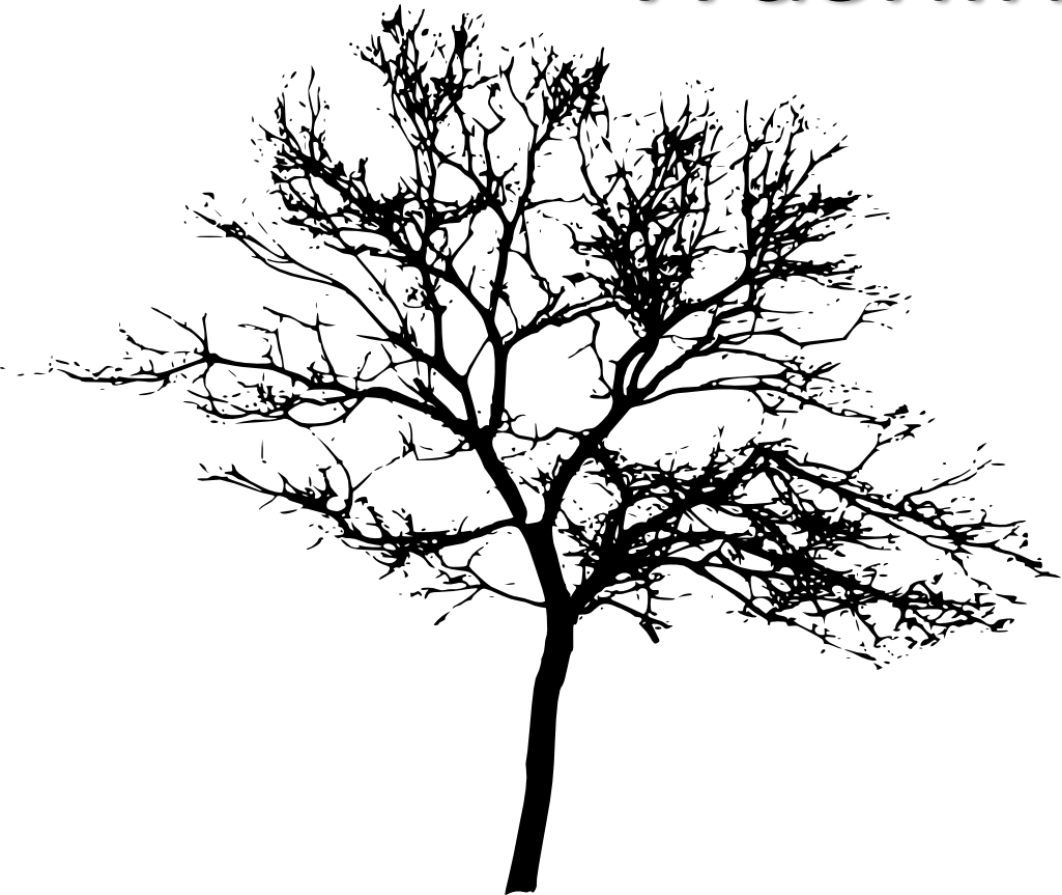


Predicting Ratings of Washington Hiking Trails

Kristin Mussar



Data

2,496 individual trail pages from WTA



1,912 trails with ratings



1,853 day hikes (under 20 miles)



Features

- Distance (mi)
- Elevation Gain (ft)
- Highest Point Elevation (ft.)
- Latitude and Longitude
- Number of Trip Reports
- Number of Ratings
- Trail Name



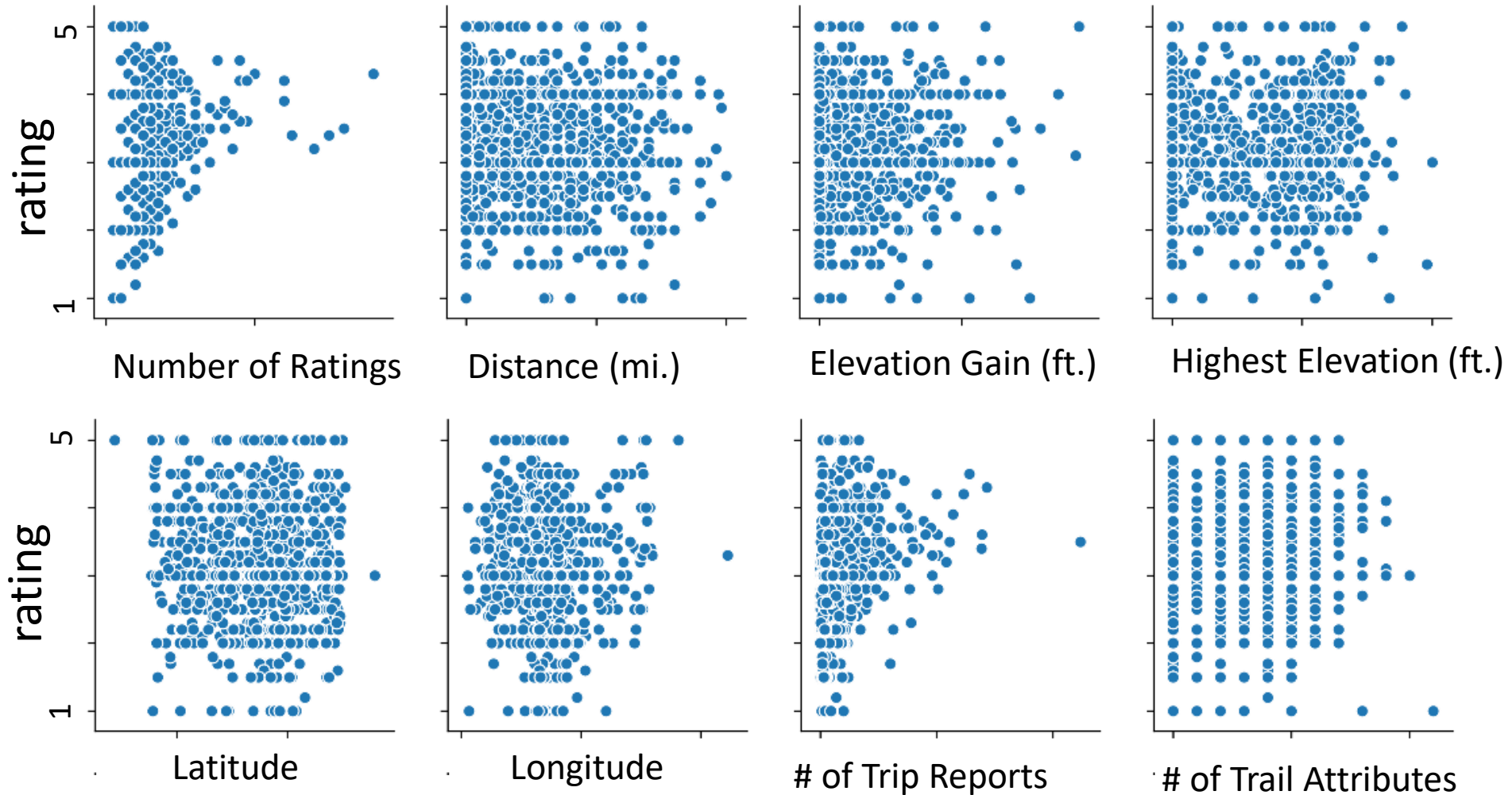
• Region → 10 Categorical features

• Subregion

• Permits Required → 7 Categorical Features

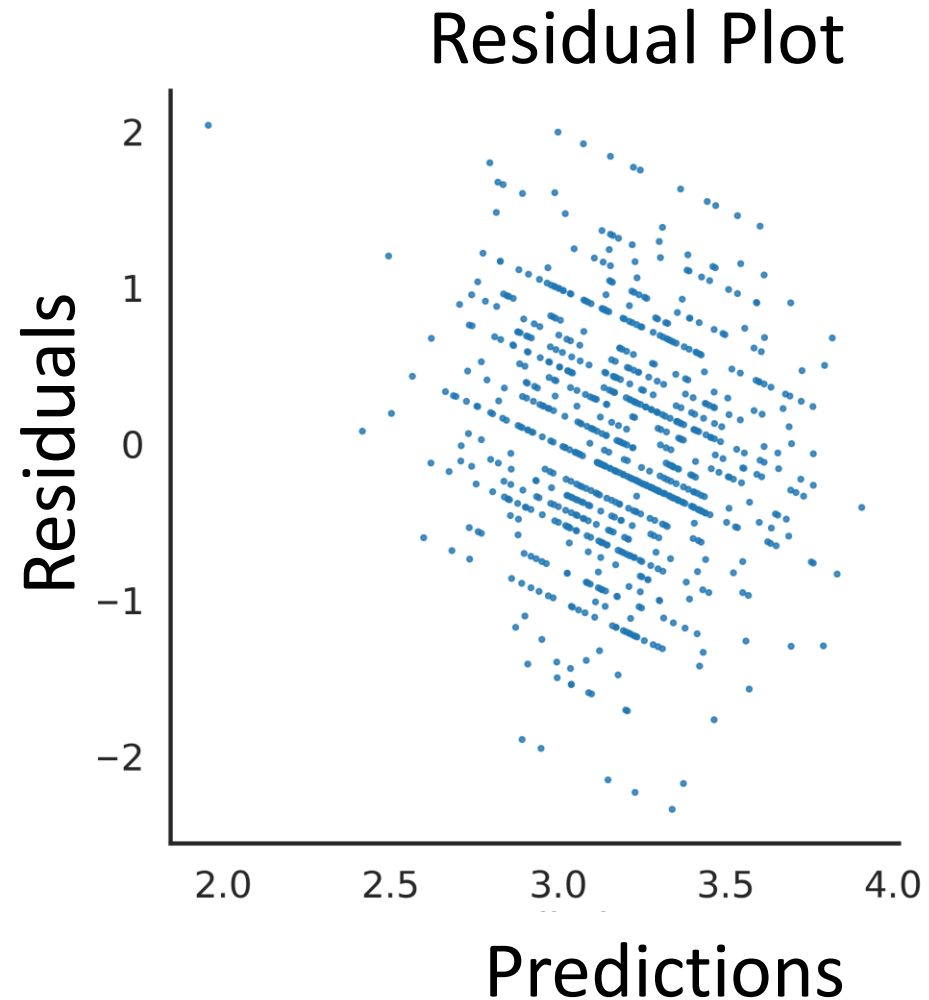
• Number of Trail Attributes → 15 Categorical Features +
1 Numerical Feature

Exploratory Data Analysis

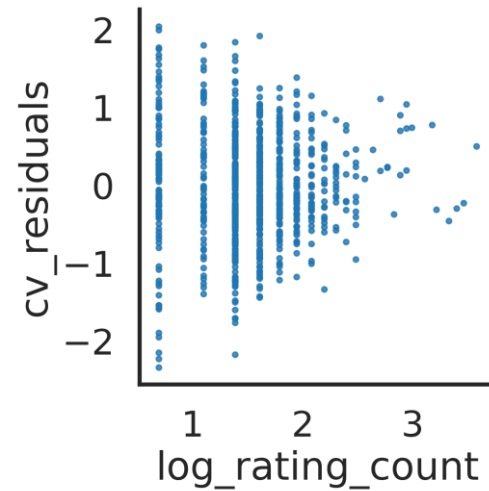
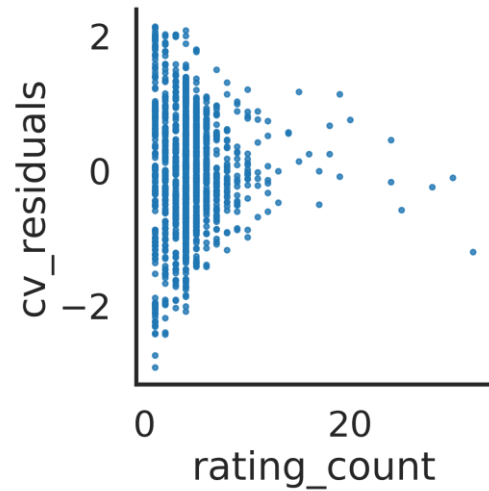
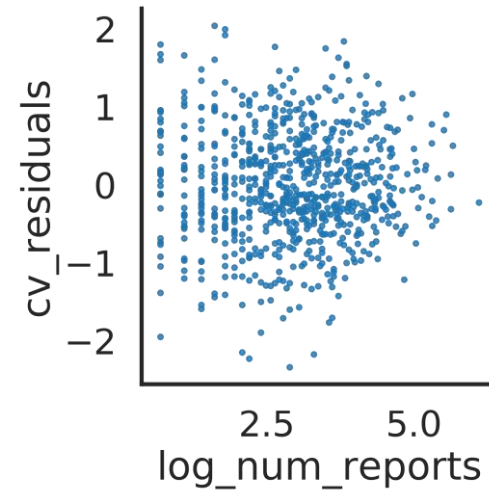
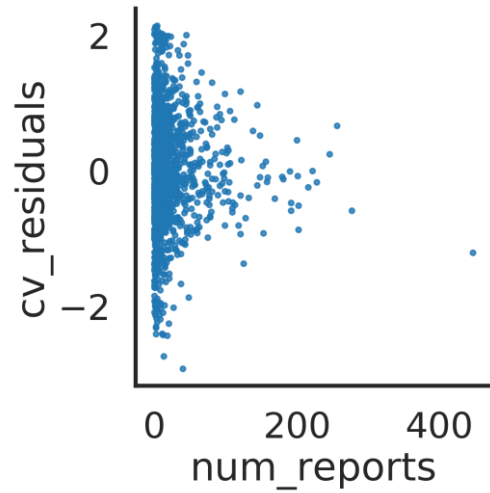


Analysis – Basic Linear Regression

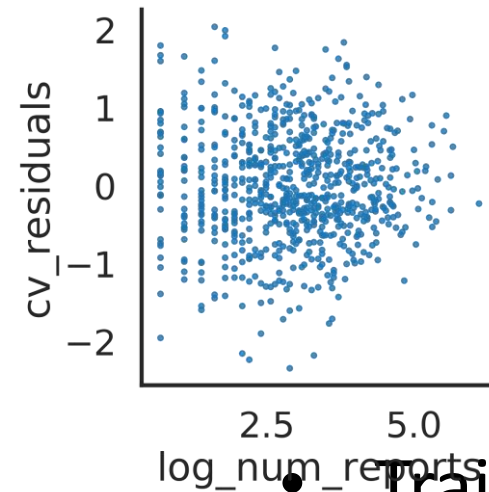
- | | R^2 |
|--------------------|-------|
| • Train/Val Split | 0.03 |
| • Cross Validation | 0.01 |



Log Transformations



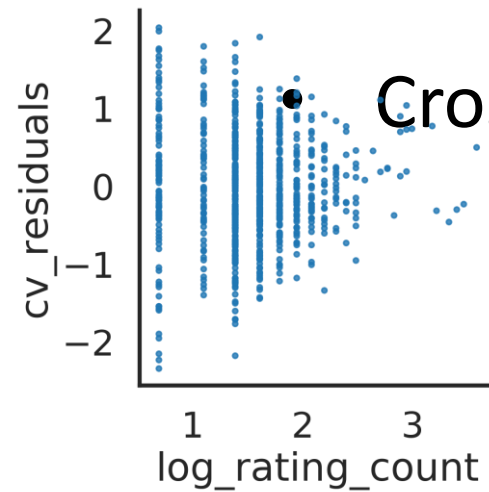
Log Transformations – Basic Linear Regression



• Train/Val Split

R^2

0.08

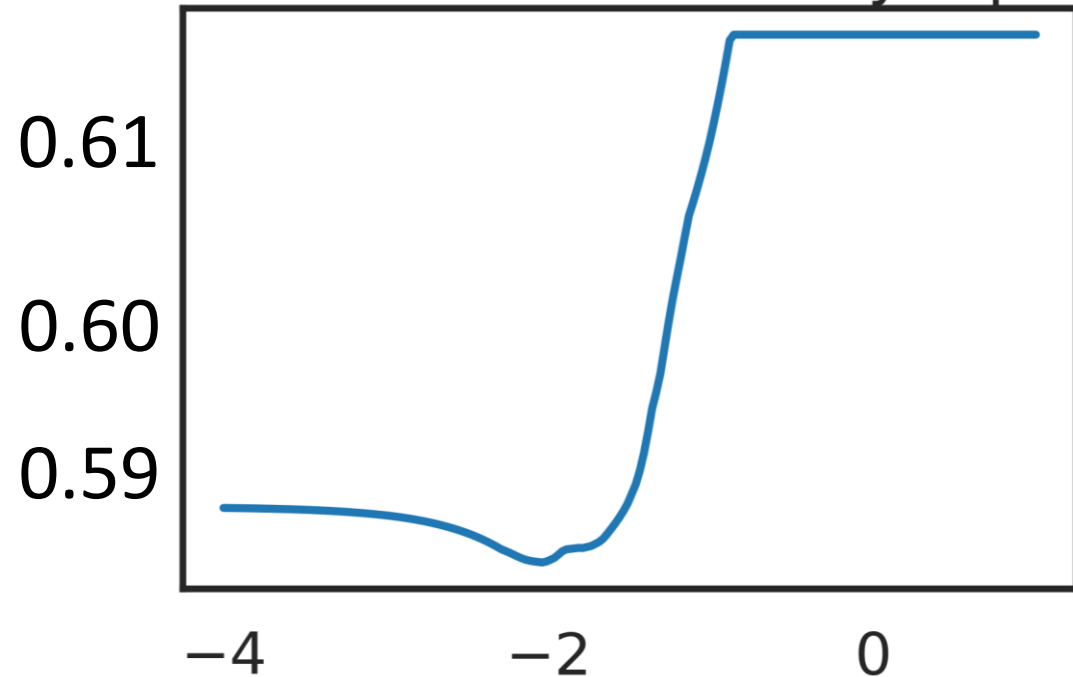


• Cross Validation

0.03

Ridge Regression

Mean Absolute Error by Alpha



- | | R^2 |
|-----------------------|-------|
| • Ridge Regression | -0.01 |
| • Ridge CV Regression | 0.07 |

Conclusions & Future Directions

- Inconclusive
- Uncaptured data may be more relevant
- Future directions:
 - Weighted ratings
 - Visitors per year (trail logs/traffic logs)



Questions?



Full list of features

- Distance (mi)
 - Elevation gain (ft)
 - Highest Point elevation (ft.)
 - Latitude and longitude
 - Number of trip reports
 - Number of ratings
 - Trail name
 - Region
 - Subregion
 - Permits required
 - Number of features
- Central Washington
 - Eastern Washington
 - Issaquah Alps
 - Mount Rainier Area
 - North Cascades
 - Olympic Peninsula
 - Puget Sound and Islands
 - Snoqualmie Region
 - South Cascades
 - Southwest Washington
- None
 - Discover Pass
 - Refuge Entrance Pass
 - National Monument Fee
 - Sno-Parks Permit
 - National Park Pass
 - Oregon State Parks Day-Use
- Coast
 - Dogs allowed on leash
 - Dogs not allowed
 - Established campsites
 - Fall foliage
 - Good for kids
 - Lakes
 - Mountain views
 - Old growth
 - Ridges/passes
 - Rivers
 - Summits
 - Waterfalls
 - Wildflowers/Meadows
 - Wildlife

Full list of features

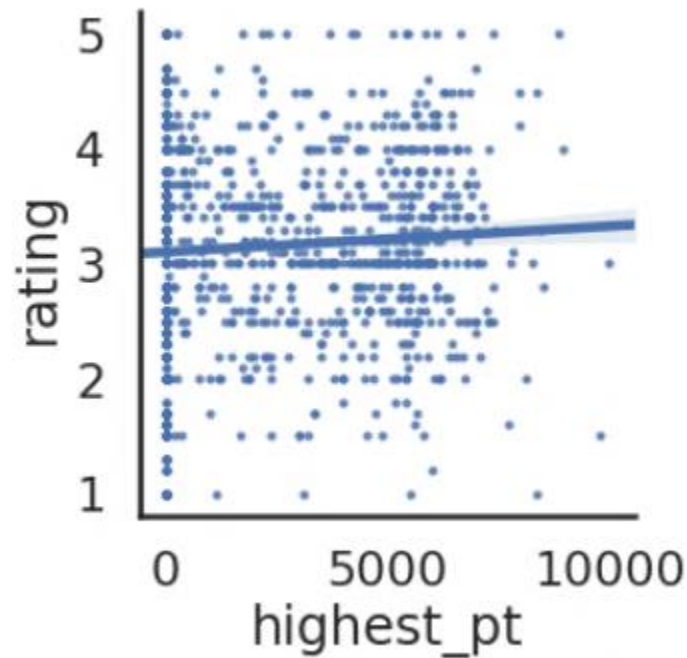
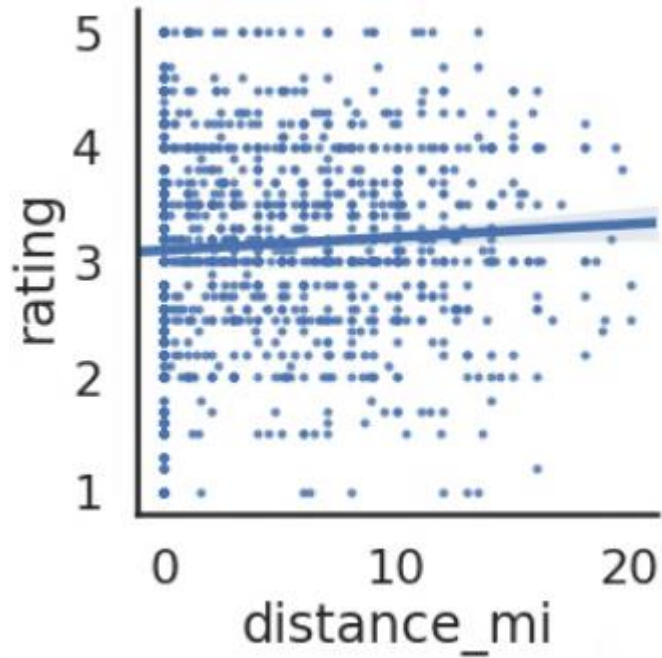
- Distance (mi)
- Elevation Gain (ft)
- Highest Point Elevation (ft.)
- Latitude and Longitude
- Number of Trip Reports
- Number of Ratings
- Trail Name
- Region
- Subregion
- Permits Required
- Number of Trail Attributes
- Central Washington
- Eastern Washington
- Issaquah Alps
- Mount Rainier Area
- North Cascades
- Olympic Peninsula
- Puget Sound and Islands
- Snoqualmie Region
- South Cascades
- Southwest Washington
- None
- Discover Pass
- Refuge Entrance Pass
- National Monument Fee
- Sno-Parks Permit
- National Park Pass
- Oregon State Parks Day-Use

Trail Attributes

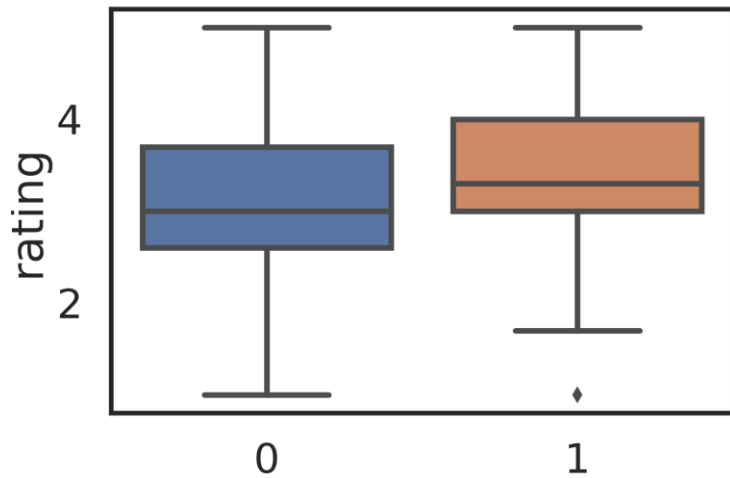
- Dogs allowed on leash
- Mountain views
- Old growth
- Summits
- Waterfalls
- Wildlife



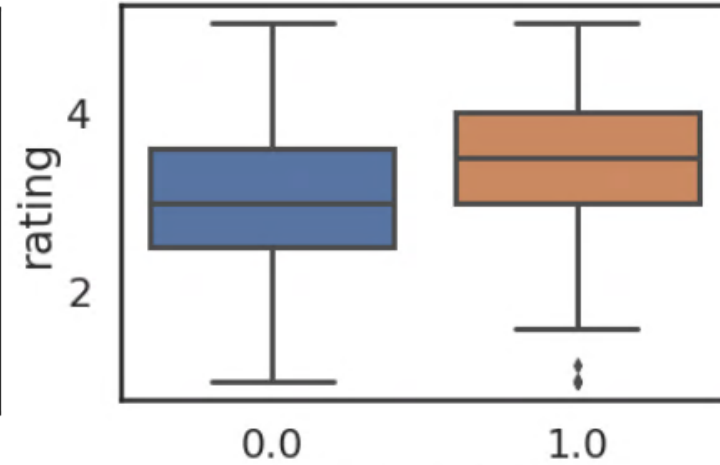
Exploratory Data Analysis – Numerical Features



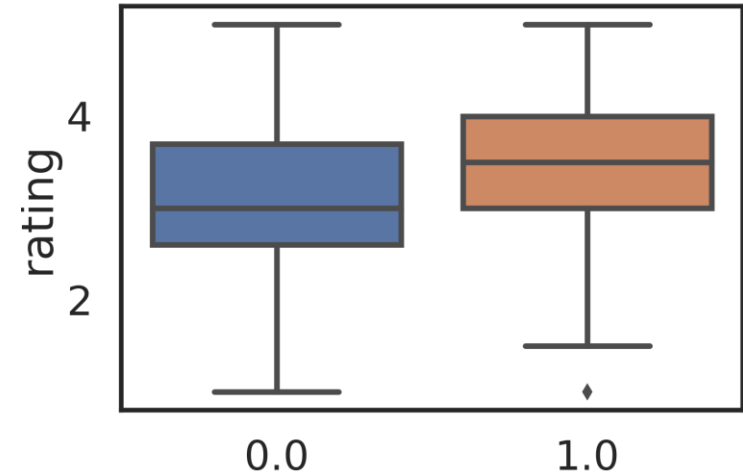
Categorical Features



National Park Permit Required

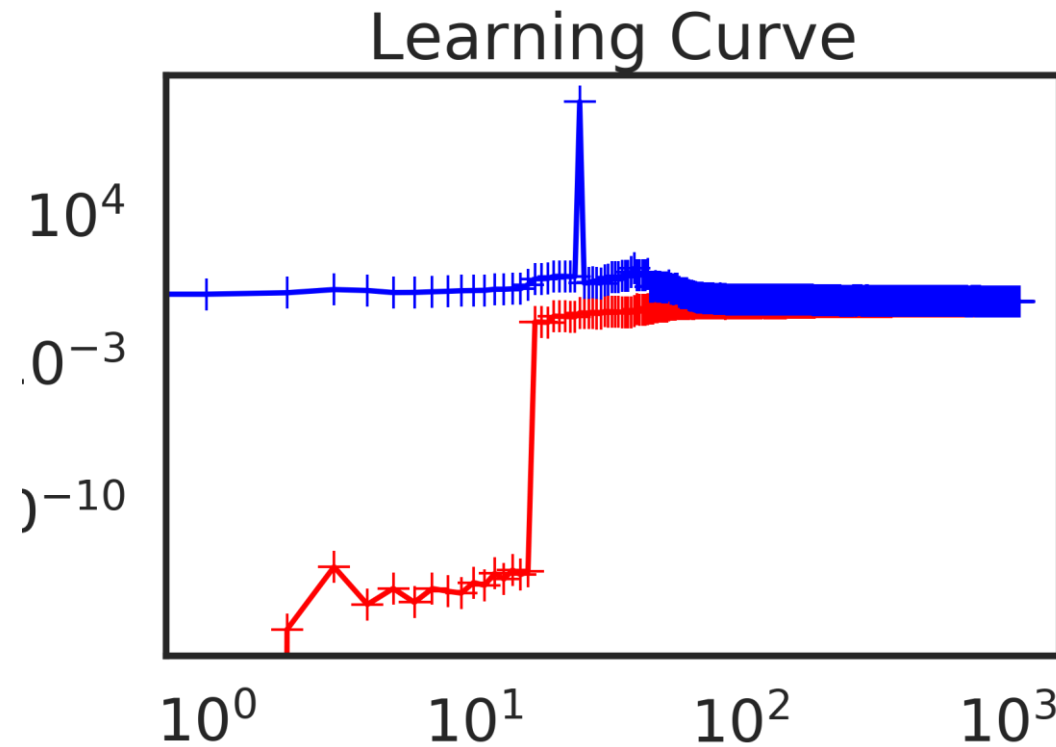


Summits

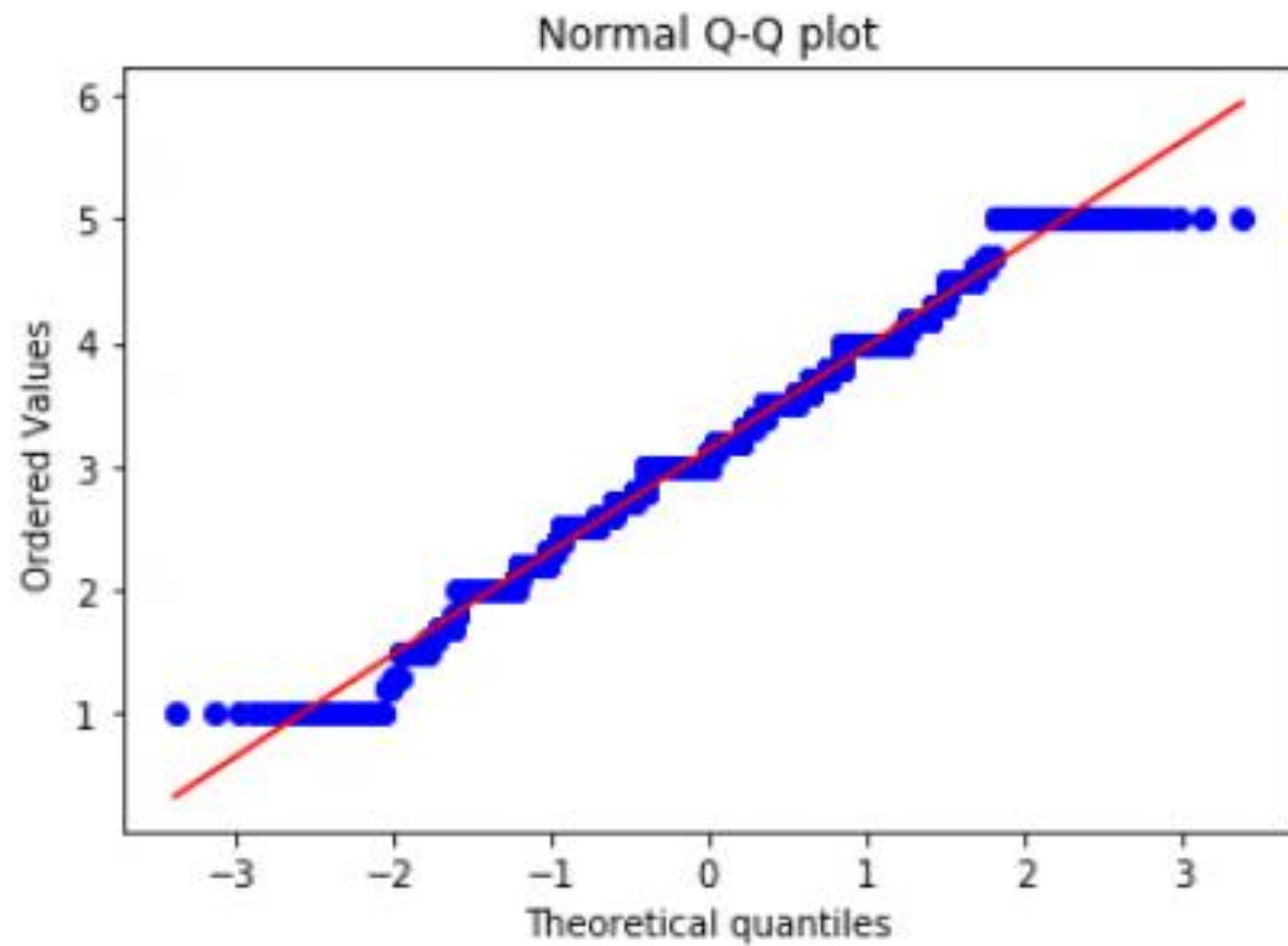


Waterfalls

Learning Curve – Basic Linear Model (CV)



Q-Q Plot of Y values



Q-Q Plot of Residuals

