

# Your Crib's Climate Cost

Predicting housing prices in the era of climate change

By: Aroob Abdelhamid

05.05.21 | The Data Incubator

# Climate change is worsening!

San Francisco  
2020

## 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.

nbcnews

theguardian.com: Frederic Larson/AP

Alabama  
2020

cnn.com: Joe Raedle/Getty Images

# More people considering climate change when purchasing a home



<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”**

My webapp will predict the effects of climate change (wildfires, floods, temperature, precipitation) on future housing prices in a contiguous US zip code

# 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
- 

Auto Regressive Integrated Moving Average (ARIMA)

OR

Long/Short Term Memory (LSTM)

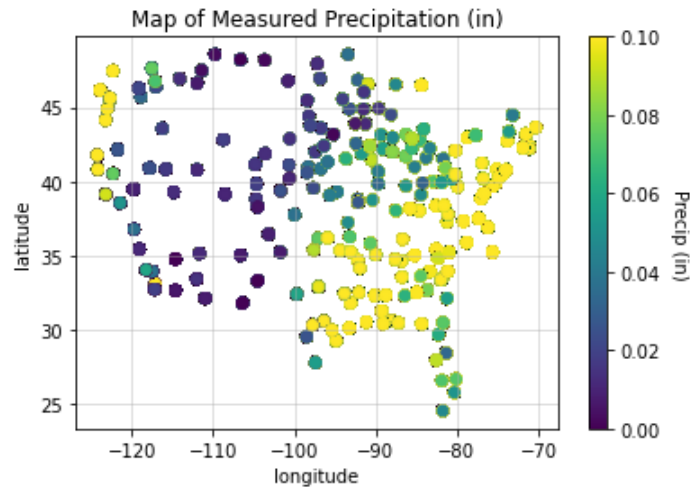


FORECAST!

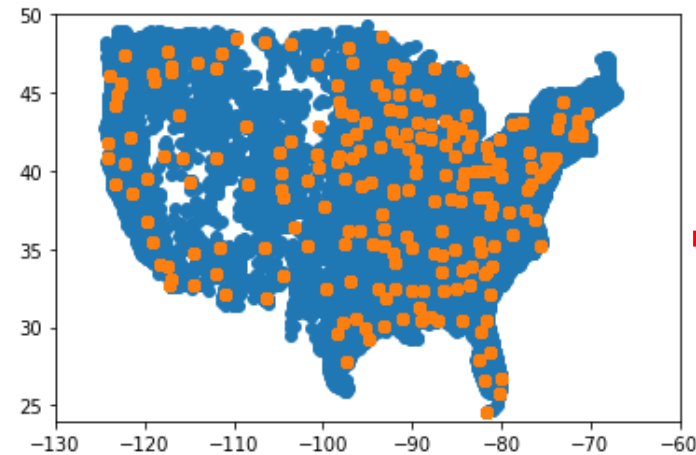


# Current Progress: Data Merging / Averaging

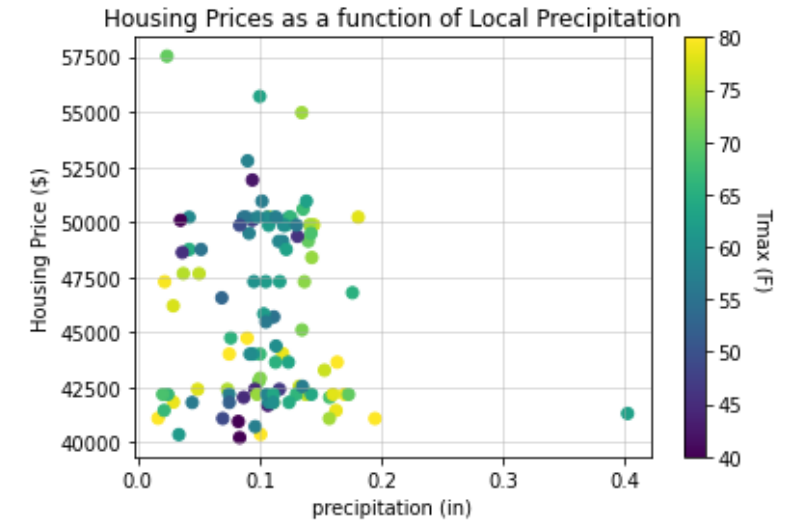
a) Temperature/ Precipitation



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



c) same spatial and temporal resolution!



## Next Steps: Correlations

REDFIN

```
average_homes_sold_yoy    total_homes_sold_with_price_dr
total_homes_sold_with_price_dr_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_price_yoy
median_sale_ppsf_yoy
median_days_to_close_yoy
price_drops_yoy
percent_active_listings_with_price_drops
percent_active_listings_with_price_drops_yoy
pending_sales_yoy
median_pending_sqft_yoy
off_market_in_two_weeks_yoy
off_market_in_one_week_yoy
percent_off_market_in_two_weeks_yoy
percent_off_market_in_one_week_yoy
total_new_listings_yoy
average_new_listings_yoy
median_new_listing_price_yoy
median_new_listing_ppsf_yoy
total_active_listings_yoy
active_listings_yoy
age_of_inventory_yoy
homes_delisted_yoy
```



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

ARIMA  
LSTM