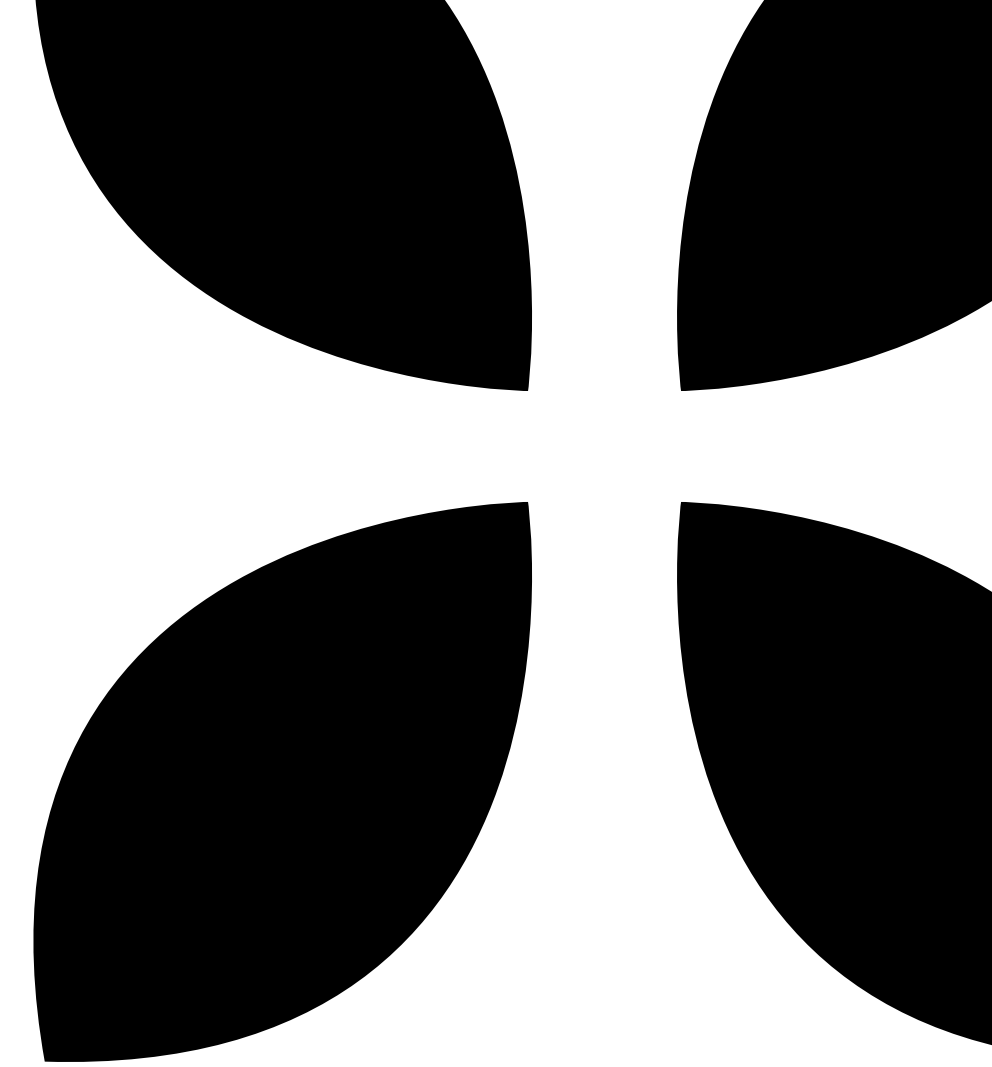


REAL ESTATE PRICE PREDICTION



AROoba SIDDIQI
EMAAN BASHIR
RIMSHA MIRZA



AGENDA

O1



INTRODUCTION

O2

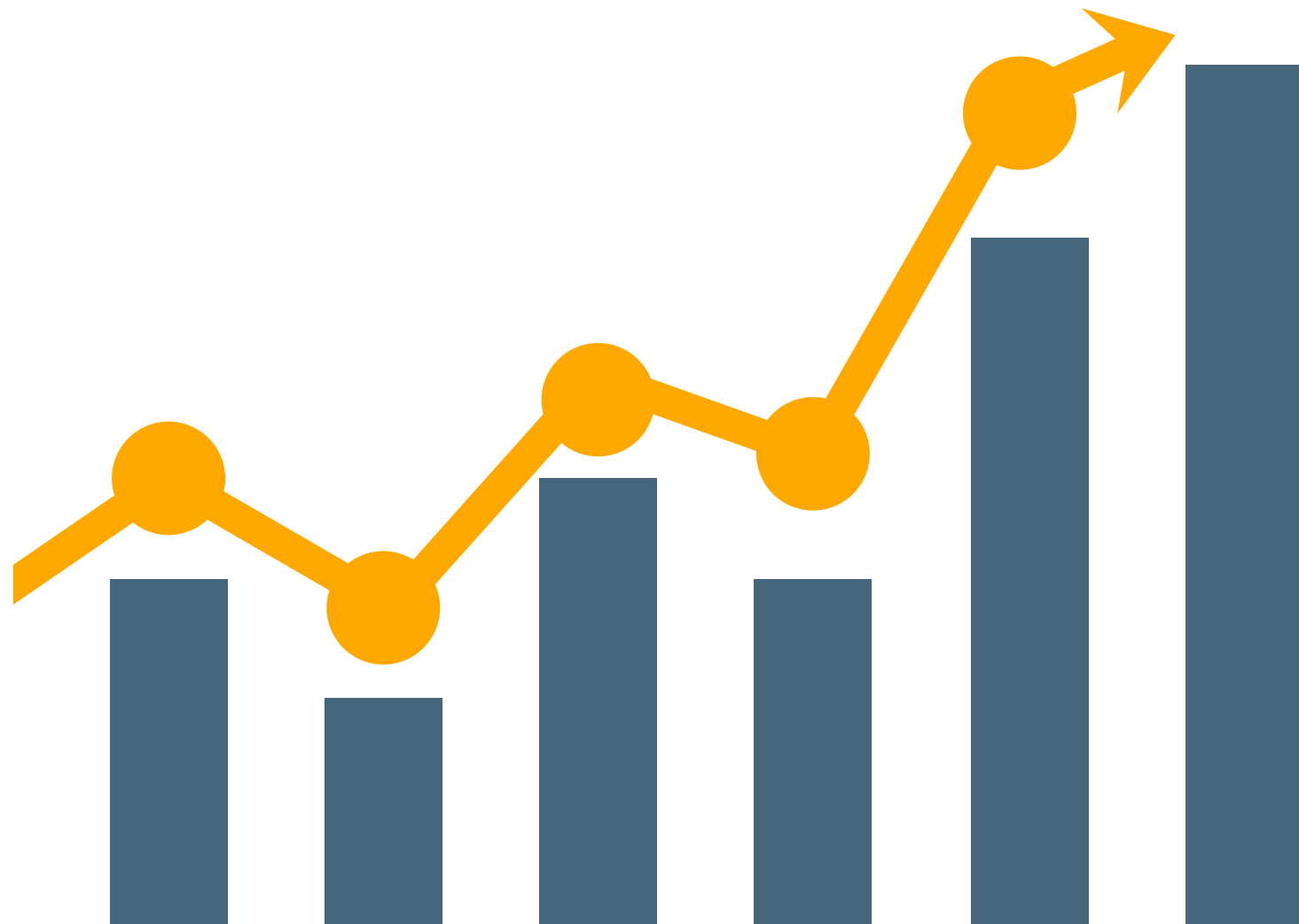


METHODOLOGY

O3



CONCLUSION



INTRODUCTION

- Uncertainties in the Real Estate Market in Pakistan
- Data-driven approach to address challenges and uncertainties in the market
- Significant implications for both buyers and sellers
- Help in making informed decisions
- Contribute to a more efficient and effective real estate market in Pakistan

DATA COLLECTION

- Web Scraping from zameen.pk
- 280046 Properties
- 189 Cities
- 18 types of Properties



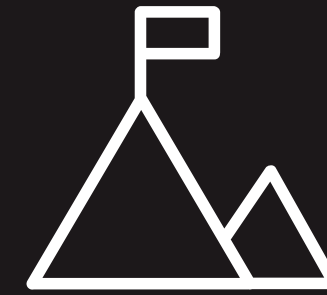
WEB SCRAPPING

- Analyze the URLs of the website
- Get a general format for the URLs
- Make a request to get the HTML of each page

- Parse the HTML code
- Find the required data
- Store in csv file



Used BeautifulSoup Library



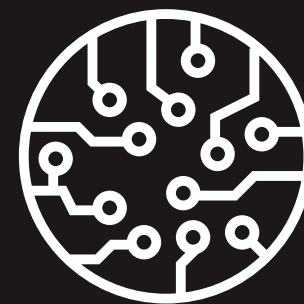
Used Threads to extract data from multiple pages at a time

DATA PRE-PROCESSING



PREPROCESSING

- Separate price from currency and get its numerical value
- Get City and Province from location
- Parse the strings to get number of beds and baths
- Convert units of area into sqft
- Get the estimated year, month and date
- Necessary property-type conversions
- Handle Null and zero values
- Remove Price and Area Outliers



Used pandas and numpy

DATA BEFORE PREPROCESSING

Url	Title	Type	Price	Location	Baths	Beds	Area	Purpose	Date_Added	Description
https://www.zameen.com//Property/islamabad_tar...	10 Kanal Empty Land Available For Rent	Commercial Plot	4 Lakh	Tarnol, Islamabad, Islamabad Capital	-	-	10 Kanal	For Rent	3 days ago	10 kanal empty land available for rent in Isla...
https://www.zameen.com//Property/islamabad_gt_...	Fair-priced 27000 Square Feet Commercial Plot ...	Commercial Plot	15 Lakh	GT Road, Islamabad, Islamabad Capital	-	-	6 Kanal	For Rent	2 weeks ago	6 Kanal Land On main GT Road For Rent Ideal Pl...
https://www.zameen.com//Property/islamabad_isl...	20 Kanal Land On Main Isb Highway Available Fo...	Commercial Plot	20 Lakh	Islamabad Expressway, Islamabad, Islamabad Cap...	-	-	20 Kanal	For Rent	2 weeks ago	20 Kanal Land on Main ISB Highway Available Fo...
https://www.zameen.com//Property/islamabad_g_1...	Industrial Building Available For Rent	Industrial Land	55 Thousand	G-12, Islamabad, Islamabad Capital	-	-	1 Kanal	For Rent	2 days ago	A Industrial Plot Located In G12 Just 1km Away...
https://www.zameen.com//Property/islamabad_mir...	Industrial Building Available For Rent	Industrial Land	50 Thousand	Mira Abadi, Islamabad, Islamabad Capital	-	-	1 Kanal	For Rent	2 days ago	A Single Story Building In Which One Hall Plus...
...
https://www.zameen.com//Property/balochistan_z...	Commercial Plot On National Highway Quetta Roa...	Commercial Plot	PKR3.4 Crore	Zhob, Balochistan	-	-	19.1 Marla	For Sale	6 years ago	Commercial Plot On National Highway Quetta Roa...
https://www.zameen.com//Property/balochistan_z...	Residential Plot For Sale	Residential Plot	PKR50 Lakh	Zhob, Balochistan	-	-	4.4 Marla	For Sale	6 years ago	Zhob bypassIdeal locationNear to Pak China Eco...

DATA AFTER PREPROCESSING

Url	Title	Type	Price	Price_Value	Currency	Location	Province	City	Baths	Beds	Area	Area_in_sqft	Purpose	Date_Added	Month	Year	Description
https://www.zameen.com//Property/islamabad_tar...	10 Kanal Empty Land Availabe For Rent	Commercial Plot	4 Lakh	400000	PKR	Tarnol, Islamabad, Islamabad Capital	Islamabad Capital	Islamabad	0	0	10 Kanal	54450.0000	For Rent	2022-12-25	12	2022	10 kanal empty land available for rent in Isla...
https://www.zameen.com//Property/islamabad_gt_...	Fair-priced 27000 Square Feet Commercial Plot ...	Commercial Plot	15 Lakh	1500000	PKR	GT Road, Islamabad, Islamabad Capital	Islamabad Capital	Islamabad	0	0	6 Kanal	32670.0000	For Rent	2022-12-14	12	2022	6 Kanal Land On main GT Road For Rent Ideal Pl...
https://www.zameen.com//Property/islamabad_isl...	20 Kanal Land On Main Isb Highway Available Fo...	Commercial Plot	20 Lakh	2000000	PKR	Islamabad Expressway, Islamabad, Islamabad Cap...	Islamabad Capital	Islamabad	0	0	20 Kanal	108900.0000	For Rent	2022-12-14	12	2022	20 Kanal Land on Main ISB Highway Available Fo...
https://www.zameen.com//Property/islamabad_g_1...	Industrial Building Available For Rent	Industrial Land	55 Thousand	55000	PKR	G-12, Islamabad, Islamabad Capital	Islamabad Capital	Islamabad	0	0	1 Kanal	5445.0000	For Rent	2022-12-26	12	2022	A Industrial Plot Located In G12 Just 1km Away...
https://www.zameen.com//Property/islamabad_mir...	Industrial Building Available For Rent	Industrial Land	50 Thousand	50000	PKR	Mira Abadi, Islamabad, Islamabad Capital	Islamabad Capital	Islamabad	0	0	1 Kanal	5445.0000	For Rent	2022-12-26	12	2022	A Single Story Building In Which One Hall Plus...
...
https://www.zameen.com//Property/balochistan_z...	Commercial Plot On National Highway Quetta Roa...	Commercial Plot	PKR3.4 Crore	34000000	PKR	Zhob, Balochistan	Balochistan	Zhob	0	0	19.1 Marla	5199.9941	For Sale	2016-12-29	12	2016	Commercial Plot On National Highway Quetta Roa...
https://www.zameen.com//Property/balochistan_z...	Residential Plot For Sale	Residential Plot	PKR50 Lakh	5000000	PKR	Zhob, Balochistan	Balochistan	Zhob	0	0	4.4 Marla	1197.9044	For Sale	2016-12-29	12	2016	Zhob bypassIdeal locationNear to Pak China Eco...

DATA VISUALIZATION

Tool: tableau

Types of graphs:

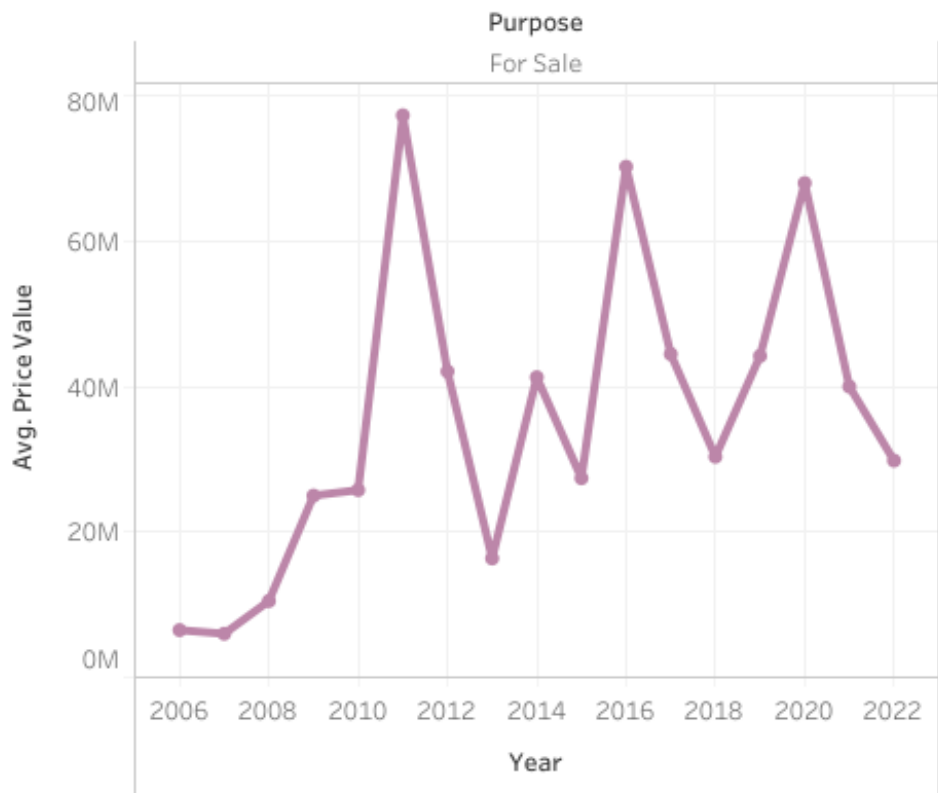
- Histogram
- Line Graph
- Map Chart
- Pie Chart
- Heat Map



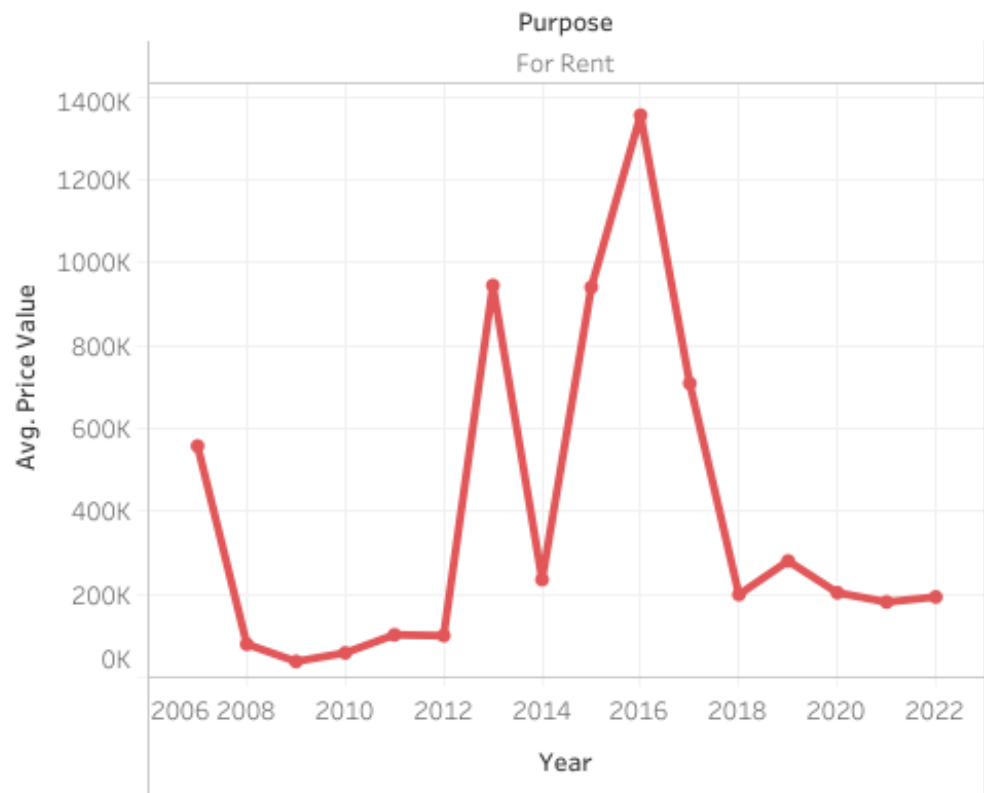
DASHBOARD

Price trend over the years

Property For Sale

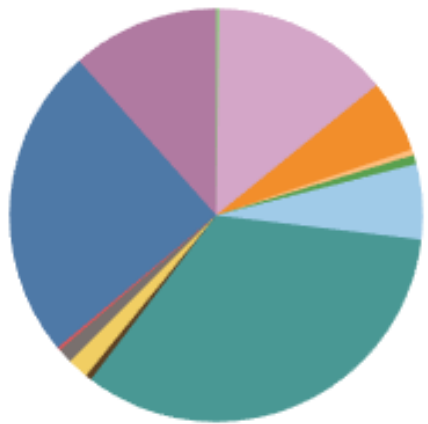


Property For Rent

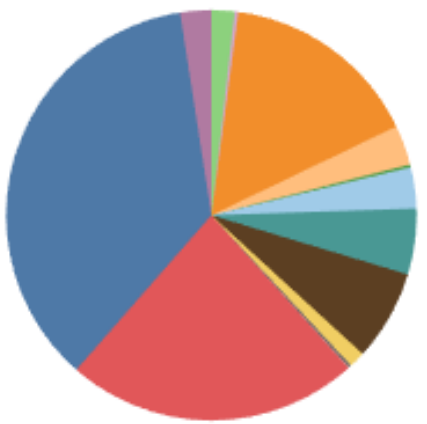


Property Types Distribution Per Province

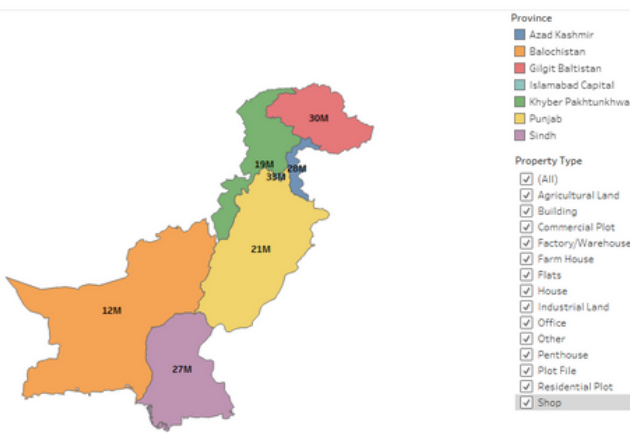
Azad Kashmir



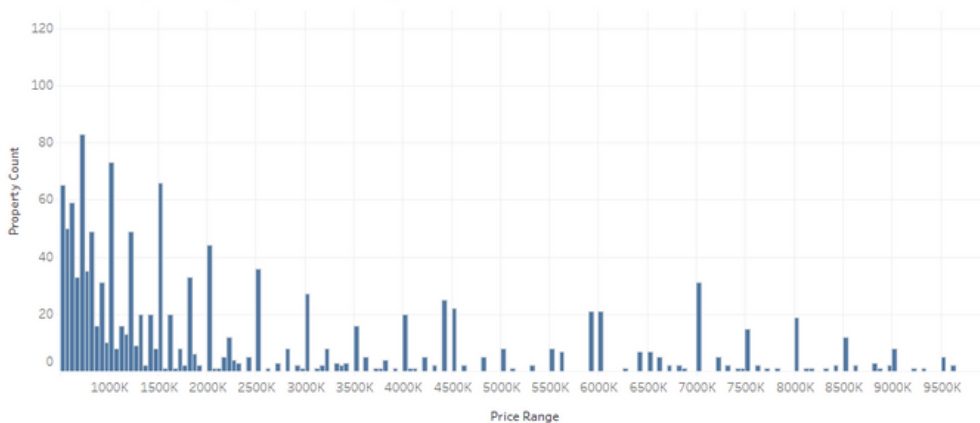
Balochistan



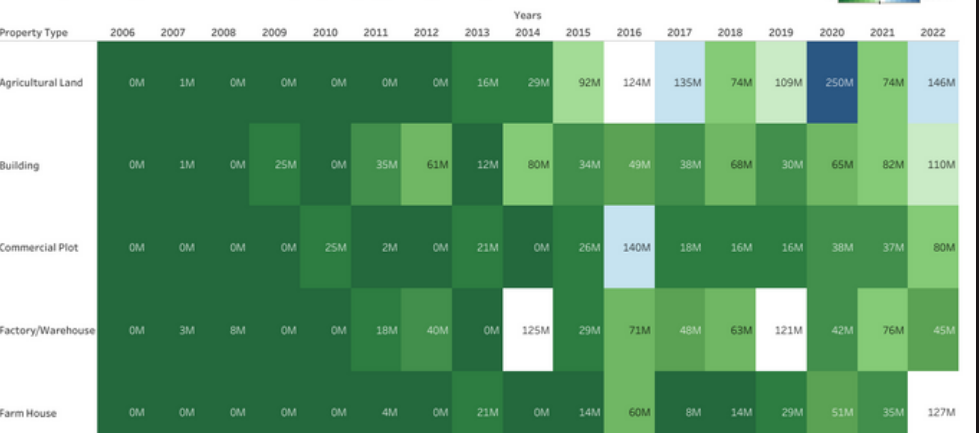
Average Price Per Province



Number of Properties against Price Range



Heatmap - Average Price for various property types against years



DATA MINING

Decision Tree Regression

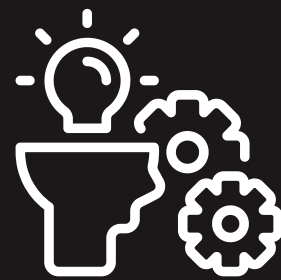
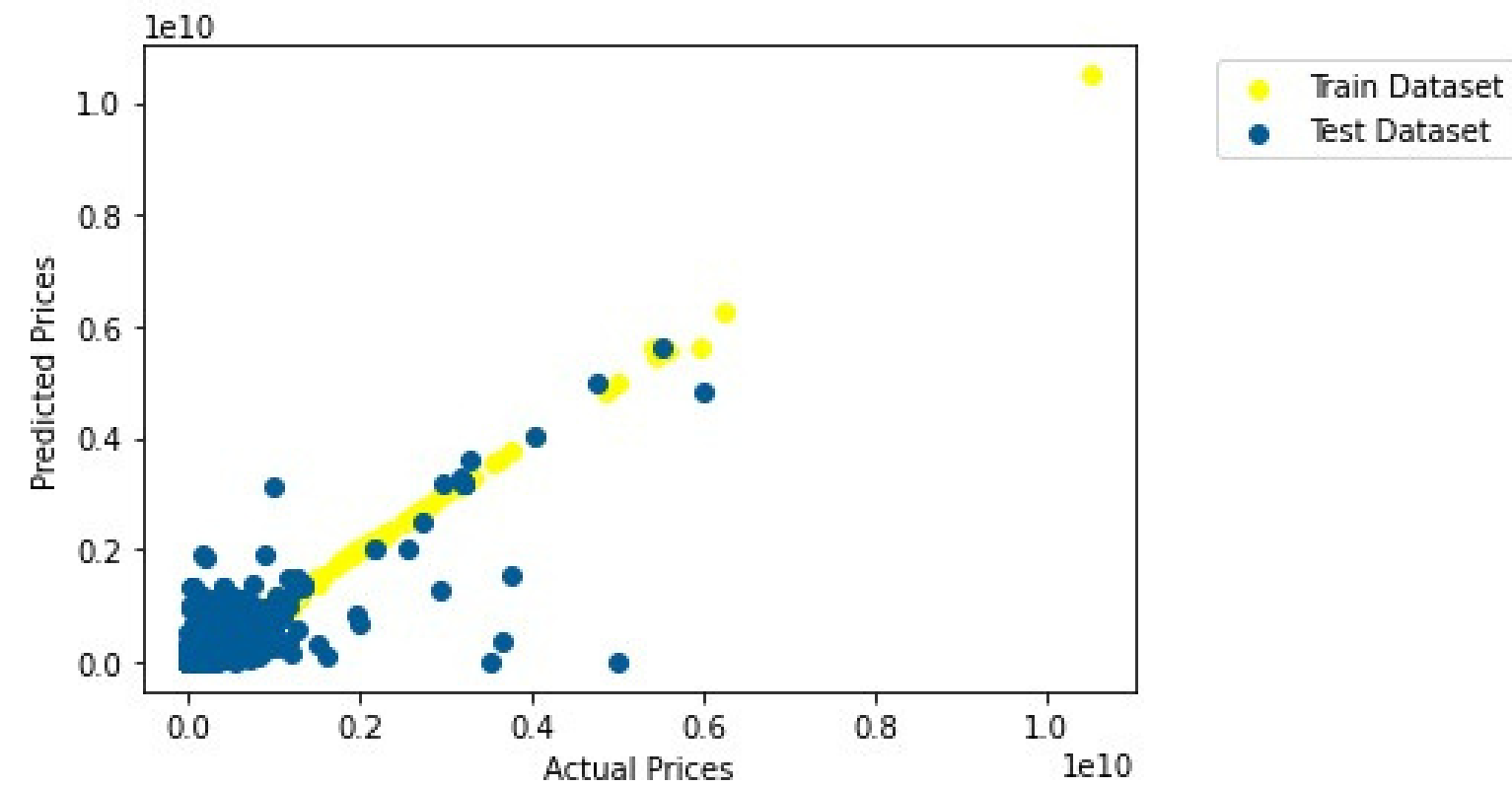
Supervised learning algorithm

Two criteria to measure quality of split

- Squared Error
- FriedmanMean Square Error

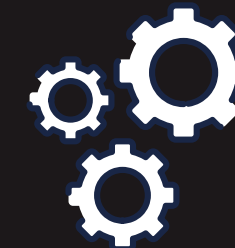
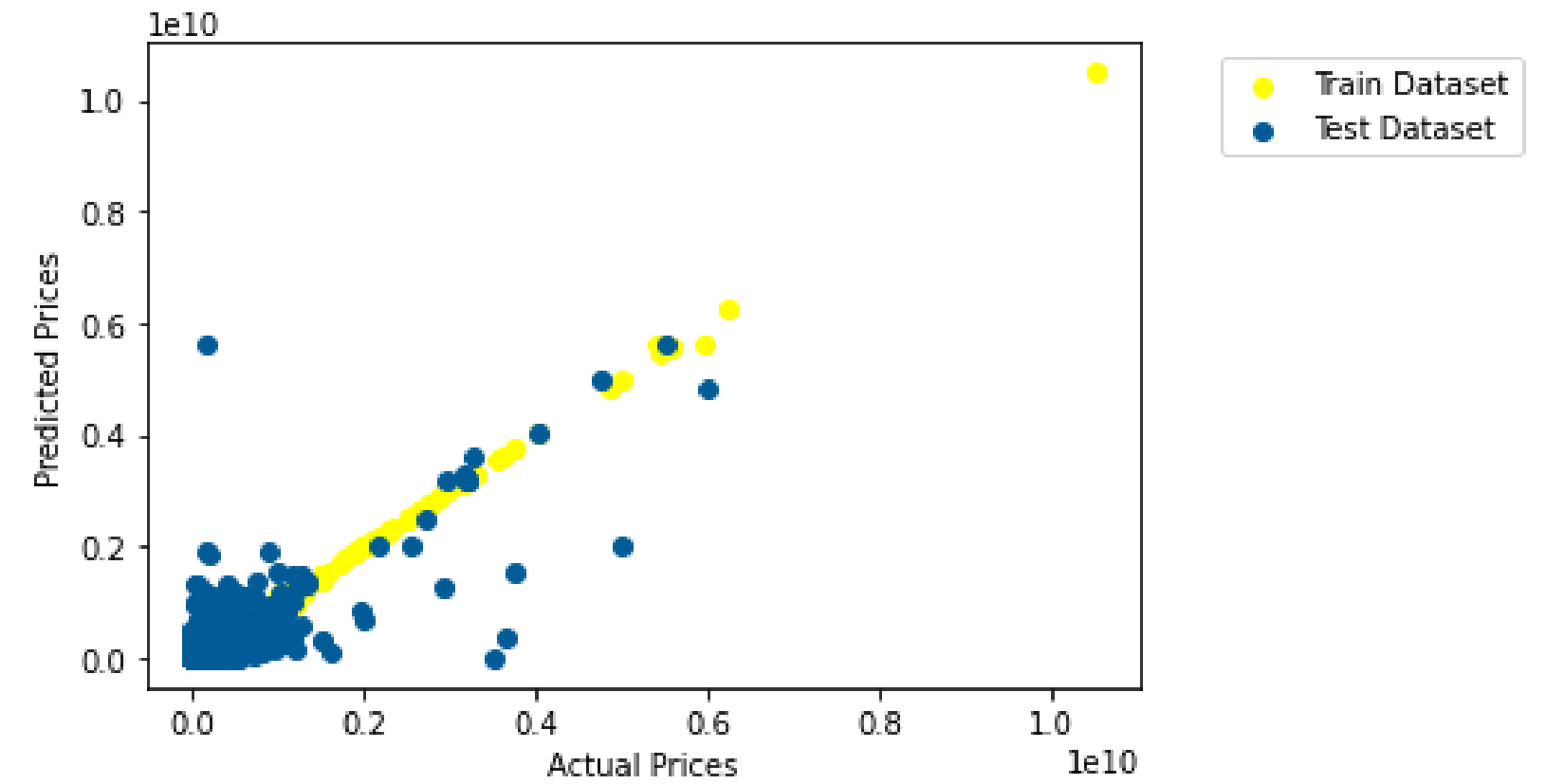


SQUARED ERROR



Accuracy = 72.2 %

FRIEDMAN MSE



Accuracy = 70.38 %

Thank you