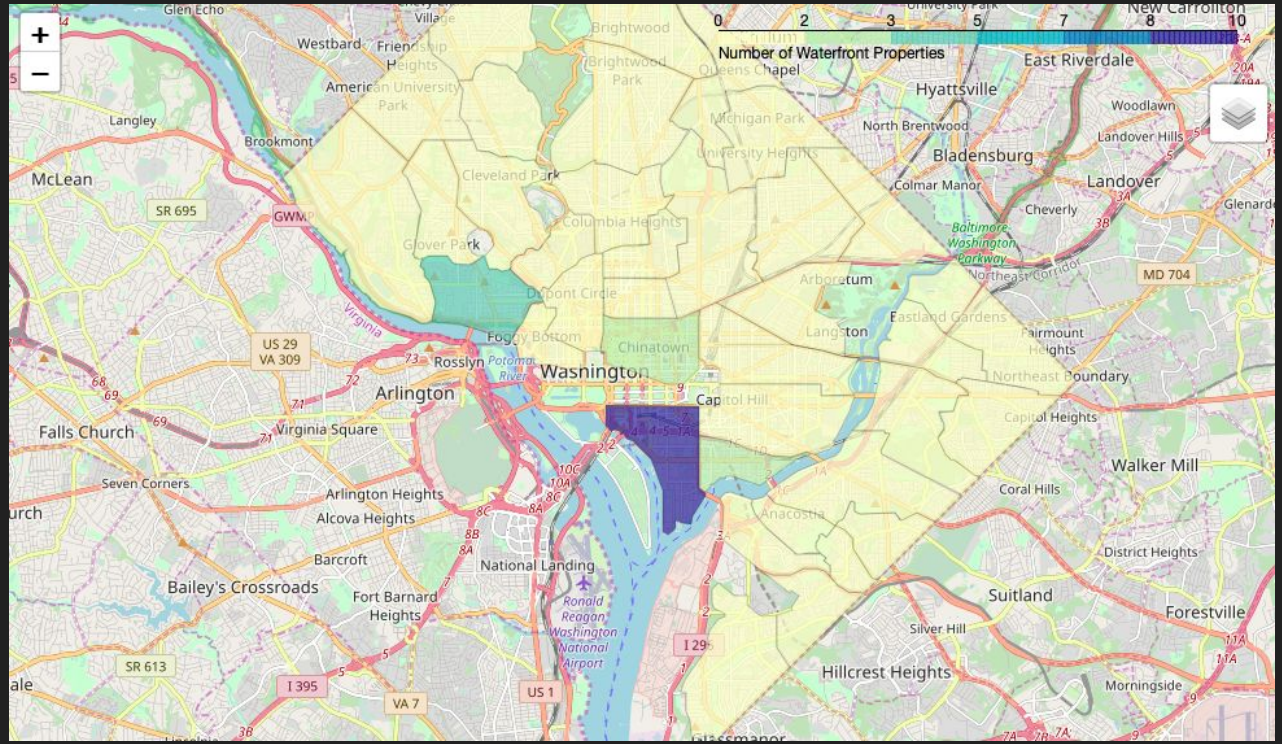
Visualizations - Where Are Airbnbs Now?



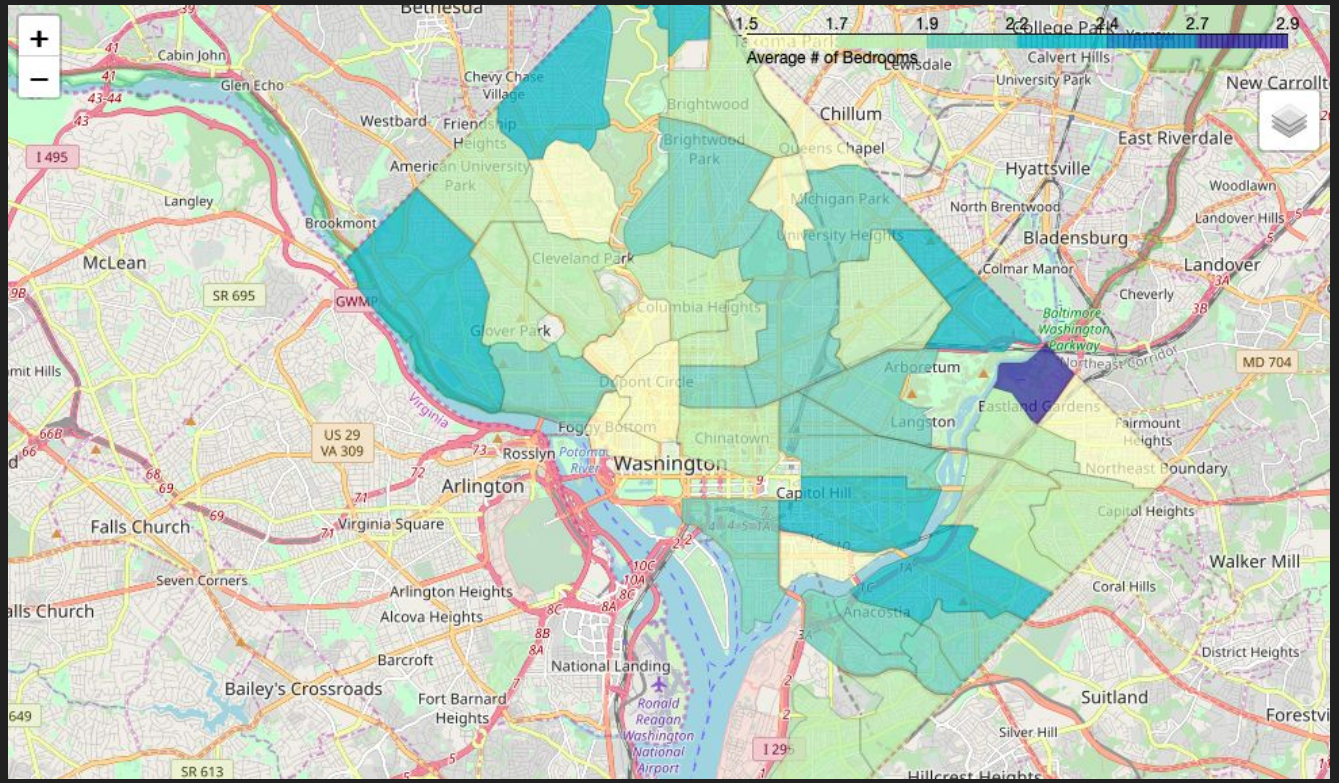
Visualizations - What Is Average Pricing?



Visualizations - Where are the Waterfront Properties?



Visualizations - How Many Average Bedrooms?



Scenario - How Should I Price My Apartment?

- Client answers questionnaire regarding 28 features included in our model
- We generate a predicted price

- We used Joey's apartment, a one bedroom, two bathroom unit in Adams Morgan as a model
  - Predicted price was $85.83 per night

Next Steps

- Identify Multicollinear variables and remove them from feature list
- Further investigate Lasso and Ridge and other techniques
- Look at historical data to identify occupancy rate within time period
- Build neighborhood-specific/other city models

Q&A