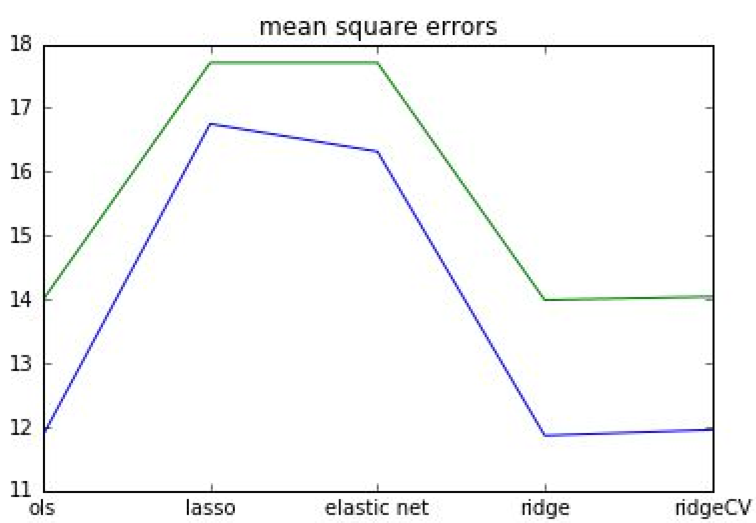
Code Test Part 1: Model building on a synthetic dataset

- A brief writeup describing the techniques you used to generate the predictions. Details such as important features and your estimates of predictive performance are helpful here, though not strictly necessary.

I use Python sklearn and pandas library to solve this problem.
The first step is data cleaning, I first separate the 4 categorical feature with other 250 numerical feature. For the numerical feature, I fill the missing value by the mean of its column. For the categorical feature, I fill the missing value by random sample one category according to its frequency. Then I encode the categorical feature from string type to integer type so that it can be trained by regression model.

The second step is splitting the data set. I split the training set (5000 records) into two part, training set with 80% and validation set with 20%. The idea is that I can use 20% validation samples to evaluate my models and report the predictive performance. Then, in the training set, I use cross validation to select the best hyperparameter alpha for ridge regression. It shows that model with the alpha = 1.0 (more regularization) get a better result. I also try other three models, Ordinary Linear Square, Lasso Regression, and Elastic Net. As the following figure shows, The simple OLS method perform well closely to ridge regression, and the Lasso and Elastic Net perform worse than others . I think it’s due to l1 penalty shrink some coefficients to zero, which may be helpful for feature selection but also decrease the prediction performance in this dataset.



I also perform some inference with the coefficients of OLS. The entire output is attached at the end of document. There are 4 features’ t-stat larger than 10 (f_35, f_175, f_205, f_61), which indicates they may be the important features. (f_61 is the categorical variable that range from ‘a’ to ‘e’.) Since t-stat is the value that estimate how significant of that coefficient is relative to the standard error.

Code Test Part 2: Baby Names!

A) Descriptive analysis

1. Please describe the format of the data files. Can you identify any limitations or distortions of the data?

The format is .txt text file format, each attribute is separated by comma.
Due to the privacy issue, they delete all the names that occur less than 5 times. This cause the data won’t represent the real distribution of names exactly .
For example, the number of each gender looks like the following :
sex
F 3154009
M 2493417
We expect it would be about half and half, but actually the female occupies 55.8% of all the records.

2. What is the most popular name of all time? (Of either gender.)

M James 4938965
F Mary 3730856

3. What is the most gender ambiguous name in 2013? 1945?

1945 :
Johnnie

	name	occurence	difference
1	Johnnie	115	0
2	Willie	98	0
3	Jessie	96	0
4	Leslie	90	0
5	Dale	86	0

2013
Avery

	name	occurence	difference
1	Avery	139	0
2	Jordan	132	0
3	Riley	91	0
4	Avery	78	0
5	Jordan	77	0

4. Of the names represented in the data, find the name that has had the largest percentage increase in popularity since 1980. Largest decrease?
5. Can you identify names that may have had an even larger increase or decrease in popularity?

B) Onward to Insight!

What insight can you extract from this dataset? Feel free to combine the baby names data with other publicly available datasets or APIs, but be sure to include code for accessing any alternative data that you use.

I found that there are 30274 Distinct Name since 1910, 24448 since 1980, 19081 since 2000, 9585 for 2014. Some names seems go out of fashion as time goes by.

The summary of OLS output for Problem 1:

-------------------------Summary of Regression Analysis-------------------------

Formula: Y ~ <f_0> + <f_1> + <f_2> + <f_3> + <f_4> + <f_5> + <f_6> + <f_7>
+ <f_8> + <f_9> + <f_10> + <f_11> + <f_12> + <f_13> + <f_14> + <f_15>
+ <f_16> + <f_17> + <f_18> + <f_19> + <f_20> + <f_21> + <f_22> + <f_23>
+ <f_24> + <f_25> + <f_26> + <f_27> + <f_28> + <f_29> + <f_30>
+ <f_31> + <f_32> + <f_33> + <f_34> + <f_35> + <f_36> + <f_37> + <f_38>
+ <f_39> + <f_40> + <f_41> + <f_42> + <f_43> + <f_44> + <f_45>
+ <f_46> + <f_47> + <f_48> + <f_49> + <f_50> + <f_51> + <f_52> + <f_53>
+ <f_54> + <f_55> + <f_56> + <f_57> + <f_58> + <f_59> + <f_60>
+ <f_62> + <f_63> + <f_64> + <f_65> + <f_66> + <f_67> + <f_68> + <f_69>
+ <f_70> + <f_71> + <f_72> + <f_73> + <f_74> + <f_75> + <f_76>

+ <f_77> + <f_78> + <f_79> + <f_80> + <f_81> + <f_82> + <f_83> + <f_84>
+ <f_85> + <f_86> + <f_87> + <f_88> + <f_89> + <f_90> + <f_91> + <f_92>
+ <f_93> + <f_94> + <f_95> + <f_96> + <f_97> + <f_98> + <f_99>
+ <f_100> + <f_101> + <f_102> + <f_103> + <f_104> + <f_105> + <f_106>
+ <f_107> + <f_108> + <f_109> + <f_110> + <f_111> + <f_112> + <f_113>
+ <f_114> + <f_115> + <f_116> + <f_117> + <f_118> + <f_119>
+ <f_120> + <f_122> + <f_123> + <f_124> + <f_125> + <f_126> + <f_127>
+ <f_128> + <f_129> + <f_130> + <f_131> + <f_132> + <f_133> + <f_134>
+ <f_135> + <f_136> + <f_137> + <f_138> + <f_139> + <f_140> + <f_141>
+ <f_142> + <f_143> + <f_144> + <f_145> + <f_146> + <f_147> + <f_148>
+ <f_149> + <f_150> + <f_151> + <f_152> + <f_153> + <f_154>
+ <f_155> + <f_156> + <f_157> + <f_158> + <f_159> + <f_160> + <f_161>
+ <f_162> + <f_163> + <f_164> + <f_165> + <f_166> + <f_167> + <f_168>
+ <f_169> + <f_170> + <f_171> + <f_172> + <f_173> + <f_174> + <f_175>
+ <f_176> + <f_177> + <f_178> + <f_179> + <f_180> + <f_181> + <f_182>
+ <f_183> + <f_184> + <f_185> + <f_186> + <f_187> + <f_188>
+ <f_189> + <f_190> + <f_191> + <f_192> + <f_193> + <f_194> + <f_195>
+ <f_196> + <f_197> + <f_198> + <f_199> + <f_200> + <f_201> + <f_202>
+ <f_203> + <f_204> + <f_205> + <f_206> + <f_207> + <f_208> + <f_209>
+ <f_210> + <f_211> + <f_212> + <f_213> + <f_214> + <f_216> + <f_217>
+ <f_218> + <f_219> + <f_220> + <f_221> + <f_222> + <f_223>
+ <f_224> + <f_225> + <f_226> + <f_227> + <f_228> + <f_229> + <f_230>
+ <f_231> + <f_232> + <f_233> + <f_234> + <f_235> + <f_236> + <f_238>
+ <f_239> + <f_240> + <f_241> + <f_242> + <f_243> + <f_244> + <f_245>
+ <f_246> + <f_247> + <f_248> + <f_249> + <f_250> + <f_251> + <f_252>
+ <f_253> + <f_61> + <f_121> + <f_215> + <f_237> + <intercept>

Number of Observations: 4000
Number of Degrees of Freedom: 255

R-squared: 0.5687
Adj R-squared: 0.5394

Rmse: 3.5590

F-stat (254, 3745): 19.4389, p-value: 0.0000

Degrees of Freedom: model 254, resid 3745

-----------------------Summary of Estimated Coefficients------------------------

Variable	Coef	Std Err	t-stat	p-value	CI 2.5%	CI 97.5%
f_0	0.0455	0.0587	0.78	0.4383	-0.0696	0.1607
f_1	-0.0963	0.0583	-1.65	0.0989	-0.2106	0.0180
f_2	-0.0463	0.0570	-0.81	0.4163	-0.1579	0.0653
f_3	0.0149	0.0595	0.25	0.8020	-0.1017	0.1315
f_4	-0.0021	0.0582	-0.04	0.9709	-0.1163	0.1120
f_5	0.0477	0.0591	0.81	0.4192	-0.0681	0.1635
f_6	0.0286	0.0583	0.49	0.6235	-0.0857	0.1430
f_7	-0.0168	0.0593	-0.28	0.7767	-0.1329	0.0993
f_8	-0.0748	0.0595	-1.26	0.2088	-0.1913	0.0418
f_9	0.0316	0.0583	0.54	0.5871	-0.0825	0.1458
f_10	-0.0939	0.0591	-1.59	0.1123	-0.2098	0.0220
f_11	0.0608	0.0599	1.01	0.3105	-0.0567	0.1782
f_12	-0.0451	0.0584	-0.77	0.4397	-0.1596	0.0693
f_13	0.0324	0.0586	0.55	0.5797	-0.0823	0.1472
f_14	0.0294	0.0592	0.50	0.6193	-0.0866	0.1454
f_15	0.0141	0.0581	0.24	0.8079	-0.0998	0.1281
f_16	-0.0279	0.0580	-0.48	0.6303	-0.1416	0.0858
f_17	0.0921	0.0591	1.56	0.1191	-0.0237	0.2079
f_18	-0.1266	0.0603	-2.10	0.0357	-0.2447	-0.0085
f_19	0.0328	0.0585	0.56	0.5754	-0.0819	0.1475
f_20	0.0824	0.0592	1.39	0.1644	-0.0337	0.1984
f_21	0.1299	0.0589	2.20	0.0275	0.0144	0.2455
f_22	0.0767	0.0584	1.31	0.1888	-0.0377	0.1911
f_23	-0.0184	0.0594	-0.31	0.7566	-0.1347	0.0979
f_24	0.0242	0.0589	0.41	0.6809	-0.0912	0.1397
f_25	-0.1289	0.0595	-2.17	0.0302	-0.2455	-0.0124
f_26	-0.0163	0.0584	-0.28	0.7804	-0.1308	0.0982
f_27	-0.0204	0.0586	-0.35	0.7275	-0.1353	0.0944
f_28	0.0506	0.0579	0.87	0.3826	-0.0630	0.1641
f_29	0.1146	0.0586	1.96	0.0504	-0.0002	0.2294

f_30	-0.0010	0.0588	-0.02	0.9871	-0.1162	0.1143
f_31	0.0029	0.0592	0.05	0.9614	-0.1132	0.1189
f_32	-0.0418	0.0588	-0.71	0.4772	-0.1571	0.0735
f_33	-0.0039	0.0574	-0.07	0.9464	-0.1163	0.1086
f_34	0.0625	0.0594	1.05	0.2929	-0.0540	0.1789
f_35	0.9415	0.0821	11.47	0.0000	0.7806	1.1024
f_36	0.0950	0.0594	1.60	0.1098	-0.0214	0.2115
f_37	-0.0040	0.0580	-0.07	0.9457	-0.1176	0.1097
f_38	0.0505	0.0591	0.85	0.3927	-0.0653	0.1664
f_39	-0.0360	0.0585	-0.62	0.5382	-0.1507	0.0787
f_40	-0.0084	0.0592	-0.14	0.8870	-0.1245	0.1076
f_41	0.0134	0.0576	0.23	0.8163	-0.0996	0.1264
f_42	-0.0006	0.0582	-0.01	0.9913	-0.1147	0.1134
f_43	0.0364	0.0611	0.60	0.5518	-0.0834	0.1562
f_44	-0.1101	0.0575	-1.91	0.0557	-0.2229	0.0026
f_45	-0.0076	0.0591	-0.13	0.8977	-0.1235	0.1083
f_46	-0.0473	0.0576	-0.82	0.4121	-0.1603	0.0657
f_47	-0.0009	0.1163	-0.01	0.9937	-0.2289	0.2270
f_48	-0.0095	0.0586	-0.16	0.8719	-0.1244	0.1055
f_49	-0.0566	0.0593	-0.95	0.3399	-0.1728	0.0596
f_50	-0.0023	0.0584	-0.04	0.9692	-0.1166	0.1121
f_51	-0.0212	0.0590	-0.36	0.7190	-0.1369	0.0944
f_52	-0.0721	0.0600	-1.20	0.2298	-0.1897	0.0455
f_53	-0.0476	0.0581	-0.82	0.4120	-0.1615	0.0662
f_54	0.1175	0.0587	2.00	0.0454	0.0024	0.2325
f_55	-0.0333	0.0600	-0.55	0.5791	-0.1508	0.0843
f_56	-0.0079	0.0573	-0.14	0.8903	-0.1202	0.1044
f_57	0.0449	0.0593	0.76	0.4490	-0.0713	0.1610
f_58	-0.0024	0.0580	-0.04	0.9666	-0.1162	0.1113
f_59	0.0329	0.0591	0.56	0.5780	-0.0829	0.1487
f_60	0.0186	0.0581	0.32	0.7487	-0.0952	0.1324
f_62	-0.0449	0.0593	-0.76	0.4490	-0.1612	0.0714
f_63	-0.1644	0.0586	-2.80	0.0051	-0.2793	-0.0494

f_64	-0.0435	0.0585	-0.74	0.4570	-0.1582	0.0712
f_65	0.0365	0.0586	0.62	0.5328	-0.0783	0.1514
f_66	-0.0657	0.0581	-1.13	0.2585	-0.1797	0.0482
f_67	0.0724	0.0578	1.25	0.2106	-0.0410	0.1858
f_68	0.0311	0.0584	0.53	0.5935	-0.0832	0.1455
f_69	-0.0561	0.0584	-0.96	0.3366	-0.1705	0.0583
f_70	0.0912	0.0586	1.56	0.1197	-0.0237	0.2060
f_71	0.0327	0.0588	0.56	0.5783	-0.0826	0.1480
f_72	0.0132	0.0590	0.22	0.8234	-0.1025	0.1288
f_73	-0.0051	0.0583	-0.09	0.9302	-0.1193	0.1091
f_74	0.0811	0.0581	1.40	0.1630	-0.0328	0.1950
f_75	-0.0387	0.1163	-0.33	0.7396	-0.2667	0.1893
f_76	-0.0099	0.0587	-0.17	0.8667	-0.1250	0.1052
f_77	-0.0438	0.0586	-0.75	0.4549	-0.1588	0.0711
f_78	-0.0347	0.0582	-0.60	0.5504	-0.1487	0.0793
f_79	-0.0407	0.0590	-0.69	0.4904	-0.1562	0.0749
f_80	0.0039	0.0590	0.07	0.9475	-0.1117	0.1194
f_81	-0.1028	0.0603	-1.70	0.0886	-0.2210	0.0155
f_82	0.0091	0.0589	0.15	0.8776	-0.1063	0.1245
f_83	0.0248	0.0584	0.42	0.6713	-0.0897	0.1393
f_84	-0.0307	0.0588	-0.52	0.6014	-0.1459	0.0845
f_85	-0.0251	0.0595	-0.42	0.6729	-0.1417	0.0915
f_86	0.0716	0.0575	1.25	0.2126	-0.0410	0.1843
f_87	-0.0268	0.0577	-0.46	0.6425	-0.1399	0.0863
f_88	0.0245	0.0583	0.42	0.6741	-0.0897	0.1387
f_89	-0.0344	0.0586	-0.59	0.5576	-0.1492	0.0805
f_90	0.0533	0.0591	0.90	0.3672	-0.0625	0.1691
f_91	0.0467	0.0593	0.79	0.4304	-0.0694	0.1629
f_92	0.1065	0.0578	1.84	0.0656	-0.0068	0.2199
f_93	-0.0448	0.0589	-0.76	0.4465	-0.1603	0.0706
f_94	0.3842	0.0827	4.65	0.0000	0.2222	0.5463
f_95	0.0956	0.0598	1.60	0.1103	-0.0217	0.2128

f_96	-0.0027	0.0589	-0.05	0.9639	-0.1181	0.1127
f_97	-0.0580	0.0582	-1.00	0.3193	-0.1720	0.0561
f_98	-0.0322	0.0585	-0.55	0.5819	-0.1469	0.0824
f_99	-0.0754	0.0589	-1.28	0.2006	-0.1909	0.0401
f_100	-0.0229	0.0580	-0.40	0.6924	-0.1365	0.0907
f_101	0.1202	0.0582	2.06	0.0392	0.0060	0.2343
f_102	-0.0248	0.0605	-0.41	0.6823	-0.1433	0.0938
f_103	-0.0336	0.0581	-0.58	0.5632	-0.1475	0.0803
f_104	-0.0277	0.0582	-0.48	0.6344	-0.1416	0.0863
f_105	-0.0171	0.0596	-0.29	0.7748	-0.1338	0.0997
f_106	0.0054	0.0583	0.09	0.9257	-0.1088	0.1197
f_107	0.0288	0.0572	0.50	0.6144	-0.0833	0.1409
f_108	0.0389	0.0584	0.67	0.5052	-0.0755	0.1533
f_109	0.0366	0.0587	0.62	0.5333	-0.0785	0.1516
f_110	0.0803	0.0595	1.35	0.1775	-0.0364	0.1969
f_111	-0.0100	0.0587	-0.17	0.8644	-0.1250	0.1050
f_112	0.0082	0.0597	0.14	0.8913	-0.1089	0.1252
f_113	-0.0764	0.0578	-1.32	0.1864	-0.1896	0.0369
f_114	-0.0363	0.0598	-0.61	0.5445	-0.1535	0.0810
f_115	-0.0252	0.0577	-0.44	0.6626	-0.1382	0.0879
f_116	0.0946	0.0580	1.63	0.1028	-0.0190	0.2082
f_117	-0.0246	0.0589	-0.42	0.6759	-0.1400	0.0908
f_118	-0.0082	0.0592	-0.14	0.8901	-0.1242	0.1078
f_119	-0.0485	0.0590	-0.82	0.4104	-0.1641	0.0670
f_120	0.0099	0.0577	0.17	0.8634	-0.1031	0.1230
f_122	0.0382	0.0585	0.65	0.5143	-0.0766	0.1529
f_123	0.0038	0.0583	0.06	0.9487	-0.1104	0.1179
f_124	-0.0962	0.0591	-1.63	0.1034	-0.2120	0.0196
f_125	-0.0465	0.0574	-0.81	0.4177	-0.1589	0.0659
f_126	0.0028	0.0591	0.05	0.9625	-0.1130	0.1185
f_127	-0.0449	0.0575	-0.78	0.4352	-0.1576	0.0678
f_128	-0.0595	0.0590	-1.01	0.3131	-0.1752	0.0561
f_129	-0.0298	0.0584	-0.51	0.6094	-0.1442	0.0846

f_130	0.0325	0.0591	0.55	0.5825	-0.0834	0.1484
f_131	0.0355	0.0590	0.60	0.5475	-0.0801	0.1510
f_132	0.0499	0.0594	0.84	0.4010	-0.0665	0.1663
f_133	-0.0411	0.0584	-0.70	0.4813	-0.1556	0.0733
f_134	-0.0105	0.0585	-0.18	0.8582	-0.1251	0.1042
f_135	-0.0300	0.0577	-0.52	0.6034	-0.1431	0.0831
f_136	-0.0458	0.0581	-0.79	0.4304	-0.1596	0.0680
f_137	0.0648	0.0588	1.10	0.2701	-0.0504	0.1801
f_138	-0.0282	0.0588	-0.48	0.6313	-0.1434	0.0870
f_139	-0.0362	0.0593	-0.61	0.5412	-0.1525	0.0800
f_140	0.0288	0.0594	0.49	0.6276	-0.0877	0.1453
f_141	-0.0509	0.0584	-0.87	0.3838	-0.1653	0.0636
f_142	0.0419	0.0584	0.72	0.4733	-0.0726	0.1564
f_143	-0.0306	0.0589	-0.52	0.6028	-0.1460	0.0848
f_144	-0.0128	0.0579	-0.22	0.8249	-0.1262	0.1006
f_145	-0.0300	0.0577	-0.52	0.6028	-0.1431	0.0831
f_146	-0.0656	0.0594	-1.10	0.2694	-0.1821	0.0508
f_147	0.0792	0.0586	1.35	0.1763	-0.0356	0.1940
f_148	0.0202	0.0586	0.34	0.7302	-0.0947	0.1351
f_149	0.0027	0.0585	0.05	0.9627	-0.1119	0.1174
f_150	-0.0306	0.0598	-0.51	0.6084	-0.1478	0.0865
f_151	0.0539	0.0585	0.92	0.3574	-0.0608	0.1686
f_152	-0.0126	0.0582	-0.22	0.8288	-0.1266	0.1014
f_153	0.0041	0.0597	0.07	0.9447	-0.1129	0.1212
f_154	-0.0489	0.0593	-0.83	0.4093	-0.1651	0.0673
f_155	0.0081	0.0591	0.14	0.8915	-0.1077	0.1238
f_156	-0.0394	0.0587	-0.67	0.5029	-0.1545	0.0758
f_157	0.0596	0.0594	1.00	0.3158	-0.0568	0.1760
f_158	0.0161	0.0587	0.27	0.7845	-0.0990	0.1312
f_159	-0.0112	0.0593	-0.19	0.8506	-0.1273	0.1050
f_160	0.0290	0.0590	0.49	0.6231	-0.0866	0.1446
f_161	0.1413	0.1166	1.21	0.2257	-0.0873	0.3699

f_162	-0.0484	0.0589	-0.82	0.4110	-0.1638	0.0670
f_163	-0.0508	0.0591	-0.86	0.3903	-0.1666	0.0651
f_164	-0.0101	0.0581	-0.17	0.8619	-0.1241	0.1038
f_165	-0.0395	0.0598	-0.66	0.5088	-0.1567	0.0777
f_166	-0.0061	0.0596	-0.10	0.9183	-0.1230	0.1108
f_167	0.0236	0.0592	0.40	0.6895	-0.0923	0.1396
f_168	-0.0841	0.0588	-1.43	0.1526	-0.1994	0.0311
f_169	0.0514	0.1165	0.44	0.6590	-0.1768	0.2796
f_170	-0.0005	0.0585	-0.01	0.9937	-0.1151	0.1142
f_171	0.0400	0.0578	0.69	0.4890	-0.0733	0.1533
f_172	0.0407	0.0599	0.68	0.4971	-0.0767	0.1581
f_173	0.0027	0.0574	0.05	0.9624	-0.1097	0.1152
f_174	-0.0083	0.0584	-0.14	0.8863	-0.1228	0.1061
f_175	2.8114	0.0818	34.38	0.0000	2.6511	2.9717
f_176	-0.0054	0.0591	-0.09	0.9266	-0.1212	0.1104
f_177	0.0719	0.0590	1.22	0.2233	-0.0438	0.1877
f_178	0.0486	0.0588	0.83	0.4089	-0.0667	0.1639
f_179	-0.0643	0.0600	-1.07	0.2842	-0.1819	0.0534
f_180	0.0391	0.0583	0.67	0.5026	-0.0752	0.1534
f_181	-0.0717	0.0595	-1.21	0.2277	-0.1883	0.0448
f_182	0.0160	0.0573	0.28	0.7794	-0.0962	0.1283
f_183	0.0011	0.0576	0.02	0.9848	-0.1118	0.1140
f_184	-0.0404	0.0570	-0.71	0.4781	-0.1520	0.0712
f_185	0.0080	0.0586	0.14	0.8913	-0.1068	0.1228
f_186	-0.0945	0.0586	-1.61	0.1069	-0.2094	0.0204
f_187	0.0396	0.0575	0.69	0.4916	-0.0732	0.1523
f_188	0.0860	0.0589	1.46	0.1439	-0.0293	0.2014
f_189	-0.0632	0.0581	-1.09	0.2774	-0.1771	0.0508
f_190	0.0314	0.0587	0.54	0.5926	-0.0836	0.1464
f_191	-0.0491	0.0580	-0.85	0.3972	-0.1628	0.0646
f_192	0.0595	0.0588	1.01	0.3119	-0.0558	0.1747
f_193	0.1429	0.0594	2.40	0.0162	0.0264	0.2594
f_194	0.0501	0.0589	0.85	0.3950	-0.0653	0.1655

f_195	0.2055	0.1147	1.79	0.0731	-0.0192	0.4303
f_196	0.1690	0.0596	2.84	0.0046	0.0522	0.2858
f_197	-0.0017	0.0587	-0.03	0.9775	-0.1166	0.1133
f_198	-0.1081	0.0592	-1.82	0.0682	-0.2242	0.0080
f_199	-0.0031	0.0595	-0.05	0.9588	-0.1197	0.1136
f_200	0.0579	0.0581	1.00	0.3196	-0.0561	0.1718
f_201	-0.0239	0.0584	-0.41	0.6826	-0.1385	0.0906
f_202	-0.0062	0.0586	-0.11	0.9151	-0.1211	0.1086
f_203	0.0268	0.0594	0.45	0.6513	-0.0895	0.1432
f_204	0.0148	0.0593	0.25	0.8031	-0.1014	0.1310
f_205	1.8642	0.0834	22.36	0.0000	1.7007	2.0276
f_206	-0.0311	0.0587	-0.53	0.5961	-0.1463	0.0840
f_207	-0.0502	0.0596	-0.84	0.3998	-0.1669	0.0666
f_208	-0.0137	0.0589	-0.23	0.8156	-0.1292	0.1017
f_209	-0.0285	0.0575	-0.50	0.6205	-0.1412	0.0842
f_210	0.0569	0.0586	0.97	0.3316	-0.0579	0.1717
f_211	-0.0180	0.0583	-0.31	0.7581	-0.1323	0.0963
f_212	-0.0475	0.0582	-0.82	0.4140	-0.1615	0.0665
f_213	-0.0003	0.0591	-0.00	0.9966	-0.1161	0.1156
f_214	-0.0639	0.0582	-1.10	0.2728	-0.1780	0.0503
f_216	0.0213	0.0583	0.37	0.7149	-0.0930	0.1356
f_217	-0.0864	0.0594	-1.46	0.1457	-0.2028	0.0300
f_218	0.7796	0.0825	9.45	0.0000	0.6178	0.9413
f_219	0.0526	0.0588	0.89	0.3715	-0.0627	0.1679
f_220	-0.0192	0.0579	-0.33	0.7398	-0.1326	0.0942
f_221	-0.0162	0.0582	-0.28	0.7801	-0.1303	0.0978
f_222	0.0318	0.0594	0.54	0.5921	-0.0846	0.1482
f_223	-0.0179	0.0589	-0.30	0.7605	-0.1334	0.0975
f_224	-0.0659	0.0595	-1.11	0.2678	-0.1824	0.0506
f_225	-0.0521	0.0587	-0.89	0.3745	-0.1672	0.0629
f_226	0.0025	0.0591	0.04	0.9663	-0.1133	0.1183
f_227	-0.0193	0.0587	-0.33	0.7427	-0.1343	0.0957

```
     f_228    0.0119    0.0581     0.21    0.8372   -0.1020    0.1259
     f_229    0.0397    0.0579     0.69    0.4926   -0.0737    0.1532
     f_230   -0.0245    0.0584    -0.42    0.6748   -0.1389    0.0899
     f_231   -0.0324    0.0593    -0.55    0.5849   -0.1486    0.0838
     f_232    0.0560    0.0587     0.95    0.3405   -0.0591    0.1711
------------------------------------------------------------------------
     f_233    0.0165    0.0592     0.28    0.7799   -0.0994    0.1325
     f_234   -0.0006    0.0577    -0.01    0.9920   -0.1137    0.1125
     f_235    0.0469    0.0591     0.79    0.4279   -0.0690    0.1628
     f_236   -0.0375    0.0584    -0.64    0.5204   -0.1520    0.0769
     f_238    0.0310    0.0594     0.52    0.6021   -0.0855    0.1475
------------------------------------------------------------------------
     f_239   -0.0350    0.0598    -0.59    0.5583   -0.1522    0.0822
     f_240   -0.0007    0.0591    -0.01    0.9899   -0.1165    0.1150
     f_241    0.0485    0.0590     0.82    0.4108   -0.0671    0.1642
     f_242    0.0150    0.0575     0.26    0.7947   -0.0977    0.1277
     f_243    0.0706    0.0590     1.20    0.2313   -0.0450    0.1861
------------------------------------------------------------------------
     f_244    0.0203    0.0586     0.35    0.7285   -0.0945    0.1352
     f_245   -0.0553    0.0591    -0.94    0.3497   -0.1710    0.0605
     f_246    0.0714    0.0587     1.22    0.2238   -0.0436    0.1864
     f_247   -0.0858    0.0590    -1.45    0.1464   -0.2015    0.0300
     f_248    0.0281    0.0594     0.47    0.6362   -0.0883    0.1445
------------------------------------------------------------------------
     f_249   -0.0120    0.0581    -0.21    0.8363   -0.1259    0.1018
     f_250   -0.0606    0.0594    -1.02    0.3073   -0.1770    0.0558
     f_251   -0.0567    0.0590    -0.96    0.3366   -0.1723    0.0589
     f_252    0.0943    0.0587     1.61    0.1084   -0.0208    0.2093
     f_253    0.0820    0.0584     1.40    0.1602   -0.0324    0.1964
------------------------------------------------------------------------
      f_61   -0.7443    0.0415   -17.94    0.0000   -0.8256   -0.6630
     f_121    0.0014    0.0340     0.04    0.9660   -0.0652    0.0681
     f_215   -0.0476    0.0524    -0.91    0.3632   -0.1503    0.0550
     f_237    0.4024    0.0714     5.63    0.0000    0.2624    0.5423
 intercept    2.3125    0.1705    13.57    0.0000    1.9784    2.6466
---------------------------------End of Summary---------------------------------
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In [38]: