HOW RESILIENT IS THE U.S. ECONOMY?

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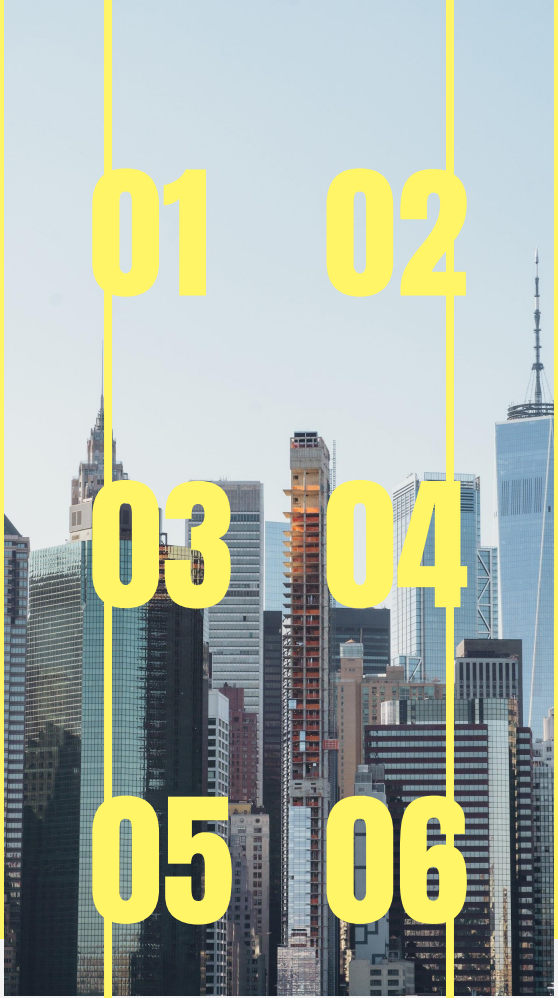

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BACKGROUND

Crafting our problem statement

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PROBLEM STATEMENT

Resilience in the economy?

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DATA

Adventures in webscraping

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MODELING & VISUALIZATION

Models, models, models

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BACKGROUND

Crafting our
problem statement

BACKGROUND

INTERESTS

- Economic Sectors
- National Crises
- Clustering

PROBLEM STATEMENT

Resilience in the economy?

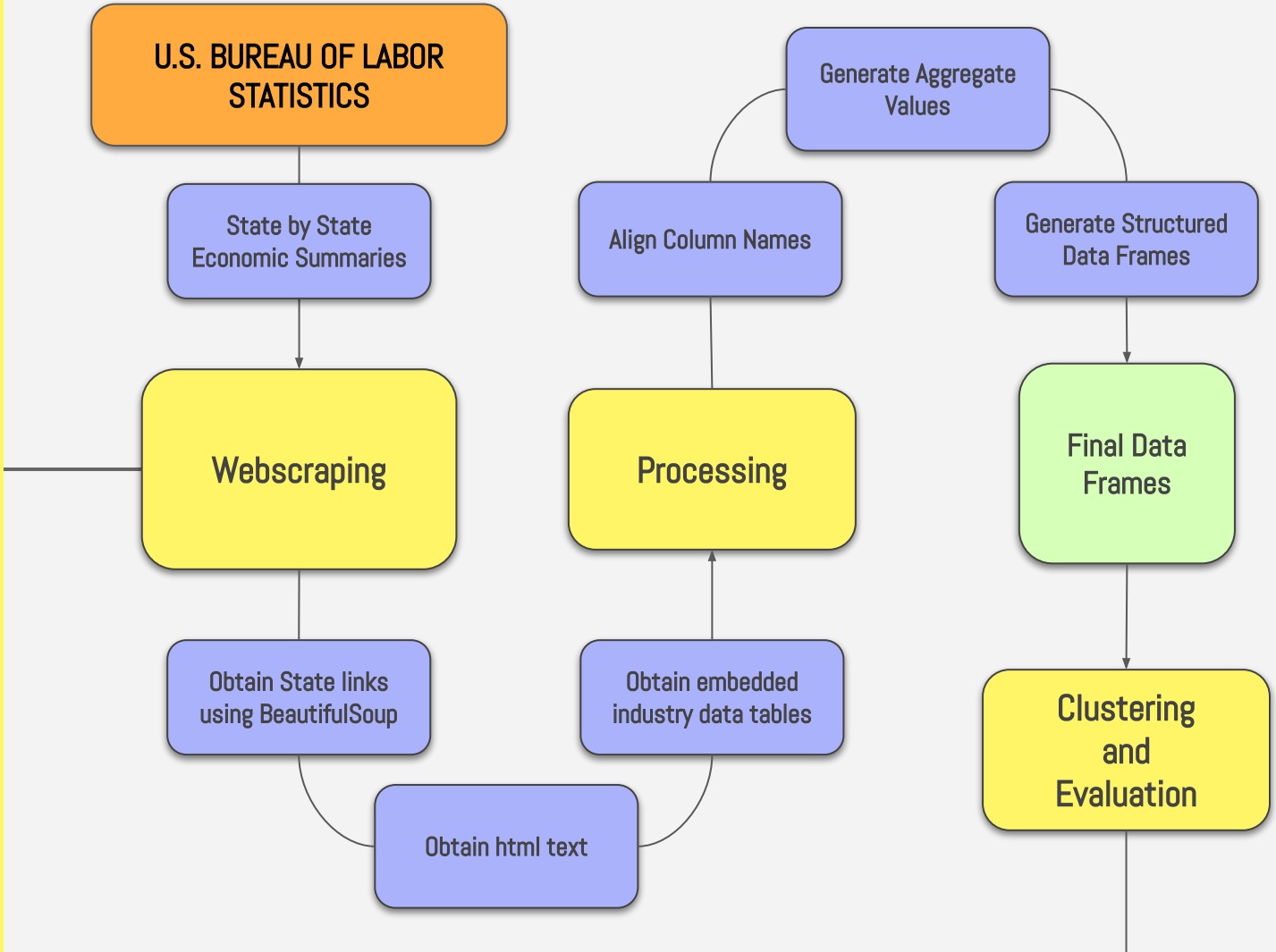
PROBLEM STATEMENT

Does the composition of a state's economy imply anything about its resilience in an economic downturn?

Can we identify economic profiles that provide insight into the resilience of a given state's economy?

Adventures in webscraping

DATA


U.S. BUREAU OF LABOR STATISTICS
State by State Economic Summaries
Webscraping
Obtain State links using BeautifulSoup
Obtain html text
Obtain embedded industry data tables
Processing
Align Column Names
Generate Aggregate Values
Generate Structured Data Frames
Final Data Frames
Clustering and Evaluation

MODELING AND VISUALIZATION

Models, models, models

KMEANS CLUSTERING

Best Silhouette: 0.449
Best Number of Clusters: 5

Metrics: Silhouette, inertia scores + elbow plot

Cluster 0 : 15 States
Cluster 1 : 24 States
Cluster 2 : 3 States
Cluster 3 : 8 States
Cluster 4 : 1 States

DBSCAN

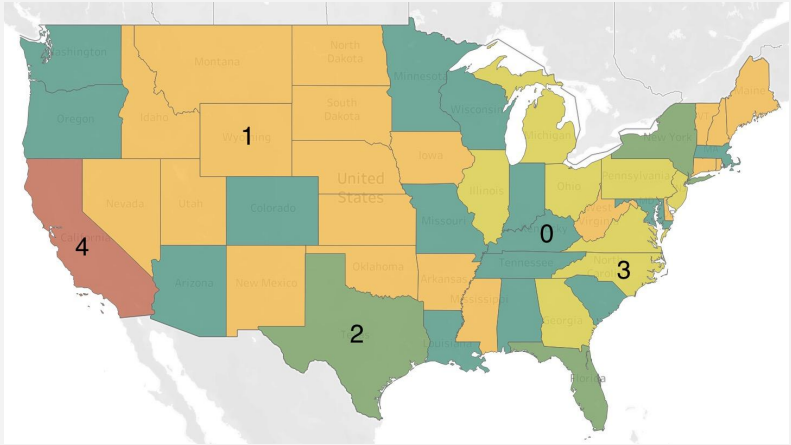
Best Epsilon: 0.96
Best Number of Clusters: 3

Metrics: Silhouette score - .3875

MODEL VISUALS

MODEL VISUAL EXPLANATION

(More info on insights slide)



Cluster 0 States:

Alabama, Arizona, Colorado, Indiana, Kentucky, Louisiana, Maryland, Massachusetts, Minnesota, Missouri, Oregon, South Carolina, Tennessee, Washington, Wisconsin

Cluster 1 States:

Alaska, Arkansas, Connecticut, Delaware, District of Columbia, Hawaii, Idaho, Iowa, Kansas, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oklahoma, Rhode Island, South Dakota, Utah, Vermont, West Virginia, Wyoming

Cluster 2 States:

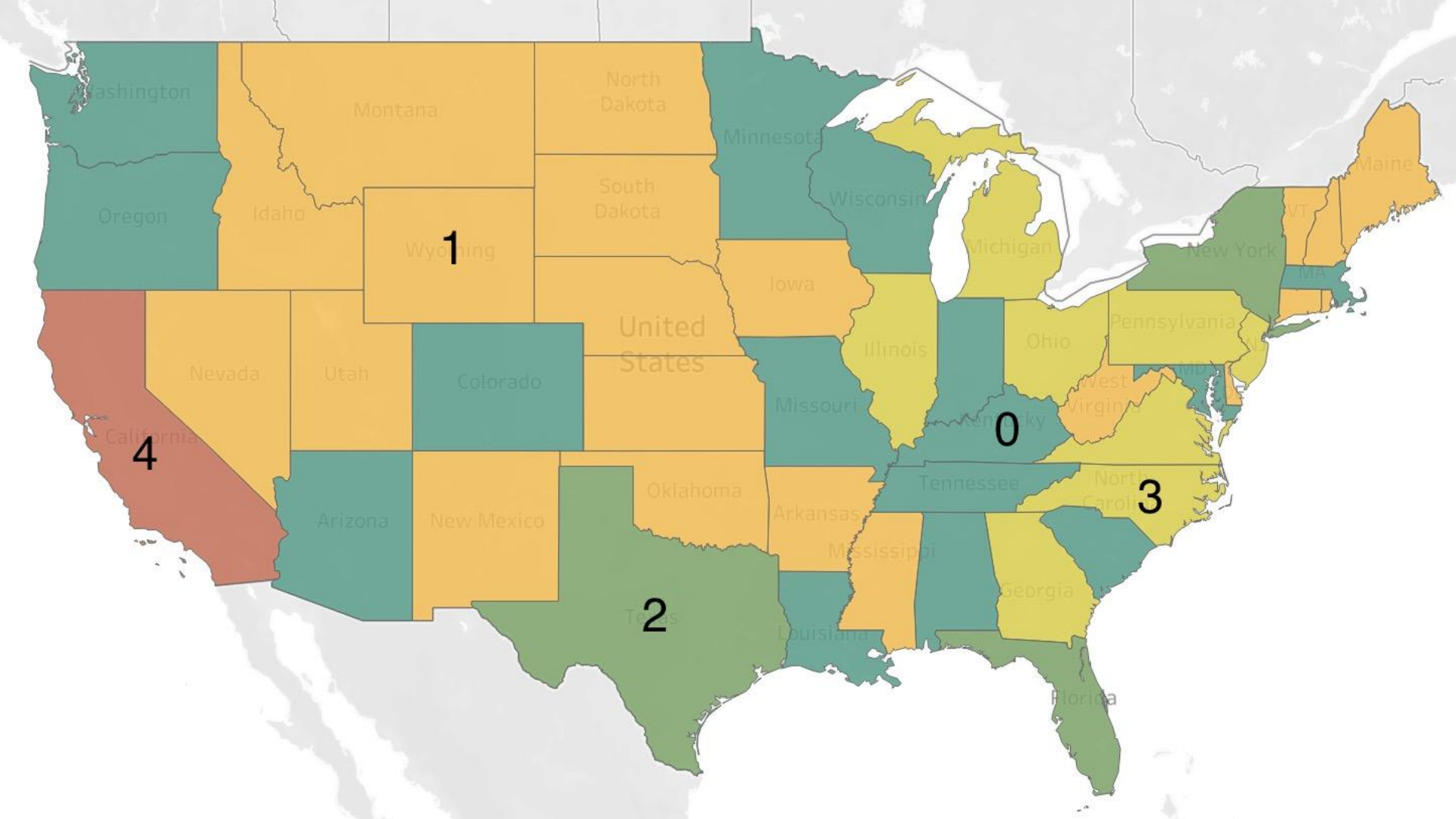
Florida, New York, Texas

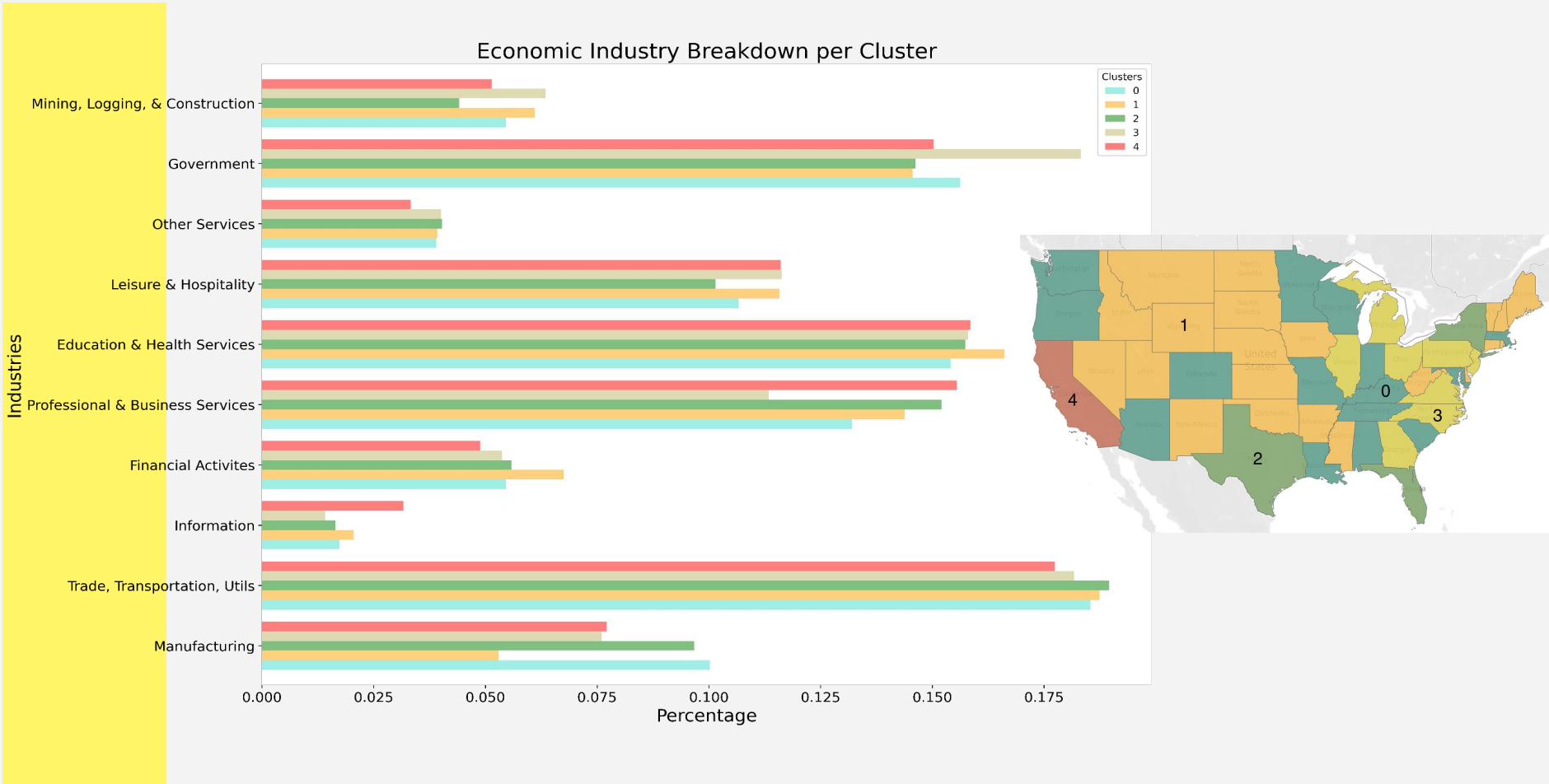
Cluster 3 States:

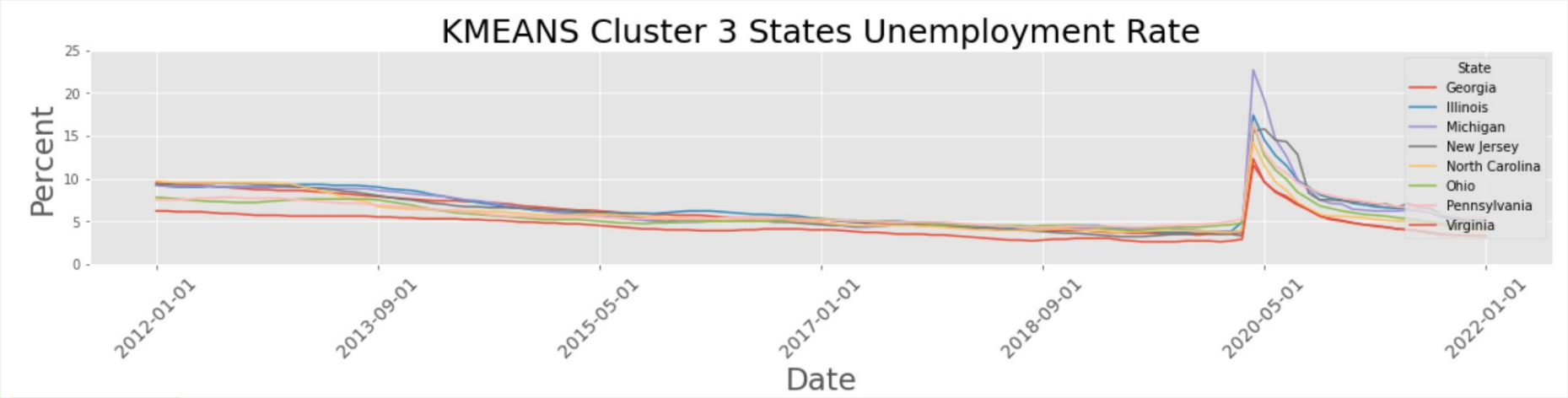
Georgia, Illinois, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Virginia

Cluster 4 States:

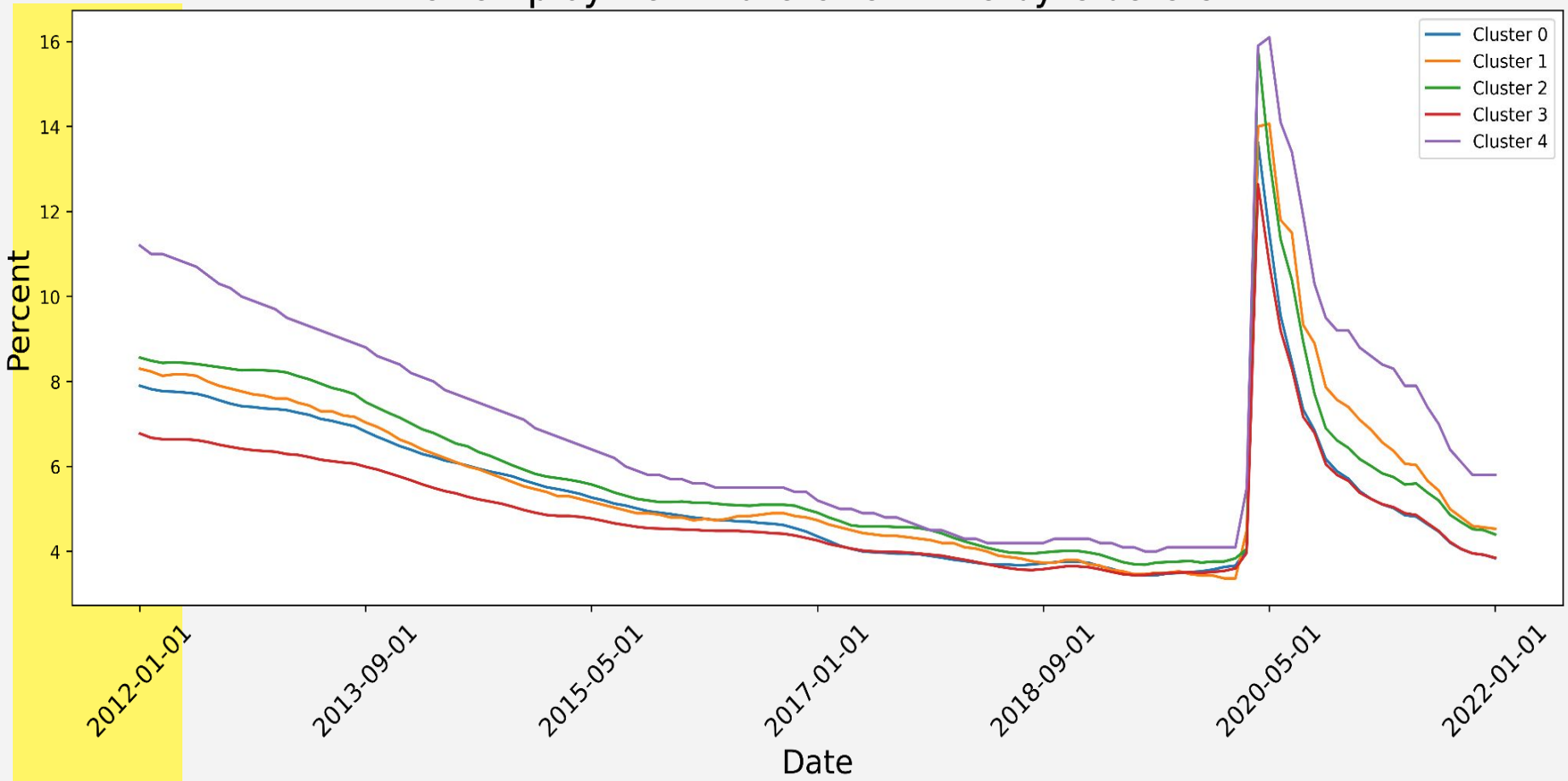
California

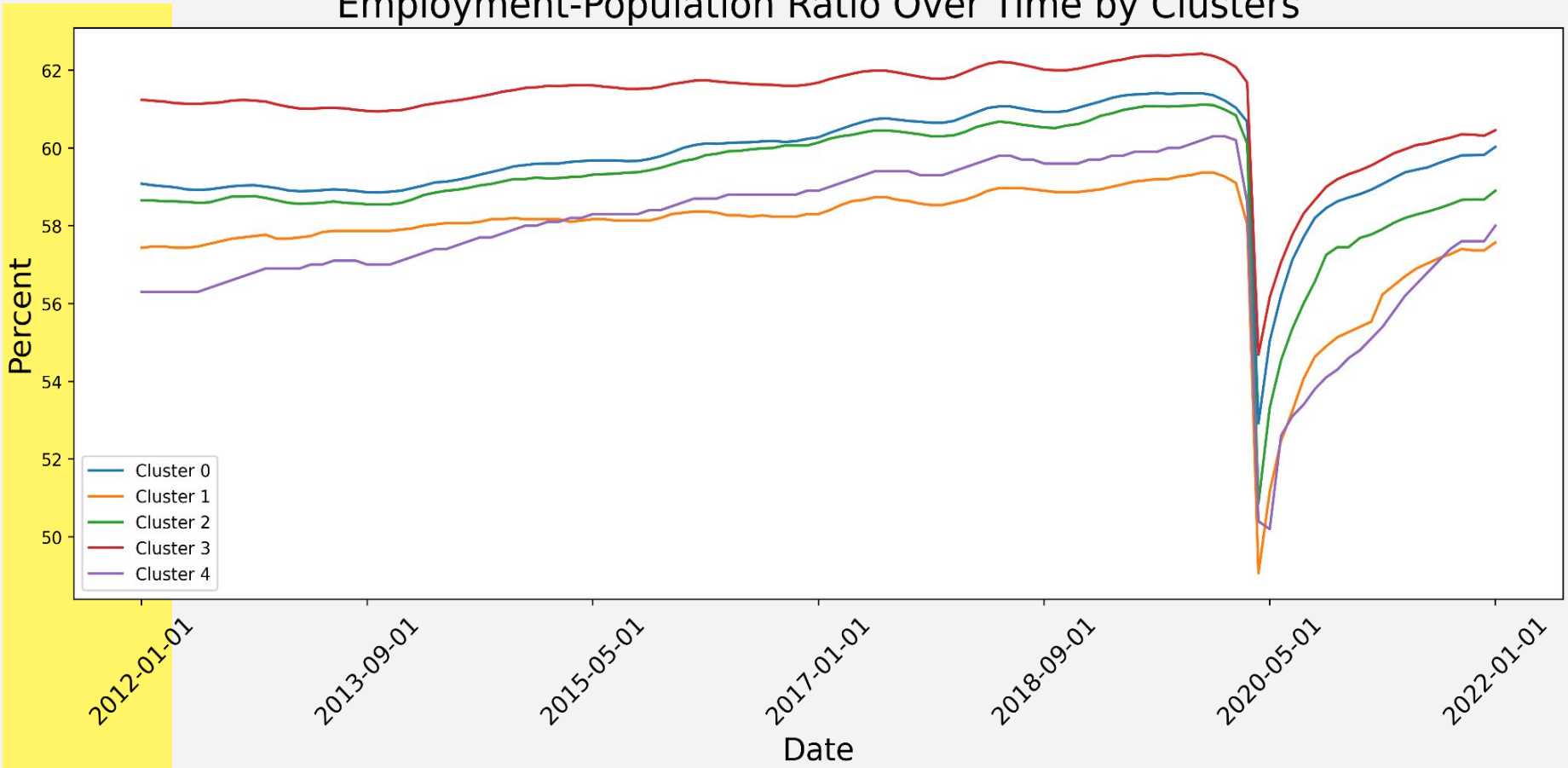

Washington
Montana
North Dakota
Minnesota
Oregon
Idaho
South Dakota
Wisconsin
Maine
1
Wyoming
Michigan
New York
Iowa
United States
Illinois
Ohio
Pennsylvania
Nevada
Utah
Colorado
Missouri
West Virginia
California
4
0
Tennessee
3
Oklahoma
Arkansas
Arizona
New Mexico
Mississippi
Georgia
2
Louisiana
Florida


Economic Industry Breakdown per Cluster
Industries
Mining, Logging, & Construction
Government
Other Services
Leisure & Hospitality
Education & Health Services
Professional & Business Services
Financial Activites
Information
Trade, Transportation, Utils
Manufacturing
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
Percentage
Clusters
0
1
2
3
4
United States
1
4
0
3
2


KMEANS Cluster 3 States Unemployment Rate
Percent
25
20
15
10
5
0
2012-01-01
2013-09-01
2015-05-01
2017-01-01
2018-09-01
2020-05-01
2022-01-01
Date
State
Georgia
Illinois
Michigan
New Jersey
North Carolina
Ohio
Pennsylvania
Virginia

KMEANS Cluster 3 States Unemployment Rate (MEAN)
Percent
25
20
15
10
5
0
2012-01-01
2013-09-01
2015-05-01
2017-01-01
2018-09-01
2020-05-01
2022-01-01
Date


Unemployment Rate Over Time by Clusters
Percent
16
14
12
10
8
6
4
Cluster 0
Cluster 1
Cluster 2
Cluster 3
Cluster 4
2012-01-01
2013-09-01
2015-05-01
2017-01-01
2018-09-01
2020-05-01
2022-01-01
Date


Employment-Population Ratio Over Time by Clusters
Percent
62
60
58
56
54
52
50
Cluster 0
Cluster 1
Cluster 2
Cluster 3
Cluster 4
2012-01-01
2013-09-01
2015-05-01
2017-01-01
2018-09-01
2020-05-01
2022-01-01
Date

CONCLUSIONS

Insights and next steps

INSIGHTS

- Cluster 3 had the least amount of unemployment by state
- Georgia, Illinois, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Virginia
- Potential reasons: Lesser population, dominant industry present, and higher age of population

NEXT STEPS

The effect of these factors on economic resiliency

- Age
- Homelessness
- Death toll during pandemic
- Population

SOURCES

Resources Used

SOURCES

DATA

- https://www.bea.gov/data/gdp/gdp-state
- https://www.bls.gov/eag/
- https://data.bls.gov/timeseries/LASST010000000000006?amp%253bdata_tool=XGtable&output_view=data&include_graphs=true

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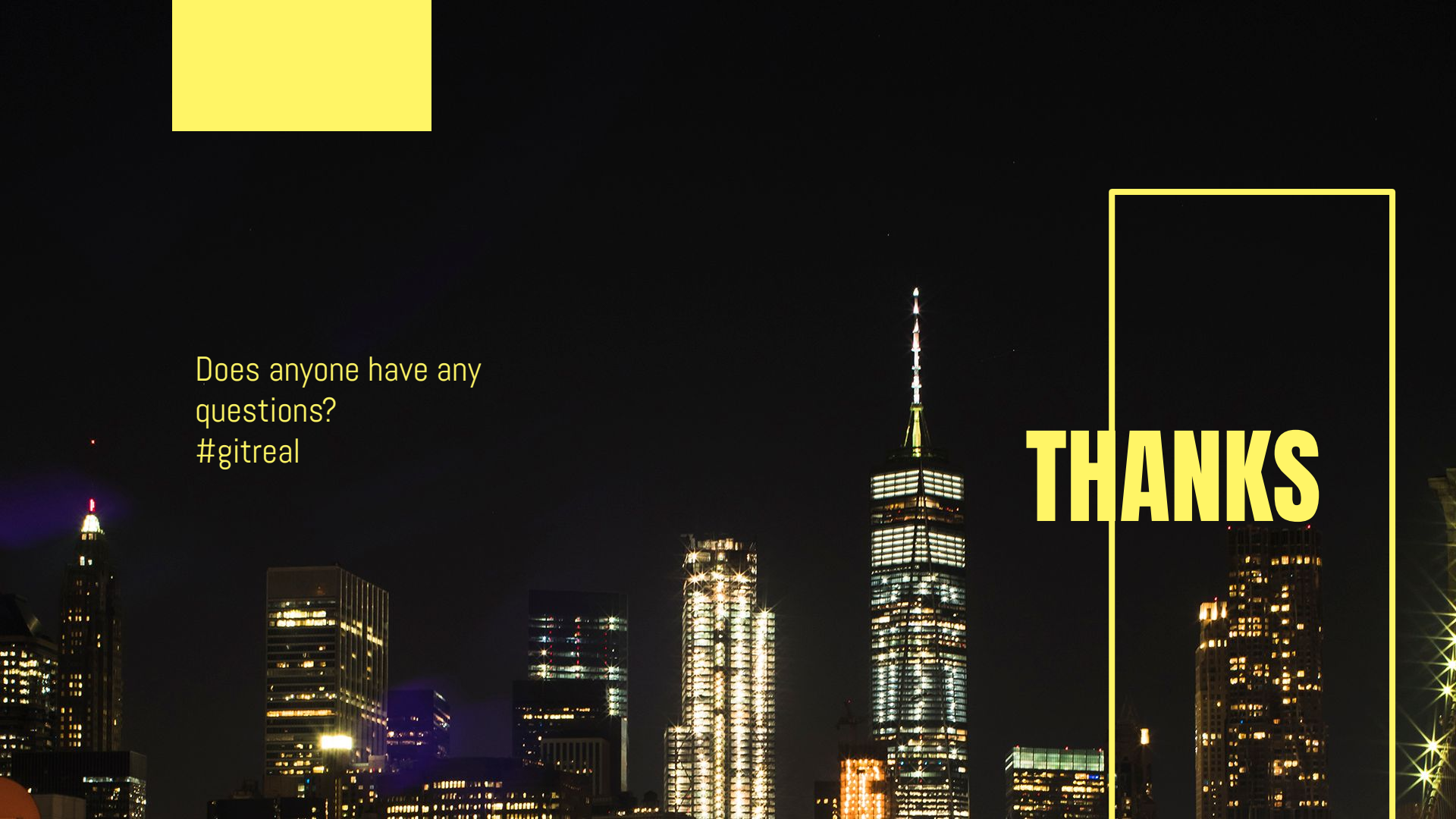
Does anyone have any questions?
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THANKS