

# Visualizing Housing Market Data from Redfin

Molly Bruns  
Kevin Flores  
Maite Rivas  
Jim Strale

# Intro

For our project, we wanted to create visualizations that allow people to better ingest housing market data during the COVID-19 pandemic (2019-2021):

- Housing prices
- Housing availability
- Location/Population trends

# Data & Data Delivery

## Data Source

### Housing Data:

[2012-2021 Redfin Dataset](#) obtained using Kaggle.

This residential real estate data set was created by Redfin, an online real estate brokerage.

Published on January 9th, 2022, this data summarize the monthly housing market for every State and County served by Redfin in the U.S.

Redfin aggregated the data across multiple listing services and has been gracious enough to include property type in their reporting in addition to a multitude of useful columns of data.

*The data was stored in a .tsv format.*

### Population Data:

[U.S. Census 2010-2019 Dataset](#) obtained using census.gov website.

The data includes elements such as Population, Population Change, and Estimated Components of Population Change from the U.S. Census website for those 10 years.

*The data was stored in a .csv format.*

# Data & Data Delivery

## Transform & Load

### **Python Library:**

We utilized pandas and numpy to clean the data within Jupyter Lab:

- Checking for outliers
- Converting data types
- Identifying and removing rows with null values
- Filtering data to include our selected columns and time frame
- Combining data frames

### **pgAdmin:**

After cleaning the data we loaded our data from Python into a pgAdmin database.

We decided to use a relational database as our data is organized in tables with common values across the tables.

# Data & Data Delivery

## Flask

### Python Flask API

After loading our data in pgAdmin we set up an API in Python using the Flask framework.

The Flask app is used as our API endpoint that allows us to pull the data from our database and return it as JSON data.

127.0.0.1:5000

127.0.0.1:5000

Available Routes:

- /api/v1.0/counties
- /api/v1.0/grouped\_data
- /api/v1.0/merged\_data
- /api/v1.0/housing\_data\_2019
- /api/v1.0/housing\_data\_2020
- /api/v1.0/housing\_data\_2021
- /api/v1.0/county\_data\_deltas
- /api/v1.0/inventory

# Data & Data Delivery

## HTML

- **HTML**

An HTML template using a Bootstrap framework was utilized which made it easy to customize and edit using our project content.

<https://bootstrapmade.com/website-templates/>



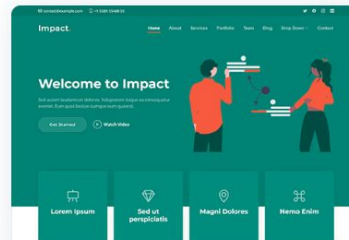
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### Bootstrap Website Templates

High quality HTML website templates created with the Bootstrap framework. Website templates are quick and easy solution that can help and can be easily edited even if you have very low knowledge of web development.

All our templates are very easy to use and customize. The code and files are well organized and structured, allowing you to start your project quickly.

Our templates are modern, 100% responsive, look beautiful on every screen size, work on all devices, big or small screens, laptops, tablets, smartphone, whether it is corporate, personal portfolio, creative agency, startup business, digital studio or any other business that needs a creative website.



### Impact - Bootstrap Business Website Template

Impact is a modern and unique business and corporate Bootstrap template. It's suitable for consulting, insurance, creative, corporate, or small business. It has been built with Bootstrap 5 and added ...

[Live Demo](#)

[Free Download](#)

# Back End

## JavaScript Library

- **D3.js & Leaflet.js Library**

Created a map view from GeoJSON formatted data

- **Plotly Library**

Created visualizations such as a Bubble Chart

- **Charts.js Library**

Created visualizations such as a Bar Chart

# Visualizations

Home Page

Map View

Choropleth Map to visualize the change in median sale price by county

Bubble Chart

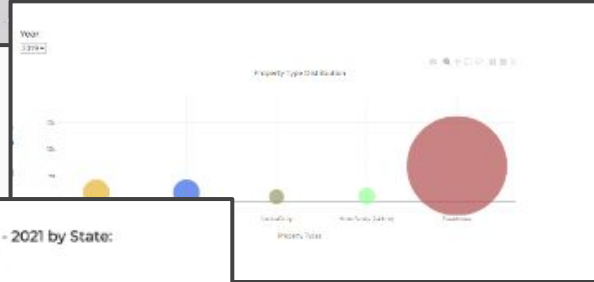
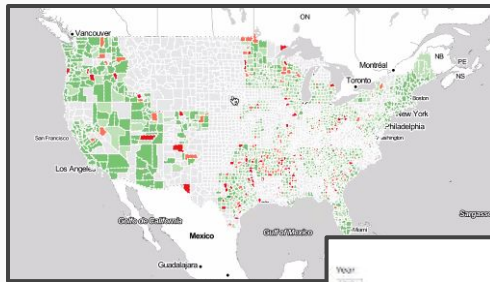
Volume of Inventory by Property Type  
Drop down to filter by year

Bar Chart

Volume of Sales by Property Type  
Sale Price by Property Type

Data Table

View of the raw data in a table format



		2020		2021		2020 yoy diff		2021 yoy diff	
0	Alabama	Bibb County	151326.5	162209.625	167903.75	10914.625	25584.125		
1	Alabama	Blount County	158750.83333333334	171620.83333333334	190208.33333333334	12900.0	18587.5		
2	Alabama	Calhoun County	121670.75	133383.33333333334	155604.56666666666	11712.583333333334	22220.833333333334		
3	Alabama	Cherokee County	152379.56666666666	188840.0	208868.75	36480.833333333334	18128.75		
4	Alabama	Chilton County	302600.0	302600.0	201375.0		-101225.0		
5	Alabama	Clay County	127125.5	146335.41666666666	152000.0	19209.516666666667	5864.583333333334		
6	Alabama	Decatur County	162087.5	169625.0	171188.66666666666	8237.5	2241.666666666667		
7	Alabama	Doak County	152952.27272727274	204787.5	187925.0	52135.227272727276	4862.5		
8	Alabama	Cullman County	157380.79166666666	185164.375	231028.51666666666	37603.083333333334	36364.541666666666		
9	Alabama	DeKalb County	131687.91666666666	156916.0	177577.08333333334	25228.083333333334	20481.083333333334		
10	Alabama	Etowah County	138628.56666666666	154247.04166666666	171443.83333333334	15817.875	17198.791666666666		
11	Alabama	Jackson County	141712.5	157777.51666666666	182770.83333333334	18065.416666666667	24992.516666666666		
12	Alabama	Jefferson County	254632.0	227107.75	244078.33333333334	22475.75	18970.583333333334		
13	Alabama	Lawrence County	113843.88888888889	156883.25	167375.0	43039.583333333333	13491.75		
14	Alabama	Limestone County	255396.5	246077.45833333334	281384.75	35880.583333333334	41172.291666666666		
15	Alabama	Madison County	215529.45833333334	241907.29166666666	283346.79833333333	26377.833333333334	41438.416666666666		



- **CORS Error**

Pip install: `pip install -U flask-cors`

Import Dependency: `from flask_cors import CORS, cross_origin`

Add: `@cross_origin(origin='*')` to each

# Thanks!

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