Projecting the economic impact of sea level rise on Florida

Jacob Kasner, Malcolm Evans, Fernando Narbona, Alex De Mouy

Highlights

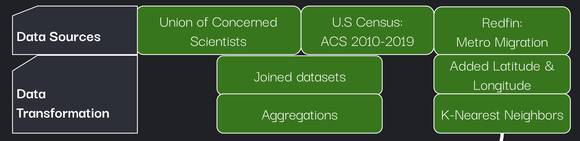
- Florida can make huge cost savings by developing real estate responsibly and planning for eventual flooding
- Interactive dashboard displaying a range of metrics that can be filtered by year, metro area, county or census tract
- The model predicts the future value for properties that are at risk of inundation

Background

Florida's sea levels are projected to rise an inch every 3 years, a rate 1.5x greater than the national projection. Coastline communities will see increased flooding and damage from natural disasters for years to come if solutions are not implemented now. We examine what is at risk for Florida and how much of an economic impact SLR will have on their real estate market.

Data

The data was pulled from the U.S. Census Bureau, Redfin and Union of Concerned Scientists.



Grouped Into 7 Metro Areas

Top Insights

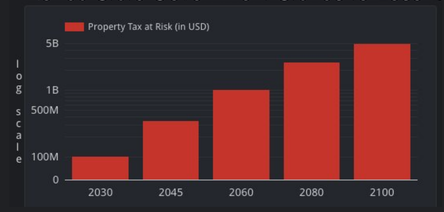
Value at Risk (in USD)
351,493,105,459

Population at Risk
2,093,815

Land Area Lost (in square meters)
22,456,309,262

Analysis

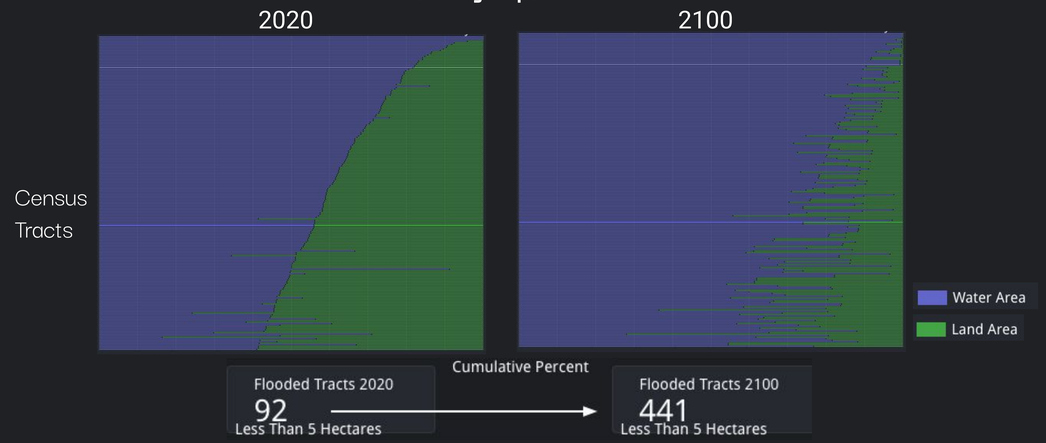
Florida State Government Stands to Lose Billions



The Highest Value Areas of Florida are Most at Risk

Thirty-Two Counties will Face Property Losses Ranging from the Millions to the Billions

Flooding Impact



Model

The model uses a dataset with over 100 features associated with 2019 housing prices to predict Florida home value.

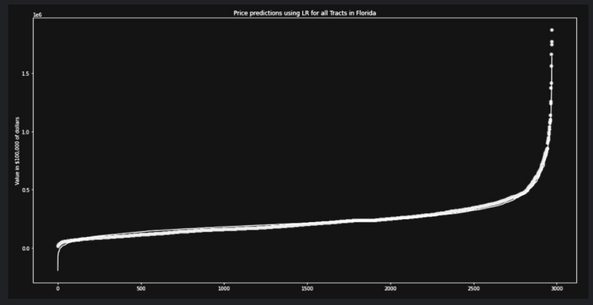
Using Multiple Linear Regression, we first normalize our data, fit it to the model, and begin to run predictions.

R^2 ~ 0.70 or a 70% Accuracy

RMSE ~ $93,000

This root mean squared error (RMSE) indicates all predictions are accurate plus or minus 93,000 USD.

Results



Next Steps

We would like to iterate over our model's accuracy to continually improve it and incorporate a time series element with the help of Facebook Prophet.

The hope is to work with Florida developers and policy makers to discourage coastal development, encourage protection, and plan for progressive evacuation.