

```
In [ ]: import pandas as pd
```

```
In [ ]: import numpy as np
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In [ ]: import matplotlib.pyplot as plt
```

Import Personel data

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In [37]: Personel = pd.read_table('CaliforniaHospitalData_Personnel.txt', sep = '\t')
Personel
```

Out[37]:

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate
0	20266	231581	Adams	Sandy	F	1	Regional Representative	46978	4	1/1/2009
1	37393	909709	Iwata	Akira	M	1	Regional Representative	46978	4	1/1/2011
2	20277	398103	Johanson	Sandy	F	1	Regional Representative	46978	4	1/1/2012
3	46348	664583	Paanua	Kaaluai	M	1	Regional Representative	46978	4	1/1/2011
4	12145	756481	Rodriguez	Jose	M	1	Regional Representative	46978	4	1/1/2009
5	46985	548312	Smith	Frank	M	1	Regional Representative	46978	4	1/1/2010
6	17718	811240	Charles	Kenneth	M	1	Regional Representative	46978	4	1/1/2009
7	46838	229849	Milgrom	Patricia	F	1	Regional Representative	46978	4	1/1/2009
8	38802	310431	Dong	HongWei	F	1	Regional Representative	46978	4	1/1/2010
9	11875	380668	Smith	Mary	F	1	Regional Representative	46978	4	1/1/2011
10	35512	625519	Brown	Marietta	F	1	Regional Representative	46978	4	1/1/2009
11	33251	411280	Manin	Emily	F	2	State Board Representative	89473	3	1/1/2009
12	22181	661286	Jones	Holly	F	2	State Board Representative	89473	3	1/1/2012
13	36569	966527	Flemming	Kris	F	2	State Board Representative	89473	3	1/1/2010

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate
14	44817	363672	Marlin	Bill	M	2	State Board Representative	89473	3	1/1/2010
15	17757	308150	Fourier	Craig	M	3	Acting Director	248904	8	1/1/2005
16	46342	768057	Tanner	Patricia	F	3	Acting Director	248904	8	1/1/2011
17	17700	704360	Frank	Vernon	M	3	Acting Director	248904	8	1/1/2005
18	10767	926378	Adamson	David	M	3	Acting Director	248904	8	1/1/2002
19	28812	908658	Holmes	Holly	F	3	Acting Director	248904	8	1/1/2003
20	21053	318165	Coulter	Tracy	F	4	Safety Inspection Member	23987	2	1/1/2011
21	37285	304224	Wood	Emily	F	4	Safety Inspection Member	23987	2	1/1/2011
22	20225	856720	Roberts	Melissa	F	4	Safety Inspection Member	23987	2	1/1/2011
23	45740	721586	Web	David	M	4	Safety Inspection Member	23987	2	1/1/2012
24	44982	231581	Adams	Sandy	F	1	Regional Representative	46978	4	1/1/2008
25	39110	909709	Iwata	Akira	M	1	Regional Representative	46978	4	1/1/2012
26	34959	398103	Johanson	Sandy	F	1	Regional Representative	46978	4	1/1/2012
27	38900	664583	Paanua	Kaaluai	M	1	Regional Representative	46978	4	1/1/2011
28	45771	756481	Rodriguez	Jose	M	1	Regional Representative	46978	4	1/1/2011
29	28283	548312	Smith	Frank	M	3	Acting Director	248904	8	1/1/2005
...

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate
31	13738	229849	Milgrom	Patricia	F	4	Safety Inspection Member	23987	2	1/1/2011
32	31032	310431	Dong	HongWei	F	4	Safety Inspection Member	23987	2	1/1/2012
33	22460	380668	Smith	Mary	F	4	Safety Inspection Member	23987	2	1/1/2012
34	13722	625519	Brown	Marietta	F	4	Safety Inspection Member	23987	2	1/1/2012
35	32930	411280	Manin	Emily	F	1	Regional Representative	46978	4	1/1/2011
36	39102	661286	Jones	Holly	F	2	State Board Representative	89473	3	1/1/2012
37	20231	966527	Flemming	Kris	F	2	State Board Representative	89473	3	1/1/2012
38	39050	363672	Marlin	Bill	M	3	Acting Director	248904	8	1/1/2008
39	33192	308150	Fourier	Craig	M	1	Regional Representative	46978	4	1/1/2011
40	43437	768057	Tanner	Patricia	F	1	Regional Representative	46978	4	1/1/2010
41	33283	704360	Frank	Vernon	M	1	Regional Representative	46978	4	1/1/2012
42	25667	926378	Adamson	David	M	1	Regional Representative	46978	4	1/1/2012
43	46844	908658	Holmes	Holly	F	3	Acting Director	248904	8	1/1/2010
44	19868	318165	Coulter	Tracy	F	1	Regional Representative	46978	4	1/1/2010
45	29805	304224	Wood	Emily	F	2	State Board Representative	89473	3	1/1/2011

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate
46	46996	856720	Roberts	Melissa	F	4	Safety Inspection Member	23987	2	1/1/2009
47	34454	721586	Web	David	M	3	Acting Director	248904	8	1/1/2012
48	38798	909709	Iwata	Akira	M	1	Regional Representative	46978	4	1/1/2011
49	37436	398103	Johanson	Sandy	F	2	State Board Representative	89473	3	1/1/2012
50	37043	664583	Paanua	Kaaluai	M	2	State Board Representative	89473	3	1/1/2010
51	43353	756481	Rodriguez	Jose	M	4	Safety Inspection Member	23987	2	1/1/2011
52	33207	811240	Charles	Kenneth	M	2	State Board Representative	89473	3	1/1/2010
53	17741	363672	Marlin	Bill	M	4	Safety Inspection Member	23987	2	1/1/2011
54	26206	308150	Fourier	Craig	M	3	Acting Director	248904	8	1/1/2011
55	29823	768057	Tanner	Patricia	F	3	Acting Director	248904	8	1/1/2009
56	33242	704360	Frank	Vernon	M	4	Safety Inspection Member	23987	2	1/1/2011
57	45067	926378	Adamson	David	M	4	Safety Inspection Member	23987	2	1/1/2012
58	22598	908658	Holmes	Holly	F	3	Acting Director	248904	8	1/1/2012
59	39076	304224	Wood	Emily	F	1	Regional Representative	46978	4	1/1/2010
60	45736	721586	Web	David	M	2	State Board Representative	89473	3	1/1/2011

61 rows × 10 columns

```
In [38]: #Import Hospital data  
Hospital = pd.read_csv('CaliforniaHospitalData.csv', sep=',')  
Hospital
```

Out[38]:

	HospitalID	Name	Zip	Website	TypeControl	Teaching	DonorType	NoFTE	NetP
0	45740	Mammoth Hospital	93546-0660	www.mammothhospital.com	District	Small/Rural	Charity	327.00	1.35520
1	12145	Victor Valley Community Hospital	92392	www.vvch.org	Non Profit	Small/Rural	Charity	345.00	1.36156
2	25667	Pioneers Memorial Hospital	92227	www.pmhd.org	District	Small/Rural	Charity	601.20	1.97094
3	46996	Ridgecrest Regional Hospital	93555	www.rrh.org	Non Profit	Small/Rural	Charity	400.00	1.39170
4	37393	Barstow Community Hospital	92311	www.barstowhospital.com	Investor	Small/Rural	Charity	262.00	1.16797
5	17741	St. Elizabeth Community Hospital	96080	redbluff.mercy.org/index.htm	Non Profit	Small/Rural	Charity	397.50	2.32503
6	20277	Ukiah Valley Medical Center	95482	www.uvmc.org	Non Profit	Small/Rural	Charity	503.50	2.14516
7	45736	Mountains Community Hospital	92352	www.mchcares.com	District	Small/Rural	Charity	158.00	3.07862
8	29823	Colusa Regional Medical Center	95932-2954	www.colusamedicalcenter.org	Non Profit	Small/Rural	Charity	168.00	5.17264

	HospitalID	Name	Zip	Website	TypeControl	Teaching	DonorType	NoFTE	NetP
9	13738	St. Mary Medical Center	92307-2206	www.stmary4health.com	Non Profit	Small/Rural	Charity	1216.00	5.40975
10	38798	Goleta Valley Cottage Hospital	93111	www.sbch.org	Non Profit	Small/Rural	Charity	288.00	3.35179
11	46348	Barton Memorial Hospital	96150	www.bartonhealth.org	Non Profit	Small/Rural	Charity	750.00	3.35179
12	33207	Memorial Hospital - Los Banos	93635-3419	www.memoriallosbanos.org	Non Profit	Small/Rural	Charity	235.00	1.05166
13	44817	Fairchild Medical Center	96097-3450	www.fairchildmed.org	Non Profit	Small/Rural	Charity	250.00	1.08162
14	17718	Mercy Medical Center - Mount Shasta	96067	www.mercymtshasta.org	Non Profit	Small/Rural	Charity	215.50	1.23480
15	33283	Sutter Lakeside Hospital	95453-6112	www.sutterlake.org	Non Profit	Small/Rural	Charity	353.00	1.73227
16	20231	Hanford Community Medical Center	93230-3513	www.hanfordhealth.com	Non Profit	Small/Rural	Charity	777.00	3.63127

	HospitalID	Name	Zip	Website	TypeControl	Teaching	DonorType	NoFTE	NetP
17	46985	Tahoe Forest Hospital District	96161	www.tfhd.com	District	Small/Rural	Charity	374.32	2.09348
18	37043	Colorado River Medical Center	92363	coloradorivermedical.org	Investor	Small/Rural	Charity	75.00	3.35936
19	46342	Coalinga Regional Medical Center	93210	www.coalingamedicalcenter.com	District	Small/Rural	Charity	160.00	6.57924
20	33242	Sutter Amador Hospital	95642-2379	www.sutteramador.com	Non Profit	Small/Rural	Charity	318.00	1.61745
21	33251	Sutter Coast Hospital	95531-8359	www.suttercoast.org	Non Profit	Small/Rural	Charity	363.00	1.72398
22	13722	Redwood Memorial Hospital	95540	www.stjosepheureka.org	Non Profit	Small/Rural	Charity	193.00	1.03189
23	17700	Mark Twain St. Joseph's Hospital	95249	www.marktwainhospital.com	Non Profit	Small/Rural	Charity	236.50	1.16609
24	20225	Frank R. Howard Memorial Hospital	95490-4225	www.howardhospital.com	Non Profit	Small/Rural	Charity	226.00	9.40159

	HospitalID	Name	Zip	Website	TypeControl	Teaching	DonorType	NoFTE	NetP
25	37285	Twin Cities Community Hospital	93465	www.twincitieshospital.com	Investor	Small/Rural	Charity	359.00	2.40738
26	20266	Sonora Regional Medical Center - greenley	95370	www.sonorahospital.org	Non Profit	Small/Rural	Charity	779.00	3.67540
27	37436	Fallbrook Hospital	92028	www.fallbrookhospital.com	District	Small/Rural	Charity	501.00	1.08960
28	17736	Sierra Nevada Memorial Hospital	95945	www.snmh.org	Non Profit	Small/Rural	Charity	524.50	2.95579
29	38802	Santa Ynez Valley Cottage Hospital	93463	www.sbch.org	Non Profit	Small/Rural	Charity	67.00	2.87734
...
31	46844	Palm Drive Hospital	95472	www.palmdrivehospital.com	District	Small/Rural	Charity	191.00	6.18167
32	28283	Hi-Desert Medical Center	92252	www.hdmc.org	District	Small/Rural	Charity	451.50	1.45733
33	11875	San Geronio Memorial Hospital	92220	www.sgmh.org	District	Small/Rural	Charity	259.00	1.43130
34	22181	Marshall Hospital	95667	www.marshallmedical.org	Non Profit	Small/Rural	Charity	900.00	4.04802

	HospitalID	Name	Zip	Website	TypeControl	Teaching	DonorType	NoFTE	NetP
35	34959	Biggs-Gridley Memorial Hospital	95948	www.frhg.org	Non Profit	Small/Rural	Charity	170.00	4.04987
36	28812	Oak Valley District Hospital	95361	www.oakvalleycares.org	District	Small/Rural	Charity	503.00	1.37280
37	43437	Southern Inyo Hospital	93545-1009	www.sihd.org	District	Small/Rural	Charity	121.00	1.75669
38	45771	Eastern Plumas Hospital - Portola Campus	96122-9406	www.ephc.org	District	Small/Rural	Charity	219.00	5.29838
39	46838	Modoc Medical Center	96101	www.modocmedicalcenter.com	City/County	Small/Rural	Charity	170.00	2.62605
40	44982	Healdsburg District Hospital	95448-3382	www.nschd.org	District	Small/Rural	Charity	150.00	6.47590
41	43353	Catalina Island Medical Center	90704	www.catalinaislandmedicalcenter.org	Non Profit	Small/Rural	Charity	55.00	1.41722
42	10767	Kern Valley Hospital	93240-9529	www.kvhd.org	District	Small/Rural	Charity	159.00	5.77285
43	19868	Ojai Valley Community Hospital	93023-3163	www.cmhhospital.org	Non Profit	Small/Rural	Charity	180.00	5.95046

	HospitalID	Name	Zip	Website	TypeControl	Teaching	DonorType	NoFTE	NetP
44	39076	UC Irvine Medical Center	92868	www.healthcare.uci.edu	Non Profit	Teaching	Alumni	3151.00	1.47628
45	17757	St. Mary's Medical Center - san francisco	94117	www.stmarysmedicalcenter.org	Non Profit	Teaching	Alumni	871.50	5.03895
46	34454	LAC USC Medical Center	90033	www.ladhs.org	City/County	Teaching	Alumni	6753.00	2.07002
47	26206	Arrowhead Regional Medical Center	92324	www.arrowheadmedcenter.org	City/County	Teaching	Alumni	2554.00	7.23744
48	22598	Kern Medical Center	93305	www.kernmedicalcenter.com	City/County	Teaching	Alumni	1850.00	5.00659
49	36569	Riverside County Regional Medical Center	92555-3911	www.rcrmc.org	City/County	Teaching	Alumni	2403.00	9.68917
50	21053	Santa Clara Valley Medical Center	95128	www.scvmed.org	City/County	Teaching	Alumni	5314.00	1.66561
51	29805	Alameda Hospital	94501	www.alamedahospital.org	City/County	Teaching	Alumni	450.00	1.02105

	HospitalID	Name	Zip	Website	TypeControl	Teaching	DonorType	NoFTE	NetP
52	35512	Community Regional Medical Center	93721-1324	www.communitymedical.org	Non Profit	Teaching	Alumni	3500.00	1.71038
53	39050	UC Davis Medical Center	95817-2282	www.ucdmc.ucdavis.edu	Non Profit	Teaching	Alumni	6525.00	2.90125
54	39102	UCSD Medical Center - Hillcrest	92103-8970	www.health.ucsd.edu	Non Profit	Teaching	Alumni	3892.00	2.42873
55	39110	UCSF Medical Center	94143	www.ucsfhealth.org	Non Profit	Teaching	Alumni	6062.00	4.16898
56	32930	Scripps Mercy Hospital	92103	www.scrippshealth.org	Non Profit	Teaching	Alumni	2814.00	1.32103
57	31032	Long Beach Memorial & Miller Children's Hospital	90806	www.memorialcare.org	Non Profit	Teaching	Alumni	5218.00	1.18702
58	22460	Stanford Hospital & Clinics	94305	stanfordhospital.org	Non Profit	Teaching	Alumni	6392.00	4.33393

	HospitalID	Name	Zip	Website	TypeControl	Teaching	DonorType	NoFTE	NetP
59	33192	California Pacific Medical Center - Pacific Ca...	94115	www.cpmc.org	Non Profit	Teaching	Alumni	1565.10	2.73628
60	38900	Cedars-Sinai Medical Center	90048	www.csmc.edu	Non Profit	Teaching	Alumni	8000.00	4.66258

61 rows × 14 columns

Join Two Tables

```
In [39]: df = pd.concat([Personel, Hospital], axis=1, join='inner')  
df
```


Out[39]:

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	...	1
0	20266	231581	Adams	Sandy	F	1	Regional Representative	46978	4	1/1/2009	...	[
1	37393	909709	Iwata	Akira	M	1	Regional Representative	46978	4	1/1/2011	...	↑
2	20277	398103	Johanson	Sandy	F	1	Regional Representative	46978	4	1/1/2012	...	[
3	46348	664583	Paanua	Kaaluai	M	1	Regional Representative	46978	4	1/1/2011	...	↑
4	12145	756481	Rodriguez	Jose	M	1	Regional Representative	46978	4	1/1/2009	...	I
5	46985	548312	Smith	Frank	M	1	Regional Representative	46978	4	1/1/2010	...	↑
6	17718	811240	Charles	Kenneth	M	1	Regional Representative	46978	4	1/1/2009	...	↑
7	46838	229849	Milgrom	Patricia	F	1	Regional Representative	46978	4	1/1/2009	...	[
8	38802	310431	Dong	HongWei	F	1	Regional Representative	46978	4	1/1/2010	...	↑
9	11875	380668	Smith	Mary	F	1	Regional Representative	46978	4	1/1/2011	...	↑
10	35512	625519	Brown	Marietta	F	1	Regional Representative	46978	4	1/1/2009	...	↑
11	33251	411280	Manin	Emily	F	2	State Board Representative	89473	3	1/1/2009	...	↑
12	22181	661286	Jones	Holly	F	2	State Board Representative	89473	3	1/1/2012	...	↑
13	36569	966527	Flemming	Kris	F	2	State Board Representative	89473	3	1/1/2010	...	↑

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	...	1
14	44817	363672	Marlin	Bill	M	2	State Board Representative	89473	3	1/1/2010	...	1
15	17757	308150	Fourier	Craig	M	3	Acting Director	248904	8	1/1/2005	...	1
16	46342	768057	Tanner	Patricia	F	3	Acting Director	248904	8	1/1/2011	...	1
17	17700	704360	Frank	Vernon	M	3	Acting Director	248904	8	1/1/2005	...	1
18	10767	926378	Adamson	David	M	3	Acting Director	248904	8	1/1/2002	...	1
19	28812	908658	Holmes	Holly	F	3	Acting Director	248904	8	1/1/2003	...	1
20	21053	318165	Coulter	Tracy	F	4	Safety Inspection Member	23987	2	1/1/2011	...	1
21	37285	304224	Wood	Emily	F	4	Safety Inspection Member	23987	2	1/1/2011	...	1
22	20225	856720	Roberts	Melissa	F	4	Safety Inspection Member	23987	2	1/1/2011	...	1
23	45740	721586	Web	David	M	4	Safety Inspection Member	23987	2	1/1/2012	...	1
24	44982	231581	Adams	Sandy	F	1	Regional Representative	46978	4	1/1/2008	...	1
25	39110	909709	Iwata	Akira	M	1	Regional Representative	46978	4	1/1/2012	...	1
26	34959	398103	Johanson	Sandy	F	1	Regional Representative	46978	4	1/1/2012	...	1
27	38900	664583	Paanua	Kaaluai	M	1	Regional Representative	46978	4	1/1/2011	...	1

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	...	1
28	45771	756481	Rodriguez	Jose	M	1	Regional Representative	46978	4	1/1/2011	...	1
29	28283	548312	Smith	Frank	M	3	Acting Director	248904	8	1/1/2005	...	1
...
31	13738	229849	Milgrom	Patricia	F	4	Safety Inspection Member	23987	2	1/1/2011	...	1
32	31032	310431	Dong	HongWei	F	4	Safety Inspection Member	23987	2	1/1/2012	...	1
33	22460	380668	Smith	Mary	F	4	Safety Inspection Member	23987	2	1/1/2012	...	1
34	13722	625519	Brown	Marietta	F	4	Safety Inspection Member	23987	2	1/1/2012	...	1
35	32930	411280	Manin	Emily	F	1	Regional Representative	46978	4	1/1/2011	...	1
36	39102	661286	Jones	Holly	F	2	State Board Representative	89473	3	1/1/2012	...	1
37	20231	966527	Flemming	Kris	F	2	State Board Representative	89473	3	1/1/2012	...	1
38	39050	363672	Marlin	Bill	M	3	Acting Director	248904	8	1/1/2008	...	1
39	33192	308150	Fourier	Craig	M	1	Regional Representative	46978	4	1/1/2011	...	1
40	43437	768057	Tanner	Patricia	F	1	Regional Representative	46978	4	1/1/2010	...	1
41	33283	704360	Frank	Vernon	M	1	Regional Representative	46978	4	1/1/2012	...	1

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	...	1
42	25667	926378	Adamson	David	M	1	Regional Representative	46978	4	1/1/2012	...	1
43	46844	908658	Holmes	Holly	F	3	Acting Director	248904	8	1/1/2010	...	1
44	19868	318165	Coulter	Tracy	F	1	Regional Representative	46978	4	1/1/2010	...	1
45	29805	304224	Wood	Emily	F	2	State Board Representative	89473	3	1/1/2011	...	1
46	46996	856720	Roberts	Melissa	F	4	Safety Inspection Member	23987	2	1/1/2009	...	1
47	34454	721586	Web	David	M	3	Acting Director	248904	8	1/1/2012	...	1
48	38798	909709	Iwata	Akira	M	1	Regional Representative	46978	4	1/1/2011	...	1
49	37436	398103	Johanson	Sandy	F	2	State Board Representative	89473	3	1/1/2012	...	1
50	37043	664583	Paanua	Kaaluai	M	2	State Board Representative	89473	3	1/1/2010	...	1
51	43353	756481	Rodriguez	Jose	M	4	Safety Inspection Member	23987	2	1/1/2011	...	1
52	33207	811240	Charles	Kenneth	M	2	State Board Representative	89473	3	1/1/2010	...	1
53	17741	363672	Marlin	Bill	M	4	Safety Inspection Member	23987	2	1/1/2011	...	1
54	26206	308150	Fourier	Craig	M	3	Acting Director	248904	8	1/1/2011	...	1
55	29823	768057	Tanner	Patricia	F	3	Acting Director	248904	8	1/1/2009	...	1

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	...	1
56	33242	704360	Frank	Vernon	M	4	Safety Inspection Member	23987	2	1/1/2011	...	1
57	45067	926378	Adamson	David	M	4	Safety Inspection Member	23987	2	1/1/2012	...	1
58	22598	908658	Holmes	Holly	F	3	Acting Director	248904	8	1/1/2012	...	1
59	39076	304224	Wood	Emily	F	1	Regional Representative	46978	4	1/1/2010	...	1
60	45736	721586	Web	David	M	2	State Board Representative	89473	3	1/1/2011	...	1

61 rows × 24 columns

Drop columns

```
In [40]: df.drop(['Work_ID', 'Position_ID', 'Website'], axis=1, inplace=True)
```

```
In [41]: df.columns
```

```
Out[41]: Index(['HospitalID', 'LastName', 'FirstName', 'Gender', 'PositionID',
               'PositionTitle', 'Compensation', 'MaxTerm', 'StartDate', 'HospitalID',
               'Name', 'Zip', 'TypeControl', 'Teaching', 'DonorType', 'NoFTE',
               'NetPatRev', 'InOperExp', 'OutOperExp', 'OperRev', 'OperInc',
               'AvlBeds'],
              dtype='object')
```

Delete Duplicate Columns

```
In [42]: df = df.loc[:, ~df.columns.duplicated()]
```

```
In [43]: df.columns
```

```
Out[43]: Index(['HospitalID', 'LastName', 'FirstName', 'Gender', 'PositionID',  
              'PositionTitle', 'Compensation', 'MaxTerm', 'StartDate', 'Name', 'Zip',  
              'TypeControl', 'Teaching', 'DonorType', 'NoFTE', 'NetPatRev',  
              'InOperExp', 'OutOperExp', 'OperRev', 'OperInc', 'AvlBeds'],  
              dtype='object')
```

```
In [ ]: df[df['OperInc']<0]['OperInc']
```

```
In [45]: df1 = (df['Teaching'] == "Small/Rural")  
df2 = (df['AvlBeds'] >= 15)  
df3 = (df['OperInc']<0)  
df4 = df[df1 & df3 & df2]  
df4.columns
```

```
Out[45]: Index(['HospitalID', 'LastName', 'FirstName', 'Gender', 'PositionID',  
              'PositionTitle', 'Compensation', 'MaxTerm', 'StartDate', 'Name', 'Zip',  
              'TypeControl', 'Teaching', 'DonorType', 'NoFTE', 'NetPatRev',  
              'InOperExp', 'OutOperExp', 'OperRev', 'OperInc', 'AvlBeds'],  
              dtype='object')
```

Export your data as tabdelimited

```
In [46]: df4.to_csv(r'hospital_data_new.txt', header=None, index=None, sep='\t', mode='a')
```

Change the name the file hospital_data_new.txt

```
In [47]: df5 = df4.rename(columns={'NoFTE':'FullTimeCount','NetPatRev':'NetPatientRevenue','InOperExp' : 'InpatientOperExp',  
                                'OutOperExp':'OutpatientOperExp','OperRev':'Operating_Revenue','OperInc':'Operating_Income'})
```

In [48]: `df5.columns`

Out[48]: Index(['HospitalID', 'LastName', 'FirstName', 'Gender', 'PositionID',
 'PositionTitle', 'Compensation', 'MaxTerm', 'StartDate', 'Name', 'Zip',
 'TypeControl', 'Teaching', 'DonorType', 'FullTimeCount',
 'NetPatientRevenue', 'InpatientOperExp', 'OutpatientOperExp',
 'Operating_Revenue', 'Operating_Income', 'AvlBeds'],
 dtype='object')

In [49]: `df6 = df5[:2]`
`df6`

Out[49]:

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
0	20266	Adams	Sandy	F	1	Regional Representative	46978	4	1/1/2009	Mammoth Hospital	...
1	37393	Iwata	Akira	M	1	Regional Representative	46978	4	1/1/2011	Victor Valley Community Hospital	...

2 rows × 21 columns

INSERT

In [50]: `ppf = Personel.copy()`

In [51]: `ppf[:1]`

Out[51]:

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate
0	20266	231581	Adams	Sandy	F	1	Regional Representative	46978	4	1/1/2009

```
In [52]: ppf['PositionTitle'].unique()
```

```
Out[52]: array(['Regional Representative', 'State Board Representative',  
              'Acting Director', 'Safety Inspection Member'], dtype=object)
```

```
In [53]: ppf.loc[61]=[20266, 231581, 'Khanh', 'Pham', 'M', 1, 'Regional Representative', 46978, 4, '09/03/2017']
```

```
In [54]: ppf.loc[62]=[20266, 231581, 'Khanh', 'Pham', 'M', 2, 'State Board Representative', 89473, 3, '09/03/2017']
```

```
In [55]: ppf.dtypes
```

```
Out[55]: HospitalID      int64  
         Work_ID        int64  
         LastName       object  
         FirstName      object  
         Gender         object  
         PositionID     int64  
         PositionTitle  object  
         Compensation   int64  
         MaxTerm        int64  
         StartDate      object  
         dtype: object
```

Convert to datetime dtype

```
In [56]: ppf['StartDate'] = pd.to_datetime(ppf['StartDate'], format='%m/%d/%Y')
```


In [57]:

ppf

Out[57]:

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate
0	20266	231581	Adams	Sandy	F	1	Regional Representative	46978	4	2009-01-01
1	37393	909709	Iwata	Akira	M	1	Regional Representative	46978	4	2011-01-01
2	20277	398103	Johanson	Sandy	F	1	Regional Representative	46978	4	2012-01-01
3	46348	664583	Paanua	Kaaluai	M	1	Regional Representative	46978	4	2011-01-01
4	12145	756481	Rodriguez	Jose	M	1	Regional Representative	46978	4	2009-01-01
5	46985	548312	Smith	Frank	M	1	Regional Representative	46978	4	2010-01-01
6	17718	811240	Charles	Kenneth	M	1	Regional Representative	46978	4	2009-01-01
7	46838	229849	Milgrom	Patricia	F	1	Regional Representative	46978	4	2009-01-01
8	38802	310431	Dong	HongWei	F	1	Regional Representative	46978	4	2010-01-01
9	11875	380668	Smith	Mary	F	1	Regional Representative	46978	4	2011-01-01
10	35512	625519	Brown	Marietta	F	1	Regional Representative	46978	4	2009-01-01
11	33251	411280	Manin	Emily	F	2	State Board Representative	89473	3	2009-01-01
12	22181	661286	Jones	Holly	F	2	State Board Representative	89473	3	2012-01-01
13	36569	966527	Flemming	Kris	F	2	State Board Representative	89473	3	2010-01-01

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate
14	44817	363672	Marlin	Bill	M	2	State Board Representative	89473	3	2010-01-01
15	17757	308150	Fourier	Craig	M	3	Acting Director	248904	8	2005-01-01
16	46342	768057	Tanner	Patricia	F	3	Acting Director	248904	8	2011-01-01
17	17700	704360	Frank	Vernon	M	3	Acting Director	248904	8	2005-01-01
18	10767	926378	Adamson	David	M	3	Acting Director	248904	8	2002-01-01
19	28812	908658	Holmes	Holly	F	3	Acting Director	248904	8	2003-01-01
20	21053	318165	Coulter	Tracy	F	4	Safety Inspection Member	23987	2	2011-01-01
21	37285	304224	Wood	Emily	F	4	Safety Inspection Member	23987	2	2011-01-01
22	20225	856720	Roberts	Melissa	F	4	Safety Inspection Member	23987	2	2011-01-01
23	45740	721586	Web	David	M	4	Safety Inspection Member	23987	2	2012-01-01
24	44982	231581	Adams	Sandy	F	1	Regional Representative	46978	4	2008-01-01
25	39110	909709	Iwata	Akira	M	1	Regional Representative	46978	4	2012-01-01
26	34959	398103	Johanson	Sandy	F	1	Regional Representative	46978	4	2012-01-01
27	38900	664583	Paanua	Kaaluai	M	1	Regional Representative	46978	4	2011-01-01

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate
28	45771	756481	Rodriguez	Jose	M	1	Regional Representative	46978	4	2011-01-01
29	28283	548312	Smith	Frank	M	3	Acting Director	248904	8	2005-01-01
...
33	22460	380668	Smith	Mary	F	4	Safety Inspection Member	23987	2	2012-01-01
34	13722	625519	Brown	Marietta	F	4	Safety Inspection Member	23987	2	2012-01-01
35	32930	411280	Manin	Emily	F	1	Regional Representative	46978	4	2011-01-01
36	39102	661286	Jones	Holly	F	2	State Board Representative	89473	3	2012-01-01
37	20231	966527	Flemming	Kris	F	2	State Board Representative	89473	3	2012-01-01
38	39050	363672	Marlin	Bill	M	3	Acting Director	248904	8	2008-01-01
39	33192	308150	Fourier	Craig	M	1	Regional Representative	46978	4	2011-01-01
40	43437	768057	Tanner	Patricia	F	1	Regional Representative	46978	4	2010-01-01
41	33283	704360	Frank	Vernon	M	1	Regional Representative	46978	4	2012-01-01
42	25667	926378	Adamson	David	M	1	Regional Representative	46978	4	2012-01-01
43	46844	908658	Holmes	Holly	F	3	Acting Director	248904	8	2010-01-01

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate
44	19868	318165	Coulter	Tracy	F	1	Regional Representative	46978	4	2010-01-01
45	29805	304224	Wood	Emily	F	2	State Board Representative	89473	3	2011-01-01
46	46996	856720	Roberts	Melissa	F	4	Safety Inspection Member	23987	2	2009-01-01
47	34454	721586	Web	David	M	3	Acting Director	248904	8	2012-01-01
48	38798	909709	Iwata	Akira	M	1	Regional Representative	46978	4	2011-01-01
49	37436	398103	Johanson	Sandy	F	2	State Board Representative	89473	3	2012-01-01
50	37043	664583	Paanua	Kaaluai	M	2	State Board Representative	89473	3	2010-01-01
51	43353	756481	Rodriguez	Jose	M	4	Safety Inspection Member	23987	2	2011-01-01
52	33207	811240	Charles	Kenneth	M	2	State Board Representative	89473	3	2010-01-01
53	17741	363672	Marlin	Bill	M	4	Safety Inspection Member	23987	2	2011-01-01
54	26206	308150	Fourier	Craig	M	3	Acting Director	248904	8	2011-01-01
55	29823	768057	Tanner	Patricia	F	3	Acting Director	248904	8	2009-01-01
56	33242	704360	Frank	Vernon	M	4	Safety Inspection Member	23987	2	2011-01-01
57	45067	926378	Adamson	David	M	4	Safety Inspection Member	23987	2	2012-01-01

	HospitalID	Work_ID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate
58	22598	908658	Holmes	Holly	F	3	Acting Director	248904	8	2012-01-01
59	39076	304224	Wood	Emily	F	1	Regional Representative	46978	4	2010-01-01
60	45736	721586	Web	David	M	2	State Board Representative	89473	3	2011-01-01
61	20266	231581	Khanh	Pham	M	1	Regional Representative	46978	4	2017-09-03
62	20266	231581	Khanh	Pham	M	2	State Board Representative	89473	3	2017-09-03

63 rows × 10 columns

Export hospital which is non-profit, 250 em or NetPatRen <=109

In [58]: df

Out[58]:

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
0	20266	Adams	Sandy	F	1	Regional Representative	46978	4	1/1/2009	Mammoth Hospital	...
1	37393	Iwata	Akira	M	1	Regional Representative	46978	4	1/1/2011	Victor Valley Community Hospital	...
2	20277	Johanson	Sandy	F	1	Regional Representative	46978	4	1/1/2012	Pioneers Memorial Hospital	...
3	46348	Paanua	Kaaluai	M	1	Regional Representative	46978	4	1/1/2011	Ridgecrest Regional Hospital	...
4	12145	Rodriguez	Jose	M	1	Regional Representative	46978	4	1/1/2009	Barstow Community Hospital	...
5	46985	Smith	Frank	M	1	Regional Representative	46978	4	1/1/2010	St. Elizabeth Community Hospital	...
6	17718	Charles	Kenneth	M	1	Regional Representative	46978	4	1/1/2009	Ukiah Valley Medical Center	...
7	46838	Milgrom	Patricia	F	1	Regional Representative	46978	4	1/1/2009	Mountains Community Hospital	...
8	38802	Dong	HongWei	F	1	Regional Representative	46978	4	1/1/2010	Colusa Regional Medical Center	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
9	11875	Smith	Mary	F	1	Regional Representative	46978	4	1/1/2011	St. Mary Medical Center	...
10	35512	Brown	Marietta	F	1	Regional Representative	46978	4	1/1/2009	Goleta Valley Cottage Hospital	...
11	33251	Manin	Emily	F	2	State Board Representative	89473	3	1/1/2009	Barton Memorial Hospital	...
12	22181	Jones	Holly	F	2	State Board Representative	89473	3	1/1/2012	Memorial Hospital - Los Banos	...
13	36569	Flemming	Kris	F	2	State Board Representative	89473	3	1/1/2010	Fairchild Medical Center	...
14	44817	Marlin	Bill	M	2	State Board Representative	89473	3	1/1/2010	Mercy Medical Center - Mount Shasta	...
15	17757	Fourier	Craig	M	3	Acting Director	248904	8	1/1/2005	Sutter Lakeside Hospital	...
16	46342	Tanner	Patricia	F	3	Acting Director	248904	8	1/1/2011	Hanford Community Medical Center	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
17	17700	Frank	Vernon	M	3	Acting Director	248904	8	1/1/2005	Tahoe Forest Hospital District	...
18	10767	Adamson	David	M	3	Acting Director	248904	8	1/1/2002	Colorado River Medical Center	...
19	28812	Holmes	Holly	F	3	Acting Director	248904	8	1/1/2003	Coalinga Regional Medical Center	...
20	21053	Coulter	Tracy	F	4	Safety Inspection Member	23987	2	1/1/2011	Sutter Amador Hospital	...
21	37285	Wood	Emily	F	4	Safety Inspection Member	23987	2	1/1/2011	Sutter Coast Hospital	...
22	20225	Roberts	Melissa	F	4	Safety Inspection Member	23987	2	1/1/2011	Redwood Memorial Hospital	...
23	45740	Web	David	M	4	Safety Inspection Member	23987	2	1/1/2012	Mark Twain St. Joseph's Hospital	...
24	44982	Adams	Sandy	F	1	Regional Representative	46978	4	1/1/2008	Frank R. Howard Memorial Hospital	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
25	39110	Iwata	Akira	M	1	Regional Representative	46978	4	1/1/2012	Twin Cities Community Hospital	...
26	34959	Johanson	Sandy	F	1	Regional Representative	46978	4	1/1/2012	Sonora Regional Medical Center - greenley	...
27	38900	Paanua	Kaaluai	M	1	Regional Representative	46978	4	1/1/2011	Fallbrook Hospital	...
28	45771	Rodriguez	Jose	M	1	Regional Representative	46978	4	1/1/2011	Sierra Nevada Memorial Hospital	...
29	28283	Smith	Frank	M	3	Acting Director	248904	8	1/1/2005	Santa Ynez Valley Cottage Hospital	...
...
31	13738	Milgrom	Patricia	F	4	Safety Inspection Member	23987	2	1/1/2011	Palm Drive Hospital	...
32	31032	Dong	HongWei	F	4	Safety Inspection Member	23987	2	1/1/2012	Hi-Desert Medical Center	...
33	22460	Smith	Mary	F	4	Safety Inspection Member	23987	2	1/1/2012	San Geronio Memorial Hospital	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
34	13722	Brown	Marietta	F	4	Safety Inspection Member	23987	2	1/1/2012	Marshall Hospital	...
35	32930	Manin	Emily	F	1	Regional Representative	46978	4	1/1/2011	Biggs- Gridley Memorial Hospital	...
36	39102	Jones	Holly	F	2	State Board Representative	89473	3	1/1/2012	Oak Valley District Hospital	...
37	20231	Flemming	Kris	F	2	State Board Representative	89473	3	1/1/2012	Southern Inyo Hospital	...
38	39050	Marlin	Bill	M	3	Acting Director	248904	8	1/1/2008	Eastern Plumas Hospital - Portola Campus	...
39	33192	Fourier	Craig	M	1	Regional Representative	46978	4	1/1/2011	Modoc Medical Center	...
40	43437	Tanner	Patricia	F	1	Regional Representative	46978	4	1/1/2010	Healdsburg District Hospital	...
41	33283	Frank	Vernon	M	1	Regional Representative	46978	4	1/1/2012	Catalina Island Medical Center	...
42	25667	Adamson	David	M	1	Regional Representative	46978	4	1/1/2012	Kern Valley Hospital	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
43	46844	Holmes	Holly	F	3	Acting Director	248904	8	1/1/2010	Ojai Valley Community Hospital	...
44	19868	Coulter	Tracy	F	1	Regional Representative	46978	4	1/1/2010	UC Irvine Medical Center	...
45	29805	Wood	Emily	F	2	State Board Representative	89473	3	1/1/2011	St. Mary's Medical Center - san francisco	...
46	46996	Roberts	Melissa	F	4	Safety Inspection Member	23987	2	1/1/2009	LAC USC Medical Center	...
47	34454	Web	David	M	3	Acting Director	248904	8	1/1/2012	Arrowhead Regional Medical Center	...
48	38798	Iwata	Akira	M	1	Regional Representative	46978	4	1/1/2011	Kern Medical Center	...
49	37436	Johanson	Sandy	F	2	State Board Representative	89473	3	1/1/2012	Riverside County Regional Medical Center	...
50	37043	Paanua	Kaaluai	M	2	State Board Representative	89473	3	1/1/2010	Santa Clara Valley Medical Center	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
51	43353	Rodriguez	Jose	M	4	Safety Inspection Member	23987	2	1/1/2011	Alameda Hospital	...
52	33207	Charles	Kenneth	M	2	State Board Representative	89473	3	1/1/2010	Community Regional Medical Center	...
53	17741	Marlin	Bill	M	4	Safety Inspection Member	23987	2	1/1/2011	UC Davis Medical Center	...
54	26206	Fourier	Craig	M	3	Acting Director	248904	8	1/1/2011	UCSD Medical Center - Hillcrest	...
55	29823	Tanner	Patricia	F	3	Acting Director	248904	8	1/1/2009	UCSF Medical Center	...
56	33242	Frank	Vernon	M	4	Safety Inspection Member	23987	2	1/1/2011	Scripps Mercy Hospital	...
57	45067	Adamson	David	M	4	Safety Inspection Member	23987	2	1/1/2012	Long Beach Memorial & Miller Children's Hospital	...
58	22598	Holmes	Holly	F	3	Acting Director	248904	8	1/1/2012	Stanford Hospital & Clinics	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
59	39076	Wood	Emily	F	1	Regional Representative	46978	4	1/1/2010	California Pacific Medical Center - Pacific Ca...	...
60	45736	Web	David	M	2	State Board Representative	89473	3	1/1/2011	Cedars-Sinai Medical Center	...

61 rows × 21 columns

Representative & Income > 100000

```
In [59]: cn1 = df['PositionTitle'] == 'State Board Representative'
         cn2 = df['OperInc'] > 100000
         dfE = df[cn1&cn2]
         dfE
```


Out[59]:

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
11	33251	Manin	Emily	F	2	State Board Representative	89473	3	1/1/2009	Barton Memorial Hospital	...
12	22181	Jones	Holly	F	2	State Board Representative	89473	3	1/1/2012	Memorial Hospital - Los Banos	...
13	36569	Flemming	Kris	F	2	State Board Representative	89473	3	1/1/2010	Fairchild Medical Center	...
14	44817	Marlin	Bill	M	2	State Board Representative	89473	3	1/1/2010	Mercy Medical Center - Mount Shasta	...
36	39102	Jones	Holly	F	2	State Board Representative	89473	3	1/1/2012	Oak Valley District Hospital	...
45	29805	Wood	Emily	F	2	State Board Representative	89473	3	1/1/2011	St. Mary's Medical Center - san francisco	...
49	37436	Johanson	Sandy	F	2	State Board Representative	89473	3	1/1/2012	Riverside County Regional Medical Center	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
52	33207	Charles	Kenneth	M	2	State Board Representative	89473	3	1/1/2010	Community Regional Medical Center	...
60	45736	Web	David	M	2	State Board Representative	89473	3	1/1/2011	Cedars-Sinai Medical Center	...

9 rows × 21 columns

Group by and count

```
In [60]: dfnum = df.groupby(['HospitalID'])['HospitalID'].count().reset_index(name='Num_Employees')
```

```
In [61]: dfT = pd.concat([dfnum, Hospital], axis=1, join='inner')  
dfT
```

Out[61]:

	HospitalID	Num_Employees	HospitalID	Name	Zip	Website	TypeControl	Teaching
0	10767	1	45740	Mammoth Hospital	93546-0660	www.mammothhospital.com	District	Small/Rural
1	11875	1	12145	Victor Valley Community Hospital	92392	www.vvch.org	Non Profit	Small/Rural
2	12145	1	25667	Pioneers Memorial Hospital	92227	www.pmhd.org	District	Small/Rural
3	13722	1	46996	Ridgecrest Regional Hospital	93555	www.rrh.org	Non Profit	Small/Rural
4	13738	1	37393	Barstow Community Hospital	92311	www.barstowhospital.com	Investor	Small/Rural
5	17700	1	17741	St. Elizabeth Community Hospital	96080	redbluff.mercy.org/index.htm	Non Profit	Small/Rural
6	17718	1	20277	Ukiah Valley Medical Center	95482	www.uvmc.org	Non Profit	Small/Rural
7	17736	1	45736	Mountains Community Hospital	92352	www.mchcares.com	District	Small/Rural
8	17741	1	29823	Colusa Regional Medical Center	95932-2954	www.colusamedicalcenter.org	Non Profit	Small/Rural

	HospitalID	Num_Employees	HospitalID	Name	Zip	Website	TypeControl	Teaching
9	17757	1	13738	St. Mary Medical Center	92307-2206	www.stmary4health.com	Non Profit	Small/Rural
10	19868	1	38798	Goleta Valley Cottage Hospital	93111	www.sbch.org	Non Profit	Small/Rural
11	20225	1	46348	Barton Memorial Hospital	96150	www.bartonhealth.org	Non Profit	Small/Rural
12	20231	1	33207	Memorial Hospital - Los Banos	93635-3419	www.memoriallosbanos.org	Non Profit	Small/Rural
13	20266	1	44817	Fairchild Medical Center	96097-3450	www.fairchildmed.org	Non Profit	Small/Rural
14	20277	1	17718	Mercy Medical Center - Mount Shasta	96067	www.mercymtshasta.org	Non Profit	Small/Rural
15	21053	1	33283	Sutter Lakeside Hospital	95453-6112	www.sutterlake.org	Non Profit	Small/Rural
16	22181	1	20231	Hanford Community Medical Center	93230-3513	www.hanfordhealth.com	Non Profit	Small/Rural

	HospitalID	Num_Employees	HospitalID	Name	Zip	Website	TypeControl	Teaching
17	22460	1	46985	Tahoe Forest Hospital District	96161	www.tfhd.com	District	Small/Rural
18	22598	1	37043	Colorado River Medical Center	92363	coloradorivermedical.org	Investor	Small/Rural
19	25667	1	46342	Coalinga Regional Medical Center	93210	www.coalingamedicalcenter.com	District	Small/Rural
20	26206	1	33242	Sutter Amador Hospital	95642-2379	www.sutteramador.com	Non Profit	Small/Rural
21	28283	1	33251	Sutter Coast Hospital	95531-8359	www.suttercoast.org	Non Profit	Small/Rural
22	28812	1	13722	Redwood Memorial Hospital	95540	www.stjosepheureka.org	Non Profit	Small/Rural
23	29805	1	17700	Mark Twain St. Joseph's Hospital	95249	www.marktwainhospital.com	Non Profit	Small/Rural
24	29823	1	20225	Frank R. Howard Memorial Hospital	95490-4225	www.howardhospital.com	Non Profit	Small/Rural

	HospitalID	Num_Employees	HospitalID	Name	Zip	Website	TypeControl	Teaching
25	31032	1	37285	Twin Cities Community Hospital	93465	www.twincitieshospital.com	Investor	Small/Rural
26	32930	1	20266	Sonora Regional Medical Center - greenley	95370	www.sonorahospital.org	Non Profit	Small/Rural
27	33192	1	37436	Fallbrook Hospital	92028	www.fallbrookhospital.com	District	Small/Rural
28	33207	1	17736	Sierra Nevada Memorial Hospital	95945	www.snmh.org	Non Profit	Small/Rural
29	33242	1	38802	Santa Ynez Valley Cottage Hospital	93463	www.sbch.org	Non Profit	Small/Rural
...
31	33283	1	46844	Palm Drive Hospital	95472	www.palmdrivehospital.com	District	Small/Rural
32	34454	1	28283	Hi-Desert Medical Center	92252	www.hdmc.org	District	Small/Rural
33	34959	1	11875	San Geronio Memorial Hospital	92220	www.sgmh.org	District	Small/Rural
34	35512	1	22181	Marshall Hospital	95667	www.marshallmedical.org	Non Profit	Small/Rural

	HospitalID	Num_Employees	HospitalID	Name	Zip	Website	TypeControl	Teaching
35	36569	1	34959	Biggs-Gridley Memorial Hospital	95948	www.frhg.org	Non Profit	Small/Rural
36	37043	1	28812	Oak Valley District Hospital	95361	www.oakvalleycares.org	District	Small/Rural
37	37285	1	43437	Southern Inyo Hospital	93545-1009	www.sihd.org	District	Small/Rural
38	37393	1	45771	Eastern Plumas Hospital - Portola Campus	96122-9406	www.ephc.org	District	Small/Rural
39	37436	1	46838	Modoc Medical Center	96101	www.modocmedicalcenter.com	City/County	Small/Rural
40	38798	1	44982	Healdsburg District Hospital	95448-3382	www.nschd.org	District	Small/Rural
41	38802	1	43353	Catalina Island Medical Center	90704	www.catalinaislandmedicalcenter.org	Non Profit	Small/Rural
42	38900	1	10767	Kern Valley Hospital	93240-9529	www.kvhd.org	District	Small/Rural
43	39050	1	19868	Ojai Valley Community Hospital	93023-3163	www.cmhhospital.org	Non Profit	Small/Rural

	HospitalID	Num_Employees	HospitalID	Name	Zip	Website	TypeControl	Teaching
44	39076	1	39076	UC Irvine Medical Center	92868	www.healthcare.uci.edu	Non Profit	Teaching
45	39102	1	17757	St. Mary's Medical Center - san francisco	94117	www.stmarysmedicalcenter.org	Non Profit	Teaching
46	39110	1	34454	LAC USC Medical Center	90033	www.ladhs.org	City/County	Teaching
47	43353	1	26206	Arrowhead Regional Medical Center	92324	www.arrowheadmedcenter.org	City/County	Teaching
48	43437	1	22598	Kern Medical Center	93305	www.kernmedicalcenter.com	City/County	Teaching
49	44817	1	36569	Riverside County Regional Medical Center	92555-3911	www.rcrmc.org	City/County	Teaching
50	44982	1	21053	Santa Clara Valley Medical Center	95128	www.scvmed.org	City/County	Teaching
51	45067	1	29805	Alameda Hospital	94501	www.alamedahospital.org	City/County	Teaching

	HospitalID	Num_Employees	HospitalID	Name	Zip	Website	TypeControl	Teaching
52	45736	1	35512	Community Regional Medical Center	93721-1324	www.communitymedical.org	Non Profit	Teaching
53	45740	1	39050	UC Davis Medical Center	95817-2282	www.ucdmc.ucdavis.edu	Non Profit	Teaching
54	45771	1	39102	UCSD Medical Center - Hillcrest	92103-8970	www.health.ucsd.edu	Non Profit	Teaching
55	46342	1	39110	UCSF Medical Center	94143	www.ucsfhealth.org	Non Profit	Teaching
56	46348	1	32930	Scripps Mercy Hospital	92103	www.scrippshealth.org	Non Profit	Teaching
57	46838	1	31032	Long Beach Memorial & Miller Children's Hospital	90806	www.memorialcare.org	Non Profit	Teaching
58	46844	1	22460	Stanford Hospital & Clinics	94305	stanfordhospital.org	Non Profit	Teaching

	HospitalID	Num_Employees	HospitalID	Name	Zip	Website	TypeControl	Teaching
59	46985	1	33192	California Pacific Medical Center - Pacific Ca...	94115	www.cpmc.org	Non Profit	Teaching
60	46996	1	38900	Cedars- Sinai Medical Center	90048	www.csmc.edu	Non Profit	Teaching

61 rows × 16 columns

```
In [62]: cnd1 = dfT['Num_Employees'] > 250
cnd2 = dfT['TypeControl']=='Non Profit'
cnd3 = dfT['NetPatRev'] < 109000

dfNew = dfT[(cnd1&cnd2)|cnd3]
dfNew
```

Out[62]:

	HospitalID	Num_Employees	HospitalID	Name	Zip	Website	TypeControl	Teaching
7	17736	1	45736	Mountains Community Hospital	92352	www.mchcares.com	District	Small/Rural
8	17741	1	29823	Colusa Regional Medical Center	95932- 2954	www.colusamedicalcenter.org	Non Profit	Small/Rural
12	20231	1	33207	Memorial Hospital - Los Banos	93635- 3419	www.memoriallosbanos.org	Non Profit	Small/Rural
13	20266	1	44817	Fairchild Medical Center	96097- 3450	www.fairchildmed.org	Non Profit	Small/Rural
18	22598	1	37043	Colorado River Medical Center	92363	coloradorivermedical.org	Investor	Small/Rural
19	25667	1	46342	Coalinga Regional Medical Center	93210	www.coalingamedicalcenter.com	District	Small/Rural
22	28812	1	13722	Redwood Memorial Hospital	95540	www.stjosepheureka.org	Non Profit	Small/Rural
24	29823	1	20225	Frank R. Howard Memorial Hospital	95490- 4225	www.howardhospital.com	Non Profit	Small/Rural
27	33192	1	37436	Fallbrook Hospital	92028	www.fallbrookhospital.com	District	Small/Rural

	HospitalID	Num_Employees	HospitalID	Name	Zip	Website	TypeControl	Teaching
29	33242	1	38802	Santa Ynez Valley Cottage Hospital	93463	www.sbch.org	Non Profit	Small/Rural
30	33251	1	45067	Glenn Medical Center	95988-2745	www.glennmed.org	Non Profit	Small/Rural
31	33283	1	46844	Palm Drive Hospital	95472	www.palmdrivehospital.com	District	Small/Rural
33	34959	1	11875	San Geronio Memorial Hospital	92220	www.sgmh.org	District	Small/Rural
35	36569	1	34959	Biggs-Gridley Memorial Hospital	95948	www.frhg.org	Non Profit	Small/Rural
37	37285	1	43437	Southern Inyo Hospital	93545-1009	www.sihd.org	District	Small/Rural
38	37393	1	45771	Eastern Plumas Hospital - Portola Campus	96122-9406	www.ephc.org	District	Small/Rural
39	37436	1	46838	Modoc Medical Center	96101	www.modocmedicalcenter.com	City/County	Small/Rural

	HospitalID	Num_Employees	HospitalID	Name	Zip	Website	TypeControl	Teaching
40	38798	1	44982	Healdsburg District Hospital	95448-3382	www.nschd.org	District	Small/Rural
41	38802	1	43353	Catalina Island Medical Center	90704	www.catalinaislandmedicalcenter.org	Non Profit	Small/Rural
42	38900	1	10767	Kern Valley Hospital	93240-9529	www.kvhd.org	District	Small/Rural
43	39050	1	19868	Ojai Valley Community Hospital	93023-3163	www.cmhhospital.org	Non Profit	Small/Rural

Export Text File

```
In [63]: dfNew.to_csv(r'New DataFrame.txt', header=None, index=None, sep='\t', mode='a')
```

Kfold

```
In [64]: from sklearn.cross_validation import KFold
kf = KFold(len(df.index),n_folds = 4)
for train, test in kf:
    print("%s %s" %(train,test))
```

```
[16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60] [ 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 1
5]
[ 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 31 32 33 34 35 36 37 38 39
40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60] [16 17 18 19 20 21 22 23 24 25 26 27 28 29 3
0]
[ 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26 27 28 29 30 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60] [31 32 33 34 35 36 37 38 39 40 41 42 43 44 4
5]
[ 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45] [46 47 48 49 50 51 52 53 54 55 56 57 58 59 6
0]
```

Save Training_Data File


```
In [65]: df.ix[train]
```

```
C:\Users\Administrator\Anaconda3\lib\site-packages\ipykernel\__main__.py:1: DeprecationWarning:  
.ix is deprecated. Please use  
.loc for label based indexing or  
.iloc for positional indexing
```

See the documentation here:

http://pandas.pydata.org/pandas-docs/stable/indexing.html#deprecate_ix

```
if __name__ == '__main__':
```

Out[65]:

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
0	20266	Adams	Sandy	F	1	Regional Representative	46978	4	1/1/2009	Mammoth Hospital	...
1	37393	Iwata	Akira	M	1	Regional Representative	46978	4	1/1/2011	Victor Valley Community Hospital	...
2	20277	Johanson	Sandy	F	1	Regional Representative	46978	4	1/1/2012	Pioneers Memorial Hospital	...
3	46348	Paanua	Kaaluai	M	1	Regional Representative	46978	4	1/1/2011	Ridgecrest Regional Hospital	...
4	12145	Rodriguez	Jose	M	1	Regional Representative	46978	4	1/1/2009	Barstow Community Hospital	...
5	46985	Smith	Frank	M	1	Regional Representative	46978	4	1/1/2010	St. Elizabeth Community Hospital	...
6	17718	Charles	Kenneth	M	1	Regional Representative	46978	4	1/1/2009	Ukiah Valley Medical Center	...
7	46838	Milgrom	Patricia	F	1	Regional Representative	46978	4	1/1/2009	Mountains Community Hospital	...
8	38802	Dong	HongWei	F	1	Regional Representative	46978	4	1/1/2010	Colusa Regional Medical Center	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
9	11875	Smith	Mary	F	1	Regional Representative	46978	4	1/1/2011	St. Mary Medical Center	...
10	35512	Brown	Marietta	F	1	Regional Representative	46978	4	1/1/2009	Goleta Valley Cottage Hospital	...
11	33251	Manin	Emily	F	2	State Board Representative	89473	3	1/1/2009	Barton Memorial Hospital	...
12	22181	Jones	Holly	F	2	State Board Representative	89473	3	1/1/2012	Memorial Hospital - Los Banos	...
13	36569	Flemming	Kris	F	2	State Board Representative	89473	3	1/1/2010	Fairchild Medical Center	...
14	44817	Marlin	Bill	M	2	State Board Representative	89473	3	1/1/2010	Mercy Medical Center - Mount Shasta	...
15	17757	Fourier	Craig	M	3	Acting Director	248904	8	1/1/2005	Sutter Lakeside Hospital	...
16	46342	Tanner	Patricia	F	3	Acting Director	248904	8	1/1/2011	Hanford Community Medical Center	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
17	17700	Frank	Vernon	M	3	Acting Director	248904	8	1/1/2005	Tahoe Forest Hospital District	...
18	10767	Adamson	David	M	3	Acting Director	248904	8	1/1/2002	Colorado River Medical Center	...
19	28812	Holmes	Holly	F	3	Acting Director	248904	8	1/1/2003	Coalinga Regional Medical Center	...
20	21053	Coulter	Tracy	F	4	Safety Inspection Member	23987	2	1/1/2011	Sutter Amador Hospital	...
21	37285	Wood	Emily	F	4	Safety Inspection Member	23987	2	1/1/2011	Sutter Coast Hospital	...
22	20225	Roberts	Melissa	F	4	Safety Inspection Member	23987	2	1/1/2011	Redwood Memorial Hospital	...
23	45740	Web	David	M	4	Safety Inspection Member	23987	2	1/1/2012	Mark Twain St. Joseph's Hospital	...
24	44982	Adams	Sandy	F	1	Regional Representative	46978	4	1/1/2008	Frank R. Howard Memorial Hospital	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
25	39110	Iwata	Akira	M	1	Regional Representative	46978	4	1/1/2012	Twin Cities Community Hospital	...
26	34959	Johanson	Sandy	F	1	Regional Representative	46978	4	1/1/2012	Sonora Regional Medical Center - greenley	...
27	38900	Paanua	Kaaluai	M	1	Regional Representative	46978	4	1/1/2011	Fallbrook Hospital	...
28	45771	Rodriguez	Jose	M	1	Regional Representative	46978	4	1/1/2011	Sierra Nevada Memorial Hospital	...
29	28283	Smith	Frank	M	3	Acting Director	248904	8	1/1/2005	Santa Ynez Valley Cottage Hospital	...
30	17736	Charles	Kenneth	M	3	Acting Director	248904	8	1/1/2006	Glenn Medical Center	...
31	13738	Milgrom	Patricia	F	4	Safety Inspection Member	23987	2	1/1/2011	Palm Drive Hospital	...
32	31032	Dong	HongWei	F	4	Safety Inspection Member	23987	2	1/1/2012	Hi-Desert Medical Center	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
33	22460	Smith	Mary	F	4	Safety Inspection Member	23987	2	1/1/2012	San Gorgonio Memorial Hospital	...
34	13722	Brown	Marietta	F	4	Safety Inspection Member	23987	2	1/1/2012	Marshall Hospital	...
35	32930	Manin	Emily	F	1	Regional Representative	46978	4	1/1/2011	Biggs-Gridley Memorial Hospital	...
36	39102	Jones	Holly	F	2	State Board Representative	89473	3	1/1/2012	Oak Valley District Hospital	...
37	20231	Flemming	Kris	F	2	State Board Representative	89473	3	1/1/2012	Southern Inyo Hospital	...
38	39050	Marlin	Bill	M	3	Acting Director	248904	8	1/1/2008	Eastern Plumas Hospital - Portola Campus	...
39	33192	Fourier	Craig	M	1	Regional Representative	46978	4	1/1/2011	Modoc Medical Center	...
40	43437	Tanner	Patricia	F	1	Regional Representative	46978	4	1/1/2010	Healdsburg District Hospital	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
41	33283	Frank	Vernon	M	1	Regional Representative	46978	4	1/1/2012	Catalina Island Medical Center	...
42	25667	Adamson	David	M	1	Regional Representative	46978	4	1/1/2012	Kern Valley Hospital	...
43	46844	Holmes	Holly	F	3	Acting Director	248904	8	1/1/2010	Ojai Valley Community Hospital	...
44	19868	Coulter	Tracy	F	1	Regional Representative	46978	4	1/1/2010	UC Irvine Medical Center	...
45	29805	Wood	Emily	F	2	State Board Representative	89473	3	1/1/2011	St. Mary's Medical Center - san francisco	...

46 rows × 21 columns

```
In [66]: df.to_csv(r'training_data.txt', header=None, index=None, sep=',', mode='a')
```

Save Text_Data File

In [67]: `df.ix[test]`

Out[67]:

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
46	46996	Roberts	Melissa	F	4	Safety Inspection Member	23987	2	1/1/2009	LAC USC Medical Center	...
47	34454	Web	David	M	3	Acting Director	248904	8	1/1/2012	Arrowhead Regional Medical Center	...
48	38798	Iwata	Akira	M	1	Regional Representative	46978	4	1/1/2011	Kern Medical Center	...
49	37436	Johanson	Sandy	F	2	State Board Representative	89473	3	1/1/2012	Riverside County Regional Medical Center	...
50	37043	Paanua	Kaaluai	M	2	State Board Representative	89473	3	1/1/2010	Santa Clara Valley Medical Center	...
51	43353	Rodriguez	Jose	M	4	Safety Inspection Member	23987	2	1/1/2011	Alameda Hospital	...
52	33207	Charles	Kenneth	M	2	State Board Representative	89473	3	1/1/2010	Community Regional Medical Center	...
53	17741	Marlin	Bill	M	4	Safety Inspection Member	23987	2	1/1/2011	UC Davis Medical Center	...

	HospitalID	LastName	FirstName	Gender	PositionID	PositionTitle	Compensation	MaxTerm	StartDate	Name	...
54	26206	Fourier	Craig	M	3	Acting Director	248904	8	1/1/2011	UCSD Medical Center - Hillcrest	...
55	29823	Tanner	Patricia	F	3	Acting Director	248904	8	1/1/2009	UCSF Medical Center	...
56	33242	Frank	Vernon	M	4	Safety Inspection Member	23987	2	1/1/2011	Scripps Mercy Hospital	...
57	45067	Adamson	David	M	4	Safety Inspection Member	23987	2	1/1/2012	Long Beach Memorial & Miller Children's Hospital	...
58	22598	Holmes	Holly	F	3	Acting Director	248904	8	1/1/2012	Stanford Hospital & Clinics	...
59	39076	Wood	Emily	F	1	Regional Representative	46978	4	1/1/2010	California Pacific Medical Center - Pacific Ca...	...
60	45736	Web	David	M	2	State Board Representative	89473	3	1/1/2011	Cedars-Sinai Medical Center	...

15 rows × 21 columns

```
In [68]: df.to_csv(r'test_data.txt', header=None, index=None, sep=',', mode='a')
```