Final_EDA-2014-2018

February 10, 2021

1 Team 82 Final EDA 2014 -2018

1.1 Team 82 project examines factors affecting students test scores in grades 4 and 8 2014-2018.

We examine parent social and economic demographics, school funding and community factors

```
In [1]: import pandas as pd
        import numpy as np
        import os
        import json
        import matplotlib.pyplot as plt
        import seaborn as sns
        import math
```

```
In [2]: dfs= ('df_1011','df_1112','df_1213','df_1314','df_1415','df_1516','df_1617','df_1718')
        dfs1618= ('df_1617','df_1718')
```

```
In [3]: math_df_201011 = pd.read_csv('./data_sets/clean/math_scores_sy1011.csv')
        math_df_201112 = pd.read_csv('./data_sets/clean/math_scores_sy1112.csv')
        math_df_201213 = pd.read_csv('./data_sets/clean/math_scores_sy1213.csv')
        math_df_201314 = pd.read_csv('./data_sets/clean/math_scores_sy1314.csv')
        math_df_201415 = pd.read_csv('./data_sets/clean/math_scores_sy1415.csv')
        math_df_201516 = pd.read_csv('./data_sets/clean/math_scores_sy1516.csv')
        math_df_201617 = pd.read_csv('./data_sets/clean/math_scores_sy1617.csv')
        math_df_201718 = pd.read_csv('./data_sets/clean/math_scores_sy1718.csv')

        rla_df_201011 = pd.read_csv('./data_sets/clean/rla_scores_sy1011.csv')
        rla_df_201112 = pd.read_csv('./data_sets/clean/rla_scores_sy1112.csv')
        rla_df_201213 = pd.read_csv('./data_sets/clean/rla_scores_sy1213.csv')
        rla_df_201314 = pd.read_csv('./data_sets/clean/rla_scores_sy1314.csv')
        rla_df_201415 = pd.read_csv('./data_sets/clean/rla_scores_sy1415.csv')
        rla_df_201516 = pd.read_csv('./data_sets/clean/rla_scores_sy1516.csv')
        rla_df_201617 = pd.read_csv('./data_sets/clean/rla_scores_sy1617.csv')
        rla_df_201718 = pd.read_csv('./data_sets/clean/rla_scores_sy1718.csv')

        parent_social_econ_by_district_df = pd.read_csv('./data_sets/clean/teacher_parentdg_ec
```

```
/opt/conda/lib/python3.6/site-packages/IPython/core/interactiveshell.py:3020: DtypeWarning: Col
  interactivity=interactivity, compiler=compiler, result=result)
/opt/conda/lib/python3.6/site-packages/IPython/core/interactiveshell.py:3020: DtypeWarning: Col
  interactivity=interactivity, compiler=compiler, result=result)
/opt/conda/lib/python3.6/site-packages/IPython/core/interactiveshell.py:3020: DtypeWarning: Col
  interactivity=interactivity, compiler=compiler, result=result)
/opt/conda/lib/python3.6/site-packages/IPython/core/interactiveshell.py:3020: DtypeWarning: Col
  interactivity=interactivity, compiler=compiler, result=result)
/opt/conda/lib/python3.6/site-packages/IPython/core/interactiveshell.py:3020: DtypeWarning: Col
  interactivity=interactivity, compiler=compiler, result=result)
```

1.2 Math Analysis for School Year 2014 - 2015

In [4]:
```
math_df_201011_clean = math_df_201011.dropna()
math_df_201112_clean = math_df_201112.dropna()
math_df_201213_clean = math_df_201213.dropna()
math_df_201314_clean = math_df_201314.dropna()
math_df_201415_clean = math_df_201415.dropna()
math_df_201516_clean = math_df_201516.dropna()
math_df_201617_clean = math_df_201617.dropna()
math_df_201718_clean = math_df_201718.dropna()
```

In [5]:
```
# Math scoores  by school district
math_df_201415
```

Out[5]:
```
          STNAM  FIPST   LEAID                                  LEANM  \
0       ALABAMA      1  100005                       Albertville City
1       ALABAMA      1  100006                        Marshall County
2       ALABAMA      1  100007                            Hoover City
3       ALABAMA      1  100008                           Madison City
4       ALABAMA      1  100011                             Leeds City
5       ALABAMA      1  100012                              Boaz City
6       ALABAMA      1  100013                       Trussville City
7       ALABAMA      1  100030                         Alexander City
8       ALABAMA      1  100060                         Andalusia City
9       ALABAMA      1  100090                          Anniston City
10      ALABAMA      1  100100                              Arab City
11      ALABAMA      1  100120                            Athens City
12      ALABAMA      1  100180                           Attalla City
13      ALABAMA      1  100185                          Saraland City
14      ALABAMA      1  100188                         Chickasaw City
15      ALABAMA      1  100189                           Satsuma City
16      ALABAMA      1  100190                         Alabaster City
17      ALABAMA      1  100194                            Pelham City
18      ALABAMA      1  100210                            Auburn City
19      ALABAMA      1  100240                         Autauga County
20      ALABAMA      1  100270                         Baldwin County
```

```
21     ALABAMA      1   100300                        Barbour County
22     ALABAMA      1   100330                         Bessemer City
23     ALABAMA      1   100360                           Bibb County
24     ALABAMA      1   100390                       Birmingham City
25     ALABAMA      1   100420                         Blount County
26     ALABAMA      1   100450                          Brewton City
27     ALABAMA      1   100480                        Bullock County
28     ALABAMA      1   100510                         Butler County
29     ALABAMA      1   100540                        Calhoun County
...        ...    ...      ...                                   ...
16131  WYOMING     56  5602870     Fremont County School District # 1
16132  WYOMING     56  5602990       Goshen County School District #1
16133  WYOMING     56  5603170     Big Horn County School District #3
16134  WYOMING     56  5603180       Platte County School District #2
16135  WYOMING     56  5603310  Hot Springs County School District #1
16136  WYOMING     56  5603770      Johnson County School District #1
16137  WYOMING     56  5604030      Lincoln County School District #1
16138  WYOMING     56  5604060      Lincoln County School District #2
16139  WYOMING     56  5604120      Laramie County School District #2
16140  WYOMING     56  5604230     Niobrara County School District #1
16141  WYOMING     56  5604260        Uinta County School District #6
16142  WYOMING     56  5604380        Park County School District #16
16143  WYOMING     56  5604450     Fremont County School District #14
16144  WYOMING     56  5604500        Uinta County School District #4
16145  WYOMING     56  5604510      Natrona County School District #1
16146  WYOMING     56  5604830       Weston County School District #1
16147  WYOMING     56  5604860     Sublette County School District #1
16148  WYOMING     56  5605090       Platte County School District #1
16149  WYOMING     56  5605160        Park County School District # 1
16150  WYOMING     56  5605220     Fremont County School District #25
16151  WYOMING     56  5605302   Sweetwater County School District #1
16152  WYOMING     56  5605680     Sheridan County School District #3
16153  WYOMING     56  5605690     Sheridan County School District #1
16154  WYOMING     56  5605695     Sheridan County School District #2
16155  WYOMING     56  5605700     Fremont County School District #24
16156  WYOMING     56  5605762   Sweetwater County School District #2
16157  WYOMING     56  5605820     Washakie County School District #2
16158  WYOMING     56  5605830        Teton County School District #1
16159  WYOMING     56  5606090       Weston County School District #7
16160  WYOMING     56  5606240     Washakie County School District #1

      DATE_CUR  ALL_MTH04NUMVALID_1415  ALL_MTH04PCTPROF_1415  \
0      13APR16                   392.0                   41.0
1      13APR16                   440.0                   44.0
2      13APR16                  1011.0                   65.0
3      13APR16                   736.0                   73.0
4      13APR16                   146.0                   37.0
5      13APR16                   197.0                   47.0
```

6	13APR16	333.0	74.0
7	13APR16	217.0	42.0
8	13APR16	121.0	27.0
9	13APR16	156.0	27.0
10	13APR16	189.0	67.0
11	13APR16	254.0	62.0
12	13APR16	80.0	42.0
13	13APR16	209.0	72.0
14	13APR16	63.0	32.0
15	13APR16	99.0	82.0
16	13APR16	465.0	51.0
17	13APR16	257.0	57.0
18	13APR16	648.0	75.0
19	13APR16	726.0	47.0
20	13APR16	2339.0	54.0
21	13APR16	66.0	22.0
22	13APR16	305.0	20.0
23	13APR16	233.0	37.0
24	13APR16	1877.0	21.0
25	13APR16	614.0	53.0
26	13APR16	89.0	62.0
27	13APR16	105.0	27.0
28	13APR16	221.0	32.0
29	13APR16	671.0	45.0
...	...	...	...
16131	13APR16	120.0	72.0
16132	13APR16	107.0	57.0
16133	13APR16	46.0	54.0
16134	13APR16	17.0	50.0
16135	13APR16	39.0	54.0
16136	13APR16	94.0	52.0
16137	13APR16	55.0	64.0
16138	13APR16	203.0	62.0
16139	13APR16	83.0	42.0
16140	13APR16	61.0	37.0
16141	13APR16	58.0	44.0
16142	13APR16	7.0	25.0
16143	13APR16	53.0	5.0
16144	13APR16	63.0	47.0
16145	13APR16	1055.0	50.0
16146	13APR16	70.0	62.0
16147	13APR16	72.0	62.0
16148	13APR16	82.0	52.0
16149	13APR16	144.0	62.0
16150	13APR16	201.0	42.0
16151	13APR16	464.0	42.0
16152	13APR16	6.0	25.0
16153	13APR16	66.0	67.0

16154	13APR16	273.0	67.0
16155	13APR16	35.0	44.0
16156	13APR16	213.0	57.0
16157	13APR16	6.0	25.0
16158	13APR16	235.0	47.0
16159	13APR16	13.0	25.0
16160	13APR16	114.0	67.0

	ECD_MTH04NUMVALID_1415	ECD_MTH04PCTPROF_1415	HOM_MTH04NUMVALID_1415	\
0	201.0	27.0	5.0	
1	354.0	40.0	56.0	
2	280.0	42.0	5.0	
3	183.0	47.0	7.0	
4	75.0	22.0	3.0	
5	141.0	37.0	8.0	
6	34.0	64.0	NaN	
7	149.0	37.0	NaN	
8	79.0	22.0	1.0	
9	116.0	22.0	24.0	
10	88.0	52.0	4.0	
11	149.0	52.0	1.0	
12	65.0	37.0	13.0	
13	107.0	62.0	23.0	
14	44.0	34.0	2.0	
15	47.0	84.0	1.0	
16	199.0	42.0	7.0	
17	124.0	42.0	1.0	
18	196.0	57.0	2.0	
19	395.0	33.0	8.0	
20	1142.0	41.0	30.0	
21	66.0	22.0	NaN	
22	225.0	22.0	22.0	
23	161.0	27.0	4.0	
24	1345.0	17.0	55.0	
25	374.0	47.0	12.0	
26	54.0	54.0	NaN	
27	97.0	27.0	1.0	
28	142.0	27.0	39.0	
29	437.0	38.0	11.0	
...	...	...	...	
16131	42.0	54.0	2.0	
16132	46.0	44.0	NaN	
16133	27.0	50.0	3.0	
16134	7.0	25.0	NaN	
16135	18.0	50.0	NaN	
16136	28.0	30.0	NaN	
16137	16.0	70.0	1.0	
16138	84.0	52.0	NaN	

16139	30.0	50.0	5.0
16140	11.0	25.0	NaN
16141	13.0	25.0	1.0
16142	2.0	NaN	NaN
16143	53.0	5.0	NaN
16144	12.0	25.0	NaN
16145	406.0	39.0	14.0
16146	28.0	50.0	4.0
16147	15.0	25.0	NaN
16148	37.0	44.0	NaN
16149	62.0	67.0	1.0
16150	100.0	27.0	NaN
16151	187.0	27.0	NaN
16152	4.0	NaN	NaN
16153	22.0	50.0	NaN
16154	115.0	62.0	4.0
16155	8.0	25.0	NaN
16156	60.0	44.0	5.0
16157	1.0	NaN	NaN
16158	61.0	22.0	3.0
16159	3.0	NaN	NaN
16160	52.0	54.0	4.0

	HOM_MTH04PCTPROF_1415	ALL_MTH08NUMVALID_1415	ALL_MTH08PCTPROF_1415	\
0	NaN	339.0	19.0	
1	34.0	393.0	25.0	
2	NaN	1140.0	61.0	
3	25.0	778.0	59.0	
4	NaN	118.0	32.0	
5	25.0	176.0	27.0	
6	NaN	345.0	46.0	
7	NaN	236.0	37.0	
8	NaN	124.0	27.0	
9	30.0	136.0	12.0	
10	NaN	186.0	47.0	
11	NaN	274.0	32.0	
12	25.0	173.0	22.0	
13	70.0	226.0	32.0	
14	NaN	78.0	8.0	
15	NaN	98.0	17.0	
16	25.0	479.0	35.0	
17	NaN	283.0	27.0	
18	NaN	626.0	50.0	
19	25.0	786.0	45.0	
20	50.0	2347.0	28.0	
21	NaN	82.0	2.0	
22	30.0	274.0	2.0	
23	NaN	260.0	22.0	

```
24                    15.0                  1688.0                   9.0
25                    25.0                   673.0                  23.0
26                     NaN                    80.0                  42.0
27                     NaN                   104.0                   2.0
28                    24.0                   220.0                  22.0
29                    25.0                   779.0                  21.0
...                    ...                     ...                   ...
16131                  NaN                   108.0                  57.0
16132                  NaN                   137.0                  62.0
16133                  NaN                    52.0                  54.0
16134                  NaN                    21.0                  50.0
16135                  NaN                    52.0                  44.0
16136                  NaN                    89.0                  62.0
16137                  NaN                    33.0                  34.0
16138                  NaN                   195.0                  57.0
16139                  NaN                    80.0                  37.0
16140                  NaN                   102.0                  47.0
16141                  NaN                    52.0                  54.0
16142                  NaN                     9.0                  25.0
16143                  NaN                    45.0                   5.0
16144                  NaN                    72.0                  62.0
16145                 25.0                   962.0                  41.0
16146                  NaN                    58.0                  44.0
16147                  NaN                    79.0                  42.0
16148                  NaN                    72.0                  52.0
16149                  NaN                   130.0                  57.0
16150                  NaN                   185.0                  37.0
16151                  NaN                   393.0                  45.0
16152                  NaN                     6.0                  25.0
16153                  NaN                    75.0                  47.0
16154                  NaN                   246.0                  67.0
16155                  NaN                    26.0                  30.0
16156                  NaN                   213.0                  47.0
16157                  NaN                     7.0                  25.0
16158                  NaN                   187.0                  57.0
16159                  NaN                    25.0                  50.0
16160                  NaN                   111.0                  57.0

       ECD_MTH08NUMVALID_1415  ECD_MTH08PCTPROF_1415  HOM_MTH08NUMVALID_1415  \
0                       156.0                   12.0                    17.0
1                       290.0                   22.0                    35.0
2                       271.0                   32.0                     6.0
3                       171.0                   32.0                     6.0
4                        65.0                   22.0                     2.0
5                       115.0                   22.0                     7.0
6                        38.0                   24.0                     NaN
7                       138.0                   22.0                     NaN
8                        67.0                   12.0                     1.0
```

9	103.0	8.0	9.0
10	68.0	37.0	6.0
11	133.0	17.0	15.0
12	134.0	17.0	26.0
13	118.0	22.0	26.0
14	56.0	5.0	2.0
15	52.0	15.0	NaN
16	183.0	17.0	11.0
17	110.0	12.0	3.0
18	162.0	17.0	6.0
19	372.0	28.0	5.0
20	1001.0	15.0	31.0
21	82.0	2.0	1.0
22	199.0	2.0	10.0
23	165.0	12.0	1.0
24	1132.0	5.0	42.0
25	388.0	18.0	12.0
26	40.0	24.0	NaN
27	88.0	2.0	2.0
28	179.0	12.0	14.0
29	470.0	14.0	13.0
...	...	...	...
16131	33.0	34.0	5.0
16132	52.0	54.0	NaN
16133	20.0	50.0	4.0
16134	10.0	25.0	NaN
16135	20.0	50.0	NaN
16136	25.0	70.0	NaN
16137	2.0	NaN	NaN
16138	67.0	47.0	NaN
16139	32.0	24.0	6.0
16140	9.0	25.0	NaN
16141	12.0	25.0	1.0
16142	5.0	NaN	NaN
16143	45.0	5.0	NaN
16144	17.0	50.0	NaN
16145	350.0	28.0	8.0
16146	25.0	30.0	3.0
16147	19.0	30.0	NaN
16148	28.0	50.0	NaN
16149	42.0	44.0	1.0
16150	72.0	27.0	NaN
16151	143.0	32.0	1.0
16152	2.0	NaN	NaN
16153	18.0	30.0	NaN
16154	80.0	62.0	1.0
16155	8.0	25.0	NaN
16156	60.0	34.0	4.0

16157	2.0	NaN	NaN
16158	56.0	34.0	3.0
16159	7.0	25.0	NaN
16160	46.0	44.0	NaN

	HOM_MTH08PCTPROF_1415
0	10.0
1	15.0
2	25.0
3	25.0
4	NaN
5	25.0
6	NaN
7	NaN
8	NaN
9	25.0
10	25.0
11	25.0
12	10.0
13	30.0
14	NaN
15	NaN
16	25.0
17	NaN
18	25.0
19	NaN
20	15.0
21	NaN
22	25.0
23	NaN
24	15.0
25	25.0
26	NaN
27	NaN
28	25.0
29	25.0
...	...
16131	NaN
16132	NaN
16133	NaN
16134	NaN
16135	NaN
16136	NaN
16137	NaN
16138	NaN
16139	25.0
16140	NaN
16141	NaN

```
16142                    NaN
16143                    NaN
16144                    NaN
16145                   25.0
16146                    NaN
16147                    NaN
16148                    NaN
16149                    NaN
16150                    NaN
16151                    NaN
16152                    NaN
16153                    NaN
16154                    NaN
16155                    NaN
16156                    NaN
16157                    NaN
16158                    NaN
16159                    NaN
16160                    NaN

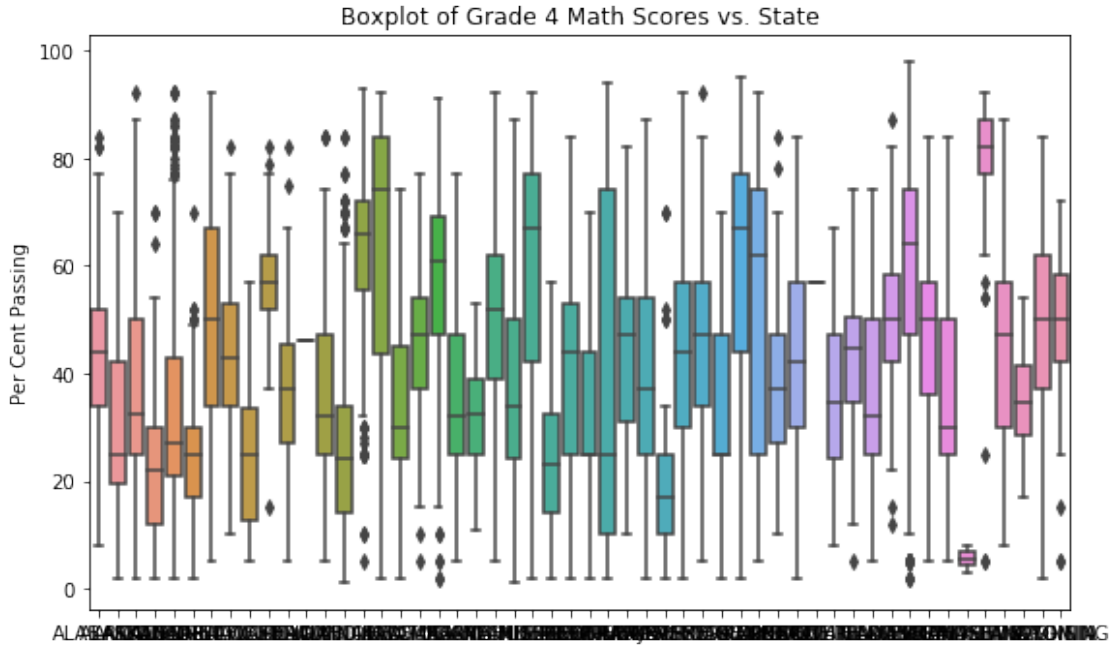
[16161 rows x 17 columns]
```

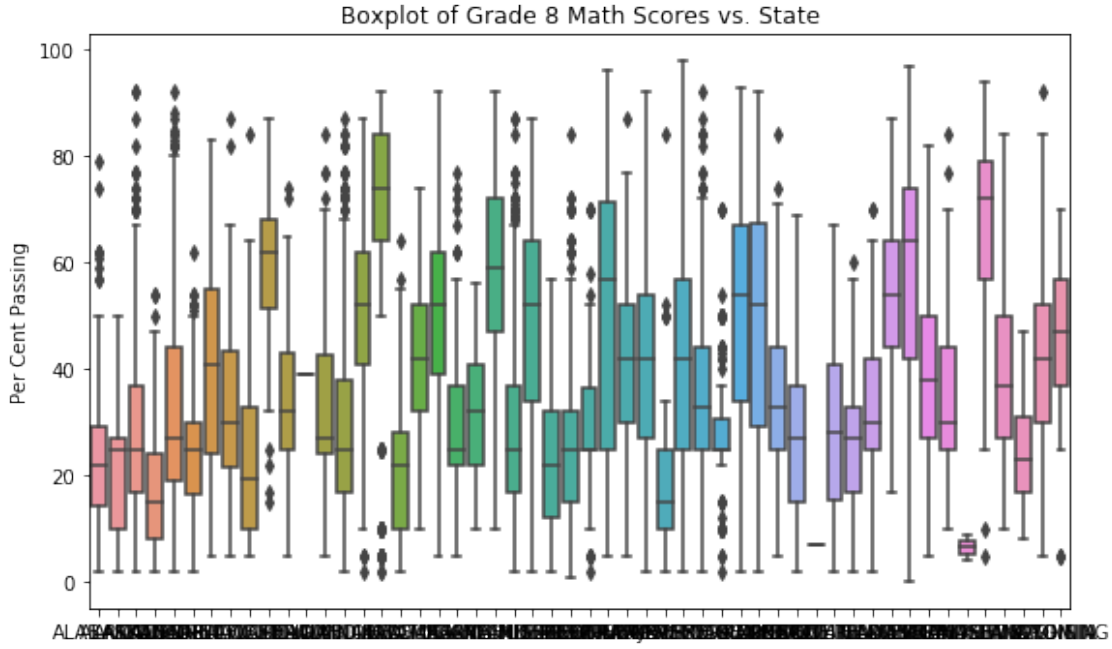
In [6]:
```
import textwrap
plt.figure(figsize=(20,12))
plt.subplot(2,2,1)

g = sns.boxplot(x="STNAM", y="ALL_MTH04PCTPROF_1415", data=math_df_201415)
g.set(ylabel='Per Cent Passing', xlabel='')
#g.set_xticklabels([textwrap.fill(t.get_text(), 10)  for t in g.get_xticklabels()])
plt.title("Boxplot of Grade 4 Math Scores vs. State")
plt.show()

plt.figure(figsize=(20,12))
plt.subplot(2,2,1)
g = sns.boxplot(x="STNAM", y="ALL_MTH08PCTPROF_1415", data=math_df_201415)
g.set(ylabel='Per Cent Passing', xlabel='')
#g.set_xticklabels([textwrap.fill(t.get_text(), 10)  for t in g.get_xticklabels()])
plt.title("Boxplot of Grade 8 Math Scores vs. State")

plt.show()
```





Box plot shows that grades dropped from grades 4 to grades 8.

```
In [7]: math_states_2011 = math_df_201011_clean.groupby(by=["STNAM"]).mean()
        math_states_2012 = math_df_201112_clean.groupby(by=["STNAM"]).mean()
        math_states_2013 = math_df_201213_clean.groupby(by=["STNAM"]).mean()
```

```
math_states_2014 = math_df_201314_clean.groupby(by=["STNAM"]).mean()
math_states_2015 = math_df_201415_clean.groupby(by=["STNAM"]).mean()
math_states_2016 = math_df_201516_clean.groupby(by=["STNAM"]).mean()
math_states_2017 = math_df_201617_clean.groupby(by=["STNAM"]).mean()
math_states_2018 = math_df_201718_clean.groupby(by=["STNAM"]).mean()
```

In [8]:
```
math_states_2015
```

Out[8]:

STNAM	FIPST	LEAID	ALL_MTH04NUMVALID_1415
ALABAMA	1.0	1.014946e+05	716.000000
ALASKA	2.0	2.003780e+05	1397.800000
ARIZONA	4.0	4.042249e+05	1016.584906
ARKANSAS	5.0	5.069106e+05	429.400000
CALIFORNIA	6.0	6.212963e+05	1392.986047
COLORADO	8.0	8.044714e+05	2014.142857
CONNECTICUT	9.0	9.030660e+05	1124.400000
DELAWARE	10.0	1.000620e+06	773.000000
DISTRICT OF COLUMBIA	11.0	1.100023e+06	1266.666667
FLORIDA	12.0	1.201064e+06	3573.054545
GEORGIA	13.0	1.302504e+06	1580.728814
HAWAII	15.0	1.500030e+06	14696.000000
IDAHO	16.0	1.601873e+06	760.571429
ILLINOIS	17.0	1.722342e+06	1199.240000
INDIANA	18.0	1.805632e+06	695.540541
IOWA	19.0	1.916334e+06	846.181818
KANSAS	20.0	2.008932e+06	1118.142857
KENTUCKY	21.0	2.102738e+06	544.140000
LOUISIANA	22.0	2.200823e+06	999.027027
MARYLAND	24.0	2.400381e+06	3824.687500
MASSACHUSETTS	25.0	2.507527e+06	799.137931
MICHIGAN	26.0	2.618051e+06	416.583333
MINNESOTA	27.0	2.720332e+06	1015.090909
MISSISSIPPI	28.0	2.802437e+06	482.875000
MISSOURI	29.0	2.919514e+06	587.250000
MONTANA	30.0	3.008871e+06	678.250000
NEBRASKA	31.0	3.154408e+06	1136.500000
NEW HAMPSHIRE	33.0	3.304269e+06	435.428571
NEW JERSEY	34.0	3.408446e+06	894.882353
NEW MEXICO	35.0	3.501039e+06	605.230769
NEW YORK	36.0	3.609674e+06	1471.770492
NORTH CAROLINA	37.0	3.702300e+06	1800.145833
NORTH DAKOTA	38.0	3.809348e+06	597.500000
OHIO	39.0	3.904511e+06	721.071429
OKLAHOMA	40.0	4.017747e+06	557.454545
OREGON	41.0	4.106786e+06	691.045455
PENNSYLVANIA	42.0	4.213762e+06	1083.416667
PUERTO RICO	72.0	7.200030e+06	31067.000000

RHODE ISLAND	44.0	4.400765e+06	1026.000000
SOUTH CAROLINA	45.0	4.502219e+06	1200.933333
SOUTH DAKOTA	46.0	4.663045e+06	1459.000000
TENNESSEE	47.0	4.702463e+06	2226.000000
TEXAS	48.0	4.824386e+06	2131.770642
UTAH	49.0	4.900626e+06	1789.444444
VIRGINIA	51.0	5.102437e+06	2149.733333
WASHINGTON	53.0	5.305167e+06	851.884058
WEST VIRGINIA	54.0	5.400800e+06	601.111111
WISCONSIN	55.0	5.508984e+06	1159.200000
WYOMING	56.0	5.602990e+06	895.000000

STNAM	ALL_MTH04PCTPROF_1415	ECD_MTH04NUMVALID_1415	\
ALABAMA	43.756098	409.804878	
ALASKA	44.200000	555.400000	
ARIZONA	33.943396	567.226415	
ARKANSAS	23.666667	287.100000	
CALIFORNIA	29.358140	953.925581	
COLORADO	26.428571	935.238095	
CONNECTICUT	16.800000	873.600000	
DELAWARE	50.000000	449.142857	
DISTRICT OF COLUMBIA	34.000000	973.000000	
FLORIDA	58.709091	2249.181818	
GEORGIA	38.237288	1031.559322	
HAWAII	46.000000	8081.000000	
IDAHO	41.071429	420.928571	
ILLINOIS	23.620000	878.060000	
INDIANA	62.297297	433.108108	
IOWA	74.090909	515.545455	
KANSAS	34.000000	619.071429	
KENTUCKY	44.220000	343.780000	
LOUISIANA	64.972973	713.081081	
MARYLAND	33.500000	1839.875000	
MASSACHUSETTS	42.310345	448.965517	
MICHIGAN	37.222222	244.416667	
MINNESOTA	63.136364	488.636364	
MISSISSIPPI	28.812500	372.625000	
MISSOURI	42.388889	379.666667	
MONTANA	46.500000	310.500000	
NEBRASKA	71.125000	688.500000	
NEW HAMPSHIRE	41.428571	203.000000	
NEW JERSEY	25.235294	644.529412	
NEW MEXICO	18.307692	481.461538	
NEW YORK	33.377049	1083.147541	
NORTH CAROLINA	45.020833	914.041667	
NORTH DAKOTA	42.500000	175.750000	
OHIO	54.321429	604.285714	

OKLAHOMA	71.772727	389.272727
OREGON	42.500000	440.340909
PENNSYLVANIA	34.625000	847.625000
PUERTO RICO	57.000000	25495.000000
RHODE ISLAND	21.500000	856.000000
SOUTH CAROLINA	46.300000	769.100000
SOUTH DAKOTA	45.500000	782.000000
TENNESSEE	52.866667	1389.333333
TEXAS	68.155963	1350.348624
UTAH	50.388889	783.166667
VIRGINIA	82.433333	844.900000
WASHINGTON	52.115942	422.811594
WEST VIRGINIA	32.000000	482.388889
WISCONSIN	41.066667	458.733333
WYOMING	49.000000	331.000000

STNAM	ECD_MTH04PCTPROF_1415	HOM_MTH04NUMVALID_1415 \
ALABAMA	35.487805	35.073171
ALASKA	31.400000	45.400000
ARIZONA	27.603774	25.433962
ARKANSAS	17.100000	13.366667
CALIFORNIA	21.116279	71.437209
COLORADO	14.619048	55.714286
CONNECTICUT	13.200000	22.000000
DELAWARE	38.285714	17.000000
DISTRICT OF COLUMBIA	28.000000	40.666667
FLORIDA	50.781818	72.254545
GEORGIA	30.847458	34.610169
HAWAII	34.000000	312.000000
IDAHO	33.928571	25.142857
ILLINOIS	15.320000	38.760000
INDIANA	53.702703	28.135135
IOWA	64.727273	17.090909
KANSAS	23.928571	27.857143
KENTUCKY	36.480000	28.860000
LOUISIANA	60.000000	32.513514
MARYLAND	17.375000	65.000000
MASSACHUSETTS	32.931034	32.758621
MICHIGAN	28.652778	13.277778
MINNESOTA	47.727273	22.227273
MISSISSIPPI	22.062500	37.625000
MISSOURI	33.527778	32.500000
MONTANA	33.750000	14.500000
NEBRASKA	64.125000	22.375000
NEW HAMPSHIRE	25.285714	17.142857
NEW JERSEY	19.235294	19.352941
NEW MEXICO	15.307692	23.769231

NEW YORK	27.016393	114.491803
NORTH CAROLINA	32.958333	33.875000
NORTH DAKOTA	25.250000	12.750000
OHIO	49.750000	28.857143
OKLAHOMA	65.909091	38.045455
OREGON	34.613636	23.863636
PENNSYLVANIA	26.208333	32.708333
PUERTO RICO	55.000000	442.000000
RHODE ISLAND	12.500000	10.500000
SOUTH CAROLINA	39.366667	27.200000
SOUTH DAKOTA	32.000000	53.500000
TENNESSEE	42.733333	30.533333
TEXAS	61.339450	31.366972
UTAH	38.000000	57.833333
VIRGINIA	73.433333	32.633333
WASHINGTON	39.536232	24.913043
WEST VIRGINIA	28.111111	21.833333
WISCONSIN	29.400000	27.266667
WYOMING	38.000000	14.500000

STNAM	HOM_MTH04PCTPROF_1415	ALL_MTH08NUMVALID_1415	\
ALABAMA	27.975610	720.463415	
ALASKA	19.400000	1356.000000	
ARIZONA	22.169811	1012.320755	
ARKANSAS	21.966667	325.133333	
CALIFORNIA	19.613953	1299.786047	
COLORADO	13.761905	1731.666667	
CONNECTICUT	13.000000	1057.000000	
DELAWARE	19.285714	720.428571	
DISTRICT OF COLUMBIA	20.666667	621.000000	
FLORIDA	35.727273	3569.618182	
GEORGIA	22.118644	1578.576271	
HAWAII	20.000000	12165.000000	
IDAHO	22.214286	722.500000	
ILLINOIS	19.620000	1125.220000	
INDIANA	39.405405	699.837838	
IOWA	29.454545	800.818182	
KANSAS	18.428571	1075.142857	
KENTUCKY	27.500000	539.960000	
LOUISIANA	40.837838	965.918919	
MARYLAND	12.250000	3572.437500	
MASSACHUSETTS	24.413793	735.448276	
MICHIGAN	23.652778	426.555556	
MINNESOTA	27.272727	975.272727	
MISSISSIPPI	18.625000	462.250000	
MISSOURI	22.972222	450.333333	
MONTANA	21.250000	673.250000	

NEBRASKA	37.750000	1024.250000
NEW HAMPSHIRE	20.000000	370.428571
NEW JERSEY	19.588235	789.235294
NEW MEXICO	15.923077	591.153846
NEW YORK	21.491803	1344.032787
NORTH CAROLINA	25.187500	1850.229167
NORTH DAKOTA	17.500000	553.500000
OHIO	32.535714	585.107143
OKLAHOMA	42.681818	548.363636
OREGON	23.909091	668.318182
PENNSYLVANIA	20.625000	953.625000
PUERTO RICO	53.000000	32502.000000
RHODE ISLAND	25.000000	929.000000
SOUTH CAROLINA	31.366667	1188.666667
SOUTH DAKOTA	23.500000	1296.000000
TENNESSEE	34.200000	2176.466667
TEXAS	44.412844	1713.128440
UTAH	27.333333	1707.555556
VIRGINIA	45.333333	1444.166667
WASHINGTON	26.666667	822.710145
WEST VIRGINIA	24.000000	597.944444
WISCONSIN	20.800000	1090.800000
WYOMING	25.000000	818.500000

STNAM	ALL_MTH08PCTPROF_1415	ECD_MTH08NUMVALID_1415	\
ALABAMA	24.682927	381.829268	
ALASKA	32.000000	488.600000	
ARIZONA	26.207547	519.660377	
ARKANSAS	16.166667	223.866667	
CALIFORNIA	29.013953	858.116279	
COLORADO	26.333333	766.809524	
CONNECTICUT	13.400000	761.600000	
DELAWARE	36.714286	366.714286	
DISTRICT OF COLUMBIA	23.000000	565.666667	
FLORIDA	58.727273	2149.290909	
GEORGIA	34.661017	993.322034	
HAWAII	39.000000	6152.000000	
IDAHO	31.142857	345.071429	
ILLINOIS	25.760000	800.380000	
INDIANA	49.891892	402.702703	
IOWA	67.363636	438.000000	
KANSAS	19.000000	549.571429	
KENTUCKY	42.860000	324.020000	
LOUISIANA	55.081081	649.000000	
MARYLAND	34.437500	1537.937500	
MASSACHUSETTS	47.827586	389.551724	
MICHIGAN	27.722222	220.430556	

MINNESOTA	52.272727	443.045455
MISSISSIPPI	30.625000	351.937500
MISSOURI	22.750000	296.611111
MONTANA	36.500000	263.750000
NEBRASKA	65.875000	602.625000
NEW HAMPSHIRE	33.714286	153.857143
NEW JERSEY	23.411765	540.117647
NEW MEXICO	14.384615	439.153846
NEW YORK	30.377049	971.590164
NORTH CAROLINA	31.854167	897.208333
NORTH DAKOTA	31.500000	140.000000
OHIO	40.857143	502.535714
OKLAHOMA	59.818182	355.000000
OREGON	41.113636	373.500000
PENNSYLVANIA	20.208333	693.958333
PUERTO RICO	7.000000	25516.000000
RHODE ISLAND	24.000000	725.500000
SOUTH CAROLINA	29.933333	743.866667
SOUTH DAKOTA	43.000000	570.000000
TENNESSEE	54.000000	1266.733333
TEXAS	67.715596	1089.669725
UTAH	40.277778	682.777778
VIRGINIA	69.100000	610.533333
WASHINGTON	44.130435	376.304348
WEST VIRGINIA	21.333333	388.944444
WISCONSIN	31.266667	408.533333
WYOMING	43.000000	287.500000

STNAM	ECD_MTH08PCTPROF_1415	HOM_MTH08NUMVALID_1415	\
ALABAMA	15.414634	30.000000	
ALASKA	18.400000	40.600000	
ARIZONA	21.037736	21.698113	
ARKANSAS	13.833333	11.100000	
CALIFORNIA	21.241860	55.855814	
COLORADO	15.428571	42.714286	
CONNECTICUT	9.000000	17.200000	
DELAWARE	25.285714	14.428571	
DISTRICT OF COLUMBIA	22.666667	23.666667	
FLORIDA	50.127273	58.000000	
GEORGIA	27.559322	28.135593	
HAWAII	28.000000	165.000000	
IDAHO	23.500000	19.928571	
ILLINOIS	17.420000	35.540000	
INDIANA	39.972973	20.513514	
IOWA	56.454545	14.181818	
KANSAS	10.357143	23.500000	
KENTUCKY	33.980000	26.300000	

LOUISIANA	48.594595	27.216216
MARYLAND	17.625000	46.812500
MASSACHUSETTS	38.000000	26.758621
MICHIGAN	19.222222	11.611111
MINNESOTA	34.909091	18.363636
MISSISSIPPI	23.500000	27.937500
MISSOURI	18.472222	26.027778
MONTANA	23.000000	12.250000
NEBRASKA	55.750000	18.125000
NEW HAMPSHIRE	22.714286	12.285714
NEW JERSEY	18.823529	13.823529
NEW MEXICO	11.153846	18.615385
NEW YORK	24.770492	81.360656
NORTH CAROLINA	20.187500	31.000000
NORTH DAKOTA	15.250000	13.750000
OHIO	37.750000	21.428571
OKLAHOMA	52.227273	31.772727
OREGON	32.045455	21.181818
PENNSYLVANIA	13.208333	20.750000
PUERTO RICO	6.000000	697.000000
RHODE ISLAND	14.000000	7.500000
SOUTH CAROLINA	20.733333	22.200000
SOUTH DAKOTA	25.500000	38.500000
TENNESSEE	43.333333	27.666667
TEXAS	62.825688	25.284404
UTAH	26.611111	50.500000
VIRGINIA	60.433333	25.500000
WASHINGTON	31.478261	19.724638
WEST VIRGINIA	15.944444	17.222222
WISCONSIN	17.400000	19.533333
WYOMING	27.500000	9.000000

STNAM	HOM_MTH08PCTPROF_1415
ALABAMA	18.731707
ALASKA	11.600000
ARIZONA	19.735849
ARKANSAS	22.666667
CALIFORNIA	20.060465
COLORADO	14.238095
CONNECTICUT	19.000000
DELAWARE	18.571429
DISTRICT OF COLUMBIA	18.333333
FLORIDA	37.763636
GEORGIA	20.644068
HAWAII	22.000000
IDAHO	19.857143
ILLINOIS	20.840000

```
INDIANA                          25.324324
IOWA                             30.909091
KANSAS                           19.142857
KENTUCKY                         24.300000
LOUISIANA                        36.594595
MARYLAND                         15.000000
MASSACHUSETTS                    22.413793
MICHIGAN                         22.847222
MINNESOTA                        20.318182
MISSISSIPPI                      20.875000
MISSOURI                         21.138889
MONTANA                          21.250000
NEBRASKA                         22.375000
NEW HAMPSHIRE                    22.142857
NEW JERSEY                       21.411765
NEW MEXICO                       18.846154
NEW YORK                         18.967213
NORTH CAROLINA                   19.645833
NORTH DAKOTA                     21.250000
OHIO                             26.285714
OKLAHOMA                         35.454545
OREGON                           21.681818
PENNSYLVANIA                     19.458333
PUERTO RICO                       3.000000
RHODE ISLAND                     25.000000
SOUTH CAROLINA                   19.533333
SOUTH DAKOTA                     19.500000
TENNESSEE                        24.933333
TEXAS                            39.064220
UTAH                             19.500000
VIRGINIA                         35.233333
WASHINGTON                       23.884058
WEST VIRGINIA                    20.222222
WISCONSIN                        19.533333
WYOMING                          25.000000
```

In [9]:
```
# MTH04 =  Math Grade 4   MTH08 = Math Grade 8
# ECD =  Economically Disadvantaged  HOM = Homeless
math_states_2015.columns
```

Out[9]:
```
Index(['FIPST', 'LEAID', 'ALL_MTH04NUMVALID_1415', 'ALL_MTH04PCTPROF_1415',
       'ECD_MTH04NUMVALID_1415', 'ECD_MTH04PCTPROF_1415',
       'HOM_MTH04NUMVALID_1415', 'HOM_MTH04PCTPROF_1415',
       'ALL_MTH08NUMVALID_1415', 'ALL_MTH08PCTPROF_1415',
       'ECD_MTH08NUMVALID_1415', 'ECD_MTH08PCTPROF_1415',
       'HOM_MTH08NUMVALID_1415', 'HOM_MTH08PCTPROF_1415'],
      dtype='object')
```

In [10]:
```
print ( math_states_2015[['ALL_MTH04NUMVALID_1415', 'ALL_MTH04PCTPROF_1415',
```

```
                                    'ECD_MTH04NUMVALID_1415', 'ECD_MTH04PCTPROF_1415',
                                    'HOM_MTH04NUMVALID_1415', 'HOM_MTH04PCTPROF_1415',
                                    'ALL_MTH08NUMVALID_1415', 'ALL_MTH08PCTPROF_1415',
                                     'ECD_MTH08NUMVALID_1415', 'ECD_MTH08PCTPROF_1415',
                                    'HOM_MTH08NUMVALID_1415', 'HOM_MTH08PCTPROF_1415']].descril
```

	ALL_MTH04NUMVALID_1415	ALL_MTH04PCTPROF_1415	ECD_MTH04NUMVALID_1415	\
count	49.000000	49.000000	49.000000	
mean	2051.000106	44.118025	1343.085220	
std	4705.410738	15.193497	3698.712261	
min	416.583333	16.800000	175.750000	
25%	695.540541	33.943396	422.811594	
50%	1016.584906	42.500000	604.285714	
75%	1459.000000	52.115942	878.060000	
max	31067.000000	82.433333	25495.000000	

	ECD_MTH04PCTPROF_1415	HOM_MTH04NUMVALID_1415	HOM_MTH04PCTPROF_1415	\
count	49.000000	49.000000	49.000000	
mean	35.135408	46.990129	25.742622	
std	15.229232	72.511216	8.907787	
min	12.500000	10.500000	12.250000	
25%	25.285714	22.227273	20.000000	
50%	32.958333	28.860000	23.500000	
75%	39.536232	38.045455	27.975610	
max	73.433333	442.000000	53.000000	

	ALL_MTH08NUMVALID_1415	ALL_MTH08PCTPROF_1415	ECD_MTH08NUMVALID_1415	\
count	49.000000	49.000000	49.000000	
mean	1937.696340	36.143119	1215.824379	
std	4777.646572	15.134058	3649.636417	
min	325.133333	7.000000	140.000000	
25%	668.318182	25.760000	373.500000	
50%	953.625000	32.000000	519.660377	
75%	1344.032787	43.000000	761.600000	
max	32502.000000	69.100000	25516.000000	

	ECD_MTH08PCTPROF_1415	HOM_MTH08NUMVALID_1415	HOM_MTH08PCTPROF_1415
count	49.000000	49.000000	49.000000
mean	27.115166	42.633979	22.164886
std	14.218982	98.472616	6.401049
min	6.000000	7.500000	3.000000
25%	17.420000	18.125000	19.500000
50%	23.000000	23.500000	20.875000
75%	33.980000	31.000000	23.884058
max	62.825688	697.000000	39.064220

```
In [11]: #df.sort_values(by=['col1']
```

```
math_states_2015_sorted = math_states_2015.sort_values(by=['ALL_MTH04PCTPROF_1415'])
tdf = math_states_2015_sorted[['ALL_MTH04PCTPROF_1415','ALL_MTH08PCTPROF_1415']][0:10]
tdf8 = math_states_2015_sorted[['ALL_MTH04PCTPROF_1415','ALL_MTH08PCTPROF_1415']][0:10

tdf8.plot.bar()

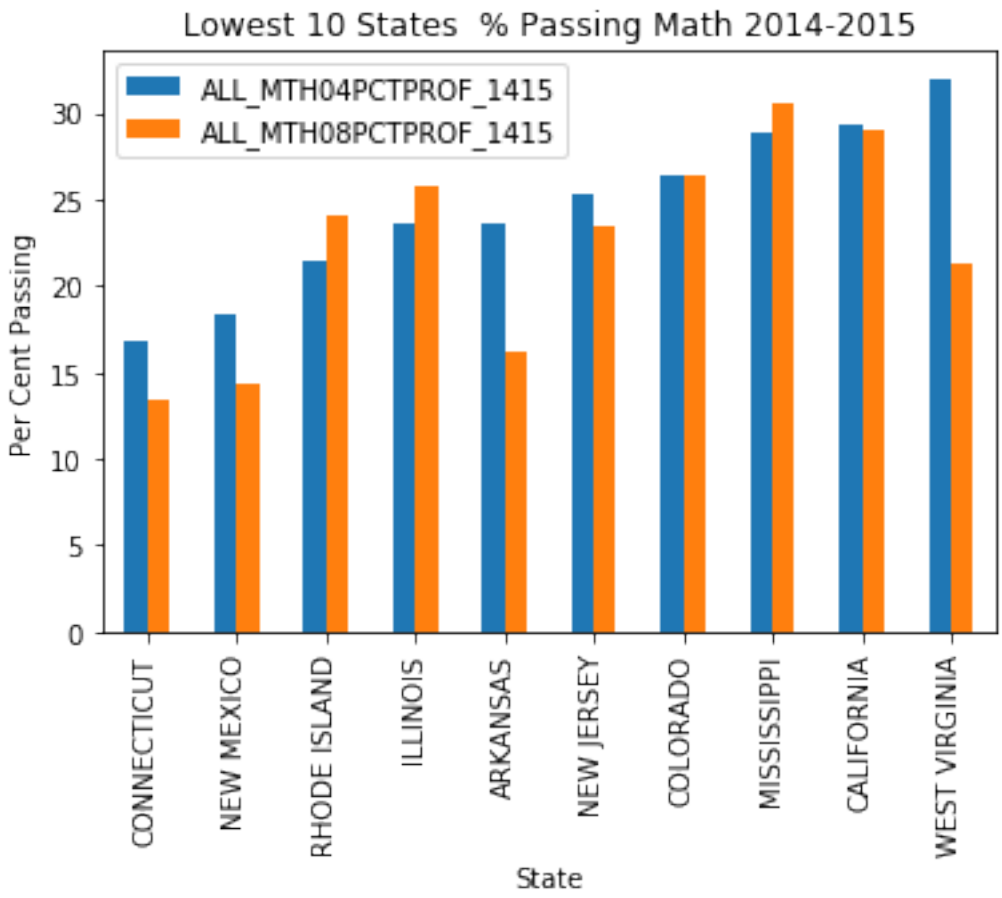
plt.xlabel('State')
plt.ylabel("Per Cent Passing")
plt.title('Lowest 10 States  % Passing Math 2014-2015')
plt.show()

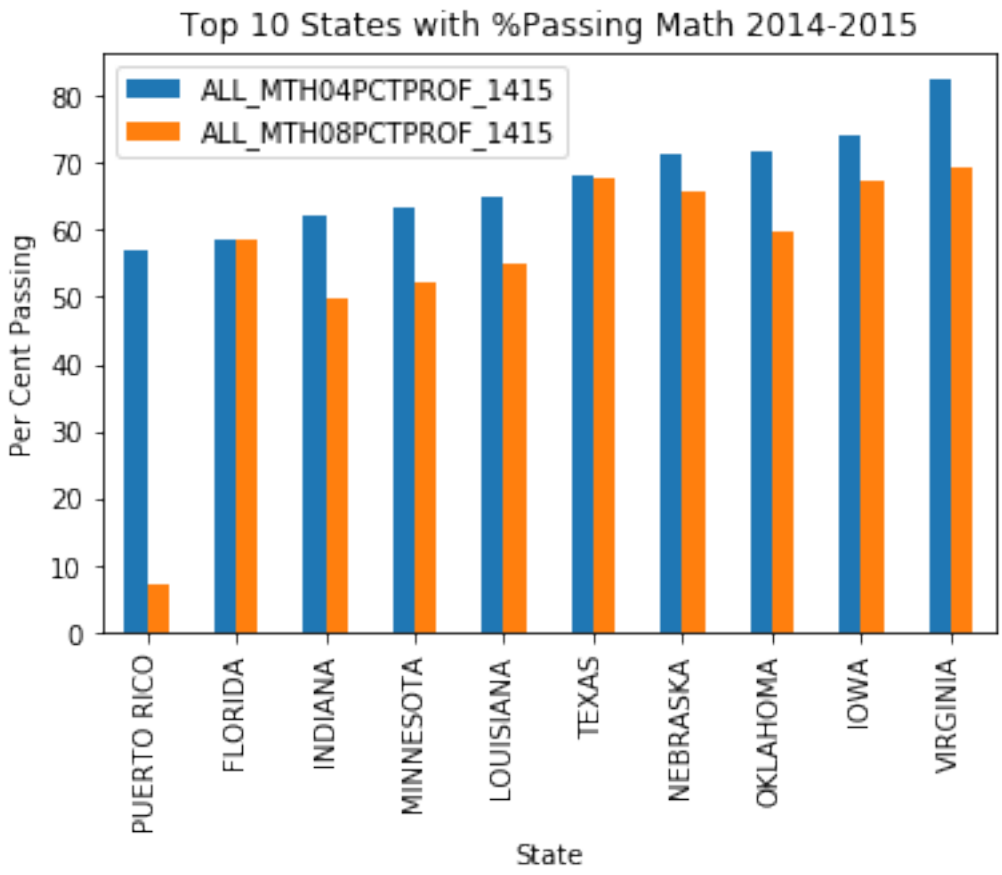
tdf8 = math_states_2015_sorted[['ALL_MTH04PCTPROF_1415','ALL_MTH08PCTPROF_1415']][-10

tdf8.plot.bar()
plt.xlabel('State')
plt.ylabel("Per Cent Passing")
plt.title('Top 10 States with %Passing Math 2014-2015')
plt.show()



math_states_2015_sorted
```


Lowest 10 States % Passing Math 2014-2015
ALL_MTH04PCTPROF_1415
ALL_MTH08PCTPROF_1415
Per Cent Passing
0
5
10
15
20
25
30
CONNECTICUT
NEW MEXICO
RHODE ISLAND
ILLINOIS
ARKANSAS
NEW JERSEY
COLORADO
MISSISSIPPI
CALIFORNIA
WEST VIRGINIA
State



Out[11]:

STNAM	FIPST	LEAID	ALL_MTH04NUMVALID_1415	\
CONNECTICUT	9.0	9.030660e+05	1124.400000	
NEW MEXICO	35.0	3.501039e+06	605.230769	
RHODE ISLAND	44.0	4.400765e+06	1026.000000	
ILLINOIS	17.0	1.722342e+06	1199.240000	
ARKANSAS	5.0	5.069106e+05	429.400000	
NEW JERSEY	34.0	3.408446e+06	894.882353	
COLORADO	8.0	8.044714e+05	2014.142857	
MISSISSIPPI	28.0	2.802437e+06	482.875000	
CALIFORNIA	6.0	6.212963e+05	1392.986047	
WEST VIRGINIA	54.0	5.400800e+06	601.111111	
NEW YORK	36.0	3.609674e+06	1471.770492	
MARYLAND	24.0	2.400381e+06	3824.687500	
ARIZONA	4.0	4.042249e+05	1016.584906	
DISTRICT OF COLUMBIA	11.0	1.100023e+06	1266.666667	
KANSAS	20.0	2.008932e+06	1118.142857	
PENNSYLVANIA	42.0	4.213762e+06	1083.416667	
MICHIGAN	26.0	2.618051e+06	416.583333	

GEORGIA	13.0	1.302504e+06	1580.728814
WISCONSIN	55.0	5.508984e+06	1159.200000
IDAHO	16.0	1.601873e+06	760.571429
NEW HAMPSHIRE	33.0	3.304269e+06	435.428571
MASSACHUSETTS	25.0	2.507527e+06	799.137931
MISSOURI	29.0	2.919514e+06	587.250000
OREGON	41.0	4.106786e+06	691.045455
NORTH DAKOTA	38.0	3.809348e+06	597.500000
ALABAMA	1.0	1.014946e+05	716.000000
ALASKA	2.0	2.003780e+05	1397.800000
KENTUCKY	21.0	2.102738e+06	544.140000
NORTH CAROLINA	37.0	3.702300e+06	1800.145833
SOUTH DAKOTA	46.0	4.663045e+06	1459.000000
HAWAII	15.0	1.500030e+06	14696.000000
SOUTH CAROLINA	45.0	4.502219e+06	1200.933333
MONTANA	30.0	3.008871e+06	678.250000
WYOMING	56.0	5.602990e+06	895.000000
DELAWARE	10.0	1.000620e+06	773.000000
UTAH	49.0	4.900626e+06	1789.444444
WASHINGTON	53.0	5.305167e+06	851.884058
TENNESSEE	47.0	4.702463e+06	2226.000000
OHIO	39.0	3.904511e+06	721.071429
PUERTO RICO	72.0	7.200030e+06	31067.000000
FLORIDA	12.0	1.201064e+06	3573.054545
INDIANA	18.0	1.805632e+06	695.540541
MINNESOTA	27.0	2.720332e+06	1015.090909
LOUISIANA	22.0	2.200823e+06	999.027027
TEXAS	48.0	4.824386e+06	2131.770642
NEBRASKA	31.0	3.154408e+06	1136.500000
OKLAHOMA	40.0	4.017747e+06	557.454545
IOWA	19.0	1.916334e+06	846.181818
VIRGINIA	51.0	5.102437e+06	2149.733333

STNAM	ALL_MTH04PCTPROF_1415	ECD_MTH04NUMVALID_1415 \
CONNECTICUT	16.800000	873.600000
NEW MEXICO	18.307692	481.461538
RHODE ISLAND	21.500000	856.000000
ILLINOIS	23.620000	878.060000
ARKANSAS	23.666667	287.100000
NEW JERSEY	25.235294	644.529412
COLORADO	26.428571	935.238095
MISSISSIPPI	28.812500	372.625000
CALIFORNIA	29.358140	953.925581
WEST VIRGINIA	32.000000	482.388889
NEW YORK	33.377049	1083.147541
MARYLAND	33.500000	1839.875000
ARIZONA	33.943396	567.226415

DISTRICT OF COLUMBIA	34.000000	973.000000
KANSAS	34.000000	619.071429
PENNSYLVANIA	34.625000	847.625000
MICHIGAN	37.222222	244.416667
GEORGIA	38.237288	1031.559322
WISCONSIN	41.066667	458.733333
IDAHO	41.071429	420.928571
NEW HAMPSHIRE	41.428571	203.000000
MASSACHUSETTS	42.310345	448.965517
MISSOURI	42.388889	379.666667
OREGON	42.500000	440.340909
NORTH DAKOTA	42.500000	175.750000
ALABAMA	43.756098	409.804878
ALASKA	44.200000	555.400000
KENTUCKY	44.220000	343.780000
NORTH CAROLINA	45.020833	914.041667
SOUTH DAKOTA	45.500000	782.000000
HAWAII	46.000000	8081.000000
SOUTH CAROLINA	46.300000	769.100000
MONTANA	46.500000	310.500000
WYOMING	49.000000	331.000000
DELAWARE	50.000000	449.142857
UTAH	50.388889	783.166667
WASHINGTON	52.115942	422.811594
TENNESSEE	52.866667	1389.333333
OHIO	54.321429	604.285714
PUERTO RICO	57.000000	25495.000000
FLORIDA	58.709091	2249.181818
INDIANA	62.297297	433.108108
MINNESOTA	63.136364	488.636364
LOUISIANA	64.972973	713.081081
TEXAS	68.155963	1350.348624
NEBRASKA	71.125000	688.500000
OKLAHOMA	71.772727	389.272727
IOWA	74.090909	515.545455
VIRGINIA	82.433333	844.900000

STNAM	ECD_MTH04PCTPROF_1415	HOM_MTH04NUMVALID_1415 \
CONNECTICUT	13.200000	22.000000
NEW MEXICO	15.307692	23.769231
RHODE ISLAND	12.500000	10.500000
ILLINOIS	15.320000	38.760000
ARKANSAS	17.100000	13.366667
NEW JERSEY	19.235294	19.352941
COLORADO	14.619048	55.714286
MISSISSIPPI	22.062500	37.625000
CALIFORNIA	21.116279	71.437209

WEST VIRGINIA	28.111111	21.833333
NEW YORK	27.016393	114.491803
MARYLAND	17.375000	65.000000
ARIZONA	27.603774	25.433962
DISTRICT OF COLUMBIA	28.000000	40.666667
KANSAS	23.928571	27.857143
PENNSYLVANIA	26.208333	32.708333
MICHIGAN	28.652778	13.277778
GEORGIA	30.847458	34.610169
WISCONSIN	29.400000	27.266667
IDAHO	33.928571	25.142857
NEW HAMPSHIRE	25.285714	17.142857
MASSACHUSETTS	32.931034	32.758621
MISSOURI	33.527778	32.500000
OREGON	34.613636	23.863636
NORTH DAKOTA	25.250000	12.750000
ALABAMA	35.487805	35.073171
ALASKA	31.400000	45.400000
KENTUCKY	36.480000	28.860000
NORTH CAROLINA	32.958333	33.875000
SOUTH DAKOTA	32.000000	53.500000
HAWAII	34.000000	312.000000
SOUTH CAROLINA	39.366667	27.200000
MONTANA	33.750000	14.500000
WYOMING	38.000000	14.500000
DELAWARE	38.285714	17.000000
UTAH	38.000000	57.833333
WASHINGTON	39.536232	24.913043
TENNESSEE	42.733333	30.533333
OHIO	49.750000	28.857143
PUERTO RICO	55.000000	442.000000
FLORIDA	50.781818	72.254545
INDIANA	53.702703	28.135135
MINNESOTA	47.727273	22.227273
LOUISIANA	60.000000	32.513514
TEXAS	61.339450	31.366972
NEBRASKA	64.125000	22.375000
OKLAHOMA	65.909091	38.045455
IOWA	64.727273	17.090909
VIRGINIA	73.433333	32.633333

STNAM	HOM_MTH04PCTPROF_1415	ALL_MTH08NUMVALID_1415 \
CONNECTICUT	13.000000	1057.000000
NEW MEXICO	15.923077	591.153846
RHODE ISLAND	25.000000	929.000000
ILLINOIS	19.620000	1125.220000
ARKANSAS	21.966667	325.133333

NEW JERSEY	19.588235	789.235294
COLORADO	13.761905	1731.666667
MISSISSIPPI	18.625000	462.250000
CALIFORNIA	19.613953	1299.786047
WEST VIRGINIA	24.000000	597.944444
NEW YORK	21.491803	1344.032787
MARYLAND	12.250000	3572.437500
ARIZONA	22.169811	1012.320755
DISTRICT OF COLUMBIA	20.666667	621.000000
KANSAS	18.428571	1075.142857
PENNSYLVANIA	20.625000	953.625000
MICHIGAN	23.652778	426.555556
GEORGIA	22.118644	1578.576271
WISCONSIN	20.800000	1090.800000
IDAHO	22.214286	722.500000
NEW HAMPSHIRE	20.000000	370.428571
MASSACHUSETTS	24.413793	735.448276
MISSOURI	22.972222	450.333333
OREGON	23.909091	668.318182
NORTH DAKOTA	17.500000	553.500000
ALABAMA	27.975610	720.463415
ALASKA	19.400000	1356.000000
KENTUCKY	27.500000	539.960000
NORTH CAROLINA	25.187500	1850.229167
SOUTH DAKOTA	23.500000	1296.000000
HAWAII	20.000000	12165.000000
SOUTH CAROLINA	31.366667	1188.666667
MONTANA	21.250000	673.250000
WYOMING	25.000000	818.500000
DELAWARE	19.285714	720.428571
UTAH	27.333333	1707.555556
WASHINGTON	26.666667	822.710145
TENNESSEE	34.200000	2176.466667
OHIO	32.535714	585.107143
PUERTO RICO	53.000000	32502.000000
FLORIDA	35.727273	3569.618182
INDIANA	39.405405	699.837838
MINNESOTA	27.272727	975.272727
LOUISIANA	40.837838	965.918919
TEXAS	44.412844	1713.128440
NEBRASKA	37.750000	1024.250000
OKLAHOMA	42.681818	548.363636
IOWA	29.454545	800.818182
VIRGINIA	45.333333	1444.166667

STNAM	ALL_MTH08PCTPROF_1415	ECD_MTH08NUMVALID_1415 \
CONNECTICUT	13.400000	761.600000

NEW MEXICO	14.384615	439.153846
RHODE ISLAND	24.000000	725.500000
ILLINOIS	25.760000	800.380000
ARKANSAS	16.166667	223.866667
NEW JERSEY	23.411765	540.117647
COLORADO	26.333333	766.809524
MISSISSIPPI	30.625000	351.937500
CALIFORNIA	29.013953	858.116279
WEST VIRGINIA	21.333333	388.944444
NEW YORK	30.377049	971.590164
MARYLAND	34.437500	1537.937500
ARIZONA	26.207547	519.660377
DISTRICT OF COLUMBIA	23.000000	565.666667
KANSAS	19.000000	549.571429
PENNSYLVANIA	20.208333	693.958333
MICHIGAN	27.722222	220.430556
GEORGIA	34.661017	993.322034
WISCONSIN	31.266667	408.533333
IDAHO	31.142857	345.071429
NEW HAMPSHIRE	33.714286	153.857143
MASSACHUSETTS	47.827586	389.551724
MISSOURI	22.750000	296.611111
OREGON	41.113636	373.500000
NORTH DAKOTA	31.500000	140.000000
ALABAMA	24.682927	381.829268
ALASKA	32.000000	488.600000
KENTUCKY	42.860000	324.020000
NORTH CAROLINA	31.854167	897.208333
SOUTH DAKOTA	43.000000	570.000000
HAWAII	39.000000	6152.000000
SOUTH CAROLINA	29.933333	743.866667
MONTANA	36.500000	263.750000
WYOMING	43.000000	287.500000
DELAWARE	36.714286	366.714286
UTAH	40.277778	682.777778
WASHINGTON	44.130435	376.304348
TENNESSEE	54.000000	1266.733333
OHIO	40.857143	502.535714
PUERTO RICO	7.000000	25516.000000
FLORIDA	58.727273	2149.290909
INDIANA	49.891892	402.702703
MINNESOTA	52.272727	443.045455
LOUISIANA	55.081081	649.000000
TEXAS	67.715596	1089.669725
NEBRASKA	65.875000	602.625000
OKLAHOMA	59.818182	355.000000
IOWA	67.363636	438.000000
VIRGINIA	69.100000	610.533333

STNAM	ECD_MTH08PCTPROF_1415	HOM_MTH08NUMVALID_1415	\
CONNECTICUT	9.000000	17.200000	
NEW MEXICO	11.153846	18.615385	
RHODE ISLAND	14.000000	7.500000	
ILLINOIS	17.420000	35.540000	
ARKANSAS	13.833333	11.100000	
NEW JERSEY	18.823529	13.823529	
COLORADO	15.428571	42.714286	
MISSISSIPPI	23.500000	27.937500	
CALIFORNIA	21.241860	55.855814	
WEST VIRGINIA	15.944444	17.222222	
NEW YORK	24.770492	81.360656	
MARYLAND	17.625000	46.812500	
ARIZONA	21.037736	21.698113	
DISTRICT OF COLUMBIA	22.666667	23.666667	
KANSAS	10.357143	23.500000	
PENNSYLVANIA	13.208333	20.750000	
MICHIGAN	19.222222	11.611111	
GEORGIA	27.559322	28.135593	
WISCONSIN	17.400000	19.533333	
IDAHO	23.500000	19.928571	
NEW HAMPSHIRE	22.714286	12.285714	
MASSACHUSETTS	38.000000	26.758621	
MISSOURI	18.472222	26.027778	
OREGON	32.045455	21.181818	
NORTH DAKOTA	15.250000	13.750000	
ALABAMA	15.414634	30.000000	
ALASKA	18.400000	40.600000	
KENTUCKY	33.980000	26.300000	
NORTH CAROLINA	20.187500	31.000000	
SOUTH DAKOTA	25.500000	38.500000	
HAWAII	28.000000	165.000000	
SOUTH CAROLINA	20.733333	22.200000	
MONTANA	23.000000	12.250000	
WYOMING	27.500000	9.000000	
DELAWARE	25.285714	14.428571	
UTAH	26.611111	50.500000	
WASHINGTON	31.478261	19.724638	
TENNESSEE	43.333333	27.666667	
OHIO	37.750000	21.428571	
PUERTO RICO	6.000000	697.000000	
FLORIDA	50.127273	58.000000	
INDIANA	39.972973	20.513514	
MINNESOTA	34.909091	18.363636	
LOUISIANA	48.594595	27.216216	
TEXAS	62.825688	25.284404	

NEBRASKA	55.750000	18.125000
OKLAHOMA	52.227273	31.772727
IOWA	56.454545	14.181818
VIRGINIA	60.433333	25.500000

STNAM	HOM_MTH08PCTPROF_1415
CONNECTICUT	19.000000
NEW MEXICO	18.846154
RHODE ISLAND	25.000000
ILLINOIS	20.840000
ARKANSAS	22.666667
NEW JERSEY	21.411765
COLORADO	14.238095
MISSISSIPPI	20.875000
CALIFORNIA	20.060465
WEST VIRGINIA	20.222222
NEW YORK	18.967213
MARYLAND	15.000000
ARIZONA	19.735849
DISTRICT OF COLUMBIA	18.333333
KANSAS	19.142857
PENNSYLVANIA	19.458333
MICHIGAN	22.847222
GEORGIA	20.644068
WISCONSIN	19.533333
IDAHO	19.857143
NEW HAMPSHIRE	22.142857
MASSACHUSETTS	22.413793
MISSOURI	21.138889
OREGON	21.681818
NORTH DAKOTA	21.250000
ALABAMA	18.731707
ALASKA	11.600000
KENTUCKY	24.300000
NORTH CAROLINA	19.645833
SOUTH DAKOTA	19.500000
HAWAII	22.000000
SOUTH CAROLINA	19.533333
MONTANA	21.250000
WYOMING	25.000000
DELAWARE	18.571429
UTAH	19.500000
WASHINGTON	23.884058
TENNESSEE	24.933333
OHIO	26.285714
PUERTO RICO	3.000000
FLORIDA	37.763636

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INDIANA                          25.324324
MINNESOTA                        20.318182
LOUISIANA                        36.594595
TEXAS                            39.064220
NEBRASKA                         22.375000
OKLAHOMA                         35.454545
IOWA                             30.909091
VIRGINIA                         35.233333
```

In [12]: parent_social_econ_by_district_df

Out[12]:

	GeoId_x	Geography_x
0	97000US2700106	A.C.G.C. Public School District
1	97000US4500690	Abbeville County School District
2	97000US5500030	Abbotsford School District
3	97000US4807380	Abbott Independent School District
4	97000US5300030	Aberdeen School District
5	97000US2800360	Aberdeen School District
6	97000US1600030	Aberdeen School District 58
7	97000US4807410	Abernathy Independent School District
8	97000US4807440	Abilene Independent School District
9	97000US2003180	Abilene Unified School District 435
10	97000US3400660	Absecon City School District
11	97000US1700105	A-C Central Community Unit School District 262
12	97000US4807470	Academy Independent School District
13	97000US2200030	Acadia Parish School District
14	97000US5100060	Accomack County Public Schools
15	97000US0600001	Acton-Agua Dulce Unified School District
16	97000US2700126	Ada-Borup Public School District
17	97000US2100030	Adair County School District
18	97000US1903090	Adair-Casey Community School District
19	97000US1800060	Adams Central Community Schools
20	97000US5500060	Adams-Friendship Area School District
21	97000US5099903	Addison Central Supervisory Union
22	97000US5099901	Addison Northeast Supervisory Union
23	97000US5099902	Addison Northwest Supervisory Union
24	97000US5099904	Addison Rutland Supervisory Union
25	95000US1703150	Addison School District 4
26	97000US1903150	Adel-De Soto-Minburn Community School District
27	97000US4600042	Agar-Blunt-Onida School District 58-3
28	97000US4807530	Agua Dulce Independent School District
29	96000US0400450	Agua Fria Union High School District
...	...	...
11356	97000US4846710	Zapata County Independent School District, SD
11357	96000US4747001	Anderson County School District in Clinton, TN
11358	96000US4747002	Arlington Community Schools in Lakeland (9-12)...
11359	96000US4747031	Coffee County School District in Manchester, TN
11360	96000US4747033	Crockett County School District in Alamo, TN

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11361  96000US4747034      Crockett County School District in Bells, TN
11362  96000US4747073  Hawkins County School District in Rogersville, TN
11363  96000US4747077  Henderson County School District in Lexington, TN
11364  96000US4747079         Henry County School District in Paris, TN
11365  96000US4747107       McMinn County School District in Athens, TN
11366  96000US4747108       McMinn County School District in Etowah, TN
11367  97000US4647100                  Menno School District 33-2, TN
11368  97000US4647942              Miller Area School District 29-4, TN
11369  96000US4747123   Monroe County School District in Sweetwater, TN
11370  96000US4747143         Rhea County School District in Dayton, TN
11371  96000US4747149  Rutherford County School District in Murfreesb...
11372  96000US4747187  Williamson County School District in Franklin, TN
11373  96000US4747189      Wilson County School District in Lebanon, TN
11374  97000US4648390                Mitchell School District 17-2, TX
11375  97000US4648780                Montrose School District 43-2, TX
11376  96000US4848449  Mount Pleasant Independent School District (9-...
11377  97000US4649650             Mount Vernon School District 17-3, UT
11378  97000US4651750        Northwestern Area School District 56-7, VA
11379  95000US5050004  Chittenden Central Supervisory Union in Essex ...
11380  97000US4650670           New Underwood School District 51-3, VT
11381  97000US4650850                 Newell School District 09-2, VT
11382  97000US4655260                 Pierre School District 32-2, WI
11383  97000US4655710              Plankinton School District 01-1, WI
11384  97000US4654270                  Parker School District 60-4, WV
11385  97000US4654300                Parkston School District 33-3, WV
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	LEAID	Year_x	Iteration_x	pct_Below PovLvL_All_Ages	\
0	2700106	2014-2018	202	11.8	
1	4500690	2014-2018	202	21.9	
2	5500030	2014-2018	202	16.0	
3	4807380	2014-2018	202	0.0	
4	5300030	2014-2018	202	18.3	
5	2800360	2014-2018	202	14.9	
6	1600030	2014-2018	202	16.0	
7	4807410	2014-2018	202	6.9	
8	4807440	2014-2018	202	16.7	
9	2003180	2014-2018	202	2.3	
10	3400660	2014-2018	202	5.8	
11	1700105	2014-2018	202	2.0	
12	4807470	2014-2018	202	2.6	
13	2200030	2014-2018	202	21.5	
14	5100060	2014-2018	202	22.4	
15	600001	2014-2018	202	5.1	
16	2700126	2014-2018	202	8.6	
17	2100030	2014-2018	202	23.3	
18	1903090	2014-2018	202	6.9	
19	1800060	2014-2018	202	21.1	
20	5500060	2014-2018	202	22.4	

21	5099903	2014-2018	202	6.0
22	5099901	2014-2018	202	8.4
23	5099902	2014-2018	202	2.6
24	5099904	2014-2018	202	8.0
25	1703150	2014-2018	202	10.8
26	1903150	2014-2018	202	4.8
27	4600042	2014-2018	202	2.6
28	4807530	2014-2018	202	14.3
29	400450	2014-2018	202	8.7
...	...	...	...	...
11356	4846710	2014-2018	202	45.9
11357	4747001	2014-2018	202	11.8
11358	4747002	2014-2018	202	4.0
11359	4747031	2014-2018	202	0.0
11360	4747033	2014-2018	202	7.9
11361	4747034	2014-2018	202	9.0
11362	4747073	2014-2018	202	11.2
11363	4747077	2014-2018	202	20.9
11364	4747079	2014-2018	202	24.7
11365	4747107	2014-2018	202	23.5
11366	4747108	2014-2018	202	47.3
11367	4647100	2014-2018	202	5.8
11368	4647942	2014-2018	202	8.9
11369	4747123	2014-2018	202	9.5
11370	4747143	2014-2018	202	20.6
11371	4747149	2014-2018	202	10.6
11372	4747187	2014-2018	202	9.2
11373	4747189	2014-2018	202	12.3
11374	4648390	2014-2018	202	6.3
11375	4648780	2014-2018	202	0.9
11376	4848449	2014-2018	202	45.5
11377	4649650	2014-2018	202	3.2
11378	4651750	2014-2018	202	10.0
11379	5050004	2014-2018	202	7.3
11380	4650670	2014-2018	202	0.9
11381	4650850	2014-2018	202	5.9
11382	4655260	2014-2018	202	9.9
11383	4655710	2014-2018	202	1.8
11384	4654270	2014-2018	202	2.3
11385	4654300	2014-2018	202	4.9

	pctmoe_Below PovLvL_All_Ages	pct_Below PovLvL_Age_gte_18	\
0	3.1	11.8	
1	5.5	21.9	
2	6.9	16.0	
3	17.3	0.0	
4	5.1	18.3	
5	7.5	14.9	

6	12.5	16.0
7	6.9	6.9
8	2.3	16.7
9	2.2	2.3
10	3.9	5.8
11	2.2	2.0
12	2.3	2.6
13	3.9	21.5
14	6.1	22.4
15	3.7	5.1
16	4.5	8.7
17	6.4	23.3
18	4.3	6.9
19	7.6	21.1
20	5.0	22.4
21	3.1	6.0
22	4.5	8.5
23	1.5	2.6
24	3.4	8.0
25	3.9	10.8
26	5.2	4.8
27	2.7	2.6
28	13.1	14.3
29	2.4	8.7
...	...	...
11356	9.8	45.9
11357	8.8	11.8
11358	5.8	4.0
11359	4.7	0.0
11360	10.4	7.9
11361	6.9	9.0
11362	17.7	11.2
11363	18.3	20.9
11364	11.4	24.7
11365	11.9	23.5
11366	34.3	47.3
11367	6.5	5.8
11368	6.6	8.9
11369	9.9	9.5
11370	19.6	20.6
11371	3.4	10.6
11372	5.5	9.2
11373	6.0	12.3
11374	3.4	6.3
11375	1.5	0.9
11376	36.5	45.5
11377	4.3	3.2
11378	5.4	10.0

```
11379                          4.9                          7.3
11380                          2.0                          0.9
11381                          7.6                          5.9
11382                          3.9                          9.9
11383                          1.6                          1.8
11384                          3.2                          2.3
11385                          2.4                          4.9

       pctmoe_Below PovLvL_Age_gte_18  pct_Below PovLvL_Age_18_64  \
0                               3.1                         11.8
1                               5.5                         21.9
2                               6.9                         16.1
3                              17.3                          0.0
4                               5.1                         18.4
5                               7.5                         15.1
6                              12.5                         16.0
7                               6.9                          6.9
8                               2.4                         16.8
9                               2.2                          2.3
10                              3.9                          5.8
11                              2.2                          2.0
12                              2.3                          2.6
13                              3.9                         21.6
14                              6.1                         22.4
15                              3.7                          5.2
16                              4.6                          8.8
17                              6.4                         23.4
18                              4.3                          6.9
19                              7.6                         21.1
20                              5.0                         22.5
21                              3.1                          6.1
22                              4.5                          8.5
23                              1.5                          2.6
24                              3.4                          8.1
25                              3.9                         10.8
26                              5.2                          4.8
27                              2.7                          2.6
28                             13.1                         14.7
29                              2.4                          8.8
...                             ...                          ...
11356                           9.8                         46.8
11357                           8.8                         11.9
11358                           5.8                          4.0
11359                           4.7                          0.0
11360                          10.4                          7.9
11361                           6.9                          9.1
11362                          17.7                         11.2
11363                          18.3                         20.9
```

11364	11.4	24.7
11365	11.9	23.5
11366	34.3	47.3
11367	6.5	5.8
11368	6.6	8.9
11369	9.9	9.5
11370	19.6	20.6
11371	3.4	10.7
11372	5.5	9.4
11373	6.0	12.4
11374	3.4	6.3
11375	1.5	0.9
11376	36.5	48.8
11377	4.3	3.2
11378	5.4	10.0
11379	4.9	7.3
11380	2.0	0.9
11381	7.6	5.9
11382	3.9	10.1
11383	1.6	1.8
11384	3.2	2.3
11385	2.4	4.9

	...	\
0	...	
1	...	
2	...	
3	...	
4	...	
5	...	
6	...	
7	...	
8	...	
9	...	
10	...	
11	...	
12	...	
13	...	
14	...	
15	...	
16	...	
17	...	
18	...	
19	...	
20	...	
21	...	
22	...	
23	...	

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24                    ...
25                    ...
26                    ...
27                    ...
28                    ...
29                    ...
...                   ...
11356                 ...
11357                 ...
11358                 ...
11359                 ...
11360                 ...
11361                 ...
11362                 ...
11363                 ...
11364                 ...
11365                 ...
11366                 ...
11367                 ...
11368                 ...
11369                 ...
11370                 ...
11371                 ...
11372                 ...
11373                 ...
11374                 ...
11375                 ...
11376                 ...
11377                 ...
11378                 ...
11379                 ...
11380                 ...
11381                 ...
11382                 ...
11383                 ...
11384                 ...
11385                 ...

       num_Educational_Attain_POP_AssocDeg  \
0                                    175.0
1                                    580.0
2                                     65.0
3                                     45.0
4                                    255.0
5                                    160.0
6                                     45.0
7                                     30.0
8                                   1480.0
```

9	145.0
10	45.0
11	45.0
12	205.0
13	875.0
14	510.0
15	180.0
16	90.0
17	305.0
18	55.0
19	245.0
20	165.0
21	145.0
22	250.0
23	130.0
24	105.0
25	355.0
26	255.0
27	15.0
28	25.0
29	1315.0
...	...
11356	135.0
11357	60.0
11358	100.0
11359	55.0
11360	4.0
11361	40.0
11362	15.0
11363	15.0
11364	10.0
11365	125.0
11366	0.0
11367	45.0
11368	95.0
11369	50.0
11370	70.0
11371	1235.0
11372	30.0
11373	180.0
11374	475.0
11375	40.0
11376	0.0
11377	30.0
11378	45.0
11379	105.0
11380	25.0
11381	25.0

```
11382                                445.0
11383                                 50.0
11384                                 65.0
11385                                105.0

       pc_Educational_Attain_POP_AssocDeg  num_Educational_Attain_POP_BacDeg  \
0                                    19.0                              140.0
1                                    19.0                              460.0
2                                     9.0                               75.0
3                                    21.0                               80.0
4                                     8.0                              275.0
5                                    12.0                              150.0
6                                     7.0                               50.0
7                                     4.0                              145.0
8                                    10.0                             1725.0
9                                    10.0                              305.0
10                                    4.0                              210.0
11                                    9.0                               65.0
12                                   13.0                              230.0
13                                    8.0                             1585.0
14                                   11.0                              460.0
15                                   12.0                              260.0
16                                   19.0                               75.0
17                                   10.0                              320.0
18                                   19.0                               60.0
19                                   14.0                              275.0
20                                   11.0                              125.0
21                                    7.0                              500.0
22                                   12.0                              590.0
23                                   11.0                              320.0
24                                    8.0                              275.0
25                                    7.0                              775.0
26                                   13.0                              865.0
27                                    4.0                               95.0
28                                   10.0                               25.0
29                                   11.0                             1940.0
...                                   ...                               ...
11356                                 5.0                              270.0
11357                                 7.0                              125.0
11358                                 6.0                              535.0
11359                                 7.0                               70.0
11360                                 1.0                               35.0
11361                                 7.0                               30.0
11362                                11.0                               15.0
11363                                 4.0                               30.0
11364                                 1.0                               50.0
11365                                14.0                              135.0
11366                                 0.0                                0.0
```

11367	20.0	50.0
11368	18.0	140.0
11369	8.0	45.0
11370	17.0	20.0
11371	11.0	3070.0
11372	1.0	1125.0
11373	9.0	475.0
11374	16.0	695.0
11375	19.0	55.0
11376	0.0	0.0
11377	19.0	45.0
11378	15.0	90.0
11379	6.0	510.0
11380	11.0	75.0
11381	9.0	70.0
11382	16.0	785.0
11383	22.0	35.0
11384	16.0	75.0
11385	16.0	165.0

	pc_Educational_Attain_POP_BacDeg	num_Educational_Attain_POP_GradProf	\
0	15.0	40.0	
1	15.0	250.0	
2	11.0	4.0	
3	38.0	25.0	
4	9.0	265.0	
5	11.0	40.0	
6	8.0	45.0	
7	19.0	30.0	
8	12.0	890.0	
9	21.0	100.0	
10	18.0	265.0	
11	13.0	25.0	
12	15.0	280.0	
13	14.0	455.0	
14	10.0	405.0	
15	17.0	200.0	
16	16.0	40.0	
17	11.0	430.0	
18	20.0	4.0	
19	15.0	115.0	
20	8.0	50.0	
21	25.0	490.0	
22	29.0	265.0	
23	29.0	170.0	
24	21.0	135.0	
25	15.0	305.0	
26	46.0	150.0	

27	27.0	20.0
28	10.0	10.0
29	16.0	1290.0
...	...	...
11356	10.0	20.0
11357	16.0	65.0
11358	36.0	210.0
11359	9.0	90.0
11360	16.0	55.0
11361	5.0	4.0
11362	11.0	0.0
11363	8.0	40.0
11364	5.0	75.0
11365	16.0	70.0
11366	0.0	10.0
11367	23.0	20.0
11368	26.0	40.0
11369	7.0	35.0
11370	5.0	4.0
11371	28.0	1490.0
11372	37.0	430.0
11373	24.0	225.0
11374	24.0	245.0
11375	26.0	20.0
11376	0.0	0.0
11377	29.0	0.0
11378	31.0	4.0
11379	30.0	555.0
11380	34.0	25.0
11381	25.0	4.0
11382	29.0	425.0
11383	15.0	20.0
11384	19.0	45.0
11385	26.0	50.0

	pc_Educational_Attain_POP_GradProf	PDP02.5_37est	\
0	4.0	855.0	
1	8.0	2740.0	
2	0.0	545.0	
3	11.0	205.0	
4	9.0	2410.0	
5	3.0	1155.0	
6	7.0	420.0	
7	4.0	680.0	
8	6.0	12175.0	
9	7.0	1270.0	
10	23.0	1055.0	
11	5.0	460.0	

12	18.0	1460.0
13	4.0	9475.0
14	8.0	3845.0
15	13.0	1375.0
16	8.0	410.0
17	15.0	2480.0
18	1.0	285.0
19	6.0	1285.0
20	3.0	1220.0
21	24.0	1890.0
22	13.0	1890.0
23	15.0	1070.0
24	10.0	1160.0
25	6.0	3885.0
26	8.0	1830.0
27	5.0	325.0
28	4.0	195.0
29	11.0	10385.0
...	...	...
11356	0.0	1355.0
11357	8.0	645.0
11358	14.0	1435.0
11359	12.0	650.0
11360	25.0	185.0
11361	0.0	480.0
11362	0.0	95.0
11363	10.0	320.0
11364	8.0	835.0
11365	8.0	775.0
11366	3.0	290.0
11367	9.0	210.0
11368	7.0	490.0
11369	6.0	525.0
11370	1.0	290.0
11371	13.0	10185.0
11372	14.0	2430.0
11373	11.0	1915.0
11374	8.0	2755.0
11375	9.0	190.0
11376	0.0	10.0
11377	0.0	145.0
11378	1.0	265.0
11379	32.0	1645.0
11380	11.0	190.0
11381	1.0	265.0
11382	16.0	2600.0
11383	9.0	190.0
11384	11.0	390.0

```
11385                                  8.0          580.0

      pct_Educational_Attain_POP_HS_Grad_higher PDP02.5_38est  \
0                                         94.0          180.0
1                                         92.0          715.0
2                                         81.0           80.0
3                                         97.0          105.0
4                                         83.0          540.0
5                                         91.0          190.0
6                                         73.0           95.0
7                                         90.0          175.0
8                                         89.0         2615.0
9                                         91.0          410.0
10                                        93.0          475.0
11                                        93.0           90.0
12                                        96.0          510.0
13                                        86.0         2040.0
14                                        83.0          865.0
15                                        91.0          455.0
16                                        90.0          115.0
17                                        86.0          750.0
18                                        98.0           65.0
19                                        74.0          385.0
20                                        85.0          170.0
21                                        95.0          990.0
22                                        94.0          855.0
23                                        97.0          490.0
24                                        92.0          410.0
25                                        76.0         1080.0
26                                        97.0         1015.0
27                                        94.0          110.0
28                                        83.0           30.0
29                                        90.0         3230.0
...                                        ...           ...
11356                                     50.0          290.0
11357                                     84.0          185.0
11358                                     98.0          745.0
11359                                     89.0          160.0
11360                                     86.0           90.0
11361                                     94.0           35.0
11362                                     70.0           15.0
11363                                     86.0           75.0
11364                                     91.0          125.0
11365                                     91.0          205.0
11366                                    100.0           10.0
11367                                     97.0           70.0
11368                                     93.0          175.0
11369                                     89.0           80.0
```

11370	72.0	25.0
11371	93.0	4565.0
11372	81.0	1555.0
11373	96.0	700.0
11374	95.0	940.0
11375	90.0	80.0
11376	22.0	0.0
11377	93.0	45.0
11378	93.0	95.0
11379	97.0	1060.0
11380	86.0	105.0
11381	96.0	80.0
11382	97.0	1210.0
11383	86.0	50.0
11384	98.0	120.0
11385	93.0	215.0

	pct_Educational_Attain_BS_Deg_higher
0	19.0
1	24.0
2	11.0
3	50.0
4	18.0
5	15.0
6	16.0
7	23.0
8	19.0
9	29.0
10	42.0
11	18.0
12	33.0
13	18.0
14	18.0
15	30.0
16	25.0
17	26.0
18	22.0
19	22.0
20	12.0
21	50.0
22	42.0
23	44.0
24	32.0
25	21.0
26	54.0
27	31.0
28	12.0
29	28.0

```
...                                    ...
11356                                 10.0
11357                                 24.0
11358                                 50.0
11359                                 22.0
11360                                 41.0
11361                                  6.0
11362                                 11.0
11363                                 20.0
11364                                 13.0
11365                                 24.0
11366                                  3.0
11367                                 32.0
11368                                 33.0
11369                                 13.0
11370                                  6.0
11371                                 41.0
11372                                 51.0
11373                                 35.0
11374                                 32.0
11375                                 38.0
11376                                  0.0
11377                                 29.0
11378                                 33.0
11379                                 62.0
11380                                 47.0
11381                                 29.0
11382                                 45.0
11383                                 22.0
11384                                 30.0
11385                                 34.0

[11386 rows x 40 columns]
```

```
In [13]: parent_social_econ_by_district_df_clean = parent_social_econ_by_district_df.dropna()
```

```
In [14]: parent_social_econ_by_district_states_df = parent_social_econ_by_district_df.groupby(
```

```
In [15]: parent_social_econ_by_district_df_clean.columns
```

```
Out[15]: Index(['GeoId_x', 'Geography_x', 'LEAID', 'Year_x', 'Iteration_x',
                'pct_Below PovLvL_All_Ages', 'pctmoe_Below PovLvL_All_Ages',
                'pct_Below PovLvL_Age_gte_18', 'pctmoe_Below PovLvL_Age_gte_18',
                'pct_Below PovLvL_Age_18_64', 'pctmoe_Below PovLvL_Age_18_64',
                'pct_Below PovLvL_Age_gte_65', 'pctmoe_Below PovLvL_Age_gte_65',
                'LEA_NAME', 'ST_NAME', 'LEA_CWIFTEST', 'LEA_CWIFTSE', 'GeoId_y',
                'Geography_y', 'Year_y', 'Iteration_y', 'num_Educational_Attain_POP',
                'num_Educational_Attain_POP_LT9th', 'pc_ Educational_Attain_POP_LT9th',
                'num_Educational_Attain_POP_9th-12th',
```

```
       'pc_Educational_Attain_POP_9th-12th',
       'num_Educational_Attain_POP_HS_GRAD',
       'pc_Educational_Attain_POP_HS_GRAD',
       'num_Educational_Attain_POP_SomeColl',
       'pc_Educational_Attain_POP_SomeColl',
       'num_Educational_Attain_POP_AssocDeg',
       'pc_Educational_Attain_POP_AssocDeg',
       'num_Educational_Attain_POP_BacDeg', 'pc_Educational_Attain_POP_BacDeg',
       'num_Educational_Attain_POP_GradProf',
       'pc_Educational_Attain_POP_GradProf', 'PDP02.5_37est',
       'pct_Educational_Attain_POP_HS_Grad_higher', 'PDP02.5_38est',
       'pct_Educational_Attain_BS_Deg_higher'],
      dtype='object')
```

```
In [16]: print (parent_social_econ_by_district_df_clean[['pct_Below PovLvL_All_Ages', 'pctmoe_
                'pct_Below PovLvL_Age_gte_18', 'pctmoe_Below PovLvL_Age_gte_18',
                'pct_Below PovLvL_Age_18_64', 'pctmoe_Below PovLvL_Age_18_64',
                'pct_Below PovLvL_Age_gte_65', 'pctmoe_Below PovLvL_Age_gte_65',
                'LEA_CWIFTEST', 'LEA_CWIFTSE',
                'num_Educational_Attain_POP_LT9th', 'pc_ Educational_Attain_POP_LT9th',
                'num_Educational_Attain_POP_9th-12th',
                'pc_Educational_Attain_POP_9th-12th',
                'num_Educational_Attain_POP_HS_GRAD',
                'pc_Educational_Attain_POP_HS_GRAD',
                'num_Educational_Attain_POP_SomeColl',
                'pc_Educational_Attain_POP_SomeColl',
                'num_Educational_Attain_POP_AssocDeg',
                'pc_Educational_Attain_POP_AssocDeg',
                'num_Educational_Attain_POP_BacDeg', 'pc_Educational_Attain_POP_BacDeg',
                'num_Educational_Attain_POP_GradProf',
                'pc_Educational_Attain_POP_GradProf', 'PDP02.5_37est',
                'pct_Educational_Attain_POP_HS_Grad_higher', 'PDP02.5_38est',
                'pct_Educational_Attain_BS_Deg_higher']].describe())
```

```
       pct_Below PovLvL_All_Ages  pctmoe_Below PovLvL_All_Ages  \
count                5920.000000                   5920.000000
mean                   12.172010                      4.677044
std                     8.719912                      3.066878
min                     0.000000                      0.200000
25%                     5.500000                      2.400000
50%                    10.300000                      4.000000
75%                    17.000000                      6.100000
max                    62.500000                     25.900000

       pct_Below PovLvL_Age_gte_18  pctmoe_Below PovLvL_Age_gte_18  \
count                  5920.000000                    5920.000000
mean                     12.168193                       4.675642
std                       8.718201                       3.066471
```

```
min                      0.000000                      0.200000
25%                      5.500000                      2.400000
50%                     10.300000                      4.000000
75%                     17.000000                      6.100000
max                     62.500000                     25.900000

       pct_Below PovLvL_Age_18_64  pctmoe_Below PovLvL_Age_18_64  \
count                 5920.000000                    5920.000000
mean                    12.185270                       4.697061
std                      8.745468                       3.095060
min                      0.000000                       0.200000
25%                      5.500000                       2.400000
50%                     10.300000                       4.000000
75%                     16.925000                       6.200000
max                     63.600000                      26.000000

       pct_Below PovLvL_Age_gte_65  pctmoe_Below PovLvL_Age_gte_65  \
count                 5920.000000                    5920.000000
mean                    9.897382                      67.957973
std                    25.047680                      27.840809
min                     0.000000                       0.900000
25%                     0.000000                      46.200000
50%                     0.000000                      68.700000
75%                     0.000000                     100.000000
max                   100.000000                     100.000000

       LEA_CWIFTEST  LEA_CWIFTSE                 ...                    \
count   5920.000000  5920.000000                 ...
mean       0.909723     0.024822                 ...
std        0.116968     0.014627                 ...
min        0.667000     0.003000                 ...
25%        0.823000     0.012000                 ...
50%        0.888000     0.024000                 ...
75%        0.980000     0.035000                 ...
max        1.424000     0.089000                 ...

       num_Educational_Attain_POP_AssocDeg  \
count                          5920.000000
mean                            704.923142
std                            2077.756762
min                               0.000000
25%                             120.000000
50%                             290.000000
75%                             676.250000
max                           98245.000000

       pc_Educational_Attain_POP_AssocDeg  num_Educational_Attain_POP_BacDeg  \
count                          5920.000000                        5920.000000
```

mean	10.488851	1675.171115
std	4.918035	5333.390163
min	0.000000	0.000000
25%	7.000000	165.000000
50%	10.000000	490.000000
75%	13.000000	1480.000000
max	38.000000	235730.000000

	pc_Educational_Attain_POP_BacDeg	num_Educational_Attain_POP_GradProf	\
count	5920.000000	5920.000000	
mean	19.474324	1089.613007	
std	9.966001	3906.071336	
min	0.000000	0.000000	
25%	12.000000	75.000000	
50%	18.000000	255.000000	
75%	26.000000	900.000000	
max	60.000000	180210.000000	

	pc_Educational_Attain_POP_GradProf	PDP02.5_37est	\
count	5920.000000	5.920000e+03	
mean	11.653041	6.679603e+03	
std	10.301973	2.088970e+04	
min	0.000000	2.000000e+01	
25%	5.000000	1.035000e+03	
50%	8.000000	2.575000e+03	
75%	15.000000	6.116250e+03	
max	68.000000	1.016160e+06	

	pct_Educational_Attain_POP_HS_Grad_higher	PDP02.5_38est	\
count	5920.000000	5920.000000	
mean	89.778041	2764.778378	
std	9.006337	9160.017904	
min	18.000000	0.000000	
25%	87.000000	245.000000	
50%	92.000000	762.500000	
75%	96.000000	2450.000000	
max	100.000000	415940.000000	

	pct_Educational_Attain_BS_Deg_higher
count	5920.000000
mean	31.565372
std	18.777103
min	0.000000
25%	18.000000
50%	27.000000
75%	41.000000
max	97.000000

```
[8 rows x 28 columns]
```

```
In [17]: df = parent_social_econ_by_district_states_df

         # reset index  only once
         df.reset_index(level=0, inplace=True)
         df['ST_NAME'] =df['ST_NAME'].str.upper()
         df2 =math_states_2015
         df2.reset_index(level=0, inplace=True)
         #merge test results and parent data
         df3 =df.merge(df2, left_on='ST_NAME', right_on='STNAM')
```

```
In [18]: df3
```

Out[18]:

	ST_NAME	LEAID_x	Iteration_x	\
0	ALABAMA	1.016377e+05	202.0	
1	ALASKA	2.003973e+05	202.0	
2	ARIZONA	4.049697e+05	202.0	
3	ARKANSAS	5.068456e+05	202.0	
4	CALIFORNIA	6.211498e+05	202.0	
5	COLORADO	8.044265e+05	202.0	
6	CONNECTICUT	9.026891e+05	202.0	
7	DELAWARE	1.000764e+06	202.0	
8	DISTRICT OF COLUMBIA	1.100030e+06	202.0	
9	FLORIDA	1.201020e+06	202.0	
10	GEORGIA	1.302836e+06	202.0	
11	HAWAII	1.500030e+06	202.0	
12	IDAHO	1.601712e+06	202.0	
13	ILLINOIS	1.721564e+06	202.0	
14	INDIANA	1.806528e+06	202.0	
15	IOWA	1.916565e+06	202.0	
16	KANSAS	2.007427e+06	202.0	
17	KENTUCKY	2.102871e+06	202.0	
18	LOUISIANA	2.201077e+06	202.0	
19	MARYLAND	2.400375e+06	202.0	
20	MASSACHUSETTS	2.507280e+06	202.0	
21	MICHIGAN	2.619355e+06	202.0	
22	MINNESOTA	2.718913e+06	202.0	
23	MISSISSIPPI	2.802553e+06	202.0	
24	MISSOURI	2.918444e+06	202.0	
25	MONTANA	3.013825e+06	202.0	
26	NEBRASKA	3.137500e+06	202.0	
27	NEW HAMPSHIRE	3.304832e+06	202.0	
28	NEW JERSEY	3.409452e+06	202.0	
29	NEW MEXICO	3.501317e+06	202.0	
30	NEW YORK	3.616626e+06	202.0	
31	NORTH CAROLINA	3.702710e+06	202.0	

32	NORTH DAKOTA	3.808912e+06	202.0
33	OHIO	3.904984e+06	202.0
34	OKLAHOMA	4.017859e+06	202.0
35	OREGON	4.106814e+06	202.0
36	PENNSYLVANIA	4.214613e+06	202.0
37	RHODE ISLAND	4.400607e+06	202.0
38	SOUTH CAROLINA	4.502354e+06	202.0
39	SOUTH DAKOTA	4.636835e+06	202.0
40	TENNESSEE	4.702153e+06	202.0
41	TEXAS	4.826378e+06	202.0
42	UTAH	4.900604e+06	202.0
43	VIRGINIA	5.102091e+06	202.0
44	WASHINGTON	5.305095e+06	202.0
45	WEST VIRGINIA	5.400840e+06	202.0
46	WISCONSIN	5.508451e+06	202.0
47	WYOMING	5.603443e+06	202.0

	pct_Below PovLvL_All_Ages	pctmoe_Below PovLvL_All_Ages	\
0	18.400000	5.970370	
1	14.681395	5.065116	
2	20.117021	6.129078	
3	17.702727	8.444091	
4	13.941816	5.924072	
5	10.395312	5.747656	
6	5.324841	3.580255	
7	11.600000	3.387500	
8	16.400000	1.000000	
9	16.598507	3.782090	
10	19.677586	5.881034	
11	7.700000	0.500000	
12	12.445652	6.471739	
13	10.571411	6.122822	
14	11.027526	4.963763	
15	8.027660	4.907903	
16	9.932830	6.162264	
17	20.523125	6.856875	
18	19.904348	4.808696	
19	9.029167	1.983333	
20	5.531522	3.839855	
21	12.799409	5.266732	
22	8.032121	4.026970	
23	23.103759	7.600752	
24	13.890758	7.568483	
25	12.244828	9.247701	
26	8.549315	5.937900	
27	4.950427	4.763248	
28	6.822600	4.663400	
29	22.335294	7.364706	

30	9.539360	4.871200
31	17.236752	4.464957
32	7.926891	6.085714
33	11.260267	5.256427
34	14.955756	7.078781
35	12.743939	6.638636
36	10.471630	4.255734
37	8.332353	3.479412
38	19.381250	5.736250
39	10.167424	5.855303
40	17.120438	5.870803
41	13.959647	6.735598
42	9.979487	3.546154
43	12.931818	4.840152
44	11.066197	5.548826
45	18.138182	5.552727
46	8.425604	4.263527
47	9.258537	5.558537

	pct_Below PovLvL_Age_gte_18	pctmoe_Below PovLvL_Age_gte_18	\
0	18.383704	5.968148	
1	14.688372	5.065116	
2	20.105674	6.134752	
3	17.690455	8.431818	
4	13.939615	5.923796	
5	10.395312	5.747656	
6	5.324204	3.579618	
7	11.600000	3.387500	
8	16.400000	1.000000	
9	16.598507	3.783582	
10	19.668391	5.878736	
11	7.700000	0.500000	
12	12.447826	6.472826	
13	10.566380	6.121227	
14	11.024042	4.963763	
15	8.025836	4.908511	
16	9.924151	6.162642	
17	20.518750	6.857500	
18	19.886957	4.801449	
19	9.029167	1.979167	
20	5.528261	3.839855	
21	12.797441	5.266339	
22	8.031515	4.027273	
23	23.107519	7.600752	
24	13.884123	7.564929	
25	12.234483	9.247701	
26	8.552511	5.939726	
27	4.951282	4.764103	

28	6.821200	4.663400
29	22.329412	7.370588
30	9.537920	4.871200
31	17.237607	4.465812
32	7.939496	6.088235
33	11.257262	5.256260
34	14.944244	7.072235
35	12.740152	6.637121
36	10.471227	4.255533
37	8.332353	3.479412
38	19.381250	5.738750
39	10.154545	5.853030
40	17.121898	5.871533
41	13.958560	6.736957
42	9.974359	3.546154
43	12.918939	4.828030
44	11.064789	5.547418
45	18.140000	5.549091
46	8.425604	4.263285
47	9.258537	5.558537

	pct_Below PovLvL_Age_18_64	pctmoe_Below PovLvL_Age_18_64	\
0	18.431111	5.986667	
1	14.734884	5.006977	
2	20.125532	6.158865	
3	17.725909	8.459091	
4	13.954746	5.941403	
5	10.441406	5.782813	
6	5.328662	3.584713	
7	11.650000	3.406250	
8	16.400000	1.000000	
9	16.583582	3.788060	
10	19.674713	5.887931	
11	7.700000	0.500000	
12	12.468478	6.485870	
13	10.580613	6.134969	
14	11.015331	4.953310	
15	8.030091	4.912158	
16	9.932453	6.172453	
17	20.505625	6.864375	
18	19.900000	4.808696	
19	9.020833	1.995833	
20	5.539130	3.852174	
21	12.803543	5.276575	
22	8.023636	4.051818	
23	23.129323	7.617293	
24	13.877725	7.563270	
25	12.271264	9.287931	

26	8.564384		5.951598
27	4.972650		4.787179
28	6.824400		4.667800
29	22.331373		7.382353
30	9.546880		4.878400
31	17.268376		4.485470
32	7.883193		6.074790
33	11.260768		5.256427
34	14.965011		7.095260
35	12.735606		6.655303
36	10.484708		4.263581
37	8.294118		3.488235
38	19.398750		5.750000
39	10.170455		5.896970
40	17.161314		5.890511
41	13.959647		6.750408
42	9.982051		3.548718
43	12.908333		4.834091
44	11.104225		5.567136
45	18.158182		5.563636
46	8.414010		4.262077
47	9.256098		5.570732

	pct_Below PovLvL_Age_gte_65	...	\
0	6.555422	...	
1	11.418182	...	
2	16.908738	...	
3	15.794444	...	
4	9.727851	...	
5	4.914286	...	
6	3.781319	...	
7	5.015385	...	
8	18.000000	...	
9	16.378689	...	
10	17.775833	...	
11	12.600000	...	
12	8.094872	...	
13	8.067302	...	
14	9.690728	...	
15	6.127273	...	
16	5.676842	...	
17	17.685714	...	
18	15.209091	...	
19	7.247826	...	
20	4.278882	...	
21	11.264286	...	
22	7.294382	...	
23	14.720000	...	

24	10.724551	...
25	17.896364	...
26	5.861905	...
27	1.234091	...
28	6.718254	...
29	20.267742	...
30	6.249577	...
31	11.260638	...
32	11.493103	...
33	8.305051	...
34	11.721759	...
35	10.619718	...
36	6.744771	...
37	11.554545	...
38	14.000000	...
39	13.080000	...
40	11.234286	...
41	14.653385	...
42	12.462963	...
43	15.488764	...
44	6.650394	...
45	9.507143	...
46	9.967172	...
47	5.126667	...

	ECD_MTH04NUMVALID_1415	ECD_MTH04PCTPROF_1415	HOM_MTH04NUMVALID_1415	\
0	409.804878	35.487805	35.073171	
1	555.400000	31.400000	45.400000	
2	567.226415	27.603774	25.433962	
3	287.100000	17.100000	13.366667	
4	953.925581	21.116279	71.437209	
5	935.238095	14.619048	55.714286	
6	873.600000	13.200000	22.000000	
7	449.142857	38.285714	17.000000	
8	973.000000	28.000000	40.666667	
9	2249.181818	50.781818	72.254545	
10	1031.559322	30.847458	34.610169	
11	8081.000000	34.000000	312.000000	
12	420.928571	33.928571	25.142857	
13	878.060000	15.320000	38.760000	
14	433.108108	53.702703	28.135135	
15	515.545455	64.727273	17.090909	
16	619.071429	23.928571	27.857143	
17	343.780000	36.480000	28.860000	
18	713.081081	60.000000	32.513514	
19	1839.875000	17.375000	65.000000	
20	448.965517	32.931034	32.758621	
21	244.416667	28.652778	13.277778	

22	488.636364	47.727273	22.227273
23	372.625000	22.062500	37.625000
24	379.666667	33.527778	32.500000
25	310.500000	33.750000	14.500000
26	688.500000	64.125000	22.375000
27	203.000000	25.285714	17.142857
28	644.529412	19.235294	19.352941
29	481.461538	15.307692	23.769231
30	1083.147541	27.016393	114.491803
31	914.041667	32.958333	33.875000
32	175.750000	25.250000	12.750000
33	604.285714	49.750000	28.857143
34	389.272727	65.909091	38.045455
35	440.340909	34.613636	23.863636
36	847.625000	26.208333	32.708333
37	856.000000	12.500000	10.500000
38	769.100000	39.366667	27.200000
39	782.000000	32.000000	53.500000
40	1389.333333	42.733333	30.533333
41	1350.348624	61.339450	31.366972
42	783.166667	38.000000	57.833333
43	844.900000	73.433333	32.633333
44	422.811594	39.536232	24.913043
45	482.388889	28.111111	21.833333
46	458.733333	29.400000	27.266667
47	331.000000	38.000000	14.500000

	HOM_MTH04PCTPROF_1415	ALL_MTH08NUMVALID_1415	ALL_MTH08PCTPROF_1415	\
0	27.975610	720.463415	24.682927	
1	19.400000	1356.000000	32.000000	
2	22.169811	1012.320755	26.207547	
3	21.966667	325.133333	16.166667	
4	19.613953	1299.786047	29.013953	
5	13.761905	1731.666667	26.333333	
6	13.000000	1057.000000	13.400000	
7	19.285714	720.428571	36.714286	
8	20.666667	621.000000	23.000000	
9	35.727273	3569.618182	58.727273	
10	22.118644	1578.576271	34.661017	
11	20.000000	12165.000000	39.000000	
12	22.214286	722.500000	31.142857	
13	19.620000	1125.220000	25.760000	
14	39.405405	699.837838	49.891892	
15	29.454545	800.818182	67.363636	
16	18.428571	1075.142857	19.000000	
17	27.500000	539.960000	42.860000	
18	40.837838	965.918919	55.081081	
19	12.250000	3572.437500	34.437500	

20	24.413793	735.448276	47.827586
21	23.652778	426.555556	27.722222
22	27.272727	975.272727	52.272727
23	18.625000	462.250000	30.625000
24	22.972222	450.333333	22.750000
25	21.250000	673.250000	36.500000
26	37.750000	1024.250000	65.875000
27	20.000000	370.428571	33.714286
28	19.588235	789.235294	23.411765
29	15.923077	591.153846	14.384615
30	21.491803	1344.032787	30.377049
31	25.187500	1850.229167	31.854167
32	17.500000	553.500000	31.500000
33	32.535714	585.107143	40.857143
34	42.681818	548.363636	59.818182
35	23.909091	668.318182	41.113636
36	20.625000	953.625000	20.208333
37	25.000000	929.000000	24.000000
38	31.366667	1188.666667	29.933333
39	23.500000	1296.000000	43.000000
40	34.200000	2176.466667	54.000000
41	44.412844	1713.128440	67.715596
42	27.333333	1707.555556	40.277778
43	45.333333	1444.166667	69.100000
44	26.666667	822.710145	44.130435
45	24.000000	597.944444	21.333333
46	20.800000	1090.800000	31.266667
47	25.000000	818.500000	43.000000

	ECD_MTH08NUMVALID_1415	ECD_MTH08PCTPROF_1415	HOM_MTH08NUMVALID_1415	\
0	381.829268	15.414634	30.000000	
1	488.600000	18.400000	40.600000	
2	519.660377	21.037736	21.698113	
3	223.866667	13.833333	11.100000	
4	858.116279	21.241860	55.855814	
5	766.809524	15.428571	42.714286	
6	761.600000	9.000000	17.200000	
7	366.714286	25.285714	14.428571	
8	565.666667	22.666667	23.666667	
9	2149.290909	50.127273	58.000000	
10	993.322034	27.559322	28.135593	
11	6152.000000	28.000000	165.000000	
12	345.071429	23.500000	19.928571	
13	800.380000	17.420000	35.540000	
14	402.702703	39.972973	20.513514	
15	438.000000	56.454545	14.181818	
16	549.571429	10.357143	23.500000	
17	324.020000	33.980000	26.300000	

18	649.000000	48.594595	27.216216
19	1537.937500	17.625000	46.812500
20	389.551724	38.000000	26.758621
21	220.430556	19.222222	11.611111
22	443.045455	34.909091	18.363636
23	351.937500	23.500000	27.937500
24	296.611111	18.472222	26.027778
25	263.750000	23.000000	12.250000
26	602.625000	55.750000	18.125000
27	153.857143	22.714286	12.285714
28	540.117647	18.823529	13.823529
29	439.153846	11.153846	18.615385
30	971.590164	24.770492	81.360656
31	897.208333	20.187500	31.000000
32	140.000000	15.250000	13.750000
33	502.535714	37.750000	21.428571
34	355.000000	52.227273	31.772727
35	373.500000	32.045455	21.181818
36	693.958333	13.208333	20.750000
37	725.500000	14.000000	7.500000
38	743.866667	20.733333	22.200000
39	570.000000	25.500000	38.500000
40	1266.733333	43.333333	27.666667
41	1089.669725	62.825688	25.284404
42	682.777778	26.611111	50.500000
43	610.533333	60.433333	25.500000
44	376.304348	31.478261	19.724638
45	388.944444	15.944444	17.222222
46	408.533333	17.400000	19.533333
47	287.500000	27.500000	9.000000

	HOM_MTH08PCTPROF_1415
0	18.731707
1	11.600000
2	19.735849
3	22.666667
4	20.060465
5	14.238095
6	19.000000
7	18.571429
8	18.333333
9	37.763636
10	20.644068
11	22.000000
12	19.857143
13	20.840000
14	25.324324
15	30.909091

```
16              19.142857
17              24.300000
18              36.594595
19              15.000000
20              22.413793
21              22.847222
22              20.318182
23              20.875000
24              21.138889
25              21.250000
26              22.375000
27              22.142857
28              21.411765
29              18.846154
30              18.967213
31              19.645833
32              21.250000
33              26.285714
34              35.454545
35              21.681818
36              19.458333
37              25.000000
38              19.533333
39              19.500000
40              24.933333
41              39.064220
42              19.500000
43              35.233333
44              23.884058
45              20.222222
46              19.533333
47              25.000000

[48 rows x 48 columns]
```

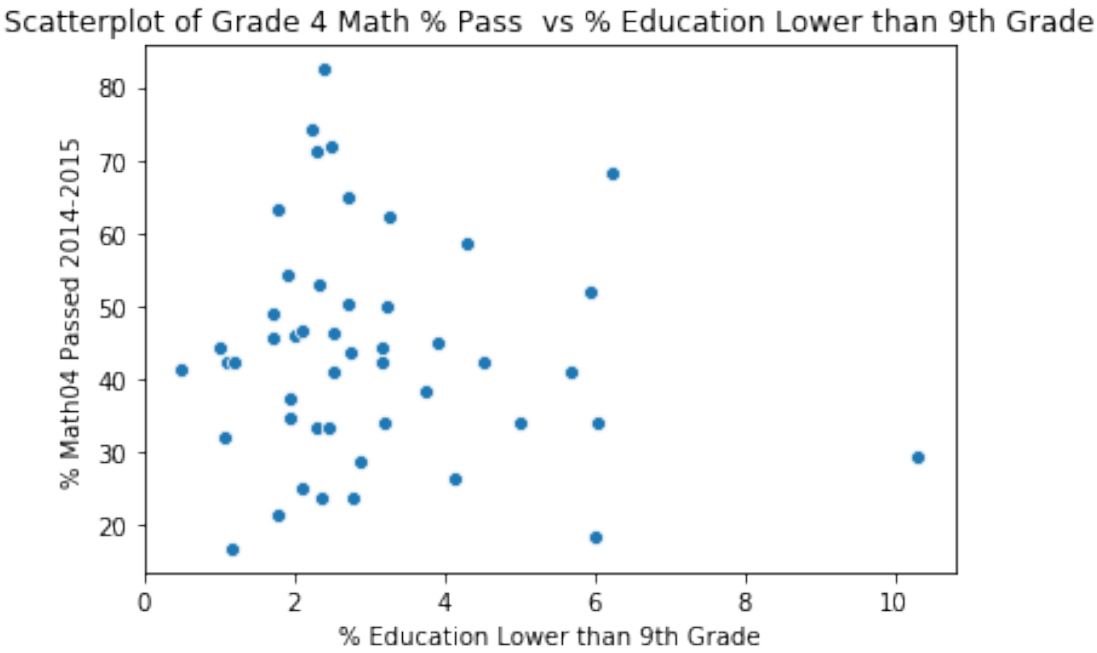
```
In [19]: df3.columns
```

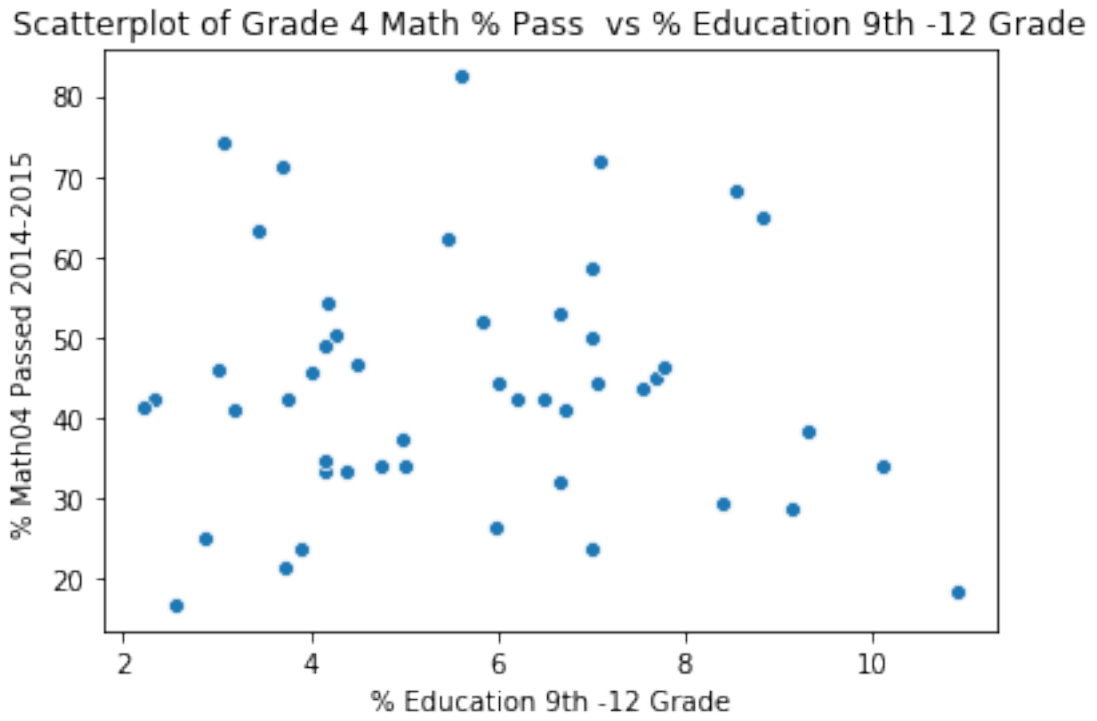
```
Out[19]: Index(['ST_NAME', 'LEAID_x', 'Iteration_x', 'pct_Below PovLvL_All_Ages',
                'pctmoe_Below PovLvL_All_Ages', 'pct_Below PovLvL_Age_gte_18',
                'pctmoe_Below PovLvL_Age_gte_18', 'pct_Below PovLvL_Age_18_64',
                'pctmoe_Below PovLvL_Age_18_64', 'pct_Below PovLvL_Age_gte_65',
                'pctmoe_Below PovLvL_Age_gte_65', 'LEA_CWIFTEST', 'LEA_CWIFTSE',
                'Iteration_y', 'num_Educational_Attain_POP',
                'num_Educational_Attain_POP_LT9th', 'pc_ Educational_Attain_POP_LT9th',
                'num_Educational_Attain_POP_9th-12th',
                'pc_Educational_Attain_POP_9th-12th',
                'num_Educational_Attain_POP_HS_GRAD',
                'pc_Educational_Attain_POP_HS_GRAD',
```

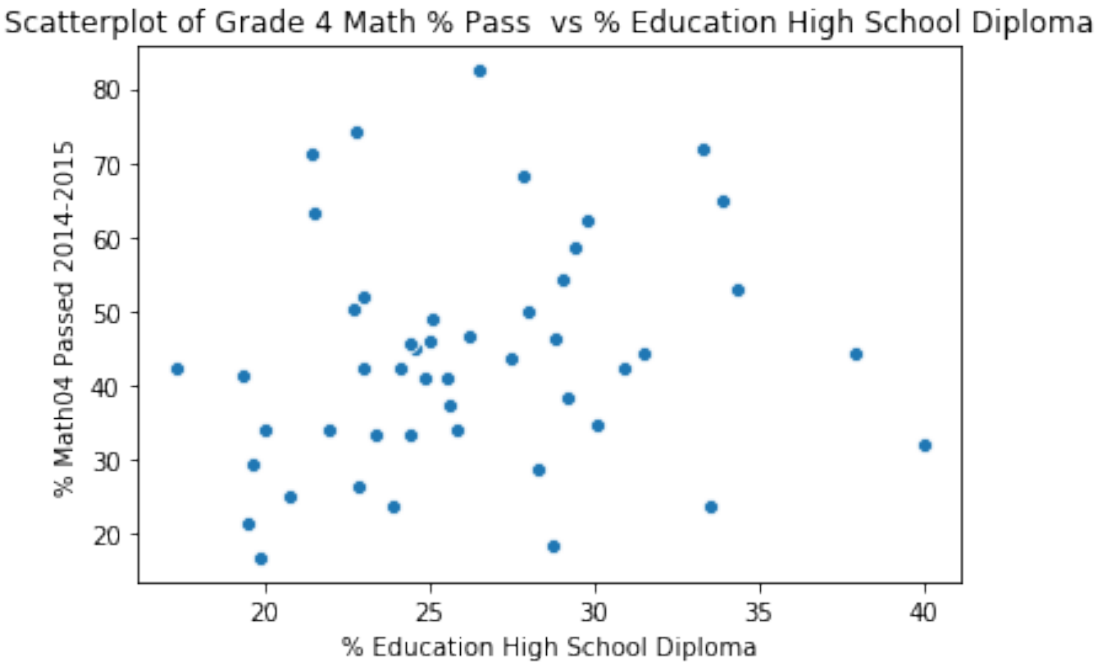
```
       'num_Educational_Attain_POP_SomeColl',
       'pc_Educational_Attain_POP_SomeColl',
       'num_Educational_Attain_POP_AssocDeg',
       'pc_Educational_Attain_POP_AssocDeg',
       'num_Educational_Attain_POP_BacDeg', 'pc_Educational_Attain_POP_BacDeg',
       'num_Educational_Attain_POP_GradProf',
       'pc_Educational_Attain_POP_GradProf', 'PDP02.5_37est',
       'pct_Educational_Attain_POP_HS_Grad_higher', 'PDP02.5_38est',
       'pct_Educational_Attain_BS_Deg_higher', 'STNAM', 'FIPST', 'LEAID_y',
       'ALL_MTH04NUMVALID_1415', 'ALL_MTH04PCTPROF_1415',
       'ECD_MTH04NUMVALID_1415', 'ECD_MTH04PCTPROF_1415',
       'HOM_MTH04NUMVALID_1415', 'HOM_MTH04PCTPROF_1415',
       'ALL_MTH08NUMVALID_1415', 'ALL_MTH08PCTPROF_1415',
       'ECD_MTH08NUMVALID_1415', 'ECD_MTH08PCTPROF_1415',
       'HOM_MTH08NUMVALID_1415', 'HOM_MTH08PCTPROF_1415'],
      dtype='object')
```

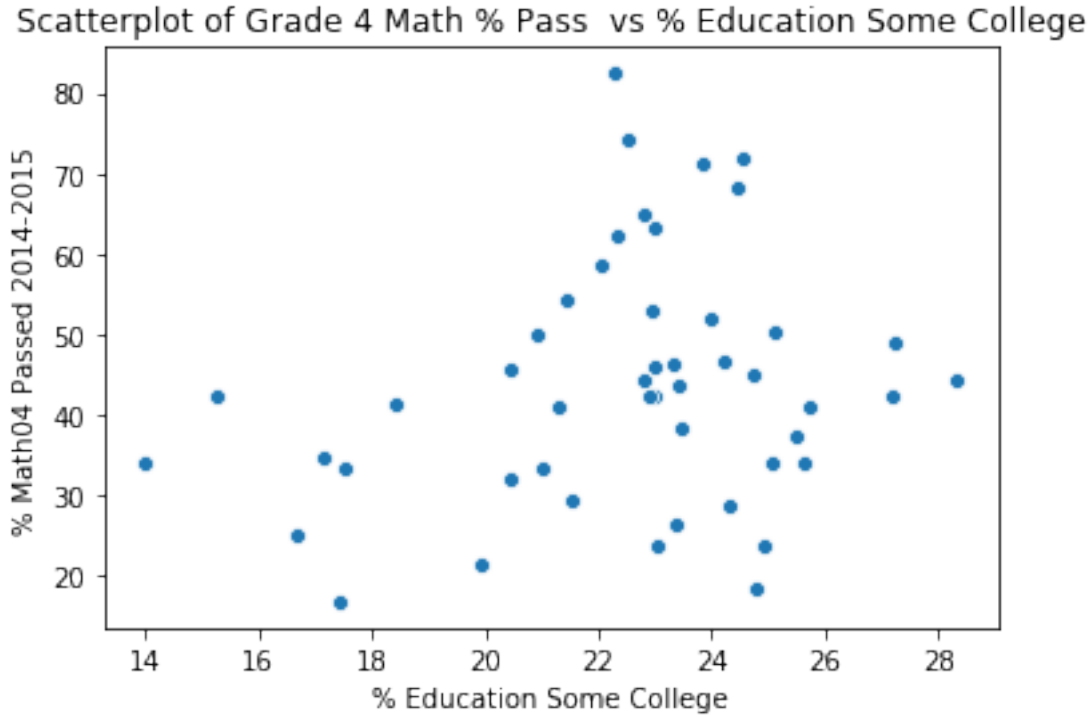
In [20]:
```
Parent_social_econ_df_sy201415=df3
Education_dict={'pc_ Educational_Attain_POP_LT9th': "% Education Lower than 9th Grade'
       'pc_Educational_Attain_POP_9th-12th' : "% Education 9th -12 Grade",
       'pc_Educational_Attain_POP_HS_GRAD':"% Education High School Diploma",
       'pc_Educational_Attain_POP_SomeColl' : "% Education Some College",
       'pc_Educational_Attain_POP_AssocDeg': " % Education Associate Degree",
       'pc_Educational_Attain_POP_BacDeg' : " % Education Bachelor Degree",
       'pc_Educational_Attain_POP_GradProf' : "% Education Graduate/Professional Degr
       'pct_Educational_Attain_POP_HS_Grad_higher' : "% Education HS Diploma and Highe
       'pct_Educational_Attain_BS_Deg_higher' : "% Education BS Degree and Higher"}
```

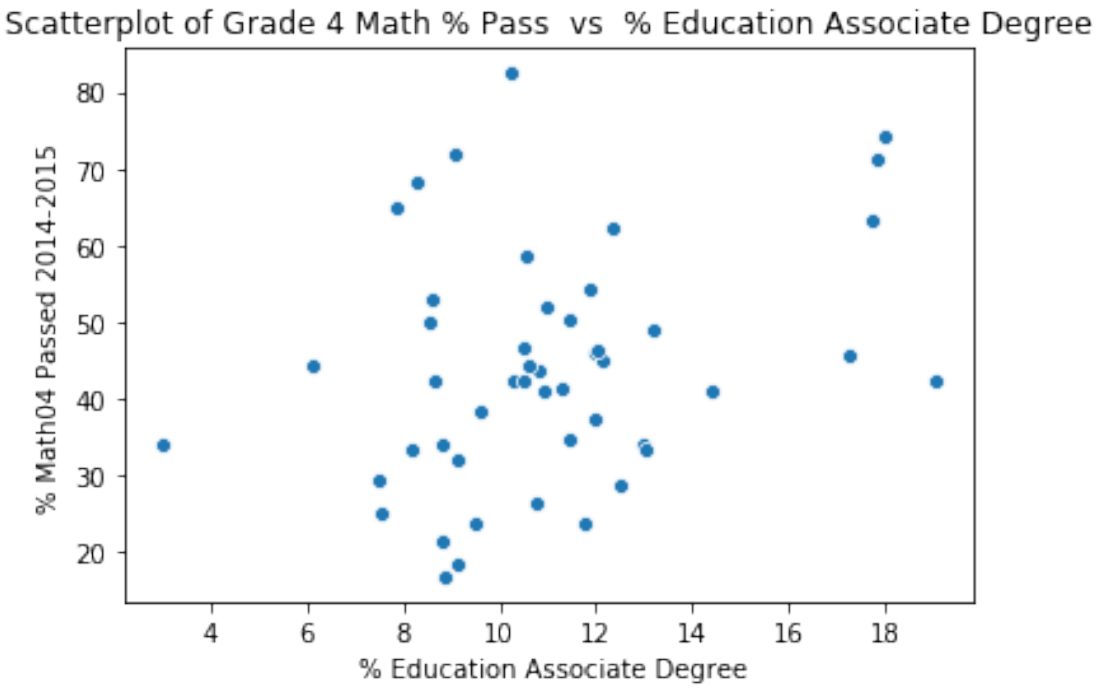
In [21]:
```
for key, value in Education_dict.items():
    sns.scatterplot(x= key, y = 'ALL_MTH04PCTPROF_1415', data = Parent_social_econ_df
    plt.ylabel("% Math04 Passed 2014-2015")
    xlabel = "{0}".format(value)
    plt.xlabel(xlabel)
    title = "Scatterplot of Grade 4 Math % Pass  vs {0}".format(value)
    plt.title(title)
    plt.show()
```

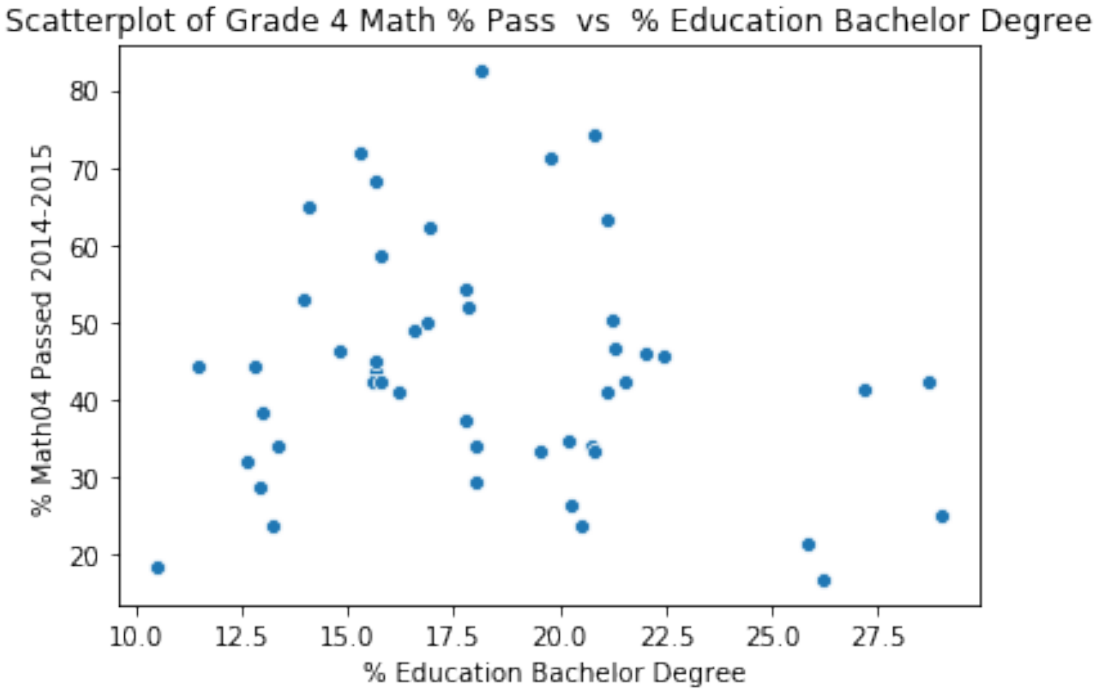

Scatterplot of Grade 4 Math % Pass vs % Education Lower than 9th Grade
% Math04 Passed 2014-2015
% Education Lower than 9th Grade
0
2
4
6
8
10
20
30
40
50
60
70
80


Scatterplot of Grade 4 Math % Pass vs % Education 9th -12 Grade
% Math04 Passed 2014-2015
% Education 9th -12 Grade
2
4
6
8
10
20
30
40
50
60
70
80

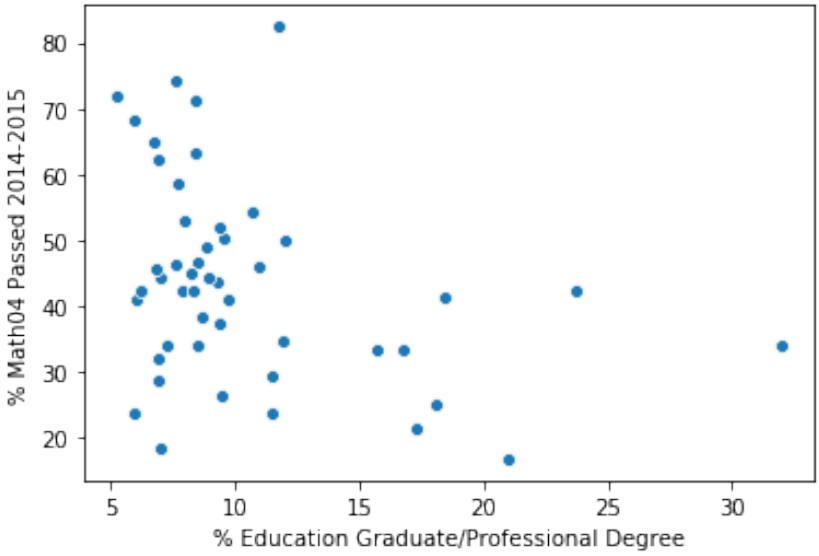

Scatterplot of Grade 4 Math % Pass vs % Education High School Diploma
% Math04 Passed 2014-2015
% Education High School Diploma
80
70
60
50
40
30
20
20
25
30
35
40


Scatterplot of Grade 4 Math % Pass vs % Education Some College
% Math04 Passed 2014-2015
% Education Some College
80
70
60
50
40
30
20
14
16
18
20
22
24
26
28

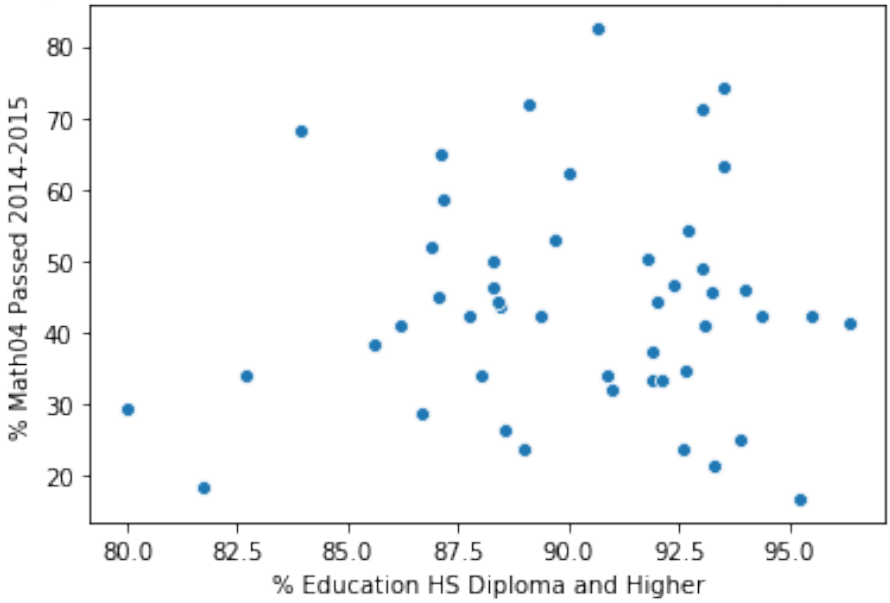

Scatterplot of Grade 4 Math % Pass vs % Education Associate Degree
% Math04 Passed 2014-2015
% Education Associate Degree
80
70
60
50
40
30
20
4
6
8
10
12
14
16
18

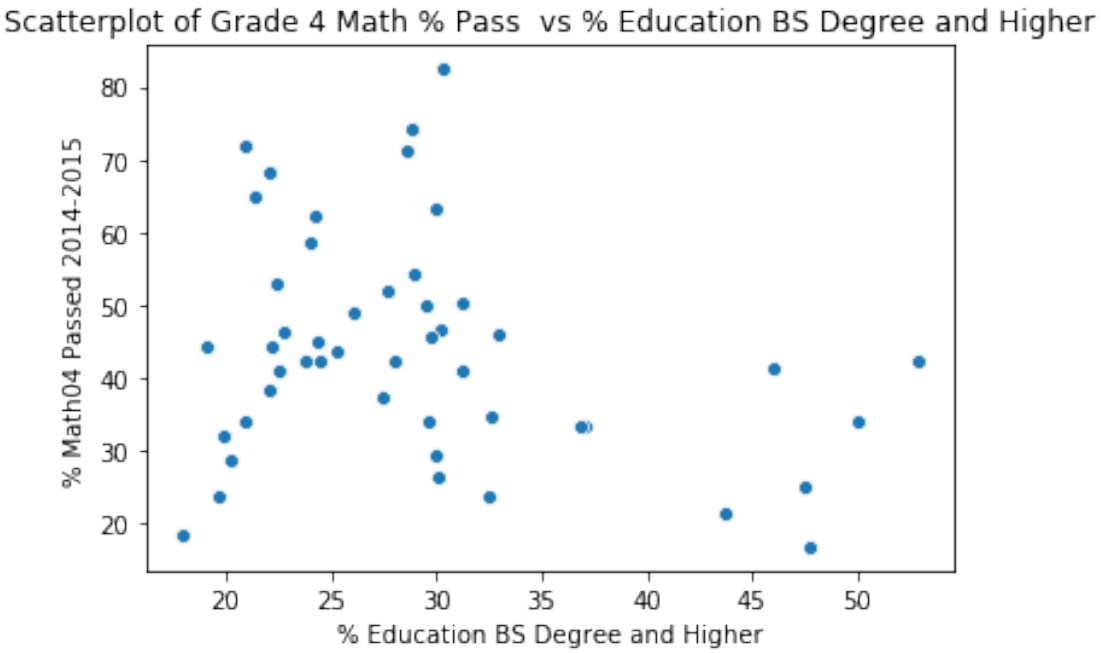

Scatterplot of Grade 4 Math % Pass vs % Education Bachelor Degree
% Math04 Passed 2014-2015
% Education Bachelor Degree
80
70
60
50
40
30
20
10.0
12.5
15.0
17.5
20.0
22.5
25.0
27.5

Scatterplot of Grade 4 Math % Pass vs % Education Graduate/Professional Degree



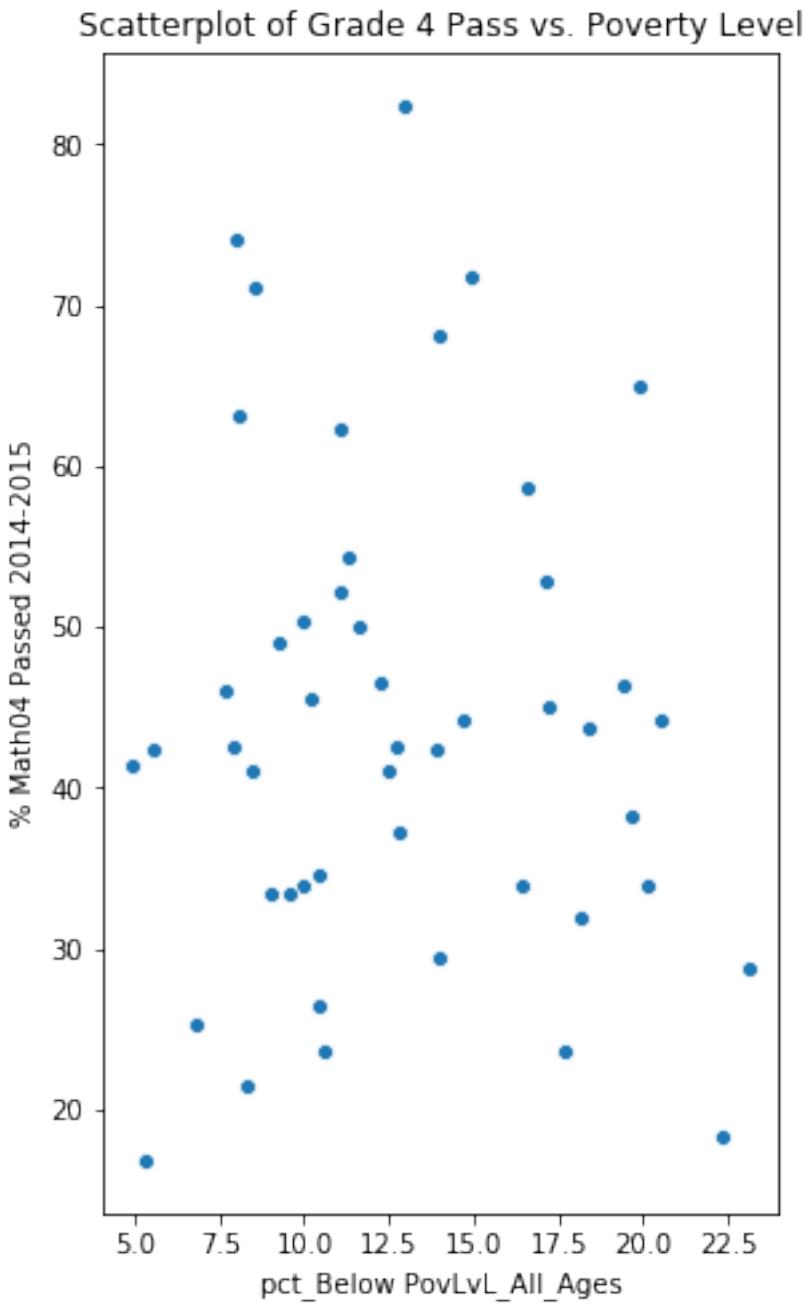
Scatterplot of Grade 4 Math % Pass vs % Education HS Diploma and Higher

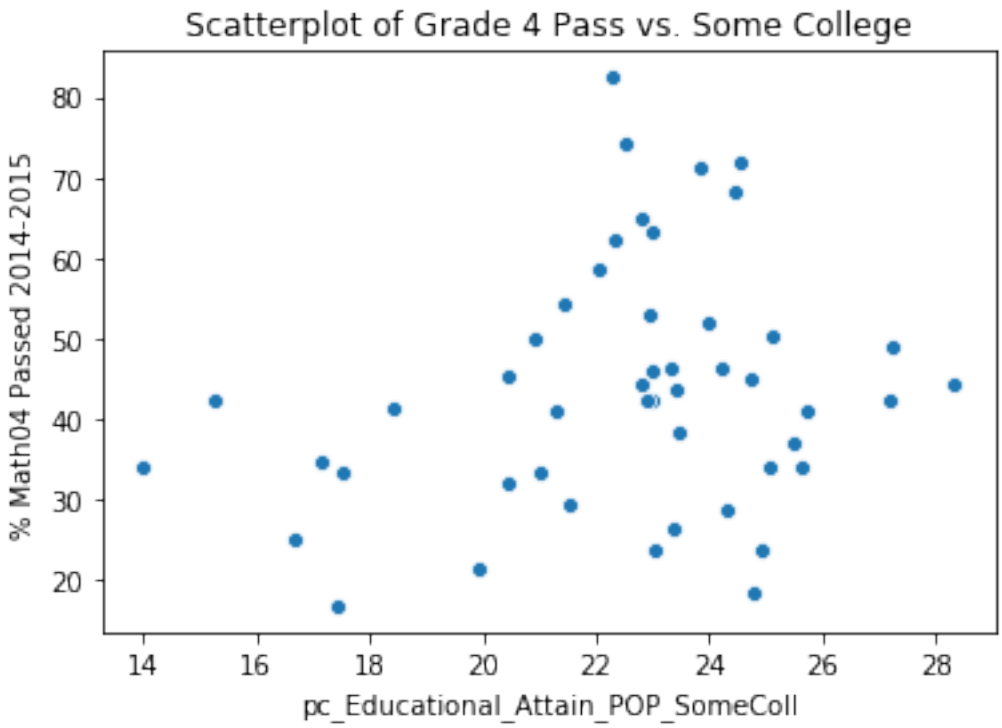




In [22]:
```
plt.figure(figsize=(10,8))
plt.subplot(121)


sns.scatterplot(x='pct_Below PovLvL_All_Ages',y = "ALL_MTH04PCTPROF_1415", data = df3
plt.ylabel("% Math04 Passed 2014-2015")
plt.title("Scatterplot of Grade 4 Pass vs. Poverty Level")
plt.show()
sns.scatterplot(x='pc_Educational_Attain_POP_SomeColl',y = 'ALL_MTH04PCTPROF_1415', da
plt.ylabel("% Math04 Passed 2014-2015")
plt.title("Scatterplot of Grade 4 Pass vs. Some College")
#plt.subplot(122)
#sns.boxplot(x='bedrooms',y= 'price', data = listings)
#plt.ylabel("price")
#plt.title("Boxplot of Price vs. Bedrooms")
plt.show()
```


Scatterplot of Grade 4 Pass vs. Poverty Level
% Math04 Passed 2014-2015
pct_Below PovLvL_All_Ages
80
70
60
50
40
30
20
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5




```
In [23]: # Create a correlation matrix
         corr    = Parent_social_econ_df_sy201415.corr()
         pos_cor = corr['ALL_MTH04PCTPROF_1415'] >0
         neg_cor = corr['ALL_MTH04PCTPROF_1415'] <0

In [24]: corr['ALL_MTH04PCTPROF_1415'][pos_cor].sort_values(ascending = False)

Out[24]: ALL_MTH04PCTPROF_1415                        1.000000
         ECD_MTH04PCTPROF_1415                       0.975267
         ALL_MTH08PCTPROF_1415                       0.917427
         ECD_MTH08PCTPROF_1415                       0.881965
         HOM_MTH04PCTPROF_1415                       0.833516
         HOM_MTH08PCTPROF_1415                       0.659254
         pc_Educational_Attain_POP_AssocDeg          0.306394
         LEA_CWIFTSE                                 0.298984
         LEAID_y                                     0.254859
         LEAID_x                                     0.254492
         FIPST                                       0.253367
         pc_Educational_Attain_POP_SomeColl          0.224595
         pc_Educational_Attain_POP_HS_GRAD           0.175194
         ALL_MTH04NUMVALID_1415                      0.068674
         ALL_MTH08NUMVALID_1415                      0.063445
         pct_Educational_Attain_POP_HS_Grad_higher   0.053652
         pctmoe_Below PovLvL_Age_gte_65              0.048049
```

```
num_Educational_Attain_POP_AssocDeg          0.039606
ECD_MTH08NUMVALID_1415                       0.036268
pct_Below PovLvL_Age_gte_65                  0.035946
ECD_MTH04NUMVALID_1415                       0.033346
num_Educational_Attain_POP_SomeColl          0.022137
num_Educational_Attain_POP_HS_GRAD           0.017668
num_Educational_Attain_POP_BacDeg            0.016080
PDP02.5_37est                                0.010645
num_Educational_Attain_POP                   0.008948
HOM_MTH08NUMVALID_1415                       0.002763
num_Educational_Attain_POP_9th-12th          0.001999
Name: ALL_MTH04PCTPROF_1415, dtype: float64
```

```
In [25]: corr['ALL_MTH04PCTPROF_1415'][neg_cor].sort_values()
```

```
Out[25]: pc_Educational_Attain_POP_GradProf     -0.332161
         LEA_CWIFTEST                           -0.294053
         pct_Educational_Attain_BS_Deg_higher   -0.269330
         pc_Educational_Attain_POP_BacDeg       -0.131489
         pc_ Educational_Attain_POP_LT9th       -0.081097
         num_Educational_Attain_POP_GradProf    -0.049244
         pct_Below PovLvL_Age_18_64             -0.048956
         pct_Below PovLvL_Age_gte_18            -0.048787
         pct_Below PovLvL_All_Ages              -0.048594
         num_Educational_Attain_POP_LT9th       -0.040269
         pc_Educational_Attain_POP_9th-12th     -0.025696
         pctmoe_Below PovLvL_Age_18_64          -0.021884
         pctmoe_Below PovLvL_Age_gte_18         -0.021240
         pctmoe_Below PovLvL_All_Ages           -0.020835
         PDP02.5_38est                          -0.010970
         HOM_MTH04NUMVALID_1415                 -0.006626
         Name: ALL_MTH04PCTPROF_1415, dtype: float64
```

1.3 Summary for Math on School Year 2014- 2015

There is slightly less than moderate correlation between students who are proficient at Math in Grade 4 and parents who have attained at least some college education.

```
In [26]: Parent_social_econ_df_sy201415['pc_Educational_Attain_POP_GradProf'].sort_values()
```

```
Out[26]: 34     5.227991
         41     5.934783
         3      5.986364
         12     6.021739
         32     6.210084
         18     6.768116
         39     6.833333
         45     6.872727
         14     6.885017
```

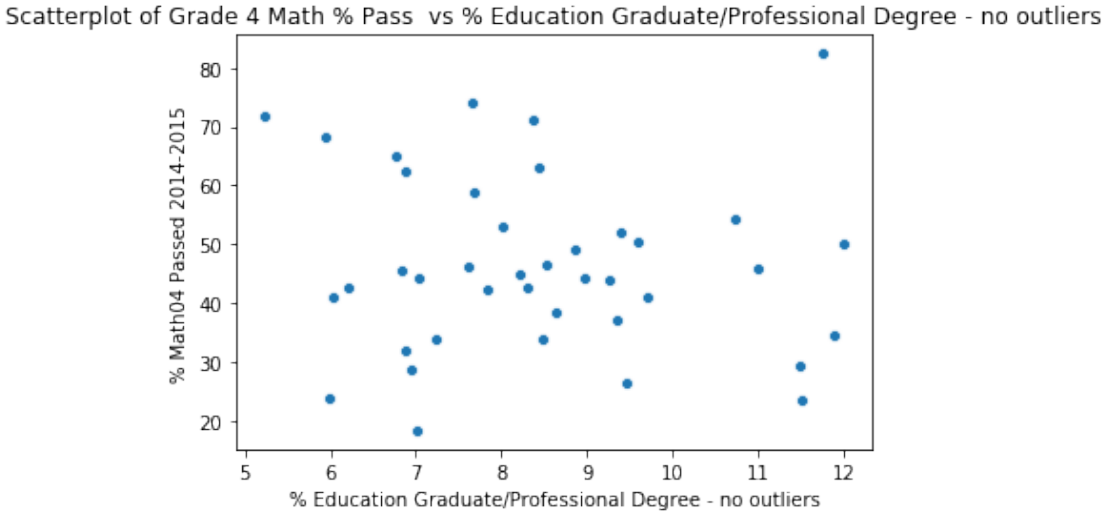
```
23     6.947368
29     7.019608
1      7.023256
2      7.226950
38     7.612500
15     7.647416
9      7.671642
24     7.838863
40     8.007299
31     8.213675
35     8.295455
26     8.378995
22     8.436364
16     8.483019
25     8.534483
10     8.637931
47     8.853659
17     8.975000
0      9.251852
21     9.340551
44     9.403756
5      9.453125
42     9.589744
46     9.700483
33    10.731219
11    11.000000
4     11.482806
13    11.516564
43    11.750000
36    11.893360
7     12.000000
19    15.708333
30    16.804800
37    17.264706
28    18.074000
27    18.452991
6     20.961783
20    23.699275
8     32.000000
Name: pc_Educational_Attain_POP_GradProf, dtype: float64
```

In [27]:
```
#Remove outliers (States  with more than 15% Education Graduate/Professional Degree)

rslt_df = Parent_social_econ_df_sy201415[Parent_social_econ_df_sy201415['pc_Educationa
```

In [28]:
```
sns.scatterplot(x= 'pc_Educational_Attain_POP_GradProf', y = 'ALL_MTH04PCTPROF_1415',
plt.ylabel("% Math04 Passed 2014-2015")
xlabel = "% Education Graduate/Professional Degree - no outliers"
```

```
plt.xlabel(xlabel)
title = "Scatterplot of Grade 4 Math % Pass  vs {0}".format(xlabel)
plt.title(title)
plt.show()
```



In [29]:
```
# Create a correlation matrix
corr1    = rslt_df.corr()
pos_cor1 = corr1['ALL_MTH04PCTPROF_1415'] >0
neg_cor1 = corr1['ALL_MTH04PCTPROF_1415'] <0
corr1['ALL_MTH04PCTPROF_1415'][neg_cor1].sort_values
```

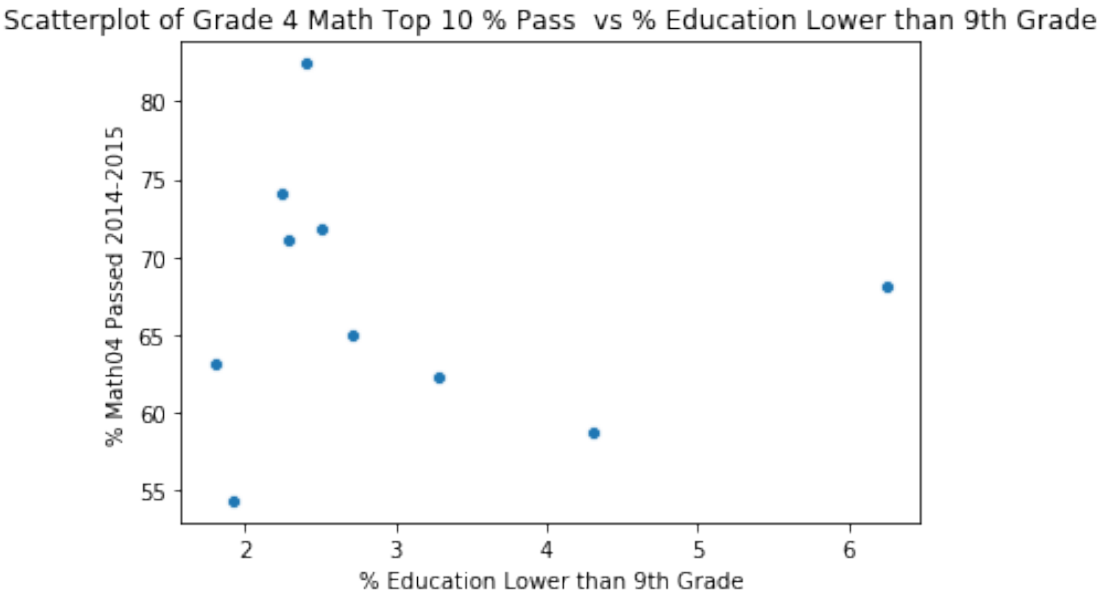
Out[29]:
```
<bound method Series.sort_values of pct_Below PovLvL_All_Ages           -0.287710
pctmoe_Below PovLvL_All_Ages         -0.275197
pct_Below PovLvL_Age_gte_18          -0.287944
pctmoe_Below PovLvL_Age_gte_18       -0.275790
pct_Below PovLvL_Age_18_64           -0.288599
pctmoe_Below PovLvL_Age_18_64        -0.276271
pct_Below PovLvL_Age_gte_65          -0.090023
pctmoe_Below PovLvL_Age_gte_65       -0.005369
LEA_CWIFTEST                         -0.067762
pc_ Educational_Attain_POP_LT9th     -0.208882
pc_Educational_Attain_POP_9th-12th   -0.259797
pc_Educational_Attain_POP_HS_GRAD    -0.019550
pc_Educational_Attain_POP_SomeColl   -0.069801
pc_Educational_Attain_POP_GradProf   -0.077186
HOM_MTH04NUMVALID_1415               -0.022233
HOM_MTH08NUMVALID_1415               -0.027820
Name: ALL_MTH04PCTPROF_1415, dtype: float64>
```

1.3.1 Top 10 and bottom 10 4th grade

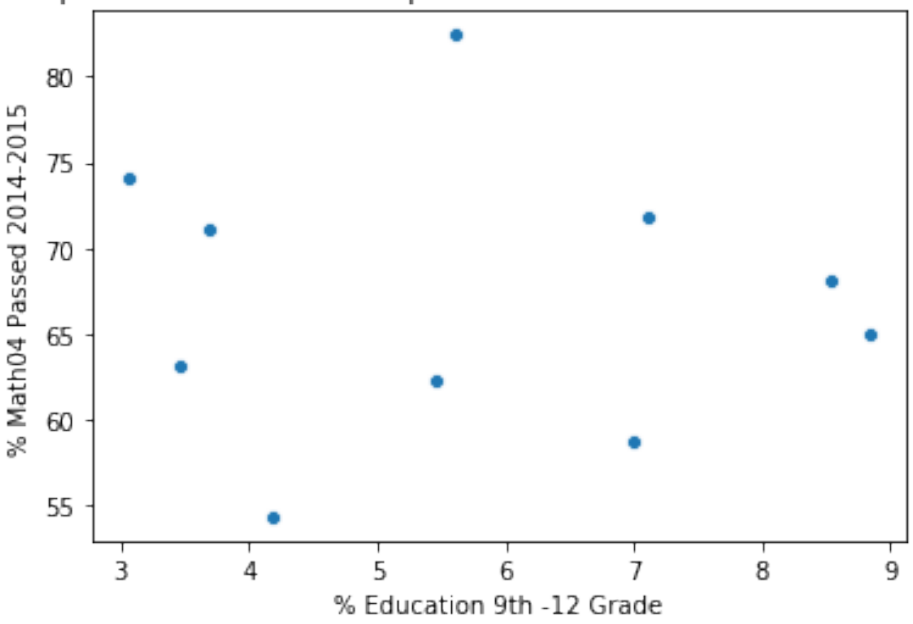
```
In [30]: df_top10_4th = Parent_social_econ_df_sy201415.nlargest(10, 'ALL_MTH04PCTPROF_1415')

In [31]: df_bottom10_4th = Parent_social_econ_df_sy201415.nsmallest(10, 'ALL_MTH04PCTPROF_1415

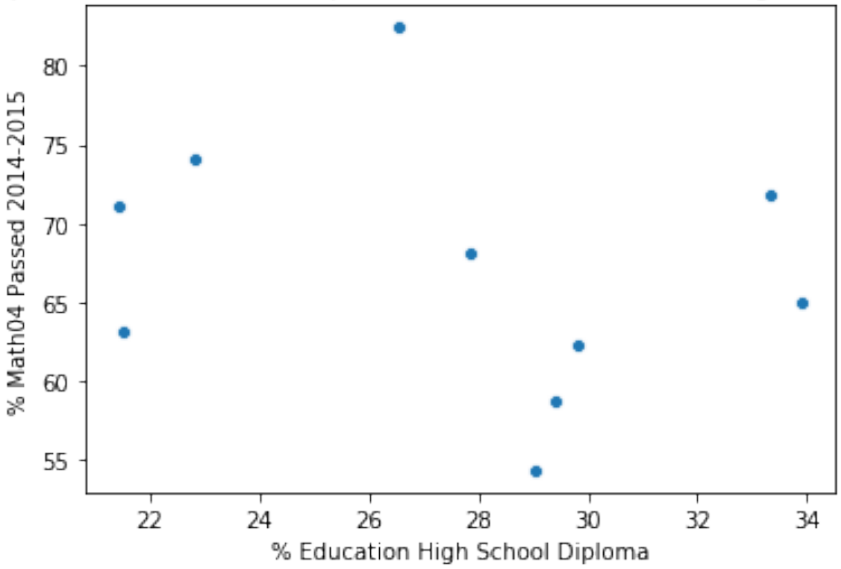
In [32]: for key, value in Education_dict.items():
             sns.scatterplot(x= key, y = 'ALL_MTH04PCTPROF_1415', data = df_top10_4th, legend=
             plt.ylabel("% Math04 Passed 2014-2015")
             xlabel = "{0}".format(value)
             plt.xlabel(xlabel)
             title = "Scatterplot of Grade 4 Math Top 10 % Pass  vs {0}".format(value)
             plt.title(title)
             plt.show()
```



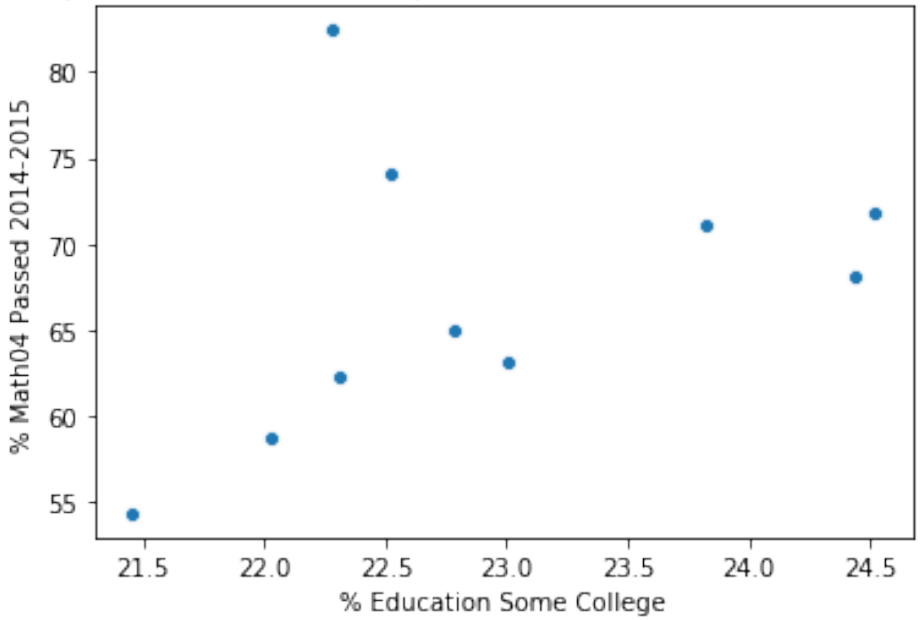
Scatterplot of Grade 4 Math Top 10 % Pass vs % Education 9th -12 Grade



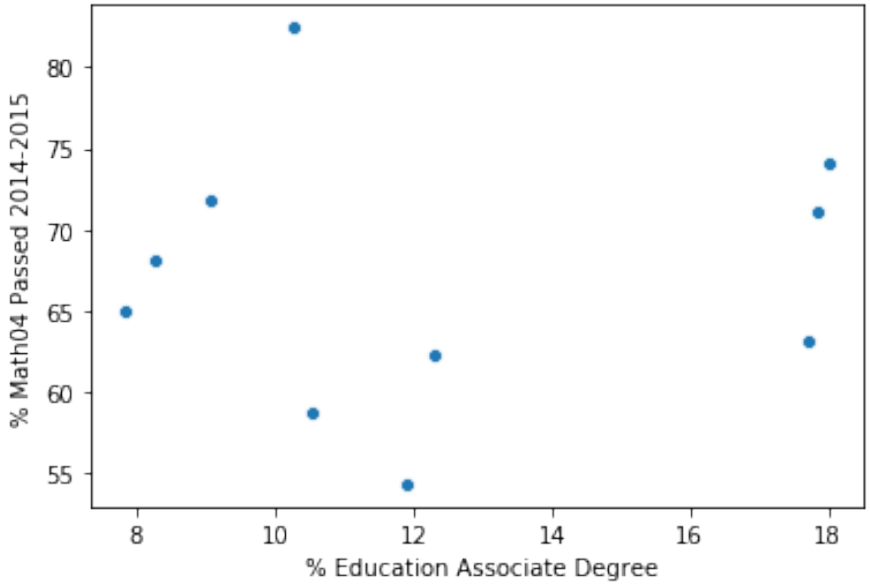
Scatterplot of Grade 4 Math Top 10 % Pass vs % Education High School Diploma



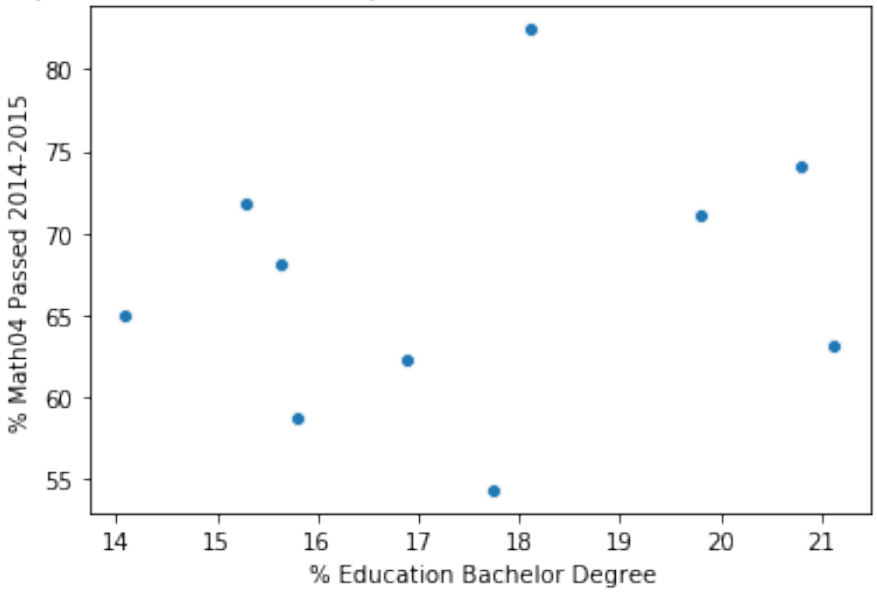
Scatterplot of Grade 4 Math Top 10 % Pass vs % Education Some College



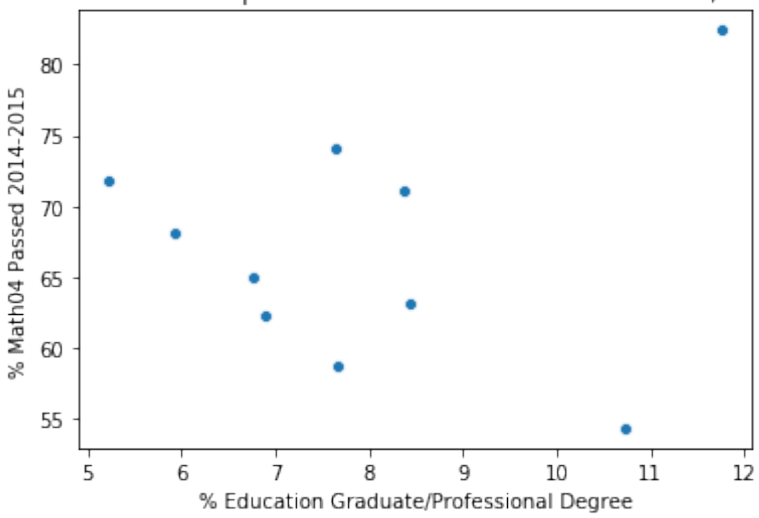
Scatterplot of Grade 4 Math Top 10 % Pass vs % Education Associate Degree

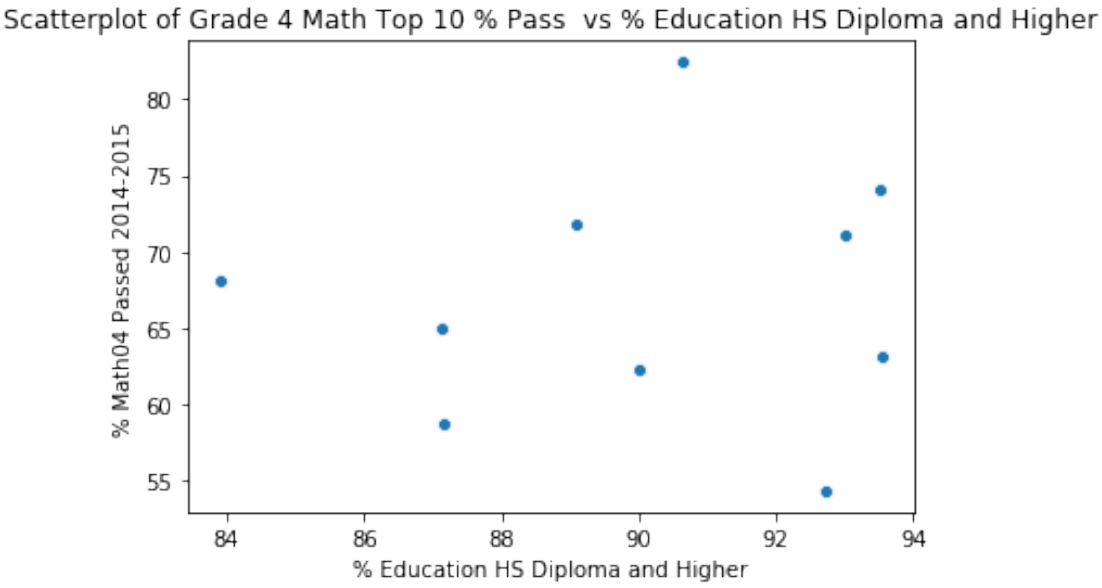


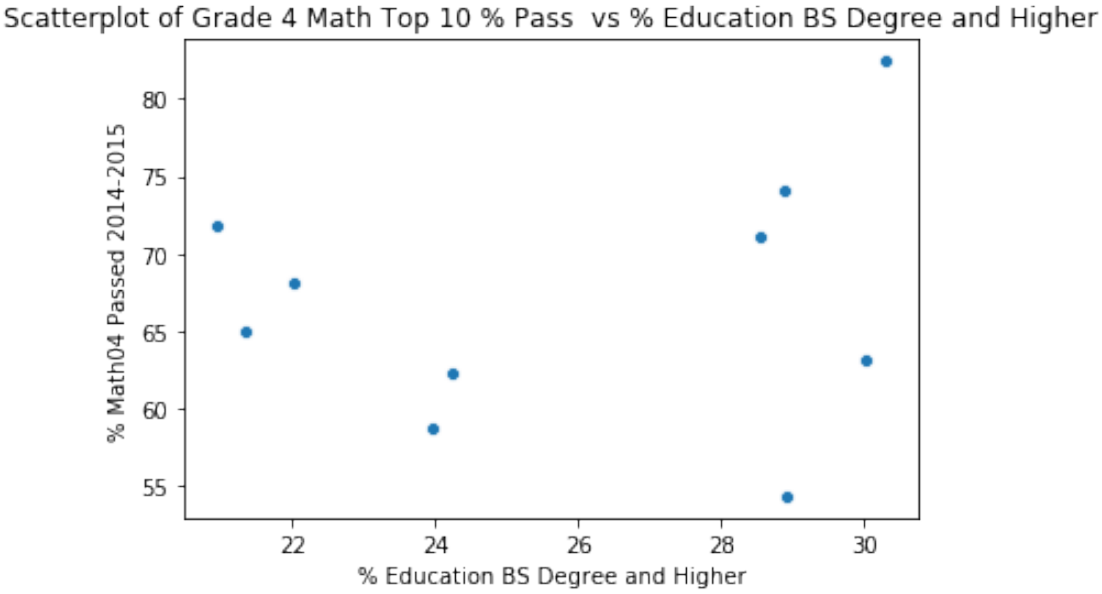
Scatterplot of Grade 4 Math Top 10 % Pass vs % Education Bachelor Degree



Scatterplot of Grade 4 Math Top 10 % Pass vs % Education Graduate/Professional Degree

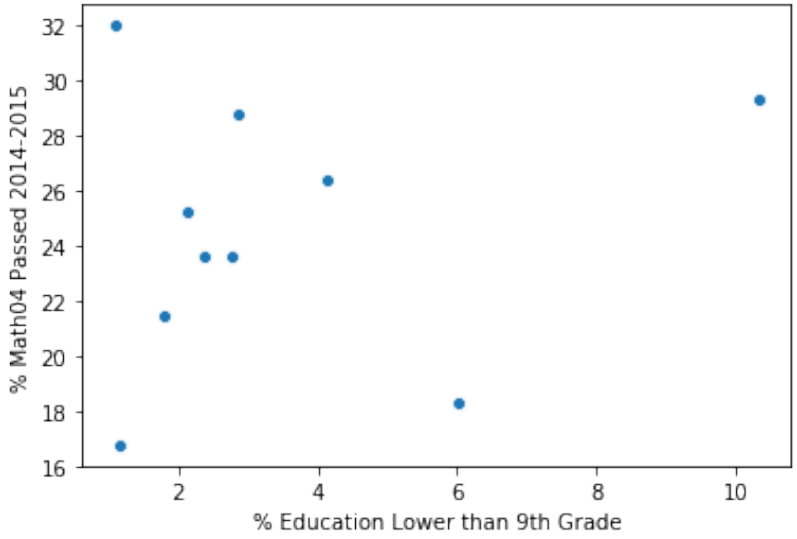




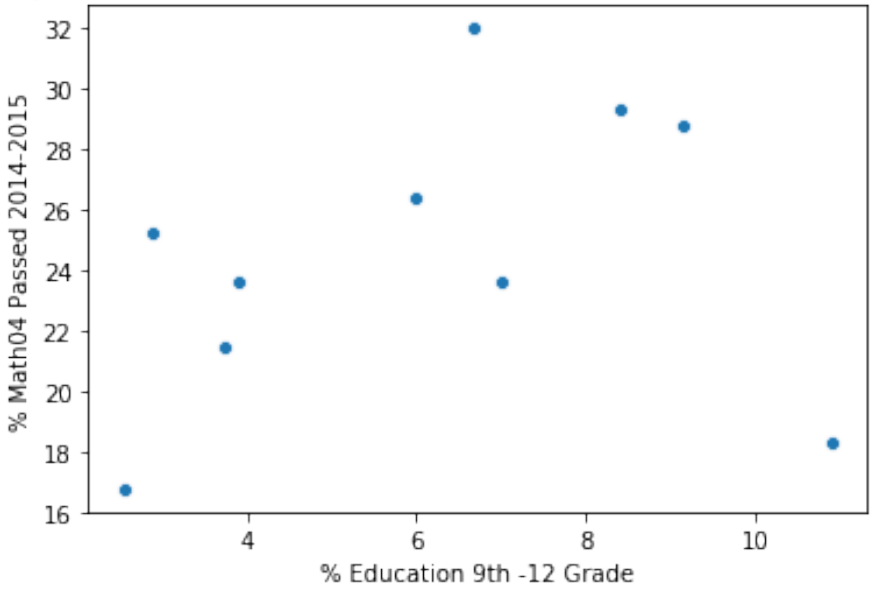



```
In [33]: for key, value in Education_dict.items():
             sns.scatterplot(x= key, y = 'ALL_MTH04PCTPROF_1415', data = df_bottom10_4th, leger
             plt.ylabel("% Math04 Passed 2014-2015")
             xlabel = "{0}".format(value)
             plt.xlabel(xlabel)
             title = "Scatterplot of Grade 4 Math Bottom 10 % Pass  vs {0}".format(value)
             plt.title(title)
             plt.show()
```

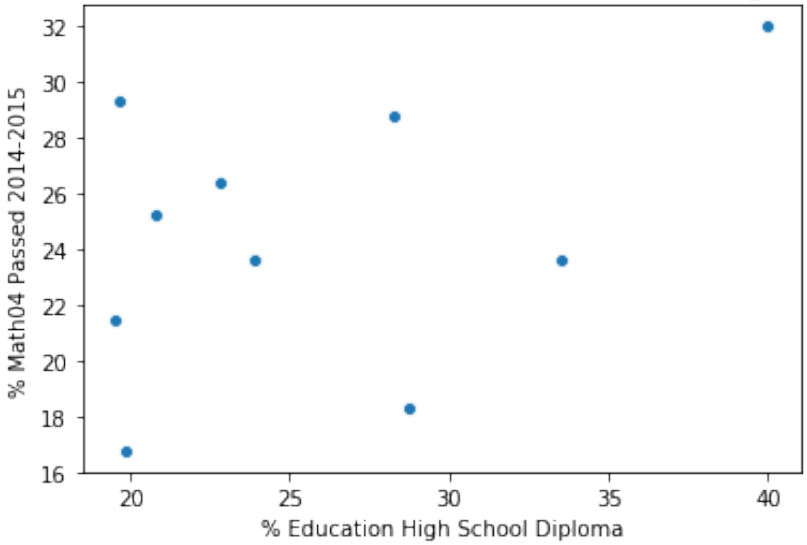
Scatterplot of Grade 4 Math Bottom 10 % Pass vs % Education Lower than 9th Grade



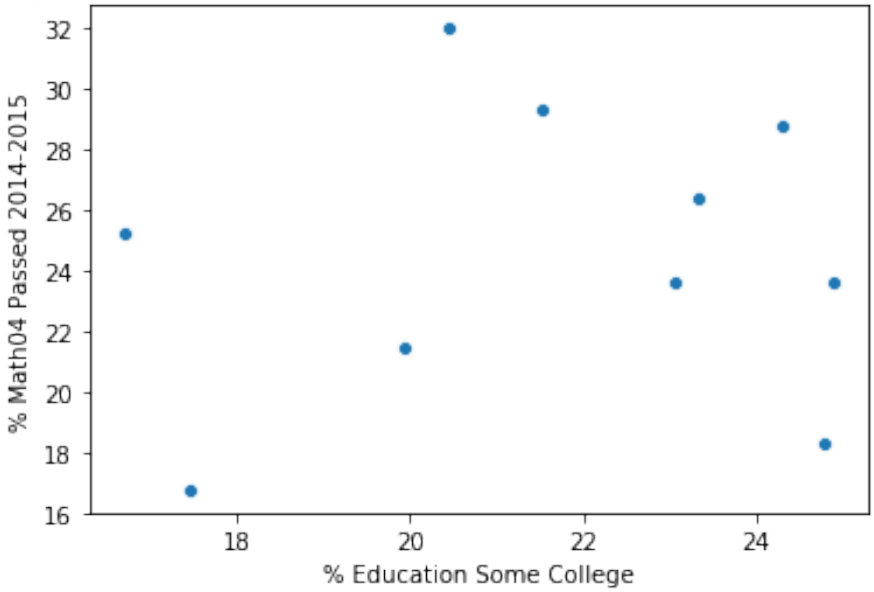
Scatterplot of Grade 4 Math Bottom 10 % Pass vs % Education 9th -12 Grade



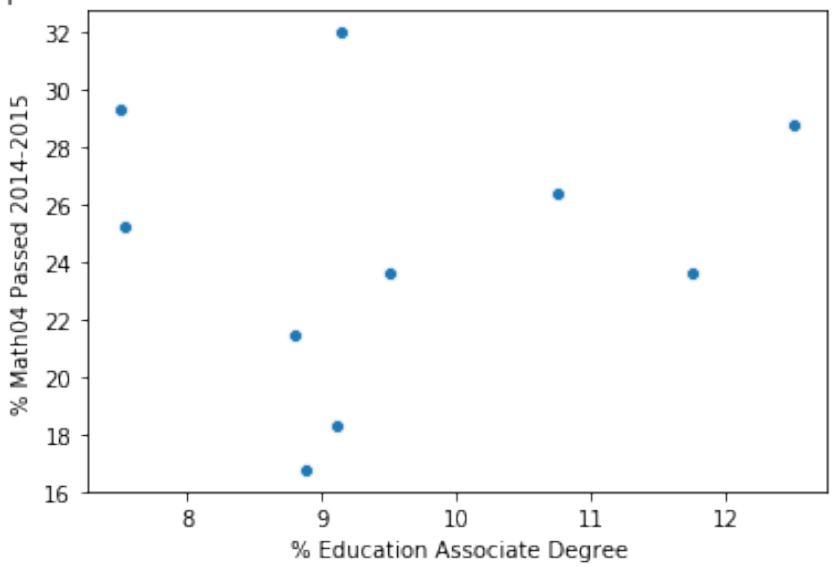
Scatterplot of Grade 4 Math Bottom 10 % Pass vs % Education High School Diploma



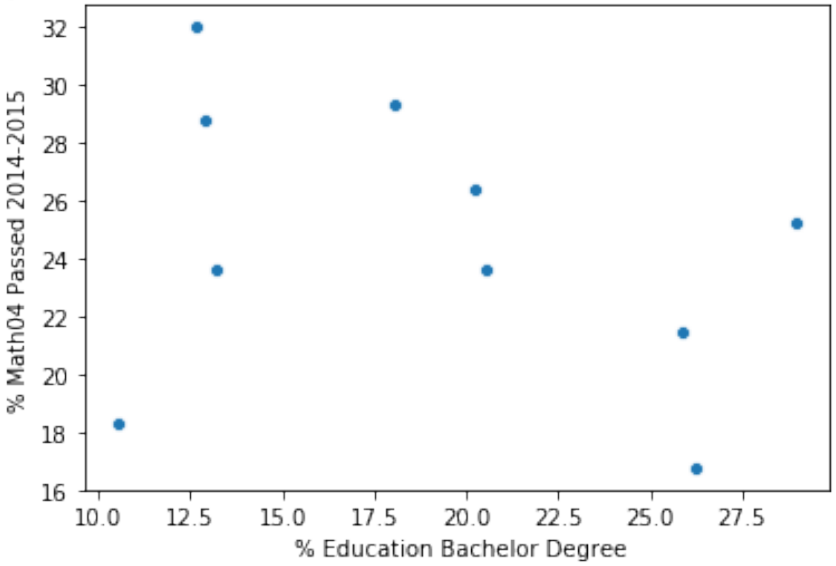
Scatterplot of Grade 4 Math Bottom 10 % Pass vs % Education Some College



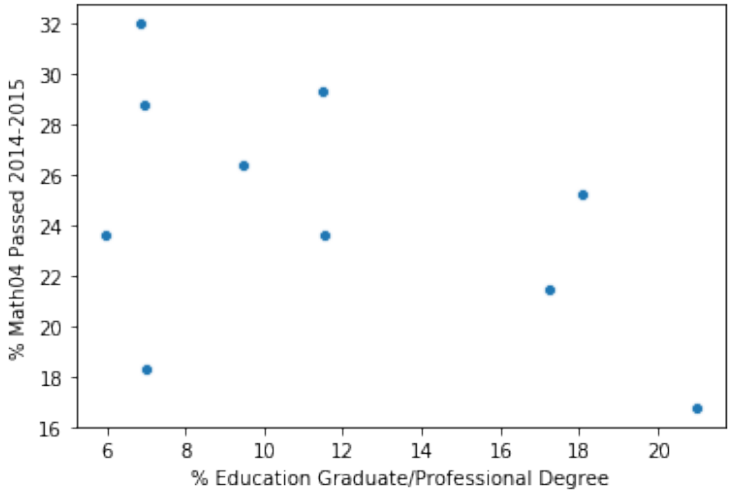
Scatterplot of Grade 4 Math Bottom 10 % Pass vs % Education Associate Degree



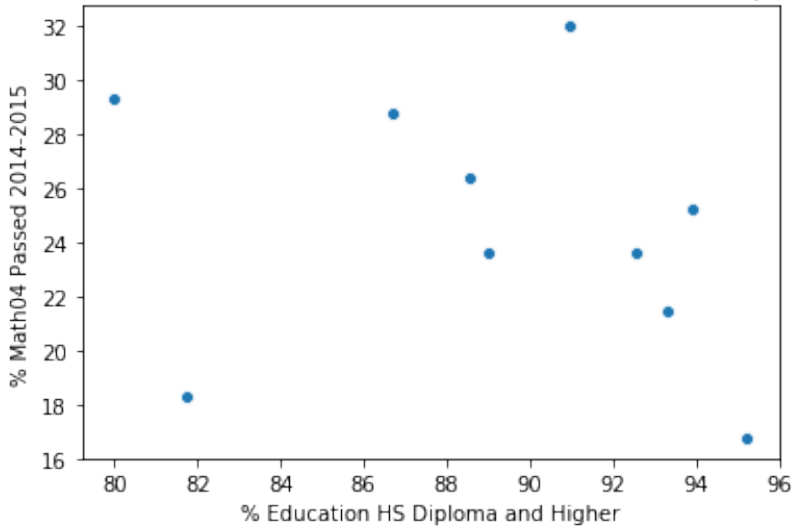
Scatterplot of Grade 4 Math Bottom 10 % Pass vs % Education Bachelor Degree

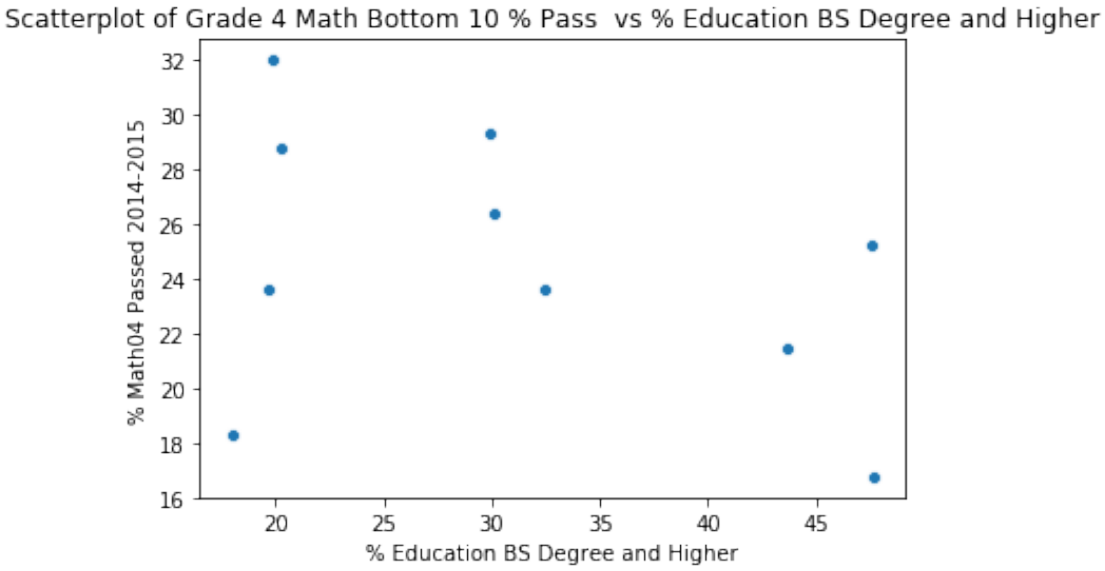


Scatterplot of Grade 4 Math Bottom 10 % Pass vs % Education Graduate/Professional Degree



Scatterplot of Grade 4 Math Bottom 10 % Pass vs % Education HS Diploma and Higher





In [34]:
```
# Create a correlation matrix
corr2   = df_top10_4th.corr()
pos_cor2 = corr2['ALL_MTH04PCTPROF_1415'] >0
neg_cor2 = corr2['ALL_MTH04PCTPROF_1415'] <0
corr2['ALL_MTH04PCTPROF_1415'][pos_cor2].sort_values(ascending = False)
```

Out[34]:
```
ALL_MTH04PCTPROF_1415                          1.000000
ECD_MTH04PCTPROF_1415                          0.930356
ALL_MTH08PCTPROF_1415                          0.835275
ECD_MTH08PCTPROF_1415                          0.733393
LEA_CWIFTSE                                    0.678601
LEAID_y                                        0.447964
LEAID_x                                        0.447179
FIPST                                          0.445817
HOM_MTH04PCTPROF_1415                          0.435456
pc_Educational_Attain_POP_SomeColl             0.384930
pctmoe_Below PovLvL_All_Ages                   0.301175
pctmoe_Below PovLvL_Age_18_64                  0.300177
pctmoe_Below PovLvL_Age_gte_18                 0.298731
HOM_MTH08PCTPROF_1415                          0.238399
pc_Educational_Attain_POP_BacDeg               0.204361
pct_Educational_Attain_BS_Deg_higher           0.182729
pctmoe_Below PovLvL_Age_gte_65                 0.130254
pc_Educational_Attain_POP_GradProf             0.104534
pct_Below PovLvL_Age_gte_65                    0.074602
pct_Educational_Attain_POP_HS_Grad_higher      0.071471
pc_Educational_Attain_POP_AssocDeg             0.065604
Name: ALL_MTH04PCTPROF_1415, dtype: float64
```

```
In [35]: # Create a correlation matrix
         corr2   = df_top10_4th.corr()
         pos_cor2 = corr2['ALL_MTH04PCTPROF_1415'] >0
         neg_cor2 = corr2['ALL_MTH04PCTPROF_1415'] <0
         corr2['ALL_MTH08PCTPROF_1415'][neg_cor2].sort_values()
```

```
Out[35]: pc_Educational_Attain_POP_HS_GRAD     -0.314091
         LEA_CWIFTEST                          -0.118198
         HOM_MTH04NUMVALID_1415                -0.030199
         pct_Below PovLvL_Age_gte_18           -0.029295
         pct_Below PovLvL_All_Ages             -0.029263
         pct_Below PovLvL_Age_18_64            -0.029091
         HOM_MTH08NUMVALID_1415                 0.011084
         num_Educational_Attain_POP_HS_GRAD     0.017537
         num_Educational_Attain_POP_AssocDeg    0.023593
         num_Educational_Attain_POP_SomeColl    0.042547
         PDP02.5_37est                          0.051481
         num_Educational_Attain_POP_9th-12th    0.054666
         num_Educational_Attain_POP             0.054868
         num_Educational_Attain_POP_BacDeg      0.074576
         PDP02.5_38est                          0.091678
         pc_Educational_Attain_POP_9th-12th     0.120729
         num_Educational_Attain_POP_GradProf    0.121158
         num_Educational_Attain_POP_LT9th       0.128109
         ECD_MTH08NUMVALID_1415                 0.160894
         ECD_MTH04NUMVALID_1415                 0.227306
         ALL_MTH08NUMVALID_1415                 0.260404
         pc_ Educational_Attain_POP_LT9th       0.321723
         ALL_MTH04NUMVALID_1415                 0.367012
         Name: ALL_MTH08PCTPROF_1415, dtype: float64
```

1.3.2 Top 10 and bottom 10 8th grade

```
In [36]: df_top10_8th = Parent_social_econ_df_sy201415.nlargest(10, 'ALL_MTH08PCTPROF_1415')
         df_top10_8th
```

```
Out[36]:       ST_NAME       LEAID_x  Iteration_x  pct_Below PovLvL_All_Ages  \
         43   VIRGINIA  5.102091e+06        202.0                  12.931818
         41      TEXAS  4.826378e+06        202.0                  13.959647
         15       IOWA  1.916565e+06        202.0                   8.027660
         26   NEBRASKA  3.137500e+06        202.0                   8.549315
         34   OKLAHOMA  4.017859e+06        202.0                  14.955756
         9     FLORIDA  1.201020e+06        202.0                  16.598507
         18  LOUISIANA  2.201077e+06        202.0                  19.904348
         40  TENNESSEE  4.702153e+06        202.0                  17.120438
         22  MINNESOTA  2.718913e+06        202.0                   8.032121
         14    INDIANA  1.806528e+06        202.0                  11.027526
```

```
    pctmoe_Below PovLvL_All_Ages  pct_Below PovLvL_Age_gte_18  \
43                      4.840152                    12.918939
41                      6.735598                    13.958560
15                      4.907903                     8.025836
26                      5.937900                     8.552511
34                      7.078781                    14.944244
9                       3.782090                    16.598507
18                      4.808696                    19.886957
40                      5.870803                    17.121898
22                      4.026970                     8.031515
14                      4.963763                    11.024042

    pctmoe_Below PovLvL_Age_gte_18  pct_Below PovLvL_Age_18_64  \
43                       4.828030                    12.908333
41                       6.736957                    13.959647
15                       4.908511                     8.030091
26                       5.939726                     8.564384
34                       7.072235                    14.965011
9                        3.783582                    16.583582
18                       4.801449                    19.900000
40                       5.871533                    17.161314
22                       4.027273                     8.023636
14                       4.963763                    11.015331

    pctmoe_Below PovLvL_Age_18_64  pct_Below PovLvL_Age_gte_65  \
43                       4.834091                    15.488764
41                       6.750408                    14.653385
15                       4.912158                     6.127273
26                       5.951598                     5.861905
34                       7.095260                    11.721759
9                        3.788060                    16.378689
18                       4.808696                    15.209091
40                       5.890511                    11.234286
22                       4.051818                     7.294382
14                       4.953310                     9.690728

           ...           ECD_MTH04NUMVALID_1415  ECD_MTH04PCTPROF_1415  \
43         ...                        844.900000              73.433333
41         ...                       1350.348624              61.339450
15         ...                        515.545455              64.727273
26         ...                        688.500000              64.125000
34         ...                        389.272727              65.909091
9          ...                       2249.181818              50.781818
18         ...                        713.081081              60.000000
40         ...                       1389.333333              42.733333
22         ...                        488.636364              47.727273
14         ...                        433.108108              53.702703
```

```
    HOM_MTH04NUMVALID_1415  HOM_MTH04PCTPROF_1415  ALL_MTH08NUMVALID_1415  \
43                32.633333              45.333333             1444.166667
41                31.366972              44.412844             1713.128440
15                17.090909              29.454545              800.818182
26                22.375000              37.750000             1024.250000
34                38.045455              42.681818              548.363636
9                 72.254545              35.727273             3569.618182
18                32.513514              40.837838              965.918919
40                30.533333              34.200000             2176.466667
22                22.227273              27.272727              975.272727
14                28.135135              39.405405              699.837838

    ALL_MTH08PCTPROF_1415  ECD_MTH08NUMVALID_1415  ECD_MTH08PCTPROF_1415  \
43              69.100000              610.533333              60.433333
41              67.715596             1089.669725              62.825688
15              67.363636              438.000000              56.454545
26              65.875000              602.625000              55.750000
34              59.818182              355.000000              52.227273
9               58.727273             2149.290909              50.127273
18              55.081081              649.000000              48.594595
40              54.000000             1266.733333              43.333333
22              52.272727              443.045455              34.909091
14              49.891892              402.702703              39.972973

    HOM_MTH08NUMVALID_1415  HOM_MTH08PCTPROF_1415
43                25.500000              35.233333
41                25.284404              39.064220
15                14.181818              30.909091
26                18.125000              22.375000
34                31.772727              35.454545
9                 58.000000              37.763636
18                27.216216              36.594595
40                27.666667              24.933333
22                18.363636              20.318182
14                20.513514              25.324324

[10 rows x 48 columns]
```

In [37]:
```
df_bottom10_8th = Parent_social_econ_df_sy201415.nsmallest(10, 'ALL_MTH08PCTPROF_1415
df_bottom10_8th
```

Out[37]:
```
                ST_NAME       LEAID_x  Iteration_x  \
6           CONNECTICUT  9.026891e+05        202.0
29           NEW MEXICO  3.501317e+06        202.0
3              ARKANSAS  5.068456e+05        202.0
16               KANSAS  2.007427e+06        202.0
36          PENNSYLVANIA  4.214613e+06        202.0
45         WEST VIRGINIA  5.400840e+06        202.0
```

```
24              MISSOURI  2.918444e+06        202.0
8   DISTRICT OF COLUMBIA  1.100030e+06        202.0
28            NEW JERSEY  3.409452e+06        202.0
37          RHODE ISLAND  4.400607e+06        202.0

    pct_Below PovLvL_All_Ages  pctmoe_Below PovLvL_All_Ages  \
6                    5.324841                      3.580255
29                  22.335294                      7.364706
3                   17.702727                      8.444091
16                   9.932830                      6.162264
36                  10.471630                      4.255734
45                  18.138182                      5.552727
24                  13.890758                      7.568483
8                   16.400000                      1.000000
28                   6.822600                      4.663400
37                   8.332353                      3.479412

    pct_Below PovLvL_Age_gte_18  pctmoe_Below PovLvL_Age_gte_18  \
6                      5.324204                       3.579618
29                    22.329412                       7.370588
3                     17.690455                       8.431818
16                     9.924151                       6.162642
36                    10.471227                       4.255533
45                    18.140000                       5.549091
24                    13.884123                       7.564929
8                     16.400000                       1.000000
28                     6.821200                       4.663400
37                     8.332353                       3.479412

    pct_Below PovLvL_Age_18_64  pctmoe_Below PovLvL_Age_18_64  \
6                     5.328662                       3.584713
29                   22.331373                       7.382353
3                    17.725909                       8.459091
16                    9.932453                       6.172453
36                   10.484708                       4.263581
45                   18.158182                       5.563636
24                   13.877725                       7.563270
8                    16.400000                       1.000000
28                    6.824400                       4.667800
37                    8.294118                       3.488235

    pct_Below PovLvL_Age_gte_65          ...            \
6                     3.781319          ...
29                   20.267742          ...
3                    15.794444          ...
16                    5.676842          ...
36                    6.744771          ...
45                    9.507143          ...
```

```
24                  10.724551          ...
8                   18.000000          ...
28                   6.718254          ...
37                  11.554545          ...

    ECD_MTH04NUMVALID_1415  ECD_MTH04PCTPROF_1415  HOM_MTH04NUMVALID_1415  \
6                873.600000             13.200000              22.000000
29               481.461538             15.307692              23.769231
3                287.100000             17.100000              13.366667
16               619.071429             23.928571              27.857143
36               847.625000             26.208333              32.708333
45               482.388889             28.111111              21.833333
24               379.666667             33.527778              32.500000
8                973.000000             28.000000              40.666667
28               644.529412             19.235294              19.352941
37               856.000000             12.500000              10.500000

    HOM_MTH04PCTPROF_1415  ALL_MTH08NUMVALID_1415  ALL_MTH08PCTPROF_1415  \
6               13.000000            1057.000000              13.400000
29              15.923077             591.153846              14.384615
3               21.966667             325.133333              16.166667
16              18.428571            1075.142857              19.000000
36              20.625000             953.625000              20.208333
45              24.000000             597.944444              21.333333
24              22.972222             450.333333              22.750000
8               20.666667             621.000000              23.000000
28              19.588235             789.235294              23.411765
37              25.000000             929.000000              24.000000

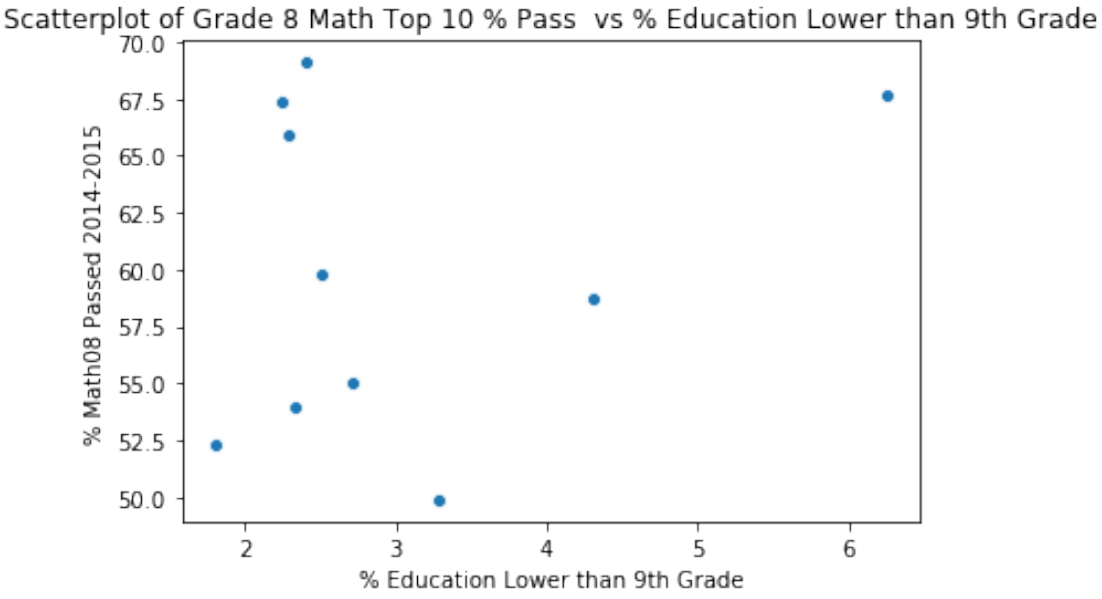
    ECD_MTH08NUMVALID_1415  ECD_MTH08PCTPROF_1415  HOM_MTH08NUMVALID_1415  \
6                761.600000              9.000000              17.200000
29               439.153846             11.153846              18.615385
3                223.866667             13.833333              11.100000
16               549.571429             10.357143              23.500000
36               693.958333             13.208333              20.750000
45               388.944444             15.944444              17.222222
24               296.611111             18.472222              26.027778
8                565.666667             22.666667              23.666667
28               540.117647             18.823529              13.823529
37               725.500000             14.000000               7.500000

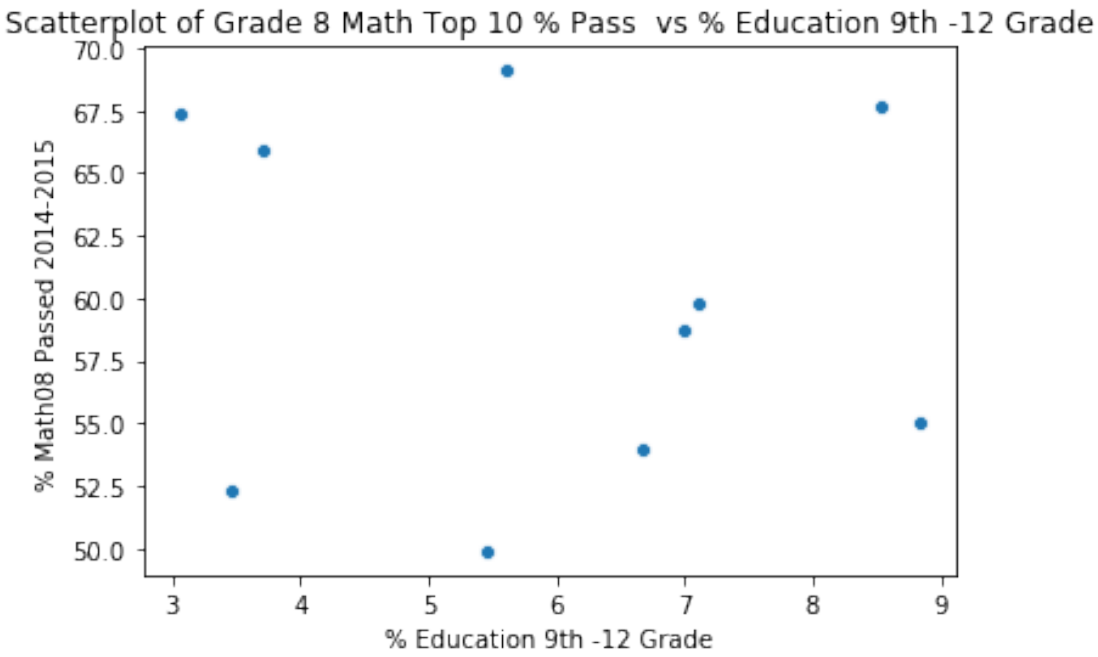
    HOM_MTH08PCTPROF_1415
6               19.000000
29              18.846154
3               22.666667
16              19.142857
36              19.458333
45              20.222222
```

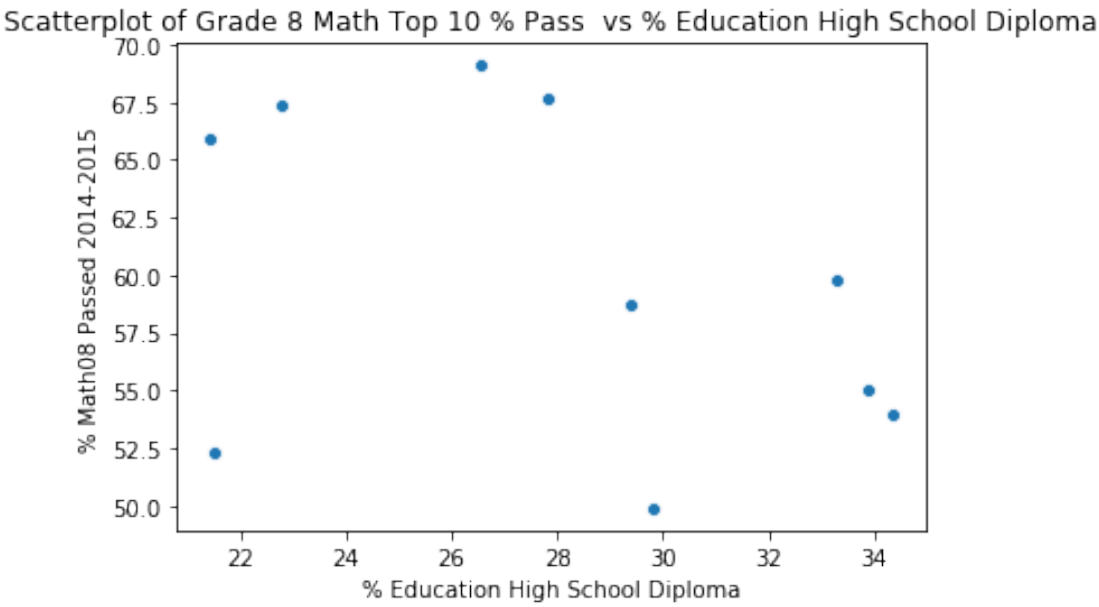
```
24              21.138889
8               18.333333
28              21.411765
37              25.000000

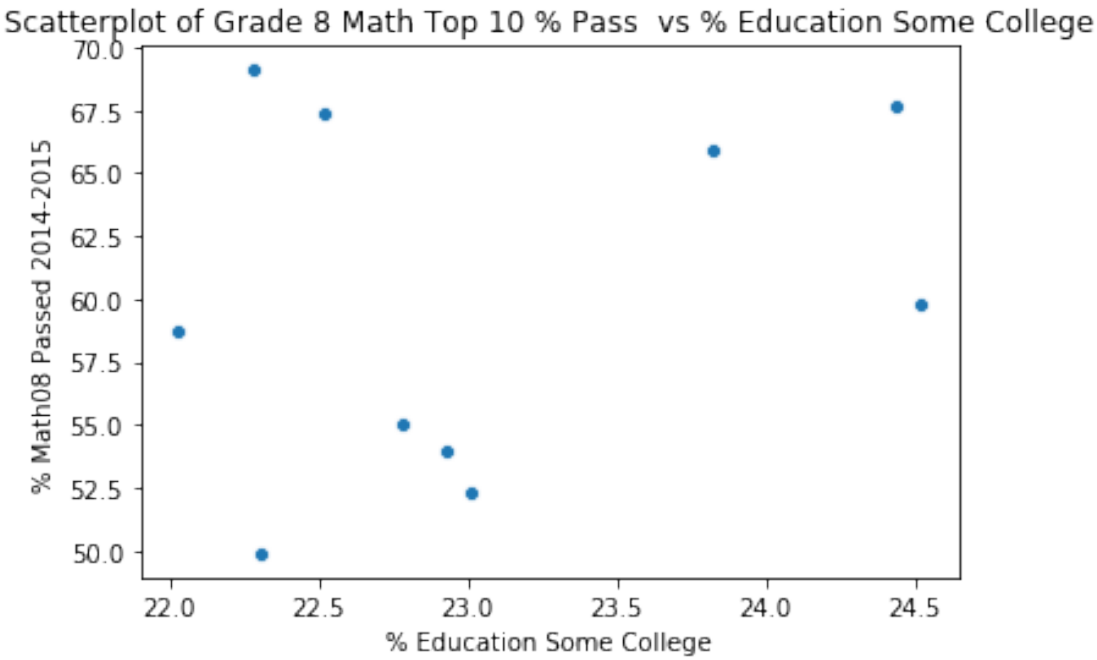
[10 rows x 48 columns]
```

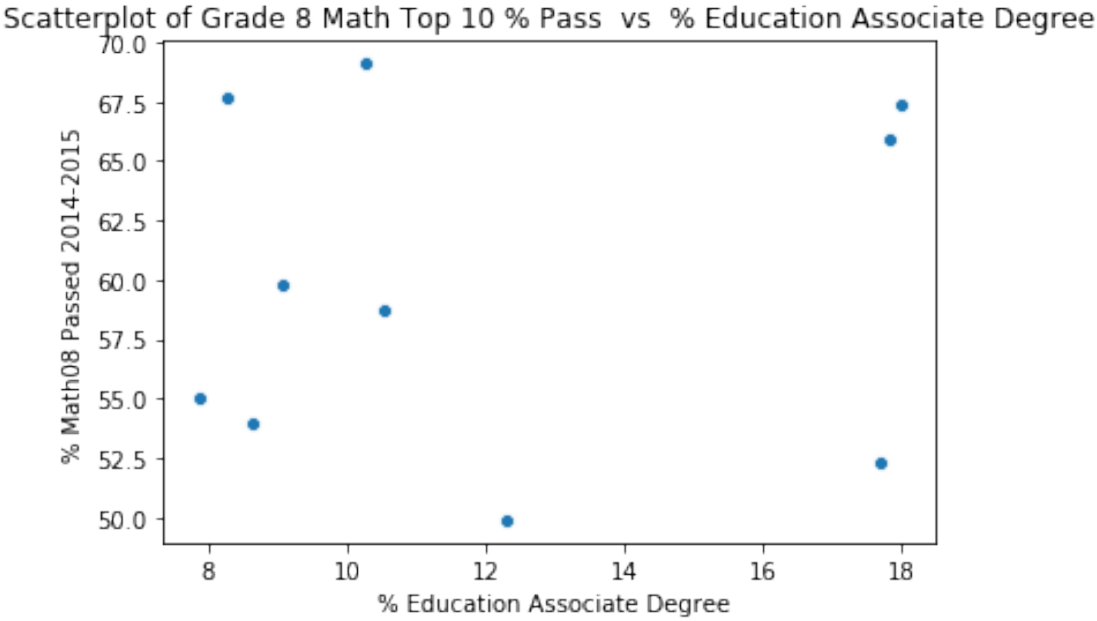
```
In [38]: for key, value in Education_dict.items():
             sns.scatterplot(x= key, y = 'ALL_MTH08PCTPROF_1415', data = df_top10_8th, legend=
             plt.ylabel("% Math08 Passed 2014-2015")
             xlabel = "{0}".format(value)
             plt.xlabel(xlabel)
             title = "Scatterplot of Grade 8 Math Top 10 % Pass  vs {0}".format(value)
             plt.title(title)
             plt.show()
```



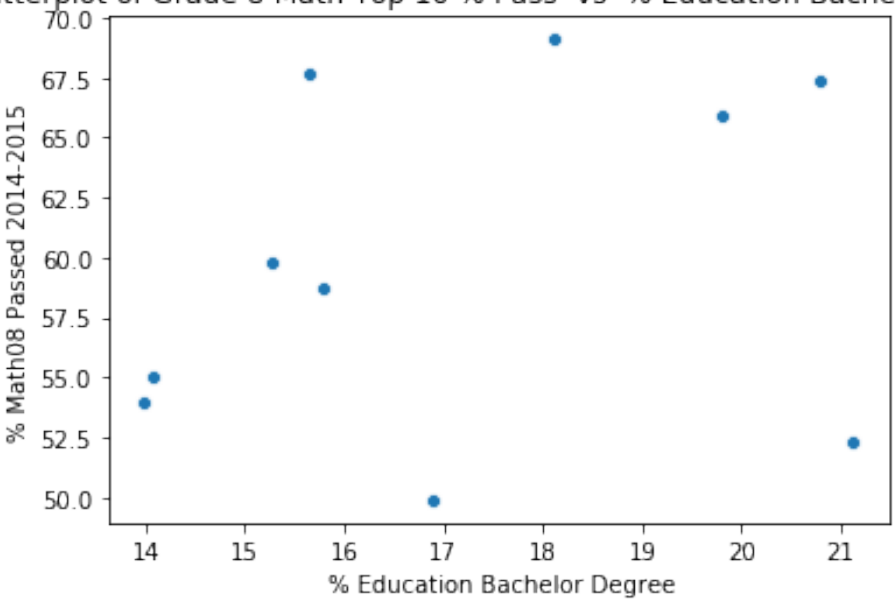

Scatterplot of Grade 8 Math Top 10 % Pass vs % Education 9th -12 Grade
% Math08 Passed 2014-2015
% Education 9th -12 Grade
70.0
67.5
65.0
62.5
60.0
57.5
55.0
52.5
50.0
3
4
5
6
7
8
9


Scatterplot of Grade 8 Math Top 10 % Pass vs % Education High School Diploma
% Math08 Passed 2014-2015
% Education High School Diploma
70.0
67.5
65.0
62.5
60.0
57.5
55.0
52.5
50.0
22
24
26
28
30
32
34

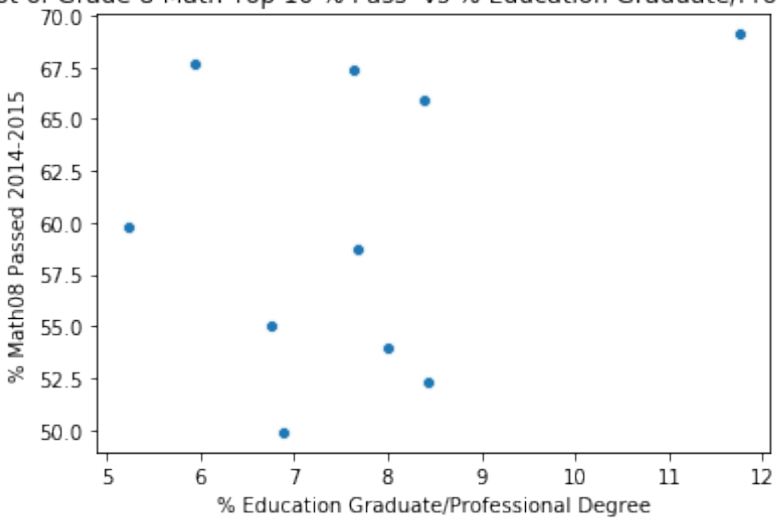

Scatterplot of Grade 8 Math Top 10 % Pass vs % Education Some College
% Math08 Passed 2014-2015
70.0
67.5
65.0
62.5
60.0
57.5
55.0
52.5
50.0
22.0
22.5
23.0
23.5
24.0
24.5
% Education Some College

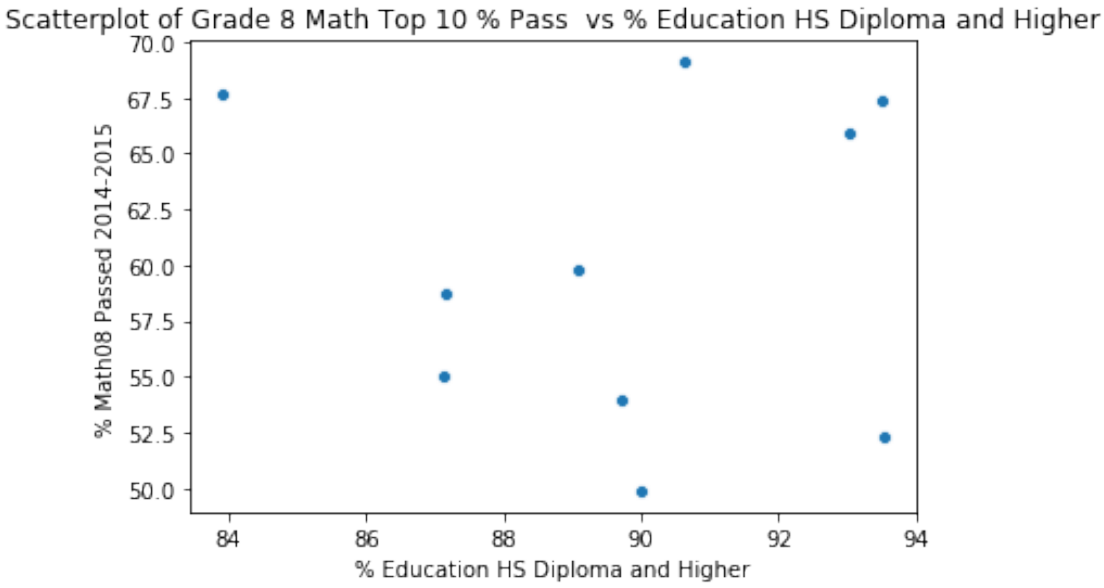

Scatterplot of Grade 8 Math Top 10 % Pass vs % Education Associate Degree
% Math08 Passed 2014-2015
70.0
67.5
65.0
62.5
60.0
57.5
55.0
52.5
50.0
8
10
12
14
16
18
% Education Associate Degree

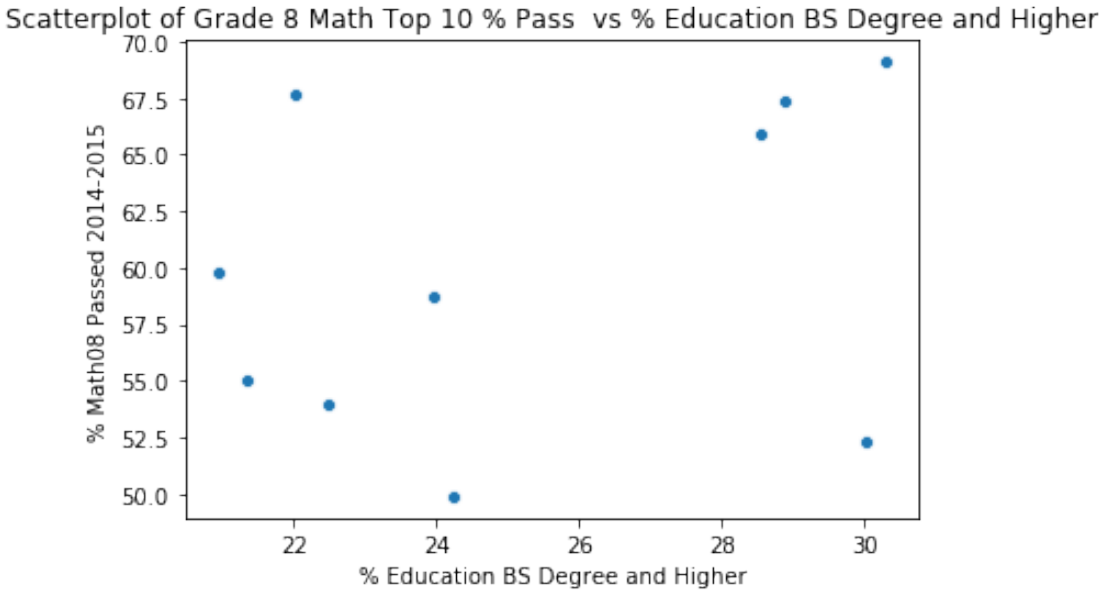
Scatterplot of Grade 8 Math Top 10 % Pass vs % Education Bachelor Degree



Scatterplot of Grade 8 Math Top 10 % Pass vs % Education Graduate/Professional Degree

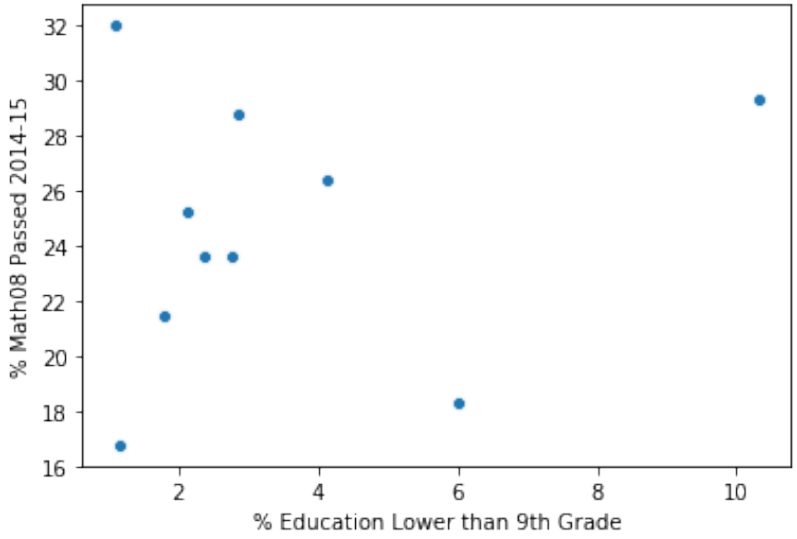




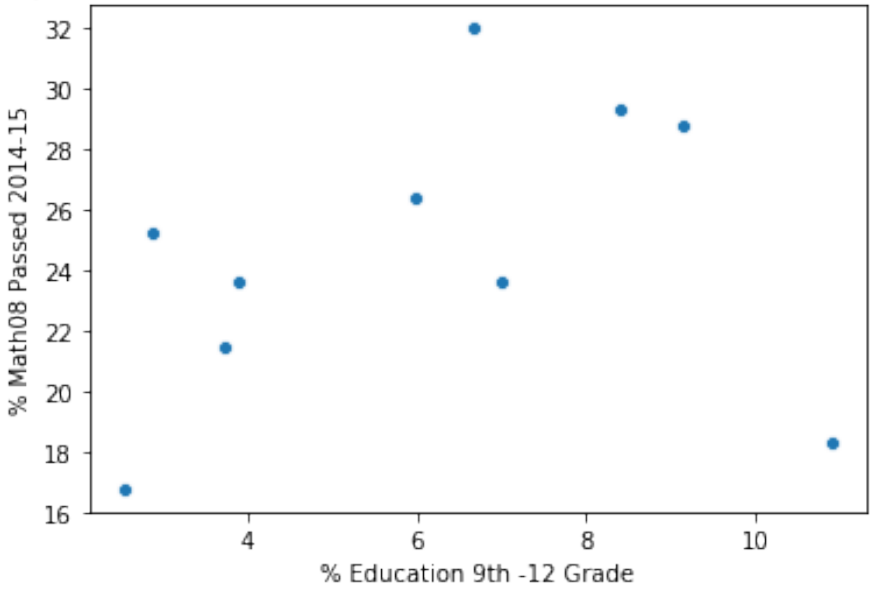



```
In [39]: for key, value in Education_dict.items():
             sns.scatterplot(x= key, y = 'ALL_MTH04PCTPROF_1415', data = df_bottom10_4th, leger
             plt.ylabel("% Math08 Passed 2014-15")
             xlabel = "{0}".format(value)
             plt.xlabel(xlabel)
             title = "Scatterplot of Grade 8 Math Bottom 10 % Pass  vs {0}".format(value)
             plt.title(title)
             plt.show()
```

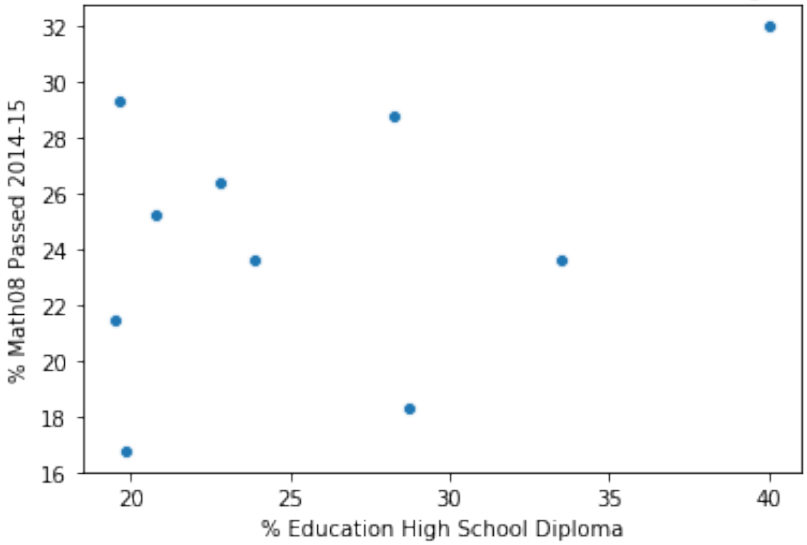
Scatterplot of Grade 8 Math Bottom 10 % Pass vs % Education Lower than 9th Grade



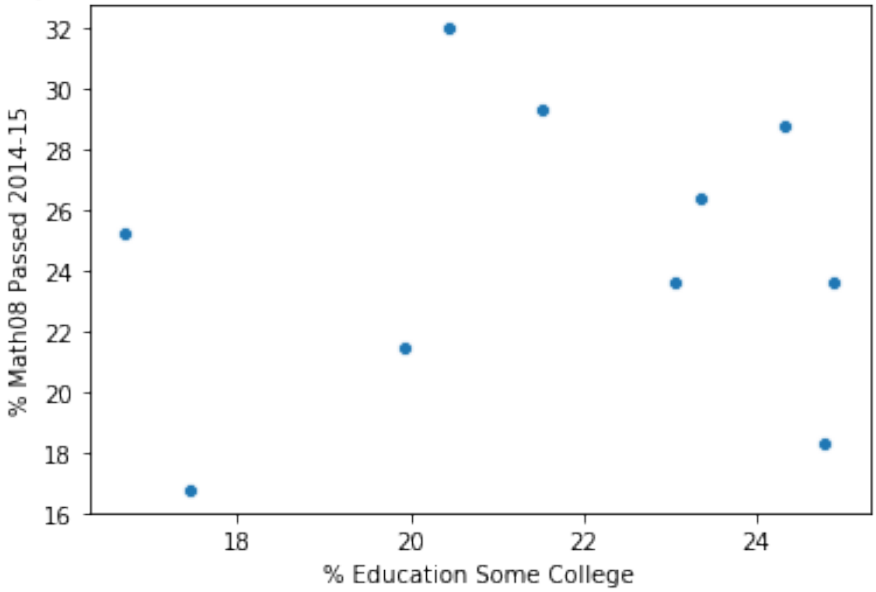
Scatterplot of Grade 8 Math Bottom 10 % Pass vs % Education 9th -12 Grade



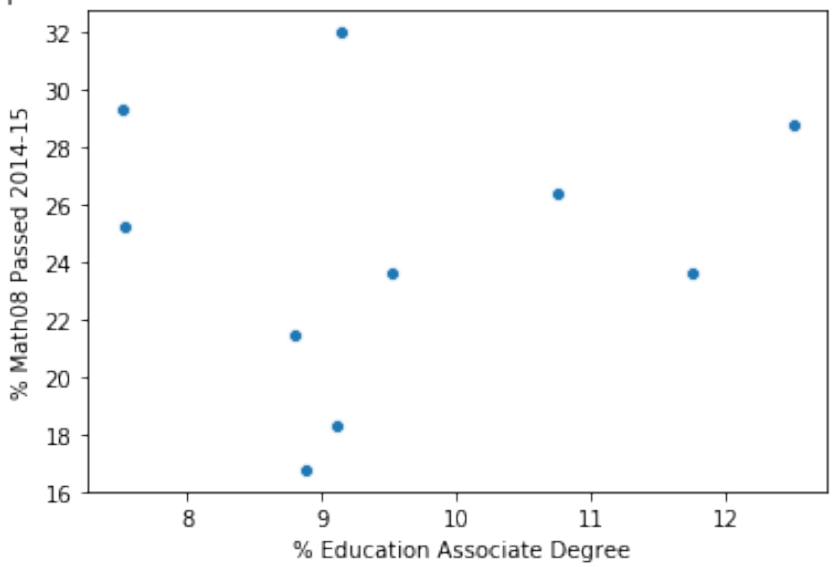
Scatterplot of Grade 8 Math Bottom 10 % Pass vs % Education High School Diploma



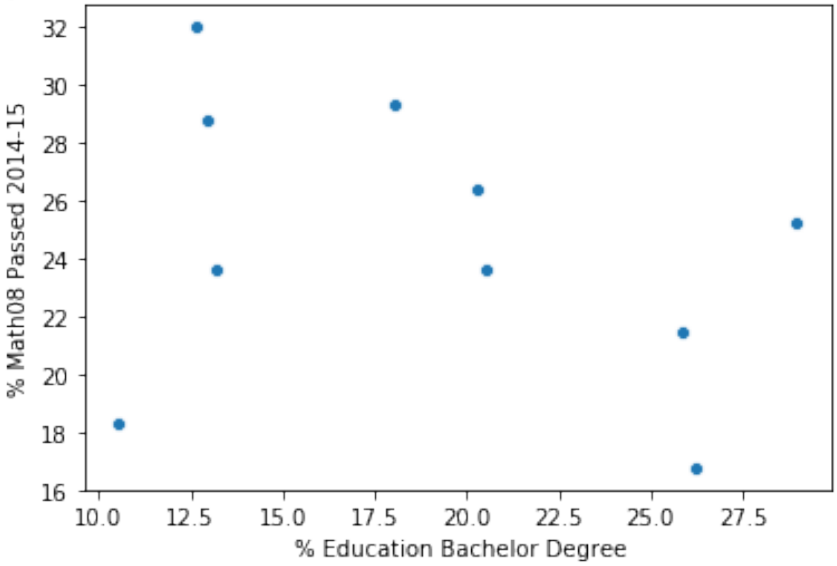
Scatterplot of Grade 8 Math Bottom 10 % Pass vs % Education Some College



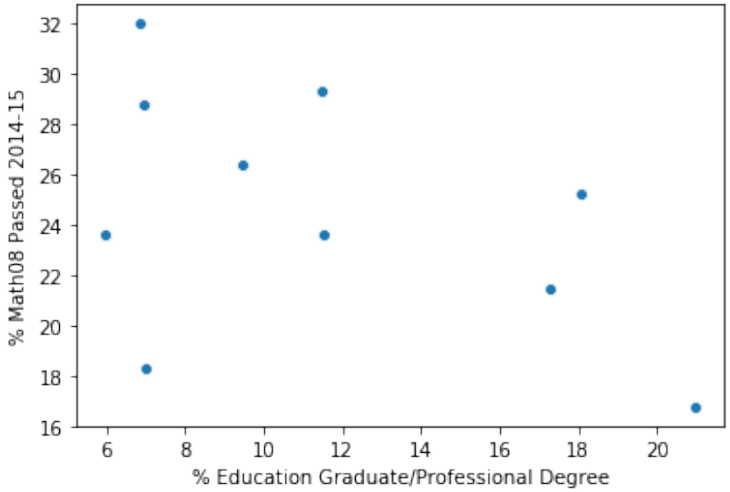
Scatterplot of Grade 8 Math Bottom 10 % Pass vs % Education Associate Degree



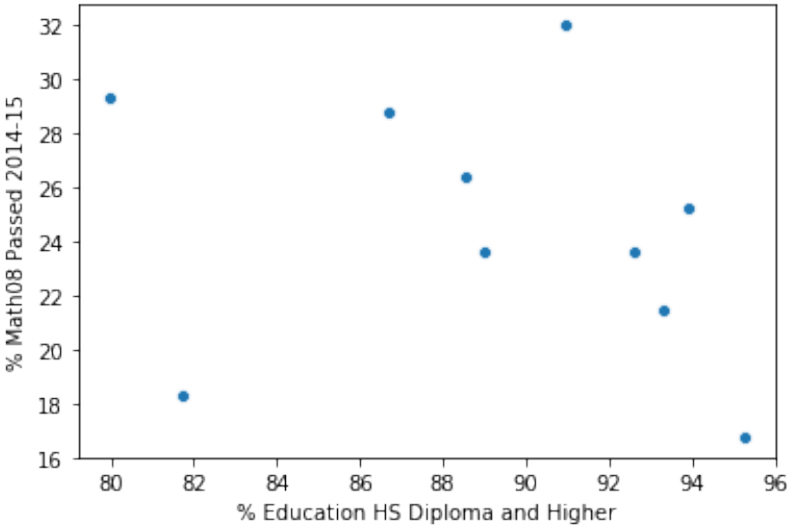
Scatterplot of Grade 8 Math Bottom 10 % Pass vs % Education Bachelor Degree

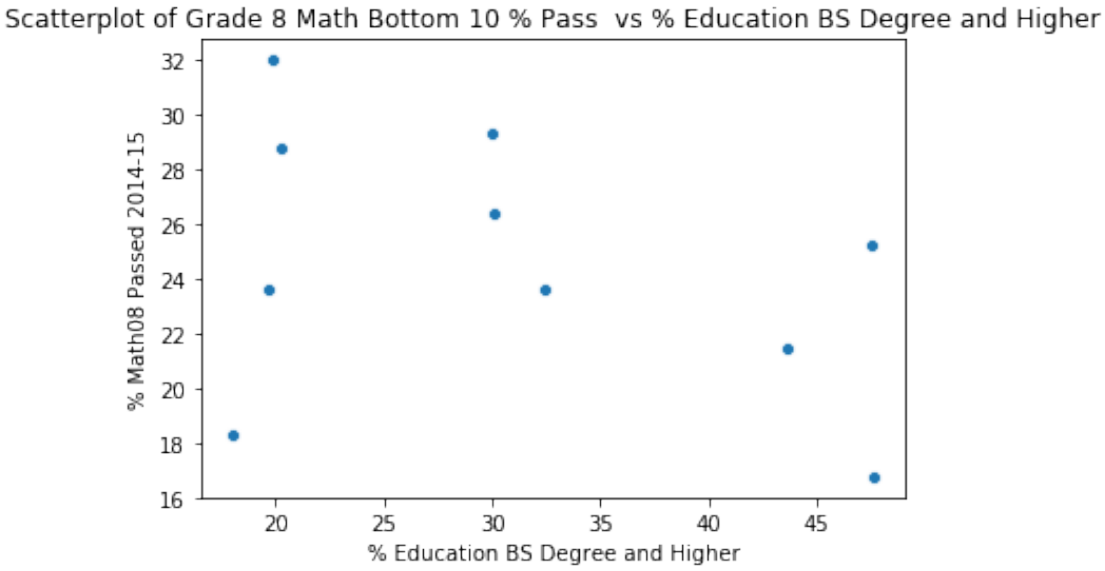


Scatterplot of Grade 8 Math Bottom 10 % Pass vs % Education Graduate/Professional Degree



Scatterplot of Grade 8 Math Bottom 10 % Pass vs % Education HS Diploma and Higher






```
In [40]: # Create a correlation matrix
         corr3    = df_top10_8th.corr()
         pos_cor3 = corr3['ALL_MTH04PCTPROF_1415'] >0
         neg_cor3 = corr3['ALL_MTH04PCTPROF_1415'] <0
         corr3['ALL_MTH04PCTPROF_1415'][pos_cor3].sort_values(ascending = False)
```

```
Out[40]: ALL_MTH04PCTPROF_1415                        1.000000
         ECD_MTH04PCTPROF_1415                        0.953621
         ALL_MTH08PCTPROF_1415                        0.756044
         ECD_MTH08PCTPROF_1415                        0.671971
         pct_Educational_Attain_BS_Deg_higher         0.482091
         pc_Educational_Attain_POP_BacDeg             0.440103
         HOM_MTH04PCTPROF_1415                        0.395793
         LEA_CWIFTSE                                  0.372428
         pc_Educational_Attain_POP_GradProf           0.370931
         LEAID_y                                      0.294768
         LEAID_x                                      0.294130
         FIPST                                        0.291898
         pctmoe_Below PovLvL_Age_gte_65               0.277157
         HOM_MTH08PCTPROF_1415                        0.276051
         pct_Educational_Attain_POP_HS_Grad_higher    0.234218
         pc_Educational_Attain_POP_AssocDeg           0.207762
         pctmoe_Below PovLvL_All_Ages                 0.181169
         pctmoe_Below PovLvL_Age_gte_18               0.178590
         pctmoe_Below PovLvL_Age_18_64                0.177148
         pc_Educational_Attain_POP_SomeColl           0.155249
         LEA_CWIFTEST                                 0.155133
         Name: ALL_MTH04PCTPROF_1415, dtype: float64
```

```
In [41]: # Create a correlation matrix
         corr3['ALL_MTH08PCTPROF_1415'][neg_cor3].sort_values()
```

```
Out[41]: pc_Educational_Attain_POP_HS_GRAD     -0.405967
         pct_Below PovLvL_Age_18_64            -0.230797
         pct_Below PovLvL_Age_gte_18           -0.230661
         pct_Below PovLvL_All_Ages             -0.230464
         HOM_MTH08NUMVALID_1415                -0.110538
         pc_Educational_Attain_POP_9th-12th    -0.102883
         num_Educational_Attain_POP_HS_GRAD    -0.100455
         HOM_MTH04NUMVALID_1415                -0.099532
         num_Educational_Attain_POP_SomeColl   -0.071141
         num_Educational_Attain_POP_AssocDeg   -0.069963
         num_Educational_Attain_POP_9th-12th   -0.065407
         PDP02.5_37est                         -0.053033
         num_Educational_Attain_POP            -0.050606
         num_Educational_Attain_POP_BacDeg     -0.022910
         ECD_MTH08NUMVALID_1415                -0.006520
         PDP02.5_38est                          0.000313
         ALL_MTH08NUMVALID_1415                 0.024428
         num_Educational_Attain_POP_LT9th       0.029095
         num_Educational_Attain_POP_GradProf    0.041115
         pct_Below PovLvL_Age_gte_65            0.061560
         ECD_MTH04NUMVALID_1415                 0.083556
         ALL_MTH04NUMVALID_1415                 0.185865
         pc_ Educational_Attain_POP_LT9th       0.236619
         Name: ALL_MTH08PCTPROF_1415, dtype: float64
```

```
In [42]: # Create a correlation matrix for bottom 10
         corr4   = df_bottom10_8th.corr()
         pos_cor4 = corr3['ALL_MTH04PCTPROF_1415'] >0
         neg_cor4 = corr3['ALL_MTH04PCTPROF_1415'] <0
         corr4['ALL_MTH04PCTPROF_1415'][pos_cor4].sort_values(ascending = False)
```

```
Out[42]: ALL_MTH04PCTPROF_1415                      1.000000
         ECD_MTH04PCTPROF_1415                      0.958423
         ALL_MTH08PCTPROF_1415                      0.576432
         ECD_MTH08PCTPROF_1415                      0.518903
         HOM_MTH04PCTPROF_1415                      0.487580
         LEAID_y                                    0.151187
         LEAID_x                                    0.151016
         FIPST                                      0.148684
         pc_Educational_Attain_POP_AssocDeg         0.132798
         pctmoe_Below PovLvL_All_Ages               0.032662
         pctmoe_Below PovLvL_Age_gte_18             0.032346
         pctmoe_Below PovLvL_Age_18_64              0.030907
         pct_Educational_Attain_POP_HS_Grad_higher -0.006826
         LEA_CWIFTSE                               -0.010237
```

```
pc_Educational_Attain_POP_SomeColl          -0.034822
pctmoe_Below PovLvL_Age_gte_65              -0.081544
pc_Educational_Attain_POP_GradProf          -0.100504
LEA_CWIFTEST                                -0.179517
HOM_MTH08PCTPROF_1415                       -0.181696
pct_Educational_Attain_BS_Deg_higher        -0.181811
pc_Educational_Attain_POP_BacDeg            -0.227952
Name: ALL_MTH04PCTPROF_1415, dtype: float64
```

```
In [43]: # Create a correlation matrix
         corr4['ALL_MTH04PCTPROF_1415'][neg_cor4].sort_values()
```

```
Out[43]: ECD_MTH08NUMVALID_1415               -0.305868
         ALL_MTH08NUMVALID_1415               -0.189229
         ECD_MTH04NUMVALID_1415               -0.119307
         pct_Below PovLvL_Age_gte_65          -0.118247
         pc_Educational_Attain_POP_9th-12th   -0.046173
         ALL_MTH04NUMVALID_1415                0.030633
         pc_ Educational_Attain_POP_LT9th      0.035273
         pct_Below PovLvL_Age_gte_18           0.098156
         pct_Below PovLvL_All_Ages             0.098162
         pct_Below PovLvL_Age_18_64            0.098338
         num_Educational_Attain_POP_AssocDeg   0.169810
         num_Educational_Attain_POP_9th-12th   0.189453
         num_Educational_Attain_POP_SomeColl   0.195255
         num_Educational_Attain_POP_LT9th      0.198709
         num_Educational_Attain_POP_BacDeg     0.207758
         num_Educational_Attain_POP            0.209887
         PDP02.5_37est                         0.211901
         num_Educational_Attain_POP_HS_GRAD    0.212976
         PDP02.5_38est                         0.218299
         num_Educational_Attain_POP_GradProf   0.223936
         pc_Educational_Attain_POP_HS_GRAD     0.296756
         HOM_MTH04NUMVALID_1415                0.671533
         HOM_MTH08NUMVALID_1415                0.703133
         Name: ALL_MTH04PCTPROF_1415, dtype: float64
```

```
In [44]: corr4
```

```
Out[44]:                                        LEAID_x  Iteration_x  \
         LEAID_x                               1.000000          NaN
         Iteration_x                                NaN          NaN
         pct_Below PovLvL_All_Ages             0.067878          NaN
         pctmoe_Below PovLvL_All_Ages          0.009131          NaN
         pct_Below PovLvL_Age_gte_18           0.068325          NaN
         pctmoe_Below PovLvL_Age_gte_18        0.009836          NaN
         pct_Below PovLvL_Age_18_64            0.067163          NaN
         pctmoe_Below PovLvL_Age_18_64         0.009547          NaN
         pct_Below PovLvL_Age_gte_65          -0.122281          NaN
```

pctmoe_Below PovLvL_Age_gte_65	0.129938	NaN
LEA_CWIFTEST	-0.354072	NaN
LEA_CWIFTSE	0.173897	NaN
Iteration_y	NaN	NaN
num_Educational_Attain_POP	-0.332003	NaN
num_Educational_Attain_POP_LT9th	-0.356812	NaN
pc_ Educational_Attain_POP_LT9th	-0.262836	NaN
num_Educational_Attain_POP_9th-12th	-0.318204	NaN
pc_Educational_Attain_POP_9th-12th	0.115492	NaN
num_Educational_Attain_POP_HS_GRAD	-0.297585	NaN
pc_Educational_Attain_POP_HS_GRAD	0.366746	NaN
num_Educational_Attain_POP_SomeColl	-0.312859	NaN
pc_Educational_Attain_POP_SomeColl	-0.026217	NaN
num_Educational_Attain_POP_AssocDeg	-0.241358	NaN
pc_Educational_Attain_POP_AssocDeg	0.228593	NaN
num_Educational_Attain_POP_BacDeg	-0.342477	NaN
pc_Educational_Attain_POP_BacDeg	-0.045074	NaN
num_Educational_Attain_POP_GradProf	-0.360692	NaN
pc_Educational_Attain_POP_GradProf	-0.323149	NaN
PDP02.5_37est	-0.331207	NaN
pct_Educational_Attain_POP_HS_Grad_higher	0.050522	NaN
PDP02.5_38est	-0.354371	NaN
pct_Educational_Attain_BS_Deg_higher	-0.228844	NaN
FIPST	0.999993	NaN
LEAID_y	1.000000	NaN
ALL_MTH04NUMVALID_1415	-0.160058	NaN
ALL_MTH04PCTPROF_1415	0.151016	NaN
ECD_MTH04NUMVALID_1415	-0.027112	NaN
ECD_MTH04PCTPROF_1415	0.166754	NaN
HOM_MTH04NUMVALID_1415	-0.148052	NaN
HOM_MTH04PCTPROF_1415	0.462184	NaN
ALL_MTH08NUMVALID_1415	0.106895	NaN
ALL_MTH08PCTPROF_1415	0.444565	NaN
ECD_MTH08NUMVALID_1415	0.105186	NaN
ECD_MTH08PCTPROF_1415	0.049893	NaN
HOM_MTH08NUMVALID_1415	-0.145598	NaN
HOM_MTH08PCTPROF_1415	0.229990	NaN

	pct_Below PovLvL_All_Ages \
LEAID_x	0.067878
Iteration_x	NaN
pct_Below PovLvL_All_Ages	1.000000
pctmoe_Below PovLvL_All_Ages	0.422566
pct_Below PovLvL_Age_gte_18	1.000000
pctmoe_Below PovLvL_Age_gte_18	0.422699
pct_Below PovLvL_Age_18_64	0.999996
pctmoe_Below PovLvL_Age_18_64	0.423262
pct_Below PovLvL_Age_gte_65	0.826039

pctmoe_Below PovLvL_Age_gte_65	-0.293476
LEA_CWIFTEST	-0.286523
LEA_CWIFTSE	0.581579
Iteration_y	NaN
num_Educational_Attain_POP	0.239449
num_Educational_Attain_POP_LT9th	0.245458
pc_ Educational_Attain_POP_LT9th	0.632257
num_Educational_Attain_POP_9th-12th	0.295837
pc_Educational_Attain_POP_9th-12th	0.928011
num_Educational_Attain_POP_HS_GRAD	0.268465
pc_Educational_Attain_POP_HS_GRAD	0.636454
num_Educational_Attain_POP_SomeColl	0.281001
pc_Educational_Attain_POP_SomeColl	0.422134
num_Educational_Attain_POP_AssocDeg	0.306247
pc_Educational_Attain_POP_AssocDeg	-0.169530
num_Educational_Attain_POP_BacDeg	0.198220
pc_Educational_Attain_POP_BacDeg	-0.947474
num_Educational_Attain_POP_GradProf	0.207759
pc_Educational_Attain_POP_GradProf	-0.367254
PDP02.5_37est	0.235295
pct_Educational_Attain_POP_HS_Grad_higher	-0.891199
PDP02.5_38est	0.204448
pct_Educational_Attain_BS_Deg_higher	-0.708466
FIPST	0.068754
LEAID_y	0.067872
ALL_MTH04NUMVALID_1415	-0.607263
ALL_MTH04PCTPROF_1415	0.098162
ECD_MTH04NUMVALID_1415	-0.534193
ECD_MTH04PCTPROF_1415	0.243313
HOM_MTH04NUMVALID_1415	0.160210
HOM_MTH04PCTPROF_1415	0.177307
ALL_MTH08NUMVALID_1415	-0.756152
ALL_MTH08PCTPROF_1415	-0.191853
ECD_MTH08NUMVALID_1415	-0.693048
ECD_MTH08PCTPROF_1415	0.178221
HOM_MTH08NUMVALID_1415	0.178038
HOM_MTH08PCTPROF_1415	-0.207895

	pctmoe_Below PovLvL_All_Ages \
LEAID_x	0.009131
Iteration_x	NaN
pct_Below PovLvL_All_Ages	0.422566
pctmoe_Below PovLvL_All_Ages	1.000000
pct_Below PovLvL_Age_gte_18	0.422027
pctmoe_Below PovLvL_Age_gte_18	0.999998
pct_Below PovLvL_Age_18_64	0.422936
pctmoe_Below PovLvL_Age_18_64	0.999996
pct_Below PovLvL_Age_gte_65	0.149892

pctmoe_Below PovLvL_Age_gte_65	0.699013
LEA_CWIFTEST	-0.845944
LEA_CWIFTSE	0.907043
Iteration_y	NaN
num_Educational_Attain_POP	-0.664431
num_Educational_Attain_POP_LT9th	-0.646448
pc_ Educational_Attain_POP_LT9th	0.118477
num_Educational_Attain_POP_9th-12th	-0.633468
pc_Educational_Attain_POP_9th-12th	0.608098
num_Educational_Attain_POP_HS_GRAD	-0.661169
pc_Educational_Attain_POP_HS_GRAD	0.606067
num_Educational_Attain_POP_SomeColl	-0.646073
pc_Educational_Attain_POP_SomeColl	0.891248
num_Educational_Attain_POP_AssocDeg	-0.664980
pc_Educational_Attain_POP_AssocDeg	0.617463
num_Educational_Attain_POP_BacDeg	-0.686107
pc_Educational_Attain_POP_BacDeg	-0.554102
num_Educational_Attain_POP_GradProf	-0.667898
pc_Educational_Attain_POP_GradProf	-0.911161
PDP02.5_37est	-0.667458
pct_Educational_Attain_POP_HS_Grad_higher	-0.404809
PDP02.5_38est	-0.674348
pct_Educational_Attain_BS_Deg_higher	-0.859061
FIPST	0.007609
LEAID_y	0.009253
ALL_MTH04NUMVALID_1415	-0.852428
ALL_MTH04PCTPROF_1415	0.032662
ECD_MTH04NUMVALID_1415	-0.943421
ECD_MTH04PCTPROF_1415	0.026157
HOM_MTH04NUMVALID_1415	-0.325475
HOM_MTH04PCTPROF_1415	0.053748
ALL_MTH08NUMVALID_1415	-0.498907
ALL_MTH08PCTPROF_1415	-0.369909
ECD_MTH08NUMVALID_1415	-0.755626
ECD_MTH08PCTPROF_1415	-0.334709
HOM_MTH08NUMVALID_1415	-0.015080
HOM_MTH08PCTPROF_1415	0.184826

	pct_Below PovLvL_Age_gte_18 \
LEAID_x	0.068325
Iteration_x	NaN
pct_Below PovLvL_All_Ages	1.000000
pctmoe_Below PovLvL_All_Ages	0.422027
pct_Below PovLvL_Age_gte_18	1.000000
pctmoe_Below PovLvL_Age_gte_18	0.422161
pct_Below PovLvL_Age_18_64	0.999995
pctmoe_Below PovLvL_Age_18_64	0.422724
pct_Below PovLvL_Age_gte_65	0.826030

pctmoe_Below PovLvL_Age_gte_65	-0.293938
LEA_CWIFTEST	-0.286192
LEA_CWIFTSE	0.581198
Iteration_y	NaN
num_Educational_Attain_POP	0.239751
num_Educational_Attain_POP_LT9th	0.245732
pc_ Educational_Attain_POP_LT9th	0.632112
num_Educational_Attain_POP_9th-12th	0.296138
pc_Educational_Attain_POP_9th-12th	0.927885
num_Educational_Attain_POP_HS_GRAD	0.268793
pc_Educational_Attain_POP_HS_GRAD	0.636466
num_Educational_Attain_POP_SomeColl	0.281311
pc_Educational_Attain_POP_SomeColl	0.421580
num_Educational_Attain_POP_AssocDeg	0.306612
pc_Educational_Attain_POP_AssocDeg	-0.169922
num_Educational_Attain_POP_BacDeg	0.198521
pc_Educational_Attain_POP_BacDeg	-0.947382
num_Educational_Attain_POP_GradProf	0.208042
pc_Educational_Attain_POP_GradProf	-0.366888
PDP02.5_37est	0.235600
pct_Educational_Attain_POP_HS_Grad_higher	-0.891078
PDP02.5_38est	0.204737
pct_Educational_Attain_BS_Deg_higher	-0.708185
FIPST	0.069203
LEAID_y	0.068319
ALL_MTH04NUMVALID_1415	-0.607004
ALL_MTH04PCTPROF_1415	0.098156
ECD_MTH04NUMVALID_1415	-0.533752
ECD_MTH04PCTPROF_1415	0.243416
HOM_MTH04NUMVALID_1415	0.160374
HOM_MTH04PCTPROF_1415	0.177422
ALL_MTH08NUMVALID_1415	-0.756010
ALL_MTH08PCTPROF_1415	-0.191573
ECD_MTH08NUMVALID_1415	-0.692695
ECD_MTH08PCTPROF_1415	0.178482
HOM_MTH08NUMVALID_1415	0.178021
HOM_MTH08PCTPROF_1415	-0.208032

	pctmoe_Below PovLvL_Age_gte_18 \
LEAID_x	0.009836
Iteration_x	NaN
pct_Below PovLvL_All_Ages	0.422699
pctmoe_Below PovLvL_All_Ages	0.999998
pct_Below PovLvL_Age_gte_18	0.422161
pctmoe_Below PovLvL_Age_gte_18	1.000000
pct_Below PovLvL_Age_18_64	0.423067
pctmoe_Below PovLvL_Age_18_64	0.999995
pct_Below PovLvL_Age_gte_65	0.150040

pctmoe_Below PovLvL_Age_gte_65	0.698974
LEA_CWIFTEST	-0.846156
LEA_CWIFTSE	0.907415
Iteration_y	NaN
num_Educational_Attain_POP	-0.664641
num_Educational_Attain_POP_LT9th	-0.646627
pc_ Educational_Attain_POP_LT9th	0.119357
num_Educational_Attain_POP_9th-12th	-0.633609
pc_Educational_Attain_POP_9th-12th	0.608693
num_Educational_Attain_POP_HS_GRAD	-0.661390
pc_Educational_Attain_POP_HS_GRAD	0.605596
num_Educational_Attain_POP_SomeColl	-0.646235
pc_Educational_Attain_POP_SomeColl	0.891486
num_Educational_Attain_POP_AssocDeg	-0.665049
pc_Educational_Attain_POP_AssocDeg	0.617769
num_Educational_Attain_POP_BacDeg	-0.686330
pc_Educational_Attain_POP_BacDeg	-0.554095
num_Educational_Attain_POP_GradProf	-0.668148
pc_Educational_Attain_POP_GradProf	-0.911302
PDP02.5_37est	-0.667675
pct_Educational_Attain_POP_HS_Grad_higher	-0.405550
PDP02.5_38est	-0.674588
pct_Educational_Attain_BS_Deg_higher	-0.859147
FIPST	0.008315
LEAID_y	0.009958
ALL_MTH04NUMVALID_1415	-0.852106
ALL_MTH04PCTPROF_1415	0.032346
ECD_MTH04NUMVALID_1415	-0.943142
ECD_MTH04PCTPROF_1415	0.025899
HOM_MTH04NUMVALID_1415	-0.325114
HOM_MTH04PCTPROF_1415	0.052905
ALL_MTH08NUMVALID_1415	-0.498224
ALL_MTH08PCTPROF_1415	-0.370191
ECD_MTH08NUMVALID_1415	-0.755053
ECD_MTH08PCTPROF_1415	-0.335252
HOM_MTH08NUMVALID_1415	-0.014559
HOM_MTH08PCTPROF_1415	0.184102

	pct_Below PovLvL_Age_18_64 \
LEAID_x	0.067163
Iteration_x	NaN
pct_Below PovLvL_All_Ages	0.999996
pctmoe_Below PovLvL_All_Ages	0.422936
pct_Below PovLvL_Age_gte_18	0.999995
pctmoe_Below PovLvL_Age_gte_18	0.423067
pct_Below PovLvL_Age_18_64	1.000000
pctmoe_Below PovLvL_Age_18_64	0.423633
pct_Below PovLvL_Age_gte_65	0.825030

pctmoe_Below PovLvL_Age_gte_65	-0.292848
LEA_CWIFTEST	-0.286875
LEA_CWIFTSE	0.581803
Iteration_y	NaN
num_Educational_Attain_POP	0.239140
num_Educational_Attain_POP_LT9th	0.245109
pc_ Educational_Attain_POP_LT9th	0.631248
num_Educational_Attain_POP_9th-12th	0.295477
pc_Educational_Attain_POP_9th-12th	0.927628
num_Educational_Attain_POP_HS_GRAD	0.268190
pc_Educational_Attain_POP_HS_GRAD	0.637636
num_Educational_Attain_POP_SomeColl	0.280632
pc_Educational_Attain_POP_SomeColl	0.421783
num_Educational_Attain_POP_AssocDeg	0.305821
pc_Educational_Attain_POP_AssocDeg	-0.169121
num_Educational_Attain_POP_BacDeg	0.197913
pc_Educational_Attain_POP_BacDeg	-0.947774
num_Educational_Attain_POP_GradProf	0.207486
pc_Educational_Attain_POP_GradProf	-0.367691
PDP02.5_37est	0.234993
pct_Educational_Attain_POP_HS_Grad_higher	-0.890504
PDP02.5_38est	0.204162
pct_Educational_Attain_BS_Deg_higher	-0.708899
FIPST	0.068037
LEAID_y	0.067156
ALL_MTH04NUMVALID_1415	-0.607570
ALL_MTH04PCTPROF_1415	0.098338
ECD_MTH04NUMVALID_1415	-0.534690
ECD_MTH04PCTPROF_1415	0.243807
HOM_MTH04NUMVALID_1415	0.160508
HOM_MTH04PCTPROF_1415	0.176555
ALL_MTH08NUMVALID_1415	-0.756291
ALL_MTH08PCTPROF_1415	-0.192909
ECD_MTH08NUMVALID_1415	-0.693573
ECD_MTH08PCTPROF_1415	0.177882
HOM_MTH08NUMVALID_1415	0.178348
HOM_MTH08PCTPROF_1415	-0.209092

	pctmoe_Below PovLvL_Age_18_64 \
LEAID_x	0.009547
Iteration_x	NaN
pct_Below PovLvL_All_Ages	0.423262
pctmoe_Below PovLvL_All_Ages	0.999996
pct_Below PovLvL_Age_gte_18	0.422724
pctmoe_Below PovLvL_Age_gte_18	0.999995
pct_Below PovLvL_Age_18_64	0.423633
pctmoe_Below PovLvL_Age_18_64	1.000000
pct_Below PovLvL_Age_gte_65	0.150559

pctmoe_Below PovLvL_Age_gte_65	0.699035
LEA_CWIFTEST	-0.846195
LEA_CWIFTSE	0.907750
Iteration_y	NaN
num_Educational_Attain_POP	-0.664695
num_Educational_Attain_POP_LT9th	-0.646703
pc_ Educational_Attain_POP_LT9th	0.118698
num_Educational_Attain_POP_9th-12th	-0.633640
pc_Educational_Attain_POP_9th-12th	0.608902
num_Educational_Attain_POP_HS_GRAD	-0.661380
pc_Educational_Attain_POP_HS_GRAD	0.606242
num_Educational_Attain_POP_SomeColl	-0.646272
pc_Educational_Attain_POP_SomeColl	0.891719
num_Educational_Attain_POP_AssocDeg	-0.665037
pc_Educational_Attain_POP_AssocDeg	0.617665
num_Educational_Attain_POP_BacDeg	-0.686415
pc_Educational_Attain_POP_BacDeg	-0.554509
num_Educational_Attain_POP_GradProf	-0.668238
pc_Educational_Attain_POP_GradProf	-0.911566
PDP02.5_37est	-0.667730
pct_Educational_Attain_POP_HS_Grad_higher	-0.405405
PDP02.5_38est	-0.674676
pct_Educational_Attain_BS_Deg_higher	-0.859518
FIPST	0.008032
LEAID_y	0.009669
ALL_MTH04NUMVALID_1415	-0.852440
ALL_MTH04PCTPROF_1415	0.030907
ECD_MTH04NUMVALID_1415	-0.943203
ECD_MTH04PCTPROF_1415	0.024459
HOM_MTH04NUMVALID_1415	-0.326709
HOM_MTH04PCTPROF_1415	0.053280
ALL_MTH08NUMVALID_1415	-0.498388
ALL_MTH08PCTPROF_1415	-0.371059
ECD_MTH08NUMVALID_1415	-0.755090
ECD_MTH08PCTPROF_1415	-0.336080
HOM_MTH08NUMVALID_1415	-0.016523
HOM_MTH08PCTPROF_1415	0.184848

	pct_Below PovLvL_Age_gte_65 \
LEAID_x	-0.122281
Iteration_x	NaN
pct_Below PovLvL_All_Ages	0.826039
pctmoe_Below PovLvL_All_Ages	0.149892
pct_Below PovLvL_Age_gte_18	0.826030
pctmoe_Below PovLvL_Age_gte_18	0.150040
pct_Below PovLvL_Age_18_64	0.825030
pctmoe_Below PovLvL_Age_18_64	0.150559
pct_Below PovLvL_Age_gte_65	1.000000

pctmoe_Below PovLvL_Age_gte_65	-0.526337
LEA_CWIFTEST	0.130799
LEA_CWIFTSE	0.231067
Iteration_y	NaN
num_Educational_Attain_POP	0.474386
num_Educational_Attain_POP_LT9th	0.493623
pc_ Educational_Attain_POP_LT9th	0.785821
num_Educational_Attain_POP_9th-12th	0.525134
pc_Educational_Attain_POP_9th-12th	0.756540
num_Educational_Attain_POP_HS_GRAD	0.485140
pc_Educational_Attain_POP_HS_GRAD	0.182667
num_Educational_Attain_POP_SomeColl	0.511269
pc_Educational_Attain_POP_SomeColl	0.214389
num_Educational_Attain_POP_AssocDeg	0.525586
pc_Educational_Attain_POP_AssocDeg	-0.484807
num_Educational_Attain_POP_BacDeg	0.445395
pc_Educational_Attain_POP_BacDeg	-0.657198
num_Educational_Attain_POP_GradProf	0.448156
pc_Educational_Attain_POP_GradProf	0.017217
PDP02.5_37est	0.469677
pct_Educational_Attain_POP_HS_Grad_higher	-0.856496
PDP02.5_38est	0.447248
pct_Educational_Attain_BS_Deg_higher	-0.316544
FIPST	-0.120909
LEAID_y	-0.122363
ALL_MTH04NUMVALID_1415	-0.368888
ALL_MTH04PCTPROF_1415	-0.118247
ECD_MTH04NUMVALID_1415	-0.244807
ECD_MTH04PCTPROF_1415	-0.039431
HOM_MTH04NUMVALID_1415	0.074429
HOM_MTH04PCTPROF_1415	0.165955
ALL_MTH08NUMVALID_1415	-0.692473
ALL_MTH08PCTPROF_1415	-0.065690
ECD_MTH08NUMVALID_1415	-0.464903
ECD_MTH08PCTPROF_1415	0.321507
HOM_MTH08NUMVALID_1415	-0.040781
HOM_MTH08PCTPROF_1415	0.011908

	pctmoe_Below PovLvL_Age_gte_65 \
LEAID_x	0.129938
Iteration_x	NaN
pct_Below PovLvL_All_Ages	-0.293476
pctmoe_Below PovLvL_All_Ages	0.699013
pct_Below PovLvL_Age_gte_18	-0.293938
pctmoe_Below PovLvL_Age_gte_18	0.698974
pct_Below PovLvL_Age_18_64	-0.292848
pctmoe_Below PovLvL_Age_18_64	0.699035
pct_Below PovLvL_Age_gte_65	-0.526337

```
pctmoe_Below PovLvL_Age_gte_65                    1.000000
LEA_CWIFTEST                                     -0.767344
LEA_CWIFTSE                                       0.558650
Iteration_y                                            NaN
num_Educational_Attain_POP                       -0.955711
num_Educational_Attain_POP_LT9th                 -0.948750
pc_ Educational_Attain_POP_LT9th                 -0.461641
num_Educational_Attain_POP_9th-12th              -0.962635
pc_Educational_Attain_POP_9th-12th               -0.047907
num_Educational_Attain_POP_HS_GRAD               -0.963610
pc_Educational_Attain_POP_HS_GRAD                 0.266540
num_Educational_Attain_POP_SomeColl              -0.964258
pc_Educational_Attain_POP_SomeColl                0.607717
num_Educational_Attain_POP_AssocDeg              -0.980120
pc_Educational_Attain_POP_AssocDeg                0.884819
num_Educational_Attain_POP_BacDeg                -0.950794
pc_Educational_Attain_POP_BacDeg                  0.097722
num_Educational_Attain_POP_GradProf              -0.942962
pc_Educational_Attain_POP_GradProf               -0.760294
PDP02.5_37est                                    -0.955459
pct_Educational_Attain_POP_HS_Grad_higher         0.287749
PDP02.5_38est                                    -0.945816
pct_Educational_Attain_BS_Deg_higher             -0.436443
FIPST                                             0.127989
LEAID_y                                           0.130053
ALL_MTH04NUMVALID_1415                           -0.408953
ALL_MTH04PCTPROF_1415                            -0.081544
ECD_MTH04NUMVALID_1415                           -0.527048
ECD_MTH04PCTPROF_1415                            -0.192850
HOM_MTH04NUMVALID_1415                           -0.511290
HOM_MTH04PCTPROF_1415                            -0.049935
ALL_MTH08NUMVALID_1415                            0.157963
ALL_MTH08PCTPROF_1415                            -0.286940
ECD_MTH08NUMVALID_1415                           -0.166368
ECD_MTH08PCTPROF_1415                            -0.622409
HOM_MTH08NUMVALID_1415                           -0.217061
HOM_MTH08PCTPROF_1415                             0.331190

                                                    ...           \
LEAID_x                                             ...
Iteration_x                                         ...
pct_Below PovLvL_All_Ages                           ...
pctmoe_Below PovLvL_All_Ages                        ...
pct_Below PovLvL_Age_gte_18                         ...
pctmoe_Below PovLvL_Age_gte_18                      ...
pct_Below PovLvL_Age_18_64                          ...
pctmoe_Below PovLvL_Age_18_64                       ...
pct_Below PovLvL_Age_gte_65                         ...
```

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pctmoe_Below PovLvL_Age_gte_65                    ...
LEA_CWIFTEST                                      ...
LEA_CWIFTSE                                       ...
Iteration_y                                       ...
num_Educational_Attain_POP                        ...
num_Educational_Attain_POP_LT9th                  ...
pc_ Educational_Attain_POP_LT9th                  ...
num_Educational_Attain_POP_9th-12th               ...
pc_Educational_Attain_POP_9th-12th                ...
num_Educational_Attain_POP_HS_GRAD                ...
pc_Educational_Attain_POP_HS_GRAD                 ...
num_Educational_Attain_POP_SomeColl               ...
pc_Educational_Attain_POP_SomeColl                ...
num_Educational_Attain_POP_AssocDeg               ...
pc_Educational_Attain_POP_AssocDeg                ...
num_Educational_Attain_POP_BacDeg                 ...
pc_Educational_Attain_POP_BacDeg                  ...
num_Educational_Attain_POP_GradProf               ...
pc_Educational_Attain_POP_GradProf                ...
PDP02.5_37est                                     ...
pct_Educational_Attain_POP_HS_Grad_higher         ...
PDP02.5_38est                                     ...
pct_Educational_Attain_BS_Deg_higher              ...
FIPST                                             ...
LEAID_y                                           ...
ALL_MTH04NUMVALID_1415                            ...
ALL_MTH04PCTPROF_1415                             ...
ECD_MTH04NUMVALID_1415                            ...
ECD_MTH04PCTPROF_1415                             ...
HOM_MTH04NUMVALID_1415                            ...
HOM_MTH04PCTPROF_1415                             ...
ALL_MTH08NUMVALID_1415                            ...
ALL_MTH08PCTPROF_1415                             ...
ECD_MTH08NUMVALID_1415                            ...
ECD_MTH08PCTPROF_1415                             ...
HOM_MTH08NUMVALID_1415                            ...
HOM_MTH08PCTPROF_1415                             ...

                                          ECD_MTH04NUMVALID_1415  \
LEAID_x                                                -0.027112
Iteration_x                                                  NaN
pct_Below PovLvL_All_Ages                              -0.534193
pctmoe_Below PovLvL_All_Ages                           -0.943421
pct_Below PovLvL_Age_gte_18                            -0.533752
pctmoe_Below PovLvL_Age_gte_18                         -0.943142
pct_Below PovLvL_Age_18_64                             -0.534690
pctmoe_Below PovLvL_Age_18_64                          -0.943203
pct_Below PovLvL_Age_gte_65                            -0.244807
```

pctmoe_Below PovLvL_Age_gte_65	-0.527048
LEA_CWIFTEST	0.743450
LEA_CWIFTSE	-0.854869
Iteration_y	NaN
num_Educational_Attain_POP	0.503505
num_Educational_Attain_POP_LT9th	0.493357
pc_ Educational_Attain_POP_LT9th	-0.113642
num_Educational_Attain_POP_9th-12th	0.474180
pc_Educational_Attain_POP_9th-12th	-0.626656
num_Educational_Attain_POP_HS_GRAD	0.491997
pc_Educational_Attain_POP_HS_GRAD	-0.696812
num_Educational_Attain_POP_SomeColl	0.484226
pc_Educational_Attain_POP_SomeColl	-0.793423
num_Educational_Attain_POP_AssocDeg	0.509242
pc_Educational_Attain_POP_AssocDeg	-0.398244
num_Educational_Attain_POP_BacDeg	0.528616
pc_Educational_Attain_POP_BacDeg	0.624126
num_Educational_Attain_POP_GradProf	0.509083
pc_Educational_Attain_POP_GradProf	0.826827
PDP02.5_37est	0.505957
pct_Educational_Attain_POP_HS_Grad_higher	0.425633
PDP02.5_38est	0.515978
pct_Educational_Attain_BS_Deg_higher	0.840704
FIPST	-0.025931
LEAID_y	-0.027216
ALL_MTH04NUMVALID_1415	0.932891
ALL_MTH04PCTPROF_1415	-0.119307
ECD_MTH04NUMVALID_1415	1.000000
ECD_MTH04PCTPROF_1415	-0.160017
HOM_MTH04NUMVALID_1415	0.295847
HOM_MTH04PCTPROF_1415	-0.209395
ALL_MTH08NUMVALID_1415	0.691323
ALL_MTH08PCTPROF_1415	0.209852
ECD_MTH08NUMVALID_1415	0.906893
ECD_MTH08PCTPROF_1415	0.072897
HOM_MTH08NUMVALID_1415	0.019429
HOM_MTH08PCTPROF_1415	-0.206805

	ECD_MTH04PCTPROF_1415 \
LEAID_x	0.166754
Iteration_x	NaN
pct_Below PovLvL_All_Ages	0.243313
pctmoe_Below PovLvL_All_Ages	0.026157
pct_Below PovLvL_Age_gte_18	0.243416
pctmoe_Below PovLvL_Age_gte_18	0.025899
pct_Below PovLvL_Age_18_64	0.243807
pctmoe_Below PovLvL_Age_18_64	0.024459
pct_Below PovLvL_Age_gte_65	-0.039431

pctmoe_Below PovLvL_Age_gte_65	-0.192850
LEA_CWIFTEST	-0.148695
LEA_CWIFTSE	0.018525
Iteration_y	NaN
num_Educational_Attain_POP	0.282057
num_Educational_Attain_POP_LT9th	0.265793
pc_ Educational_Attain_POP_LT9th	0.084549
num_Educational_Attain_POP_9th-12th	0.269559
pc_Educational_Attain_POP_9th-12th	0.069934
num_Educational_Attain_POP_HS_GRAD	0.293727
pc_Educational_Attain_POP_HS_GRAD	0.414471
num_Educational_Attain_POP_SomeColl	0.273729
pc_Educational_Attain_POP_SomeColl	-0.093365
num_Educational_Attain_POP_AssocDeg	0.257604
pc_Educational_Attain_POP_AssocDeg	0.008673
num_Educational_Attain_POP_BacDeg	0.273922
pc_Educational_Attain_POP_BacDeg	-0.354809
num_Educational_Attain_POP_GradProf	0.289102
pc_Educational_Attain_POP_GradProf	-0.081709
PDP02.5_37est	0.283864
pct_Educational_Attain_POP_HS_Grad_higher	-0.107555
PDP02.5_38est	0.283822
pct_Educational_Attain_BS_Deg_higher	-0.233183
FIPST	0.164790
LEAID_y	0.166884
ALL_MTH04NUMVALID_1415	-0.052188
ALL_MTH04PCTPROF_1415	0.958423
ECD_MTH04NUMVALID_1415	-0.160017
ECD_MTH04PCTPROF_1415	1.000000
HOM_MTH04NUMVALID_1415	0.737512
HOM_MTH04PCTPROF_1415	0.399203
ALL_MTH08NUMVALID_1415	-0.299417
ALL_MTH08PCTPROF_1415	0.486064
ECD_MTH08NUMVALID_1415	-0.377979
ECD_MTH08PCTPROF_1415	0.568301
HOM_MTH08NUMVALID_1415	0.762199
HOM_MTH08PCTPROF_1415	-0.339197

	HOM_MTH04NUMVALID_1415 \
LEAID_x	-0.148052
Iteration_x	NaN
pct_Below PovLvL_All_Ages	0.160210
pctmoe_Below PovLvL_All_Ages	-0.325475
pct_Below PovLvL_Age_gte_18	0.160374
pctmoe_Below PovLvL_Age_gte_18	-0.325114
pct_Below PovLvL_Age_18_64	0.160508
pctmoe_Below PovLvL_Age_18_64	-0.326709
pct_Below PovLvL_Age_gte_65	0.074429

pctmoe_Below PovLvL_Age_gte_65	-0.511290
LEA_CWIFTEST	0.260627
LEA_CWIFTSE	-0.276413
Iteration_y	NaN
num_Educational_Attain_POP	0.605549
num_Educational_Attain_POP_LT9th	0.604926
pc_ Educational_Attain_POP_LT9th	0.428732
num_Educational_Attain_POP_9th-12th	0.600234
pc_Educational_Attain_POP_9th-12th	0.027186
num_Educational_Attain_POP_HS_GRAD	0.599421
pc_Educational_Attain_POP_HS_GRAD	-0.045932
num_Educational_Attain_POP_SomeColl	0.597554
pc_Educational_Attain_POP_SomeColl	-0.347900
num_Educational_Attain_POP_AssocDeg	0.591538
pc_Educational_Attain_POP_AssocDeg	-0.224485
num_Educational_Attain_POP_BacDeg	0.604582
pc_Educational_Attain_POP_BacDeg	-0.200288
num_Educational_Attain_POP_GradProf	0.612735
pc_Educational_Attain_POP_GradProf	0.337295
PDP02.5_37est	0.605781
pct_Educational_Attain_POP_HS_Grad_higher	-0.241402
PDP02.5_38est	0.609957
pct_Educational_Attain_BS_Deg_higher	0.112497
FIPST	-0.149186
LEAID_y	-0.148016
ALL_MTH04NUMVALID_1415	0.395801
ALL_MTH04PCTPROF_1415	0.671533
ECD_MTH04NUMVALID_1415	0.295847
ECD_MTH04PCTPROF_1415	0.737512
HOM_MTH04NUMVALID_1415	1.000000
HOM_MTH04PCTPROF_1415	-0.148661
ALL_MTH08NUMVALID_1415	0.002388
ALL_MTH08PCTPROF_1415	0.170159
ECD_MTH08NUMVALID_1415	0.039833
ECD_MTH08PCTPROF_1415	0.406961
HOM_MTH08NUMVALID_1415	0.913954
HOM_MTH08PCTPROF_1415	-0.749234

	HOM_MTH04PCTPROF_1415 \
LEAID_x	0.462184
Iteration_x	NaN
pct_Below PovLvL_All_Ages	0.177307
pctmoe_Below PovLvL_All_Ages	0.053748
pct_Below PovLvL_Age_gte_18	0.177422
pctmoe_Below PovLvL_Age_gte_18	0.052905
pct_Below PovLvL_Age_18_64	0.176555
pctmoe_Below PovLvL_Age_18_64	0.053280
pct_Below PovLvL_Age_gte_65	0.165955

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pctmoe_Below PovLvL_Age_gte_65                    -0.049935
LEA_CWIFTEST                                      -0.160238
LEA_CWIFTSE                                        0.024824
Iteration_y                                             NaN
num_Educational_Attain_POP                         0.037623
num_Educational_Attain_POP_LT9th                   0.018344
pc_ Educational_Attain_POP_LT9th                  -0.224257
num_Educational_Attain_POP_9th-12th                0.027769
pc_Educational_Attain_POP_9th-12th                 0.010898
num_Educational_Attain_POP_HS_GRAD                 0.060672
pc_Educational_Attain_POP_HS_GRAD                  0.384079
num_Educational_Attain_POP_SomeColl                0.039126
pc_Educational_Attain_POP_SomeColl                 0.039852
num_Educational_Attain_POP_AssocDeg                0.040998
pc_Educational_Attain_POP_AssocDeg                -0.041137
num_Educational_Attain_POP_BacDeg                  0.029618
pc_Educational_Attain_POP_BacDeg                  -0.170547
num_Educational_Attain_POP_GradProf                0.031985
pc_Educational_Attain_POP_GradProf                -0.172490
PDP02.5_37est                                      0.039515
pct_Educational_Attain_POP_HS_Grad_higher          0.076308
PDP02.5_38est                                      0.031155
pct_Educational_Attain_BS_Deg_higher              -0.196142
FIPST                                              0.461692
LEAID_y                                            0.462250
ALL_MTH04NUMVALID_1415                            -0.279565
ALL_MTH04PCTPROF_1415                              0.487580
ECD_MTH04NUMVALID_1415                            -0.209395
ECD_MTH04PCTPROF_1415                              0.399203
HOM_MTH04NUMVALID_1415                            -0.148661
HOM_MTH04PCTPROF_1415                              1.000000
ALL_MTH08NUMVALID_1415                            -0.394207
ALL_MTH08PCTPROF_1415                              0.758041
ECD_MTH08NUMVALID_1415                            -0.335473
ECD_MTH08PCTPROF_1415                              0.528352
HOM_MTH08NUMVALID_1415                            -0.223069
HOM_MTH08PCTPROF_1415                              0.644035

                                          ALL_MTH08NUMVALID_1415  \
LEAID_x                                                0.106895
Iteration_x                                                 NaN
pct_Below PovLvL_All_Ages                             -0.756152
pctmoe_Below PovLvL_All_Ages                          -0.498907
pct_Below PovLvL_Age_gte_18                           -0.756010
pctmoe_Below PovLvL_Age_gte_18                        -0.498224
pct_Below PovLvL_Age_18_64                            -0.756291
pctmoe_Below PovLvL_Age_18_64                         -0.498388
pct_Below PovLvL_Age_gte_65                           -0.692473
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pctmoe_Below PovLvL_Age_gte_65	0.157963
LEA_CWIFTEST	0.166709
LEA_CWIFTSE	-0.388796
Iteration_y	NaN
num_Educational_Attain_POP	-0.156856
num_Educational_Attain_POP_LT9th	-0.161197
pc_ Educational_Attain_POP_LT9th	-0.366777
num_Educational_Attain_POP_9th-12th	-0.185639
pc_Educational_Attain_POP_9th-12th	-0.638601
num_Educational_Attain_POP_HS_GRAD	-0.174233
pc_Educational_Attain_POP_HS_GRAD	-0.606796
num_Educational_Attain_POP_SomeColl	-0.177806
pc_Educational_Attain_POP_SomeColl	-0.306727
num_Educational_Attain_POP_AssocDeg	-0.158239
pc_Educational_Attain_POP_AssocDeg	0.293225
num_Educational_Attain_POP_BacDeg	-0.130149
pc_Educational_Attain_POP_BacDeg	0.713976
num_Educational_Attain_POP_GradProf	-0.145131
pc_Educational_Attain_POP_GradProf	0.291889
PDP02.5_37est	-0.154644
pct_Educational_Attain_POP_HS_Grad_higher	0.584436
PDP02.5_38est	-0.139909
pct_Educational_Attain_BS_Deg_higher	0.543371
FIPST	0.107271
LEAID_y	0.106947
ALL_MTH04NUMVALID_1415	0.781314
ALL_MTH04PCTPROF_1415	-0.189229
ECD_MTH04NUMVALID_1415	0.691323
ECD_MTH04PCTPROF_1415	-0.299417
HOM_MTH04NUMVALID_1415	0.002388
HOM_MTH04PCTPROF_1415	-0.394207
ALL_MTH08NUMVALID_1415	1.000000
ALL_MTH08PCTPROF_1415	-0.041508
ECD_MTH08NUMVALID_1415	0.886850
ECD_MTH08PCTPROF_1415	-0.484819
HOM_MTH08NUMVALID_1415	-0.009575
HOM_MTH08PCTPROF_1415	-0.163961

	ALL_MTH08PCTPROF_1415 \
LEAID_x	0.444565
Iteration_x	NaN
pct_Below PovLvL_All_Ages	-0.191853
pctmoe_Below PovLvL_All_Ages	-0.369909
pct_Below PovLvL_Age_gte_18	-0.191573
pctmoe_Below PovLvL_Age_gte_18	-0.370191
pct_Below PovLvL_Age_18_64	-0.192909
pctmoe_Below PovLvL_Age_18_64	-0.371059
pct_Below PovLvL_Age_gte_65	-0.065690

pctmoe_Below PovLvL_Age_gte_65	-0.286940
LEA_CWIFTEST	0.257152
LEA_CWIFTSE	-0.413850
Iteration_y	NaN
num_Educational_Attain_POP	0.283153
num_Educational_Attain_POP_LT9th	0.266552
pc_ Educational_Attain_POP_LT9th	-0.154283
num_Educational_Attain_POP_9th-12th	0.255122
pc_Educational_Attain_POP_9th-12th	-0.353130
num_Educational_Attain_POP_HS_GRAD	0.288022
pc_Educational_Attain_POP_HS_GRAD	-0.107484
num_Educational_Attain_POP_SomeColl	0.269262
pc_Educational_Attain_POP_SomeColl	-0.391679
num_Educational_Attain_POP_AssocDeg	0.261102
pc_Educational_Attain_POP_AssocDeg	-0.275596
num_Educational_Attain_POP_BacDeg	0.294138
pc_Educational_Attain_POP_BacDeg	0.278309
num_Educational_Attain_POP_GradProf	0.288865
pc_Educational_Attain_POP_GradProf	0.281193
PDP02.5_37est	0.285997
pct_Educational_Attain_POP_HS_Grad_higher	0.271542
PDP02.5_38est	0.290739
pct_Educational_Attain_BS_Deg_higher	0.316903
FIPST	0.443844
LEAID_y	0.444590
ALL_MTH04NUMVALID_1415	0.201477
ALL_MTH04PCTPROF_1415	0.576432
ECD_MTH04NUMVALID_1415	0.209852
ECD_MTH04PCTPROF_1415	0.486064
HOM_MTH04NUMVALID_1415	0.170159
HOM_MTH04PCTPROF_1415	0.758041
ALL_MTH08NUMVALID_1415	-0.041508
ALL_MTH08PCTPROF_1415	1.000000
ECD_MTH08NUMVALID_1415	0.037242
ECD_MTH08PCTPROF_1415	0.751407
HOM_MTH08NUMVALID_1415	0.024269
HOM_MTH08PCTPROF_1415	0.385743

	ECD_MTH08NUMVALID_1415 \
LEAID_x	0.105186
Iteration_x	NaN
pct_Below PovLvL_All_Ages	-0.693048
pctmoe_Below PovLvL_All_Ages	-0.755626
pct_Below PovLvL_Age_gte_18	-0.692695
pctmoe_Below PovLvL_Age_gte_18	-0.755053
pct_Below PovLvL_Age_18_64	-0.693573
pctmoe_Below PovLvL_Age_18_64	-0.755090
pct_Below PovLvL_Age_gte_65	-0.464903

pctmoe_Below PovLvL_Age_gte_65	-0.166368
LEA_CWIFTEST	0.485805
LEA_CWIFTSE	-0.667125
Iteration_y	NaN
num_Educational_Attain_POP	0.108434
num_Educational_Attain_POP_LT9th	0.100368
pc_ Educational_Attain_POP_LT9th	-0.290975
num_Educational_Attain_POP_9th-12th	0.081566
pc_Educational_Attain_POP_9th-12th	-0.648686
num_Educational_Attain_POP_HS_GRAD	0.095056
pc_Educational_Attain_POP_HS_GRAD	-0.685615
num_Educational_Attain_POP_SomeColl	0.090926
pc_Educational_Attain_POP_SomeColl	-0.597778
num_Educational_Attain_POP_AssocDeg	0.126094
pc_Educational_Attain_POP_AssocDeg	-0.069170
num_Educational_Attain_POP_BacDeg	0.135934
pc_Educational_Attain_POP_BacDeg	0.732888
num_Educational_Attain_POP_GradProf	0.113013
pc_Educational_Attain_POP_GradProf	0.581786
PDP02.5_37est	0.110692
pct_Educational_Attain_POP_HS_Grad_higher	0.541522
PDP02.5_38est	0.121045
pct_Educational_Attain_BS_Deg_higher	0.739279
FIPST	0.106145
LEAID_y	0.105117
ALL_MTH04NUMVALID_1415	0.852821
ALL_MTH04PCTPROF_1415	-0.305868
ECD_MTH04NUMVALID_1415	0.906893
ECD_MTH04PCTPROF_1415	-0.377979
HOM_MTH04NUMVALID_1415	0.039833
HOM_MTH04PCTPROF_1415	-0.335473
ALL_MTH08NUMVALID_1415	0.886850
ALL_MTH08PCTPROF_1415	0.037242
ECD_MTH08NUMVALID_1415	1.000000
ECD_MTH08PCTPROF_1415	-0.276671
HOM_MTH08NUMVALID_1415	-0.128661
HOM_MTH08PCTPROF_1415	-0.104309

	ECD_MTH08PCTPROF_1415 \
LEAID_x	0.049893
Iteration_x	NaN
pct_Below PovLvL_All_Ages	0.178221
pctmoe_Below PovLvL_All_Ages	-0.334709
pct_Below PovLvL_Age_gte_18	0.178482
pctmoe_Below PovLvL_Age_gte_18	-0.335252
pct_Below PovLvL_Age_18_64	0.177882
pctmoe_Below PovLvL_Age_18_64	-0.336080
pct_Below PovLvL_Age_gte_65	0.321507

pctmoe_Below PovLvL_Age_gte_65	-0.622409
LEA_CWIFTEST	0.498502
LEA_CWIFTSE	-0.433465
Iteration_y	NaN
num_Educational_Attain_POP	0.642864
num_Educational_Attain_POP_LT9th	0.632888
pc_ Educational_Attain_POP_LT9th	0.196054
num_Educational_Attain_POP_9th-12th	0.628526
pc_Educational_Attain_POP_9th-12th	-0.082005
num_Educational_Attain_POP_HS_GRAD	0.648205
pc_Educational_Attain_POP_HS_GRAD	0.004760
num_Educational_Attain_POP_SomeColl	0.634624
pc_Educational_Attain_POP_SomeColl	-0.487075
num_Educational_Attain_POP_AssocDeg	0.609151
pc_Educational_Attain_POP_AssocDeg	-0.694332
num_Educational_Attain_POP_BacDeg	0.644555
pc_Educational_Attain_POP_BacDeg	-0.032259
num_Educational_Attain_POP_GradProf	0.646767
pc_Educational_Attain_POP_GradProf	0.450116
PDP02.5_37est	0.644285
pct_Educational_Attain_POP_HS_Grad_higher	-0.074071
PDP02.5_38est	0.646069
pct_Educational_Attain_BS_Deg_higher	0.269555
FIPST	0.049481
LEAID_y	0.049793
ALL_MTH04NUMVALID_1415	0.020067
ALL_MTH04PCTPROF_1415	0.518903
ECD_MTH04NUMVALID_1415	0.072897
ECD_MTH04PCTPROF_1415	0.568301
HOM_MTH04NUMVALID_1415	0.406961
HOM_MTH04PCTPROF_1415	0.528352
ALL_MTH08NUMVALID_1415	-0.484819
ALL_MTH08PCTPROF_1415	0.751407
ECD_MTH08NUMVALID_1415	-0.276671
ECD_MTH08PCTPROF_1415	1.000000
HOM_MTH08NUMVALID_1415	0.199335
HOM_MTH08PCTPROF_1415	0.067562

	HOM_MTH08NUMVALID_1415 \
LEAID_x	-0.145598
Iteration_x	NaN
pct_Below PovLvL_All_Ages	0.178038
pctmoe_Below PovLvL_All_Ages	-0.015080
pct_Below PovLvL_Age_gte_18	0.178021
pctmoe_Below PovLvL_Age_gte_18	-0.014559
pct_Below PovLvL_Age_18_64	0.178348
pctmoe_Below PovLvL_Age_18_64	-0.016523
pct_Below PovLvL_Age_gte_65	-0.040781

pctmoe_Below PovLvL_Age_gte_65	-0.217061
LEA_CWIFTEST	-0.061758
LEA_CWIFTSE	0.032593
Iteration_y	NaN
num_Educational_Attain_POP	0.322887
num_Educational_Attain_POP_LT9th	0.325872
pc_ Educational_Attain_POP_LT9th	0.395420
num_Educational_Attain_POP_9th-12th	0.322965
pc_Educational_Attain_POP_9th-12th	0.143440
num_Educational_Attain_POP_HS_GRAD	0.314602
pc_Educational_Attain_POP_HS_GRAD	0.075905
num_Educational_Attain_POP_SomeColl	0.318809
pc_Educational_Attain_POP_SomeColl	-0.022741
num_Educational_Attain_POP_AssocDeg	0.303712
pc_Educational_Attain_POP_AssocDeg	0.069699
num_Educational_Attain_POP_BacDeg	0.317775
pc_Educational_Attain_POP_BacDeg	-0.297695
num_Educational_Attain_POP_GradProf	0.332211
pc_Educational_Attain_POP_GradProf	0.035690
PDP02.5_37est	0.322604
pct_Educational_Attain_POP_HS_Grad_higher	-0.284191
PDP02.5_38est	0.327201
pct_Educational_Attain_BS_Deg_higher	-0.129205
FIPST	-0.147196
LEAID_y	-0.145435
ALL_MTH04NUMVALID_1415	0.198414
ALL_MTH04PCTPROF_1415	0.703133
ECD_MTH04NUMVALID_1415	0.019429
ECD_MTH04PCTPROF_1415	0.762199
HOM_MTH04NUMVALID_1415	0.913954
HOM_MTH04PCTPROF_1415	-0.223069
ALL_MTH08NUMVALID_1415	-0.009575
ALL_MTH08PCTPROF_1415	0.024269
ECD_MTH08NUMVALID_1415	-0.128661
ECD_MTH08PCTPROF_1415	0.199335
HOM_MTH08NUMVALID_1415	1.000000
HOM_MTH08PCTPROF_1415	-0.755333

	HOM_MTH08PCTPROF_1415
LEAID_x	0.229990
Iteration_x	NaN
pct_Below PovLvL_All_Ages	-0.207895
pctmoe_Below PovLvL_All_Ages	0.184826
pct_Below PovLvL_Age_gte_18	-0.208032
pctmoe_Below PovLvL_Age_gte_18	0.184102
pct_Below PovLvL_Age_18_64	-0.209092
pctmoe_Below PovLvL_Age_18_64	0.184848
pct_Below PovLvL_Age_gte_65	0.011908

```
pctmoe_Below PovLvL_Age_gte_65                    0.331190
LEA_CWIFTEST                                     -0.127872
LEA_CWIFTSE                                       0.021695
Iteration_y                                            NaN
num_Educational_Attain_POP                       -0.373282
num_Educational_Attain_POP_LT9th                 -0.374843
pc_ Educational_Attain_POP_LT9th                 -0.392460
num_Educational_Attain_POP_9th-12th              -0.385682
pc_Educational_Attain_POP_9th-12th               -0.171837
num_Educational_Attain_POP_HS_GRAD               -0.372902
pc_Educational_Attain_POP_HS_GRAD                 0.003252
num_Educational_Attain_POP_SomeColl              -0.375826
pc_Educational_Attain_POP_SomeColl                0.189379
num_Educational_Attain_POP_AssocDeg              -0.386199
pc_Educational_Attain_POP_AssocDeg                0.094770
num_Educational_Attain_POP_BacDeg                -0.366043
pc_Educational_Attain_POP_BacDeg                  0.242005
num_Educational_Attain_POP_GradProf              -0.370862
pc_Educational_Attain_POP_GradProf               -0.184928
PDP02.5_37est                                    -0.372271
pct_Educational_Attain_POP_HS_Grad_higher         0.300239
PDP02.5_38est                                    -0.369223
pct_Educational_Attain_BS_Deg_higher              0.004902
FIPST                                             0.229868
LEAID_y                                           0.230005
ALL_MTH04NUMVALID_1415                           -0.310475
ALL_MTH04PCTPROF_1415                            -0.181696
ECD_MTH04NUMVALID_1415                           -0.206805
ECD_MTH04PCTPROF_1415                            -0.339197
HOM_MTH04NUMVALID_1415                           -0.749234
HOM_MTH04PCTPROF_1415                             0.644035
ALL_MTH08NUMVALID_1415                           -0.163961
ALL_MTH08PCTPROF_1415                             0.385743
ECD_MTH08NUMVALID_1415                           -0.104309
ECD_MTH08PCTPROF_1415                             0.067562
HOM_MTH08NUMVALID_1415                           -0.755333
HOM_MTH08PCTPROF_1415                             1.000000

[46 rows x 46 columns]
```

In [45]:
```
#corr4.columns
pct_cols = [col for col in corr4.columns if ((('pc' in col) and ('moe'not in col)) or
pct_cols
```

Out[45]:
```
['pct_Below PovLvL_All_Ages',
 'pct_Below PovLvL_Age_gte_18',
 'pct_Below PovLvL_Age_18_64',
 'pct_Below PovLvL_Age_gte_65',
```

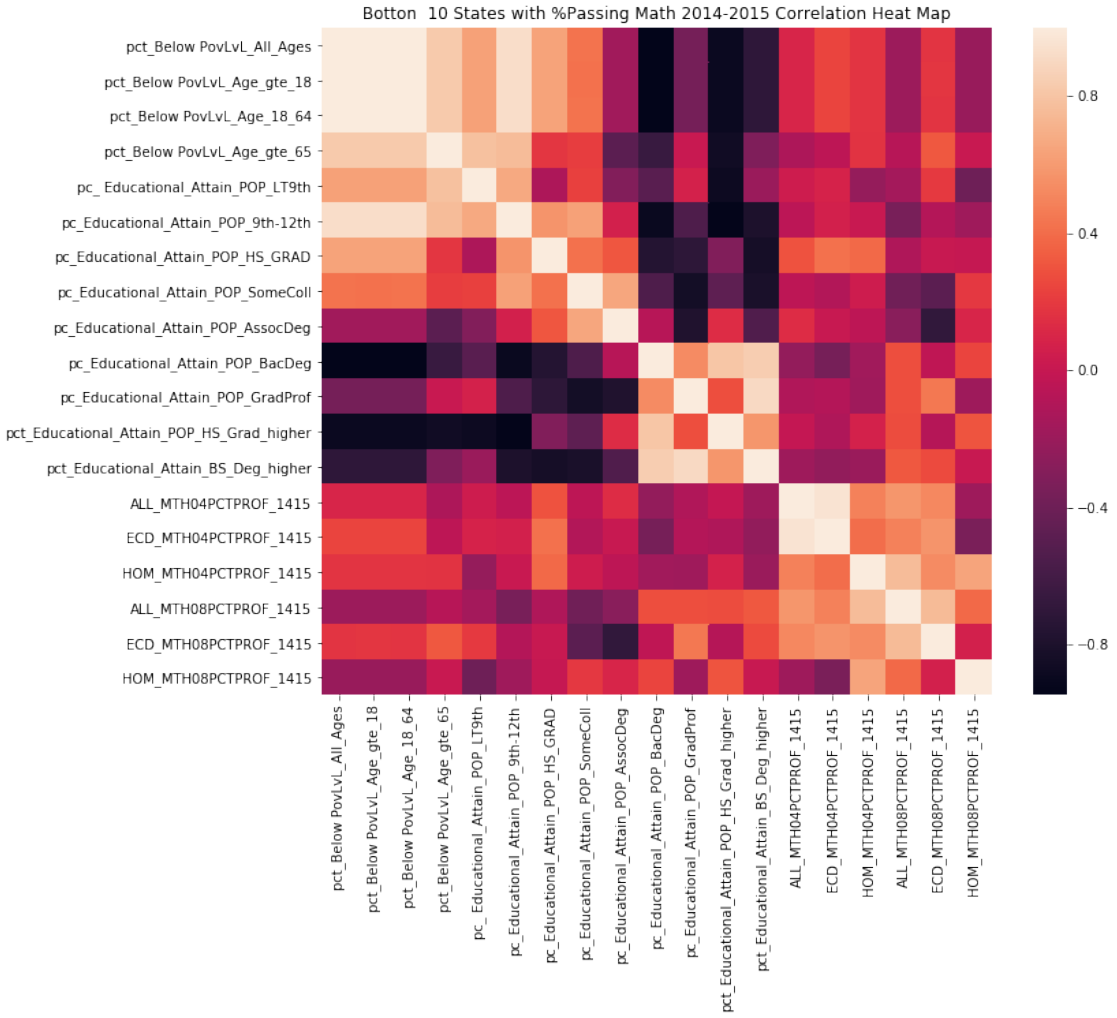
```
            'pc_ Educational_Attain_POP_LT9th',
            'pc_Educational_Attain_POP_9th-12th',
            'pc_Educational_Attain_POP_HS_GRAD',
            'pc_Educational_Attain_POP_SomeColl',
            'pc_Educational_Attain_POP_AssocDeg',
            'pc_Educational_Attain_POP_BacDeg',
            'pc_Educational_Attain_POP_GradProf',
            'pct_Educational_Attain_POP_HS_Grad_higher',
            'pct_Educational_Attain_BS_Deg_higher',
            'ALL_MTH04PCTPROF_1415',
            'ECD_MTH04PCTPROF_1415',
            'HOM_MTH04PCTPROF_1415',
            'ALL_MTH08PCTPROF_1415',
            'ECD_MTH08PCTPROF_1415',
            'HOM_MTH08PCTPROF_1415']

In [46]: df_top10_8th_pct   = df_top10_8th[pct_cols]
         df_top10_8th_pct_corr = df_top10_8th_pct.corr()

In [47]: fig, ax = plt.subplots(figsize=(11, 9))
         sns.heatmap(df_top10_8th_pct_corr)
         plt.title('Top 10 States with %Passing Math 2014-2015 Correlation Heat Map')
         plt.show()
```

In [48]:
```
df_bottom10_8th_pct    = df_bottom10_8th[pct_cols]
df_bottom10_8th_pct_corr = df_bottom10_8th_pct.corr()
```

In [49]:
```
fig, bx = plt.subplots(figsize=(11, 9))
sns.heatmap(df_bottom10_8th_pct_corr)
plt.title('Botton  10 States with %Passing Math 2014-2015 Correlation Heat Map')
plt.show()
```



In [50]: *#list_of_math_dfs['df_1718'].to_csv (r'./data_sets/clean/math_scores_sy1718.csv',index*

In [51]: df_top10_8th_pct_corr.to_csv(r'./correlation_data/df_top10_8th_pct_sy1415_corr.csv',in

In [52]: *#obtain only % related data*

```
pct_cols2 = pct_cols.copy()
pct_cols2.insert(0,"ST_NAME")

df_top10_8th_pct_ = df_top10_8th[pct_cols2]
df_top10_8th_pct
#df_top10_8th_pct.to_csv(r'./correlation_data/df_top10_8th_pct_sy1415.csv',index=Fals

#df = df_top10_8th_ri

#df_top10_8th_pc_col2 = df[pct_col1]
#pct_cols
```

Out[52]:

	pct_Below PovLvL_All_Ages	pct_Below PovLvL_Age_gte_18	\
43	12.931818	12.918939	
41	13.959647	13.958560	
15	8.027660	8.025836	
26	8.549315	8.552511	
34	14.955756	14.944244	
9	16.598507	16.598507	
18	19.904348	19.886957	
40	17.120438	17.121898	
22	8.032121	8.031515	
14	11.027526	11.024042	

	pct_Below PovLvL_Age_18_64	pct_Below PovLvL_Age_gte_65	\
43	12.908333	15.488764	
41	13.959647	14.653385	
15	8.030091	6.127273	
26	8.564384	5.861905	
34	14.965011	11.721759	
9	16.583582	16.378689	
18	19.900000	15.209091	
40	17.161314	11.234286	
22	8.023636	7.294382	
14	11.015331	9.690728	

	pc_ Educational_Attain_POP_LT9th	pc_Educational_Attain_POP_9th-12th	\
43	2.401515	5.606061	
41	6.255435	8.538043	
15	2.243161	3.060790	
26	2.292237	3.698630	
34	2.510158	7.106095	
9	4.313433	7.000000	
18	2.710145	8.840580	
40	2.335766	6.678832	
22	1.803030	3.454545	
14	3.278746	5.456446	

	pc_Educational_Attain_POP_HS_GRAD	pc_Educational_Attain_POP_SomeColl	\
43	26.530303	22.280303	
41	27.836957	24.436141	
15	22.796353	22.516717	
26	21.433790	23.826484	
34	33.311512	24.521445	
9	29.388060	22.029851	
18	33.884058	22.782609	
40	34.335766	22.927007	
22	21.487879	23.009091	
14	29.818815	22.306620	

	pc_Educational_Attain_POP_AssocDeg	pc_Educational_Attain_POP_BacDeg	\
43	10.257576	18.121212	
41	8.281250	15.639946	
15	18.003040	20.793313	
26	17.853881	19.799087	
34	9.079007	15.279910	
9	10.537313	15.791045	
18	7.855072	14.086957	
40	8.620438	13.985401	
22	17.721212	21.127273	
14	12.320557	16.895470	

	pc_Educational_Attain_POP_GradProf	\
43	11.750000	
41	5.934783	
15	7.647416	
26	8.378995	
34	5.227991	
9	7.671642	
18	6.768116	
40	8.007299	
22	8.436364	
14	6.885017	

	pct_Educational_Attain_POP_HS_Grad_higher	\
43	90.636364	
41	83.915761	
15	93.516717	
26	93.018265	
34	89.099323	
9	87.149254	
18	87.130435	
40	89.715328	
22	93.527273	
14	90.010453	

	pct_Educational_Attain_BS_Deg_higher	ALL_MTH04PCTPROF_1415	\
43	30.303030	82.433333	
41	22.028533	68.155963	
15	28.884498	74.090909	
26	28.552511	71.125000	
34	20.941309	71.772727	
9	23.970149	58.709091	
18	21.347826	64.972973	
40	22.467153	52.866667	
22	30.015152	63.136364	
14	24.233449	62.297297	

	ECD_MTH04PCTPROF_1415	HOM_MTH04PCTPROF_1415	ALL_MTH08PCTPROF_1415	\
43	73.433333	45.333333	69.100000	
41	61.339450	44.412844	67.715596	
15	64.727273	29.454545	67.363636	
26	64.125000	37.750000	65.875000	
34	65.909091	42.681818	59.818182	
9	50.781818	35.727273	58.727273	
18	60.000000	40.837838	55.081081	
40	42.733333	34.200000	54.000000	
22	47.727273	27.272727	52.272727	
14	53.702703	39.405405	49.891892	

	ECD_MTH08PCTPROF_1415	HOM_MTH08PCTPROF_1415
43	60.433333	35.233333
41	62.825688	39.064220
15	56.454545	30.909091
26	55.750000	22.375000
34	52.227273	35.454545
9	50.127273	37.763636
18	48.594595	36.594595
40	43.333333	24.933333
22	34.909091	20.318182
14	39.972973	25.324324