```
In [ ]:
         CS 418: Project 1
         Authors: Anusha Sagi, Fatima Kahack, Lydia Tse
         Description: The following is code that merges
         the data sets regarding the election results
         and the 2018 census information.
In [1]: # Load libraries
         import pandas as pd
         import matplotlib.pyplot as plt
         import seaborn as sns
         import numpy as np
In [2]: # Load Election dataset
        data election = pd.read csv('election train.csv')
        print(data_election)
               Year State
                                                   Office
                                                                            Votes
                                       County
                                                                 Party
        0
              2018
                       AZ
                               Apache County
                                               US Senator
                                                            Democratic
                                                                          16298.0
               2018
                               Apache County
                                               US Senator
                                                            Republican
                                                                           7810.0
        2
               2018
                       ΑZ
                              Cochise County
                                               US Senator
                                                            Democratic
                                                                          17383.0
        3
               2018
                              Cochise County
                                               US Senator
                                                                          26929.0
                       ΑZ
                                                            Republican
                             Coconino County
        4
               2018
                                               US Senator
                                                            Democratic
                                                                          34240.0
                       AZ
        5
              2018
                       AZ
                             Coconino County
                                               US Senator
                                                            Republican
                                                                          19249.0
        6
               2018
                       AZ
                                 Gila County
                                               US Senator
                                                            Democratic
                                                                           7643.0
              2018
                       ΑZ
                                 Gila County
                                               US Senator
                                                            Republican
                                                                          12180.0
        8
               2018
                                Graham County
                                               US Senator
                                                            Democratic
                                                                           3368.0
                       AZ
               2018
                               Graham County
                                                            Republican
                                                                           6870.0
        9
                       ΑZ
                                               US Senator
                                               US Senator
        10
              2018
                       ΑZ
                               La Paz County
                                                            Democratic
                                                                           1609.0
        11
               2018
                       ΑZ
                               La Paz County
                                               US Senator
                                                            Republican
                                                                           3265.0
                                                            Democratic 732671.0
        12
              2018
                             Maricopa County
                       ΑZ
                                               US Senator
               2018
                             Maricopa County
        13
                       A 7.
                                               IIS Senator
                                                            Republican
                                                                         672505.0
                               Mohave County
        14
              2018
                       ΑZ
                                               US Senator
                                                            Democratic
                                                                          19214.0
        15
               2018
                       ΑZ
                               Mohave County
                                               US Senator
                                                            Republican
                                                                          50209.0
        16
               2018
                               Navajo County
                                               US Senator
                                                                          16624.0
                       AZ
                                                            Democratic
        17
               2018
                                Navajo County
                                               US Senator
                                                            Republican
                                                                          18767.0
        18
               2018
                       ΑZ
                                 Pima County
                                               US Senator
                                                            Democratic
                                                                         221242.0
                                 Pima County
                                                                         160550.0
        19
              2018
                       AZ
                                               US Senator
                                                            Republican
        20
               2018
                       AZ
                           Santa Cruz County
                                               US Senator
                                                            Democratic
                                                                           9241.0
        21
              2018
                       ΑZ
                           Santa Cruz County
                                               US Senator
                                                            Republican
                                                                           3828.0
        22
               2018
                              Yavapai County
                                               US Senator
                                                                          40160.0
                                                            Democratic
        23
                              Yavapai County
               2018
                       ΑZ
                                               US Senator
                                                            Republican
                                                                          65308.0
        24
               2018
                       CT
                            Fairfield County
                                               US Senator
                                                            Democratic
        25
               2018
                       CT
                            Fairfield County
                                               US Senator
                                                            Republican
                                                                         131321.0
        26
              2018
                             Hartford County
                       CT
                                               US Senator
                                                            Democratic
                                                                         203591.0
                             Hartford County
        27
               2018
                                               US Senator
                                                            Republican
                                                                         123864.0
                       CT
        28
              2018
                       CT
                            Middlesex County
                                               US Senator
                                                            Democratic
                                                                          42383.0
                       СТ
        29
               2018
                            Middlesex County
                                               US Senator
                                                            Republican
                                                                          32836.0
        2380
              2018
                                Albany County
                                                                           7576.0
                                               US Senator
                                                            Democratic
                                               US Senator
        2381
              2018
                       WY
                               Albany County
                                                            Republican
                                                                           6366.0
        2382
                             Campbell County
              2018
                                               US Senator
                                                                           1628.0
                       WY
                                                            Democratic
        2383
              2018
                       WY
                             Campbell County
                                               US Senator
                                                            Republican
                                                                          11020.0
        2384
              2018
                       WY
                               Carbon County
                                               US Senator
                                                            Democratic
                                                                           1359.0
        2385
              2018
                       WY
                                Carbon County
                                               US Senator
                                                            Republican
                                                                           3673.0
        2386
              2018
                       WY
                             Converse County
                                               US Senator
                                                            Democratic
                                                                            834.0
        2387
              2018
                       WY
                             Converse County
                                               US Senator
                                                            Republican
                                                                           3959.0
        2388
              2018
                       WY
                              Fremont County
                                               US Senator
                                                            Democratic
                                                                           4734.0
        2389
                              Fremont County
              2018
                       WY
                                               US Senator
                                                            Republican
                                                                           9262.0
        2390
              2018
                               Goshen County
                       WY
                                               US Senator
                                                            Democratic
                                                                           1020.0
        2391
              2018
                       WY
                               Goshen County
                                               US Senator
                                                            Republican
                                                                           3658.0
        2392
              2018
                       WY
                              Johnson County
                                               US Senator
                                                            Democratic
                                                                            722.0
        2393
              2018
                       WY
                              Johnson County
                                               US Senator
                                                            Republican
                                                                           3085.0
                              Lincoln County
        2394
              2018
                                               US Senator
                                                            Democratic
                                                                           1152.0
        2395
              2018
                       WY
                              Lincoln County
                                               US Senator
                                                            Republican
                                                                           5846.0
        2396
              2018
                              Natrona County
                                                                           7285.0
                       WY
                                               US Senator
                                                            Democratic
        2397
              2018
                       WY
                              Natrona County
                                               US Senator
                                                            Republican
                                                                          16359.0
        2398
              2018
                       WY
                             Niobrara County
                                               US Senator
                                                            Democratic
                                                                            144.0
                             Niobrara County
        2399
              2018
                       WY
                                               US Senator
                                                            Republican
                                                                            980.0
        2400
              2018
                       WY
                               Platte County
                                               US Senator
                                                                            801.0
                                                            Democratic
                               Platte County
        2401
              2018
                                               US Senator
                                                            Republican
                                                                           2850.0
        2402
              2018
                       WY
                              Sublette County
                                               US Senator
                                                            Democratic
                                                                            668.0
        2403
              2018
                             Sublette County
                                                                           2653.0
                       WY
                                               US Senator
                                                            Republican
                           Sweetwater County
        2404
              2018
                                                                           3943.0
                       WY
                                               US Senator
                                                            Democratic
        2405
              2018
                       WY
                           Sweetwater County
                                               US Senator
                                                            Republican
                                                                           8577.0
        2406
              2018
                       WY
                                Uinta County
                                               US Senator
                                                            Democratic
                                                                           1371.0
        2407
              2018
                       WY
                                Uinta County
                                               US Senator
                                                            Republican
                                                                           4713.0
        2408
              2018
                             Washakie County
                                               US Senator
                                                            Democratic
                             Washakie County
                                                                           2423.0
              2018
                                               US Senator
                                                            Republican
        [2410 rows x 6 columns]
```

```
In [3]: # 1. Reshape dataset from long format to wide format - pivot_table()
    data_election = pd.pivot_table(data_election, index = ['Year','State','County','Office'], columns = 'Party', values = 'V
    otes', aggfunc = np.sum).reset_index()
    print(data_election)
    #data_a_tidy.to_excel("output.xlsx")
```

Party		State	- ,	County		Office	Democratic	Republican
0	2018	AZ	-	County		Senator	16298.0	7810.0
1	2018	AZ	Cochise	_		Senator	17383.0	26929.0
2	2018	AZ	Coconino	_		Senator	34240.0	19249.0
3	2018	AZ		County		Senator	7643.0	12180.0
4	2018	AZ		County		Senator	3368.0	6870.0
5	2018	AZ		County		Senator	1609.0	3265.0
5	2018	AZ	Maricopa	-		Senator	732671.0	672505.0
7	2018	AZ		County		Senator	19214.0	50209.0
3	2018	AZ	_	County		Senator	16624.0	18767.0
9	2018	AZ		County		Senator	221242.0	160550.0
10	2018	AZ	Santa Cruz	_		Senator	9241.0	3828.0
11	2018	AZ	Yavapai	_		Senator	40160.0	65308.0
12 13	2018	CT CT	Fairfield Hartford	-		Senator	210899.0 203591.0	131321.0 123864.0
13 14	2018 2018	CT	Middlesex	-		Senator Senator	42383.0	32836.0
15	2018	CT	New Haven	-		Senator	179714.0	126004.0
16	2018	CT	Tolland			Senator	34732.0	28046.0
17	2018	CT		_				
L 7	2018	DE	Windham	County		Senator Senator	20490.0 40675.0	19032.0 50391.0
L9	2018	FL	Alachua	_		Senator	74493.0	40599.0
20	2018	FL		County		Senator	1945.0	8579.0
21	2018	FL		County		Senator	16723.0	46681.0
22	2018	FL	Bradford			Senator	2879.0	7576.0
23	2018	FL	Brevard	_		Senator	121112.0	160305.0
24	2018	FL	Broward	_		Senator	472239.0	211397.0
25	2018	FL	Charlotte	_		Senator	33525.0	52916.0
26	2018	FL		County		Senator	22660.0	48008.0
27	2018	FL	Collier			Senator	54390.0	101266.0
8	2018	FL		County		Senator	3328.0	5503.0
9	2018	$_{ m FL}$		County		Senator	1322.0	4442.0
175	2018	WV	Pocahontas	County	US	Senator	1269.0	1411.0
176	2018	WV	Preston	County	US	Senator	3686.0	5943.0
177	2018	WV	Raleigh	County	US	Senator	10581.0	12620.0
178	2018	WV	Randolph	County	US	Senator	4472.0	4017.0
179	2018	WV	Ritchie	County	US	Senator	1082.0	1961.0
180	2018	WV	Roane	County	US	Senator	2165.0	1899.0
1181	2018	WV	Summers	County		Senator	2069.0	1868.0
L182	2018	WV		County	US	Senator	2376.0	2642.0
183	2018	WV		County	US	Senator	1469.0	1502.0
184	2018	WV	_	County		Senator	1065.0	1603.0
185	2018	WV	-	County		Senator	3102.0	4010.0
186	2018	WV	_	County		Senator	6395.0	5954.0
187	2018	WV		County		Senator	2518.0	2135.0
188	2018	WV		County		Senator	14189.0	13696.0
189	2018	WV	Wyoming	_		Senator	2607.0	3096.0
190	2018	WY	_	County		Senator	7576.0	6366.0
1191	2018	WY	Campbell	-		Senator	1628.0	11020.0
1192	2018	WY		County		Senator	1359.0	3673.0
1193	2018	WY	Converse	_		Senator	834.0	3959.0
1194	2018	WY	Fremont	_		Senator	4734.0	9262.0
1195	2018	WY		County		Senator	1020.0	3658.0
1196	2018	WY	Johnson	_		Senator	722.0	3085.0
1197	2018	WY	Lincoln	_		Senator	1152.0	5846.0
1198	2018	WY	Natrona	-		Senator	7285.0	16359.0
1199	2018	WY	Niobrara	-		Senator	144.0	980.0
1200	2018	WY		County		Senator	801.0	2850.0
1201	2018	WY	Sublette	_		Senator	668.0	2653.0
1202	2018	WY	Sweetwater	_		Senator	3943.0	8577.0
1203	2018	WY		County		Senator	1371.0	4713.0
1204	2018	WY	Washakie	county	บร	Senator	588.0	2423.0

[1205 rows x 6 columns]

In [4]: # Load demographics dataset
 data_demographics = pd.read_csv('demographics_train.csv')
 print(data_demographics)

				r i_Exploratory_L	Jata_Allalysis
	State	County	FIPS	Total Population	\
0	Wisconsin	La Crosse	55063	117538	
1	Virginia	Alleghany	51005	15919	
2	Indiana	Fountain	18045	16741	
3 4	Ohio Wisconsin	Geauga	39055	94020 20566	
5	Texas	Jackson Baylor	55053 48023	3639	
6	Nebraska	Madison	31119	35125	
7	Hawaii	Hawaii	15001	193680	
8	Tennessee	Henry	47079	32291	
9	Michigan	Oceana	26127	26152	
10	Nebraska	Pierce	31139	7179	
11	Texas	Jack	48237	8866	
12	Florida	Walton	12131	61528	
13	Virginia	Washington	51191	54562	
14	Florida	Escambia		309574	
15	Texas	Wheeler		5642	
16 17	Arizona Nebraska	Yavapai Loup	4025 31115	218586 542	
18	Michigan	Antrim	26009	23215	
19	Minnesota	Wabasha	27157	21327	
20	Nevada	Elko	32007	52029	
21	Wisconsin	Dodge	55027	88404	
22	Minnesota	Lake of the Woods	27077	3901	
23	West Virginia	Tucker	54093	6922	
24	Virginia	Lexington City	51678	7036	
25	Florida	Gilchrist	12041	17033	
26	Tennessee	Claiborne	47025	31701	
27	Connecticut	Middlesex	9007	164438	
28 29	Utah Massachusetts	Sevier Hampshire	49041 25015	20913 161035	
	rassaciiusects	nampshire 	23013	101033	
1186	West Virginia	Wood	54107	86262	
1187	Florida	Orange	12095	1256055	
1188	North Dakota	Walsh	38099	10995	
1189	Indiana	White	18181	24265	
1190	Montana	Carter	30011	1295	
1191	Indiana	Pulaski	18131	12910	
1192	Washington	Lewis	53041	75724	
1193	Pennsylvania	Greene	42059	37669	
1194 1195	Texas Montana	Yoakum Pondera	48501 30073	8316 6166	
1196	North Dakota	Dickey	38021	5160	
1197	Texas	Refugio	48391	7315	
1198	Virginia	Smyth	51173	31513	
1199	Virginia	Charlotte	51037	12232	
1200	Michigan	Grand Traverse	26055	90715	
1201	Indiana	Rush	18139	16873	
1202	Montana	Deer Lodge	30023	9176	
1203	Ohio	Washington	39167	61154	
1204 1205	Wisconsin New York	Portage Monroe	55097 36055	70551 749236	
1205	Florida	Broward	12011	1863780	
1207	Washington	Wahkiakum	53069	4051	
1208	New York	Tioga	36107	49649	
1209	Montana	Carbon	30009	10340	
1210	Texas	Johnson	48251	157544	
1211	Montana	Lincoln	30053	19268	
1212	Ohio	Tuscarawas	39157	92579	
1213	Michigan	Newaygo	26123	47957	
1214 1215	Tennessee Texas	Lauderdale Sabine	47097 48403	27261 10367	
1213	Texas	Sabine	40403	10307	
	Citizen Votino	-Age Population Pe	rcent W	Thite, not Hispanic	or Latino \
0		0			90.537528
1		12705			91.940449
2		12750			95.705155
3		0			95.837056
4		15835			86.662453
5		0			86.644683
6		24885			81.249822
7 8		0 25285			30.401694 87.662197
9		18930			82.486999
10		5385			96.893718
11		6535			78.411911
12		47490			84.447731
13		0			95.484037
14		0			65.219624
15		3785			68.397731
16		0			81.159361
17 18		435 0			97.970480 95.179841
19		16385			94.926619
20		34740			67.354744
21		0			90.629383
22		0			93.975904
23		5690			97.688529

		P1_Exploratory_Data_Analysis
24	6335	80.542922
25	0	87.295250
26	25350	95.495410
27	0	84.738929
28	0	92.244059
29	0	84.610799
1186	67640	95.478890
1187	854605	42.656970
1188	8280	85.657117
1189	0	90.245209
1190	0	96.602317
1191	9870	94.771495
1192	56900	84.489726
1193 1194	0	92.598689 34.271284
1194	0	80.960104
1196	0	93.720930
1197	0	42.761449
1198	24960	94.376924
1199	9540	67.282538
1200	70710	92.673758
1201	0	96.325490
1202 1203	0	90.747602 95.364163
1203	0	91.815850
1205	0	71.329327
1206	0	39.245351
1207	0	89.681560
1208	38525	95.454088
1209	0	94.787234
1210	0	74.343041
1211 1212	15640 70485	93.351671 95.155489
1213	0	90.716684
1214	0	60.456330
1215	0	86.341275
0	Percent Black, not Hispanic or Latino	
0 1	1.214075 5.207614	
2	0.400215	
3	1.256116	
4	1.983857	3.082758
5	1.841165	
6	1.155872	
7	0.547811	
8 9	8.599919 1.131845	
10	0.222872	
11	4.376269	
12	4.950592	
13	1.268282	1.414904
14	21.532816	
15	2.658632	
16 17	0.518331 0.000000	
18	0.323067	
19	0.150045	
20	1.060947	24.067347
21	2.085878	
22	0.102538	
23	0.173360	
24 25	8.996589 5.988376	
26	1.050440	
27	4.664980	
28	0.344283	
29	2.683268	5.253516
• • •	•••	
1186	1.123322	
1187	19.981211	
1188 1189	0.300136 0.461570	
1190	0.000000	
1191	0.209140	
1192	0.662934	
1193	4.149300	
1194	0.000000	
1195	0.389231	
1196 1197	1.472868 4.743677	
1197	2.068987	
1199	30.657292	
1200	1.234636	
1201	1.149766	1.428317
1202	0.348736	
1203	1.100500	1.013834

```
1204
                                     0.687446
                                                                   2.951057
1205
                                    14.497969
                                                                   8.120272
1206
                                    27.214639
                                                                   27.564841
1207
                                     0.123426
                                                                   4.640829
1208
                                     0.713005
                                                                   1.695905
1209
                                     0.009671
                                                                   2.379110
1210
                                     2.487559
                                                                   19.762733
1211
                                     0.057089
                                                                   2.678015
1212
                                     0.804718
                                                                   2.349345
                                                                   5.728048
1213
                                     1.317847
1214
                                     34.789626
                                                                   2.380690
1215
                                     7.080158
                                                                   3.839105
      Percent Foreign Born Percent Female Percent Age 29 and Under \
0
                   2.976059
                                   51.171536
                                                               43.241335
                   1.300333
                                   51.077329
                                                               31.660280
1
2
                   1.547100
                                   49.770026
                                                               35.899887
                                   50.678579
3
                   2.578175
                                                               36.281642
4
                   1.376058
                                   46.649810
                                                               36.292911
5
                   2.473207
                                   51.662545
                                                               30.090684
6
                   6.784342
                                   50.448399
                                                               41.432028
7
                  11.003717
                                   50.143019
                                                               36.008881
8
                                   51.441578
                                                               33.238364
                   1.560806
9
                   5.578923
                                   49.395840
                                                               36.643469
10
                   0.780053
                                   49.658727
                                                               36.634629
11
                   5.549289
                                   43.187458
                                                               38.732236
12
                   5.759979
                                   49.349889
                                                               33.165388
13
                   1.611011
                                   50.500348
                                                               32.005792
14
                   4.747492
                                   50.299444
                                                               41.364585
15
                   9.517901
                                   49.202410
                                                               39.188231
                   6.456955
                                   51.092476
                                                               28.717301
16
17
                   0.000000
                                   52.398524
                                                               30.996310
18
                   2.015938
                                   50.273530
                                                               29.450786
19
                   1.355090
                                   50.171145
                                                               34.594645
20
                   8.602895
                                   47.948260
                                                               44.928790
21
                   1.884530
                                   47.788562
                                                               34.642098
22
                   1.563702
                                   47.962061
                                                               28.479877
23
                   0.592314
                                   50.245594
                                                               29.731292
24
                   3.936896
                                   43.447982
                                                               67.367823
25
                   2.906123
                                   47.390360
                                                               38.307990
26
                   1.164001
                                   51.200278
                                                               35.673954
27
                   7.652732
                                   51.098894
                                                               33.241708
                                                               43.877014
                                   48.893033
28
                   1.989193
29
                   7.846120
                                   53.230664
                                                               44.243177
                   1.001600
                                   51.756277
                                                               34.726763
1186
                  20.157318
                                   50.827551
                                                               43.005123
1187
1188
                   3.919964
                                   48.722146
                                                               34.588449
1189
                   4.314857
                                   50.294663
                                                               36.130229
1190
                   0.077220
                                   51.737452
                                                               30.810811
1191
                   0.805577
                                   49.310612
                                                               36.018590
1192
                   4.512440
                                   50.158470
                                                               35.731076
                                   48.084632
1193
                   0.809684
                                                               35.267727
1194
                  25.637326
                                   49.158249
                                                               46.284271
1195
                   2.189426
                                   49.724295
                                                               37.528381
1196
                   1.763566
                                   49.806202
                                                               36.531008
                                   50.799727
1197
                   2.734108
                                                               36.896787
1198
                   1.256624
                                   50.423635
                                                               33.316409
1199
                   0.662198
                                   49.959124
                                                               35.080118
                                                               35.075787
1200
                   2.421871
                                   50.830623
1201
                   1.060866
                                   50.974930
                                                               36.745096
1202
                   1.874455
                                   46.785092
                                                               29.980384
1203
                   1.430814
                                   50.596854
                                                               34.483435
1204
                   3.119729
                                   49.846211
                                                               42.641493
1205
                   8.460752
                                   51.694126
                                                               39.551223
1206
                  32.715718
                                   51.376504
                                                               36.701971
1207
                   3.505307
                                   51.246606
                                                               26.783510
1208
                   2.229652
                                   50.554895
                                                               34.465951
1209
                   1.276596
                                   49.990329
                                                               28.143133
1210
                   6.138603
                                   50.168842
                                                               41.296400
                                   49.974050
1211
                   2.345858
                                                               27.979033
1212
                   1.650482
                                   50.823621
                                                               36.475875
1213
                   1.978856
                                   49.656984
                                                               36.620306
                                                               39.528997
1214
                   1.757089
                                   47.734859
1215
                   0.752387
                                   50.506415
                                                               31.243368
      Percent Age 65 and Older
                                  Median Household Income Percent Unemployed \
0
                      14.702479
                                                      51477
                                                                        4.796952
1
                      23.902255
                                                      45538
                                                                        4.560986
2
                      18.941521
                                                      45924
                                                                        7.978789
3
                      18.028079
                                                      74165
                                                                        4.036902
4
                      17.587280
                                                      49608
                                                                        5.569698
5
                      24.402308
                                                      34382
                                                                        1.377410
6
                      15.404982
                                                      48673
                                                                        3.094085
                      17.580545
7
                                                      53936
                                                                        7.437632
8
                      21.476572
                                                      38378
                                                                        7.912277
                      19.088406
                                                      41952
9
                                                                        8.275556
10
                      18.540187
                                                      53125
                                                                        3.981142
```

		P1_Explorato	ry_Data_Analysis
11	15.677871	50390	4.680468
12	18.783318	46910	7.295474
13	20.301675	43835	6.425857
14	15.774581	46117	8.297930
15	17.795108	51082	5.424099
16	28.272625	46638	8.525986
17	24.538745	56750	0.335570
18	25.410295	48825	7.815784
19	18.807146	58865	3.382303
20	9.229468	74672	4.896851
21	16.304692	54111	4.849356
22	21.814919	45732	3.888099
23	22.594626	43529	8.190184
24	14.198408	34464	3.926590
25	19.567898	40881	9.732220
26	18.390587	33428	8.446716
27	17.703937	79837	5.257635
28	15.583608	48872	5.340291
29	14.755177	62608	7.146733
	•••	•••	
1186	18.559737	43944	7.625458
1187	10.741090	49391	8.072223
1188	20.627558	51181	3.314246
1189	18.569957	51547	5.421587
1190	24.942085	46985	2.656250
1191	18.086754	44884	7.046070
1192	19.609371	44526	9.684249
1193	17.104250	49116	6.993228
1194	11.423761	56655	9.136546
1195	19.656179	42193	8.497409
1196	21.705426	55882	2.549773
1197	21.052632	50145	7.469005
1198	19.994923	38906	7.343413
1199	20.372793	33837	6.997030
1200	17.003803	55597	5.848530
1201	17.412434	46380	5.658982
1202	20.891456	39212	3.727181
1203	19.151650	44763	4.689885
1204	14.644725	52411	6.178216
1205	15.491914	53568	7.306146
1206	15.371879	52954	8.710312
1207	31.325599	48116	6.971514
1208	17.925839	58115	6.720605
1209	22.746615	52869	3.743112

35461

46992

44049

32353

32500

6.337092

11.570571

5.734798

8.885564

11.427738

8.259134

1215 28.995852 Percent Less than High School Degree $\$ 0 5.474767 1 15.537543 2 12.032155 3 8.928599 4 11.792912 5 13.066667 11.678672 6 7 8.362326 8 15.710841 14.335429 9 10 5.227552 11 21.130221 12 15.083974 13 15.913833 10.053723 14 15 19.678609 16 9.830672 17 2.736318 18 9.311741 19 6.811536 20 16.622189 21 10.956491 10.309278 22 23 12.702390 24 14.962495 25 17.294025 26 22.759203 27 6.153444 28 10.556637 29 5.741345 1186 10.370080 1187 12.319191 1188 13.114754 10.394650 1189 7.991588 1190

13.209643

24.828732

17.836658

17.728382

13.891640

1210

1211

1212

1213

	P1_Expl
12.931034	
12.929994	
17.449694	
20.028275	
5.543796	
6.784049	
9.616412	
11.688725	
6.868490	
14.068037	
14.194114	
24.485474	
14.643237	
Porgont Logs than Bagholor's Dogroo	Percent Rural
	16.827753
83.711604	52.393846
85.538940	65.951276
62.730824	63.968990
86.129256	72.238251
	100.000000
	27.904576 37.990804
	66.848129
82.947912	89.890854
78.618286	100.000000
89.221949	53.217603
73.691263	63.125193
	71.676143
	8.302225 100.000000
	33.197178
78.109453	100.000000
73.314054	100.000000
78.761297	64.541428
	37.850793
	48.641828 100.000000
	100.000000
55.112515	0.000000
87.654646	83.918767
86.813089	71.554962
	24.540066
	64.714931 27.443699
	27.443099
79.738786	26.774461
68.077150	2.042138
83.281291	62.055940
	67.966563
	100.000000 80.943143
	60.654695
82.669606	66.832963
82.183908	37.327072
77.324750	58.101739
	100.000000
	60.679940 75.285643
	100.000000
68.328672	48.023820
85.971564	61.160304
84.100541	33.641643
81.590788	56.562207
	36.031649
	6.449975 0.016933
	100.000000
74.963552	65.658680
70.838103	100.000000
82.255463	37.874170
81.041325	79.793773
85.020218	41.580437
05 ((0700	02 040201
85.660708 91.425468	83.840281 58.662592
85.660708 91.425468 87.060703	83.840281 58.662592 100.000000
	12.929994 13.277047 28.571429 10.801144 12.319456 20.225171 17.449694 20.028275 5.543796 15.398535 10.536314 9.795325 6.784049 9.616412 11.688725 6.868490 9.753866 6.142694 16.183214 11.891078 14.068037 14.194114 24.485474 14.643237 Percent Less than Bachelor's Degree 67.529757 83.711604 85.538940 62.730824 86.129256 73.409524 86.32521 72.408979 85.305261 82.947912 78.618286 89.221949 73.691263 75.223085 75.116986 85.879874 74.458362 78.109453 73.314054 78.761297 81.880924 83.745359 83.024055 85.794140 55.112515 87.654646 86.813089 59.071541 83.495524 55.277464 79.738786 68.077150 83.281291 84.315482 82.860147 89.330497 84.490042 82.669606 82.183908 77.324750 72.047579 89.203860 85.29810 86.958058 66.328672 85.9971564 84.100541 81.590788 69.694941 63.335285 68.984269 84.928385 74.963552 70.838103 82.255463

[1216 rows x 17 columns]

```
In [5]: #2i-Merge elections and demographics
    #Rename column names in election - State
    data_state_codes = pd.read_csv('State_codes.csv')
    data_election['State'] = data_election['State'].map(data_state_codes.set_index('State_code')['State_name'])
    print(data_election)
```

							_ 1	<i>7</i> – –	
Party	Year	S	tate		County		Office	Democratic	
0	2018	Ari	zona	Apache	County	US	Senator	16298.0	
1	2018	Ari	zona	Cochise	County	US	Senator	17383.0	
2	2018	Ari	zona	Coconino	County	US	Senator	34240.0	
3	2018	Ari	zona	Gila	County	US	Senator	7643.0	
4	2018	Ari	zona	Graham	County	US	Senator	3368.0	
5	2018	Ari	zona	La Paz	County	US	Senator	1609.0	
6	2018	Ari	zona	Maricopa	County	US	Senator	732671.0	
7	2018		zona	_	County		Senator	19214.0	
8	2018		zona		County	US	Senator	16624.0	
9	2018		zona	-	County		Senator	221242.0	
10	2018		zona	Santa Cruz	_		Senator	9241.0	
11	2018		zona	Yavapai	_		Senator	40160.0	
12	2018	Connect		Fairfield	_		Senator	210899.0	
13	2018	Connect		Hartford	_		Senator	203591.0	
14	2018	Connect		Middlesex	_		Senator	42383.0	
15	2018	Connect		New Haven	_		Senator	179714.0	
16	2018	Connect		Tolland	_	US	Senator	34732.0	
17	2018	Connect			-	US		20490.0	
				Windham	_		Senator		
18	2018		ware		County		Senator	40675.0	
19	2018		rida	Alachua	_		Senator	74493.0	
20	2018		rida		County		Senator	1945.0	
21	2018		rida	_	County		Senator	16723.0	
22	2018		rida	Bradford	_		Senator	2879.0	
23	2018		rida	Brevard	_	US	Senator	121112.0	
24	2018		rida	Broward	County		Senator	472239.0	
25	2018	Flo	rida	Charlotte	County	US	Senator	33525.0	
26	2018	Flo	rida	Citrus	County	US	Senator	22660.0	
27	2018	Flo	rida	Collier	County	US	Senator	54390.0	
28	2018	Flo	rida		County	US	Senator	3328.0	
29	2018		rida		County	US	Senator	1322.0	
		110		DIATE	_	OB			
1175	2010	Woot Wire	•••	Dogahontag	Country	IIC	Constor	1260 0	
1175	2018	West Virg		Pocahontas	_		Senator	1269.0	
1176	2018	West Virg		Preston	_		Senator	3686.0	
1177	2018	West Virg		Raleigh	_		Senator	10581.0	
1178	2018	West Virg	inia	Randolph	County	US	Senator	4472.0	
1179	2018	West Virg	inia	Ritchie	County	US	Senator	1082.0	
1180	2018	West Virg	inia	Roane	County	US	Senator	2165.0	
1181	2018	West Virg	inia	Summers	County	US	Senator	2069.0	
1182	2018	West Virg	inia	Taylor	County	US	Senator	2376.0	
1183	2018	West Virg		_	County		Senator	1469.0	
1184	2018	West Virg			County		Senator	1065.0	
1185	2018	West Virg		_	County		Senator	3102.0	
1186	2018	West Virg		-	County		Senator	6395.0	
		-		_	_				
1187	2018	West Virg			County		Senator	2518.0	
1188	2018	West Virg			County		Senator	14189.0	
1189	2018	West Virg		Wyoming	_		Senator	2607.0	
1190	2018	_	ming		County	US	Senator	7576.0	
1191	2018	Wyo	ming	Campbell	County	US	Senator	1628.0	
1192	2018	Wyo	ming	Carbon	County	US	Senator	1359.0	
1193	2018	Wyo	ming	Converse	County	US	Senator	834.0	
1194	2018	Wyo	ming	Fremont	County	US	Senator	4734.0	
1195	2018		ming	Goshen	County	US	Senator	1020.0	
1196	2018	_	ming	Johnson	_		Senator	722.0	
1197	2018	_	ming	Lincoln			Senator	1152.0	
1198	2018	_	ming	Natrona	_		Senator	7285.0	
		_	-		_				
1199	2018	_	ming	Niobrara	_		Senator	144.0	
1200	2018	_	ming		County		Senator	801.0	
1201	2018		ming	Sublette	_		Senator	668.0	
1202	2018		ming	Sweetwater			Senator	3943.0	
1203	2018	-	ming		County		Senator	1371.0	
1204	2018	Wyo	ming	Washakie	County	US	Senator	588.0	
Party	Repub								
0	7	810.0							
1	26	929.0							
2	19	249.0							
3		180.0							
4		870.0							
5		265.0							
6									
		505.0							
7		209.0							
8		767.0							
9		550.0							
10		828.0							
11	65	308.0							
12	131	321.0							
13		864.0							
14		836.0							
15		004.0							
16		046.0							
17		032.0							
18		391.0							
19		599.0							
20		579.0							
21		681.0							
22	7	576.0							
23	160	305.0							
lia/Down!	oade/D1	Evplorator	v Dote	Analysis Ah	tm1				

24	211397.0
25	52916.0
26	48008.0
27	101266.0
28	5503.0
29	4442.0
1175	1411.0
1176	5943.0
1177	12620.0
1178	4017.0
1179	1961.0
1180	1899.0
1181	1868.0
1182	2642.0
1183	1502.0
1184	1603.0
1185	4010.0
1186	5954.0
1187	2135.0
1188	13696.0
1189	3096.0
1190	6366.0
1191	11020.0
1192	3673.0
1193	3959.0
1194	9262.0
1195	3658.0
1196	3085.0
1197	5846.0
1198	16359.0
1199	980.0
1200	2850.0
1201	2653.0
1202	8577.0
1203	4713.0
1204	2423.0

[1205 rows x 6 columns]

					_ 1	_ ,
Party	Year	State	County	Office	Democratic	Republican
0	2018	arizona	apache	US Senator	16298.0	7810.0
			-			
1	2018	arizona	cochise	US Senator	17383.0	26929.0
2	2018	arizona	coconino	US Senator	34240.0	19249.0
3	2018	arizona	gila	US Senator	7643.0	12180.0
4	2018	arizona	graham	US Senator	3368.0	6870.0
			-			
5	2018	arizona	la paz	US Senator	1609.0	3265.0
6	2018	arizona	maricopa	US Senator	732671.0	672505.0
7	2018	arizona	mohave	US Senator	19214.0	50209.0
8	2018	arizona	navajo	US Senator	16624.0	18767.0
9	2018	arizona	pima	US Senator	221242.0	160550.0
10	2018	arizona	santa cruz	US Senator	9241.0	3828.0
11	2018	arizona	yavapai	US Senator	40160.0	65308.0
12	2018	connecticut	fairfield	US Senator	210899.0	131321.0
13	2018	connecticut	hartford	US Senator	203591.0	123864.0
14	2018	connecticut	middlesex	US Senator	42383.0	32836.0
15		connecticut				
	2018		new haven		179714.0	126004.0
16	2018	connecticut	tolland	US Senator	34732.0	28046.0
17	2018	connecticut	windham	US Senator	20490.0	19032.0
18	2018	delaware	sussex	US Senator	40675.0	50391.0
19	2018	florida	alachua	US Senator	74493.0	40599.0
20	2018	florida	baker	US Senator	1945.0	8579.0
21	2018	florida	bay	US Senator	16723.0	46681.0
22	2018	florida	bradford	US Senator	2879.0	7576.0
23	2018	florida	brevard	US Senator	121112.0	160305.0
24	2018	florida	broward	US Senator	472239.0	211397.0
25	2018	florida	charlotte	US Senator	33525.0	52916.0
26	2018	florida	citrus	US Senator	22660.0	48008.0
27	2018	florida	collier	US Senator	54390.0	101266.0
28	2018	florida	desoto	US Senator	3328.0	5503.0
			dixie			
29	2018	florida	dixie	US Senator	1322.0	4442.0
			• • •	• • •		
1175	2018	west virginia	pocahontas	US Senator	1269.0	1411.0
1176	2018	west virginia	preston	US Senator	3686.0	5943.0
			_			
1177	2018	west virginia	raleigh	US Senator	10581.0	12620.0
1178	2018	west virginia	randolph	US Senator	4472.0	4017.0
1179	2018	west virginia	ritchie	US Senator	1082.0	1961.0
		-				
1180	2018	west virginia	roane		2165.0	1899.0
1181	2018	west virginia	summers	US Senator	2069.0	1868.0
1182	2018	west virginia	taylor	US Senator	2376.0	2642.0
1183	2018	west virginia	tucker	US Senator	1469.0	1502.0
		-				
1184	2018	west virginia	tyler	US Senator	1065.0	1603.0
1185	2018	west virginia	upshur	US Senator	3102.0	4010.0
1186	2018	west virginia	wayne	US Senator	6395.0	5954.0
1187	2018	west virginia	wetzel	US Senator	2518.0	2135.0
		-				
1188	2018	west virginia	wood	US Senator	14189.0	13696.0
1189	2018	west virginia	wyoming	US Senator	2607.0	3096.0
1190	2018	wyoming	albany	US Senator	7576.0	6366.0
1191	2018	wyoming	campbell	US Senator	1628.0	11020.0
			-			
1192	2018	wyoming	carbon	US Senator	1359.0	3673.0
1193	2018	wyoming	converse	US Senator	834.0	3959.0
1194	2018	wyoming	fremont	US Senator	4734.0	9262.0
1195	2018			US Senator		
		wyoming	goshen		1020.0	3658.0
1196	2018	wyoming	johnson	US Senator	722.0	3085.0
1197	2018	wyoming	lincoln	US Senator	1152.0	5846.0
1198	2018	wyoming	natrona	US Senator	7285.0	16359.0
1199	2018	wyoming	niobrara	US Senator	144.0	980.0
1200	2018	wyoming	platte	US Senator	801.0	2850.0
1201	2018	wyoming	sublette	US Senator	668.0	2653.0
1202	2018	wyoming	sweetwater	US Senator	3943.0	8577.0
1203	2018	wyoming	uinta	US Senator	1371.0	4713.0
1204	2018	wyoming	washakie	US Senator	588.0	2423.0
[1205	rows x	6 columns]				
		State	County	FIPS Total	Population	\
0	7.74	sconsin	la crosse	55063	117538	
1		irginia	alleghany	51005	15919	
2		indiana	fountain	18045	16741	
3		ohio	geauga	39055	94020	
4		sconsin	jackson	55053	20566	
	WI		-			
5		texas	baylor	48023	3639	
6	n	ebraska	madison	31119	35125	
7		hawaii	hawaii	15001	193680	
8	+	nnessee	henry	47079	32291	
			_			
9		ichigan	oceana	26127	26152	
10	n	ebraska	pierce	31139	7179	
11		texas	jack	48237	8866	
12		florida	walton	12131	61528	
13		irginia	washington	51191	54562	
14		florida	escambia	12033	309574	
15		texas	wheeler	48483	5642	
16		arizona	yavapai	4025	218586	
17		ebraska	loup	31115	542	
18	m	ichigan	antrim	26009	23215	
19		nnesota	wabasha	27157	21327	
20	III.	nevada	elko			
20		nevada	етко	32007	52029	
0 -						
21	wi	sconsin	dodge	55027	88404	
21 22			dodge of the woods	55027 27077	88404 3901	

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				I I_Exploratory_I
23	west virginia	tucker	54093	6922
24	virginia	lexington city	51678	7036
25	florida	gilchrist	12041	17033
26	tennessee	claiborne	47025	31701
27	connecticut	middlesex	9007	164438
28	utah	sevier	49041	20913
29	massachusetts	hampshire	25015	161035
		•••		
1186	west virginia	wood	54107	86262
1187	florida	orange	12095	1256055
1188	north dakota	walsh	38099	10995
1189	indiana	white	18181	24265
1190	montana	carter	30011	1295
1191	indiana	pulaski	18131	12910
1192	washington	lewis	53041	75724
1193	pennsylvania	greene	42059	37669
1194	texas	yoakum	48501	8316
1195	montana	pondera	30073	6166
1196	north dakota	dickey	38021	5160
1197	texas	refugio	48391	7315
1198	virginia	smyth	51173	31513
1199	virginia	charlotte	51037	12232
1200	michigan	grand traverse	26055	90715
1201	indiana	rush	18139	16873
1202	montana	deer lodge	30023	9176
1203	ohio	washington	39167	61154
1204	wisconsin	portage	55097	70551
1205	new york	monroe	36055	749236
1206	florida	broward	12011	1863780
1207	washington	wahkiakum	53069	4051
1208	new york	tioga	36107	49649
1209	montana	carbon	30009	10340
1210	texas	johnson	48251	157544
1211	montana	lincoln	30053	19268
1212	ohio	tuscarawas	39157	92579
1213	michigan	newaygo	26123	47957
1214	tennessee	lauderdale	47097	27261
1215	texas	sabine	48403	10367
	Citizen Voting_A	an Donulation Do	rcant Whita	not Highanic

1215		texas	sabi	ne 48403	3		10367	
	a: . :	********	B1-1-1		entrat i a		***	
0	Citizen	voting-Age	Population 0	Percent	white,	not	нізрапіс	or Latino 90.537528
1			12705					91.940449
2			12750					95.705155
3			12750					95.837056
4			15835					86.662453
5								86.644683
6			0 24885					
7			24005					81.249822
								30.401694
8 9			25285					87.662197
10			18930					82.486999
			5385					96.893718
11			6535					78.411911
12			47490					84.447731
13			0					95.484037
14			0					65.219624
15			3785					68.397731
16			0					81.159361
17			435					97.970480
18			0					95.179841
19			16385					94.926619
20			34740					67.354744
21			0					90.629383
22			0					93.975904
23			5690					97.688529
24			6335					80.542922
25			0					87.295250
26			25350					95.495410
27			0					84.738929
28			0					92.244059
29			0					84.610799
1186			67640					95.478890
1187			854605					42.656970
1188			8280					85.657117
1189			0					90.245209
1190			0					96.602317
1191			9870					94.771495
1192			56900					84.489726
1193			0					92.598689
1194			0					34.271284
1195			0					80.960104
1196			0					93.720930
1197			0					42.761449
1198			24960					94.376924
1199			9540					67.282538
1200			70710					92.673758
1201			0					96.325490
1202			0					90.747602

			P1_Exploratory_Data_Analysis
1203		0	95.364163
1204		0	91.815850
1205		0	71.329327
1206		0	39.245351
1207		0	89.681560
1208		38525	95.454088
1200		0	94.787234
1210		0	74.343041
		15640	93.351671
1211		70485	
1212			95.155489
1213		0	90.716684
1214		0 0	60.456330
1215		U	86.341275
	Percent Black, not Hi	icpanio or Tatino	Percent Hispanic or Latino \
0	Percent Black, not hi	1.214075	_
1			1.724549
2		5.207614	1.432251
		0.400215	2.359477
3		1.256116	1.294405
4		1.983857	3.082758
5		1.841165	8.353943
6		1.155872	14.217794
7		0.547811	12.405514
8		8.599919	2.201852
9		1.131845	14.419547
10		0.222872	1.587965
11		4.376269	15.880893
12		4.950592	5.888376
13		1.268282	1.414904
14		21.532816	5.389988
15		2.658632	26.462247
16		0.518331	14.054880
17		0.000000	0.000000
18		0.323067	1.955632
19		0.150045	2.874291
20		1.060947	24.067347
21		2.085878	4.485091
22		0.102538	1.230454
23		0.173360	0.650101
24		8.996589	4.178511
25		5.988376	5.336699
26		1.050440	1.113530
27		4.664980	5.641032
28		0.344283	4.882131
29		2.683268	5.253516
• • •			• • •
1186		1.123322	1.032900
1187		19.981211	29.338126
1188		0.300136	10.759436
1189		0.461570	7.554090
1190		0.000000	1.389961
1191		0.209140	2.788536
1192		0.662934	9.629708
1193		4.149300	1.422921
1194		0.000000	63.552189
1195		0.389231	1.881284
1196		1.472868	3.333333
1197		4.743677	49.323308
1198		2.068987	1.948402
1199		30.657292	0.948332
1200		1.234636	2.621397
1201		1.149766	1.428317
1202		0.348736	3.073235
1203		1.100500	1.013834
1204		0.687446	2.951057
1205		14.497969	8.120272
1206		27.214639	27.564841
1207		0.123426	4.640829
1208		0.713005	1.695905
1209		0.009671	2.379110
1210		2.487559	19.762733
1211		0.057089	2.678015
1212		0.804718	2.349345
1213		1.317847	5.728048
1214		34.789626	2.380690
1215		7.080158	3.839105
			2.00,100
	Percent Foreign Born	Percent Female	Percent Age 29 and Under \
0	2.976059	51.171536	43.241335
1	1.300333	51.077329	31.660280
2	1.547100	49.770026	35.899887
3	2.578175	50.678579	36.281642
4	1.376058	46.649810	36.292911
5	2.473207	51.662545	30.090684
6	6.784342	50.448399	41.432028
7	11.003717	50.143019	36.008881
8	1.560806	51.441578	33.238364
9	5.578923	49.395840	36.643469
_	5.570725	17.373040	50.015105

\

			P1_Exp	oloratory_Data_Analysis
10	0.780053	49.658727		36.634629
11	5.549289	43.187458		38.732236
12	5.759979	49.349889		33.165388
13	1.611011	50.500348		32.005792
14 15	4.747492 9.517901	50.299444 49.202410		41.364585 39.188231
16	6.456955	51.092476		28.717301
17	0.000000	52.398524		30.996310
18	2.015938	50.273530		29.450786
19	1.355090	50.171145		34.594645
20	8.602895	47.948260		44.928790
21	1.884530	47.788562		34.642098
22	1.563702	47.962061		28.479877
23	0.592314	50.245594		29.731292
24	3.936896	43.447982		67.367823
25	2.906123	47.390360		38.307990
26 27	1.164001 7.652732	51.200278 51.098894		35.673954 33.241708
28	1.989193	48.893033		43.877014
29	7.846120	53.230664		44.243177
	•••	•••		•••
1186	1.001600	51.756277		34.726763
1187	20.157318	50.827551		43.005123
1188	3.919964	48.722146		34.588449
1189	4.314857	50.294663		36.130229
1190	0.077220	51.737452		30.810811
1191	0.805577	49.310612		36.018590
1192	4.512440	50.158470		35.731076
1193 1194	0.809684 25.637326	48.084632 49.158249		35.267727 46.284271
1194	25.63/326	49.158249		46.2842/1 37.528381
1196	1.763566	49.724293		36.531008
1197	2.734108	50.799727		36.896787
1198	1.256624	50.423635		33.316409
1199	0.662198	49.959124		35.080118
1200	2.421871	50.830623		35.075787
1201	1.060866	50.974930		36.745096
1202	1.874455	46.785092		29.980384
1203	1.430814	50.596854		34.483435
1204	3.119729	49.846211		42.641493
1205 1206	8.460752 32.715718	51.694126 51.376504		39.551223 36.701971
1207	3.505307	51.246606		26.783510
1208	2.229652	50.554895		34.465951
1209	1.276596	49.990329		28.143133
1210	6.138603	50.168842		41.296400
1211	2.345858	49.974050		27.979033
1212	1.650482	50.823621		36.475875
1213	1.978856	49.656984		36.620306
1214	1.757089	47.734859		39.528997
1215	0.752387	50.506415		31.243368
	Percent Age 65 and Older	Median Household	Tncome	Percent Unemployed
0	14.702479	Healan nousenola	51477	4.796952
1	23.902255		45538	4.560986
2	18.941521		45924	7.978789
3	18.028079		74165	4.036902
4	17.587280			
5	24 402200		49608	5.569698
6	24.402308		34382	5.569698 1.377410
	15.404982		34382 48673	5.569698 1.377410 3.094085
7	15.404982 17.580545		34382 48673 53936	5.569698 1.377410 3.094085 7.437632
7 8	15.404982 17.580545 21.476572		34382 48673 53936 38378	5.569698 1.377410 3.094085 7.437632 7.912277
7 8 9	15.404982 17.580545 21.476572 19.088406		34382 48673 53936 38378 41952	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556
7 8	15.404982 17.580545 21.476572		34382 48673 53936 38378	5.569698 1.377410 3.094085 7.437632 7.912277
7 8 9 10	15.404982 17.580545 21.476572 19.088406 18.540187		34382 48673 53936 38378 41952 53125	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142
7 8 9 10 11	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871		34382 48673 53936 38378 41952 53125 50390	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468
7 8 9 10 11	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581		34382 48673 53936 38378 41952 53125 50390 46910	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474
7 8 9 10 11 12 13 14 15	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108		34382 48673 53936 38378 41952 53125 50390 46910 43835 46117 51082	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099
7 8 9 10 11 12 13 14 15	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625		34382 48673 53936 38378 41952 53125 50390 46910 43835 46117 51082 46638	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986
7 8 9 10 11 12 13 14 15 16	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745		34382 48673 53936 38378 41952 53125 50390 46910 43835 46117 51082 46638 56750	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986 0.335570
7 8 9 10 11 12 13 14 15 16 17	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295		34382 48673 53936 38378 41952 53125 50390 46910 43835 46117 51082 46638 56750 48825	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986 0.335570 7.815784
7 8 9 10 11 12 13 14 15 16 17 18	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295 18.807146		34382 48673 53936 38378 41952 53125 50390 46910 43835 46117 51082 46638 46638 46638 48825 58865	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525966 0.335570 7.815784 3.382303
7 8 9 10 11 12 13 14 15 16 17 18 19 20	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295 18.807146 9.229468		34382 48673 53936 38378 41952 53125 50390 46910 46910 46638 56750 48655 58865 74672	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986 0.335570 7.815784 3.382303 4.896851
7 8 9 10 11 12 13 14 15 16 17 18	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295 18.807146		34382 48673 53936 38378 41952 53125 50390 46910 43835 46117 51082 46638 46638 46638 48825 58865	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525966 0.335570 7.815784 3.382303
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 17.774581 17.795108 28.272625 24.538745 25.410295 18.807146 9.229468 16.304692		34382 48673 53936 38378 41952 53125 50390 46910 43835 466117 51082 46638 56750 48825 74672 54111	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986 0.335570 7.815784 3.382303 4.896851 4.849356
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295 18.807146 9.229468 16.304692 21.814919		34382 48673 53936 38378 41952 53125 50390 46910 43835 46117 51082 46638 56750 48825 58865 58865 584672 54111 45732	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986 0.335570 7.815784 3.382303 4.896851 4.849356 3.888099
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295 18.807146 9.229468 16.304692 21.814919 22.594626 14.198408 19.567898		34382 48673 53936 38378 41952 53125 50390 46910 43835 46117 51082 46638 56750 48825 58865 74672 54111 45732 43529	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986 0.335570 7.815784 3.382303 4.896851 4.849356 3.888099 8.190184 3.926590 9.732220
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295 18.807146 9.229468 16.304692 21.814919 22.594626 14.198408 19.567898 18.390587		34382 48673 53936 38378 41952 53125 50390 46910 43835 466117 51082 46638 56750 48825 74672 54111 45732 43529 440881 33428	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986 0.335570 7.815784 3.382303 4.896851 4.849356 3.888099 8.190184 3.926590 9.732220 8.446716
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295 18.807146 9.229468 16.304692 21.814919 22.594626 14.198408 19.567898 18.390587 17.703937		34382 48673 53936 38378 41952 53125 50390 46910 43835 56750 48825 58865 74672 54111 45732 43529 34468 33428 79837	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986 0.335570 7.815784 3.382303 4.896851 4.849356 3.888099 8.190184 3.926590 9.732220 8.446716 5.257635
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295 18.807146 9.229468 16.304692 21.814919 22.594626 14.198408 19.567899 18.390587 17.703937 15.583608		34382 48673 53936 38378 41952 53125 50390 46910 43835 751082 46638 56750 48825 58865 78467 54111 45732 43529 34464 4088 79837 48872	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986 0.335570 7.815784 3.382303 4.896851 4.849356 3.888099 8.190184 3.926590 9.732220 8.446716 5.257635 5.340291
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295 18.807146 9.229468 16.304692 21.814919 22.594626 14.198408 19.567898 18.390587 17.703937 15.583608 14.755177		34382 48673 53936 38378 41952 53125 50390 46910 43835 46617 51082 46638 56750 48825 58865 74672 43529 34464 40881 33428 3428 4872 62608	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525966 0.335570 7.815784 3.382303 4.896851 4.849356 3.888099 8.190184 3.926590 9.732220 8.446716 5.257635 5.340291 7.146733
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295 18.807146 9.229468 16.304692 21.814919 22.594626 14.198408 19.567898 18.390587 17.703937 15.583608 14.755177		34382 48673 53936 41952 53125 50390 46910 43813 56750 58865 74672 54111 45732 43529 34464 40881 33428 79837 48872 62608	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986 0.335570 7.815784 3.382303 4.896851 4.849356 3.888099 8.190184 3.926590 9.732220 8.446716 5.257635 5.340291 7.146733
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295 18.807146 9.229468 16.304692 21.814919 22.594662 14.198408 19.567898 18.390587 17.703937 15.583608 14.755177 		34382 48673 53936 41952 53125 50390 46910 43835 46117 51082 46638 56750 48825 74672 54111 45732 43529 43529 43529 4381 33428 79837 48872 62608	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986 0.335570 7.815784 3.382303 4.896851 4.849356 3.888099 8.190184 3.926590 9.732220 8.446716 5.257635 5.340291 7.146733 7.625458
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295 18.807146 9.229468 16.304692 21.814919 22.594626 14.198408 19.567898 18.390587 17.703937 15.583608 14.755177		34382 48673 53936 38378 41952 53125 50390 46910 43835 56750 48825 74672 54111 45732 43529 344681 33428 79837 48872 6260	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986 0.335570 7.815784 3.382303 4.896851 4.849356 3.888099 8.190184 3.926590 9.732220 8.446716 5.257635 5.340291 7.146733 7.625458 8.072223
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 	15.404982 17.580545 21.476572 19.088406 18.540187 15.677871 18.783318 20.301675 15.774581 17.795108 28.272625 24.538745 25.410295 18.807146 9.229468 16.304692 21.814919 22.594626 14.198408 19.567898 18.390587 17.703937 15.583608 14.755173 10.741090		34382 48673 53936 41952 53125 50390 46910 43835 46117 51082 46638 56750 48825 74672 54111 45732 43529 43529 43529 4381 33428 79837 48872 62608	5.569698 1.377410 3.094085 7.437632 7.912277 8.275556 3.981142 4.680468 7.295474 6.425857 8.297930 5.424099 8.525986 0.335570 7.815784 3.382303 4.896851 4.849356 3.888099 8.190184 3.926590 9.732220 8.446716 5.257635 5.340291 7.146733 7.625458

		•	•
1190	24.942085	46985	2.656250
1191	18.086754	44884	7.046070
1192	19.609371	44526	9.684249
1193	17.104250	49116	6.993228
1194	11.423761	56655	9.136546
1195	19.656179	42193	8.497409
1196	21.705426	55882	2.549773
1197	21.052632	50145	7.469005
1198	19.994923	38906	7.343413
1199	20.372793	33837	6.997030
1200	17.003803	55597	5.848530
1201	17.412434	46380	5.658982
1202	20.891456	39212	3.727181
1203	19.151650	44763	4.689885
1204	14.644725	52411	6.178216
1205	15.491914	53568	7.306146
1206	15.371879	52954	8.710312
1207	31.325599	48116	6.971514
1208	17.925839	58115	6.720605
1209	22.746615	52869	3.743112
1210	13.209643	59095	6.337092
1211	24.828732	35461	11.570571
1212	17.836658	46992	5.734798
1213	17.728382	44049	8.885564
1214	13.891640	32353	11.427738
1215	28.995852	32500	8.259134

Percent Less than High School Degree \ 0 5.474767 1 2 3 15.537543 12.032155 8.928599 4 11.792912 5 13.066667 11.678672 8.362326 8 15.710841 9 14.335429 10 5.227552 11 21.130221 12 15.083974 13 15.913833 14 10.053723 15 19.678609 16 9.830672 17 2.736318 18 9.311741 19 6.811536 20 16.622189 21 10.956491 22 10.309278 23 12.702390 24 14.962495 25 17.294025 26 22.759203 27 6.153444 28 10.556637 29 5.741345 1186 10.370080 1187 12.319191 1188 13.114754 1189 10.394650 1190 7.991588 1191 12.931034 1192 12.929994 1193 13.277047 1194 28.571429 1195 10.801144 1196 12.319456 1197 20.225171 1198 17.449694 1199 20.028275 1200 5.543796 1201 15.398535 10.536314 1202 1203 9.795325 1204 6.784049 1205 9.616412 11.688725 1206 1207 6.868490 1208 9.753866 1209 6.142694 1210 16.183214 1211 11.891078 1212 14.068037 1213 14.194114

24.485474

	Percent	Less	than	Bachelor's Degree	Percent Rural
0				67.529757	16.827753
1				83.711604	52.393846
2				85.538940	65.951276
3				62.730824	63.968990
4				86.129256	72.238251
5				73.409524	100.000000
6 7				80.345221 72.408979	27.904576 37.990804
8				85.305261	66.848129
9				82.947912	89.890854
10				78.618286	100.000000
11				89.221949	53.217603
12				73.691263	63.125193
13				75.223085	71.676143
14				75.116986	8.302225
15				85.879874	100.000000
16				74.458362	33.197178
17				78.109453	100.000000
18				73.314054	100.000000
19				78.761297	64.541428
20				81.880924	37.850793
21				83.745359	48.641828
22				83.024055	100.000000
23				85.794140	100.000000
24				55.112515	0.000000
25				87.654646	83.918767
26				86.813089	71.554962
27				59.071541	24.540066
28				83.495524	64.714931
29				55.277464	27.443699
1186				79.738786	26.774461
1187				68.077150	2.042138
1188				83.281291	62.055940
1189				84.315482	67.966563
1190				82.860147	100.000000
1191				89.330497	80.943143
1192				84.490042	60.654695
1193				82.669606	66.832963
1194				82.183908	37.327072
1195				77.324750	58.101739
1196				72.047579	100.000000
1197				89.203860	60.679940
1198				85.209810	75.285643
1199				86.958058	100.000000
1200				68.328672	48.023820
1201				85.971564	61.160304
1202				84.100541	33.641643
1203				81.590788	56.562207
1204				69.694941	36.031649
1205 1206				63.335285 68.984269	6.449975 0.016933
1207				84.928385	100.000000
1207				74.963552	65.658680
1200				70.838103	100.000000
1210				82.255463	37.874170
1211				81.041325	79.793773
1212				85.020218	41.580437
1213				85.660708	83.840281
1214				91.425468	58.662592
1215				87.060703	100.000000

[1216 rows x 17 columns]

	***	Q1 - 1 -			055:		D
0	Year	State	County	110		Democratic	Republican 7810.0
0 1	2018	arizona	apache cochise	US	Senator	16298.0	26929.0
2	2018	arizona	coconino		Senator	17383.0	
	2018	arizona			Senator	34240.0	19249.0
3 4	2018	arizona	gila		Senator	7643.0	12180.0
5	2018	arizona	graham la paz	US	Senator	3368.0	6870.0
5 6	2018	arizona		US	Senator	1609.0	3265.0
	2018	arizona	maricopa			732671.0	672505.0
7	2018	arizona	mohave		Senator	19214.0	50209.0
8	2018	arizona	navajo	US	Senator	16624.0	18767.0
9	2018	arizona	pima		Senator	221242.0	160550.0
10	2018	arizona	santa cruz	US	Senator	9241.0	3828.0
11	2018	arizona	yavapai		Senator	40160.0	65308.0
12	2018	connecticut	fairfield		Senator	210899.0	131321.0
13	2018	connecticut	hartford			203591.0	123864.0
14	2018	connecticut	middlesex	US	Senator	42383.0	32836.0
15	2018	connecticut	new haven		Senator	179714.0	126004.0
16	2018	connecticut	tolland	US	Senator	34732.0	28046.0
17	2018	connecticut	windham		Senator	20490.0	19032.0
18	2018	delaware	sussex	US	Senator	40675.0	50391.0
19	2018	florida	alachua		Senator	74493.0	40599.0
20	2018	florida	baker		Senator	1945.0	8579.0
21	2018	florida	bay	US	Senator	16723.0	46681.0
22	2018	florida	bradford	US	Senator	2879.0	7576.0
23	2018	florida	brevard		Senator	121112.0	160305.0
24	2018	florida	broward		Senator	472239.0	211397.0
25	2018	florida	charlotte		Senator	33525.0	52916.0
26	2018	florida	citrus		Senator	22660.0	48008.0
27	2018	florida	collier		Senator	54390.0	101266.0
28	2018	florida	desoto		Senator	3328.0	5503.0
29	2018	florida	dixie	US	Senator	1322.0	4442.0
• • • •		. •••	• • •		• • •		
1170	2018	wisconsin	portage		Senator	20170.0	14510.0
1171	2018	wisconsin	racine		Senator	45397.0	41213.0
1172	2018	wisconsin	rock		Senator	42616.0	25322.0
1173	2018	wisconsin	rusk		Senator	2654.0	3381.0
1174	2018	wisconsin	sawyer	US	Senator	3938.0	4159.0
1175	2018	wisconsin	sheboygan		Senator	24183.0	28667.0
1176	2018	wisconsin	st. croix	US	Senator	18765.0	21069.0
1177	2018	wisconsin	taylor		Senator	3028.0	5005.0
1178	2018	wisconsin	walworth	US	Senator	20299.0	24844.0
1179	2018	wisconsin	washington			23072.0	47102.0
1180	2018	wisconsin	waukesha		Senator	84147.0	136190.0
1181	2018	wisconsin	waupaca	US	Senator	9509.0	12792.0
1182	2018	wisconsin	waushara	US	Senator	4434.0	6106.0
1183	2018	wisconsin	winnebago		Senator	40185.0	35282.0
1184	2018	wisconsin	wood		Senator	15992.0	16899.0
1185	2018	wyoming	albany	US	Senator	7576.0	6366.0
1186	2018	wyoming	campbell		Senator	1628.0	11020.0
1187	2018	wyoming	carbon	US	Senator	1359.0	3673.0
1188	2018	wyoming	converse		Senator	834.0	3959.0
1189	2018	wyoming	fremont		Senator	4734.0	9262.0
1190	2018	wyoming	goshen		Senator	1020.0	3658.0
1191	2018	wyoming	johnson		Senator	722.0	3085.0
1192	2018	wyoming	lincoln		Senator	1152.0	5846.0
1193	2018	wyoming	natrona		Senator	7285.0	16359.0
1194	2018	wyoming	niobrara		Senator	144.0	980.0
1195	2018	wyoming	platte		Senator	801.0	2850.0
1196	2018	wyoming	sublette		Senator	668.0	2653.0
1197	2018	wyoming	sweetwater		Senator	3943.0	8577.0
1198	2018	wyoming	uinta		Senator	1371.0	4713.0
1199	2018	wyoming	washakie	US	Senator	588.0	2423.0
	DIDA	m-1-1 D1	-11 0111-			D1-1-1-1	
0	FIPS	Total Popul	ation Citiz 72346	en '	vocing-Age	Population	\
0 1	4001					0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
2	4003		28177			92915 104265	
3	4005 4007		38064 53179			104265	
4							
5	4009 4012		37529 20304			0 15245	
6	4012		88549			2723565	
7	4015					2/23303	
8	4015		03629 08209			76280	
9	4017		03338			76280	
10	4019		46547			27155	
11	4023		18586			2/155	
12	9001		41618			0	
13	9001		95699			644940	
14	9003		64438			044940	
15	9007		60874			631715	
16	9013		51689			031713	
17	9015		17078			0	
18	10005		11224			0	
19	12001		56581			197720	
20	12001		27312			20415	
21	12005		78361			135795	
22	12003		26919			0	
23	12007		60683			438510	
-	_,,,,	3	-				

			PI_Explorat
24	12011	1863780	0
25	12015	169642	141230
26	12017	140453	0
27	12021	348236	0
28	12027	35134	0
29	12029	16084	12890
		•••	•••
1170	55097	70551	0
1171	55101	194873	0
1172	55105	160986	0
1173	55107	14272	0
1174	55113	16438	13055
1175	55117	115269	86115
1176	55109	86726	0
1177	55119	20521	15445
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1179	55131	133422	101285
1180	55133	395377	298750
1181	55135	51974	0
1182	55137	24238	0
1183	55139	169487	0
1184	55141	73621	0
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1186	56005	48473	0
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1188	56009	14223	0
1189	56013	40683	30170
1190	56015	13546	0
1191	56019	8572	6590
1192	56023	18543	0
1193	56025	80871	60415
1194	56027	2498	1995
1195	56031	8740	6830
1196	56035	10032	0
1197	56037	44812	30565
1198	56041	20893	14355
1199	56043	8351	0

1199	56043	8351		0
	Percent White, no	ot Hispanic or Latin	o Percent	Hispanic or Latino
0	·	18.57186	3	5.947806
1		56.29949	2	34.403208
2		54.61959	7	13.711033
3		63.22232	5	18.548675
4		51.46153	6	32.097844
5		58.88494		26.182033
6		56.91811		30.286833
7		78.25260		15.708470
8		41.92719		11.049913
9		53.27157		36.105978
10		15.27488		83.219112
11		81.15936		14.054880
12		63.50951		18.636007
13		63.25205		16.897976
14		84.73892		5.641032
15		64.78276		16.790959
16		85.89218		5.029369
17		83.78260		10.877364
18		74.82909		9.195925
19		62.46019		8.994820
20		82.08845		2.317663
21		77.68738		5.728270
22		74.78732		3.796575
23		75.79880		9.301691
24		39.24535		27.564841
25		84.64354		6.632202
26		88.87101		5.121998
27		64.22253		26.634524
28		55.04070		30.688222
29		85.04103		3.780154
		05.04105		5.700154
1170		91.81585		2.951057
1171		73.05886		12.452212
1172		83.64205		8.207546
1173		95.55773		1.604540
1174		77.30259		2.269132
1175		85.57981		5.975588
1176		94.42035	_	2.180430
1177		96.54987	_	1.744554
1177		85.71165		10.894866
1179		93.42687		2.972523
1179		93.42687 89.47156		4.495709
1180		94.86089		2.880286
1181		89.81764		6.213384
1182		89.54846		3.841003
1184		93.08077		2.665000
1185		83.26990		9.229305
1186		87.77463		8.357230
1187		77.92431	2	17.647808

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1188
                                     88.849047
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1189
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                                                                         6.779244
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1191
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1193
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1194
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1195
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1198
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1199
                                     82.397318
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      Percent Foreign Born Percent Female Percent Age 29 and Under
0
                   1.719515
                                   50.598513
                                                                45.854643
                  11.458374
                                   49.069646
                                                                37.902276
1
2
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                                   50.581614
                                                                48.946141
3
                   4.249798
                                   50.296170
                                                                32.238290
4
                   4.385942
                                   46.313518
                                                                46.393456
5
                  11.372143
                                   48.946020
                                                                28.073286
6
                  14.729333
                                   50.549278
                                                                41.886620
7
                   6.969047
                                   49.676618
                                                                30.485835
8
                                                                43.243168
                   2.914730
                                   49.846131
9
                  12.903428
                                   50.807405
                                                                40.087388
10
                  32.644424
                                   52.125808
                                                                43.300320
11
                   6.456955
                                   51.092476
                                                                28.717301
12
                  21.154120
                                   51.308280
                                                                38.019876
13
                  15.011070
                                   51.492075
                                                                37.389458
                   7.652732
                                   51.098894
                                                                33.241708
14
15
                  12.073428
                                   51.759956
                                                                37.982562
                                                                42.301024
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16
17
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                  10.144555
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20
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                                   47.715290
                                                                41.344464
21
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                                   50.280050
                                                                37.739192
                                   44.741632
                                                                35.343066
22
                   2.306921
23
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24
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25
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26
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                                                                24.581889
27
                  23.816894
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                                                                29.998909
                                   43.345477
28
                  17.504412
                                                                37.513520
29
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                                                                31.236011
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                                                                38.058120
1171
1172
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                                   50.796343
                                                                38.521362
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                                   49.691704
1173
                                                                31.747478
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                   1.502616
                                   49.306485
                                                                30.800584
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                                   49.745378
                                                                36.383590
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                                   50.064571
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1177
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                   6.097786
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                                   50.384494
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                                   50.893198
                                                                34.964350
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1198
                   3.986981
                                   49.327526
                                                                43,205858
1199
                   3.783978
                                   51.359119
                                                                34.774279
      Percent Age 65 and Older
                                  Median Household Income Percent Unemployed \
0
                       13.322091
                                                      32460
                                                                       15.807433
1
                       19.756275
                                                      45383
                                                                        8.567108
2
                       10.873943
                                                      51106
                                                                        8.238305
3
                       26.397638
                                                      40593
                                                                       12.129932
4
                       12.315809
                                                      47422
                                                                       14.424104
5
                       36.056935
                                                      36321
                                                                       10.599013
6
                       13.837843
                                                      55676
                                                                        6.808454
                                                      39856
7
                       26.858650
                                                                       11.680953
8
                       15.745456
                                                      36868
                                                                       18.525791
                       17.801778
                                                      46764
                                                                        9.214114
9
10
                                                      38941
                                                                        9.749896
                      15.895761
```

1191

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1199

		P1_Explorate	ory_Data_Analysis
11	28.272625	46638	8.525986
12	14.383115	86670	8.211898
13	15.644876	68027	8.237243
14	17.703937	79837	5.257635
15	15.604490	62715	8.545483
16	13.868507	80129	6.267325
17	14.571482	60689	8.375524
18	24.214578	54218	7.108621
19	12.430772	44702	7.020154
20	12.910076	53327	6.832522
21	16.103857	48577	7.475668
22	17.452357	43373	10.563312
23	22.491140	49914	9.278023
24	15.371879	52954	8.710312
25	37.622759	44865	10.088979
26	35.105694	39054	11.648012
27	29.589704	59783	6.408868
28	19.408550	35513	8.291825
29	21.729669	34634	5.306200
	•••	• • •	
1170	14.644725	52411	6.178216
1171	14.722409	56359	7.478894
1172	15.032984	50968	7.390601
1173	22.323430	39904	4.930617
1174	23.317922	41869	7.665187
1175	16.257623	54392	5.054640
1176	12.209718	73743	4.081465
1177	18.088787	47306	4.478597
1178	15.303676	55575	6.442507
1179	15.645096	70325	4.019701
1180	16.492866	78268	3.665774
1181	19.523223	52441	4.546458
1182	22.353329	46581	6.336312
1183	14.738003	53501	4.420678
1184	18.608821	49926	5.669639
1185	9.549107	43043	4.579174
1186	6.954387	80822	4.669432
1187	13.774210	56972	4.141937
1188	13.668003	66737	5.282284
1189	16.409803	53559	7.344324

44883

54594

64579

56983

40640

41051

76004

68233

53323

46212

6.918819

4.512276

5.618095

4.861868

0.457875

3.901047

2.786971

5.072255

6.390755

7.441860

Percent Less than High School Degree \ 0 21.758252 1 13.409171 2 11.085381 3 15.729958 4 14.580797 5 24.842215 6 13.051927 7 16.145850 8 18.494087 12.252238 9 10 25.206726 11 9.830672 12 10.103521 13 10.736314 14 6.153444 15 10.503197 16 6.214203 17 11.925239 18 13.792481 19 7.468059 20 17.871127 21 11.320101 22 23.212996 23 8.823708 24 11.688725 25 10.578890 26 13.288908 27 14.321540 28 29.475750 22.236087 29 1170 6.784049 1171 11.170104 1172 10.591406 12.513379 1173 1174 8.901562

20.389783

20.496967

14.382786

12.825364

18.254604

22.013730

13.337321

9.417120

10.678218

1175		I I_Expi
	8.367242	
1176	4.242959	
1177	12.358524	
1178	9.074810	
1179	6.072757	
1180	4.116150	
1181	9.145423	
1182	13.760962	
1183	7.893714	
1184	7.658332	
1185	4.210167	
1186	8.330054	
1187	9.579879	
1188	9.758393	
1189	8.537172	
1190	8.390574	
1191	5.105750	
1192	6.949996	
1193	8.332255	
1194	11.054422	
	9.675889	
1195		
1196	4.658830	
1197	9.314606	
1198	10.361224	
1199	12.577108	
	124377100	
	Dorgont Logg then Desheloute De-	Dowgont Posses
_	Percent Less than Bachelor's Degree	Percent Rural
0	88.941063	74.061076
1	76.837055	36.301067
2	65.791439	31.466066
3	82.262624	41.062000
4	86.675944	46.437399
5	89.563407	56.327786
6	69.031137	2.363800
7	88.121178	22.963644
8	85.507970	54.138242
9	69.199391	7.523491
10	77.506775	26.883172
11	74.458362	33.197178
12	53.637538	4.584061
13	63.133913	5.408640
14	59.071541	24.540066
15	65.711800	3.639981
16	61.140250	38.207884
17	76.143316	49.761036
18	76.115066	41.303609
19	58.485040	21.193437
20	87.235709	59.491057
21	77.466127	11.999858
22	88.220732	75.529453
23	72.271467	5.074387
24	68.984269	0.016933
25	78.396083	8.884347
26	82.154355	34.518820
27	66.118970	8.485942
28	89.960743	46.242327
29	93.602862	77.024723
1170	69.694941	36.031649
1171	76.027600	12.277901
1172	79.234347	20.416513
1173	85.209692	
		76.624873
1174		76.624873
1174	77.865939	84.200036
1175	77.865939 76.378160	84.200036 28.284866
1175 1176	77.865939 76.378160 66.600965	84.200036 28.284866 53.168534
1175	77.865939 76.378160	84.200036 28.284866
1175 1176	77.865939 76.378160 66.600965	84.200036 28.284866 53.168534
1175 1176 1177 1178	77.865939 76.378160 66.600965 86.537786 72.181794	84.200036 28.284866 53.168534 80.443714 34.197089
1175 1176 1177 1178 1179	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687
1175 1176 1177 1178 1179 1180	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448
1175 1176 1177 1178 1179 1180 1181	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897
1175 1176 1177 1178 1179 1180	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448
1175 1176 1177 1178 1179 1180 1181	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897
1175 1176 1177 1178 1179 1180 1181 1182 1183	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021
1175 1176 1177 1178 1179 1180 1181 1182 1183 1184	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765
1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723
1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464
1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723
1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464
1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983 79.681613 84.468152	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464 41.630469 55.360370
1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983 79.681613 84.468152 77.648670	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464 41.630469 55.360370 51.424370
1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983 79.681613 84.468152 77.648670 77.036880	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464 41.630469 55.360370 45.995924
1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983 79.681613 84.468152 77.036880 77.036880 74.537343	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464 41.630469 55.360370 51.424370 45.995924 49.025557
1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983 79.681613 84.468152 77.648670 77.036880 74.537343 79.631291	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464 41.630469 55.360370 51.424370 45.995924 49.025557 82.729482
1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983 79.681613 84.468152 77.036880 77.036880 74.537343	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464 41.630469 55.360370 51.424370 45.995924 49.025557
1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983 79.681613 84.468152 77.648670 77.036880 74.537343 79.631291	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464 41.630469 55.360370 51.424370 45.995924 49.025557 82.729482
1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983 79.681613 84.468152 77.648670 77.036880 74.537343 79.631291 77.786814 81.009070	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464 41.630469 55.360370 51.424370 45.995924 49.025557 82.729482 14.449304 100.0000000
1175 1176 1177 1178 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983 79.681613 84.468152 77.648670 77.036880 74.537343 79.631291 77.786814 81.009070 80.300395	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464 41.630469 55.360370 45.995924 49.025557 82.729482 14.449304 100.000000 58.647744
1175 1176 1177 1178 1180 1181 1182 1183 1184 1185 1186 1187 1188 1190 1191 1192 1193 1194 1195 1196	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983 79.681613 84.468152 77.648670 77.036880 74.537343 79.631291 77.786814 81.009070 80.300395 75.645069	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464 41.630469 55.360370 51.424370 45.995924 49.025557 82.729482 14.449304 100.0000000
1175 1176 1177 1178 1180 1181 1182 1183 1184 1185 1186 1187 1191 1192 1193 1194 1195 1196 1197	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983 79.681613 84.468152 77.648670 77.036880 74.537343 79.631291 77.786814 81.009075 80.300395 75.645069 78.628507	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464 41.630469 55.360370 51.424370 45.995924 49.025557 82.729482 14.449304 100.000000 58.647744 100.000000 10.916313
1175 1176 1177 1178 1180 1181 1182 1183 1184 1185 1186 1187 1188 1190 1191 1192 1193 1194 1195 1196	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983 79.681613 84.468152 77.648670 77.036880 74.537343 79.631291 77.786814 81.009070 80.300395 75.645069	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464 41.630469 55.360370 51.424370 45.995924 49.025557 82.729482 14.449304 100.0000000
1175 1176 1177 1178 1180 1181 1182 1183 1184 1185 1186 1187 1191 1192 1193 1194 1195 1196 1197	77.865939 76.378160 66.600965 86.537786 72.181794 70.577928 58.376564 82.335700 84.915338 73.113141 79.617467 52.136794 80.935983 79.681613 84.468152 77.648670 77.036880 74.537343 79.631291 77.786814 81.009075 80.300395 75.645069 78.628507	84.200036 28.284866 53.168534 80.443714 34.197089 30.784687 9.860448 64.939897 89.496244 13.431021 36.682765 11.939723 29.072464 41.630469 55.360370 51.424370 45.995924 49.025557 82.729482 14.449304 100.000000 58.647744 100.000000 10.916313

[1200 rows x 21 columns]

Percent Age 65 and Older

Percent Less than High School Degree

Percent Less than Bachelor's Degree

dtypes: float64(13), int64(5), object(3)

Median Household Income Percent Unemployed

memory usage: 206.2+ KB

Percent Rural

```
In [8]: #3 - no.of variables, type of variables, irrelevant & redundant attributes
        #3i - no.of variables
        data whole.shape
        #Answer: 1200 rows & 21 columns
Out[8]: (1200, 21)
In [9]: #3ii - type of variables
        data_whole.info()
        #Answer:float64, int64, object
        <class 'pandas.core.frame.DataFrame'>
        Int64Index: 1200 entries, 0 to 1199
        Data columns (total 21 columns):
                                                  1200 non-null int64
        Year
                                                  1200 non-null object
        State
        County
                                                  1200 non-null object
                                                  1200 non-null object
        Office
        Democratic
                                                  1200 non-null float64
        Republican
                                                  1200 non-null float64
                                                  1200 non-null int64
        FIPS
        Total Population
                                                  1200 non-null int64
                                                  1200 non-null int64
        Citizen Voting-Age Population
                                                  1200 non-null float64
        Percent White, not Hispanic or Latino
                                                  1200 non-null float64
        Percent Black, not Hispanic or Latino
        Percent Hispanic or Latino
                                                  1200 non-null float64
        Percent Foreign Born
                                                  1200 non-null float64
        Percent Female
                                                  1200 non-null float64
        Percent Age 29 and Under
                                                  1200 non-null float64
```

1200 non-null float64

1200 non-null int64

```
In [10]: #3iii - Irrelevant & Redundant attributes
    data_whole = data_whole.drop(['Year', 'Office'], axis=1)
    print(data_whole)
    '''
    Answer:
    Year and office attributes have same values. So,it doesn't give much information about the data.
    So we drop columns year & office (as same row values)
    '''
```

	Stato	County	Democratic	Donublican	FIPS
0	State arizona	apache	16298.0	Republican 7810.0	4001
1	arizona	cochise	17383.0	26929.0	4003
2	arizona	coconino	34240.0	19249.0	4005
3	arizona	gila	7643.0	12180.0	4007
4	arizona	graham	3368.0	6870.0	4009
5	arizona	la paz	1609.0	3265.0	4012
6	arizona	maricopa	732671.0	672505.0	4013
7	arizona	mohave	19214.0	50209.0	4015
8	arizona	navajo	16624.0	18767.0	4017
9	arizona	pima	221242.0	160550.0	4019
10	arizona	santa cruz	9241.0	3828.0	4023
11 12	arizona connecticut	yavapai fairfield	40160.0 210899.0	65308.0 131321.0	4025
13	connecticut	hartford	203591.0	123864.0	9001 9003
14	connecticut	middlesex	42383.0	32836.0	9003
15	connecticut	new haven	179714.0	126004.0	9009
16	connecticut	tolland	34732.0	28046.0	9013
17	connecticut	windham	20490.0	19032.0	9015
18	delaware	sussex	40675.0	50391.0	10005
19	florida	alachua	74493.0	40599.0	12001
20	florida	baker	1945.0	8579.0	12003
21	florida	bay	16723.0	46681.0	12005
22	florida	bradford	2879.0	7576.0	12007
23	florida	brevard	121112.0	160305.0	12009
24	florida	broward	472239.0	211397.0	12011
25	florida	charlotte	33525.0	52916.0	12015
26	florida	citrus	22660.0	48008.0	12017
27	florida	collier	54390.0	101266.0	12021
28	florida	desoto	3328.0	5503.0	12027
29	florida	dixie	1322.0	4442.0	12029
1170	wisconsin		20170.0	14510.0	55097
1170	wisconsin	portage racine	45397.0	41213.0	55101
1172	wisconsin	rock	42616.0	25322.0	55105
1173	wisconsin	rusk	2654.0	3381.0	55107
1174	wisconsin	sawyer	3938.0	4159.0	55113
1175	wisconsin	sheboygan	24183.0	28667.0	55117
1176	wisconsin	st. croix	18765.0	21069.0	55109
1177	wisconsin	taylor	3028.0	5005.0	55119
1178	wisconsin	walworth	20299.0	24844.0	55127
1179	wisconsin	washington	23072.0	47102.0	55131
1180	wisconsin	waukesha	84147.0	136190.0	55133
1181	wisconsin	waupaca	9509.0	12792.0	55135
1182	wisconsin	waushara	4434.0	6106.0	55137
1183	wisconsin	winnebago	40185.0	35282.0	55139
1184	wisconsin	wood	15992.0	16899.0	55141
1185	wyoming	albany	7576.0	6366.0	56001
1186	wyoming	campbell	1628.0	11020.0	56005
1187 1188	wyoming wyoming	carbon converse	1359.0 834.0	3673.0 3959.0	56007 56009
1189	wyoming	fremont	4734.0	9262.0	56013
1190	wyoming	goshen	1020.0	3658.0	56015
1191	wyoming	johnson	722.0	3085.0	56019
1192	wyoming	lincoln	1152.0	5846.0	56023
1193	wyoming	natrona	7285.0	16359.0	
1194	wyoming	niobrara	144.0	980.0	56027
1195	wyoming	platte	801.0	2850.0	56031
1196	wyoming	sublette	668.0	2653.0	56035
1197	wyoming	sweetwater	3943.0	8577.0	56037
1198	wyoming	uinta	1371.0	4713.0	56041
1199	wyoming	washakie	588.0	2423.0	56043
	1 - 1				,
0		tion Citizen	Voting-Age	_	\
0 1		2346 8177		0 92915	
2		8064		104265	
3		3179		104265	
3 4		7529		0	
5		0304		15245	
6		8549		2723565	
7		3629		0	
8		8209		76280	
9		3338		0	
10	4	6547		27155	
11	21	8586		0	
12		1618		0	
13		5699		644940	
14		4438		0	
15		0874		631715	
16		1689		0	
17		7078		0	
18		1224		197720	
19 20		6581 7312		197720 20415	
21		7312 8361		135795	
22		6919		133793	
23		0683		438510	
-	30				

```
1863780
24
25
                 169642
                                                   141230
26
                 140453
                                                        0
27
                 348236
                                                        0
28
                  35134
                                                        0
29
                  16084
                                                    12890
1170
                  70551
                                                        0
1171
                 194873
                                                        0
1172
                 160986
                                                        0
1173
                  14272
                                                        0
1174
                  16438
                                                    13055
1175
                 115269
                                                    86115
1176
                  86726
                                                    15445
1177
                  20521
1178
                 103021
                                                        0
1179
                 133422
                                                   101285
1180
                 395377
                                                   298750
1181
                  51974
                                                        0
1182
                  24238
                                                        0
1183
                 169487
                                                        0
1184
                  73621
                                                        0
                                                    30070
1185
                  37836
1186
                  48473
                                                        0
1187
                  15696
                                                    11335
1188
                  14223
                                                        0
                                                    30170
1189
                  40683
1190
                  13546
1191
                   8572
                                                     6590
1192
                  18543
                                                        0
                                                    60415
                  80871
1193
1194
                   2498
                                                     1995
1195
                   8740
                                                     6830
1196
                  10032
1197
                  44812
                                                    30565
1198
                  20893
                                                    14355
1199
                   8351
```

Percent White, not Hispanic or Latino 18.571863 56.299492 54.619597 63.222325 51.461536 58.884949 56.918114 78.252606 41.927196 53.271579 15.274883 81.159361 63.509512 63.252052 84.738929 64.782767 85.892187 83.782606 74.829091 62.460198 82.088459 77.687387 74.787325 75.798803 39.245351 84.643543 88.871010 64.222539 55.040701 85.041035 91.815850 73.058864 83.642056 95.557735 77.302592 85.579818 94.420358 96.549876 85.711651 93.426871 89.471568 94.860892 89.817642 89.548461 93.080779 83.269902 87.774637

77.924312

```
1188
                                    88.849047
1189
                                    70.198855
1190
                                    86.409272
1191
                                    91.565562
1192
                                    92.600982
1193
                                    87.026252
1194
                                    89.511609
1195
                                    89.359268
1196
                                    91.646730
1197
                                    79.815674
1198
                                    87.718375
1199
                                    82.397318
      Percent Black, not Hispanic or Latino Percent Hispanic or Latino \
0
                                     0.486551
                                                                  5.947806
                                     3.714395
                                                                  34.403208
1
2
                                     1.342855
                                                                  13.711033
3
                                     0.552850
                                                                  18.548675
4
                                     1.811932
                                                                  32.097844
5
                                     0.379236
                                                                  26.182033
                                     5.013612
                                                                  30.286833
                                                                  15.708470
7
                                     0.951731
8
                                     0.672772
                                                                  11.049913
                                     3.199719
                                                                  36.105978
9
10
                                     0.199798
                                                                  83.219112
11
                                     0.518331
                                                                  14.054880
12
                                    10.456151
                                                                  18.636007
13
                                    12.657935
                                                                  16.897976
14
                                     4.664980
                                                                  5.641032
15
                                    12.177276
                                                                  16.790959
16
                                     2.811674
                                                                  5.029369
17
                                    1.866277
                                                                  10.877364
18
                                    12.284589
                                                                  9.195925
19
                                    19.504562
                                                                   8.994820
20
                                    13.876684
                                                                   2.317663
21
                                    10.527526
                                                                   5.728270
22
                                    19.250344
                                                                  3.796575
23
                                    9.838001
                                                                  9.301691
24
                                    27.214639
                                                                  27.564841
25
                                     5.535775
                                                                   6.632202
26
                                     2.817313
                                                                  5.121998
27
                                     6.775003
                                                                  26.634524
28
                                    12.904878
                                                                  30.688222
29
                                     7.504352
                                                                  3.780154
                                    0.687446
                                                                  2.951057
1170
                                    10.764960
                                                                  12,452212
1171
1172
                                     3.404644
                                                                   8.207546
1173
                                     0.987948
                                                                   1.604540
1174
                                     0.663098
                                                                   2.269132
1175
                                     1.474811
                                                                  5.975588
1176
                                     0.785232
                                                                   2.180430
                                                                  1.744554
1177
                                     0.375225
1178
                                     0.990089
                                                                  10.894866
1179
                                     1.077034
                                                                   2.972523
1180
                                     1.402712
                                                                   4.495709
1181
                                     0.352099
                                                                   2.880286
1182
                                     1.547157
                                                                   6.213384
1183
                                     1.996613
                                                                   3.841003
                                     0.709037
                                                                  2.665000
1184
                                     1.345280
1185
                                                                   9.229305
1186
                                     0.742681
                                                                  8.357230
1187
                                     1.242355
                                                                  17.647808
1188
                                     0.007031
                                                                   7.691767
                                                                   6.779244
1189
                                     0.516186
1190
                                     0.147645
                                                                  10.519711
1191
                                     0.443304
                                                                  2.134858
1192
                                     0.210322
                                                                   4.416761
1193
                                     1.158635
                                                                   8.198242
1194
                                     0.120096
                                                                   4.243395
1195
                                     0.057208
                                                                   7.814645
1196
                                     0.000000
                                                                  7.814992
1197
                                     0.865840
                                                                  15.859591
1198
                                     0.186665
                                                                  8.959939
                                     0.790325
1199
                                                                  13.962400
      Percent Foreign Born Percent Female Percent Age 29 and Under \
0
                   1.719515
                                   50.598513
                                                              45.854643
                  11.458374
                                                              37.902276
1
                                   49.069646
2
                   4.825298
                                   50.581614
                                                              48.946141
3
                   4.249798
                                   50.296170
                                                              32.238290
                   4.385942
4
                                   46.313518
                                                              46.393456
5
                  11.372143
                                   48.946020
                                                              28.073286
6
                  14.729333
                                   50.549278
                                                              41.886620
7
                   6.969047
                                   49.676618
                                                              30.485835
8
                   2.914730
                                   49.846131
                                                              43.243168
                  12.903428
                                   50.807405
                                                              40.087388
9
                  32.644424
                                   52.125808
                                                              43.300320
```

			P1_Exploratory_Data_A	anal
11	6.456955	51.092476	28.717301	
12	21.154120	51.308280	38.019876	
13	15.011070	51.492075	37.389458	
14	7.652732	51.098894	33.241708	
15	12.073428	51.759956	37.982562	
16	6.769113	49.967367	42.301024	
17	5.269991	50.422795	37.389604	
18	6.671117	51.495569	31.746866	
19	10.144555	51.670623	48.551530	
20	1.475542	47.715290	41.344464	
21	5.479898	50.280050	37.739192	
22	2.306921	44.741632	35.343066	
23	8.632685	51.140841	31.972612	
24	32.715718	51.376504	36.701971	
25	10.185567	51.260891	22.388913	
26	5.413911	51.667818	24.581889	
27	23.816894	50.881299	29.998909	
28	17.504412	43.345477	37.513520	
29	2.785377	45.417807	31.236011	
1170	3.119729	49.846211	42.641493	
1171	5.064837	50.538043	38.058120	
1172	4.583007	50.796343	38.521362	
1173	1.891816	49.691704	31.747478	
1174	1.502616	49.306485	30.800584	
1175	5.754366	49.745378	36.383590	
1176	2.453705	50.064571	38.543228	
1177	1.461917	48.842649	35.100629	
1178	6.097786	50.039312	39.967579	
1179	2.717693	50.384494	35.089416	
1180	4.902410	50.893198	34.964350	
1181	1.816293	49.265017	33.189672	
1182	2.784883	47.520422	30.006601	
1183	3.318839	49.604394	39.787122	
1184	2.326782	50.712433	34.645006	
1185	6.081510	47.756105	55.447193	
1186	3.645328	48.008170	45.326264	
1187	5.198777	45.839704	39.181957	
1188	2.706883	49.933207	38.515081	
1189	1.339626	49.907824	39.751247	
1190	2.724051	47.091392	35.914661	
1191	1.656556	46.966869	32.571162	
1192	2.151755	48.773122	38.715418	
1193	2.729038	49.421919	40.688257	
1194	0.280224	54.443555	36.269015	
1195	2.780320	47.711670	32.700229	
1196	2.053429	46.949761	36.393541	
1197	5.509685	47.824244	44.153352	
1198	3.986981	49.327526	43.205858	
1199	3.783978	51.359119	34.774279	
	Donnert Are C5 and C3.3	Madian Warrant 3.3	Tunama Danisis II	1 -
0	Percent Age 65 and Older	Median Household	Income Percent Unemp	

1100	01,003,0	31.003113	011//12/3
	Percent Age 65 and Older	Median Household Income	Percent Unemployed
0	13.322091	32460	15.807433
1	19.756275	45383	8.567108
2	10.873943	51106	8.238305
3	26.397638	40593	12.129932
4	12.315809	47422	14.424104
5	36.056935	36321	10.599013
6	13.837843	55676	6.808454
7	26.858650	39856	11.680953
8	15.745456	36868	18.525791
9	17.801778	46764	9.214114
10	15.895761	38941	9.749896
11	28.272625	46638	8.525986
12	14.383115	86670	8.211898
13	15.644876	68027	8.237243
14	17.703937	79837	5.257635
15	15.604490	62715	8.545483
16	13.868507	80129	6.267325
17	14.571482	60689	8.375524
18	24.214578	54218	7.108621
19	12.430772	44702	7.020154
20	12.910076	53327	6.832522
21	16.103857	48577	7.475668
22	17.452357	43373	10.563312
23	22.491140	49914	9.278023
24	15.371879	52954	8.710312
25	37.622759	44865	10.088979
26	35.105694	39054	11.648012
27	29.589704	59783	6.408868
28	19.408550	35513	8.291825
29	21.729669	34634	5.306200
	•••	•••	• • •
1170	14.644725	52411	6.178216
1171	14.722409	56359	7.478894
1172	15.032984	50968	7.390601
1173	22.323430	39904	4.930617
1174	23.317922	41869	7.665187

		PI_Exploratory_Data	_Analysis
1175	16.257623	54392	5.054640
1176	12.209718	73743	4.081465
1177	18.088787	47306	4.478597
1178	15.303676	55575	6.442507
1179	15.645096	70325	4.019701
1180	16.492866	78268	3.665774
1181	19.523223	52441	4.546458
1182	22.353329	46581	6.336312
1183	14.738003	53501	4.420678
1184	18.608821	49926	5.669639
1185	9.549107	43043	4.579174
1186	6.954387	80822	4.669432
1187	13.774210	56972	4.141937
1188	13.668003	66737	5.282284
1189	16.409803	53559	7.344324
1190	20.389783	44883	6.918819
1191	20.496967	54594	4.512276
1192	14.382786	64579	5.618095
1193	12.825364	56983	4.861868
1194	18.254604	40640	0.457875
1195	22.013730	41051	3.901047
1196	13.337321	76004	2.786971
1197	9.417120	68233	5.072255
1198	10.678218	53323	6.390755
1199	19.650341	46212	7.441860

Percent Less than High School Degree $\$ 0 21.758252 13.409171 1 2 3 4 5 11.085381 15.729958 14.580797 24.842215 6 7 13.051927 16.145850 8 18.494087 12.252238 10 25.206726 11 9.830672 12 10.103521 13 10.736314 14 6.153444 15 10.503197 6.214203 16 17 11.925239 13.792481 18 19 7.468059 20 17.871127 11.320101 22 23.212996 23 8.823708 11.688725 24 25 10.578890 26 13.288908 27 14.321540 28 29.475750 29 22.236087 1170 6.784049 1171 11.170104 1172 10.591406 12.513379 1173 1174 8.901562 1175 8.367242 1176 4.242959 1177 12.358524 1178 9.074810 1179 6.072757 1180 4.116150 1181 9.145423 1182 13.760962 1183 7.893714 1184 7.658332 1185 4.210167 1186 8.330054 9.579879 1187 1188 9.758393 1189 8.537172 1190 8.390574 5.105750 1191 1192 6.949996 8.332255 1193 1194 11.054422 1195 9.675889 1196 4.658830 1197 9.314606 1198 10.361224

12.577108

	Percent	Less	than	Bachelor's Degree	Percent Rural
0				88.941063	74.061076
1				76.837055	36.301067
2				65.791439	31.466066
3				82.262624	41.062000
4				86.675944	46.437399
5				89.563407	56.327786
6				69.031137	2.363800
7				88.121178	22.963644
8				85.507970	54.138242
9				69.199391	7.523491
10				77.506775	26.883172
11				74.458362	33.197178
12				53.637538	4.584061
13				63.133913	5.408640
14				59.071541	24.540066
15				65.711800	3.639981
16				61.140250	38.207884
17				76.143316	49.761036
18				76.115066	41.303609
19				58.485040	21.193437
20				87.235709	59.491057
21				77.466127	11.999858
22				88.220732	75.529453
23				72.271467	5.074387
24				68.984269	0.016933
25				78.396083	8.884347
26				82.154355	34.518820
27				66.118970	8.485942
28				89.960743	46.242327
29				93.602862	77.024723
1170				60 604041	26 021640
1170				69.694941 76.027600	36.031649
1171				79.234347	12.277901
1172				85.209692	20.416513 76.624873
1173 1174				77.865939	84.200036
1174				76.378160	28.284866
1176				66.600965	53.168534
1177				86.537786	80.443714
1177				72.181794	34.197089
1179				70.577928	30.784687
1180				58.376564	9.860448
1181				82.335700	64.939897
1182				84.915338	89.496244
1183				73.113141	13.431021
1184				79.617467	36.682765
1185				52.136794	11.939723
1186				80.935983	29.072464
1187				79.681613	41.630469
1188				84.468152	55.360370
1189				77.648670	51.424370
1190				77.036880	45.995924
1191				74.537343	49.025557
1192				79.631291	82.729482
1193				77.786814	14.449304
1194				81.009070	100.000000
1195				80.300395	58.647744
1196				75.645069	100.000000
1197				78.628507	10.916313
1198				81.793082	43.095937
1199				78.923920	35.954529
1177				70.723720	33.734323

[1200 rows x 19 columns]

```
County
                                         0
Democratic
                                         0
Republican
                                         0
FIPS
                                         0
Total Population
                                         0
Citizen Voting-Age Population
                                         0
Percent White, not Hispanic or Latino
Percent Black, not Hispanic or Latino
                                         0
Percent Hispanic or Latino
                                         0
Percent Foreign Born
                                         0
Percent Female
                                         0
Percent Age 29 and Under
                                         0
Percent Age 65 and Older
                                         0
Median Household Income
Percent Unemployed
                                         0
Percent Less than High School Degree
                                         0
Percent Less than Bachelor's Degree
                                         0
Percent Rural
                                         0
dtype: int64
```

```
In [12]: #4i - Citizen Voting-Age Population
d = data_whole.loc(data_whole['Citizen Voting-Age Population'] < data_whole['Democratic'] + data_whole['Republican']]
#d = data_whole.loc(data_whole['Citizen Voting-Age Population'] == 0]
d = d[['Citizen Voting-Age Population', 'Democratic', 'Republican']]
print(d)
data_whole = data_whole.drop(['Citizen Voting-Age Population'], axis=1)
data_whole.to_excel("output.xlsx")

'''
Answer:
Citizen voting population has many zeros.
When we consdier citizen voting age population, when it is less than democratic
plus republican votes, it has 677 rows with zero values.
So, out of 1200 rows 677 is more than 50% of the data.
Hence, we drop the column 'Citizen Voting-Age Population'
'''</pre>
```

```
Citizen Voting-Age Population Democratic Republican
0
                                           16298.0
                                                         7810.0
                                            7643.0
                                                        12180.0
3
                                     0
                                            3368.0
                                                         6870.0
4
                                     0
7
                                     0
                                           19214.0
                                                        50209.0
9
                                     0
                                          221242.0
                                                       160550.0
11
                                           40160.0
                                                        65308.0
12
                                     0
                                          210899.0
                                                       131321.0
14
                                     0
                                           42383.0
                                                        32836.0
                                     0
                                           34732.0
16
                                                        28046.0
                                           20490.0
                                                        19032.0
17
                                     0
18
                                     0
                                           40675.0
                                                        50391.0
22
                                     0
                                            2879.0
                                                         7576.0
24
                                     0
                                          472239.0
                                                       211397.0
26
                                     0
                                                        48008.0
                                           22660.0
27
                                     0
                                           54390.0
                                                       101266.0
                                            3328.0
28
                                     0
                                                         5503.0
                                                        75947.0
31
                                     0
                                           52891.0
32
                                     0
                                           21419.0
                                                        31467.0
33
                                     0
                                            2011.0
                                                         3404.0
                                     0
                                           13945.0
                                                         6051.0
                                     0
                                                         5703.0
35
                                            1633.0
36
                                     0
                                            1156.0
                                                         2666.0
38
                                     0
                                            1671.0
                                                         2856.0
                                                         5304.0
39
                                     0
                                            3542.0
42
                                     0
                                           29195.0
                                                        44798.0
43
                                     0
                                            5182.0
                                                        10791.0
44
                                     0
                                             623.0
                                                         2195.0
45
                                     0
                                           61402.0
                                                        93537.0
48
                                     0
                                           68877.0
                                                        94390.0
49
                                     0
                                           59025.0
                                                        95592.0
                                    . .
                                            3852.0
                                                         2703.0
1139
                                     0
1141
                                     0
                                           16007.0
                                                        21482.0
1146
                                            1879.0
                                                         2062.0
1148
                                     0
                                            3222.0
                                                         4893.0
1149
                                     0
                                            1459.0
                                                         1605.0
1154
                                     0
                                            4287.0
                                                         5158.0
1155
                                     0
                                           35731.0
                                                        21160.0
1159
                                     0
                                           16541.0
                                                        18795.0
1160
                                     0
                                           29084.0
                                                        32661.0
1161
                                     0
                                            7520.0
                                                         9731.0
1165
                                     0
                                            9338.0
                                                        10112.0
1166
                                     0
                                           41618.0
                                                        41354.0
1167
                                     0
                                           21464.0
                                                        29480.0
1168
                                     0
                                            1529.0
                                                         1578.0
1170
                                     0
                                           20170.0
                                                        14510.0
1171
                                     0
                                           45397.0
                                                        41213.0
1172
                                     0
                                           42616.0
                                                        25322.0
1173
                                     0
                                            2654.0
                                                         3381.0
                                                        21069.0
1176
                                     0
                                           18765.0
1178
                                     0
                                           20299.0
                                                        24844.0
1181
                                            9509.0
                                                        12792.0
                                     0
1182
                                     0
                                            4434.0
                                                         6106.0
1183
                                     0
                                           40185.0
                                                        35282.0
1184
                                     0
                                           15992.0
                                                        16899.0
1186
                                     0
                                                        11020.0
                                            1628.0
1188
                                     0
                                             834.0
                                                         3959.0
                                     0
                                            1020.0
                                                         3658.0
1190
                                                         5846.0
1192
                                     0
                                            1152.0
1196
                                     0
                                             668.0
                                                         2653.0
1199
                                     0
                                             588.0
                                                         2423.0
```

[677 rows x 3 columns]

```
In [13]: #5 - Party variable (Democratic - 1; Republican - 0)
# Calculate Party
data_whole['Party'] = np.where(data_whole['Democratic']>data_whole['Republican'], '1', '0')
data_whole.to_excel("output.xlsx")
print(data_whole)
```

	State	County	Democrati	c Republica	an FIPS \		
0	arizona	apache	16298.	-			
1	arizona	cochise	17383.				
2	arizona	coconino	34240.				
3	arizona	gila	7643.				
4 5	arizona arizona	graham la paz	3368. 1609.				
6	arizona	maricopa	732671.				
7	arizona	mohave	19214.				
8	arizona	navajo	16624.	0 18767	.0 4017		
9	arizona	pima	221242.				
10 11	arizona	santa cruz	9241. 40160.				
12	arizona connecticut	yavapai fairfield	210899.				
13	connecticut	hartford	203591.				
14	connecticut	middlesex	42383.	0 32836	.0 9007		
15	connecticut	new haven	179714.				
16	connecticut	tolland	34732.				
17 18	connecticut delaware	windham sussex	20490. 40675.				
19	florida	alachua	74493.				
20	florida	baker	1945.				
21	florida	bay	16723.				
22	florida	bradford	2879.				
23 24	florida florida	brevard broward	121112. 472239.				
25	florida	charlotte	33525.				
26	florida	citrus	22660.				
27	florida	collier	54390.	0 101266	.0 12021		
28	florida	desoto	3328.				
29	florida	dixie	1322.				
1170	wisconsin	portage	20170.		.0 55097		
1171	wisconsin	racine	45397.				
1172	wisconsin	rock	42616.				
1173	wisconsin	rusk	2654.				
1174	wisconsin	sawyer	3938.				
1175 1176	wisconsin wisconsin	sheboygan st. croix	24183. 18765.				
1177	wisconsin	taylor	3028.				
1178	wisconsin	walworth	20299.				
1179	wisconsin	washington	23072.	0 47102	.0 55131		
1180	wisconsin	waukesha	84147.				
1181	wisconsin	waupaca	9509.				
1182 1183	wisconsin wisconsin	waushara winnebago	4434. 40185.				
1184	wisconsin	wood	15992.				
1185	wyoming	albany	7576.				
1186	wyoming	campbell	1628.				
1187	wyoming	carbon	1359.				
1188 1189	wyoming wyoming	converse fremont	834. 4734.				
1190	wyoming	goshen	1020.				
1191	wyoming	johnson	722.				
1192	wyoming	lincoln	1152.		.0 56023		
1193	wyoming	natrona	7285.				
1194 1195	wyoming	niobrara	144. 801.				
1195	wyoming wyoming	platte sublette	668.				
1197	wyoming	sweetwater	3943.				
1198	wyoming	uinta	1371.	0 4713			
1199	wyoming	washakie	588.	0 2423	.0 56043		
	Total Donula	tion Porgon	· White n	ot Wichania	or Tatino		
0	Total Popula 7	2346	mille, I	ot Hispanic	18.571863		
1		8177			56.299492		
2		8064			54.619597		
3		3179			63.222325		
4 5		7529 0304			51.461536 58.884949		
6		8549			56.918114		
7		3629			78.252606		
8		8209	41.927196				
9		3338			53.271579		
10		6547			15.274883		
11 12		8586 1618	81.159361 63.509512				
13		5699	63.509512				
14		4438	84.738929				
15		0874	64.782767				
16		1689	85.892187				
17 18		7078 1224			83.782606 74.829091		
19		6581			62.460198		
20		7312	82.088459				
21		8361	77.687387				
22		6919			74.787325		
23	56	0683			75.798803		

			P1_Exploratory_	_Data_Analys
24	1863780		39.245351	
25	169642		84.643543	
26	140453		88.871010	
27	348236		64.222539	
28	35134		55.040701	
29	16084		85.041035	
			• • •	
1170	70551		91.815850	
1171	194873		73.058864	
1172	160986		83.642056	
1173	14272		95.557735	
1174	16438		77.302592	
1175	115269		85.579818	
1176	86726		94.420358	
1177	20521		96.549876	
1178 1179	103021 133422		85.711651 93.426871	
1180	395377		89.471568	
1181	51974		94.860892	
1182	24238		89.817642	
1183	169487		89.548461	
1184	73621		93.080779	
1185	37836		83.269902	
1186	48473		87.774637	
1187	15696		77.924312	
1188	14223		88.849047	
1189	40683		70.198855	
1190	13546		86.409272	
1191	8572		91.565562	
1192	18543		92.600982	
1193	80871		87.026252	
1194	2498		89.511609	
1195	8740		89.359268	
1196	10032		91.646730	
1197	44812		79.815674 87.718375	
1198 1199	20893 8351		82.397318	
1177	0331		02.337310	
	Percent Black, not	Hispanic or Latino	Percent Hispanic or	r Latino
0	, , , , , , , , , , , , , , , , , , , ,	0.486551	_	5.947806
1		3.714395	34	4.403208
2		1.342855	13	3.711033
3		0.552850	18	8.548675
4		1.811932	32	2.097844
5		0.379236		6.182033
6		5.013612		0.286833
7		0.951731		5.708470
8		0.672772		1.049913
9		3.199719		6.105978
10 11		0.199798 0.518331		3.219112 4.054880
12		10.456151		8.636007
13		12.657935		6.897976
14		4.664980		5.641032
15		12.177276		6.790959
16		2.811674		5.029369
17		1.866277	10	0.877364
18		12.284589	9	9.195925
19		19.504562	8	8.994820
20		13.876684	2	2.317663
21		10.527526	<u>.</u>	5.728270
22		19.250344		3.796575
23		9.838001		9.301691
24		27.214639		7.564841
25		5.535775		6.632202
26		2.817313		5.121998
27		6.775003 12.904878		6.634524
28				0.688222
29		7.504352	•	3.780154
1170		0.687446		2.951057
1171		10.764960		2.452212
1172		3.404644		8.207546
1173				1.604540
		0.987948		
1174		0.987948		2.269132
			2	
1174		0.663098	:	2.269132

0.375225

0.990089

1.077034

1.402712 0.352099 1.547157

1.996613

0.709037

1.345280

0.742681

1.242355

1.744554

10.894866

2.972523 4.495709 2.880286 6.213384

3.841003

2.665000

9.229305

8.357230

17.647808

1177

1178

1179

1180

1181 1182 1183

1184 1185

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1187

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1188
                                     0.007031
                                                                   7.691767
1189
                                     0.516186
                                                                   6.779244
1190
                                     0.147645
                                                                  10.519711
1191
                                     0.443304
                                                                   2.134858
1192
                                     0.210322
                                                                   4.416761
1193
                                     1.158635
                                                                   8.198242
1194
                                     0.120096
                                                                   4.243395
1195
                                     0.057208
                                                                   7.814645
1196
                                     0.000000
                                                                   7.814992
1197
                                     0.865840
                                                                  15.859591
1198
                                     0.186665
                                                                   8.959939
1199
                                     0.790325
                                                                  13.962400
      Percent Foreign Born Percent Female Percent Age 29 and Under \
0
                   1.719515
                                   50.598513
                                                               45.854643
                  11.458374
                                   49.069646
                                                               37.902276
1
2
                   4.825298
                                   50.581614
                                                               48.946141
                                   50.296170
3
                   4.249798
                                                               32.238290
4
                   4.385942
                                   46.313518
                                                               46.393456
5
                  11.372143
                                   48.946020
                                                               28.073286
6
                  14.729333
                                   50.549278
                                                               41.886620
7
                   6.969047
                                   49.676618
                                                               30.485835
8
                   2.914730
                                   49.846131
                                                               43.243168
9
                  12.903428
                                   50.807405
                                                               40.087388
10
                  32.644424
                                   52.125808
                                                               43.300320
11
                   6.456955
                                   51.092476
                                                               28.717301
12
                  21.154120
                                   51.308280
                                                               38.019876
13
                  15.011070
                                   51.492075
                                                               37.389458
14
                   7.652732
                                   51.098894
                                                               33.241708
15
                  12.073428
                                   51.759956
                                                               37.982562
                                                               42.301024
                   6.769113
                                   49.967367
16
17
                   5.269991
                                   50.422795
                                                               37.389604
18
                   6.671117
                                   51.495569
                                                               31.746866
19
                  10.144555
                                   51.670623
                                                               48.551530
20
                   1.475542
                                   47.715290
                                                               41.344464
21
                   5.479898
                                   50.280050
                                                               37.739192
22
                   2.306921
                                   44.741632
                                                               35.343066
23
                   8.632685
                                   51.140841
                                                               31.972612
24
                  32.715718
                                   51.376504
                                                               36.701971
25
                  10.185567
                                   51.260891
                                                               22.388913
26
                   5.413911
                                   51.667818
                                                               24.581889
27
                  23.816894
                                   50.881299
                                                               29.998909
                  17.504412
                                   43.345477
28
                                                               37.513520
29
                   2.785377
                                   45.417807
                                                               31.236011
                   3.119729
                                   49.846211
                                                               42.641493
1170
                   5.064837
                                   50.538043
                                                               38.058120
1171
1172
                   4.583007
                                   50.796343
                                                               38.521362
1173
                   1.891816
                                   49.691704
                                                               31.747478
1174
                   1.502616
                                   49.306485
                                                               30.800584
1175
                                   49.745378
                                                               36.383590
                   5.754366
1176
                   2.453705
                                   50.064571
                                                               38.543228
1177
                   1.461917
                                   48.842649
                                                               35.100629
1178
                   6.097786
                                   50.039312
                                                               39.967579
1179
                   2.717693
                                   50.384494
                                                               35.089416
1180
                   4.902410
                                   50.893198
                                                               34.964350
1181
                   1.816293
                                   49.265017
                                                               33.189672
1182
                   2.784883
                                   47.520422
                                                               30.006601
1183
                   3.318839
                                   49.604394
                                                               39.787122
                                                               34.645006
1184
                   2.326782
                                   50.712433
1185
                   6.081510
                                   47.756105
                                                               55.447193
1186
                   3.645328
                                   48.008170
                                                               45.326264
1187
                   5.198777
                                   45.839704
                                                               39.181957
1188
                   2.706883
                                   49.933207
                                                               38.515081
1189
                   1.339626
                                   49.907824
                                                               39.751247
1190
                   2.724051
                                   47.091392
                                                               35.914661
1191
                   1.656556
                                   46.966869
                                                               32.571162
1192
                   2.151755
                                   48.773122
                                                               38.715418
1193
                   2.729038
                                   49.421919
                                                               40.688257
1194
                   0.280224
                                   54.443555
                                                               36.269015
1195
                   2.780320
                                   47.711670
                                                               32.700229
1196
                   2.053429
                                   46.949761
                                                               36.393541
1197
                   5.509685
                                   47.824244
                                                               44.153352
1198
                   3.986981
                                   49.327526
                                                               43,205858
1199
                   3.783978
                                   51.359119
                                                               34.774279
      Percent Age 65 and Older
                                  Median Household Income Percent Unemployed \
0
                      13.322091
                                                      32460
                                                                       15.807433
1
                      19.756275
                                                     45383
                                                                        8.567108
2
                      10.873943
                                                     51106
                                                                        8.238305
3
                      26.397638
                                                     40593
                                                                       12.129932
                                                                       14.424104
4
                      12.315809
                                                     47422
5
                      36.056935
                                                     36321
                                                                       10.599013
6
                      13.837843
                                                     55676
                                                                        6.808454
7
                                                      39856
                      26.858650
                                                                       11.680953
8
                      15.745456
                                                     36868
                                                                       18.525791
                      17.801778
                                                      46764
                                                                        9.214114
9
10
                                                     38941
                                                                        9.749896
                      15.895761
```

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1199

		P1_Explorate	ory_Data_Analysis
11	28.272625	46638	8.525986
12	14.383115	86670	8.211898
13	15.644876	68027	8.237243
14	17.703937	79837	5.257635
15	15.604490	62715	8.545483
16	13.868507	80129	6.267325
17	14.571482	60689	8.375524
18	24.214578	54218	7.108621
19	12.430772	44702	7.020154
20	12.910076	53327	6.832522
21	16.103857	48577	7.475668
22	17.452357	43373	10.563312
23	22.491140	49914	9.278023
24	15.371879	52954	8.710312
25	37.622759	44865	10.088979
26	35.105694	39054	11.648012
27	29.589704	59783	6.408868
28	19.408550	35513	8.291825
29	21.729669	34634	5.306200
	•••		
1170	14.644725	52411	6.178216
1171	14.722409	56359	7.478894
1172	15.032984	50968	7.390601
1173	22.323430	39904	4.930617
1174	23.317922	41869	7.665187
1175	16.257623	54392	5.054640
1176	12.209718	73743	4.081465
1177	18.088787	47306	4.478597
1178	15.303676	55575	6.442507
1179	15.645096	70325	4.019701
1180	16.492866	78268	3.665774
1181	19.523223	52441	4.546458
1182	22.353329	46581	6.336312
1183	14.738003	53501	4.420678
1184	18.608821	49926	5.669639
1185	9.549107	43043	4.579174

80822

56972

66737

53559

44883

54594

64579

56983

40640

41051

76004

68233

53323

46212

4.669432

4.141937

5.282284

7.344324

6.918819

4.512276

5.618095

4.861868

0.457875

3.901047 2.786971

5.072255

6.390755

7.441860

Percent Less than High School Degree 0 21.758252 1 13.409171 2 11.085381 3 15.729958 4 14.580797 5 24.842215 6 13.051927 16.145850 7 8 18.494087 9 12.252238 10 25.206726 11 9.830672 10.103521 12 13 10.736314 14 6.153444 15 10.503197 16 6.214203 17 11.925239 18 13.792481 19 7.468059 20 17.871127 21 11.320101 22 23.212996 23 8.823708 24 11.688725 25 10.578890 26 13.288908 14.321540 27 29.475750 28 29 22.236087 6.784049 1170 1171 11.170104 10.591406 1172 1173 12.513379

8.901562

6.954387

13.774210

13.668003

16.409803

20.389783

20.496967

14.382786

12.825364

18.254604

22.013730

13.337321

9.417120

10.678218

19.650341

1174

			_	-
1175		8.367242		
1176		4.242959		
1177		12.358524		
1178		9.074810		
1179		6.072757		
1180		4.116150		
1181		9.145423		
1182		13.760962		
1183		7.893714		
1184		7.658332		
1185		4.210167		
1186		8.330054		
1187		9.579879		
1188		9.758393		
1189		8.537172		
1190		8.390574		
1191		5.105750		
1192		6.949996		
1193		8.332255		
1194		11.054422		
1195		9.675889		
1196		4.658830		
1197		9.314606		
1198		10.361224		
1199		12.577108		
11))		12.577100		
	Demont Torre 12	Jamla D-	Demos-1 -	Derri
_	Percent Less than Bache			_
0		88.941063	74.061076	1
1		76.837055	36.301067	0
2		65.791439	31.466066	1
3		82.262624	41.062000	0
4		86.675944	46.437399	0
5		89.563407	56.327786	0
6		69.031137	2.363800	1
7		88.121178	22.963644	0
8		85.507970	54.138242	0
9		69.199391	7.523491	1
10		77.506775	26.883172	1
11		74.458362	33.197178	0
12		53.637538	4.584061	1
13		63.133913	5.408640	1
14		59.071541	24.540066	1
15		65.711800	3.639981	1
16		61.140250	38.207884	1
17		76.143316	49.761036	1
18		76.115066	41.303609	0
19		58.485040	21.193437	1
20		87.235709	59.491057	0
21		77.466127	11.999858	0
22		88.220732	75.529453	0
23		72.271467	5.074387	0
24		68.984269	0.016933	1
		78.396083		
25			8.884347	0
26		82.154355	34.518820	0
27		66.118970	8.485942	0
28		89.960743	46.242327	0
29		93.602862	77.024723	0
1170		69.694941	36.031649	1
1171		76.027600	12.277901	1
1172		79.234347	20.416513	1
1173		85.209692	76.624873	0
1174		77.865939	84.200036	0
1175		76.378160	28.284866	0
1176		66.600965	53.168534	0
1177		86.537786	80.443714	0
1178		72.181794	34.197089	0
			30.784687	
1179		70.577928		0
1180		58.376564	9.860448	0
1181		82.335700	64.939897	0
1182		84.915338	89.496244	0
1183		73.113141	13.431021	1
1184		79.617467	36.682765	0
1185		52.136794	11.939723	1
			29.072464	
1186		80.935983		0
1187		79.681613	41.630469	0
1188		84.468152	55.360370	0
1189		77.648670	51.424370	0
1190		77.036880	45.995924	0
1191		74.537343	49.025557	0
1191		79.631291	82.729482	0
1193		77.786814	14.449304	0
1194		81.009070	100.000000	0
1195		80.300395	58.647744	0
1196		75.645069	100.000000	0
1197		78.628507	10.916313	0
1198		81.793082	43.095937	0
			10.000001	
1100			32 054530	
1199		78.923920	35.954529	0

[1200 rows x 19 columns]

```
In [14]: #6 - Hypothesis Testing - Total Population - Democratic & Republican counties
          #6i - Mean of Democratic counties
         d_democratic = data_whole.loc[data_whole['Democratic']>data_whole['Republican']]
         d_democratic_tp = d_democratic[['Total Population', 'Party']]
         sample_mean = d_democratic_tp['Total Population'].mean()
         print("Mean population for Democratic Counties:", sample mean)
         Mean population for Democratic Counties: 300998.3169230769
In [15]: #6ii - Mean of Republican counties
         d_republican = data_whole.loc[data_whole['Democratic']<data_whole['Republican']]</pre>
         d_republican_tp = d_republican[['Total Population', 'Party']]
         sample_mean = d_republican_tp['Total Population'].mean()
         print("Mean population for Republican Counties:", sample_mean)
         Mean population for Republican Counties: 53864.6724137931
In [16]: '''
         Mean population for Democratic Counties: 300998.3169230769
         Mean population for Republican Counties: 53864.6724137931
          Therefore clearly, mean population for democratic counties is greater than mean population for republican counties.
In [17]: #6iii - Compute sample standard deviations of Democratic & Republican
          sample_std_democratic = d_democratic_tp['Total Population'].std()
          sample_std_republican = d_republican_tp['Total Population'].std()
         print("Sample standard deviation of democratic counties population:", sample_std_democratic)
         print("Sample standard deviation of republican counties population:", sample std republican)
         Sample standard deviation of democratic counties population: 553600.0257123302
         Sample standard deviation of republican counties population: 94192.57279397613
In [18]: #6iv - Compute p-value using scipy.stats.ttest_ind
          import scipy.stats as st
         [statistic, pvalue] = st.ttest ind(d democratic tp['Total Population'], d republican tp['Total Population'], equal var =
         False)
         print("t-test statistic:", statistic)
         print("pvalue:", pvalue)
         t-test statistic: 8.004638577960957
         pvalue: 2.0478717602973023e-14
In [19]: '''
          6th Answer Conclusion: Total Population
         Null Hypothesis: \mu(Democratic population) = \mu(Republican population)
         Alternate Hypothesis: \mu(Democratic population) != \mu(Republican population)
          t-test statistic: 8.004638577960957
          pvalue: 2.0478717602973023e-14
          Since pvalue < \alpha (Statistically signficant)
          Therefore, we reject null hypothesis.
          There is sufficient evidence to conclude that the mean population of
         democratic counties is different from republican counties.
In [20]: #7 - Hypothesis Testing - Median Household income - Democratic & Republican counties
         #7i - Mean of Democratic counties
         d_democratic_mhhi = d_democratic[['Median Household Income', 'Party']]
         sample_mean = d_democratic_mhhi['Median Household Income'].mean()
         print("Mean Median Household Income for Democratic Counties:", sample_mean)
         Mean Median Household Income for Democratic Counties: 53798.732307692306
In [21]: #7ii - Mean of Republican counties
         d_republican_mhhi = d_republican[['Median Household Income', 'Party']]
         sample_mean = d_republican_mhhi['Median Household Income'].mean()
         print("Mean Median Household Income for Republican Counties:", sample mean)
         Mean Median Household Income for Republican Counties: 48746.81954022989
In [22]: '''
          Mean Median Household Income for Democratic Counties: 53798.732307692306
         Mean Median Household Income for Republican Counties: 48746.81954022989
         Therefore clearly, mean median household income for democratic counties is
          greater than mean population for republican counties.
```

```
In [23]: #7iii - Compute sample standard deviations of Democratic & Republican
         sample std democratic = d democratic mhhi['Median Household Income'].std()
         sample_std_republican = d_republican_mhhi['Median Household Income'].std()
         print("Sample standard deviation of democratic counties Median Household Income:", sample std democratic)
         print("Sample standard deviation of republican counties Median Household Income:", sample_std_republican)
         Sample standard deviation of democratic counties Median Household Income: 15289.130077404621
         Sample standard deviation of republican counties Median Household Income: 10670.729411820219
In [24]: #7iv - Compute p-value using scipy.stats.ttest_ind
         import scipy.stats as st
         [statistic, pvalue] = st.ttest ind(d democratic mhhi['Median Household Income'], d republican mhhi['Median Household Inc
         ome'], equal_var = False)
         print("t-test statistic:", statistic)
         print("pvalue:", pvalue)
         t-test statistic: 5.479141589767387
         pvalue: 7.149437363182572e-08
In [25]: '''
         7th Answer Conclusion: Total Population
         Null Hypothesis: \mu(Democratic median household income) = \mu(Republican median household income)
         Alternate Hypothesis: \mu(Democratic median household income) != \mu(Republican median household income)
         t-test statistic: 5.479141589767387
         pvalue: 7.149437363182598e-08
         Since pvalue < \alpha (Statistically signficant)
         Therefore, we reject null hypothesis.
         There is sufficient evidence to conclude that the mean median household income of
         democratic counties is different from republican counties.
In [26]: #8i - Descriptive Statistics
         #------Part1(Statistic Descriptions)------
         #Create a dataframe that contains variables we are interested in age, gender, race and ethinitcy, and education
         data_stat = data_whole.drop(columns= ['Democratic', 'Republican', 'FIPS', 'Total Population', 'Median Household Income',
         'Percent Unemployed', 'Percent Rural' ])
         #Get percentage of males
         percent_male = []
         for i in range(len(data_stat['Percent Female'])):
            percent male.append(100 - data stat.iloc[i,7])
         data stat['Percent Male'] = percent male
         #Reorder the columns so male and female percentages are close
         data_stat = data_stat[['Percent White, not Hispanic or Latino','Percent Black, not Hispanic or Latino','Percent Hispanic
         or Latino', 'Percent Foreign Born', 'Percent Female', 'Percent Male', 'Percent Age 29 and Under', 'Percent Age 65 and Olde
         r','Percent Less than High School Degree','Percent Less than Bachelor\'s Degree', 'Party']]
         #Get the information for each county
         democratic counties = data stat.loc[data whole['Democratic']>data whole['Republican']]
         republican_counties = data_stat.loc[data_whole['Democratic'] < data_whole['Republican']]
         #8i - Compute the statistic description for democratic county
         democratic_counties.describe().transpose()
Out[26]:
```

	count	mean	std	min	25%	50%	75%	max
Percent White, not Hispanic or Latino	325.0	69.683766	24.981502	2.776702	53.271579	77.786090	90.300749	98.063495
Percent Black, not Hispanic or Latino	325.0	9.242649	13.351340	0.000000	0.839103	3.485992	11.058843	63.953279
Percent Hispanic or Latino	325.0	12.587391	19.575030	0.193349	2.531017	5.039747	11.857116	95.479801
Percent Foreign Born	325.0	7.986330	8.330740	0.179769	2.470508	5.105490	10.144555	52.229868
Percent Female	325.0	50.385433	2.149359	34.245291	49.854280	50.653830	51.492075	56.418468
Percent Male	325.0	61.273041	6.252786	32.632177	57.838838	61.925849	65.511556	76.843548
Percent Age 29 and Under	325.0	38.726959	6.252786	23.156452	34.488444	38.074151	42.161162	67.367823
Percent Age 65 and Older	325.0	16.194826	4.282422	6.653188	13.106233	15.698087	18.806426	31.642106
Percent Less than High School Degree	325.0	11.883760	6.505613	3.215803	7.893714	10.370080	13.637059	49.673777
Percent Less than Bachelor's Degree	325.0	71.968225	11.192404	26.335440	65.711800	72.736143	79.903653	94.849957

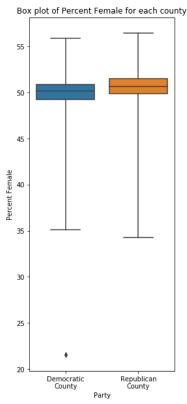
In [27]: #8ii - Compute the statistic description for republican county
 republican_counties.describe().transpose()

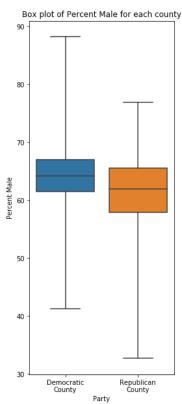
Out[27]:

	count	mean	std	min	25%	50%	75%	max
Percent White, not Hispanic or Latino	870.0	82.656646	16.056122	18.758977	75.016397	89.434849	94.466596	99.627329
Percent Black, not Hispanic or Latino	870.0	4.189241	6.721695	0.000000	0.460419	1.318311	4.753831	41.563041
Percent Hispanic or Latino	870.0	9.733094	14.049576	0.000000	1.704539	3.427435	10.709696	78.397012
Percent Foreign Born	870.0	3.990096	4.507786	0.000000	1.320101	2.326317	5.149429	37.058317
Percent Female	870.0	49.630898	2.429013	21.513413	49.222905	50.176792	50.829770	55.885023
Percent Male	870.0	63.994281	5.181522	41.250884	61.460213	64.153468	67.016348	88.157895
Percent Age 29 and Under	870.0	36.005719	5.181522	11.842105	32.983652	35.846532	38.539787	58.749116
Percent Age 65 and Older	870.0	18.828267	4.733155	6.954387	15.784982	18.377896	21.112847	37.622759
Percent Less than High School Degree	870.0	14.009112	6.303126	2.134454	9.662491	12.572435	17.447168	47.812773
Percent Less than Bachelor's Degree	870.0	81.095427	6.815537	43.419470	78.108424	82.406700	85.546272	97.014925

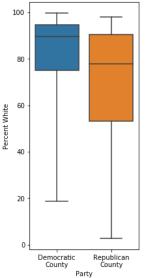
In [28]: #8ii - Plotting #-----Part2(Plot)-----plt.figure(figsize=(4, 10)) ax = sns.boxplot(x = 'Party', y = 'Percent Female', data = data stat, whis=10) ax.set(title = 'Box plot of Percent Female for each county', xlabel = 'Party', ylabel = 'Percent Female') ax.set_xticklabels(['Democratic\nCounty', 'Republican\nCounty']) plt.figure(figsize=(4, 10)) ax = sns.boxplot(x = 'Party', y = 'Percent Male', data = data_stat, whis=10) ax.set(title = 'Box plot of Percent Male for each county', xlabel = 'Party', ylabel = 'Percent Male') ax.set_xticklabels(['Democratic\nCounty', 'Republican\nCounty']) plt.figure(figsize=(3, 7)) ax = sns.boxplot(x = 'Party', y = 'Percent White, not Hispanic or Latino', data = data_stat, whis=10) ax.set(title = 'Box plot of Percent White for each county', xlabel = 'Party', ylabel = 'Percent White') ax.set_xticklabels(['Democratic\nCounty', 'Republican\nCounty']) plt.figure(figsize=(3, 7))
ax = sns.boxplot(x = 'Party', y = 'Percent Black, not Hispanic or Latino', data = data_stat, whis=10) ax.set(title = 'Box plot of Percent Black for each county', xlabel = 'Party', ylabel = 'Percent Black') ax.set_xticklabels(['Democratic\nCounty', 'Republican\nCounty']) plt.figure(figsize=(3, 7))
ax = sns.boxplot(x = 'Party', y = 'Percent Hispanic or Latino', data = data_stat, whis=10) ax.set(title = 'Box plot of Percent Hispanic\nor Latino for each county', xlabel = 'Party', ylabel = 'Percent Hispanic o r Latino') ax.set_xticklabels(['Democratic\nCounty', 'Republican\nCounty']) plt.figure(figsize=(3, 7)) ax = sns.boxplot(x = 'Party', y = 'Percent Foreign Born', data = data_stat, whis=10) ax.set(title = 'Box plot of Percent Foreign for each county', xlabel = 'Party', ylabel = 'Percent Foreign') ax.set xticklabels(['Democratic\nCounty', 'Republican\nCounty']) plt.figure(figsize=(3, 7))
ax = sns.boxplot(x = 'Party', y = 'Percent Age 29 and Under', data = data_stat, whis=10) ax.set(title = 'Box plot of Percent Age 29\nand Under for each county', xlabel = 'Party', ylabel = 'Percent 29 and Under ax.set xticklabels(['Democratic\nCounty', 'Republican\nCounty']) plt.figure(figsize=(3, 7))
ax = sns.boxplot(x = 'Party', y = 'Percent Age 65 and Older', data = data_stat, whis=10) ax.set(title = 'Box plot of Percent Age 65\nand Older for each county', xlabel = 'Party', ylabel = 'Percent 65 and Older ax.set_xticklabels(['Democratic\nCounty', 'Republican\nCounty']) plt.figure(figsize=(3, 7)) ax = sns.bxxplot(x = 'Party', y = 'Percent Less than High School Degree', data = data stat, whis=10) ax.set(title = 'Box plot of Percent Less than \nHigh School Degree for each county', xlabel = 'Party', ylabel = 'Percent Less Than Highschool') ax.set_xticklabels(['Democratic\nCounty', 'Republican\nCounty']) plt.figure(figsize=(3, 7)) ax = sns.boxplot(x = 'Party', y = 'Percent Less than Bachelor\'s Degree', data = data stat, whis=10) ax.set(title = 'Box plot of Percent Less than \nBachelor Degree for each county', xlabel = 'Party', ylabel = 'Percent Le ss Than Bachelor') ax.set_xticklabels(['Democratic\nCounty', 'Republican\nCounty'])

Out[28]: [Text(0, 0, 'Democratic\nCounty'), Text(0, 0, 'Republican\nCounty')]

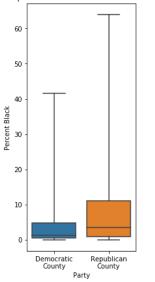


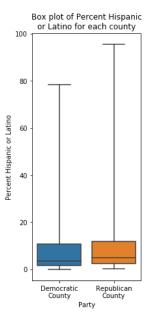




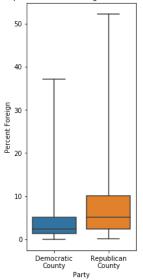


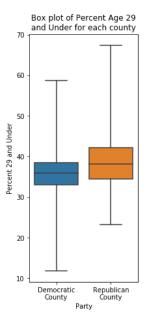
Box plot of Percent Black for each county

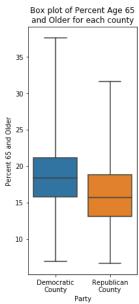


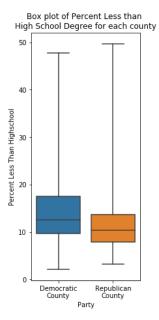


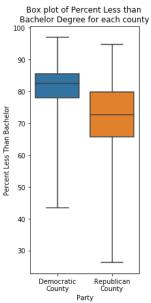
Box plot of Percent Foreign for each county











In [29]:

#9 Answer:

The variables that are important to determine whether a county is marked Democratic or Republican are Race and Ethnicity, Education and Age.

The percentage of White make up about 70 percent of Republicans and 83 percent of Democrats.

Education also plays a very large part, 72 percent of Democrats have a degree less than a bachelor's degree and 81 percent of Demokration also plays a very large part, 72 percent of Democrats have a degree less than a bachelor's

degree and 81 percent of Republicans have a degree less than a bachelor's degree.

Finally people age 29 and younger makeup 39 percent of Republicans and 36 percent of Democrats.

