PHIGHT COVID

Help better understand the impact of non-pharmaceutical interventions and model the changes in covid cases over time

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Overall Conclusion

- To combat the COVID-19 pandemic, each U.S. state has implemented different non-pharmaceutical interventions (NPI).
- Characterize the effectiveness of NPIs
  - Tighter the restrictions, lower the cases
  - Some NPIs lead to similar trends among different states
  - Took a while to see the positive impact of NPI restrictions
  - Covid cases trends are approximately grouped by regions
States with tighter restrictions have more cases under control

For interactive graphs of all states, visit [https://phightcovid.org/Graphs.html](https://phightcovid.org/Graphs.html) for interactive graphs for all states
States experienced similar trends after the onset of restaurant and/or bar easing
It took 40 days to see the impact of restriction, but even longer for winter.
Bspline explanation

Basis: 15 cubic polynomials
Model(independent of covid data)

Weighted sum of polynomials w.r.t. 15 estimated coefficients by de Boor's algorithm using our covid data(i.e. Time & Normalised covid cases)

Kmeans: Create k clusters(centers) and assign each state(a set of 15 coefficients) to its closest center based on its b-spline coefficients.
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