Your Crib's Climate Cost

Predicting housing prices in the era of climate change

By Aroob Abdelhamid, PhD Chemistry

05.05.21 | The Data Incubator

Climate change is worsening!

San Francisco
2020

theguardian.com: Frederic Larson/AP

nbcnews

As wildfires rage, climate experts warn: The future we were worried about is here

Wildfires in the U.S., Australia and Siberia have driven home how climate change is already threatening to destroy ecosystems in various parts of the world.

Alabama
2020

cnn.com: Joe Raedle/Getty Images

More people/ investors are considering climate change when purchasing a home, especially with the increase of remote work!

MARKETS

If You Sell a House These Days, the Buyer Might Be a Pension Fund

Yield-chasing investors are snapping up single-family homes, competing with ordinary Americans and driving up prices

https://www.wsj.com/articles/if-you-sell-a-house-these-days-the-buyer-might-be-a-pension-fund-11617544801

"**73 percent** of millennials say climate change affected where they planned to live."

-Marie Haaland of the NYPost, "**Majority of young Americans say climate change affects their major life decisions**"

Where should I buy a house so that climate change doesn't decrease its value or worse?

My webapp will predict the effects of climate change (wildfires, floods, temperature, precipitation) on future housing prices

Data Sources and Analysis

Datasets

- Housing prices and parameters
  - Zillow: 69 MB
  - RedFin: 948 MB

&

- Past precipitation and temperature:
  - Carnegie Mellon University Dataset; 300 MB

- Future Precipitation and Temperature
  - NASA NEX DCP30; ~60 GB

Analyses

- Autocorrelation Function / Seasonal Decompositions

Multi-variate (linear) Regressions
OR
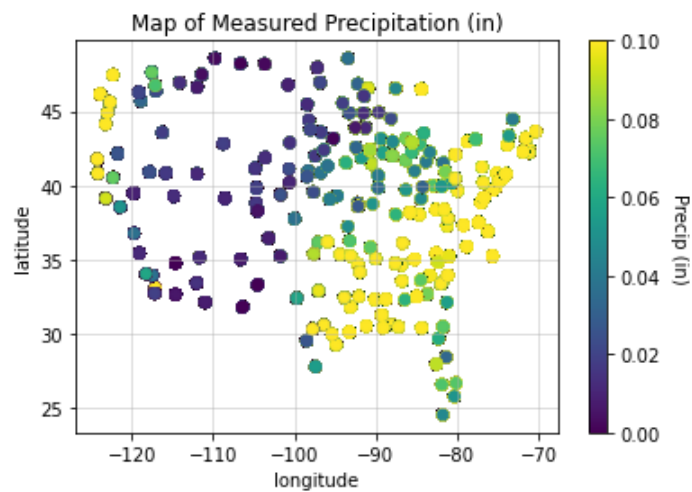Auto Regressive Integrated Moving
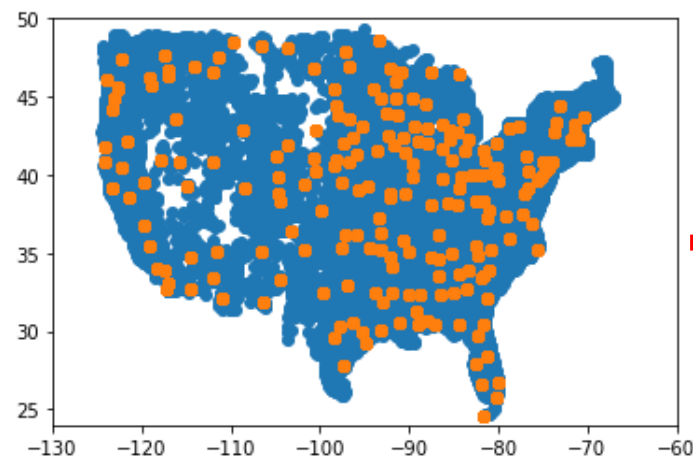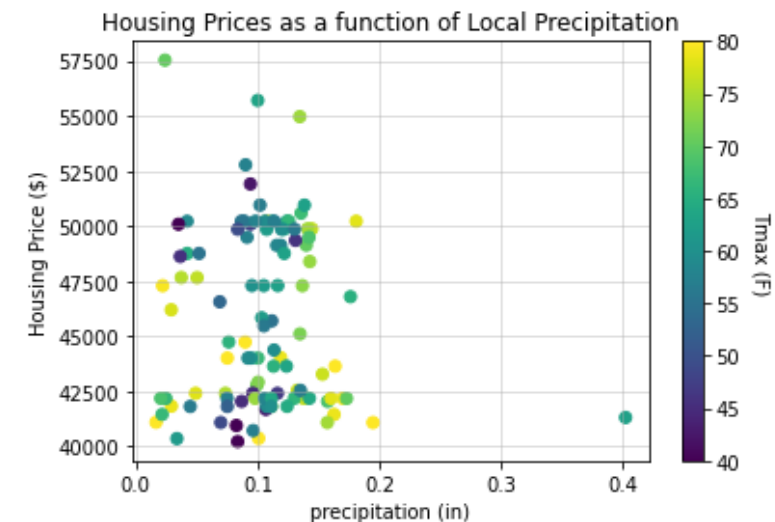Average (ARIMA) time series analysis

FORECAST!

Current Progress!

a) Temperature/ Precipitation

Map of Measured Precipitation (in)

b) Temperature/ Precipitation (orange)
Zillow housing price data (blue)

c) same spatial and temporal resolution!

Housing Prices as a function of Local Precipitation

Next Steps!

average_homes_sold_yoy   total_homes_sold_with_price_dr
total_homes_sold_with_price_drops_yoy
average_homes_sold_with_price_drops
average_homes_sold_with_price_drops_yoy
percent_homes_sold_with_price_drops
percent_homes_sold_with_price_drops_yoy   median_sale_pric
median_sale_price_yoy   median_sale_ppsf
median_sale_ppsf_yoy median_days_to_close
median_days_to_close_yoy   price_drops   price_drops_yoy
percent_active_listings_with_price_drops
percent_active_listings_with_price_drops_yoy
pending_sales pending_sales_yoy   median_pending_sqft
median_pending_sqft_yoy   off_market_in_two_weeks
off_market_in_two_weeks_yoy off_market_in_one_week
off_market_in_one_week_yoy percent_off_market_in_two_week
percent_off_market_in_two_weeks_yoy
percent_off_market_in_one_week
percent_off_market_in_one_week_yoy total_new_listings
total_new_listings_yoy   average_new_listings
average_new_listings_yoy   median_new_listing_price
median_new_listing_price_yoy   median_new_listing_ppsf
median_new_listing_ppsf_yoy inventory   inventory_yoy
total_active_listings   total_active_listings_yoy
active_listings   active_listings_yoy age_of_inventory
age_of_inventory_yoy homes_delisted   homes_delisted_y

Correlations

Thank You! Questions?

Aroob Abdelhamid, PhD Chemistry
She/her
LinkedIn: /aroob-abdelhamid
aroobabdelha@gmail.com
Lebanon, NH, USA

MOTIVATION
Predicting future housing prices for remote workers and real estate investors

DATA SOURCES
Housing
Precipitation
Temperature

ANALYSIS
Linear Regression
ARIMA