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In [1]: import numpy as np  
import pandas as pd
```

```
In [11]: births=pd.read_csv('birth_zip.csv')
births=births[births['Year']==2017]
births=births.iloc[:,1:]
births
```

Out[11]:

	Zip Code	Total Live Births
7764	90001	952
7765	90002	876
7766	90003	1236
7767	90004	577
7768	90005	363
7769	90006	656
7770	90007	372
7771	90008	389
7772	90009	1
7773	90010	34
7774	90011	1816
7775	90012	233
7776	90013	71
7777	90014	31
7778	90015	235
7779	90016	554
7780	90017	303
7781	90018	594
7782	90019	686
7783	90020	401
7784	90021	23
7785	90022	873
7786	90023	637
7787	90024	270
7788	90025	490
7789	90026	672
7790	90027	367
7791	90028	185
7792	90029	301
7793	90030	1
...
9645	96112	1
9646	96113	12
9647	96114	26

	Zip Code	Total Live Births
9648	96116	2
9649	96117	5
9650	96118	19
9651	96120	7
9652	96121	6
9653	96122	38
9654	96124	2
9655	96125	2
9656	96126	2
9657	96128	6
9658	96129	7
9659	96130	193
9660	96134	24
9661	96136	2
9662	96137	25
9663	96140	13
9664	96141	1
9665	96142	7
9666	96143	61
9667	96145	22
9668	96146	6
9669	96148	13
9670	96150	304
9671	96151	9
9672	96160	2
9673	96161	162
9674	99999	2144

1911 rows × 2 columns

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In [23]: demographics=pd.read_csv('cal_demo.csv')
demographics['Geography']=demographics['Geography'].str[6:].astype(int)
demographics
```

Out[23]:

	Geography	Total population	Median age (years)	Average Household size	Population Per Square Mile (Land Area)	White	Black or African American	American Indian and Alaska Native	Tot Asia
0	89010	31	26.5	4.43	2	18	0	8	
1	89019	69	38.3	2.88	0	55	6	0	
2	89060	30	44.0	3.75	4	27	0	0	
3	89061	51	47.5	2.43	71	42	0	2	
4	89439	80	57.5	1.95	11	78	0	0	
5	90001	57,110	26.6	4.40	16,306	20,509	6,133	410	14
6	90002	51,223	25.5	4.36	16,728	14,392	13,101	371	14
7	90003	66,266	26.3	4.22	18,660	19,878	16,181	516	14
8	90004	62,180	34.8	2.73	20,400	23,205	2,187	497	16,70
9	90005	37,681	33.9	2.50	34,761	10,953	2,007	317	12,74
10	90006	59,185	32.4	3.13	30,829	18,869	2,179	626	10,95
11	90007	40,920	24.0	3.00	16,593	15,849	4,547	274	6,31
12	90008	32,327	39.7	2.33	8,801	2,747	22,581	144	82
13	90010	3,800	37.8	1.87	8,309	884	167	8	2,51
14	90011	103,892	26.2	4.67	24,240	35,138	9,764	1,219	55
15	90012	31,103	36.3	2.12	9,618	8,432	4,260	186	13,65
16	90013	11,772	44.6	1.26	17,546	4,386	3,810	168	1,85
17	90014	7,005	44.8	1.34	24,737	2,813	2,058	89	1,14
18	90015	18,986	31.3	2.45	11,100	6,711	1,334	196	2,67
19	90016	47,596	33.9	2.93	13,123	11,653	17,829	429	1,47
20	90017	23,768	29.4	2.53	32,725	8,266	1,430	481	3,22
21	90018	49,310	33.2	3.12	17,028	12,825	15,663	471	1,82
22	90019	64,458	35.8	2.70	16,578	19,321	15,249	577	10,14
23	90020	38,967	34.6	2.35	34,475	9,486	2,270	222	18,51
24	90021	3,951	44.3	1.57	1,908	1,620	1,242	49	15
25	90022	67,179	29.8	3.94	15,334	35,177	387	858	54
26	90023	45,903	28.4	4.26	10,866	22,777	308	560	27
27	90024	47,452	23.6	2.03	16,154	29,232	1,018	79	12,61
28	90025	42,147	34.7	1.97	16,402	27,257	1,185	210	8,35
29	90026	67,869	34.0	2.68	16,063	31,713	2,001	852	11,75
...
1739	96117	405	45.1	2.60	1	362	0	6	

	Geography	Total population	Median age (years)	Average Household size	Population Per Square Mile (Land Area)	White	Black or African American	American Indian and Alaska Native	Tot Asia
1740	96118	1,627	46.6	2.37	8	1,507	4	30	
1741	96119	90	54.0	2.50	1	78	5	1	
1742	96120	957	46.9	2.44	5	668	0	237	
1743	96121	368	51.1	2.37	11	339	2	4	
1744	96122	3,883	45.0	2.34	63	3,253	21	90	2
1745	96123	48	44.5	2.40	0	40	0	1	
1746	96124	326	50.6	2.08	6	300	0	1	
1747	96125	258	56.4	1.97	3	236	0	2	
1748	96126	215	52.3	2.13	2	202	2	0	
1749	96128	752	39.1	2.64	24	647	0	28	
1750	96129	261	43.8	2.53	3	250	1	2	
1751	96130	23,150	35.1	2.51	48	15,847	2,269	822	25
1752	96132	119	56.3	2.05	0	91	2	1	
1753	96133	110	45.0	2.62	9	99	0	1	
1754	96134	2,512	35.2	2.73	8	1,643	8	53	
1755	96135	128	46.0	2.29	4	114	0	1	
1756	96136	104	45.3	2.21	1	97	0	1	
1757	96137	3,297	50.5	2.21	68	2,988	7	130	1
1758	96140	1,170	46.2	2.13	249	1,094	6	11	2
1759	96141	744	48.7	2.03	62	710	11	3	1
1760	96142	1,037	43.3	2.14	51	973	6	7	1
1761	96143	4,414	32.6	2.61	802	3,787	18	22	2
1762	96145	3,161	43.3	2.10	85	2,990	9	11	4
1763	96146	1,366	39.7	2.20	65	1,246	5	5	7
1764	96148	788	38.5	2.48	580	685	0	4	1
1765	96150	29,792	38.0	2.36	241	23,488	236	273	1,34
1766	96155	8	46.0	2.00	0	5	0	0	
1767	96161	18,451	38.4	2.52	101	16,048	70	104	28
1768	97635	165	57.9	1.85	4	150	0	2	

1769 rows × 12 columns

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In [34]: stats=demographics.merge(births,how='inner',left_on='Geography', right_on='Zip Code')
stats = stats.drop(columns='Zip Code')

stats['White']=stats['White'].str.replace(",", "").astype(int)/stats['Total population'].str.replace(",", "").astype(int)
stats
```


Out[34]:

	Geography	Total population	Median age (years)	Average Household size	Population Per Square Mile (Land Area)	White	Black or African American	American Indian and Alaska Native	1 A
0	90001	57,110	26.6	4.40	16,306	0.359114	6,133	410	
1	90002	51,223	25.5	4.36	16,728	0.280968	13,101	371	
2	90003	66,266	26.3	4.22	18,660	0.299973	16,181	516	
3	90004	62,180	34.8	2.73	20,400	0.373191	2,187	497	16
4	90005	37,681	33.9	2.50	34,761	0.290677	2,007	317	12
5	90006	59,185	32.4	3.13	30,829	0.318814	2,179	626	10
6	90007	40,920	24.0	3.00	16,593	0.387317	4,547	274	6
7	90008	32,327	39.7	2.33	8,801	0.084975	22,581	144	
8	90010	3,800	37.8	1.87	8,309	0.232632	167	8	2
9	90011	103,892	26.2	4.67	24,240	0.338217	9,764	1,219	
10	90012	31,103	36.3	2.12	9,618	0.271099	4,260	186	13
11	90013	11,772	44.6	1.26	17,546	0.372579	3,810	168	1
12	90014	7,005	44.8	1.34	24,737	0.401570	2,058	89	1
13	90015	18,986	31.3	2.45	11,100	0.353471	1,334	196	2
14	90016	47,596	33.9	2.93	13,123	0.244831	17,829	429	1
15	90017	23,768	29.4	2.53	32,725	0.347779	1,430	481	3
16	90018	49,310	33.2	3.12	17,028	0.260089	15,663	471	1
17	90019	64,458	35.8	2.70	16,578	0.299746	15,249	577	10
18	90020	38,967	34.6	2.35	34,475	0.243437	2,270	222	18
19	90021	3,951	44.3	1.57	1,908	0.410023	1,242	49	
20	90022	67,179	29.8	3.94	15,334	0.523631	387	858	
21	90023	45,903	28.4	4.26	10,866	0.496199	308	560	
22	90024	47,452	23.6	2.03	16,154	0.616033	1,018	79	12
23	90025	42,147	34.7	1.97	16,402	0.646713	1,185	210	8
24	90026	67,869	34.0	2.68	16,063	0.467268	2,001	852	11
25	90027	45,151	38.3	1.99	5,464	0.698434	1,412	203	5
26	90028	28,714	34.0	1.78	18,838	0.631469	2,282	211	2
27	90029	38,617	34.6	2.70	28,359	0.438848	1,232	343	6
28	90031	39,316	33.5	3.49	11,383	0.356394	525	427	9
29	90032	45,786	32.4	3.52	9,604	0.450094	1,050	680	5
...	
1648	96107	1,269	36.4	2.41	14	0.831363	12	67	

	Geography	Total population	Median age (years)	Average Household size	Population Per Square Mile (Land Area)	White	Black or African American	American Indian and Alaska Native	1 A
1649	96109	2,197	37.0	2.46	11	0.597633	431	106	
1650	96110	166	55.0	2.05	1	0.909639	1	0	
1651	96112	214	40.6	2.28	2	0.518692	2	76	
1652	96113	1,000	38.9	2.46	147	0.739000	86	43	
1653	96114	3,220	43.4	2.65	47	0.923292	15	67	
1654	96116	233	45.1	2.31	1	0.635193	3	8	
1655	96117	405	45.1	2.60	1	0.893827	0	6	
1656	96118	1,627	46.6	2.37	8	0.926245	4	30	
1657	96120	957	46.9	2.44	5	0.698015	0	237	
1658	96121	368	51.1	2.37	11	0.921196	2	4	
1659	96122	3,883	45.0	2.34	63	0.837754	21	90	
1660	96124	326	50.6	2.08	6	0.920245	0	1	
1661	96125	258	56.4	1.97	3	0.914729	0	2	
1662	96126	215	52.3	2.13	2	0.939535	2	0	
1663	96128	752	39.1	2.64	24	0.860372	0	28	
1664	96129	261	43.8	2.53	3	0.957854	1	2	
1665	96130	23,150	35.1	2.51	48	0.684536	2,269	822	
1666	96134	2,512	35.2	2.73	8	0.654061	8	53	
1667	96136	104	45.3	2.21	1	0.932692	0	1	
1668	96137	3,297	50.5	2.21	68	0.906278	7	130	
1669	96140	1,170	46.2	2.13	249	0.935043	6	11	
1670	96141	744	48.7	2.03	62	0.954301	11	3	
1671	96142	1,037	43.3	2.14	51	0.938284	6	7	
1672	96143	4,414	32.6	2.61	802	0.857952	18	22	
1673	96145	3,161	43.3	2.10	85	0.945903	9	11	
1674	96146	1,366	39.7	2.20	65	0.912152	5	5	
1675	96148	788	38.5	2.48	580	0.869289	0	4	
1676	96150	29,792	38.0	2.36	241	0.788400	236	273	1
1677	96161	18,451	38.4	2.52	101	0.869763	70	104	

1678 rows × 13 columns

```
In [35]: stats['Total population'] = stats['Total population'].str.replace(",","").astype(int)
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```
In [36]: stats['Black or African American']=stats['Black or African American'].str.replace(",", "").astype(int)/stats['Total population']

In [37]: stats['Total Asian']=stats['Total Asian'].str.replace(",", "").astype(int)/stats['Total population']

In [38]: stats['American Indian and Alaska Native']=stats['American Indian and Alaska Native'].str.replace(",", "").astype(int)/stats['Total population']

In [40]: stats['Total NHOPI']=stats['Total NHOPI'].str.replace(",", "").astype(int)/stats['Total population']

In [42]: stats['Some Other Race']=stats['Some Other Race'].str.replace(",", "").astype(int)/stats['Total population']

In [45]: stats['Vacancy rate'] = stats['Vacancy rate'].str.replace("%", "").astype(float)

In [50]: stats['Population Per Square Mile (Land Area)'] = stats['Population Per Square Mile (Land Area)'].str.replace(",", "").astype(int)

In [51]: stats.to_csv('demobirth.csv')
```

In [52]: stats

Out[52]:

	Geography	Total population	Median age (years)	Average Household size	Population Per Square Mile (Land Area)	White	Black or African American	American Indian and Alaska Native	
0	90001	57110	26.6	4.40	16306	0.359114	0.107389	0.007179	0.0
1	90002	51223	25.5	4.36	16728	0.280968	0.255764	0.007243	0.0
2	90003	66266	26.3	4.22	18660	0.299973	0.244183	0.007787	0.0
3	90004	62180	34.8	2.73	20400	0.373191	0.035172	0.007993	0.0
4	90005	37681	33.9	2.50	34761	0.290677	0.053263	0.008413	0.0
5	90006	59185	32.4	3.13	30829	0.318814	0.036817	0.010577	0.0
6	90007	40920	24.0	3.00	16593	0.387317	0.111119	0.006696	0.0
7	90008	32327	39.7	2.33	8801	0.084975	0.698518	0.004454	0.0
8	90010	3800	37.8	1.87	8309	0.232632	0.043947	0.002105	0.0
9	90011	103892	26.2	4.67	24240	0.338217	0.093982	0.011733	0.0
10	90012	31103	36.3	2.12	9618	0.271099	0.136964	0.005980	0.0
11	90013	11772	44.6	1.26	17546	0.372579	0.323649	0.014271	0.0
12	90014	7005	44.8	1.34	24737	0.401570	0.293790	0.012705	0.0
13	90015	18986	31.3	2.45	11100	0.353471	0.070262	0.010323	0.0
14	90016	47596	33.9	2.93	13123	0.244831	0.374590	0.009013	0.0
15	90017	23768	29.4	2.53	32725	0.347779	0.060165	0.020237	0.0
16	90018	49310	33.2	3.12	17028	0.260089	0.317643	0.009552	0.0
17	90019	64458	35.8	2.70	16578	0.299746	0.236573	0.008952	0.0
18	90020	38967	34.6	2.35	34475	0.243437	0.058254	0.005697	0.0
19	90021	3951	44.3	1.57	1908	0.410023	0.314351	0.012402	0.0
20	90022	67179	29.8	3.94	15334	0.523631	0.005761	0.012772	0.0
21	90023	45903	28.4	4.26	10866	0.496199	0.006710	0.012200	0.0
22	90024	47452	23.6	2.03	16154	0.616033	0.021453	0.001665	0.0
23	90025	42147	34.7	1.97	16402	0.646713	0.028116	0.004983	0.0
24	90026	67869	34.0	2.68	16063	0.467268	0.029483	0.012554	0.0
25	90027	45151	38.3	1.99	5464	0.698434	0.031273	0.004496	0.0
26	90028	28714	34.0	1.78	18838	0.631469	0.079473	0.007348	0.0
27	90029	38617	34.6	2.70	28359	0.438848	0.031903	0.008882	0.0
28	90031	39316	33.5	3.49	11383	0.356394	0.013353	0.010861	0.0
29	90032	45786	32.4	3.52	9604	0.450094	0.022933	0.014852	0.0
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1648	96107	1269	36.4	2.41	14	0.831363	0.009456	0.052797	0.0

	Geography	Total population	Median age (years)	Average Household size	Population Per Square Mile (Land Area)	White	Black or African American	American Indian and Alaska Native	
1649	96109	2197	37.0	2.46	11	0.597633	0.196177	0.048248	0.0
1650	96110	166	55.0	2.05	1	0.909639	0.006024	0.000000	0.0
1651	96112	214	40.6	2.28	2	0.518692	0.009346	0.355140	0.0
1652	96113	1000	38.9	2.46	147	0.739000	0.086000	0.043000	0.0
1653	96114	3220	43.4	2.65	47	0.923292	0.004658	0.020807	0.0
1654	96116	233	45.1	2.31	1	0.635193	0.012876	0.034335	0.0
1655	96117	405	45.1	2.60	1	0.893827	0.000000	0.014815	0.0
1656	96118	1627	46.6	2.37	8	0.926245	0.002459	0.018439	0.0
1657	96120	957	46.9	2.44	5	0.698015	0.000000	0.247649	0.0
1658	96121	368	51.1	2.37	11	0.921196	0.005435	0.010870	0.0
1659	96122	3883	45.0	2.34	63	0.837754	0.005408	0.023178	0.0
1660	96124	326	50.6	2.08	6	0.920245	0.000000	0.003067	0.0
1661	96125	258	56.4	1.97	3	0.914729	0.000000	0.007752	0.0
1662	96126	215	52.3	2.13	2	0.939535	0.009302	0.000000	0.0
1663	96128	752	39.1	2.64	24	0.860372	0.000000	0.037234	0.0
1664	96129	261	43.8	2.53	3	0.957854	0.003831	0.007663	0.0
1665	96130	23150	35.1	2.51	48	0.684536	0.098013	0.035508	0.0
1666	96134	2512	35.2	2.73	8	0.654061	0.003185	0.021099	0.0
1667	96136	104	45.3	2.21	1	0.932692	0.000000	0.009615	0.0
1668	96137	3297	50.5	2.21	68	0.906278	0.002123	0.039430	0.0
1669	96140	1170	46.2	2.13	249	0.935043	0.005128	0.009402	0.0
1670	96141	744	48.7	2.03	62	0.954301	0.014785	0.004032	0.0
1671	96142	1037	43.3	2.14	51	0.938284	0.005786	0.006750	0.0
1672	96143	4414	32.6	2.61	802	0.857952	0.004078	0.004984	0.0
1673	96145	3161	43.3	2.10	85	0.945903	0.002847	0.003480	0.0
1674	96146	1366	39.7	2.20	65	0.912152	0.003660	0.003660	0.0
1675	96148	788	38.5	2.48	580	0.869289	0.000000	0.005076	0.0
1676	96150	29792	38.0	2.36	241	0.788400	0.007922	0.009164	0.0
1677	96161	18451	38.4	2.52	101	0.869763	0.003794	0.005637	0.0

1678 rows × 13 columns

In []: