# Stage_I_Task_3

September 21, 2023

## 1 Individual Report - ACS Housing and Economics

by Johannes Kaendler

(Because the social data is not available for all states, I wiil just focus on the other two)

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

[2]:
```
housing = pd.read_csv("./data/ACSDP1Y2022.DP04-Data.csv", low_memory=False)
economics = pd.read_csv("./data/ACSDP1Y2022.DP03-Data.csv", low_memory=False)
confirmed = pd.read_csv("../Team/covid_confirmed_usafacts.csv")
deaths = pd.read_csv("../Team/covid_deaths_usafacts.csv")
county_population = pd.read_csv("../Team/covid_county_population_usafacts.csv")
housing_labels = pd.read_csv("data/ACSDP1Y2022.DP03-Column-Metadata.csv")
economics_labels = pd.read_csv("data/ACSDP1Y2022.DP04-Column-Metadata.csv")
```

Let's calculate the COVID-19 data trends of the last week. We will build the final dataset based on the population dataset. Since the data is in absolute number, we will first calculate the change from two weeks ago to last week. Then we subtract that from the difference of this week and last week

[3]:
```
THIS_WEEK = '2023-07-23'
LAST_WEEK = '2023-07-16'
TWO_WEEKS_AGO = '2023-07-09'
df = county_population.copy()
df['confirmed-trend'] =␣
  ↪((confirmed[THIS_WEEK]-confirmed[THIS_WEEK])-(confirmed[LAST_WEEK]-confirmed[TWO_WEEKS_AGO]
df['death-trend'] =␣
  ↪((deaths[THIS_WEEK]-deaths[THIS_WEEK])-(deaths[LAST_WEEK]-deaths[TWO_WEEKS_AGO]))
print(f" On average thet number of new cases in the last week was␣
  ↪{df['confirmed-trend'].mean()} more than the week before. The biggest␣
  ↪reduction is {df['confirmed-trend'].min()}. The highest increase was␣
  ↪{df['confirmed-trend'].max()}")
print(f" On average thet number of new deaths in the last week was␣
  ↪{df['death-trend'].mean()} more than the week before. The biggest reduction␣
  ↪is {df['death-trend'].min()}. The highest increase was {df['death-trend'].
  ↪max()}")
```

```
df.head()
```

```
 On average thet number of new cases in the last week was -6.271218290009395
more than the week before. The biggest reduction is -2814.0. The highest
increase was 636.0
 On average thet number of new deaths in the last week was -0.043532727842154714
more than the week before. The biggest reduction is -13.0. The highest increase
was 2.0
```

[3]:

| | countyFIPS | County Name | State | population | confirmed-trend | death-trend |
|---|---|---|---|---|---|---|
| 0 | 0 | Statewide Unallocated | AL | 0 | 0.0 | 0.0 |
| 1 | 1001 | Autauga County | AL | 55869 | 0.0 | 0.0 |
| 2 | 1003 | Baldwin County | AL | 223234 | 0.0 | 0.0 |
| 3 | 1005 | Barbour County | AL | 24686 | 0.0 | 0.0 |
| 4 | 1007 | Bibb County | AL | 22394 | 0.0 | 0.0 |

It is safe to say that the number of deaths was stable increasing decreasing by only -13 to +2

The number of new confirmed case is not stable and different for each county. This sugest that COVID is still spreading, but more localized.

[4]:
```
housing = pd.read_csv("./data/ACSDP1Y2022.DP04-Data.csv", low_memory=False)
economics = pd.read_csv("./data/ACSDP1Y2022.DP03-Data.csv", low_memory=False)
housing_labels = pd.read_csv("data/ACSDP1Y2022.DP03-Column-Metadata.csv")
economics_labels = pd.read_csv("data/ACSDP1Y2022.DP04-Column-Metadata.csv")
```

[5]:
```
housing.head()
```

[5]:

| | GEO_ID | NAME | DP04_0001E |
|---|---|---|---|
| 0 | Geography | Geographic Area Name | Estimate!!HOUSING OCCUPANCY!!Total housing units |
| 1 | 0500000US01003 | Baldwin County, Alabama | 132299 |
| 2 | 0500000US01015 | Calhoun County, Alabama | 53408 |
| 3 | 0500000US01043 | Cullman County, Alabama | 39893 |
| 4 | 0500000US01049 | DeKalb County, Alabama | 31022 |

```
                                          DP04_0001M  \
0  Margin of Error!!HOUSING OCCUPANCY!!Total hous…
1                                                185
2                                                 87
3                                                 40
4                                                 39

                                         DP04_0001MA  \
0  Annotation of Margin of Error!!HOUSING OCCUPAN…
1                                                NaN
2                                                NaN
3                                                NaN
4                                                NaN

                                         DP04_0001EA  \
0  Annotation of Estimate!!HOUSING OCCUPANCY!!Tot…
1                                                NaN
2                                                NaN
3                                                NaN
4                                                NaN

                                          DP04_0002E  \
0  Estimate!!HOUSING OCCUPANCY!!Total housing uni…
1                                              98854
2                                              45701
3                                              35966
4                                              26459

                                         DP04_0002EA  \
0  Annotation of Estimate!!HOUSING OCCUPANCY!!Tot…
1                                                NaN
2                                                NaN
3                                                NaN
4                                                NaN

                                          DP04_0002M  \
0  Margin of Error!!HOUSING OCCUPANCY!!Total hous…
1                                               3781
2                                               1562
3                                               1274
4                                               1114

                                         DP04_0002MA  …  \
0  Annotation of Margin of Error!!HOUSING OCCUPAN…  …
1                                                NaN  …
2                                                NaN  …
```

```
3                                                 NaN  …
4                                                 NaN  …

                                          DP04_0141PMA  \
0  Annotation of Percent Margin of Error!!GROSS R…
1                                                 NaN
2                                                 NaN
3                                                 NaN
4                                                 NaN

                                           DP04_0142PE  \
0  Percent!!GROSS RENT AS A PERCENTAGE OF HOUSEHO…
1                                                46.3
2                                                34.9
3                                                39.7
4                                                32.4

                                          DP04_0142PEA  \
0  Annotation of Percent!!GROSS RENT AS A PERCENT…
1                                                 NaN
2                                                 NaN
3                                                 NaN
4                                                 NaN

                                           DP04_0142PM  \
0  Percent Margin of Error!!GROSS RENT AS A PERCE…
1                                                 9.2
2                                                 8.8
3                                                14.3
4                                                12.6

                                          DP04_0142PMA  \
0  Annotation of Percent Margin of Error!!GROSS R…
1                                                 NaN
2                                                 NaN
3                                                 NaN
4                                                 NaN

                                           DP04_0143PE  \
0  Percent!!GROSS RENT AS A PERCENTAGE OF HOUSEHO…
1                                                 (X)
2                                                 (X)
3                                                 (X)
4                                                 (X)

                                          DP04_0143PEA  \
0  Annotation of Percent!!GROSS RENT AS A PERCENT…
```

```
1                                                   (X)
2                                                   (X)
3                                                   (X)
4                                                   (X)

                                            DP04_0143PM  \
0  Percent Margin of Error!!GROSS RENT AS A PERCE…
1                                                   (X)
2                                                   (X)
3                                                   (X)
4                                                   (X)

                                           DP04_0143PMA Unnamed: 1146
0  Annotation of Percent Margin of Error!!GROSS R…           NaN
1                                                   (X)        NaN
2                                                   (X)        NaN
3                                                   (X)        NaN
4                                                   (X)        NaN

[5 rows x 1147 columns]
```

[6]:
```
economics.head()
```

[6]:
```
           GEO_ID                      NAME  \
0       Geography     Geographic Area Name
1  0500000US01003  Baldwin County, Alabama
2  0500000US01015  Calhoun County, Alabama
3  0500000US01043  Cullman County, Alabama
4  0500000US01049   DeKalb County, Alabama

                                         DP03_0001E  \
0  Estimate!!EMPLOYMENT STATUS!!Population 16 yea…
1                                            201504
2                                             94762
3                                             72822
4                                             56340

                                         DP03_0001M  \
0  Margin of Error!!EMPLOYMENT STATUS!!Population…
1                                              1225
2                                               667
3                                               501
4                                               610

                                        DP03_0001MA  \
0  Annotation of Margin of Error!!EMPLOYMENT STAT…
1                                               NaN
```

```
2                                                   NaN
3                                                   NaN
4                                                   NaN

                                              DP03_0001EA  \
0  Annotation of Estimate!!EMPLOYMENT STATUS!!Pop…
1                                                   NaN
2                                                   NaN
3                                                   NaN
4                                                   NaN

                                               DP03_0002E  \
0  Estimate!!EMPLOYMENT STATUS!!Population 16 yea…
1                                                117259
2                                                 53438
3                                                 43353
4                                                 32603

                                               DP03_0002M  \
0  Margin of Error!!EMPLOYMENT STATUS!!Population…
1                                                 3370
2                                                 2853
3                                                 2012
4                                                 1753

                                              DP03_0002MA  \
0  Annotation of Margin of Error!!EMPLOYMENT STAT…
1                                                   NaN
2                                                   NaN
3                                                   NaN
4                                                   NaN

                                              DP03_0002EA  …  \
0  Annotation of Estimate!!EMPLOYMENT STATUS!!Pop…  …
1                                                   NaN  …
2                                                   NaN  …
3                                                   NaN  …
4                                                   NaN  …

                                             DP03_0135PMA  \
0  Annotation of Percent Margin of Error!!PERCENT…
1                                                   NaN
2                                                   NaN
3                                                   NaN
4                                                   NaN

                                             DP03_0136PE  \
```

```
0  Percent!!PERCENTAGE OF FAMILIES AND PEOPLE WHO…
1                                                11.0
2                                                14.5
3                                                15.1
4                                                15.9

                                            DP03_0136PEA  \
0  Annotation of Percent!!PERCENTAGE OF FAMILIES …
1                                                 NaN
2                                                 NaN
3                                                 NaN
4                                                 NaN

                                             DP03_0136PM  \
0  Percent Margin of Error!!PERCENTAGE OF FAMILIE…
1                                                 2.5
2                                                 3.6
3                                                 3.9
4                                                 4.8

                                            DP03_0136PMA  \
0  Annotation of Percent Margin of Error!!PERCENT…
1                                                 NaN
2                                                 NaN
3                                                 NaN
4                                                 NaN

                                             DP03_0137PE  \
0  Percent!!PERCENTAGE OF FAMILIES AND PEOPLE WHO…
1                                                25.9
2                                                33.2
3                                                31.9
4                                                38.3

                                             DP03_0137PM  \
0  Percent Margin of Error!!PERCENTAGE OF FAMILIE…
1                                                 5.3
2                                                 5.9
3                                                 7.4
4                                                 6.4

                                            DP03_0137PMA  \
0  Annotation of Percent Margin of Error!!PERCENT…
1                                                 NaN
2                                                 NaN
3                                                 NaN
4                                                 NaN
```

```
                                          DP03_0137PEA Unnamed: 1098
0  Annotation of Percent!!PERCENTAGE OF FAMILIES …           NaN
1                                                  NaN           NaN
2                                                  NaN           NaN
3                                                  NaN           NaN
4                                                  NaN           NaN

[5 rows x 1099 columns]
```

Let's edit the eky column so that all match

[7]:
```
housing['GEO_ID'] = pd.to_numeric(housing['GEO_ID'].str.slice(start=9))
economics['GEO_ID'] = pd.to_numeric(economics['GEO_ID'].str.slice(start=9))
df['countyFIPS'] = pd.to_numeric(df['countyFIPS'])
```

Now we can merge the data sets

[8]:
```
df = df.merge(economics, left_on='countyFIPS', right_on='GEO_ID').
↪merge(housing, left_on='countyFIPS', right_on='GEO_ID')
```

Let's write the data to a csv

[9]:
```
df.to_csv("merged_set.csv")
df.head()
```

[9]:
```
   countyFIPS     County Name State  population  confirmed-trend  death-trend  \
0        1003  Baldwin County    AL      223234              0.0          0.0
1        1015  Calhoun County    AL      113605              0.0          0.0
2        1043  Cullman County    AL       83768              0.0          0.0
3        1049   DeKalb County    AL       71513              0.0          0.0
4        1051   Elmore County    AL       81209              0.0          0.0

   GEO_ID_x                  NAME_x DP03_0001E DP03_0001M  … DP04_0141PMA  \
0    1003.0  Baldwin County, Alabama     201504       1225  …          NaN
1    1015.0  Calhoun County, Alabama      94762        667  …          NaN
2    1043.0  Cullman County, Alabama      72822        501  …          NaN
3    1049.0   DeKalb County, Alabama      56340        610  …          NaN
4    1051.0   Elmore County, Alabama      72804        524  …          NaN

  DP04_0142PE DP04_0142PEA DP04_0142PM DP04_0142PMA DP04_0143PE DP04_0143PEA  \
0        46.3          NaN         9.2          NaN         (X)          (X)
1        34.9          NaN         8.8          NaN         (X)          (X)
2        39.7          NaN        14.3          NaN         (X)          (X)
3        32.4          NaN        12.6          NaN         (X)          (X)
4        26.5          NaN         9.9          NaN         (X)          (X)

  DP04_0143PM DP04_0143PMA Unnamed: 1146
```

```
0         (X)          (X)          NaN
1         (X)          (X)          NaN
2         (X)          (X)          NaN
3         (X)          (X)          NaN
4         (X)          (X)          NaN

[5 rows x 2252 columns]
```

[0]: