CFR_County_Visulazations

July 29, 2020

1 COVID County Data Pull from NYT: July 6, 2020

[1]:
```
import pandas as pd

#read in csv from NYT
covcounty61420df = pd.read_csv('##path##', dtype={"fips": str})

# #create case fatality rate variable & insert new column into df
cfr = covcounty61420df['deaths']/covcounty61420df['cases']
covcounty61420df.insert(5, "CFR(%)", cfr*100)
```

[2]:
```
#filter by county descending by name and date
covcounty61420df = covcounty61420df.sort_values(by =['county', 'date'])
```

[3]:
```
#how many unique counties are there in this df
covcounty61420df['county'].nunique()
```

[3]: 1815

[4]:
```
covcounty61420df['fips'].nunique()
```

[4]: 3060

[5]:
```
covcounty61420df.shape
```

[5]: (301004, 7)

[6]:
```
#remove counties outside of 0.1-99.9% cfr
covcountydf = covcounty61420df[(covcounty61420df['CFR(%)']>0.1) &␣
↪(covcounty61420df['CFR(%)']<100)]
covcountydf = covcountydf.sort_values(by =['county', 'date', 'CFR(%)'])
covcountydf.head()
```

[6]:

	date	county	state	fips	cases	CFR(%)	deaths
14655	2020-03-27	Acadia	Louisiana	22001	8	12.500000	1
16473	2020-03-28	Acadia	Louisiana	22001	9	11.111111	1
18385	2020-03-29	Acadia	Louisiana	22001	9	11.111111	1

20401	2020-03-30	Acadia	Louisiana	22001	11	9.090909	1
22508	2020-03-31	Acadia	Louisiana	22001	39	2.564103	1

[9]:
```
covcountydf.describe()
```

[9]:

	cases	CFR(%)	deaths
count	152637.000000	152637.000000	152637.000000
mean	933.635514	5.980398	51.354285
std	5667.645055	6.139799	497.815756
min	2.000000	0.100402	1.000000
25%	42.000000	2.307692	1.000000
50%	124.000000	4.320988	4.000000
75%	416.000000	7.575758	16.000000
max	221637.000000	98.181818	22661.000000

1.1 March Data

[10]:
```
#obtain cfr dataset for counties on Mar 31, 2020
filt = covcountydf['date']=='2020-03-31'
covcounty331df = covcountydf[filt]
covcounty331df.head()
```

[10]:

	date	county	state	fips	cases	CFR(%)	deaths
22508	2020-03-31	Acadia	Louisiana	22001	39	2.564103	1
22177	2020-03-31	Ada	Idaho	16001	195	1.538462	3
21912	2020-03-31	Adams	Colorado	08001	185	1.081081	2
23356	2020-03-31	Aiken	South Carolina	45003	13	7.692308	1
21862	2020-03-31	Alameda	California	06001	334	2.095808	7

[11]:
```
covcounty331df.describe()
```

[11]:

	cases	CFR(%)	deaths
count	496.000000	496.000000	496.000000
mean	339.149194	7.114583	8.064516
std	2097.618427	9.602174	67.208374
min	2.000000	0.192308	1.000000
25%	18.000000	1.861927	1.000000
50%	55.500000	3.508772	2.000000
75%	176.750000	7.692308	4.000000
max	43518.000000	54.545455	1475.000000

[12]:
```
covcounty331df['cases'].median()
```

[12]: 55.5

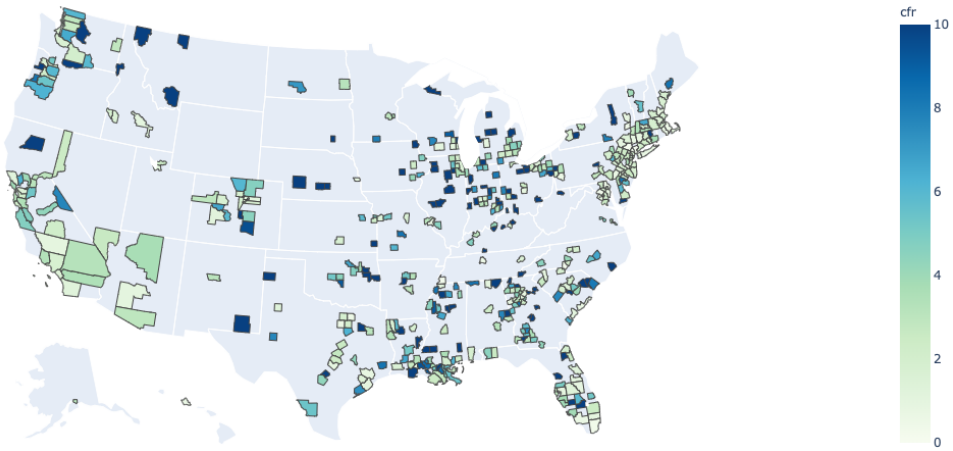
1.2 Map of US Counties by CFR March

[13]:
```
#create map of all unique US Counties with available data for March 31, 2020
from urllib.request import urlopen
import json
with urlopen('https://raw.githubusercontent.com/plotly/datasets/master/
 ↪geojson-counties-fips.json') as response:
    counties = json.load(response)

import pandas as pd

import plotly.express as px

fig = px.choropleth(covcounty331df, geojson=counties, locations='fips',␣
 ↪color='CFR(%)',
                           color_continuous_scale="GnBu",
                           range_color=(0, 10),
                           scope="usa",
                           labels={'CFR(%)':'cfr'}
                          )
fig.update_layout(margin={"r":0,"t":0,"l":0,"b":0})
fig.show()
```



[14]:
```
#Sort Top March Counties by CFR(%)
topcovcounty331df = covcounty331df.sort_values(by =['CFR(%)'], ascending=False)
filt = topcovcounty331df['cases']>56
topcovcounty331df[filt].head()
```

[14]:

	date	county	state	fips	cases	\
22553	2020-03-31	St. John the Baptist	Louisiana	22095	104	
23353	2020-03-31	Unknown	Rhode Island	NaN	72	

```
23222  2020-03-31            Cleveland      Oklahoma  40027     65
22550  2020-03-31          St. Charles     Louisiana  22089     71
22108  2020-03-31                  Lee       Georgia  13177     90

          CFR(%)  deaths
22553  11.538462      12
23353  11.111111       8
23222   9.230769       6
22550   8.450704       6
22108   7.777778       7
```

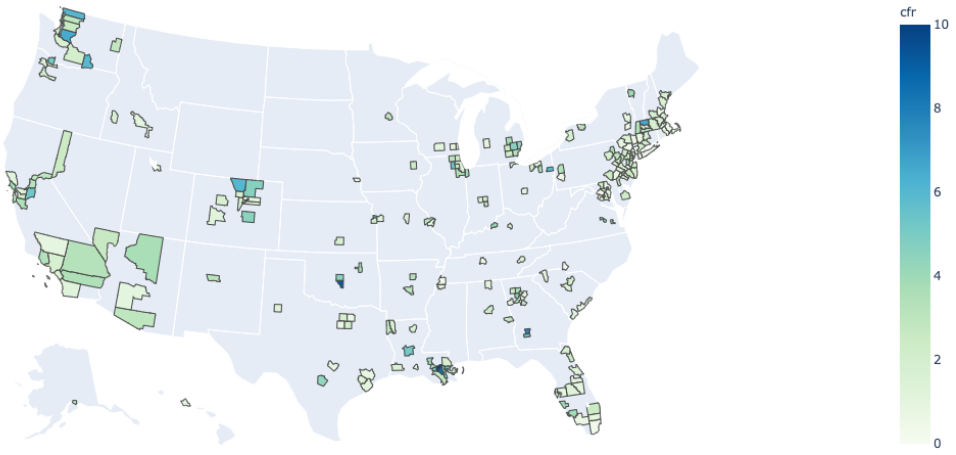
[15]:
```
topcovcounty331df[filt].describe()
```

[15]:
```
              cases      CFR(%)       deaths
count    244.000000  244.000000   244.000000
mean     666.090164    2.368787    14.885246
std     2958.286153    1.744595    95.437713
min       57.000000    0.192308     1.000000
25%      101.750000    1.098901     2.000000
50%      184.000000    1.874282     3.500000
75%      388.250000    3.091796     8.000000
max    43518.000000   11.538462  1475.000000
```

1.3 Map of US Counties Cases > Median by CFR March

[16]:
```
topmardf = topcovcounty331df[filt]

from urllib.request import urlopen
import json
with urlopen('https://raw.githubusercontent.com/plotly/datasets/master/
 ↪geojson-counties-fips.json') as response:
    counties = json.load(response)
fig = px.choropleth(topmardf, geojson=counties, locations='fips',␣
 ↪color='CFR(%)',
                           color_continuous_scale="GnBu",
                           range_color=(0, 10),
                           scope="usa",
                           labels={'CFR(%)':'cfr'}
                          )
fig.update_layout(margin={"r":0,"t":0,"l":0,"b":0})
fig.show()
```



[17]:
```
#print top march csv counties
#topmardf.to_csv('topmarchco.csv')
```

1.4 April Data

[18]:
```
#obtain cfr dataset for counties on April 30, 2020
filt = covcountydf['date']=='2020-04-30'
covcounty430df = covcountydf[filt]
covcounty430df.head()
```

[18]:

	date	county	state	fips	cases	CFR(%)	deaths
101968	2020-04-30	Acadia	Louisiana	22001	130	7.692308	10
103487	2020-04-30	Accomack	Virginia	51001	264	1.515152	4
101467	2020-04-30	Ada	Idaho	16001	681	2.349486	16
102876	2020-04-30	Adair	Oklahoma	40001	64	4.687500	3
101855	2020-04-30	Adair	Kentucky	21001	81	12.345679	10

[19]:
```
covcounty430df.describe()
```

[19]:

	cases	CFR(%)	deaths
count	1453.000000	1453.000000	1453.000000
mean	722.664831	6.789486	43.395045
std	5118.795683	6.301989	484.414543
min	2.000000	0.134771	1.000000
25%	30.000000	3.030303	1.000000
50%	88.000000	5.000000	3.000000
75%	285.000000	8.333333	13.000000
max	172784.000000	66.666667	17809.000000

[20]:
```
covcounty430df['cases'].median()
```

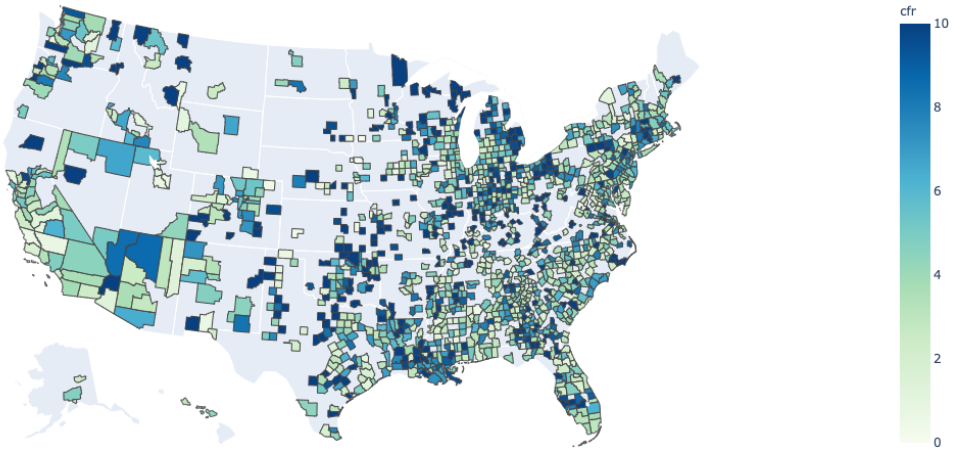
[20]: 88.0

[21]:
```
#create map of all unique US Counties with available data for April 30, 2020
from urllib.request import urlopen
import json
with urlopen('https://raw.githubusercontent.com/plotly/datasets/master/
 ↪geojson-counties-fips.json') as response:
    counties = json.load(response)

import pandas as pd

import plotly.express as px

fig = px.choropleth(covcounty430df, geojson=counties, locations='fips',␣
 ↪color='CFR(%)',
                           color_continuous_scale="GnBu",
                           range_color=(0, 10),
                           scope="usa",
                           labels={'CFR(%)':'cfr'}
                          )
fig.update_layout(margin={"r":0,"t":0,"l":0,"b":0})
fig.show()
```



[22]:
```
#sort top April Counties by CFR(%)
topcovcounty430df = covcounty430df.sort_values(by =['CFR(%)'], ascending=False)
filt = topcovcounty430df['cases']>88
topcovcounty430df[filt].head()
```

[22]:

	date	county	state	fips	cases	CFR(%)	deaths
102024	2020-04-30	Unknown	Louisiana	NaN	104	41.346154	43
102016	2020-04-30	St. Landry	Louisiana	22097	180	23.333333	42

```
102872  2020-04-30       Wayne       Ohio  39169    128  21.875000      28
102842  2020-04-30       Miami       Ohio  39109    139  19.424460      27
102789  2020-04-30       Allen       Ohio  39003    121  19.008264      23
```

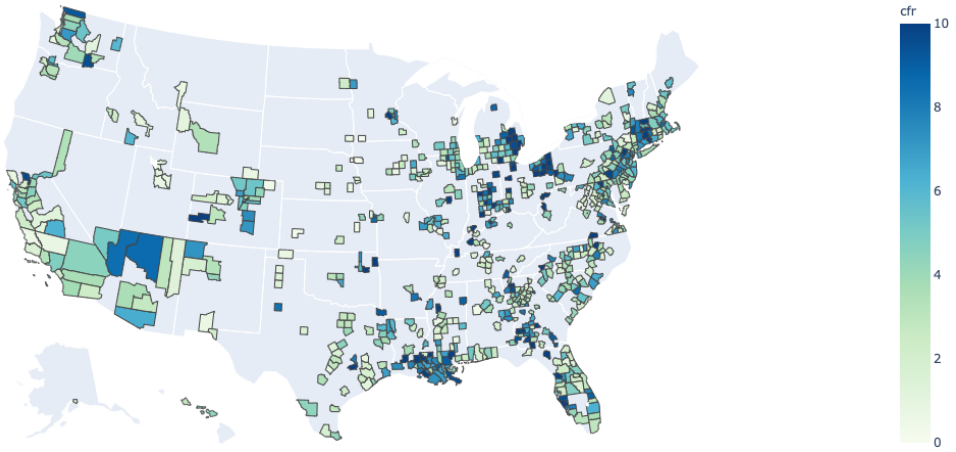
[23]:
```
topcovcounty430df[filt].describe()
```

[23]:
```
              cases      CFR(%)        deaths
count     724.000000  724.000000    724.000000
mean     1414.983425    4.934874     84.856354
std      7187.794596    3.676884    683.978487
min        89.000000    0.134771      1.000000
25%       150.000000    2.340114      5.750000
50%       285.000000    4.226107     12.500000
75%       728.250000    6.666667     33.250000
max    172784.000000   41.346154  17809.000000
```

1.5 Map of US Counties Cases > Median by CFR April

[24]:
```
topaprildf = topcovcounty430df[filt]

from urllib.request import urlopen
import json
with urlopen('https://raw.githubusercontent.com/plotly/datasets/master/
 ↪geojson-counties-fips.json') as response:
    counties = json.load(response)
fig = px.choropleth(topaprildf, geojson=counties, locations='fips',␣
 ↪color='CFR(%)',
                           color_continuous_scale="GnBu",
                           range_color=(0, 10),
                           scope="usa",
                           labels={'CFR(%)':'cfr'}
                          )
fig.update_layout(margin={"r":0,"t":0,"l":0,"b":0})
fig.show()
```



1.6 May Data

[26]:
```
#obtain cfr dataset for May 31, 2020
filt = covcountydf['date']=='2020-05-31'
covcounty531df = covcountydf[filt]
covcounty531df.head()
```

[26]:

	date	county	state	fips	cases	CFR(%)	deaths
192700	2020-05-31	Acadia	Louisiana	22001	418	5.502392	23
194298	2020-05-31	Accomack	Virginia	51001	909	1.320132	12
192166	2020-05-31	Ada	Idaho	16001	812	2.709360	22
193648	2020-05-31	Adair	Oklahoma	40001	87	3.448276	3
192582	2020-05-31	Adair	Kentucky	21001	97	19.587629	19

[27]:
```
covcounty531df.describe()
```

[27]:

	cases	CFR(%)	deaths
count	1755.000000	1755.000000	1755.000000
mean	1007.087179	5.828488	59.441595
std	6033.471561	5.327465	538.954509
min	2.000000	0.115075	1.000000
25%	48.000000	2.439024	2.000000
50%	144.000000	4.394216	5.000000
75%	463.500000	7.692308	21.000000
max	208085.000000	55.555556	21050.000000

[28]:
```
covcounty531df['cases'].median()
```

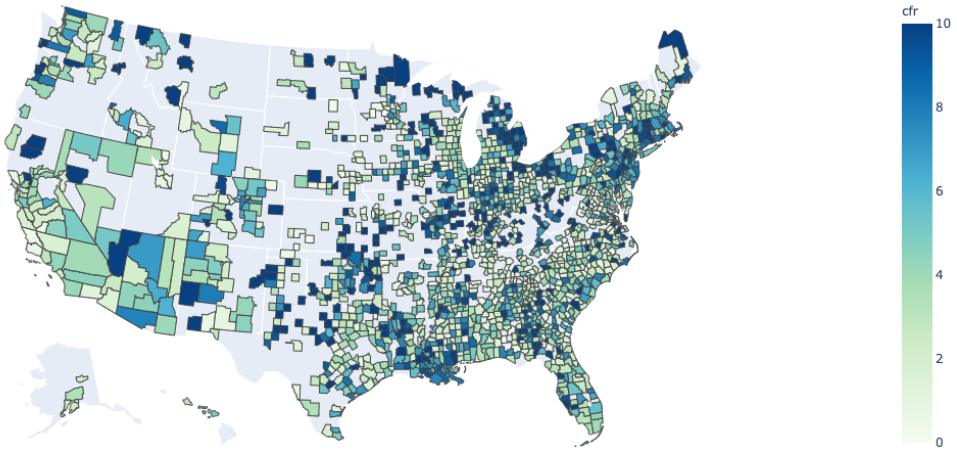
[28]:
```
144.0
```

[29]:
```
#create map of all unique US Counties with available data for May 31, 2020
from urllib.request import urlopen
import json
with urlopen('https://raw.githubusercontent.com/plotly/datasets/master/
 ↪geojson-counties-fips.json') as response:
    counties = json.load(response)

import pandas as pd

import plotly.express as px

fig = px.choropleth(covcounty531df, geojson=counties, locations='fips',␣
 ↪color='CFR(%)',
                           color_continuous_scale="GnBu",
                           range_color=(0, 10),
                           scope="usa",
                           labels={'CFR(%)':'cfr'}
                          )
fig.update_layout(margin={"r":0,"t":0,"l":0,"b":0})
fig.show()
```



[30]:
```
#sort top May Counties by CFR(%)
topcovcounty531df = covcounty531df.sort_values(by =['CFR(%)'], ascending=False)
filt = topcovcounty531df['cases']>144
topcovcounty531df[filt].head()
```

[30]:

	date	county	state	fips	cases	CFR(%)	\
192756	2020-05-31	Unknown	Louisiana	NaN	189	55.555556	
192748	2020-05-31	St. Landry	Louisiana	22097	257	21.011673	
193644	2020-05-31	Wayne	Ohio	39169	274	18.248175	
192761	2020-05-31	West Baton Rouge	Louisiana	22121	166	18.072289	

```
193626  2020-05-31          Portage       Ohio  39133    325  17.538462

        deaths
192756     105
192748      54
193644      50
192761      30
193626      57
```

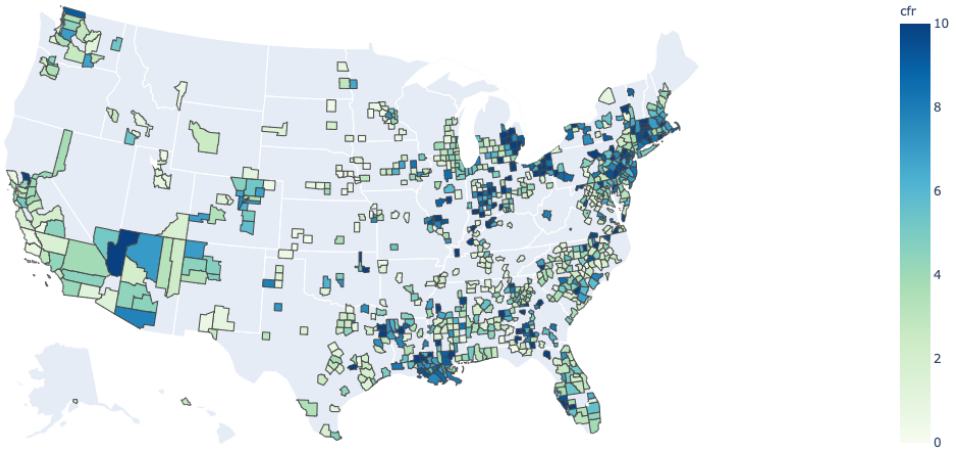
[31]:
```
topcovcounty531df[filt].describe()
```

[31]:
```
                cases      CFR(%)        deaths
count     876.000000  876.000000    876.000000
mean     1960.728311    4.862482    116.043379
std      8435.207303    3.923903    758.852248
min       145.000000    0.115075      1.000000
25%       247.750000    1.964398      7.000000
50%       465.000000    4.086411     21.000000
75%      1191.500000    6.820953     50.000000
max    208085.000000   55.555556  21050.000000
```

1.7 Map of US Counties Cases > Median by CFR May

[32]:
```
topmaydf = topcovcounty531df[filt]

from urllib.request import urlopen
import json
with urlopen('https://raw.githubusercontent.com/plotly/datasets/master/
 ↪geojson-counties-fips.json') as response:
    counties = json.load(response)
fig = px.choropleth(topmaydf, geojson=counties, locations='fips',␣
 ↪color='CFR(%)',
                           color_continuous_scale="GnBu",
                           range_color=(0, 10),
                           scope="usa",
                           labels={'CFR(%)':'cfr'}
                          )
fig.update_layout(margin={"r":0,"t":0,"l":0,"b":0})
fig.show()
```



1.8 June Data

[34]:
```
#obtain cfr dataset for June 30, 2020
filt = covcountydf['date']=='2020-06-30'
covcounty614df = covcountydf[filt]
covcounty614df.head()
```

[34]:

	date	county	state	fips	cases	CFR(%)	deaths
283630	2020-06-30	Acadia	Louisiana	22001	878	4.100228	36
285284	2020-06-30	Accomack	Virginia	51001	1042	1.343570	14
283080	2020-06-30	Ada	Idaho	16001	2169	1.060396	23
284612	2020-06-30	Adair	Oklahoma	40001	115	3.478261	4
283511	2020-06-30	Adair	Kentucky	21001	120	15.833333	19

[35]:
```
covcounty614df.describe()
```

[35]:

	cases	CFR(%)	deaths
count	1951.000000	1951.000000	1951.000000
mean	1337.067145	4.610401	65.304459
std	6703.407039	5.005200	557.446809
min	2.000000	0.140449	1.000000
25%	77.000000	1.541432	2.000000
50%	228.000000	3.157895	6.000000
75%	690.000000	6.250000	24.000000
max	219844.000000	98.181818	22566.000000

[36]:
```
covcounty614df['cases'].median()
```

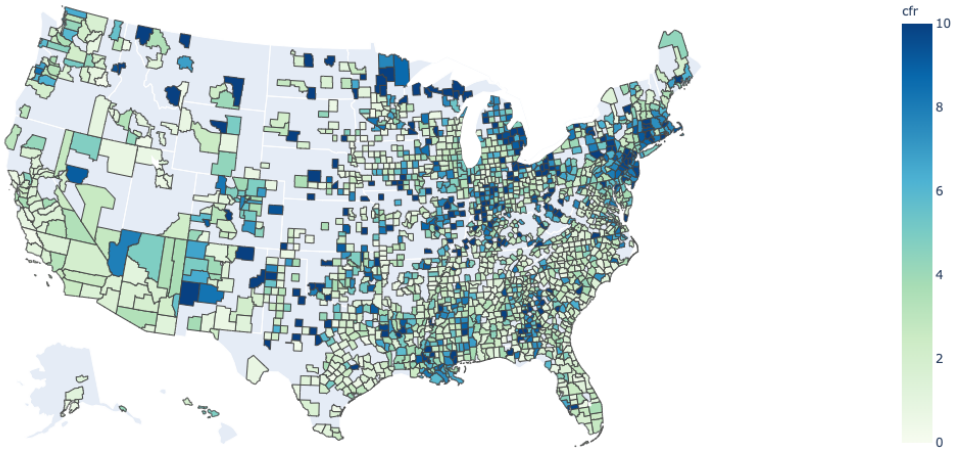
[36]:
```
228.0
```

[37]:
```
#create map of all unique US Counties with available data for June 14, 2020
from urllib.request import urlopen
import json
with urlopen('https://raw.githubusercontent.com/plotly/datasets/master/
 ↪geojson-counties-fips.json') as response:
    counties = json.load(response)

import pandas as pd

import plotly.express as px

fig = px.choropleth(covcounty614df, geojson=counties, locations='fips',␣
 ↪color='CFR(%)',
                           color_continuous_scale="GnBu",
                           range_color=(0, 10),
                           scope="usa",
                           labels={'CFR(%)':'cfr'}
                          )
fig.update_layout(margin={"r":0,"t":0,"l":0,"b":0})
fig.show()
```



1.8.1 Top June Counties by Case Fatality Rate

[38]:
```
#sort top June Counties by CFR(%)
topcovcounty614df = covcounty614df.sort_values(by =['CFR(%)'], ascending=False)
filthi = topcovcounty614df['cases']>228
topcovcounty614df[filthi].head()
```

[38]:

	date	county	state	fips	cases	CFR(%)	deaths
283210	2020-06-30	Unknown	Illinois	NaN	1053	19.088319	201
284280	2020-06-30	Sussex	New Jersey	34037	1229	15.541090	191

```
283742  2020-06-30  Franklin  Massachusetts  25011    366  14.754098      54
284608  2020-06-30     Wayne           Ohio  39169    353  14.730878      52
284349  2020-06-30   Orleans       New York  36073    281  14.590747      41
```

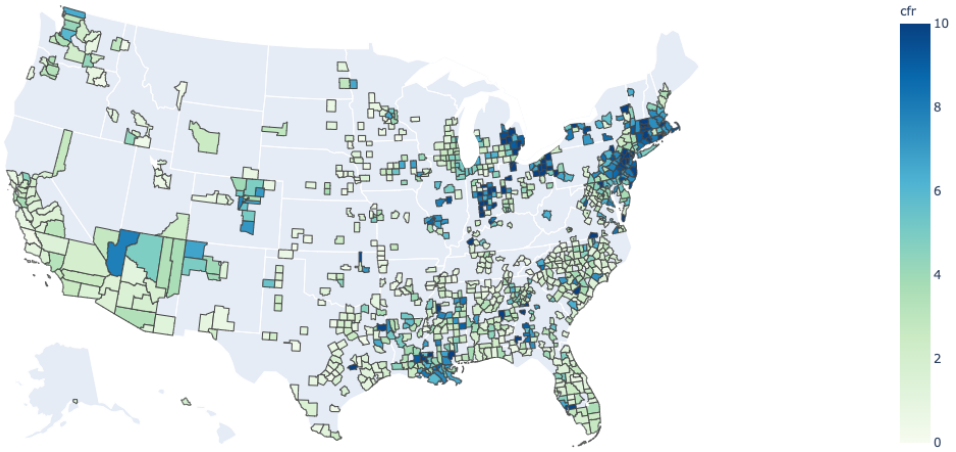
[39]:
```
topcovcounty614df[filthi].describe()
```

[39]:
```
              cases      CFR(%)        deaths
count     974.000000  974.000000    974.000000
mean     2589.655031    3.733962    126.788501
std      9322.894804    3.176003    784.334303
min       229.000000    0.140449      1.000000
25%       371.250000    1.320787      7.000000
50%       692.000000    2.627437     22.000000
75%      1830.500000    5.345227     58.000000
max    219844.000000   19.088319  22566.000000
```

1.9 Map of US Counties Cases > Median by CFR June

[40]:
```
topjundf = topcovcounty614df[filthi]

from urllib.request import urlopen
import json
with urlopen('https://raw.githubusercontent.com/plotly/datasets/master/
 ↪geojson-counties-fips.json') as response:
    counties = json.load(response)
fig = px.choropleth(topjundf, geojson=counties, locations='fips',␣
 ↪color='CFR(%)',
                           color_continuous_scale="GnBu",
                           range_color=(0, 10),
                           scope="usa",
                           labels={'CFR(%)':'cfr'}
                          )
fig.update_layout(margin={"r":0,"t":0,"l":0,"b":0})
fig.show()
```



1.10 Top June Case County Demographic Data

[42]:
```
covcounty614df.head()
```

[42]:

	date	county	state	fips	cases	CFR(%)	deaths
283630	2020-06-30	Acadia	Louisiana	22001	878	4.100228	36
285284	2020-06-30	Accomack	Virginia	51001	1042	1.343570	14
283080	2020-06-30	Ada	Idaho	16001	2169	1.060396	23
284612	2020-06-30	Adair	Oklahoma	40001	115	3.478261	4
283511	2020-06-30	Adair	Kentucky	21001	120	15.833333	19

[43]:
```
covcounty614df.describe()
```

[43]:

	cases	CFR(%)	deaths
count	1951.000000	1951.000000	1951.000000
mean	1337.067145	4.610401	65.304459
std	6703.407039	5.005200	557.446809
min	2.000000	0.140449	1.000000
25%	77.000000	1.541432	2.000000
50%	228.000000	3.157895	6.000000
75%	690.000000	6.250000	24.000000
max	219844.000000	98.181818	22566.000000

[44]:
```
covcounty614df['CFR(%)'].median()
```

[44]:
```
3.1578947368421053
```

[46]:
```
#filter covid county data from June 30, 2020 by Median CFR (breakpoint of 4)
filthi = covcounty614df['CFR(%)']>=6.25
filtlo = covcounty614df['CFR(%)']<6.25
junehicountydf = covcounty614df[filthi]
```

```
junelocountydf = covcounty614df[filtlo]
```

[47]:
```
#Merge census data to high and low June COVID County data with previously␣
↪combined census county demographics and economic data

#read in county ethnic demographics from US Census - 5 Year Data
demographicdf  = pd.read_csv('##path##', engine='python')
pd.set_option('display.max_columns', 85)
```

[49]:
```
demographicdf.rename(columns = {"Total Population 25 years and over- Bachelor's␣
↪degree": "Num College Grads"}, inplace=True)
demographicdf.head()
```

[49]:
```
   Unnamed: 0        GEO_ID_x                    NAME_x  \
0           0  0500000US01001  Autauga County, Alabama
1           1  0500000US01003  Baldwin County, Alabama
2           2  0500000US01005  Barbour County, Alabama
3           3  0500000US01007     Bibb County, Alabama
4           4  0500000US01009   Blount County, Alabama

   Total Population for whom poverty status is determined  \
0                                            54765.0
1                                           204929.0
2                                            22856.0
3                                            20468.0
4                                            57082.0

   Margin of Error- Total Population for whom poverty status is determined  \
0                                              147.0
1                                              494.0
2                                              277.0
3                                              201.0
4                                              150.0

   Population Below Poverty Level  \
0                           8422.0
1                          21653.0
2                           6597.0
3                           2863.0
4                           8220.0

   Margin of Error- Population Below Poverty Level  \
0                                           1137.0
1                                           1765.0
2                                            661.0
3                                            770.0
4                                            992.0
```

```
   Percent Below Poverty Level  Margin of Error- Percent Below Poverty Level  \
0                         15.4                                           2.1
1                         10.6                                           0.9
2                         28.9                                           2.9
3                         14.0                                           3.8
4                         14.4                                           1.7

   Total Population 16 years and over  \
0                             43368.0
1                            167712.0
2                             20948.0
3                             18470.0
4                             45915.0

   Margin of Error- Total Population 16 years and over  \
0                                              203.0
1                                              321.0
2                                               82.0
3                                              132.0
4                                              159.0

   Unemployment Rate- 16 years and over  \
0                                   4.2
1                                   4.4
2                                   9.5
3                                   7.5
4                                   4.1

   Margin of Error- Unemployment Rate- 16 years and over  \
0                                                1.0
1                                                0.6
2                                                2.0
3                                                2.5
4                                                0.8

   Total Population 16 years and over.1  \
0                             43368.0
1                            167712.0
2                             20948.0
3                             18470.0
4                             45915.0

   Margin of Error- Total Population 16 years and over.1  \
0                                              203.0
1                                              321.0
2                                               82.0
```

```
3                                                132.0
4                                                159.0

   Unemployment Rate- 16 years and over.1  \
0                                     4.2
1                                     4.4
2                                     9.5
3                                     7.5
4                                     4.1

   Margin of Error- Unemployment Rate- 16 years and over.1  \
0                                                  1.0
1                                                  0.6
2                                                  2.0
3                                                  2.5
4                                                  0.8

   Total Population 16 years and over.2  \
0                               43368.0
1                              167712.0
2                               20948.0
3                               18470.0
4                               45915.0

   Margin of Error- Total Population 16 years and over.2  \
0                                                203.0
1                                                321.0
2                                                 82.0
3                                                132.0
4                                                159.0

   Unemployment Rate- 16 years and over.2  \
0                                     4.2
1                                     4.4
2                                     9.5
3                                     7.5
4                                     4.1

   Margin of Error- Unemployment Rate- 16 years and over.2  \
0                                                  1.0
1                                                  0.6
2                                                  2.0
3                                                  2.5
4                                                  0.8

   Household Median Income  Margin of Error- Household Median Income  \
0                  58786.0                                    2972.0
```

```
1                 55962.0                                        1204.0
2                 34186.0                                        2552.0
3                 45340.0                                        5618.0
4                 48695.0                                        2703.0

   Total Population 25 years and over- High school graduates  \
0                                                12119
1                                                40579
2                                                 6486
3                                                 7471
4                                                13489

   Margin of error- Total Population 25 years and over- High school graduates  \
0                                                 696
1                                                1685
2                                                 402
3                                                 541
4                                                 516

   Num College Grads  \
0               5903
1              30431
2               1417
3               1197
4               3217

   Margin of error- Total Population 25 years and over- Bachelor's degree  \
0                                                 611
1                                                1278
2                                                 208
3                                                 372
4                                                 380

     fips        GEO_ID_y                    NAME_y  Estimate- Total  \
0  1001.0  0500000US01001  Autauga County, Alabama            55200
1  1003.0  0500000US01003  Baldwin County, Alabama           208107
2  1005.0  0500000US01005  Barbour County, Alabama            25782
3  1007.0  0500000US01007     Bibb County, Alabama            22527
4  1009.0  0500000US01009   Blount County, Alabama            57645

  Margin of Error- Total  Estimate- Total- White alone  \
0                  *****                         42437
1                  *****                        179526
2                  *****                         12216
3                  *****                         17268
4                  *****                         55054
```

	Margin of Error- Total- White alone	\
0	337	
1	747	
2	179	
3	70	
4	265	

	Estimate- Total- Black or African American alone	\
0	10565	
1	19764	
2	12266	
3	5018	
4	862	

	Margin of Error- Total- Black or African American alone	\
0	230	
1	377	
2	196	
3	112	
4	169	

	Estimate- Total- American Indian and Alaska Native alone	\
0	159	
1	1522	
2	72	
3	8	
4	141	

	Margin of Error- Total- American Indian and Alaska Native alone	\
0	68	
1	337	
2	43	
3	16	
4	73	

	Estimate- Total- Asian alone	Margin of Error- Total- Asian alone	\
0	568	166	
1	1680	360	
2	96	40	
3	37	54	
4	198	33	

	Estimate- Total- Native Hawaiian and Other Pacific Islander alone	\
0	32	
1	9	
2	1	
3	0	

```
4                                                    18

   Margin of Error- Total- Native Hawaiian and Other Pacific Islander alone  \
0                                                    36
1                                                    13
2                                                     3
3                                                    22
4                                                    32

   Estimate- Total- Two or more races  \
0                                1030
1                                3572
2                                 353
3                                 187
4                                 935

   Margin of Error- Total- Two or more races  \
0                                    250
1                                    671
2                                    161
3                                     90
4                                    193

   Estimate- Total- Two or more races- Two races including Some other race  \
0                                                    18
1                                                   603
2                                                    22
3                                                     0
4                                                    31

   Margin of Error- Total- Two or more races- Two races including Some other
race  \
0                                                    29
1                                                   403
2                                                    23
3                                                    22
4                                                    43

   Estimate- Total- Two or more races- Two races excluding Some other race, and
three or more races  \
0                                                  1012
1                                                  2969
2                                                   331
3                                                   187
4                                                   904

   Margin of Error- Total- Two or more races!!Two races excluding Some other
```

```
race, and three or more races
0                                                  251
1                                                  659
2                                                  162
3                                                   90
4                                                  181
```

[50]:
```
demographicdf.dropna(inplace=True)
#demographicdf.isnull().sum()
```

[51]:
```
#read in data about older population inhabitants
agesdf = pd.read_csv('##path##', engine='python')
```

[52]:
```
#create new df with only Geo ID and population >62 years
over62df = agesdf[['GEO_ID', 'Total Population 62 Years and over']].copy()
over62df.dropna(inplace = True)
#over62df.to_csv('over62.csv') - note, needed to find atypical characters and impute median value (5700)
over62df = pd.read_csv('##path##', engine='python')
#over62df['Total Population 62 Years and over']= over62df['Total Population 62 Years and over'].astype(float)
```

[53]:
```
#create fips from Geo ID
splitfipsdf = over62df["GEO_ID"].str.split("S", n=1, expand=True)
over62df["fips"] = splitfipsdf[1]
over62df['fips']= over62df['fips'].astype(float)
```

[ ]:
```
#merge demographic info with High CFR June Counties on fips
junehicountydf['fips']=junehicountydf['fips'].astype(float)
junhidf = pd.merge(junehicountydf, demographicdf, on='fips')
junhidf = pd.merge(junhidf, over62df, on='fips')
pd.set_option('display.max_columns', 85)
#mergecensusdf.to_csv('mergecensus.csv')
junhidf.dropna(inplace=True)
```

1.11 Descriptive Statistics for June US Counties with a CFR% >= 6.25

[55]:
```
junhidf.describe()
```

[55]:

	fips	cases	CFR(%)	deaths	Unnamed: 0_x	\
count	497.000000	497.000000	497.000000	497.000000	497.000000	
mean	29629.537223	1236.967807	10.308380	105.452716	1513.088531	
std	12868.312146	3698.375852	5.215824	309.507085	786.760090	
min	1019.000000	2.000000	6.250000	1.000000	9.000000	
25%	19113.000000	39.000000	7.142857	3.000000	845.000000	
50%	28015.000000	144.000000	8.695652	15.000000	1408.000000	

```
75%    39151.000000    480.000000   11.576923    43.000000   2118.000000
max    56043.000000  41807.000000   50.000000  2722.000000   3140.000000

       Total Population for whom poverty status is determined  \
count                                        4.970000e+02
mean                                         1.175912e+05
std                                          2.262355e+05
min                                          1.053000e+03
25%                                          1.491400e+04
50%                                          3.242000e+04
75%                                          9.586400e+04
max                                          1.740233e+06

       Margin of Error- Total Population for whom poverty status is determined
\
count                                          497.000000
mean                                           304.881288
std                                            292.979301
min                                              8.000000
25%                                            117.000000
50%                                            208.000000
75%                                            375.000000
max                                           2223.000000

       Population Below Poverty Level  \
count                      497.000000
mean                     14570.114688
std                      29438.173851
min                        182.000000
25%                       2377.000000
50%                       4811.000000
75%                      11500.000000
max                     401149.000000

       Margin of Error- Population Below Poverty Level  \
count                                        497.000000
mean                                         939.780684
std                                          847.735747
min                                           56.000000
25%                                          406.000000
50%                                          654.000000
75%                                         1137.000000
max                                         6740.000000

       Percent Below Poverty Level  \
count                    497.000000
mean                      15.550302
```

```
std                       6.673359
min                       2.700000
25%                      10.800000
50%                      14.500000
75%                      19.000000
max                      47.700000

       Margin of Error- Percent Below Poverty Level  \
count                                    497.000000
mean                                       2.140845
std                                        1.464927
min                                        0.200000
25%                                        1.100000
50%                                        1.800000
75%                                        3.000000
max                                       10.700000

       Total Population 16 years and over  \
count                        4.970000e+02
mean                         9.762128e+04
std                          1.866879e+05
min                          1.137000e+03
25%                          1.272700e+04
50%                          2.629600e+04
75%                          7.929800e+04
max                          1.389038e+06

       Margin of Error- Total Population 16 years and over  \
count                                          497.000000
mean                                           170.889336
std                                            140.850863
min                                             19.000000
25%                                             79.000000
50%                                            122.000000
75%                                            209.000000
max                                            850.000000

       Unemployment Rate- 16 years and over  \
count                             497.000000
mean                                5.999396
std                                 2.557898
min                                 0.000000
25%                                 4.400000
50%                                 5.700000
75%                                 7.100000
max                                23.300000
```

```
       Margin of Error- Unemployment Rate- 16 years and over  \
count                                          497.000000
mean                                             1.354728
std                                              1.022914
min                                              0.200000
25%                                              0.700000
50%                                              1.100000
75%                                              1.800000
max                                              7.500000

       Total Population 16 years and over.1  \
count                          4.970000e+02
mean                           9.762128e+04
std                            1.866879e+05
min                            1.137000e+03
25%                            1.272700e+04
50%                            2.629600e+04
75%                            7.929800e+04
max                            1.389038e+06

       Margin of Error- Total Population 16 years and over.1  \
count                                          497.000000
mean                                           170.889336
std                                            140.850863
min                                             19.000000
25%                                             79.000000
50%                                            122.000000
75%                                            209.000000
max                                            850.000000

       Unemployment Rate- 16 years and over.1  \
count                                497.000000
mean                                   5.999396
std                                    2.557898
min                                    0.000000
25%                                    4.400000
50%                                    5.700000
75%                                    7.100000
max                                   23.300000

       Margin of Error- Unemployment Rate- 16 years and over.1  \
count                                          497.000000
mean                                             1.354728
std                                              1.022914
min                                              0.200000
25%                                              0.700000
50%                                              1.100000
```

```
75%                                              1.800000
max                                              7.500000

       Total Population 16 years and over.2  \
count                          4.970000e+02
mean                           9.762128e+04
std                            1.866879e+05
min                            1.137000e+03
25%                            1.272700e+04
50%                            2.629600e+04
75%                            7.929800e+04
max                            1.389038e+06

       Margin of Error- Total Population 16 years and over.2  \
count                                          497.000000
mean                                           170.889336
std                                            140.850863
min                                             19.000000
25%                                             79.000000
50%                                            122.000000
75%                                            209.000000
max                                            850.000000

       Unemployment Rate- 16 years and over.2  \
count                                497.000000
mean                                   5.999396
std                                    2.557898
min                                    0.000000
25%                                    4.400000
50%                                    5.700000
75%                                    7.100000
max                                   23.300000

       Margin of Error- Unemployment Rate- 16 years and over.2  \
count                                          497.000000
mean                                             1.354728
std                                              1.022914
min                                              0.200000
25%                                              0.700000
50%                                              1.100000
75%                                              1.800000
max                                              7.500000

       Household Median Income  Margin of Error- Household Median Income  \
count                497.000000                                 497.000000
mean               52982.665996                                2795.064386
std                15809.557828                                1738.428619
```

```
min              21093.000000                                376.000000
25%              42480.000000                               1580.000000
50%              50761.000000                               2366.000000
75%              59045.000000                               3617.000000
max             124796.000000                              15295.000000

       Total Population 25 years and over- High school graduates  \
count                                          497.000000
mean                                         24008.887324
std                                          40751.730244
min                                            340.000000
25%                                           4198.000000
50%                                           8473.000000
75%                                          22068.000000
max                                         353763.000000

       Margin of error- Total Population 25 years and over- High school
graduates  \
count                                          497.000000
mean                                           700.694165
std                                            631.564905
min                                             64.000000
25%                                            299.000000
50%                                            473.000000
75%                                            870.000000
max                                           3289.000000

       Num College Grads  \
count         497.000000
mean        16850.917505
std         38256.386281
min            29.000000
25%          1093.000000
50%          2760.000000
75%         10687.000000
max        303611.000000

       Margin of error- Total Population 25 years and over- Bachelor's degree  \
count                                          497.000000
mean                                           537.032193
std                                            580.853983
min                                             30.000000
25%                                            170.000000
50%                                            311.000000
75%                                            645.000000
max                                           3634.000000
```

```
       Estimate- Total  Estimate- Total- White alone  \
count     4.970000e+02                  4.970000e+02
mean      1.206721e+05                  9.370341e+04
std       2.310442e+05                  1.682904e+05
min       1.328000e+03                  5.210000e+02
25%       1.528600e+04                  1.178300e+04
50%       3.323100e+04                  2.763700e+04
75%       9.821400e+04                  8.696400e+04
max       1.761382e+06                  1.233271e+06

       Margin of Error- Total- White alone  \
count                           497.000000
mean                            382.259557
std                             591.780582
min                              10.000000
25%                              83.000000
50%                             172.000000
75%                             389.000000
max                            3697.000000

       Estimate- Total- Black or African American alone  \
count                                         497.000000
mean                                        14496.372233
std                                         45623.848891
min                                             0.000000
25%                                           231.000000
50%                                          1754.000000
75%                                          8588.000000
max                                        685098.000000

       Margin of Error- Total- Black or African American alone  \
count                                           497.000000
mean                                            276.579477
std                                             348.077650
min                                               2.000000
25%                                              63.000000
50%                                             143.000000
75%                                             314.000000
max                                            1877.000000

       Estimate- Total- American Indian and Alaska Native alone  \
count                                           497.000000
mean                                            707.167002
std                                            2637.395277
min                                               0.000000
25%                                              34.000000
50%                                             135.000000
```

```
75%                                          447.000000
max                                        50524.000000

       Margin of Error- Total- American Indian and Alaska Native alone  \
count                                        497.000000
mean                                         118.114688
std                                          140.259814
min                                            2.000000
25%                                           30.000000
50%                                           64.000000
75%                                          147.000000
max                                          931.000000

       Estimate- Total- Asian alone  Margin of Error- Total- Asian alone  \
count                    497.000000                           497.000000
mean                    5204.030181                           144.873239
std                    18778.708582                           202.949466
min                        0.000000                             2.000000
25%                       57.000000                            30.000000
50%                      206.000000                            64.000000
75%                     1191.000000                           166.000000
max                   197711.000000                          1372.000000

       Estimate- Total- Native Hawaiian and Other Pacific Islander alone  \
count                                        497.000000
mean                                          47.052314
std                                          113.125952
min                                            0.000000
25%                                            0.000000
50%                                            7.000000
75%                                           37.000000
max                                         1426.000000

       Margin of Error- Total- Native Hawaiian and Other Pacific Islander alone
\
count                                        497.000000
mean                                          36.957746
std                                           42.287898
min                                            1.000000
25%                                           16.000000
50%                                           21.000000
75%                                           38.000000
max                                          299.000000

       Estimate- Total- Two or more races  \
count                          497.000000
mean                          3203.026157
```

```
std                            6689.200425
min                               0.000000
25%                             234.000000
50%                             605.000000
75%                            2346.000000
max                           45881.000000

       Margin of Error- Total- Two or more races  \
count                                  497.000000
mean                                   347.486922
std                                    424.844151
min                                     13.000000
25%                                     89.000000
50%                                    179.000000
75%                                    401.000000
max                                   2783.000000

       Estimate- Total- Two or more races- Two races including Some other race
\
count                                            497.000000
mean                                             446.227364
std                                             1201.511371
min                                                0.000000
25%                                                9.000000
50%                                               53.000000
75%                                              226.000000
max                                            11239.000000

       Margin of Error- Total- Two or more races- Two races including Some other
race  \
count                                             497.00000
mean                                              126.34004
std                                               191.17204
min                                                 3.00000
25%                                                19.00000
50%                                                51.00000
75%                                               137.00000
max                                              1441.00000

       Estimate- Total- Two or more races- Two races excluding Some other race,
and three or more races  \
count                                            497.000000
mean                                            2756.798793
std                                             5676.636445
min                                                0.000000
25%                                              210.000000
50%                                              548.000000
```

```
75%                                                 2137.000000
max                                                40734.000000

       Margin of Error- Total- Two or more races!!Two races excluding Some other
race, and three or more races  \
count                                               497.000000
mean                                                320.213280
std                                                 387.532583
min                                                  11.000000
25%                                                  83.000000
50%                                                 166.000000
75%                                                 368.000000
max                                                2481.000000

       Unnamed: 0_y  Total Population 62 Years and over
count    497.000000                          497.000000
mean    1513.734406                        24800.102616
std      787.134043                        45203.721118
min        9.000000                          237.000000
25%      845.000000                         3807.000000
50%     1409.000000                         7515.000000
75%     2119.000000                        21677.000000
max     3141.000000                       322990.000000
```

[56]:
```
junhidf.shape
```

[56]:
```
(497, 57)
```

[ ]:
```
#merge demographic info with Low CFR June Counties on fips
junelocountydf['fips']=junelocountydf['fips'].astype(float)
junlodf = pd.merge(junelocountydf, demographicdf, on='fips')
junlodf = pd.merge(junlodf, over62df, on='fips')
pd.set_option('display.max_columns', 85)
#mergecensusdf.to_csv('mergecensus.csv')
junlodf.dropna(inplace=True)
junlodf.head()
```

1.12 Descriptive Statistics for June US Counties with a CFR% < 6.25

[59]:
```
junlodf.describe()
```

[59]:
```
                fips          cases       CFR(%)       deaths  Unnamed: 0_x  \
count    1439.000000    1439.000000  1439.000000  1439.000000   1439.000000
mean    29309.783878    1220.680334     2.570042    36.047950   1505.419736
std     16087.170567    4791.715696     1.567743   186.587918    957.223165
min      1001.000000      17.000000     0.140449     1.000000      0.000000
25%     16035.000000      86.500000     1.297936     2.000000    568.000000
```

```
50%    28131.000000     253.000000     2.222222     4.000000   1466.000000
75%    45056.000000     736.000000     3.707205    15.000000   2343.500000
max    56039.000000  103529.000000     6.194690  4565.000000   3138.000000

       Total Population for whom poverty status is determined  \
count                                        1.439000e+03
mean                                         1.591289e+05
std                                          4.385031e+05
min                                          1.986000e+03
25%                                          2.355300e+04
50%                                          4.973000e+04
75%                                          1.306970e+05
max                                          9.947799e+06

       Margin of Error- Total Population for whom poverty status is determined
\
count                                         1439.000000
mean                                           365.205003
std                                            349.525502
min                                              1.000000
25%                                            166.000000
50%                                            268.000000
75%                                            436.500000
max                                           4278.000000

       Population Below Poverty Level  \
count                    1.439000e+03
mean                     2.253970e+04
std                      6.666775e+04
min                      1.650000e+02
25%                      3.846500e+03
50%                      7.420000e+03
75%                      1.763900e+04
max                      1.589956e+06

       Margin of Error- Population Below Poverty Level  \
count                                        1439.000000
mean                                         1271.618485
std                                          1231.175428
min                                            66.000000
25%                                           587.500000
50%                                           911.000000
75%                                          1469.500000
max                                         15303.000000

       Percent Below Poverty Level  \
count                   1439.000000
```

```
mean                      15.968728
std                        6.330145
min                        3.500000
25%                       11.500000
50%                       15.300000
75%                       19.400000
max                       55.100000

       Margin of Error- Percent Below Poverty Level  \
count                                   1439.000000
mean                                       1.963586
std                                        1.245206
min                                        0.200000
25%                                        1.100000
50%                                        1.700000
75%                                        2.600000
max                                       10.100000

       Total Population 16 years and over  \
count                        1.439000e+03
mean                         1.294709e+05
std                          3.540376e+05
min                          1.368000e+03
25%                          1.993550e+04
50%                          4.107400e+04
75%                          1.076390e+05
max                          8.115158e+06

       Margin of Error- Total Population 16 years and over  \
count                                          1439.000000
mean                                            209.376650
std                                             174.492425
min                                              21.000000
25%                                             107.000000
50%                                             158.000000
75%                                             251.000000
max                                            1824.000000

       Unemployment Rate- 16 years and over  \
count                             1439.000000
mean                                 6.084086
std                                  2.470902
min                                  0.300000
25%                                  4.400000
50%                                  5.700000
75%                                  7.200000
max                                 18.100000
```

```
       Margin of Error- Unemployment Rate- 16 years and over  \
count                                          1439.000000
mean                                              1.228562
std                                               0.885895
min                                               0.100000
25%                                               0.600000
50%                                               1.000000
75%                                               1.600000
max                                               6.800000

       Total Population 16 years and over.1  \
count                          1.439000e+03
mean                           1.294709e+05
std                            3.540376e+05
min                            1.368000e+03
25%                            1.993550e+04
50%                            4.107400e+04
75%                            1.076390e+05
max                            8.115158e+06

       Margin of Error- Total Population 16 years and over.1  \
count                                          1439.000000
mean                                            209.376650
std                                             174.492425
min                                              21.000000
25%                                             107.000000
50%                                             158.000000
75%                                             251.000000
max                                            1824.000000

       Unemployment Rate- 16 years and over.1  \
count                             1439.000000
mean                                 6.084086
std                                  2.470902
min                                  0.300000
25%                                  4.400000
50%                                  5.700000
75%                                  7.200000
max                                 18.100000

       Margin of Error- Unemployment Rate- 16 years and over.1  \
count                                          1439.000000
mean                                              1.228562
std                                               0.885895
min                                               0.100000
25%                                               0.600000
```

```
50%                                                 1.000000
75%                                                 1.600000
max                                                 6.800000

       Total Population 16 years and over.2  \
count                          1.439000e+03
mean                           1.294709e+05
std                            3.540376e+05
min                            1.368000e+03
25%                            1.993550e+04
50%                            4.107400e+04
75%                            1.076390e+05
max                            8.115158e+06

       Margin of Error- Total Population 16 years and over.2  \
count                                          1439.000000
mean                                            209.376650
std                                             174.492425
min                                              21.000000
25%                                             107.000000
50%                                             158.000000
75%                                             251.000000
max                                            1824.000000

       Unemployment Rate- 16 years and over.2  \
count                               1439.000000
mean                                   6.084086
std                                    2.470902
min                                    0.300000
25%                                    4.400000
50%                                    5.700000
75%                                    7.200000
max                                   18.100000

       Margin of Error- Unemployment Rate- 16 years and over.2  \
count                                          1439.000000
mean                                              1.228562
std                                               0.885895
min                                               0.100000
25%                                               0.600000
50%                                               1.000000
75%                                               1.600000
max                                               6.800000

       Household Median Income  Margin of Error- Household Median Income  \
count              1439.000000                                1439.000000
mean              53006.840167                                2536.341209
```

```
std               14694.287838                                1465.453003
min               20188.000000                                 247.000000
25%               43151.500000                                1540.000000
50%               51043.000000                                2189.000000
75%               59716.000000                                3143.500000
max              136268.000000                               10958.000000

       Total Population 25 years and over- High school graduates  \
count                                       1.439000e+03
mean                                        2.858594e+04
std                                         6.664521e+04
min                                         4.140000e+02
25%                                         6.027500e+03
50%                                         1.211900e+04
75%                                         2.644600e+04
max                                         1.416482e+06

       Margin of error- Total Population 25 years and over- High school
graduates  \
count                                        1439.000000
mean                                          856.606671
std                                           778.025223
min                                            52.000000
25%                                           428.000000
50%                                           619.000000
75%                                          1020.000000
max                                          9780.000000

       Num College Grads  \
count       1.439000e+03
mean        2.150561e+04
std         6.533190e+04
min         7.600000e+01
25%         1.861500e+03
50%         4.525000e+03
75%         1.513200e+04
max         1.416842e+06

       Margin of error- Total Population 25 years and over- Bachelor's degree  \
count                                        1439.000000
mean                                          670.963169
std                                           720.766028
min                                            27.000000
25%                                           262.000000
50%                                           431.000000
75%                                           811.000000
max                                          8651.000000
```

```
       Estimate- Total  Estimate- Total- White alone  \
count     1.439000e+03                  1.439000e+03
mean      1.629869e+05                  1.160805e+05
std       4.453940e+05                  2.716352e+05
min       2.029000e+03                  2.520000e+02
25%       2.492850e+04                  1.986000e+04
50%       5.156400e+04                  4.273100e+04
75%       1.345425e+05                  1.031175e+05
max       1.009805e+07                  5.186859e+06

       Margin of Error- Total- White alone  \
count                          1439.000000
mean                            636.379430
std                            1058.896196
min                               2.000000
25%                             140.000000
50%                             315.000000
75%                             689.500000
max                           15793.000000

       Estimate- Total- Black or African American alone  \
count                                       1.439000e+03
mean                                        2.152022e+04
std                                         7.128638e+04
min                                         0.000000e+00
25%                                         7.180000e+02
50%                                         3.590000e+03
75%                                         1.226100e+04
max                                         1.230494e+06

       Margin of Error- Total- Black or African American alone  \
count                                         1439.000000
mean                                           348.760945
std                                            418.052994
min                                              4.000000
25%                                            109.000000
50%                                            207.000000
75%                                            402.000000
max                                           3374.000000

       Estimate- Total- American Indian and Alaska Native alone  \
count                                         1439.000000
mean                                          1322.982627
std                                           4888.974076
min                                              0.000000
25%                                             71.000000
```

```
50%                                          218.000000
75%                                          767.500000
max                                        82699.000000

       Margin of Error- Total- American Indian and Alaska Native alone  \
count                                        1439.000000
mean                                          177.403753
std                                           234.129974
min                                             3.000000
25%                                            49.000000
50%                                           101.000000
75%                                           207.000000
max                                          3037.000000

       Estimate- Total- Asian alone  Margin of Error- Total- Asian alone  \
count                  1.439000e+03                          1439.000000
mean                   9.430248e+03                           204.054899
std                    5.639516e+04                           322.480264
min                    0.000000e+00                             3.000000
25%                    1.270000e+02                            47.500000
50%                    4.180000e+02                            95.000000
75%                    2.281500e+03                           223.500000
max                    1.469968e+06                          3742.000000

       Estimate- Total- Native Hawaiian and Other Pacific Islander alone  \
count                                        1439.000000
mean                                          352.423211
std                                          2915.854756
min                                             0.000000
25%                                             0.000000
50%                                            20.000000
75%                                            85.000000
max                                         93947.000000

       Margin of Error- Total- Native Hawaiian and Other Pacific Islander alone
\
count                                        1439.000000
mean                                           62.086171
std                                           103.980571
min                                             1.000000
25%                                            19.000000
50%                                            28.000000
75%                                            61.500000
max                                          1809.000000

       Estimate- Total- Two or more races  \
count                         1439.000000
```

```
mean                          5563.820709
std                          18319.466491
min                             0.000000
25%                           421.000000
50%                          1138.000000
75%                          3586.500000
max                        397680.000000

       Margin of Error- Total- Two or more races  \
count                                1439.000000
mean                                  482.038916
std                                   621.652050
min                                     9.000000
25%                                   148.500000
50%                                   279.000000
75%                                   565.000000
max                                  8047.000000

       Estimate- Total- Two or more races- Two races including Some other race
\
count                                          1439.000000
mean                                            856.030577
std                                            4021.415577
min                                               0.000000
25%                                              26.000000
50%                                             109.000000
75%                                             369.000000
max                                          113303.000000

       Margin of Error- Total- Two or more races- Two races including Some other
race  \
count                                          1439.000000
mean                                            180.718555
std                                             289.401539
min                                               2.000000
25%                                              31.000000
50%                                              81.000000
75%                                             204.000000
max                                            3691.000000

       Estimate- Total- Two or more races- Two races excluding Some other race,
and three or more races  \
count                                          1439.000000
mean                                           4707.790132
std                                           14765.319842
min                                               0.000000
25%                                             366.500000
```

```
50%                                                1021.000000
75%                                                3202.000000
max                                              284377.000000

       Margin of Error- Total- Two or more races!!Two races excluding Some other
race, and three or more races  \
count                                              1439.000000
mean                                                437.862404
std                                                 546.029008
min                                                   5.000000
25%                                                 132.500000
50%                                                 264.000000
75%                                                 523.000000
max                                                6490.000000

       Unnamed: 0_y  Total Population 62 Years and over
count   1439.000000                        1.439000e+03
mean    1506.010424                        2.936540e+04
std      957.648492                        7.306683e+04
min        0.000000                        2.100000e+02
25%      568.000000                        5.357500e+03
50%     1467.000000                        1.068600e+04
75%     2344.500000                        2.459000e+04
max     3139.000000                        1.610630e+06
```

1.13 State County Counts for Both CFR Cohorts

[75]:
```
#high CFR% counties in June Counts by State
hicountiesdf = junhidf.groupby('state')['county'].nunique()
```

[76]:
```
#low CFR% counties in June Counts by State
locountiesdf = junlodf.groupby('state')['county'].nunique()
```

1.14 County Counts by Month with CFR >=6.25%

[77]:
```
filtmarcfr = topcovcounty331df['CFR(%)']>=6.25
topcovcounty331df[filtmarcfr]
print("March County Count >= CFR 7: ", topcovcounty331df[filtmarcfr].shape)

filtaprlcfr = topcovcounty430df['CFR(%)']>=6.25
topcovcounty430df[filtaprlcfr]
print("April County Count >= CFR 7: ", topcovcounty430df[filtaprlcfr].shape)

filtmaycfr = topcovcounty531df['CFR(%)']>=6.25
topcovcounty531df[filtmaycfr]
print("May County Count >= CFR 7: ", topcovcounty531df[filtmaycfr].shape)
```

```
filtjuncfr = topcovcounty614df['CFR(%)']>=6.25
topcovcounty614df[filtjuncfr]
print("June County Count >= CFR 7: ", topcovcounty614df[filtjuncfr].shape)
```

```
March County Count >= CFR 7:  (154, 7)
April County Count >= CFR 7:  (574, 7)
May County Count >= CFR 7:  (602, 7)
June County Count >= CFR 7:  (502, 7)
```