statistics-counties

March 14, 2023

[1]:
```
%matplotlib inline
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt

# Set some Pandas options
pd.set_option('display.max_columns', 20)
pd.set_option('display.max_rows', 25)

from datetime import datetime
```

[2]:
```
segments = pd.read_csv("covid19_superdata.csv")
```

[11]:
```
#get just the dates in brown, dane, and milwaukee county. all of these are␣
 ↪counties are in wisconsin.
brown = segments[segments.countyFIPS==55009].iloc[:,4:-1]

dane = segments[segments.countyFIPS==55025].iloc[:,4:-1]

milwaukee = segments[segments.countyFIPS==55079].iloc[:,4:-1]
```

0.1 Cases for Each County Compared:

[22]:
```
#remove suffixes and convert to datetime
brown_cases = brown.filter(regex='_x')
brown_cases.columns = brown_cases.columns.str.rstrip('_x')
brown_cases.columns = pd.to_datetime(brown_cases.columns)
brown_cases_week = brown_cases.T.reset_index()
brown_cases_week = brown_cases_week.assign(Weeks = brown_cases_week['index']).
 ↪drop(columns = 'index')
brown_cases_week['Weeks'] = brown_cases_week['Weeks'].astype('datetime64[ns]')
#get mean cases per week
brown_cases_week_mean = brown_cases_week.resample('W-Mon', label='left', closed␣
 ↪= 'left', on='Weeks').mean(numeric_only=True)
brown_cases_week_mean = brown_cases_week_mean.loc['2022-06-01':'2022-12-31', :]
brown_cases_new_week_mean = brown_cases_week_mean.sum(axis=1).diff()
```

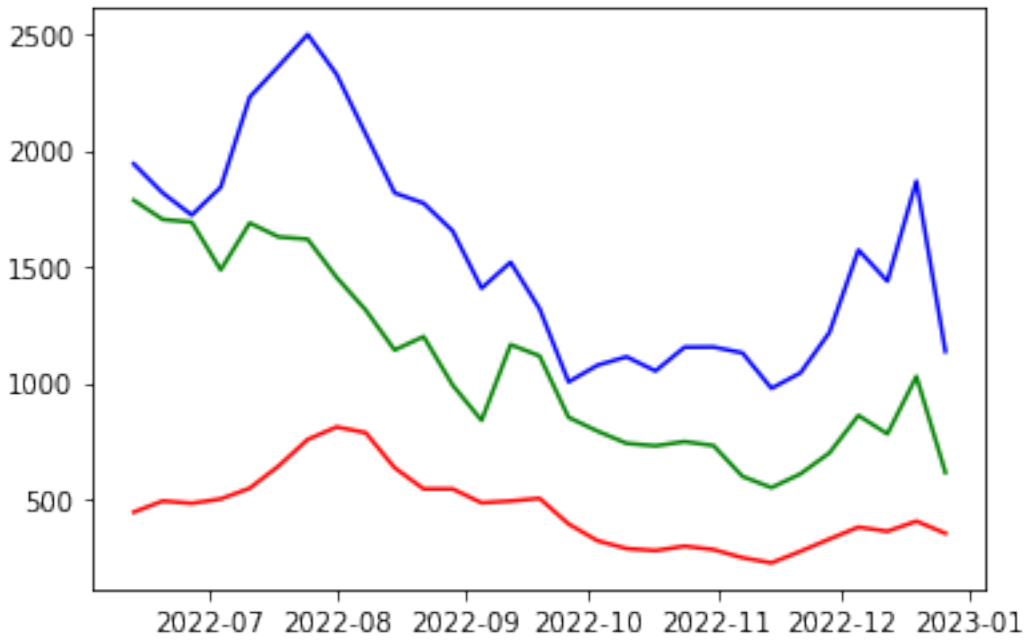
```
#remove suffixes and convert to datetime
dane_cases = dane.filter(regex='_x')
dane_cases.columns = dane_cases.columns.str.rstrip('_x')
dane_cases.columns = pd.to_datetime(dane_cases.columns)
dane_cases_week = dane_cases.T.reset_index()
dane_cases_week = dane_cases_week.assign(Weeks = dane_cases_week['index']).
 ↪drop(columns = 'index')
dane_cases_week['Weeks'] = dane_cases_week['Weeks'].astype('datetime64[ns]')
#get mean cases per week
dane_cases_week_mean = dane_cases_week.resample('W-Mon', label='left', closed =␣
 ↪'left', on='Weeks').mean(numeric_only=True)
dane_cases_week_mean = dane_cases_week_mean.loc['2022-06-01':'2022-12-31', :]
dane_cases_new_week_mean = dane_cases_week_mean.sum(axis=1).diff()

milwaukee_cases = milwaukee.filter(regex='_x')
milwaukee_cases.columns = milwaukee_cases.columns.str.rstrip('_x')
milwaukee_cases.columns = pd.to_datetime(milwaukee_cases.columns)
milwaukee_cases_week = milwaukee_cases.T.reset_index()
milwaukee_cases_week = milwaukee_cases_week.assign(Weeks =␣
 ↪milwaukee_cases_week['index']).drop(columns = 'index')
milwaukee_cases_week['Weeks'] = milwaukee_cases_week['Weeks'].
 ↪astype('datetime64[ns]')
#get mean cases per week
milwaukee_cases_week_mean = milwaukee_cases_week.resample('W-Mon',␣
 ↪label='left', closed = 'left', on='Weeks').mean(numeric_only=True)
milwaukee_cases_week_mean = milwaukee_cases_week_mean.loc['2022-06-01':
 ↪'2022-12-31', :]
milwaukee_cases_new_week_mean = milwaukee_cases_week_mean.sum(axis=1).diff()
```

[14]:
```
#raw data
fig1 = plt.figure()
ax1 = fig1.add_subplot()

ax1.plot(brown_cases_new_week_mean, color="red")
ax1.plot(dane_cases_new_week_mean, color="green")
ax1.plot(milwaukee_cases_new_week_mean, color="blue")
```

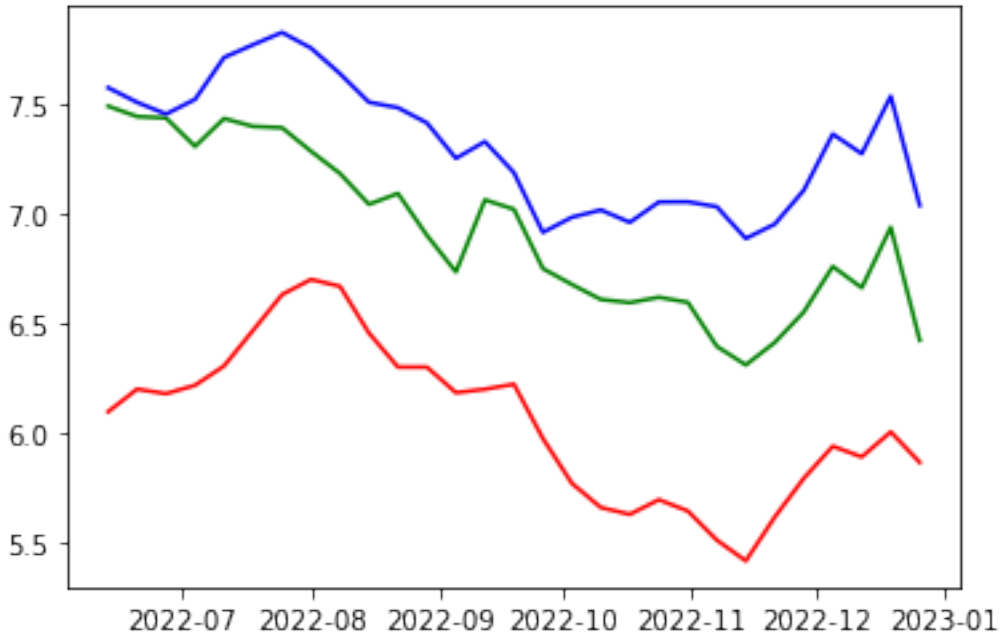
[14]:
```
[<matplotlib.lines.Line2D at 0x7fbdaeceaca0>]
```



[15]:
```
#log normalized data
fig1 = plt.figure()
ax1 = fig1.add_subplot()

ax1.plot(brown_cases_new_week_mean.apply(np.log), color="red")
ax1.plot(dane_cases_new_week_mean.apply(np.log), color="green")
ax1.plot(milwaukee_cases_new_week_mean.apply(np.log), color="blue")
```

[15]:
```
[<matplotlib.lines.Line2D at 0x7fbdaec5fe50>]
```



The data trends similarly to the country data for these counties. Spiking around the Thanksgiving, and Christmas.

0.2 Deaths for Each County Compared

[41]:
```
#remove suffixes and convert to datetime
brown_deaths = brown.filter(regex='_y')
brown_deaths.columns = brown_deaths.columns.str.rstrip('_y')
brown_deaths.columns = pd.to_datetime(brown_deaths.columns)
brown_deaths_week = brown_deaths.T.reset_index()
brown_deaths_week = brown_deaths_week.assign(Weeks =␣
↪brown_deaths_week['index']).drop(columns = 'index')
brown_deaths_week['Weeks'] = brown_deaths_week['Weeks'].astype('datetime64[ns]')
#get mean deaths per week
brown_deaths_week_mean = brown_deaths_week.resample('W-Mon', label='left',␣
↪closed = 'left', on='Weeks').mean(numeric_only=True)
brown_deaths_week_mean = brown_deaths_week_mean.loc['2022-06-01':'2022-12-31', :
↪]
brown_deaths_new_week_mean = brown_deaths_week_mean.sum(axis=1).diff()

#remove suffixes and convert to datetime
dane_deaths = dane.filter(regex='_y')
dane_deaths.columns = dane_deaths.columns.str.rstrip('_y')
dane_deaths.columns = pd.to_datetime(dane_deaths.columns)
dane_deaths_week = dane_deaths.T.reset_index()
```

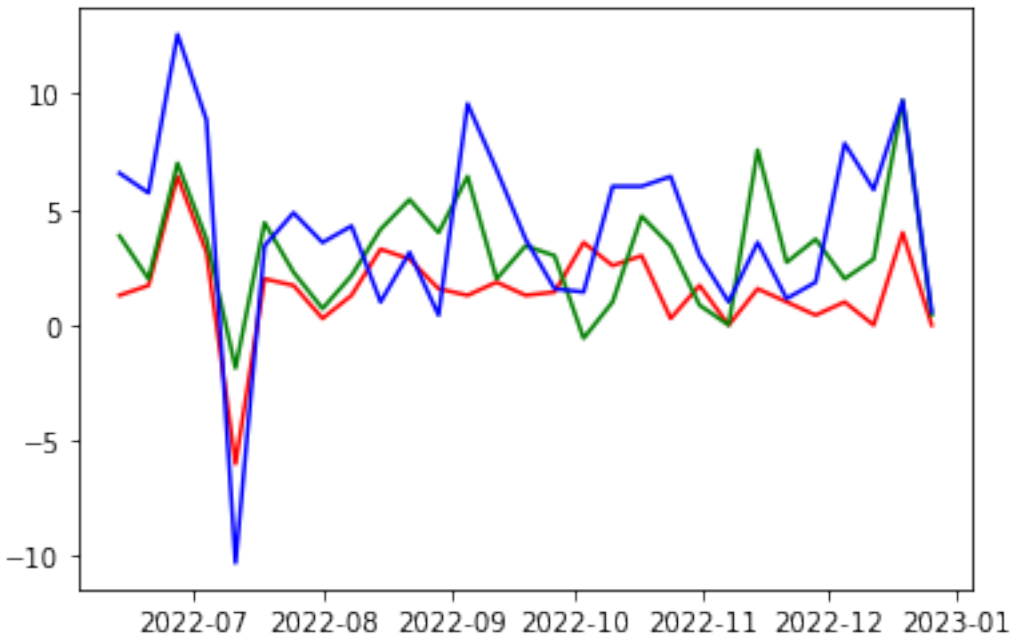
```
dane_deaths_week = dane_deaths_week.assign(Weeks = dane_deaths_week['index']).
 ↪drop(columns = 'index')
dane_deaths_week['Weeks'] = dane_deaths_week['Weeks'].astype('datetime64[ns]')
#get mean deaths per week
dane_deaths_week_mean = dane_deaths_week.resample('W-Mon', label='left', closed␣
 ↪= 'left', on='Weeks').mean(numeric_only=True)
dane_deaths_week_mean = dane_deaths_week_mean.loc['2022-06-01':'2022-12-31', :]
dane_deaths_new_week_mean = dane_deaths_week_mean.sum(axis=1).diff()

milwaukee_deaths = milwaukee.filter(regex='_y')
milwaukee_deaths.columns = milwaukee_deaths.columns.str.rstrip('_y')
milwaukee_deaths.columns = pd.to_datetime(milwaukee_deaths.columns)
milwaukee_deaths_week = milwaukee_deaths.T.reset_index()
milwaukee_deaths_week = milwaukee_deaths_week.assign(Weeks =␣
 ↪milwaukee_deaths_week['index']).drop(columns = 'index')
milwaukee_deaths_week['Weeks'] = milwaukee_deaths_week['Weeks'].
 ↪astype('datetime64[ns]')
#get mean deaths per week
milwaukee_deaths_week_mean = milwaukee_deaths_week.resample('W-Mon',␣
 ↪label='left', closed = 'left', on='Weeks').mean(numeric_only=True)
milwaukee_deaths_week_mean = milwaukee_deaths_week_mean.loc['2022-06-01':
 ↪'2022-12-31', :]
milwaukee_deaths_new_week_mean = milwaukee_deaths_week_mean.sum(axis=1).diff()
```

[12]:
```
#raw data
fig1 = plt.figure()
ax1 = fig1.add_subplot()

ax1.plot(brown_deaths_new_week_mean, color="red")
ax1.plot(dane_deaths_new_week_mean, color="green")
ax1.plot(milwaukee_deaths_new_week_mean, color="blue")
```

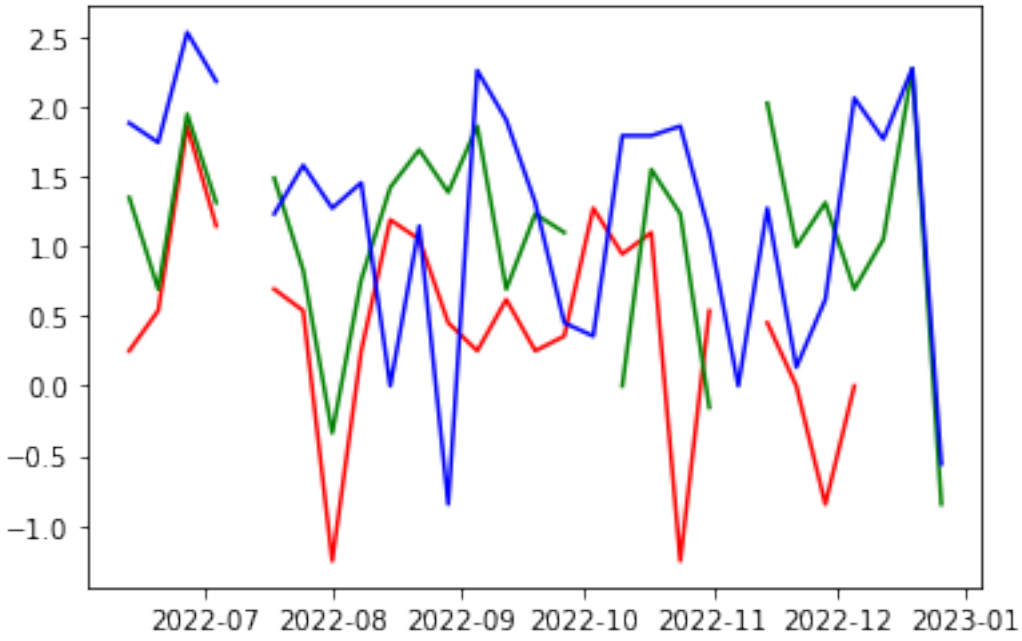
[12]:
```
[<matplotlib.lines.Line2D at 0x7fbdaedf61f0>]
```



[13]:
```
#log normalized data
fig1 = plt.figure()
ax1 = fig1.add_subplot()

ax1.plot(brown_deaths_new_week_mean.apply(np.log), color="red")
ax1.plot(dane_deaths_new_week_mean.apply(np.log), color="green")
ax1.plot(milwaukee_deaths_new_week_mean.apply(np.log), color="blue")
```

[13]:
```
[<matplotlib.lines.Line2D at 0x7fbdaed6c580>]
```



1 Data Report:

The data trends similarly to the state data for these counties. The cases start to fall as Summer ends, then spiking around traditional holidays in the United States, as well as around fall break for schools. Similar peaks can be found in relation to deaths, also tending to be at the highest near holidays and breaks.