Real-Estate Price Prediction

Predicting Property Prices in City of New-York

1 PROJECT SCORE

Scope of this project is to explore and analyze the property sales in city of New-York and examine the correlation between criminal activity in a particular location with the price of property sale. Predict the price of the property based on number of crime incidents in the in and around the area where property is located and other charaterstics of the property.

2 DATA UNDERSTANDING

Crime Data:

The data sets used in this study are extracted from "NYC Open Data" Arhives:

"NYPD Complaint Data Historic" :- https://data.cityofnewyork.us/Public-Safety/NYPD-Complaint-Data-Historic/qgea-i56i which includes all valid felony, misdemeanor and violoation crimes reported to the NewYork City Police Department (NYPD).

Column	Description
CMPLNT_NUM	Randomly generated persistent ID for each complaint
CMPLNT_FR_DT	Exact date of occurrence for the reported event (or starting date of occurrence, if CMPLNT_TO_DT exists)
CMPLNT_FR_TM	Exact time of occurrence for the reported event (or starting time of occurrence, if CMPLNT_TO_TM exists)
CMPLNT_TO_DT	Ending date of occurrence for the reported event, if exact time of occurrence is unknown
CMPLNT_TO_TM	Ending time of occurrence for the reported event, if exact time of occurrence is unknown
RPT_DT	Date event was reported to police
KY_CD	Three digit offense classification code
OFNS_DESC	Description of offense corresponding with key code
PD_CD	Three digit internal classification code (more granular than Key Code)
PD_DESC	Description of internal classification corresponding with PD code (more granular than Offense Description)
CRM_ATPT_CPTD_CD	Indicator of whether crime was successfully completed or attempted, but failed or was interrupted prematurely
LAW_CAT_CD	Level of offense: felony, misdemeanor, violation
JURIS_DESC	Jurisdiction responsible for incident. Either internal, like Police, Transit, and Housing; or external, like Correction, Port Authority, etc.
BORO_NM	The name of the borough in which the incident occurred
ADDR_PCT_CD	The precinct in which the incident occurred
LOC_OF_OCCUR_DESC	Specific location of occurrence in or around the premises; inside, opposite of, front of, rear of
PREM_TYP_DESC	Specific description of premises; grocery store, residence, street, etc.
PARKS_NM	Name of NYC park, playground or greenspace of occurrence, if applicable (state parks are not included)
HADEVELOPT	Name of NYCHA housing development of occurrence, if applicable
X_COORD_CD	X-coordinate for New York State Plane Coordinate System, Long Island Zone, NAD 83, units feet (FIPS 3104)
Y_COORD_CD	Y-coordinate for New York State Plane Coordinate System, Long Island Zone, NAD 83, units feet (FIPS 3104)
Latitude	Latitude coordinate for Global Coordinate System, WGS 1984, decimal degrees (EPSG 4326)
Longitude	Longitude coordinate for Global Coordinate System, WGS 1984, decimal degrees (EPSG 4326)

Table1: Attributes in Crime-Data

Sales-data:

"Annualized Rolling Sales Update" :- https://data.cityofnewyork.us/Housing-Development/Annualized-Rolling-Sales-Update/uzf5-f8n2 which includes Sales Prices of properties.

Column	Description
Borough	The name of the borough in which the property is located.
Neighborhood	Name of Neighborhood in which property is located.
Building Class Category	Category of the Building Class Eg: One Family Homes
Tax Class at Present	one of four tax classes Class 1: Includes most residential property of up to three units (such as one-, two-, and three-family homes and small stores or offices with one or two attached apartments), vacant land that is zoned for residential use, and most condominiums that are not more than three stories. Class 2: Includes all other property that is primarily residential, such as cooperatives and condominiums. Class 3: Includes property with equipment owned by a gas, telephone or electric company. Class 4: Includes all other properties not included in class 1,2, and 3, such as offices, factories, warehouses, garage buildings, etc.
Block	A Tax Block is a sub-division of the borough on which real properties are located.
Lot	A Tax Lot is a subdivision of a Tax Block and represents the property unique location.
Easement	An easement is a right, such as a right of way, which allows an entity to make limited use of another's real property
Building Class at Present	The Building Classification is used to describe a property's constructive use. The first position of the Building Class is a letter that is used to describe a general class of properties (for example "A" signifies one-family homes, "O" signifies office buildings. "R" signifies condominiums). The second position, a number, adds more specific information about the property's use or construction style (using our previous examples "A0" is a Cape Cod style one family home, "O4" is a tower type office building and "R5" is a commercial condominium unit). The term Building Class used by the Department of Finance is interchangeable with the term Building Code used by the Department of Buildings.
Address	Street Address of the property
Zip Code	The property's postal code
Residential Units	The number of residential units at the listed property.
Commercial Units	The number of commercial units at the listed property.
Total Units	The total number of units at the listed property.
Land Square Feet	The land area of the property listed in square feet
Gross Square Feet	The total area of all the floors of a building as measured from the exterior surfaces of the outside walls of the building, including the land area and space within any building or structure on the property.
Year Built	Year the structure on the property was built.
Building Class at Time of Sal	Building Class at Time of Sale
Sale Price	Price paid for the property.
Sale Date	Date the property sold.

Table2: Attributes in Sale-Data

3 DATA CLEANING & PREPARATION

These data sets have a lot of missing values, inconsistent date-time formats. So, a great deal of time was spent in cleaning the data sets.

Sale-data is coded with zip-code as a location attribute and Crime-data does not have zip-code information but has lattitude and longitude data for each reported incident. To join the crime-data with sales data appropriately, we had to use third-party GeoCoding APIs which are

expensive and need high computational times. Open-source solutions frequently timeout and often impose daily limits on number of lat-long pairs can be geo-coded.
Python code for following analysis can be found @ <insert link>

3.1 IMPORT NECESSARY LIBRARIES IN IPHYTHON NOTEBOOK

Necessary python libraries for analysis have been imported into ipython notebook.
Eg: datetime, csv, glob, zipfile, matplotlib, pandas, numpy, geocoder, scipy and sklearn.

3.2 READ IN AND EXAMINE DATA SET; CHECK FOR MISSING VALUES

File paths for Sales data was loaded into into a list using "glob.glob" and all of Sales-data was read and appended into single dataframe using "pd.read_excel".
Crime-data was readily available in csv which could read with pd.read_csv into a dataframe in ipython notebook.

Missing values and formatting issues in data have been correted or eliminated as appropriate.

3.3 REVERSE-GEOCODING THE CRIME DATA WITH ZIP-CODES

GeoCoding is to extract lattitude-logitude pair when we have physical address wile Reverse-GeoCoding is to extract a physical address when we have lattitude-logitude information. In our case, we used python - "geocoder" library to access open-souce GeoCoding APIs "Google geocoder" and "Open Street Maps" to extract zip-codes for each lat-long pair in crime-data. As these are free services, they have dailylimit of 10000 geo coding requests. Though, our sample of sales data is not more than 10000, we do not know wich of the crime records match with the zip-codes on sales-data sample until we extract the zip-codes for all crime-data which has around 1Million records. This geo-coding step took 3 weeks time.

3.4 CALCUATING CRIME INCIDENTS FOR SALE RECORDS

Next step is to calculate the number of crime incidents reported (in past 6 months,1,2,3,4,5 years) for zip-codes in each record in sales-data as of sale-date.

Written custom python functions for calculating below values for each record in Sale-data:
"past_crime_count", "past6M_crime_count", "past1Y_crime_count", "past2Y_crime_count", "past3Y_crime_count", "past4Y_crime_count", "past5Y_crime_count" and "past_MISDEMEANOR_count", "past_FELONY_count", "past_VIOLATION_count" ranging from past 6 Months to 5 Years, all-past counts.

This is very time-consuming task as we have to make independent function calls for each record. Each function call for all 8000 sample records takes from 8-10 hours.

4 EXPLORATORY DATA ANALYSIS

Once we have cleaned sampled data, We started our analysis with an assumption that property values may be inversely proportional to number of criminal incidents in a particular location.

Sales-Price, ranges from "zero" through 1B USD. These low price sales ($0 - $100K USD) could be result of family transfers, however there is no attribute that exlains if the sale is an off-market transfer transactions.

4.1 DISTRIBUTION OF SALES PRICE:

```
count    8.000000e+03
mean     2.652798e+06
std      3.595869e+07
min      1.000000e+00
25%      3.250000e+05
50%      5.450000e+05
75%      8.500000e+05
max      1.791829e+09
```

Sales-Price follows an exponential distribution. Please see the histograms in the next page.
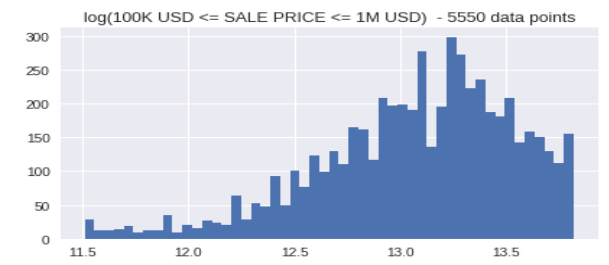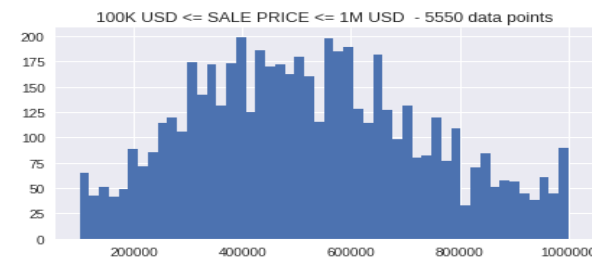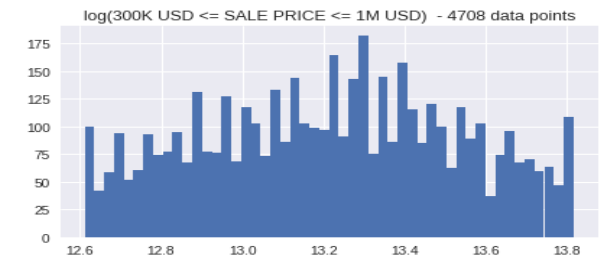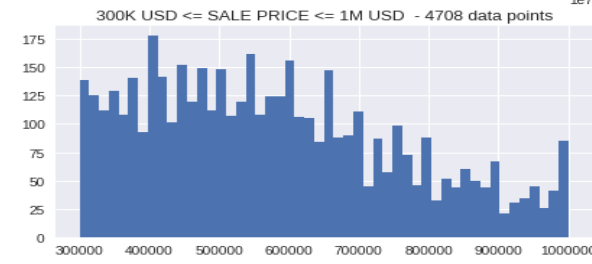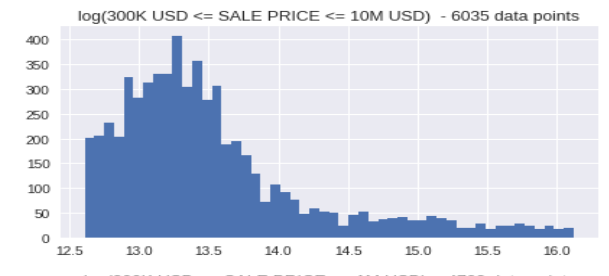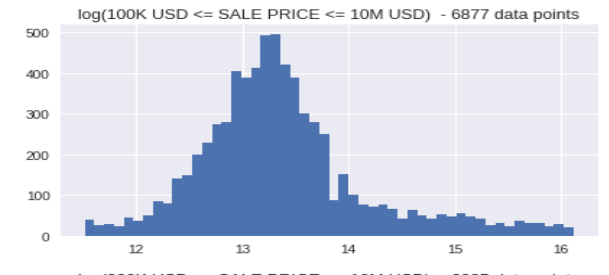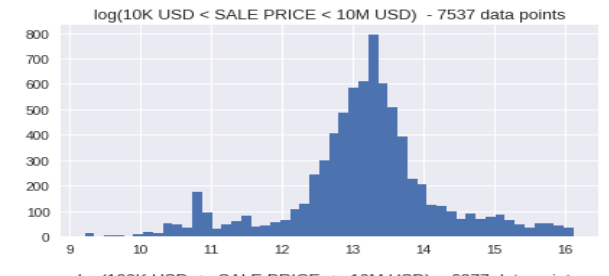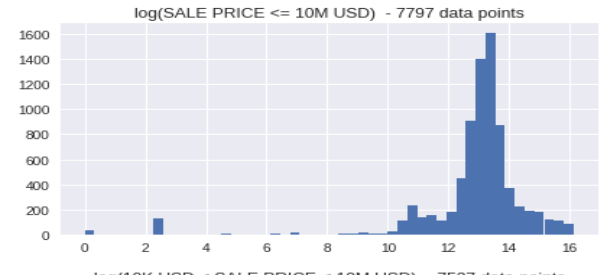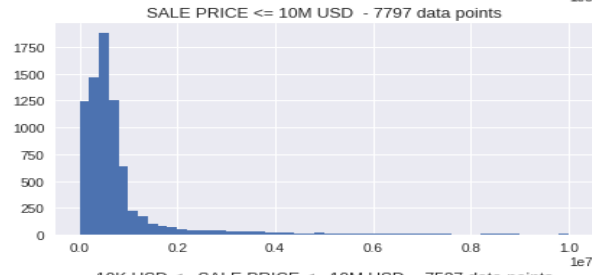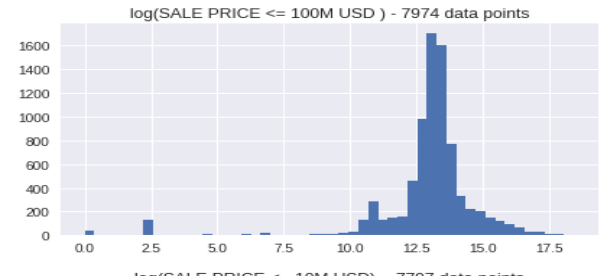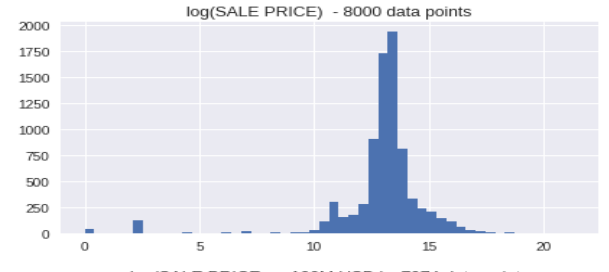
4.2 SCATTER PLOTTS:
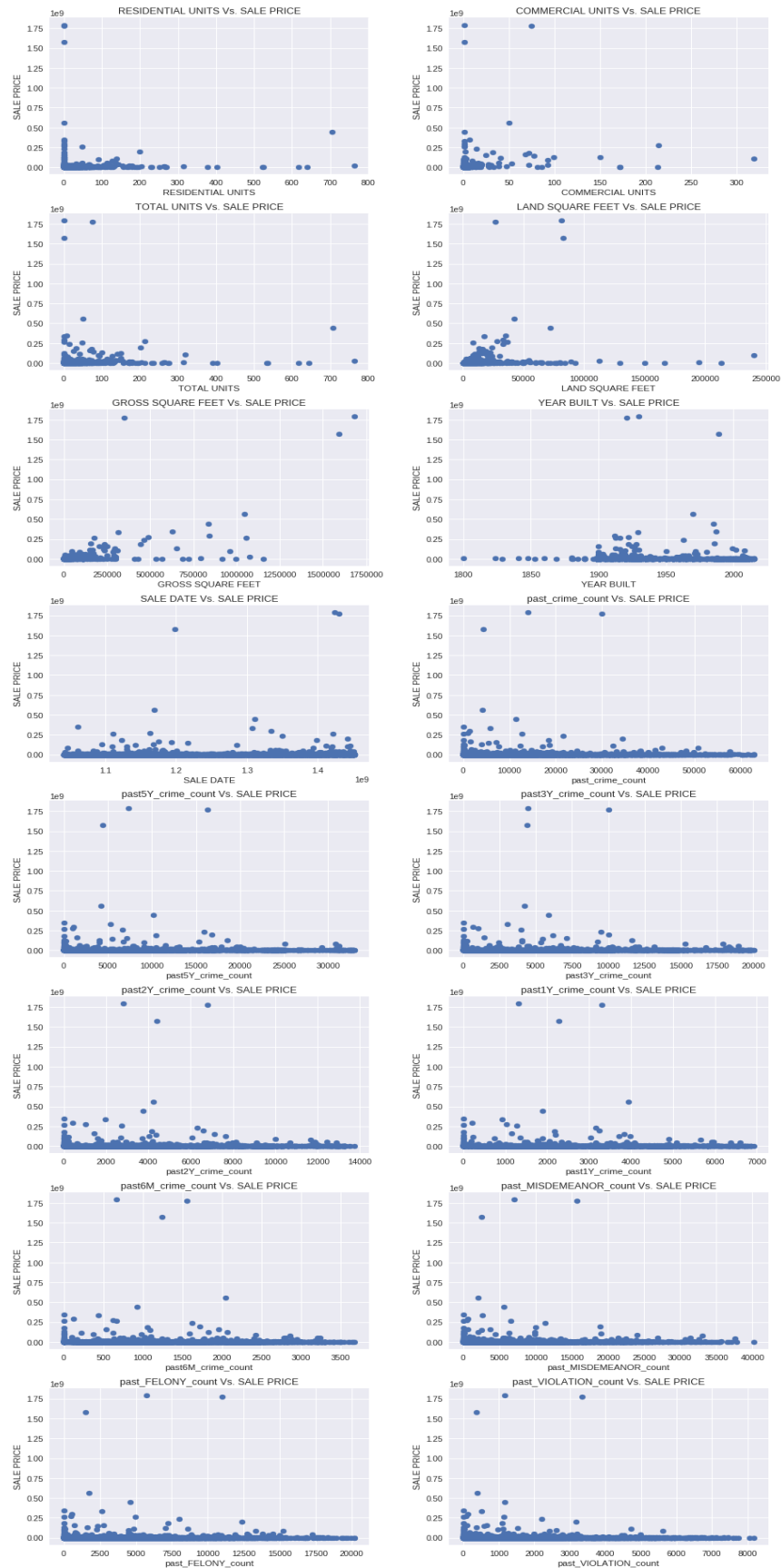
4.3 CORRELATION:

For further analysis, we have considered data with sale-price ranging from 100K USD to 10M USD. Most of the attributes are categorical in nature. So, created dummy variables for further analysis and evaluation.

Surprisingly, the crime_counts are in positive correlation with Sales-Price as per below correlation table.

feature	corr_coef	p_value
past_FELONY_count	0.0970	0.00000
past_MISDEMEANOR_count	0.0905	0.00000
past_crime_count	0.0889	0.00000
past5Y_crime_count	0.0695	0.00000
past3Y_crime_count	0.0654	0.00000
past2Y_crime_count	0.0652	0.00000
past1Y_crime_count	0.0592	0.00000
past_VIOLATION_count	0.0575	0.00000
past6M_crime_count	0.0547	0.00000

Table3: Correlation Table Crime-Data Vs. Sale-Data.
Complete table can be found in Appendix-A.

5 MODELING & EVALUATION

We have started our modeling with a random sample of 8000 data points from original data. We ran multiple models and realized that none of the models are peforming well due to high bias in SALES price. There are many "zero" in SALE-PRICE which represent that transaction is a simple property transfer within family members. To eliminate this bias issue and improved the models, we have removed all data between $0 to $100,000 from sample with an assumption that a house value cannot be less than $100,00.

With new data, We have started our modeling again with linear-regressor. Linear regressor has produced very poor results with a negative R-Square value. A Negative R-Square indicates that variance of predicted values from actual values is much higher than that of variance in actual values from actual mean.

Then we tried Ridge-Regression and Lasso Regression which can supress curse of dimensionality inherent to our data with 470+ features. These 2 models are similar to Linear-Regression but they impose panalty terms in regression equation to deal with curse of Dimensionality. Lasso Regression, in addition will help in choosing right features. Though these models have improved prediction accuracy, they still have low R-square(0.44) and high Root-Mean-Squared Errors > 990000.

Then we tried ensemble methods Random-Forest Regressor and Gradient Boost Regressor. Random-Forest constructs multiple decission-trees by randomly selecting a subset of features and a subset of records from given training data. These random samples and random features for each decision-tree are chosen using boot-strap method. Node-Values are determined by weighted average while predicting continuos data. Random-Forest has given best results with R-Square 0.65 and RMSE = $788955.

We also tried running Grddient Boost – Regressor. Gradient-boost starts with single tree. After validating results, algorithm will assign more weights to miscalssified/high variance records and runs the model again. This cycle repeats until errror is minimized. Gradient Boost has
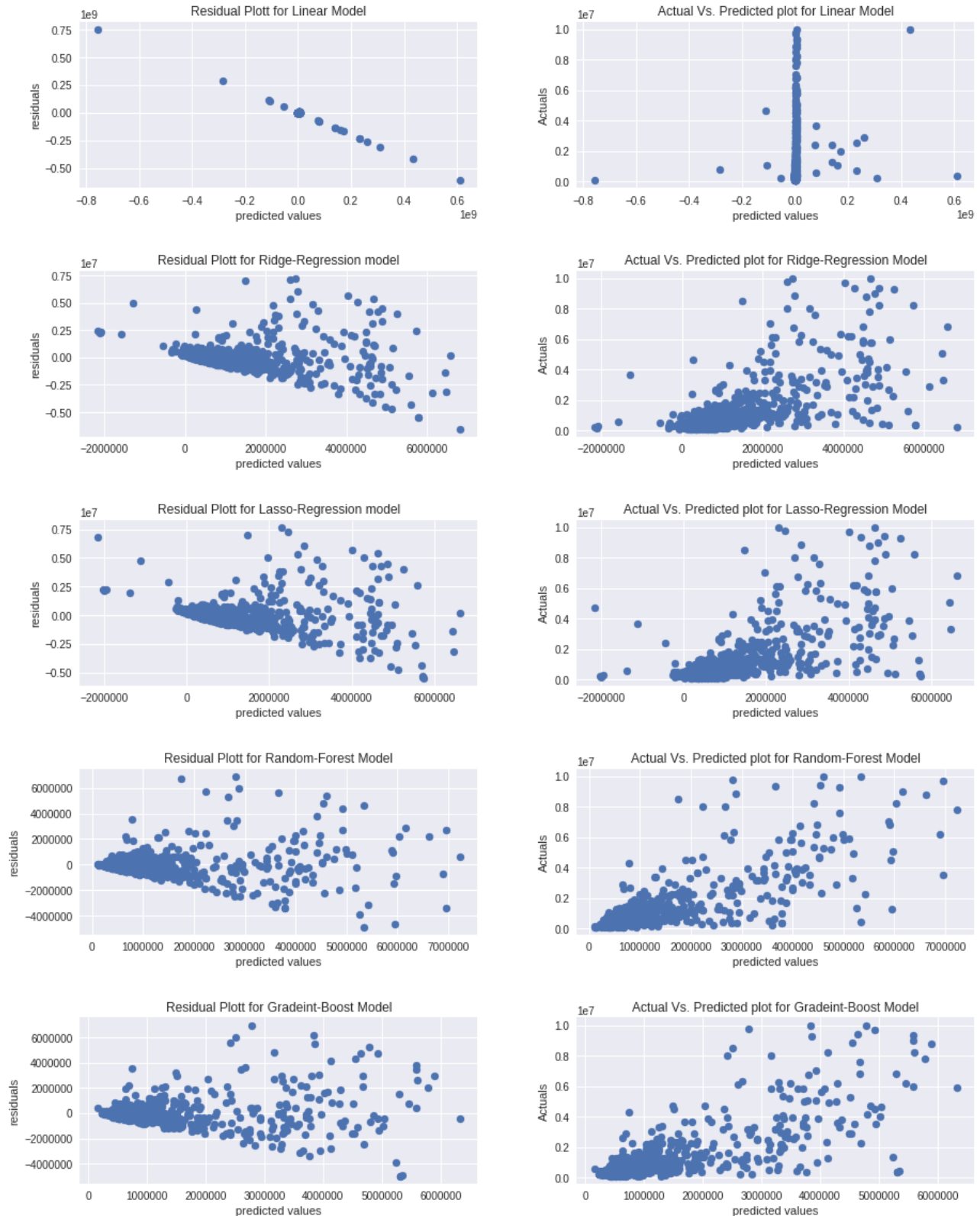
10 PYTHON- CODE

Ipython notebook:
https://github.com/yerraeee/mY_SpringBoard/blob/master/Capstone1_House_Price_Prediction/mY_CapStone1_HousePrices%20with%20CrimeData-V6.ipynb

Python Code:
https://github.com/yerraeee/mY_SpringBoard/blob/master/Capstone1_House_Price_Prediction/House_Price_Prediction.py

APPENDICES

APPENDIX- A: CORRELATION TABLE

feature	corr_coef	p_value
0 TAX CLASS AT PRESENT_2	0.45	0.0000
1 BOROUGH	-0.35	0.0000
2 TAX CLASS AT PRESENT_1	-0.35	0.0000
BUILDING CLASS CATEGORY_08 RENTALS - ELEVATOR		
3 APARTMENTS	0.35	0.0000
4 TAX CLASS AT TIME OF SALE	0.30	0.0000
5 ZIP CODE	-0.29	0.0000
6 BUILDING CLASS AT TIME OF SALE_D1	0.29	0.0000
7 BUILDING CLASS AT PRESENT_D1	0.27	0.0000
8 NEIGHBORHOOD_GREENWICH VILLAGE-WEST	0.24	0.0000
9 TOTAL UNITS	0.24	0.0000
10 RESIDENTIAL UNITS	0.24	0.0000
11 LAND SQUARE FEET	0.23	0.0000
12 BUILDING CLASS AT TIME OF SALE_C7	0.23	0.0000
13 BUILDING CLASS AT PRESENT_C7	0.22	0.0000
14 BLOCK	-0.20	0.0000
15 NEIGHBORHOOD_UPPER EAST SIDE (79-96)	0.19	0.0000
16 NEIGHBORHOOD_UPPER EAST SIDE (59-79)	0.19	0.0000
17 BUILDING CLASS AT TIME OF SALE_C1	0.19	0.0000

18	BUILDING CLASS AT PRESENT_C1	0.19	0.0000
	BUILDING CLASS CATEGORY_07 RENTALS - WALKUP		
19	APARTMENTS	0.18	0.0000
20	BUILDING CLASS CATEGORY_02 TWO FAMILY HOMES	-0.18	0.0000
21	GROSS SQUARE FEET	0.17	0.0000
22	SALE DATE	0.16	0.0000
23	TAX CLASS AT PRESENT_4	0.15	0.0000
24	BUILDING CLASS AT PRESENT_A4	0.14	0.0000
25	YEAR BUILT	-0.13	0.0000
26	BUILDING CLASS AT TIME OF SALE_D3	0.13	0.0000
27	BUILDING CLASS AT TIME OF SALE_A5	-0.12	0.0000
28	NEIGHBORHOOD_WASHINGTON HEIGHTS UPPER	0.12	0.0000
29	BUILDING CLASS AT PRESENT_C0	-0.12	0.0000
30	BUILDING CLASS AT PRESENT_A5	-0.12	0.0000
31	NEIGHBORHOOD_UPPER WEST SIDE (79-96)	0.12	0.0000
32	BUILDING CLASS AT TIME OF SALE_D7	0.12	0.0000
33	NEIGHBORHOOD_EAST VILLAGE	0.11	0.0000
34	BUILDING CLASS AT PRESENT_C4	0.11	0.0000
35	BUILDING CLASS AT TIME OF SALE_C4	0.11	0.0000
36	BUILDING CLASS CATEGORY_23 LOFT BUILDINGS	0.11	0.0000
37	BUILDING CLASS AT PRESENT_B1	-0.11	0.0000
38	BUILDING CLASS AT PRESENT_D3	0.11	0.0000
39	BUILDING CLASS AT TIME OF SALE_D9	0.10	0.0000
40	NEIGHBORHOOD_GRAMERCY	0.10	0.0000
41	BUILDING CLASS AT TIME OF SALE_C0	-0.10	0.0000
42	BUILDING CLASS CATEGORY_03 THREE FAMILY HOMES	-0.10	0.0000
43	BUILDING CLASS AT TIME OF SALE_B1	-0.10	0.0000
44	BUILDING CLASS AT PRESENT_B2	-0.10	0.0000
45	past_FELONY_count	0.10	0.0000
46	BUILDING CLASS AT TIME OF SALE_B2	-0.10	0.0000
47	BUILDING CLASS AT PRESENT_D7	0.10	0.0000
48	NEIGHBORHOOD_FASHION	0.09	0.0000
49	BUILDING CLASS CATEGORY_01 ONE FAMILY HOMES	-0.09	0.0000
50	BUILDING CLASS AT PRESENT_D9	0.09	0.0000
51	TAX CLASS AT PRESENT_2B	0.09	0.0000
52	past_MISDEMEANOR_count	0.09	0.0000
53	past_crime_count	0.09	0.0000
54	BUILDING CLASS AT TIME OF SALE_A4	0.09	0.0000
55	NEIGHBORHOOD_CHINATOWN	0.09	0.0000
56	BUILDING CLASS CATEGORY_22 STORE BUILDINGS	0.09	0.0000
57	NEIGHBORHOOD_UPPER WEST SIDE (59-79)	0.09	0.0000
58	NEIGHBORHOOD_HARLEM-CENTRAL	0.09	0.0000
59	NEIGHBORHOOD_MURRAY HILL	0.09	0.0000

60 NEIGHBORHOOD_UPPER WEST SIDE (96-116)	0.09	0.0000
61 NEIGHBORHOOD_GREENWICH VILLAGE-CENTRAL	0.08	0.0000
62 NEIGHBORHOOD_WASHINGTON HEIGHTS LOWER	0.08	0.0000
63 BUILDING CLASS CATEGORY_21 OFFICE BUILDINGS	0.08	0.0000
64 NEIGHBORHOOD_BUSHWICK	-0.08	0.0000
65 NEIGHBORHOOD_LOWER EAST SIDE	0.08	0.0000
66 NEIGHBORHOOD_CIVIC CENTER	0.08	0.0000
67 BUILDING CLASS CATEGORY_27 FACTORIES	0.08	0.0000
68 NEIGHBORHOOD_MIDTOWN CBD	0.08	0.0000
69 BUILDING CLASS AT TIME OF SALE_E7	0.08	0.0000
70 BUILDING CLASS AT TIME OF SALE_L9	0.08	0.0000
71 BUILDING CLASS CATEGORY_33 EDUCATIONAL FACILITIES	0.08	0.0000
72 BUILDING CLASS AT TIME OF SALE_L8	0.08	0.0000
73 BUILDING CLASS CATEGORY_30 WAREHOUSES	0.08	0.0000
74 NEIGHBORHOOD_BROOKLYN HEIGHTS	0.08	0.0000
75 BUILDING CLASS AT TIME OF SALE_K9	0.08	0.0000
76 NEIGHBORHOOD_INWOOD	0.07	0.0000
77 BUILDING CLASS AT PRESENT_E7	0.07	0.0000
78 NEIGHBORHOOD_MANHATTAN VALLEY	0.07	0.0000
79 BUILDING CLASS AT TIME OF SALE_W1	0.07	0.0000
80 BUILDING CLASS AT PRESENT_K9	0.07	0.0000
81 past5Y_crime_count	0.07	0.0000
82 BUILDING CLASS AT PRESENT_L8	0.07	0.0000
83 NEIGHBORHOOD_MIDTOWN EAST	0.07	0.0000
84 NEIGHBORHOOD_CLINTON	0.07	0.0000
85 NEIGHBORHOOD_BEDFORD STUYVESANT	-0.07	0.0000
86 BUILDING CLASS AT PRESENT_W2	0.07	0.0000
87 BUILDING CLASS AT TIME OF SALE_W2	0.07	0.0000
88 NEIGHBORHOOD_SOHO	0.07	0.0000
89 past2Y_crime_count	0.07	0.0000
90 past3Y_crime_count	0.07	0.0000
91 NEIGHBORHOOD_FLATIRON	0.07	0.0000
92 NEIGHBORHOOD_WILLIAMSBURG-NORTH	0.07	0.0000
93 BUILDING CLASS AT TIME OF SALE_C5	0.06	0.0000
94 BUILDING CLASS AT PRESENT_F1	0.06	0.0000
95 NEIGHBORHOOD_OCEAN HILL	-0.06	0.0000
96 past1Y_crime_count	0.06	0.0000
97 BUILDING CLASS AT PRESENT_M2	0.06	0.0000
98 BUILDING CLASS AT TIME OF SALE_M2	0.06	0.0000
99 past_VIOLATION_count	0.06	0.0000
100 BUILDING CLASS AT PRESENT_C5	0.06	0.0000
101 BUILDING CLASS AT TIME OF SALE_O7	0.06	0.0000
102 NEIGHBORHOOD_COBBLE HILL	0.06	0.0000
103 NEIGHBORHOOD_EAST NEW YORK	-0.06	0.0000

104	NEIGHBORHOOD_FINANCIAL	0.06	0.0000
105	past6M_crime_count	0.06	0.0000
106	BUILDING CLASS AT TIME OF SALE_H9	0.06	0.0000
107	NEIGHBORHOOD_PARK SLOPE	0.06	0.0000
108	BUILDING CLASS AT PRESENT_L9	0.05	0.0000
109	BUILDING CLASS AT TIME OF SALE_O9	0.05	0.0000
110	BUILDING CLASS AT TIME OF SALE_J9	0.05	0.0000
111	NEIGHBORHOOD_KIPS BAY	0.05	0.0000
112	BUILDING CLASS AT PRESENT_B3	-0.05	0.0000
113	BUILDING CLASS AT PRESENT_J5	0.05	0.0000
114	BUILDING CLASS AT TIME OF SALE_J5	0.05	0.0000
115	NEIGHBORHOOD_ARDEN HEIGHTS	-0.05	0.0000
116	BUILDING CLASS CATEGORY_14 RENTALS - 4-10 UNIT	0.05	0.0000
117	BUILDING CLASS AT TIME OF SALE_F9	0.05	0.0000
118	BUILDING CLASS AT PRESENT_O5	0.05	0.0000
119	BUILDING CLASS AT PRESENT_K2	0.05	0.0000
120	NEIGHBORHOOD_LONG ISLAND CITY	0.05	0.0001
121	NEIGHBORHOOD_DOWNTOWN-METROTECH	0.05	0.0001
122	NEIGHBORHOOD_CHELSEA	0.05	0.0001
123	BUILDING CLASS AT TIME OF SALE_B3	-0.05	0.0001
124	BUILDING CLASS CATEGORY_34 THEATRES	0.05	0.0001
125	BUILDING CLASS AT PRESENT_O9	0.05	0.0001
126	BUILDING CLASS AT TIME OF SALE_F4	0.05	0.0001
127	BUILDING CLASS AT TIME OF SALE_B9	-0.05	0.0001
128	BUILDING CLASS AT TIME OF SALE_E1	0.05	0.0001
129	BUILDING CLASS AT TIME OF SALE_O5	0.05	0.0001
130	COMMERCIAL UNITS	0.05	0.0001
131	BUILDING CLASS AT PRESENT_O7	0.05	0.0001
132	BUILDING CLASS AT PRESENT_A7	0.05	0.0001
133	BUILDING CLASS AT TIME OF SALE_A7	0.05	0.0001
134	BUILDING CLASS AT TIME OF SALE_K2	0.05	0.0002
135	NEIGHBORHOOD_DOWNTOWN-FULTON MALL	0.05	0.0002
136	BUILDING CLASS AT PRESENT_B9	-0.05	0.0002
137	NEIGHBORHOOD_CYPRESS HILLS	-0.04	0.0003
138	BUILDING CLASS AT PRESENT_D8	0.04	0.0003
139	NEIGHBORHOOD_BEDFORD PARK/NORWOOD	0.04	0.0003
140	NEIGHBORHOOD_FORDHAM	0.04	0.0004
141	NEIGHBORHOOD_CARROLL GARDENS	0.04	0.0005
142	BUILDING CLASS AT PRESENT_C3	-0.04	0.0005
143	NEIGHBORHOOD_FLATBUSH-CENTRAL	0.04	0.0006
144	BUILDING CLASS AT TIME OF SALE_E9	0.04	0.0007
145	BUILDING CLASS AT TIME OF SALE_S9	0.04	0.0008
146	BUILDING CLASS AT PRESENT_K1	0.04	0.0011
147	NEIGHBORHOOD_ALPHABET CITY	0.04	0.0012
148	BUILDING CLASS AT TIME OF SALE_C3	-0.04	0.0013
149	NEIGHBORHOOD_HARLEM-EAST	0.04	0.0013

150	NEIGHBORHOOD_CANARSIE	-0.04	0.0014
151	BUILDING CLASS AT PRESENT_F4	0.04	0.0016
152	BUILDING CLASS CATEGORY_38 ASYLUMS AND HOMES	0.04	0.0017
153	BUILDING CLASS AT TIME OF SALE_N9	0.04	0.0017
154	BUILDING CLASS AT PRESENT_N9	0.04	0.0018
155	BUILDING CLASS AT TIME OF SALE_K1	0.04	0.0022
156	NEIGHBORHOOD_BAYCHESTER	-0.04	0.0023
157	BUILDING CLASS AT PRESENT_H9	0.04	0.0025
158	BUILDING CLASS CATEGORY_05 TAX CLASS 1 VACANT LAND	-0.04	0.0029
159	NEIGHBORHOOD_TRIBECA	0.04	0.0031
160	NEIGHBORHOOD_RIDGEWOOD	-0.04	0.0032
161	BUILDING CLASS AT PRESENT_E9	0.04	0.0036
162	BUILDING CLASS AT TIME OF SALE_F1	0.04	0.0036
163	BUILDING CLASS AT TIME OF SALE_V0	-0.03	0.0041
164	BUILDING CLASS CATEGORY_25 LUXURY HOTELS	-0.03	0.0044
165	BUILDING CLASS AT TIME OF SALE_H2	-0.03	0.0044
166	NEIGHBORHOOD_FLATBUSH-NORTH	-0.03	0.0048
167	NEIGHBORHOOD_SOUTHBRIDGE	0.03	0.0056
168	BUILDING CLASS AT TIME OF SALE_A1	-0.03	0.0063
169	NEIGHBORHOOD_SOUTH JAMAICA	-0.03	0.0063
170	BUILDING CLASS AT PRESENT_E1	0.03	0.0070
171	BUILDING CLASS AT PRESENT_H2	-0.03	0.0071
172	NEIGHBORHOOD_RICHMOND HILL	-0.03	0.0089
173	BUILDING CLASS AT PRESENT_A1	-0.03	0.0110
174	NEIGHBORHOOD_FLATBUSH-EAST	-0.03	0.0119
175	BUILDING CLASS AT PRESENT_F9	0.03	0.0147
176	BUILDING CLASS AT PRESENT_S9	0.03	0.0151
177	NEIGHBORHOOD_MORRISANIA/LONGWOOD	-0.03	0.0154
178	NEIGHBORHOOD_GLENDALE	-0.03	0.0168
179	BUILDING CLASS AT PRESENT_S5	0.03	0.0179
180	BUILDING CLASS AT PRESENT_C2	-0.03	0.0185
181	NEIGHBORHOOD_SOUNDVIEW	-0.03	0.0188
182	NEIGHBORHOOD_ROCKAWAY PARK	0.03	0.0192
183	BUILDING CLASS AT TIME OF SALE_S2	-0.03	0.0206
184	BUILDING CLASS AT TIME OF SALE_G1	0.03	0.0212
185	NEIGHBORHOOD_FAR ROCKAWAY	-0.03	0.0218
186	NEIGHBORHOOD_OZONE PARK	-0.03	0.0219
187	NEIGHBORHOOD_MORNINGSIDE HEIGHTS	0.03	0.0231
188	BUILDING CLASS AT PRESENT_D6	0.03	0.0239
189	NEIGHBORHOOD_MARINERS HARBOR	-0.03	0.0304
190	BUILDING CLASS AT TIME OF SALE_F5	0.03	0.0337
191	NEIGHBORHOOD_GREAT KILLS	-0.03	0.0341
192	BUILDING CLASS AT PRESENT_F5	0.03	0.0346
193	NEIGHBORHOOD_GRAVESEND	-0.03	0.0355

194 TAX CLASS AT PRESENT_2A	-0.03	0.0356
195 NEIGHBORHOOD_MOUNT HOPE/MOUNT EDEN	0.03	0.0361
196 NEIGHBORHOOD_HOLLIS	-0.02	0.0395
197 NEIGHBORHOOD_PARKCHESTER	-0.02	0.0411
198 NEIGHBORHOOD_BRIARWOOD	0.02	0.0463
199 BUILDING CLASS AT TIME OF SALE_E3	0.02	0.0464
200 NEIGHBORHOOD_WOODHAVEN	-0.02	0.0496
201 NEIGHBORHOOD_MORRIS PARK/VAN NEST	-0.02	0.0555
202 NEIGHBORHOOD_NEW BRIGHTON	-0.02	0.0558
203 BUILDING CLASS AT TIME OF SALE_C2	-0.02	0.0566
204 NEIGHBORHOOD_ROSSVILLE	-0.02	0.0568
205 NEIGHBORHOOD_LITTLE ITALY	0.02	0.0573
206 NEIGHBORHOOD_TRAVIS	-0.02	0.0578
207 NEIGHBORHOOD_BOERUM HILL	0.02	0.0592
208 NEIGHBORHOOD_WILLIAMSBRIDGE	-0.02	0.0593
209 NEIGHBORHOOD_EAST ELMHURST	-0.02	0.0597
210 NEIGHBORHOOD_WESTCHESTER	-0.02	0.0621
211 NEIGHBORHOOD_MELROSE/CONCOURSE	-0.02	0.0624
212 NEIGHBORHOOD_NEW SPRINGVILLE	-0.02	0.0660
213 BUILDING CLASS AT TIME OF SALE_S3	0.02	0.0661
214 NEIGHBORHOOD_THROGS NECK	-0.02	0.0677
BUILDING CLASS CATEGORY_01 ONE FAMILY 215 DWELLINGS	-0.02	0.0682
216 BUILDING CLASS AT TIME OF SALE_K4	0.02	0.0693
217 BUILDING CLASS AT TIME OF SALE_D6	0.02	0.0698
218 NEIGHBORHOOD_HUNTS POINT	0.02	0.0746
219 NEIGHBORHOOD_QUEENS VILLAGE	-0.02	0.0766
220 NEIGHBORHOOD_ROSEBANK	-0.02	0.0770
221 NEIGHBORHOOD_SCHUYLERVILLE/PELHAM BAY	-0.02	0.0783
222 NEIGHBORHOOD_DOWNTOWN-FULTON FERRY	0.02	0.0833
223 BUILDING CLASS AT TIME OF SALE_A2	-0.02	0.0840
224 BUILDING CLASS CATEGORY_26 OTHER HOTELS	0.02	0.0880
225 NEIGHBORHOOD_VAN CORTLANDT PARK	0.02	0.0914
226 NEIGHBORHOOD_MARINE PARK	-0.02	0.0915
227 NEIGHBORHOOD_CONCORD	-0.02	0.0920
228 BUILDING CLASS AT TIME OF SALE_S5	0.02	0.0947
229 NEIGHBORHOOD_HARLEM-UPPER	0.02	0.0947
230 BUILDING CLASS AT PRESENT_O4	0.02	0.0954
231 BUILDING CLASS AT PRESENT_O6	0.02	0.0964
232 BUILDING CLASS AT TIME OF SALE_O6	0.02	0.0964
233 BUILDING CLASS AT TIME OF SALE_W9	0.02	0.0980
BUILDING CLASS CATEGORY_02 TWO FAMILY 234 DWELLINGS	-0.02	0.1000
235 NEIGHBORHOOD_WESTERLEIGH	-0.02	0.1015
BUILDING CLASS CATEGORY_03 THREE FAMILY 236 DWELLINGS	-0.02	0.1079

237 NEIGHBORHOOD_FLATLANDS		-0.02	0.1109
238 BUILDING CLASS AT PRESENT_S2		-0.02	0.1125
239 NEIGHBORHOOD_SOUTH OZONE PARK		-0.02	0.1128
240 BUILDING CLASS AT PRESENT_W3		0.02	0.1130
241 NEIGHBORHOOD_MIDDLE VILLAGE		-0.02	0.1160
242 BUILDING CLASS AT PRESENT_A3		0.02	0.1163
243 NEIGHBORHOOD_BROWNSVILLE		-0.02	0.1167
244 NEIGHBORHOOD_WYCKOFF HEIGHTS		-0.02	0.1179
245 NEIGHBORHOOD_CORONA		-0.02	0.1208
246 NEIGHBORHOOD_WILLIAMSBURG-SOUTH		0.02	0.1220
247 NEIGHBORHOOD_CROWN HEIGHTS		-0.02	0.1241
248 NEIGHBORHOOD_PORT RICHMOND		-0.02	0.1404
249 NEIGHBORHOOD_BATHGATE		-0.02	0.1413
250 BUILDING CLASS AT TIME OF SALE_C9		0.02	0.1423
251 NEIGHBORHOOD_OLD MILL BASIN		-0.02	0.1424
252 BUILDING CLASS AT PRESENT_K4		0.02	0.1455
253 NEIGHBORHOOD_CONCORD-FOX HILLS		-0.02	0.1455
254 BUILDING CLASS AT TIME OF SALE_O1		0.02	0.1475
255 NEIGHBORHOOD_FLUSHING-SOUTH		-0.02	0.1485
256 NEIGHBORHOOD_SUNSET PARK		-0.02	0.1501
257 BUILDING CLASS AT TIME OF SALE_M3		0.02	0.1539
258 NEIGHBORHOOD_CASTLE HILL/UNIONPORT		-0.02	0.1554
259 NEIGHBORHOOD_PROSPECT HEIGHTS		0.02	0.1562
260 NEIGHBORHOOD_STAPLETON		-0.02	0.1595
261 BUILDING CLASS AT TIME OF SALE_E4		0.02	0.1616
262 BUILDING CLASS AT PRESENT_D5		0.02	0.1667
263 BUILDING CLASS AT PRESENT_W9		0.02	0.1683
264 NEIGHBORHOOD_HARLEM-WEST		0.02	0.1701
265 NEIGHBORHOOD_DYKER HEIGHTS		-0.02	0.1705
266 NEIGHBORHOOD_GERRITSEN BEACH		0.02	0.1711
267 NEIGHBORHOOD_ROSSVILLE-CHARLESTON		-0.02	0.1740
268 NEIGHBORHOOD_ARVERNE		-0.02	0.1778
269 NEIGHBORHOOD_WAKEFIELD		-0.02	0.1811
270 NEIGHBORHOOD_COUNTRY CLUB		-0.02	0.1823
271 NEIGHBORHOOD_ELTINGVILLE		-0.02	0.1846
272 BUILDING CLASS AT PRESENT_A9		-0.02	0.1869
273 BUILDING CLASS CATEGORY_37 RELIGIOUS FACILITIES		0.02	0.1889
274 NEIGHBORHOOD_RIVERDALE		0.02	0.1892
275 NEIGHBORHOOD_FORT GREENE		0.02	0.1942
276 NEIGHBORHOOD_MADISON		-0.02	0.1955
277 BUILDING CLASS AT PRESENT_G1		0.02	0.1960
278 NEIGHBORHOOD_CROTONA PARK		-0.02	0.1970
279 NEIGHBORHOOD_ST. ALBANS		-0.02	0.1990
280 NEIGHBORHOOD_MIDWOOD		0.02	0.1994
281 NEIGHBORHOOD_STAPLETON-CLIFTON		-0.02	0.2003
282 NEIGHBORHOOD_WEST NEW BRIGHTON		-0.02	0.2020

283 NEIGHBORHOOD_BULLS HEAD	-0.02	0.2025
284 BUILDING CLASS AT PRESENT_G2	0.02	0.2029
285 NEIGHBORHOOD_MIDLAND BEACH	-0.02	0.2040
286 BUILDING CLASS AT TIME OF SALE_A9	-0.02	0.2051
287 NEIGHBORHOOD_WOODROW	-0.02	0.2133
288 TAX CLASS AT PRESENT_2C	0.01	0.2163
289 BUILDING CLASS AT PRESENT_S3	0.01	0.2208
290 NEIGHBORHOOD_TOTTENVILLE	-0.01	0.2233
291 NEIGHBORHOOD_GRASMERE	-0.01	0.2266
292 NEIGHBORHOOD_SO. JAMAICA-BAISLEY PARK	-0.01	0.2297
293 NEIGHBORHOOD_SPRINGFIELD GARDENS	0.01	0.2298
294 NEIGHBORHOOD_PRINCES BAY	-0.01	0.2317
295 NEIGHBORHOOD_BRIGHTON BEACH	0.01	0.2336
296 BUILDING CLASS AT PRESENT_I4	0.01	0.2403
297 BUILDING CLASS AT TIME OF SALE_I4	0.01	0.2403
298 NEIGHBORHOOD_SOUTH BEACH	-0.01	0.2423
299 NEIGHBORHOOD_ANNADALE	-0.01	0.2475
300 NEIGHBORHOOD_KENSINGTON	0.01	0.2475
301 NEIGHBORHOOD_MASPETH	-0.01	0.2477
302 NEIGHBORHOOD_COLLEGE POINT	-0.01	0.2609
303 BUILDING CLASS AT TIME OF SALE_S4	0.01	0.2624
304 NEIGHBORHOOD_HAMMELS	-0.01	0.2647
305 BUILDING CLASS AT TIME OF SALE_V1	-0.01	0.2654
306 BUILDING CLASS CATEGORY_06 TAX CLASS 1 - OTHER	-0.01	0.2669
307 BUILDING CLASS AT TIME OF SALE_G0	-0.01	0.2669
308 BUILDING CLASS CATEGORY_13 CONDOS - ELEVATOR APARTMENTS	0.01	0.2717
309 BUILDING CLASS AT PRESENT_RR	0.01	0.2717
310 BUILDING CLASS AT TIME OF SALE_R4	0.01	0.2717
311 NEIGHBORHOOD_WILLIAMSBURG-EAST	0.01	0.2725
312 NEIGHBORHOOD_CONEY ISLAND	-0.01	0.2797
313 NEIGHBORHOOD_BENSONHURST	-0.01	0.2805
314 BUILDING CLASS CATEGORY_31 COMMERCIAL VACANT LAND	-0.01	0.2839
315 NEIGHBORHOOD_MANOR HEIGHTS	-0.01	0.2869
316 NEIGHBORHOOD_JAMAICA	-0.01	0.2940
317 NEIGHBORHOOD_KINGSBRIDGE/JEROME PARK	0.01	0.2958
318 NEIGHBORHOOD_TOMPKINSVILLE	-0.01	0.2972
319 NEIGHBORHOOD_SPRING CREEK	-0.01	0.3173
320 NEIGHBORHOOD_ASTORIA	-0.01	0.3184
321 NEIGHBORHOOD_BERGEN BEACH	-0.01	0.3193
322 NEIGHBORHOOD_SHEEPSHEAD BAY	-0.01	0.3201
323 BUILDING CLASS AT PRESENT_A2	-0.01	0.3225
324 NEIGHBORHOOD_PLEASANT PLAINS	-0.01	0.3239
325 NEIGHBORHOOD_PARK SLOPE SOUTH	0.01	0.3424
326 NEIGHBORHOOD_ROSEDALE	-0.01	0.3430

327	BUILDING CLASS CATEGORY_41 TAX CLASS 4 - OTHER	-0.01	0.3490
328	BUILDING CLASS AT TIME OF SALE_Z9	-0.01	0.3490
329	NEIGHBORHOOD_WOODSIDE	-0.01	0.3490
330	BUILDING CLASS AT PRESENT_S4	0.01	0.3570
331	NEIGHBORHOOD_MILL BASIN	-0.01	0.3573
332	NEIGHBORHOOD_BAY RIDGE	-0.01	0.3696
333	BUILDING CLASS AT TIME OF SALE_D5	0.01	0.3715
334	NEIGHBORHOOD_FOREST HILLS	0.01	0.3755
335	NEIGHBORHOOD_NEW DORP-BEACH	-0.01	0.3765
336	NEIGHBORHOOD_CASTLETON CORNERS	-0.01	0.3932
337	NEIGHBORHOOD_DONGAN HILLS	0.01	0.3950
338	NEIGHBORHOOD_GRYMES HILL	-0.01	0.3990
339	NEIGHBORHOOD_BELMONT	-0.01	0.4006
340	BUILDING CLASS AT TIME OF SALE_H4	-0.01	0.4026
341	NEIGHBORHOOD_CAMBRIA HEIGHTS	-0.01	0.4055
342	BUILDING CLASS AT PRESENT_I5	0.01	0.4072
343	NEIGHBORHOOD_FLATBUSH-LEFFERTS GARDEN	0.01	0.4149
344	NEIGHBORHOOD_BATH BEACH	-0.01	0.4242
345	NEIGHBORHOOD_GOWANUS	0.01	0.4333
346	NEIGHBORHOOD_HOWARD BEACH	-0.01	0.4407
347	NEIGHBORHOOD_JACKSON HEIGHTS	-0.01	0.4421
348	BUILDING CLASS AT PRESENT_F2	0.01	0.4465
349	BUILDING CLASS AT TIME OF SALE_F2	0.01	0.4465
350	BUILDING CLASS AT PRESENT_O1	0.01	0.4465
351	NEIGHBORHOOD_BUSH TERMINAL	-0.01	0.4570
352	NEIGHBORHOOD_BOROUGH PARK	-0.01	0.4613
353	BUILDING CLASS AT PRESENT_E3	0.01	0.4642
354	NEIGHBORHOOD_AIRPORT LA GUARDIA	-0.01	0.4695
355	NEIGHBORHOOD_WILLOWBROOK	-0.01	0.4792
356	NEIGHBORHOOD_LAURELTON	-0.01	0.4800
357	BUILDING CLASS AT PRESENT_S0	-0.01	0.4864
358	BUILDING CLASS AT PRESENT_P9	0.01	0.4901
359	BUILDING CLASS AT TIME OF SALE_P9	0.01	0.4901
360	NEIGHBORHOOD_OAKWOOD-BEACH	-0.01	0.4936
361	NEIGHBORHOOD_JAMAICA HILLS	-0.01	0.4971
362	NEIGHBORHOOD_PELHAM PARKWAY SOUTH	-0.01	0.5104
363	BUILDING CLASS AT TIME OF SALE_G2	0.01	0.5120
364	BUILDING CLASS AT PRESENT_H4	-0.01	0.5179
365	BUILDING CLASS AT TIME OF SALE_V2	-0.01	0.5277
366	BUILDING CLASS AT PRESENT_M9	-0.01	0.5311
367	BUILDING CLASS AT TIME OF SALE_S1	-0.01	0.5536
368	BUILDING CLASS AT TIME OF SALE_S0	-0.01	0.5620
369	NEIGHBORHOOD_MOTT HAVEN/PORT MORRIS	-0.01	0.5640
370	BUILDING CLASS CATEGORY_29 COMMERCIAL GARAGES	0.01	0.5676
371	BUILDING CLASS AT TIME OF SALE_G9	-0.01	0.5680

372 BUILDING CLASS AT PRESENT_N2	-0.01	0.5699
BUILDING CLASS CATEGORY_32 HOSPITAL AND 373 HEALTH FACILITIES	0.01	0.5716
374 BUILDING CLASS AT TIME OF SALE_V3	-0.01	0.5728
375 BUILDING CLASS AT PRESENT_N3	-0.01	0.5756
376 NEIGHBORHOOD_NEW DORP	-0.01	0.5804
377 BUILDING CLASS AT PRESENT_I6	-0.01	0.5805
378 BUILDING CLASS AT TIME OF SALE_I6	-0.01	0.5805
379 BUILDING CLASS AT PRESENT_J1	-0.01	0.5824
380 BUILDING CLASS AT TIME OF SALE_J1	-0.01	0.5824
381 BUILDING CLASS AT PRESENT_H3	-0.01	0.5875
382 NEIGHBORHOOD_ELMHURST	0.01	0.5929
BUILDING CLASS CATEGORY_09 COOPS - WALKUP 383 APARTMENTS	0.01	0.6064
384 BUILDING CLASS AT PRESENT_C6	0.01	0.6064
385 BUILDING CLASS AT TIME OF SALE_C6	0.01	0.6064
386 NEIGHBORHOOD_GREAT KILLS-BAY TERRACE	-0.01	0.6064
387 NEIGHBORHOOD_FLORAL PARK	-0.01	0.6094
388 BUILDING CLASS AT TIME OF SALE_G7	-0.01	0.6098
389 NEIGHBORHOOD_FRESH MEADOWS	-0.01	0.6104
390 BUILDING CLASS AT TIME OF SALE_I5	0.01	0.6137
391 BUILDING CLASS AT PRESENT_N1	-0.01	0.6236
392 NEIGHBORHOOD_PELHAM PARKWAY NORTH	-0.01	0.6269
393 NEIGHBORHOOD_CLINTON HILL	0.01	0.6295
394 BUILDING CLASS AT TIME OF SALE_D4	-0.01	0.6306
395 NEIGHBORHOOD_RICHMONDTOWN	-0.01	0.6329
396 NEIGHBORHOOD_HIGHBRIDGE/MORRIS HEIGHTS	0.01	0.6330
397 BUILDING CLASS AT TIME OF SALE_G6	0.01	0.6373
398 NEIGHBORHOOD_REGO PARK	-0.01	0.6379
399 BUILDING CLASS AT PRESENT_D0	0.01	0.6448
400 BUILDING CLASS AT TIME OF SALE_D0	0.01	0.6448
401 BUILDING CLASS AT PRESENT_O8	-0.01	0.6479
402 BUILDING CLASS AT PRESENT_H8	-0.01	0.6599
403 NEIGHBORHOOD_HILLCREST	-0.01	0.6599
404 BUILDING CLASS AT PRESENT_P5	-0.01	0.6599
405 BUILDING CLASS AT TIME OF SALE_P5	-0.01	0.6599
406 NEIGHBORHOOD_FRESH KILLS	-0.01	0.6626
407 BUILDING CLASS AT TIME OF SALE_O4	-0.01	0.6783
408 NEIGHBORHOOD_BELLEROSE	0.00	0.6794
409 BUILDING CLASS AT TIME OF SALE_K7	0.00	0.6894
410 BUILDING CLASS AT PRESENT_O2	0.00	0.6926
BUILDING CLASS CATEGORY_10 COOPS - ELEVATOR 411 APARTMENTS	0.00	0.6976
412 NEIGHBORHOOD_NEW BRIGHTON-ST. GEORGE	0.00	0.6984
413 BUILDING CLASS AT PRESENT_J4	0.00	0.6984
414 BUILDING CLASS AT TIME OF SALE_J4	0.00	0.6984
415 NEIGHBORHOOD_PELHAM GARDENS	0.00	0.7002

416 BUILDING CLASS AT PRESENT_M1	0.00	0.7021
417 NEIGHBORHOOD_LIVINGSTON	0.00	0.7028
BUILDING CLASS CATEGORY_35 INDOOR PUBLIC AND		
418 CULTURAL FACILITIES	0.00	0.7057
419 BUILDING CLASS AT PRESENT_D4	0.00	0.7076
420 NEIGHBORHOOD_NAVY YARD	0.00	0.7131
421 BUILDING CLASS AT PRESENT_S1	0.00	0.7251
422 NEIGHBORHOOD_BELLE HARBOR	0.00	0.7292
423 BUILDING CLASS AT PRESENT_K7	0.00	0.7299
424 NEIGHBORHOOD_FLUSHING-NORTH	0.00	0.7390
425 NEIGHBORHOOD_WOODLAWN	0.00	0.7502
426 NEIGHBORHOOD_PORT IVORY	0.00	0.7504
427 BUILDING CLASS AT TIME OF SALE_O2	0.00	0.7528
428 NEIGHBORHOOD_WINDSOR TERRACE	0.00	0.7561
429 NEIGHBORHOOD_BAYSIDE	0.00	0.7576
430 NEIGHBORHOOD_BRONXDALE	0.00	0.7697
431 BUILDING CLASS CATEGORY_17 CONDOPS	0.00	0.7716
432 BUILDING CLASS AT PRESENT_R9	0.00	0.7716
433 BUILDING CLASS AT TIME OF SALE_R9	0.00	0.7716
434 NEIGHBORHOOD_HOLLISWOOD	0.00	0.7719
435 NEIGHBORHOOD_SUNNYSIDE	0.00	0.7830
436 BUILDING CLASS AT TIME OF SALE_A0	0.00	0.7834
437 LOT	0.00	0.7890
438 NEIGHBORHOOD_MANHATTAN BEACH	0.00	0.7893
439 BUILDING CLASS AT TIME OF SALE_M1	0.00	0.7984
440 NEIGHBORHOOD_GREENPOINT	0.00	0.8127
441 NEIGHBORHOOD_DONGAN HILLS-COLONY	0.00	0.8166
442 BUILDING CLASS AT TIME OF SALE_O8	0.00	0.8177
443 NEIGHBORHOOD_OAKLAND GARDENS	0.00	0.8265
444 NEIGHBORHOOD_KINGSBRIDGE HTS/UNIV HTS	0.00	0.8280
445 BUILDING CLASS AT PRESENT_I1	0.00	0.8299
446 BUILDING CLASS AT TIME OF SALE_I1	0.00	0.8299
447 BUILDING CLASS AT PRESENT_M4	0.00	0.8299
448 BUILDING CLASS AT TIME OF SALE_M4	0.00	0.8299
449 NEIGHBORHOOD_COBBLE HILL-WEST	0.00	0.8341
450 NEIGHBORHOOD_MIDTOWN WEST	0.00	0.8448
451 BUILDING CLASS AT TIME OF SALE_M9	0.00	0.8493
452 NEIGHBORHOOD_WILLIAMSBURG-CENTRAL	0.00	0.8692
453 NEIGHBORHOOD_OCEAN PARKWAY-SOUTH	0.00	0.8705
454 NEIGHBORHOOD_RED HOOK	0.00	0.8718
455 BUILDING CLASS AT TIME OF SALE_I9	0.00	0.8724
456 BUILDING CLASS AT PRESENT_G0	0.00	0.8842
457 NEIGHBORHOOD_OCEAN PARKWAY-NORTH	0.00	0.8863
458 BUILDING CLASS AT TIME OF SALE_A3	0.00	0.8948
459 NEIGHBORHOOD_KEW GARDENS	0.00	0.8983
460 NEIGHBORHOOD_SEAGATE	0.00	0.9008

461 NEIGHBORHOOD_LITTLE NECK	0.00	0.9020
462 BUILDING CLASS AT TIME OF SALE_H3	0.00	0.9038
463 NEIGHBORHOOD_JAMAICA ESTATES	0.00	0.9314
464 BUILDING CLASS AT TIME OF SALE_G5	0.00	0.9483
465 BUILDING CLASS AT PRESENT_Z9	0.00	0.9769
466 NEIGHBORHOOD_EAST TREMONT	0.00	0.9791
467 BUILDING CLASS AT PRESENT_G9	0.00	0.9844
468 BUILDING CLASS AT TIME OF SALE_V9	0.00	0.9906
469 NEIGHBORHOOD_WHITESTONE	0.00	0.9936
470 BUILDING CLASS AT PRESENT_W6	0.00	0.9962
471 BUILDING CLASS AT TIME OF SALE_W6	0.00	0.9962

APPENDIX- B: MODELING & EVALUATION-RESULTS

model_data shape for 100K USD <= SALE PRICE <= 10M USD: (6877, 477)

Linear Regresion results:

Model Performance on Training data
Mean-Squared Error: 595814053656.5806
Root-Mean-Squared Error: 771889.923277005
Rsquare: 0.6792300693862764

Predictions on Test Data:

	deviation%	residuals	y_pred_train	y_train
0	-26.521538	-1.152626e+05	5.498626e+05	434600.0
1	12.429187	8.762577e+04	6.173742e+05	705000.0
2	44.776289	6.089575e+05	7.510425e+05	1360000.0
3	-13.846654	-8.654159e+04	7.115416e+05	625000.0
4	0.001767	3.214864e+00	1.819758e+05	181979.0
5	27.938762	2.690503e+05	6.939497e+05	963000.0
6	-11.923327	-6.438596e+04	6.043860e+05	540000.0
7	-37.441196	-1.419021e+06	5.209021e+06	3790000.0
8	-47.961883	-1.270990e+06	3.920990e+06	2650000.0
9	35.213647	1.250084e+05	2.299916e+05	355000.0

Model Performance on Test data
Mean-Squared Error: 1165780012302866.0
Root-Mean-Squared Error: 34143520.79535539
Rsquare: -659.2990051845629

Predictions on Test Data:

	deviation%	residuals	y_pred_test	y_test
0	-8.087768	-3.569941e+04	4.770994e+05	441400.0
1	18.716681	2.058835e+05	8.941165e+05	1100000.0

2 20.631039 2.019779e+05 7.770221e+05 979000.0
3 15.297568 7.296940e+04 4.040306e+05 477000.0
4 -15.141165 -1.362705e+05 1.036270e+06 900000.0
5 -17.671929 -1.042644e+05 6.942644e+05 590000.0
6 -103.872306 -1.324372e+06 2.599372e+06 1275000.0
7 -12.912516 -6.843633e+04 5.984363e+05 530000.0
8 -160.103274 -6.083924e+05 9.883924e+05 380000.0
9 11.287104 9.876216e+04 7.762378e+05 875000.0

Ridge-Regression results:
best parameters: {'alpha': 0.1, 'normalize': 'True'}

Model Performance on Training data:
Mean-Squared Error: 596663954982.3667
Root-Mean-Squared Error: 772440.2598145482
Rsquare: 0.6787725058433761

Predictions on Training Data:
   deviation%   residuals y_pred_train   y_train
0 -28.022801 -1.217871e+05 5.563871e+05 434600.0
1 12.891153 9.088263e+04 6.141174e+05 705000.0
2 44.904912 6.107068e+05 7.492932e+05 1360000.0
3 -13.252986 -8.283116e+04 7.078312e+05 625000.0
4 72.253697 1.314866e+05 5.049245e+04 181979.0
5 27.546179 2.652697e+05 6.977303e+05 963000.0
6 -9.341394 -5.044353e+04 5.904435e+05 540000.0
7 -36.528105 -1.384415e+06 5.174415e+06 3790000.0
8 -46.653036 -1.236305e+06 3.886305e+06 2650000.0
9 33.337100 1.183467e+05 2.366533e+05 355000.0

Model Performance on Test data:
Mean-Squared Error: 982245520019.0864
Root-Mean-Squared Error: 991083.0035971187
Rsquare: 0.4436551211455335

Predictions on Test Data:
   deviation%   residuals y_pred_test   y_test
0 -8.599854 -3.795975e+04 4.793598e+05 441400.0
1 19.197741 2.111752e+05 8.888248e+05 1100000.0
2 20.304357 1.987797e+05 7.802203e+05 979000.0
3 15.111723 7.208292e+04 4.049171e+05 477000.0
4 -17.434603 -1.569114e+05 1.056911e+06 900000.0
5 -17.359893 -1.024234e+05 6.924234e+05 590000.0
6 -103.667808 -1.321765e+06 2.596765e+06 1275000.0
7 -12.303972 -6.521105e+04 5.952111e+05 530000.0
8 -159.810459 -6.072797e+05 9.872797e+05 380000.0

9   11.934221 1.044244e+05 7.705756e+05   875000.0

Lasso-Regression results:

best parameters: {'alpha': 100, 'normalize': 'True'}

/home/mahesh_yerra/anaconda3/lib/python3.6/site-packages/sklearn/linear_model/coordinate_descent.py:484: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Fitting data with very small alpha may cause precision problems.
  ConvergenceWarning)

Model Performance on Training data:
Mean-Squared Error: 602620646093.4557
Root-Mean-Squared Error: 776286.4459034795
Rsquare: 0.675565586868127

Predictions on Training Data:
	deviation%	residuals	y_pred_train	y_train
0	-31.284650	-1.359631e+05	5.705631e+05	434600.0
1	13.488077	9.509094e+04	6.099091e+05	705000.0
2	44.630952	6.069809e+05	7.530191e+05	1360000.0
3	-13.912498	-8.695311e+04	7.119531e+05	625000.0
4	302.230630	5.499963e+05	-3.680173e+05	181979.0
5	26.261799	2.529011e+05	7.100989e+05	963000.0
6	13.894280	7.502911e+04	4.649709e+05	540000.0
7	-34.714097	-1.315664e+06	5.105664e+06	3790000.0
8	-45.470305	-1.204963e+06	3.854963e+06	2650000.0
9	25.204987	8.947770e+04	2.655223e+05	355000.0

Model Performance on Test data:
Mean-Squared Error: 985973464195.0726
Root-Mean-Squared Error: 992961.9651301214
Rsquare: 0.44154360970700346

Predictions on Test Data:
	deviation%	residuals	y_pred_test	y_test
0	-9.417477	-4.156874e+04	4.829687e+05	441400.0
1	20.330260	2.236329e+05	8.763671e+05	1100000.0
2	20.604790	2.017209e+05	7.772791e+05	979000.0
3	17.249344	8.227937e+04	3.947206e+05	477000.0
4	-18.169995	-1.635300e+05	1.063530e+06	900000.0
5	-17.111114	-1.009556e+05	6.909556e+05	590000.0
6	-100.862105	-1.285992e+06	2.560992e+06	1275000.0
7	-9.981315	-5.290097e+04	5.829010e+05	530000.0
8	-159.368857	-6.056017e+05	9.856017e+05	380000.0

9   12.200753 1.067566e+05 7.682434e+05   875000.0

Random-Forest results:

Model Performance on Training data:
Mean-Squared Error: 85890465413.07838
Root-Mean-Squared Error: 293070.75154828804
Rsquare: 0.9537589312272019

Predictions on Training Data:
```
   deviation%  residuals  y_pred_train   y_train
0   -7.251157  -31513.53    466113.53   434600.0
1    8.739121   61610.80    643389.20   705000.0
2   10.384782  141233.03   1218766.97  1360000.0
3   10.296000   64350.00    560650.00   625000.0
4 -373.227944 -679196.48    861175.48   181979.0
5   -0.581501   -5599.85    968599.85   963000.0
6   -7.300120  -39420.65    579420.65   540000.0
7    1.597999   60564.17   3729435.83  3790000.0
8  -10.242944 -271438.02   2921438.02  2650000.0
9   -1.811741   -6431.68    361431.68   355000.0
```

Model Performance on Test data:
Mean-Squared Error: 622451444612.2367
Root-Mean-Squared Error: 788955.9205761984
Rsquare: 0.6474428577298541

Predictions on Test Data:
```
   deviation%  residuals  y_pred_test    y_test
0  -16.428550  -72515.62    513915.62   441400.0
1   21.839157  240230.73    859769.27  1100000.0
2   18.280885  178969.86    800030.14   979000.0
3  -16.406174  -78257.45    555257.45   477000.0
4   13.965028  125685.25    774314.75   900000.0
5   -3.896624  -22990.08    612990.08   590000.0
6  -21.969339 -280109.07   1555109.07  1275000.0
7   -5.892102  -31228.14    561228.14   530000.0
8 -117.557861 -446719.87    826719.87   380000.0
9   43.056571  376745.00    498255.00   875000.0
```


Gradient-Boost results:

Model Performance on Training data:
Mean-Squared Error: 425687249236.16003
Root-Mean-Squared Error: 652447.1237090098

Rsquare: 0.7708216706829574

Predictions on Training Data:

	deviation%	residuals	y_pred_train	y_train
0	-19.797332	-8.603920e+04	5.206392e+05	434600.0
1	37.293509	2.629192e+05	4.420808e+05	705000.0
2	31.196439	4.242716e+05	9.357284e+05	1360000.0
3	-21.345360	-1.334085e+05	7.584085e+05	625000.0
4	-570.229450	-1.037698e+06	1.219677e+06	181979.0
5	6.212833	5.982958e+04	9.031704e+05	963000.0
6	-19.720364	-1.064900e+05	6.464900e+05	540000.0
7	-8.689507	-3.293323e+05	4.119332e+06	3790000.0
8	-30.053201	-7.964098e+05	3.446410e+06	2650000.0
9	-4.578965	-1.625533e+04	3.712553e+05	355000.0

Model Performance on Test data:
Mean-Squared Error: 693893792693.9021
Root-Mean-Squared Error: 833002.8767620806
Rsquare: 0.6069778378560038

Predictions on Test Data:

	deviation%	residuals	y_pred_test	y_test
0	-12.442170	-54919.736346	4.963197e+05	441400.0
1	36.833227	405165.500919	6.948345e+05	1100000.0
2	35.616842	348688.882739	6.303111e+05	979000.0
3	-31.810146	-151734.397501	6.287344e+05	477000.0
4	29.633264	266699.378118	6.333006e+05	900000.0
5	0.669065	3947.486353	5.860525e+05	590000.0
6	-13.409035	-170965.192223	1.445965e+06	1275000.0
7	-10.756549	-57009.707929	5.870097e+05	530000.0
8	-99.388666	-377676.931686	7.576769e+05	380000.0
9	25.154606	220102.806149	6.548972e+05	875000.0

Model-Performance Table:

	model_name	RMSE	Rsquare	Train_RMSE	Train_Rsquare
0	Linear	3.414352e+07	-659.299005	771889.923277	0.679230
1	Ridge-Regression	9.910830e+05	0.443655	772440.259815	0.678773
2	Lasso-Regression	9.929620e+05	0.441544	776286.445903	0.675566
3	Random-Forest	7.889559e+05	0.647443	293070.751548	0.953759
4	Gradient-Boost	8.330029e+05	0.606978	652447.123709	0.770822
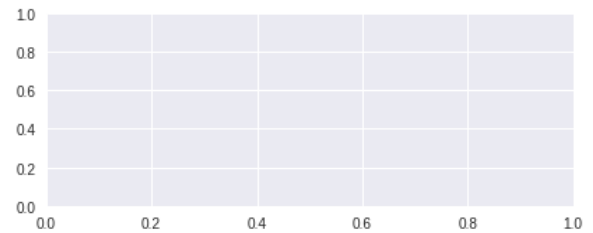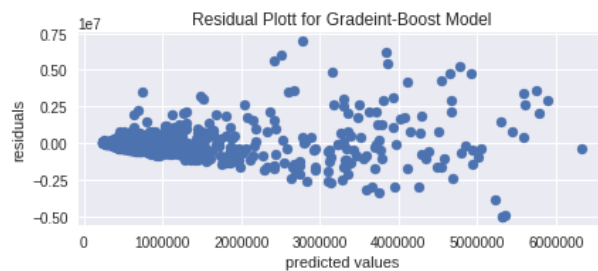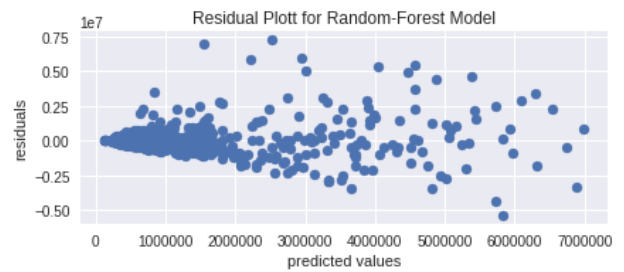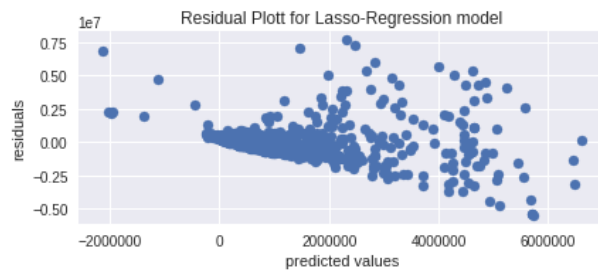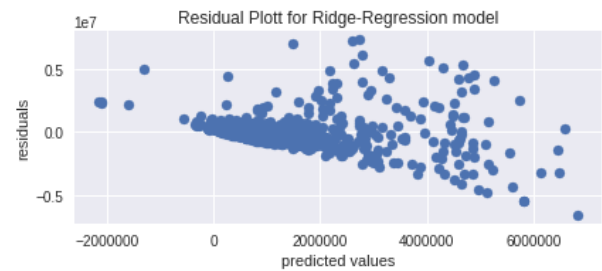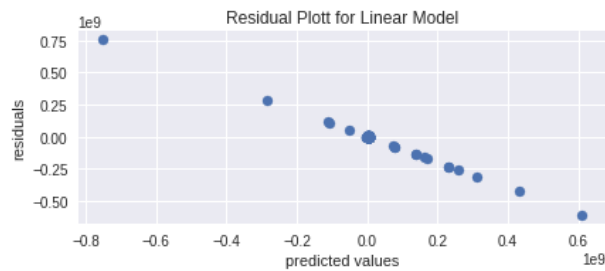
Model-Coefficients/Estimators:

Linear-Regression Model Coefficients:
```
 [ -1.26726025e+06  -1.38214742e+00   2.77208076e+02  -6.90876684e+02
    1.53336362e+06   1.54804236e+06  -1.54469983e+06   4.49437509e+01
    1.51148231e+00   2.48156507e+02   8.24893246e+08   2.38302816e-03
   -2.50802973e+09  -1.24730464e+02   6.48919302e+01   6.63853964e+01
   -4.87311228e+01   3.58330056e+01   2.50802979e+09   2.50802987e+09
    2.50802948e+09   1.67065813e+06  -2.10972106e+06   2.00901704e+06
    1.89118555e+06   1.68566802e+06   1.42452915e+06   2.65191494e+05
   -1.86488057e+06   3.54786956e+05  -1.69139109e+06   1.57149420e+06
   -1.65024704e+06   2.07532436e+05  -3.49074553e+05   1.23479491e+06
   -1.79704166e+06   2.82099093e+05   2.46755003e+05   7.40212043e+05
    3.20258110e+05   1.53321557e+06   6.00950645e+05  -1.58249283e+06
    2.87871216e+06   1.82277582e+05   2.05514865e+06  -1.44726244e+05
    7.64039187e+04   1.25198942e+06   2.16837297e+05   1.33143248e+06
   -1.73391071e+06   1.98140139e+06  -8.10257197e+05   2.75464081e+05
    1.84473134e+06  -2.01417826e+06   1.75879722e+05   1.98690522e+06
    4.53364433e+05   1.56104804e+06   1.93771832e+06  -5.05239698e+05
    1.99276012e+04   1.62645054e+06  -1.68422149e+06  -1.88098390e+06
    2.15848428e+05   2.72570461e+04   1.43218302e+06   2.25930866e+06
```

```
 4.43369131e+06   2.68993802e+06  -1.62597537e+05   2.41682140e+05
 1.53014452e+06   6.25992674e+04  -2.12662232e+06  -1.38376871e+06
 1.66503782e+06   1.83523455e+06   1.67470142e+06   1.27634315e+06
 2.92567898e+06   3.74371303e+05   4.85288210e+04   4.82189922e+05
 2.93495105e+04   1.38092504e+06   6.04486823e+04   1.12476322e+06
 1.72608256e+06   1.40216797e+06  -1.55009417e+06   1.98725844e+06
 8.95527019e+05   2.10660945e+06   1.30015290e+06   5.53298538e+05
 1.49040722e+06   5.03005771e+05  -7.21160715e+05   2.10002445e+06
 2.59973741e+05   2.02165991e+06   9.06369361e+03   3.08160904e+05
 5.07567236e+05   9.15331417e+05   2.03673673e+06   1.70393818e+06
-2.23215614e+06  -2.41438187e+06  -2.51627809e+06  -2.96183563e+06
-1.67922446e+06   1.64240556e+06   1.26049448e+06   1.76883195e+06
 9.14950842e+05  -1.60597889e+06  -2.32040065e+06   1.60189567e+06
 1.64087299e+06   2.05609943e+06   1.65862979e+06   2.52245051e+05
 1.86783850e+06  -1.66577034e+06  -1.84088912e+06  -1.91656267e+06
 1.24875616e+06  -2.58045918e+06  -6.72704334e+02   1.86627532e+06
 1.95781754e+06  -1.73224203e+06   2.04220328e+05   6.08948844e+05
-5.79834173e+05   2.04654494e+06   1.14762068e+05   1.86964236e+06
 1.53312302e+06  -1.89072181e+06   1.48001945e+06   2.05478724e+06
 2.99778389e+06  -7.33865112e+05  -6.57636207e+05   4.71998187e+05
 8.97406647e+04  -1.39430445e+06  -1.72233929e+06  -1.84359727e+06
-1.63781773e+06  -1.57644440e+06  -8.80907549e+05   6.61275508e+05
 1.97819878e+06  -1.01465910e+08   1.74990466e+06   1.98101687e+06
 2.08296181e+06   2.17413738e+06   2.08843221e+06   8.40985304e+04
 8.17543472e+04   5.85633194e+05   1.67130293e+05   1.46200194e+06
 1.03502752e+06   5.11944720e+05  -1.76057285e+06  -1.58956252e+06
-1.67038237e+06  -1.70069084e+06   1.90247793e+06   7.02055298e+05
 1.80107797e+06   1.95926036e+06   6.99798160e+05   1.46455571e+06
 4.34376280e+05   1.59328563e+06   1.59166116e+06   2.00148685e+06
 1.56696196e+06  -1.63383483e+06   1.27293833e+06   1.98192531e+06
 1.39446693e+06   1.92648082e+06   2.00282407e+06  -1.72653140e+06
 3.55712369e+05   2.07171147e+05   1.21377937e+06  -1.95178603e+05
-1.66825030e+06   1.94869587e+06   1.44994076e+06   1.37806042e+06
-1.47722700e+06  -3.68218233e+05   2.09222401e+06   1.28218283e+06
 1.86180260e+06   1.89184980e+06   1.74959230e+06   2.61161201e+05
-1.77062541e+06   1.98939160e+06   1.94692965e+06   1.88149212e+06
-1.85095204e+06   5.70684802e+05  -1.20989363e+05  -9.70679379e+05
-2.33778937e+05  -1.06153705e+06  -8.47524108e+05  -1.73909024e+06
-1.91883688e+06  -8.55694928e+05   1.78662415e+06  -1.85675294e+06
 1.99302532e+06   1.80014226e+06  -1.67654768e+06   2.91578874e+05
 5.02763236e+05   1.37193387e+06   3.82724743e+05   2.33164036e+06
 5.77198649e+05   1.51056257e+06  -1.28496737e+06   2.04171297e+06
 1.38020722e+06   9.06101440e+04   1.22095956e+09   1.22133766e+09
 1.07762702e+09   1.07796451e+09   5.02727356e+08   5.03106971e+08
 1.13190811e+09   7.54639284e+08   5.90433332e+08   5.77256121e+08
 2.13463994e+08   3.85637235e+08   2.13043521e+08   5.47595546e+08
 2.13429213e+08  -7.96175366e+08  -8.04402545e+08  -6.43074140e+08
```

```
-3.56325754e+08  -6.60692451e+08  -7.43692293e+08  -8.03814390e+08
-8.03072132e+08  -6.43430480e+08  -6.82585973e+08  -7.08611240e+08
-6.06538991e+08  -3.04010639e+08  -7.10192128e+08  -4.82047697e+08
-4.82822114e+08  -2.36026182e+07   8.59741645e+06   7.13508786e+06
 7.46445363e+06   8.72707794e+07  -8.79809165e+07  -1.13451382e+07
-1.12730960e+07  -8.96930353e+06  -1.04224991e+07  -1.11917082e+07
 1.40619685e+08  -1.14576317e+07  -1.11087631e+07  -1.11630117e+07
-1.11380431e+07  -1.10054309e+07  -1.10873723e+07  -4.21307177e+07
-4.17740676e+07  -4.19519334e+07   2.61649695e+07  -4.20577890e+07
 2.13484692e+08  -4.25900578e+07   8.72790431e+07  -4.24574497e+07
-4.17619392e+07  -4.40073459e+07   3.09823238e+07  -4.19608163e+07
-4.26564252e+07  -4.01938958e+07  -4.24328511e+07   5.28097930e+07
 5.32410118e+07   5.62128515e+07   5.22288768e+07   5.42789028e+07
 9.89530236e-10   5.28472601e+07  -8.33375584e+07   5.19874165e+07
-1.12061630e+07   5.11656131e+07   5.30885577e+07   6.15410287e+07
 5.16277631e+07  -2.03048234e+08  -2.03821430e+08   5.69743545e+07
 5.19391490e+07   5.28441813e+07  -9.31322575e-10  -8.14907253e-10
 5.47885721e+07  -1.15539099e+08   2.56113708e-09  -1.01470489e+08
-1.51627793e+08   5.30932742e+07   5.35713650e+07   5.35589388e+07
 5.35619263e+07   5.35858963e+07   5.43401479e+07   5.24967219e+07
 5.30429509e+07  -9.84083403e+07  -1.01010288e+08   5.27978311e+07
 5.32989696e+07   5.33221701e+07  -1.04773790e-09   5.48422338e+07
-5.71401089e+07  -5.83252977e+07  -6.15414852e+07  -5.64413516e+07
-5.70519496e+07   5.36115658e+07   5.33411052e+07   5.26288264e+07
 1.04773790e-09  -3.04007419e+08   2.13465851e+08   2.13042555e+08
-1.08209858e+07  -1.07605038e+07  -1.07819975e+07  -4.21508065e+07
-4.15849342e+07  -4.11871559e+07  -4.25471828e+07  -9.85433095e+07
 5.40268540e+07  -1.04482066e+08   5.22907226e+07   2.32830644e-10
 5.33840008e+07   2.88115313e+08   2.88028185e+08   2.87816831e+08
 5.82076609e-10   2.87821792e+08   2.87962377e+08   1.40608114e+08
 2.88197744e+08   4.31311539e+08   4.31371689e+08   4.31377487e+08
 4.31194190e+08   1.00621798e+09   9.44179383e+07   9.39349780e+07
 9.40704666e+07   2.63085440e+07   9.34423541e+07   2.13484692e+08
 9.50731730e+07   9.37299026e+07   8.72790431e+07   1.10221823e+08
 1.09598792e+08   2.98475707e+08   3.09966005e+07   1.07460753e+08
 1.10365509e+08   1.07976721e+08  -1.61172104e+08  -1.62005085e+08
-1.60969409e+08  -1.58155607e+08  -1.60713307e+08  -2.19031603e+08
 0.00000000e+00  -2.20831274e+08  -8.33492867e+07  -2.20548882e+08
 7.54647232e+08  -1.58842609e+08  -1.60880772e+08   0.00000000e+00
-1.61595249e+08  -1.61446675e+08  -1.60844856e+08  -3.56191672e+08
-5.03072453e+07  -3.08462387e+08  -3.01828999e+08   0.00000000e+00
 0.00000000e+00  -2.84265538e+08  -1.15539609e+08  -2.82807038e+08
 0.00000000e+00  -1.01470489e+08  -1.51631038e+08  -3.53484718e+08
-1.60232036e+08  -1.60552352e+08  -1.61238505e+08  -1.61017352e+08
-1.61310145e+08  -3.22688158e+08  -3.20270139e+08  -2.55313416e+08
-9.84347897e+07   0.00000000e+00  -1.01009692e+08  -2.55398140e+08
-4.82027261e+08  -5.83236193e+07  -5.83311330e+07  -6.15394783e+07
```

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 -5.52556067e+07 -5.70407226e+07 -1.67653676e+08 -1.69787064e+08
 -1.68051886e+08  0.00000000e+00 -3.04007419e+08  2.13042555e+08
  2.13465851e+08  2.87432582e+08  2.87690936e+08  4.31121344e+08
  1.37086988e+08  1.36749981e+08  1.35985289e+08  1.37650878e+08
  3.77336556e+08 -3.22306013e+08  3.77208772e+08  3.77214731e+08
 -3.20939167e+08 -2.51219389e+08 -9.85398971e+07 -1.04476572e+08
 -2.54513743e+08  0.00000000e+00  0.00000000e+00 -4.82812505e+08]

Ridge-Regression Model Coefficients:
 [ -4.80275763e+05 -9.33080927e+00  2.59675698e+02 -3.66693324e+02
   1.35213534e+06  1.35873530e+06 -1.36203925e+06  4.40472618e+01
   5.97660510e-01  2.34730868e+02  3.05228055e+05  2.38960194e-03
  -1.26908506e+01 -1.25049129e+02  6.33692582e+01  6.40854146e+01
  -4.59380751e+01  3.64474855e+01  7.51842987e+01  1.53118191e+02
  -2.41769789e+02  2.83101825e+05 -6.92857288e+05  2.30929417e+05
   1.11806665e+05  3.27584441e+05  1.32367562e+05 -2.27445953e+05
  -1.32236012e+06 -1.43749367e+05 -1.16206468e+06  2.46371078e+05
  -1.12616330e+06 -3.23293867e+05  0.00000000e+00 -1.09846896e+05
  -1.28372259e+06 -2.13386367e+05 -2.35206854e+05  1.95124891e+05
  -1.78881471e+05  2.07262387e+05  1.15530553e+05 -1.05447547e+06
   2.32588040e+06 -3.29785498e+05  2.44538902e+05 -6.92193926e+05
  -4.40703648e+05 -5.28482171e+04 -2.68583889e+05  7.80852012e+05
  -1.21212743e+06  1.53997398e+05  5.44383219e+05  1.66945227e+06
   2.98578061e+06 -4.03769964e+05 -3.49623424e+05  1.43734458e+06
  -9.22401508e+04  2.16903699e+05  1.34383407e+05 -2.24254359e+06
  -4.64613459e+05  2.63212680e+05 -1.14141186e+06 -1.35513235e+06
  -3.18224211e+05 -4.82020815e+05 -3.52745937e+05  4.09007412e+05
   3.54411265e+06  2.08147669e+06  0.00000000e+00 -2.57301810e+05
   1.39990569e+05 -4.46996298e+05 -1.58975142e+06  5.71220726e+04
   2.95375757e+05  5.36638930e+04  3.16257606e+05  2.60680135e+06
   3.91372529e+06 -1.27978949e+05 -4.54517127e+05 -3.02897218e+04
  -4.74324670e+05  2.49643370e+06 -4.24862352e+05 -6.54158041e+04
   3.88318032e+05  7.56471453e+04 -1.02790663e+06  6.27533795e+05
   3.66130777e+05  3.00550263e+05 -2.46044536e+04  1.16363132e+05
   1.34343682e+05 -4.99171373e+04  6.65649411e+05  2.98258304e+05
  -2.30680014e+05  2.37208177e+05  0.00000000e+00 -2.19316998e+05
   1.81491662e+06  2.32862226e+06  2.12872551e+05  3.45649815e+05
  -8.02887324e+05 -1.00542664e+06 -1.07578663e+06 -1.51624325e+06
  -1.15549227e+06  2.70330169e+05 -5.72002491e+04  4.18276215e+05
  -3.56220586e+05 -1.08013044e+06 -9.04960033e+05  2.27856889e+05
   3.15616586e+05  6.44634884e+05  3.33534469e+05 -2.45546956e+05
   5.23043628e+05 -1.14036152e+06 -1.30194047e+06 -4.96297602e+05
  -4.17784386e+04 -1.10782316e+06  0.00000000e+00  4.45126631e+04
   6.88073617e+05 -3.22840975e+05 -2.83370364e+05  1.32485649e+05
   8.32236017e+05  2.25094515e+05 -3.73205985e+05  5.62293965e+04
   1.78245416e+05 -1.37652040e+06  1.19677577e+05  2.56022584e+05
   4.17325813e+06  6.31965787e+05  6.81895918e+05 -1.52746606e+04
```

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-3.86671237e+05   2.69049279e+04  -1.19755369e+06  -1.32854785e+06
-1.12281219e+06  -1.05683459e+06   5.21294633e+05   1.29176057e+05
 1.58275793e+05  -1.00178114e+06  -3.18857857e+04   1.84536072e+05
 2.76205099e+05   7.25435192e+05   2.89212146e+05  -4.52091674e+05
-4.10974611e+05   9.96797369e+04  -3.10477779e+05   1.39667806e+05
 4.96202575e+05  -2.75648649e+04  -1.23479695e+06  -1.01078976e+06
-1.11080037e+06  -1.14834798e+06   1.37803107e+05  -1.00171517e+06
-1.27811701e+04   1.87287419e+05   1.54160092e+05   1.36164068e+05
-1.08462455e+05   2.32802710e+05   2.68070679e+05   1.91850380e+05
 2.06772020e+05  -1.05137094e+06  -2.80870022e+04   1.79757707e+05
 1.02273255e+05   1.56610451e+05   2.40373431e+05  -1.19560723e+06
-1.19779176e+05  -2.92970506e+05  -8.67328509e+04   1.17830707e+06
-1.14870689e+06   1.49520210e+05   1.28545177e+05   7.24243970e+04
-1.75170089e+05  -8.54206337e+05   7.89947136e+05  -2.26979426e+04
 4.13060841e+04   9.42930230e+04   3.83406150e+05  -2.76348246e+05
-1.23184754e+06   1.62686096e+05   1.80621169e+05   7.53598715e+04
-2.16876931e+05   2.02184245e+06   1.27767100e+06   4.87857174e+05
 1.18472861e+06   3.80163012e+05  -2.73800112e+05  -1.20404882e+06
-4.83183356e+05   5.73321621e+05  -4.47080690e+04  -1.33207055e+06
 1.79100470e+05   4.60286799e+05  -1.14813386e+06  -2.28146555e+05
-2.46144540e+04   8.32858135e+05  -1.50489018e+05   5.03674910e+05
 5.67566088e+04   1.81173652e+05  -7.59384556e+05   2.67815595e+05
 4.07798407e+03  -4.35024587e+05  -1.35331899e+03   3.77430996e+05
-1.36027132e+05   2.01363710e+05  -1.53316255e+05   2.25987116e+05
 1.00202941e+05   1.12684575e+05   1.47302979e+05   1.30615774e+06
-5.44825737e+05  -5.69666764e+05  -9.34739537e+05   1.57822333e+04
-6.63083886e+05  -2.63608187e+05  -4.41087702e+05   2.86300289e+05
-1.57506404e+06  -7.09939574e+05   6.79753805e+05   9.41382033e+04
 8.35349593e+05  -2.42918427e+05  -1.07856467e+06   1.51824315e+06
 1.71443469e+06  -2.20353787e+05   1.89998931e+04   3.33972784e+05
-4.33555673e+05   2.47157953e+05   9.13454687e+05  -5.24502701e+05
-2.02428635e+05  -5.25157370e+05   9.14760675e+04  -5.34420803e+05
-4.05433103e+05   1.75569989e+06   3.93523172e+05  -3.95388700e+05
 1.79353562e+06  -6.34547257e+05  -2.97136630e+05  -3.47286443e+05
-3.29527797e+05  -1.94195185e+05  -2.76789464e+05   2.01415897e+05
 5.44283743e+05   3.65048993e+05   3.21896455e+05   2.23588665e+05
-5.44825737e+05  -2.22823349e+05  -5.25157370e+05  -1.15298057e+05
 5.03091031e+05  -1.35937494e+06  -1.94408064e+06   2.97513589e+05
-2.68282410e+05   1.99057250e+06  -8.46205811e+04  -5.71728141e+05
-1.70822276e+05   2.75229057e+06  -1.10489310e+06   9.38731455e+05
 0.00000000e+00  -5.24919319e+05   1.46986180e+05  -1.33286397e+06
-3.34890629e+05  -1.78458562e+06  -2.78691385e+05   6.77030392e+06
-1.66270191e+06  -8.79833901e+05  -1.62475007e+06   2.03581645e+06
 8.25803265e+03  -3.19488906e+05   0.00000000e+00   0.00000000e+00
 1.19761151e+06  -5.60371144e+05   0.00000000e+00  -1.00178114e+06
-2.40950348e+04  -2.63506274e+05   2.36093352e+05   1.46114314e+05
 1.21772399e+05   2.04283559e+05   5.13190870e+05  -6.82480784e+05
```

```
 -3.44068926e+05  2.03342431e+06 -4.32667873e+05 -5.89821968e+05
 -1.18736857e+05  5.29923438e+04  0.00000000e+00  1.33666983e+06
  4.59790006e+05 -5.86329803e+05 -3.08484336e+06  1.25677111e+06
  6.49274988e+05  2.73034577e+05 -1.12786503e+05 -7.62649554e+05
  0.00000000e+00 -2.20353787e+05 -6.63083886e+05 -9.34739537e+05
 -2.73758615e+04  5.22018370e+04  2.91892985e+04  1.82715921e+05
  7.38134811e+05  1.13981101e+06 -1.84420128e+05  1.99554131e+06
  6.22152167e+05 -3.55201135e+06 -1.02174858e+06  0.00000000e+00
 -4.60956307e+04  4.49621719e+04 -3.47125267e+04 -2.59294227e+05
  0.00000000e+00 -2.47262390e+05 -8.55170203e+04  1.79353562e+06
  1.24320809e+05  4.68910353e+04  1.03083033e+05  1.16614445e+05
 -6.77906134e+04  7.26708613e+04  2.59310531e+05 -2.18790953e+05
 -8.02944628e+04  3.21896455e+05 -6.71529036e+05 -5.44825737e+05
  8.99952729e+05 -3.63242285e+05 -5.25157370e+05  1.70794157e+06
  1.16009960e+06 -4.45093936e+04 -1.94408064e+06 -9.19142001e+05
  1.81747997e+06 -5.16140763e+05 -3.31727527e+05 -1.14482422e+06
 -1.20265912e+05  2.35601046e+06  7.61567928e+04  1.20608836e+06
  0.00000000e+00 -4.60932633e+05  1.46986180e+05 -2.12388098e+05
  1.12684575e+05  1.62347570e+06 -7.41202864e+04  0.00000000e+00
 -7.95757465e+05 -6.20376185e+05 -3.90835566e+04 -1.57506404e+06
 -9.29519930e+05 -2.43219886e+06  2.65177921e+06  0.00000000e+00
  0.00000000e+00 -8.84733058e+05 -5.60371144e+05  3.66539534e+05
  0.00000000e+00 -1.00178114e+06 -2.40950348e+04  2.74031087e+06
  5.01914218e+05  2.01271217e+05 -4.40307132e+05 -2.06294364e+05
 -4.97671641e+05 -6.92395911e+05  9.78696200e+05 -7.85502177e+05
  2.03342431e+06  0.00000000e+00 -4.32667873e+05 -7.96254364e+05
  3.33972784e+05 -5.08448892e+05 -5.86329803e+05 -3.08484336e+06
  2.22501001e+06  6.49274988e+05  1.10107426e+06 -8.65961195e+05
  8.06615811e+05  0.00000000e+00 -2.20353787e+05 -9.34739537e+05
 -6.63083886e+05 -5.95595304e+05 -3.64359461e+05 -1.33461322e+05
  2.26448057e+05 -1.03512103e+05 -8.80297557e+05  7.73143836e+05
  1.17008732e+05 -7.59710974e+05 -1.46716441e+04 -2.13414740e+03
  5.16792547e+05  3.05378667e+06  1.99554131e+06 -3.55201135e+06
  2.09265162e+04  0.00000000e+00  0.00000000e+00 -4.33555673e+05]
```

Lasso-Regression Model Coefficients:
```
 [ -2.52973516e+05 -1.87159158e+01  1.95712553e+02 -1.90065556e+02
  -7.05533536e+03 -2.18333847e+03 -1.53686514e+03  4.27918686e+01
  -4.06139132e-01  2.27985825e+02  1.57652028e+05  2.39681463e-03
  -2.72525150e+00 -1.24651322e+02  6.30739395e+01  5.84859932e+01
  -4.11832361e+01  3.47792656e+01  6.28268330e+01  1.52343789e+02
  -2.63590634e+02  0.00000000e+00  0.00000000e+00  0.00000000e+00
  -2.82671489e+04  1.97167349e+05  6.75899979e+03 -5.74409981e+04
  -7.44698360e+05  0.00000000e+00 -6.50710588e+05  7.39234099e+04
  -6.04265131e+05 -2.14023268e+05  0.00000000e+00 -3.06673045e+04
  -7.99537944e+05 -6.46378793e+04 -2.24769018e+04  2.67110659e+05
  -3.25242519e+04  5.07099822e+04  2.42635204e+05 -5.38026449e+05
```

```
 2.39099623e+06  -1.66044375e+05   0.00000000e+00  -5.16208069e+05
-3.16468324e+05  -0.00000000e+00  -9.33386306e+04   8.51843078e+05
-6.94370766e+05  -0.00000000e+00   1.06770824e+06   2.34798175e+06
 3.56471045e+06   3.69489864e+05  -2.11301055e+05   1.51019593e+06
-0.00000000e+00   7.68352566e+04  -0.00000000e+00  -2.28625552e+06
-2.30904466e+05   1.14037652e+05  -5.95984495e+05  -8.30114668e+05
-2.13092372e+05  -3.42731806e+05  -2.90301195e+05   0.00000000e+00
 3.48643076e+06   2.06117938e+06   0.00000000e+00  -9.82203339e+04
-1.48774210e+04  -3.15616864e+05  -1.00036017e+06   7.95134265e+05
 1.47216826e+05  -2.13171646e+04   2.38749685e+05   3.25402272e+06
 4.46134645e+06   8.91416128e+03  -3.20365692e+05   7.75976966e+04
-3.26621676e+05   2.96546842e+06  -2.37430568e+05  -0.00000000e+00
 2.63594611e+05  -0.00000000e+00  -4.96019153e+05   4.59186783e+05
 4.47819989e+05   0.00000000e+00  -0.00000000e+00   2.05200306e+05
 0.00000000e+00   0.00000000e+00   1.27278841e+06   2.29703239e+04
-8.01008432e+04   4.55567742e+04   0.00000000e+00  -1.04611099e+05
 2.55179897e+06   3.08474179e+06   0.00000000e+00   2.18234300e+05
-3.68723651e+04  -2.30360205e+05  -2.66813970e+05  -6.67254490e+05
-6.44611849e+05   0.00000000e+00  -1.17032022e+05   0.00000000e+00
-2.08336532e+05  -5.61059277e+05  -9.57834094e+04   5.30732053e+04
 2.13839868e+05   0.00000000e+00   1.84418170e+05  -4.45306685e+04
 3.55370796e+05  -6.10276892e+05  -7.54061354e+05   0.00000000e+00
-0.00000000e+00  -1.30843170e+05   0.00000000e+00  -0.00000000e+00
 5.80418000e+05   3.65931519e+05  -1.18287853e+05   1.28266809e+05
 1.49292630e+06   0.00000000e+00  -1.93726472e+05  -1.02103410e+05
 3.09230055e+04  -8.72637882e+05  -0.00000000e+00   0.00000000e+00
 4.84462067e+06   1.25330791e+06   1.21256974e+06   1.18707882e+05
-1.34805472e+05   2.28567194e+05  -6.99609762e+05  -8.32084315e+05
-6.47633041e+05  -5.27928399e+05   1.22143664e+06   6.47481666e+04
-0.00000000e+00  -6.65000309e+05  -0.00000000e+00   0.00000000e+00
 5.42411967e+04   0.00000000e+00   0.00000000e+00  -3.46507912e+05
-2.58122101e+05   2.31944475e+05  -7.01825616e+04   3.99759193e+04
 5.82941355e+05   5.26261725e+04  -7.26297378e+05  -2.74933989e+05
-4.71506054e+05  -5.43310213e+05   0.00000000e+00  -6.83193870e+05
-1.51541010e+05   0.00000000e+00   2.17767988e+05   3.29231254e+03
-0.00000000e+00   5.45753736e+04   1.69077811e+05   0.00000000e+00
 6.41868222e+04  -3.59200894e+05  -0.00000000e+00   0.00000000e+00
 0.00000000e+00   0.00000000e+00   6.54703286e+04  -6.82550449e+05
 0.00000000e+00  -1.47167416e+05  -0.00000000e+00   1.76912868e+06
-6.44670294e+05  -0.00000000e+00   1.38470176e+04   0.00000000e+00
 1.54794938e+05  -5.80926028e+05   6.65847688e+05  -2.15496941e+03
-7.65694881e+04  -0.00000000e+00   1.98565213e+05  -1.69283805e+05
-6.92141489e+05  -0.00000000e+00   0.00000000e+00  -3.41202283e+04
 1.97464054e+05   2.83877688e+06   1.98848214e+06   1.23352684e+06
 1.93266285e+06   1.09940092e+06   0.00000000e+00  -6.88181295e+05
 2.60281294e+05   1.31652093e+06  -1.10499676e+05  -8.09423613e+05
-0.00000000e+00   2.92338959e+05  -6.40188689e+05  -4.91383714e+04
```

```
4.39178430e+04   8.98158796e+05  -0.00000000e+00   1.85213653e+05
1.47049938e+05   7.47171211e+04  -2.00675905e+05   0.00000000e+00
-1.27983752e+05  -3.09445790e+05  -3.15162138e+05   6.13589896e+04
-2.55835633e+05   7.65049570e+04  -2.52703496e+05   1.19045287e+05
0.00000000e+00  -0.00000000e+00   4.37552603e+04   6.47977719e+05
-4.80934784e+05  -9.50971573e+05  -1.18367740e+06   2.39228093e+04
-7.20973559e+05   2.27967659e+05  -8.98273525e+03   0.00000000e+00
-3.21964697e+06  -1.46161892e+06   5.78719992e+05   7.12015723e+04
6.76199152e+05  -0.00000000e+00  -1.11137666e+06   1.11477350e+06
1.26130754e+06  -1.69717403e+04  -2.46955153e+05   7.43684357e+05
-3.59017357e+05   2.38173765e+04   1.08258612e+06  -2.51769853e+05
-0.00000000e+00  -3.91817741e+05   0.00000000e+00  -1.37517462e+05
0.00000000e+00   1.92149526e+06   6.52043250e+05  -3.11595056e+04
3.96106988e+06  -2.47672489e+05  -3.62006547e+03  -1.48991373e+04
-0.00000000e+00   6.43197649e+04   2.65683578e+04   8.79361199e+04
3.40963294e+05   1.59025322e+05   5.70479403e+05  -0.00000000e+00
-9.91975856e+05  -1.14093133e+05  -2.45415060e+03  -1.14469197e+05
5.41864498e+05  -1.06430930e+06  -2.74965143e+06   9.90224641e+03
-1.47556924e+05   1.75100566e+06  -0.00000000e+00  -2.40172940e+05
-0.00000000e+00   2.63139835e+06  -6.09546439e+05   1.14697819e+06
0.00000000e+00  -3.40107095e+05   5.09869497e+05  -9.21243297e+05
-0.00000000e+00  -7.08805369e+05   9.74310823e+03   7.00807062e+06
-1.19402078e+06  -1.07421808e+04  -8.18451137e+05   1.33807888e+06
0.00000000e+00  -0.00000000e+00   0.00000000e+00   0.00000000e+00
6.29635561e+05  -6.93561603e+04   0.00000000e+00  -1.14701388e+06
2.96649203e+05   2.58049097e+04   4.10355506e+05   1.50853609e+05
-0.00000000e+00   1.32528973e+05   6.44917543e+05   0.00000000e+00
-1.06220023e+05   4.38287940e+06  -0.00000000e+00  -3.02520623e+05
0.00000000e+00   1.05424470e+05   0.00000000e+00   1.17709410e+06
0.00000000e+00  -6.93666904e+05  -4.58895450e+06   5.97826002e+05
7.00851123e+05   5.75158951e+05  -6.16416151e+04  -3.49545758e+05
0.00000000e+00  -0.00000000e+00  -9.97413941e+05  -9.96812959e+05
-0.00000000e+00   2.49667066e+05   2.32052443e+05   0.00000000e+00
4.01071896e+05   7.90574806e+05  -2.17681496e+05   4.53865682e+06
5.97756020e+05  -5.83877392e+06  -1.42138811e+05   0.00000000e+00
-0.00000000e+00   0.00000000e+00   4.51584572e+04  -1.03155350e+05
0.00000000e+00  -5.20608845e+04   0.00000000e+00   4.54668344e+04
1.84712593e+05  -0.00000000e+00   1.88566945e+04   3.71155244e+04
-7.83612059e+04  -0.00000000e+00   3.32201369e+05  -1.32890024e+05
0.00000000e+00   1.64245680e+04  -4.93038714e+05  -2.76168647e+04
7.89508766e+05  -0.00000000e+00  -1.74246018e+04   2.21804715e+06
1.57752683e+06  -0.00000000e+00  -6.38213415e+03  -7.91141229e+04
2.19329562e+06  -0.00000000e+00  -0.00000000e+00  -6.81442064e+05
0.00000000e+00   2.78911973e+06   1.62051051e+05   1.22566004e+06
0.00000000e+00  -0.00000000e+00   6.63879163e+04  -0.00000000e+00
-0.00000000e+00   1.23023448e+06   4.79946843e+04   0.00000000e+00
-3.07536507e+05  -3.52957202e+05   1.19384629e+04  -0.00000000e+00
```

```
 -1.58956441e+05 -9.95996560e+05  3.40483751e+06  0.00000000e+00
  0.00000000e+00 -0.00000000e+00 -1.25632746e+02  0.00000000e+00
  0.00000000e+00 -1.08735838e+02  2.87870786e+04  3.23860125e+06
  1.83231581e+05  3.18193431e+04 -4.33102365e+05 -0.00000000e+00
 -3.58989309e+05 -0.00000000e+00  1.02864355e+06 -2.43701399e+05
  6.44584170e+04  0.00000000e+00 -0.00000000e+00 -0.00000000e+00
  9.17501407e+04  0.00000000e+00 -1.71692671e+03 -1.71056622e+03
  2.45451383e+06  6.52084474e+04  7.00407568e+05 -7.45263778e+05
  3.55314651e+05  0.00000000e+00 -0.00000000e+00 -1.62722251e+03
 -1.62468229e+03 -7.50599724e+04 -1.08228095e+05 -8.61244185e+04
  1.76168863e+05  0.00000000e+00 -7.21863846e+05  6.14455174e+05
  1.63000403e+04 -7.52077625e+05 -0.00000000e+00 -0.00000000e+00
  0.00000000e+00  3.55106583e+06  5.15291058e+04 -4.84994213e+03
  0.00000000e+00  0.00000000e+00  0.00000000e+00 -2.52346503e+04]
```

Random Forest-Model estimators:
 [DecisionTreeRegressor(criterion='mse', max_depth=None, max_features='auto',
       max_leaf_nodes=None, min_impurity_split=1e-07,
       min_samples_leaf=1, min_samples_split=2,
       min_weight_fraction_leaf=0.0, presort=False,
       random_state=1106026783, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
       max_leaf_nodes=None, min_impurity_split=1e-07,
       min_samples_leaf=1, min_samples_split=2,
       min_weight_fraction_leaf=0.0, presort=False,
       random_state=1450320500, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
       max_leaf_nodes=None, min_impurity_split=1e-07,
       min_samples_leaf=1, min_samples_split=2,
       min_weight_fraction_leaf=0.0, presort=False,
       random_state=35292500, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
       max_leaf_nodes=None, min_impurity_split=1e-07,
       min_samples_leaf=1, min_samples_split=2,
       min_weight_fraction_leaf=0.0, presort=False,
       random_state=74067342, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
       max_leaf_nodes=None, min_impurity_split=1e-07,
       min_samples_leaf=1, min_samples_split=2,
       min_weight_fraction_leaf=0.0, presort=False,
       random_state=199356566, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
       max_leaf_nodes=None, min_impurity_split=1e-07,
       min_samples_leaf=1, min_samples_split=2,
       min_weight_fraction_leaf=0.0, presort=False,
       random_state=1396897818, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
```

max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=80115917, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=1700585817, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=2061033840, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=1375790332, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=382266742, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
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           min_weight_fraction_leaf=0.0, presort=False,
           random_state=1470011698, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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           min_weight_fraction_leaf=0.0, presort=False,
           random_state=784306543, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=516668512, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=1133736769, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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min_weight_fraction_leaf=0.0, presort=False,
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        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=1646081382, splitter='best'), DecisionTreeRegressor(criterion='mse',
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        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
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max_depth=None, max_features='auto',
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max_depth=None, max_features='auto',
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        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=726436093, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=716644271, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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        min_weight_fraction_leaf=0.0, presort=False,
        random_state=614282912, splitter='best'), DecisionTreeRegressor(criterion='mse',
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        min_weight_fraction_leaf=0.0, presort=False,
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max_depth=None, max_features='auto',
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        min_weight_fraction_leaf=0.0, presort=False,

random_state=2133382757, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=1889899936, splitter='best'), DecisionTreeRegressor(criterion='mse',
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        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=579337070, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=137589179, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=2127804938, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=701295966, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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        min_weight_fraction_leaf=0.0, presort=False,
        random_state=808750105, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
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        min_weight_fraction_leaf=0.0, presort=False,
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max_depth=None, max_features='auto',
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max_depth=None, max_features='auto',

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min_weight_fraction_leaf=0.0, presort=False,
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max_depth=None, max_features='auto',
max_leaf_nodes=None, min_impurity_split=1e-07,
min_samples_leaf=1, min_samples_split=2,
min_weight_fraction_leaf=0.0, presort=False,
random_state=354446661, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
max_leaf_nodes=None, min_impurity_split=1e-07,
min_samples_leaf=1, min_samples_split=2,
min_weight_fraction_leaf=0.0, presort=False,
random_state=1257060344, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
max_leaf_nodes=None, min_impurity_split=1e-07,
min_samples_leaf=1, min_samples_split=2,
min_weight_fraction_leaf=0.0, presort=False,
random_state=1060269552, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
max_leaf_nodes=None, min_impurity_split=1e-07,
min_samples_leaf=1, min_samples_split=2,
min_weight_fraction_leaf=0.0, presort=False,
random_state=649925456, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
max_leaf_nodes=None, min_impurity_split=1e-07,
min_samples_leaf=1, min_samples_split=2,
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max_depth=None, max_features='auto',
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min_samples_leaf=1, min_samples_split=2,
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random_state=600138914, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
max_leaf_nodes=None, min_impurity_split=1e-07,
min_samples_leaf=1, min_samples_split=2,
min_weight_fraction_leaf=0.0, presort=False,
random_state=1467365030, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
max_leaf_nodes=None, min_impurity_split=1e-07,
min_samples_leaf=1, min_samples_split=2,
min_weight_fraction_leaf=0.0, presort=False,
random_state=1210913491, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
max_leaf_nodes=None, min_impurity_split=1e-07,
min_samples_leaf=1, min_samples_split=2,

```
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=670327258, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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        random_state=1118209815, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=55651732, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=338979080, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=336346086, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=899565831, splitter='best'), DecisionTreeRegressor(criterion='mse',
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max_depth=None, max_features='auto',
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        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=1575813462, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
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max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
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random_state=162859676, splitter='best'), DecisionTreeRegressor(criterion='mse',
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max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=1669660523, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=1540003779, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=1559332908, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
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           min_weight_fraction_leaf=0.0, presort=False,
           random_state=776622168, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=1894425278, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
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max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
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max_depth=None, max_features='auto',

max_leaf_nodes=None, min_impurity_split=1e-07,
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        min_weight_fraction_leaf=0.0, presort=False,
        random_state=1819064642, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=1786278106, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=1459604146, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=1627226873, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=1121189631, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
        min_samples_leaf=1, min_samples_split=2,
        min_weight_fraction_leaf=0.0, presort=False,
        random_state=694294159, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
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        min_weight_fraction_leaf=0.0, presort=False,
        random_state=728984405, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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        min_weight_fraction_leaf=0.0, presort=False,
        random_state=630273904, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
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        min_weight_fraction_leaf=0.0, presort=False,
        random_state=2050449381, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
        max_leaf_nodes=None, min_impurity_split=1e-07,
        min_samples_leaf=1, min_samples_split=2,

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          min_weight_fraction_leaf=0.0, presort=False,
          random_state=159559656, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
          max_leaf_nodes=None, min_impurity_split=1e-07,
          min_samples_leaf=1, min_samples_split=2,
          min_weight_fraction_leaf=0.0, presort=False,
          random_state=249099915, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
          max_leaf_nodes=None, min_impurity_split=1e-07,
          min_samples_leaf=1, min_samples_split=2,
          min_weight_fraction_leaf=0.0, presort=False,
          random_state=378702679, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
          max_leaf_nodes=None, min_impurity_split=1e-07,
          min_samples_leaf=1, min_samples_split=2,
          min_weight_fraction_leaf=0.0, presort=False,
          random_state=1512530579, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
          max_leaf_nodes=None, min_impurity_split=1e-07,
          min_samples_leaf=1, min_samples_split=2,
          min_weight_fraction_leaf=0.0, presort=False,
          random_state=2009571403, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
          max_leaf_nodes=None, min_impurity_split=1e-07,
          min_samples_leaf=1, min_samples_split=2,
          min_weight_fraction_leaf=0.0, presort=False,
          random_state=903617210, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
          max_leaf_nodes=None, min_impurity_split=1e-07,
          min_samples_leaf=1, min_samples_split=2,
          min_weight_fraction_leaf=0.0, presort=False,
          random_state=1223304578, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
          max_leaf_nodes=None, min_impurity_split=1e-07,
          min_samples_leaf=1, min_samples_split=2,
          min_weight_fraction_leaf=0.0, presort=False,
          random_state=1276332733, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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          min_weight_fraction_leaf=0.0, presort=False,
          random_state=1328106412, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
          max_leaf_nodes=None, min_impurity_split=1e-07,
          min_samples_leaf=1, min_samples_split=2,
          min_weight_fraction_leaf=0.0, presort=False,
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random_state=1949784140, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=1587429547, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=630787136, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=742945993, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=1141906432, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=1060570581, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=1352556903, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=2024467656, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
           max_leaf_nodes=None, min_impurity_split=1e-07,
           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
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max_depth=None, max_features='auto',
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           min_samples_leaf=1, min_samples_split=2,
           min_weight_fraction_leaf=0.0, presort=False,
           random_state=106255929, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',

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             max_leaf_nodes=None, min_impurity_split=1e-07,
             min_samples_leaf=1, min_samples_split=2,
             min_weight_fraction_leaf=0.0, presort=False,
             random_state=1498880311, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
             max_leaf_nodes=None, min_impurity_split=1e-07,
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             min_weight_fraction_leaf=0.0, presort=False,
             random_state=1181209167, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
             max_leaf_nodes=None, min_impurity_split=1e-07,
             min_samples_leaf=1, min_samples_split=2,
             min_weight_fraction_leaf=0.0, presort=False,
             random_state=125921567, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
             max_leaf_nodes=None, min_impurity_split=1e-07,
             min_samples_leaf=1, min_samples_split=2,
             min_weight_fraction_leaf=0.0, presort=False,
             random_state=1916934476, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
             max_leaf_nodes=None, min_impurity_split=1e-07,
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             min_weight_fraction_leaf=0.0, presort=False,
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max_depth=None, max_features='auto',
             max_leaf_nodes=None, min_impurity_split=1e-07,
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             min_weight_fraction_leaf=0.0, presort=False,
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max_depth=None, max_features='auto',
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             random_state=1329698102, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
             max_leaf_nodes=None, min_impurity_split=1e-07,
             min_samples_leaf=1, min_samples_split=2,
             min_weight_fraction_leaf=0.0, presort=False,
             random_state=2112654263, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
             max_leaf_nodes=None, min_impurity_split=1e-07,
             min_samples_leaf=1, min_samples_split=2,
             min_weight_fraction_leaf=0.0, presort=False,
             random_state=1002340526, splitter='best'), DecisionTreeRegressor(criterion='mse',
max_depth=None, max_features='auto',
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             min_samples_leaf=1, min_samples_split=2,
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min_weight_fraction_leaf=0.0, presort=False,
        random_state=1251628904, splitter='best')]

Random Forest-Model Feature-Importances:
[8.13217203e-02   6.24675235e-02   2.38490506e-02   1.57832199e-01
  1.88345967e-02   1.02681124e-02   1.66891485e-02   3.40255195e-02
  2.82705362e-01   3.65432146e-02   2.24453167e-03   7.11691665e-02
  3.72233492e-03   5.32792027e-03   6.40691070e-03   9.80197434e-03
  1.09116101e-02   8.11553212e-03   5.71248537e-03   7.64509826e-03
  8.78438123e-03   2.12146404e-07   5.65271594e-04   8.35457972e-08
  5.73730709e-07   1.80653578e-06   5.49647769e-05   1.24822896e-05
  1.75183751e-05   2.56508709e-04   2.17154775e-06   2.41799690e-06
  1.11339100e-04   3.35048964e-04   0.00000000e+00   2.74057871e-06
  1.23829144e-04   5.38076717e-04   1.08627919e-06   1.63275535e-04
  3.90027790e-04   1.23343878e-06   2.22410694e-04   8.87486875e-05
  1.94987009e-03   1.58019577e-04   4.72829946e-08   3.51363362e-06
  1.47402864e-04   1.73306629e-07   2.18792849e-05   3.45381304e-04
  9.16339035e-07   1.18766810e-08   1.03681946e-04   1.11792721e-04
  2.09841736e-05   2.98819434e-04   2.69591316e-04   1.17802897e-03
  2.72131495e-05   4.16947203e-05   4.36624100e-07   9.06600489e-09
  1.12882111e-05   2.69286440e-04   1.27445672e-06   2.54873776e-06
  8.60749752e-04   6.46577849e-06   2.02607613e-05   2.39532891e-06
  9.81164797e-05   1.58592356e-05   0.00000000e+00   2.33118954e-05
  7.23719129e-06   1.07465431e-04   6.89800935e-05   3.18924415e-04
  1.77928719e-04   3.84928968e-07   1.91279736e-05   2.39577754e-05
  3.79012512e-05   1.37168466e-03   3.41307299e-05   1.09535065e-03
  7.27717974e-05   1.14026949e-04   4.40171845e-06   4.22491305e-08
  4.23632112e-04   1.84556045e-05   6.52419957e-05   1.83512264e-03
  1.52175841e-03   3.17160812e-08   1.13091897e-07   1.47470083e-04
  2.23120756e-05   1.31031446e-04   3.53478569e-04   1.95061581e-07
  3.49538457e-05   1.06408715e-06   0.00000000e+00   2.60067710e-04
  8.91844851e-05   1.82119108e-03   1.56662788e-07   7.39106174e-07
  1.76445481e-03   5.06026171e-04   9.83751396e-05   1.22052918e-04
  4.30106412e-05   1.73087642e-08   3.08611061e-06   1.61683491e-07
  2.30794910e-07   1.37409394e-04   9.00713928e-05   4.65071838e-05
  9.00359586e-06   2.89044214e-09   1.18730936e-05   1.00276257e-04
  7.32710596e-05   6.65530893e-05   5.88081250e-05   7.53627435e-05
  8.62039891e-08   1.28654771e-04   0.00000000e+00   5.51831656e-09
  8.65591998e-04   1.37805366e-04   4.12146483e-05   7.94039974e-05
  2.59585669e-04   3.81292099e-08   7.20208193e-07   8.37178032e-07
  4.94011124e-05   7.10533778e-06   4.76234966e-05   2.60879903e-07
  3.35476775e-04   2.06896407e-04   1.39062492e-03   1.04885018e-04
  2.24156255e-06   5.84105225e-05   1.32531113e-06   1.30718323e-04
  1.11426028e-04   3.08938649e-05   2.25137529e-04   1.67232454e-04
  1.42723597e-06   4.52466552e-05   1.52142178e-06   3.78235396e-08
  2.33144426e-06   1.65408813e-07   2.82455710e-08   2.37855105e-05
  1.16330412e-03   4.63095511e-04   1.79608853e-06   6.16477409e-06

2.34461052e-03	5.73633140e-04	2.23960837e-06	4.19486212e-08
1.73770180e-07	1.54585767e-07	9.71384547e-08	7.09814116e-07
1.59832065e-06	1.00528543e-06	4.30402858e-04	1.16652548e-06
7.45334291e-05	1.15234237e-05	6.44987154e-06	1.41942939e-07
5.47029059e-05	3.25536784e-05	5.17244027e-05	1.80028934e-07
1.25524554e-07	1.14037377e-07	1.07396650e-06	7.18558893e-06
5.63246410e-10	6.98505037e-05	1.14272754e-07	3.12546800e-04
3.38991401e-04	6.46886436e-07	9.58253165e-06	1.47282944e-06
4.87862033e-05	7.01884460e-07	4.36567989e-04	2.24341433e-06
4.31092289e-06	5.01817437e-08	3.13365154e-05	4.29519614e-04
2.50761861e-06	4.47303001e-07	1.86753012e-08	6.45637709e-07
1.21755462e-05	9.15585038e-03	6.51057518e-03	1.41995865e-04
3.47334510e-04	3.13418608e-04	4.14153214e-06	4.15947576e-05
9.22381798e-05	5.54721261e-04	5.61835966e-08	1.82805845e-06
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1.97341152e-03	5.17016047e-03	4.67537097e-04	7.99387476e-05
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1.49012746e-04	2.04440883e-05	3.05965692e-04	8.59400157e-04
2.86776839e-04	4.39781013e-04	5.43510832e-04	3.62335248e-04
3.64426559e-05	4.66471684e-06	1.67944699e-03	2.10563321e-02
6.45008578e-07	2.58433566e-03	1.93133710e-05	3.90550173e-04
2.39253234e-06	8.65389031e-04	2.91343390e-03	1.33015910e-04
6.73994549e-05	1.01204275e-04	2.83797657e-04	2.05070152e-04
4.32355018e-04	8.87080543e-05	2.00644751e-04	7.81609819e-05
2.87937921e-04	2.80791356e-05	5.10727793e-05	4.26179147e-05
2.88922954e-05	9.56086766e-04	6.39716603e-04	6.58976144e-04
1.25885544e-03	1.07497480e-09	7.45465181e-04	4.04995152e-06
4.14657503e-07	1.52134422e-03	1.87508337e-03	1.44455173e-04
6.37183604e-09	1.36003446e-04	2.93599177e-04	5.04263068e-05
3.15462547e-04	2.63589035e-04	3.29731836e-04	1.37617270e-03
8.44822155e-05	1.98073243e-04	1.19301184e-03	1.33955958e-04
1.49243033e-05	3.64121163e-04	2.30096134e-07	4.45216093e-04
4.55434241e-04	6.50764706e-04	3.01536522e-05	5.24856382e-05
9.27794856e-05	1.85657966e-04	2.62566231e-04	4.65035687e-05
6.04888908e-05	1.66624023e-04	3.09563831e-04	2.06739183e-03
0.00000000e+00	2.46288162e-04	9.93413045e-06	3.25006135e-05
4.05342769e-06	7.72942336e-05	6.64982745e-05	1.07676153e-03
5.56303224e-05	1.07939614e-05	1.06229300e-04	2.24582943e-06
5.85245900e-07	7.83396804e-05	0.00000000e+00	0.00000000e+00
1.92059471e-05	6.07328097e-06	0.00000000e+00	6.92550963e-05
6.95427765e-05	4.83291997e-04	1.16659905e-03	6.83637142e-04
4.38281848e-06	5.79957458e-04	3.43194450e-05	2.66589300e-05
4.85765051e-06	2.31808918e-05	2.74529348e-07	2.90276197e-06
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1.36373637e-07	7.11773302e-09	8.37984495e-09	2.49147660e-04
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0.00000000e+00	2.60931837e-05	4.99835955e-06	8.78554155e-07

9.00120976e-08 2.26025174e-04 4.32727771e-04 7.76055461e-05
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1.84118035e-05 8.23358276e-07 1.61654786e-05 0.00000000e+00
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7.35183607e-05 2.97390145e-04 3.11218403e-04 4.13902519e-04
1.22491291e-04 4.39189401e-04 1.32781968e-03 3.23382997e-04
2.09983936e-04 1.36034992e-03 1.16463456e-04 2.77808804e-06
3.10118987e-04 1.37916873e-06 3.28125337e-09 1.99723284e-04
4.99708829e-04 1.80572896e-03 1.81405701e-06 7.76738205e-05
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3.83276704e-07 3.77018902e-05 8.95148567e-08 2.54508524e-06
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3.19803899e-04 0.00000000e+00 1.71803962e-05 2.82823731e-05
4.09799499e-06 2.47525019e-07 2.53309928e-04 2.18117039e-04
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1.84987258e-05 8.55634481e-05 2.13412519e-07 1.08126436e-06
8.56913256e-06 9.70915156e-05 5.18146784e-05 9.01141682e-07
1.96146070e-06 0.00000000e+00 0.00000000e+00 2.58482982e-05]

Gradient Boost-Model estimators:
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        min_samples_split=2, min_weight_fraction_leaf=0.0,
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            random_state=<mtrand.RandomState object at 0x7f5d9009c870>,
            splitter='best')]
  [ DecisionTreeRegressor(criterion='friedman_mse', max_depth=3,
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            min_samples_split=2, min_weight_fraction_leaf=0.0,
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      random_state=<mtrand.RandomState object at 0x7f5d9009c870>,
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          random_state=<mtrand.RandomState object at 0x7f5d9009c870>,
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```
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Gradient Boost-Model Feature-Importances:
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    1.20004471e-01   2.29374698e-02   1.04012603e-03   7.80455050e-02
    8.71203738e-04   1.14832194e-02   1.45329981e-02   3.24674687e-03
    9.94531235e-03   1.70955649e-02   3.14478657e-03   1.41852266e-02
    2.71082587e-03   0.00000000e+00   3.52874900e-03   0.00000000e+00
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    0.00000000e+00   0.00000000e+00   0.00000000e+00   0.00000000e+00
    0.00000000e+00   0.00000000e+00   0.00000000e+00   0.00000000e+00
    0.00000000e+00   0.00000000e+00   0.00000000e+00   0.00000000e+00
    0.00000000e+00   0.00000000e+00   0.00000000e+00   0.00000000e+00
    1.23531349e-02   0.00000000e+00   0.00000000e+00   0.00000000e+00
    0.00000000e+00   0.00000000e+00   0.00000000e+00   5.67192956e-03
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0.00000000e+00   0.00000000e+00   0.00000000e+00   4.59194864e-03
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0.00000000e+00   2.01226029e-03   0.00000000e+00   0.00000000e+00
0.00000000e+00   2.17531183e-03   0.00000000e+00   0.00000000e+00
3.38691724e-03   0.00000000e+00   1.72605465e-03   0.00000000e+00
0.00000000e+00   0.00000000e+00   0.00000000e+00   0.00000000e+00
0.00000000e+00   2.27934486e-03   0.00000000e+00   0.00000000e+00
0.00000000e+00   0.00000000e+00   0.00000000e+00   0.00000000e+00
0.00000000e+00   0.00000000e+00   0.00000000e+00   7.84447384e-03
0.00000000e+00   1.71142349e-03   0.00000000e+00   2.01564631e-03
0.00000000e+00   0.00000000e+00   0.00000000e+00   0.00000000e+00
0.00000000e+00   0.00000000e+00   0.00000000e+00   0.00000000e+00
0.00000000e+00   0.00000000e+00   0.00000000e+00   9.52622501e-03
0.00000000e+00   0.00000000e+00   1.10914066e-03   0.00000000e+00
0.00000000e+00   0.00000000e+00   0.00000000e+00   0.00000000e+00
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0.00000000e+00   0.00000000e+00   1.00425771e-03   0.00000000e+00
0.00000000e+00   0.00000000e+00   4.56377451e-04   8.27648273e-04
0.00000000e+00   0.00000000e+00   1.19419328e-03   0.00000000e+00
0.00000000e+00   0.00000000e+00   0.00000000e+00   4.09594720e-03
9.22423791e-03   1.67751336e-03   0.00000000e+00   0.00000000e+00
0.00000000e+00   0.00000000e+00   0.00000000e+00   0.00000000e+00
0.00000000e+00   2.02478879e-02   0.00000000e+00   0.00000000e+00
0.00000000e+00   0.00000000e+00   0.00000000e+00   1.16798184e-03
0.00000000e+00   0.00000000e+00   0.00000000e+00   0.00000000e+00
0.00000000e+00   0.00000000e+00   0.00000000e+00   0.00000000e+00
2.79577824e-03   0.00000000e+00   1.40599417e-03   0.00000000e+00
0.00000000e+00   0.00000000e+00   2.83632929e-03   0.00000000e+00
0.00000000e+00   0.00000000e+00   0.00000000e+00   6.03824467e-03
0.00000000e+00   2.73618301e-03   3.52405246e-03   0.00000000e+00
0.00000000e+00   0.00000000e+00   1.16775367e-03   0.00000000e+00
6.13051960e-03   0.00000000e+00   0.00000000e+00   0.00000000e+00
0.00000000e+00   0.00000000e+00   0.00000000e+00   0.00000000e+00
4.12873939e-03   0.00000000e+00   1.30550391e-02   0.00000000e+00
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4.81050595e-04 0.00000000e+00 0.00000000e+00 0.00000000e+00
0.00000000e+00 0.00000000e+00 0.00000000e+00 0.00000000e+00
0.00000000e+00 0.00000000e+00 0.00000000e+00 0.00000000e+00
0.00000000e+00 0.00000000e+00 0.00000000e+00 0.00000000e+00
0.00000000e+00 1.16932150e-02 7.91702441e-03 0.00000000e+00
0.00000000e+00 0.00000000e+00 0.00000000e+00 0.00000000e+00]