

Is mental health a nightmare? Employment factors driving mental health outcomes

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Highlights

- Mental health and work employment topics are currently topics *du jour*.
- While certain employment factors seemed as though would have obvious correlation with unhealthy mental health days, the results showed surprising outcomes.
- Our project seeks to empower users with information about the impact of employment factors on unhealthy mental days by county in Florida.

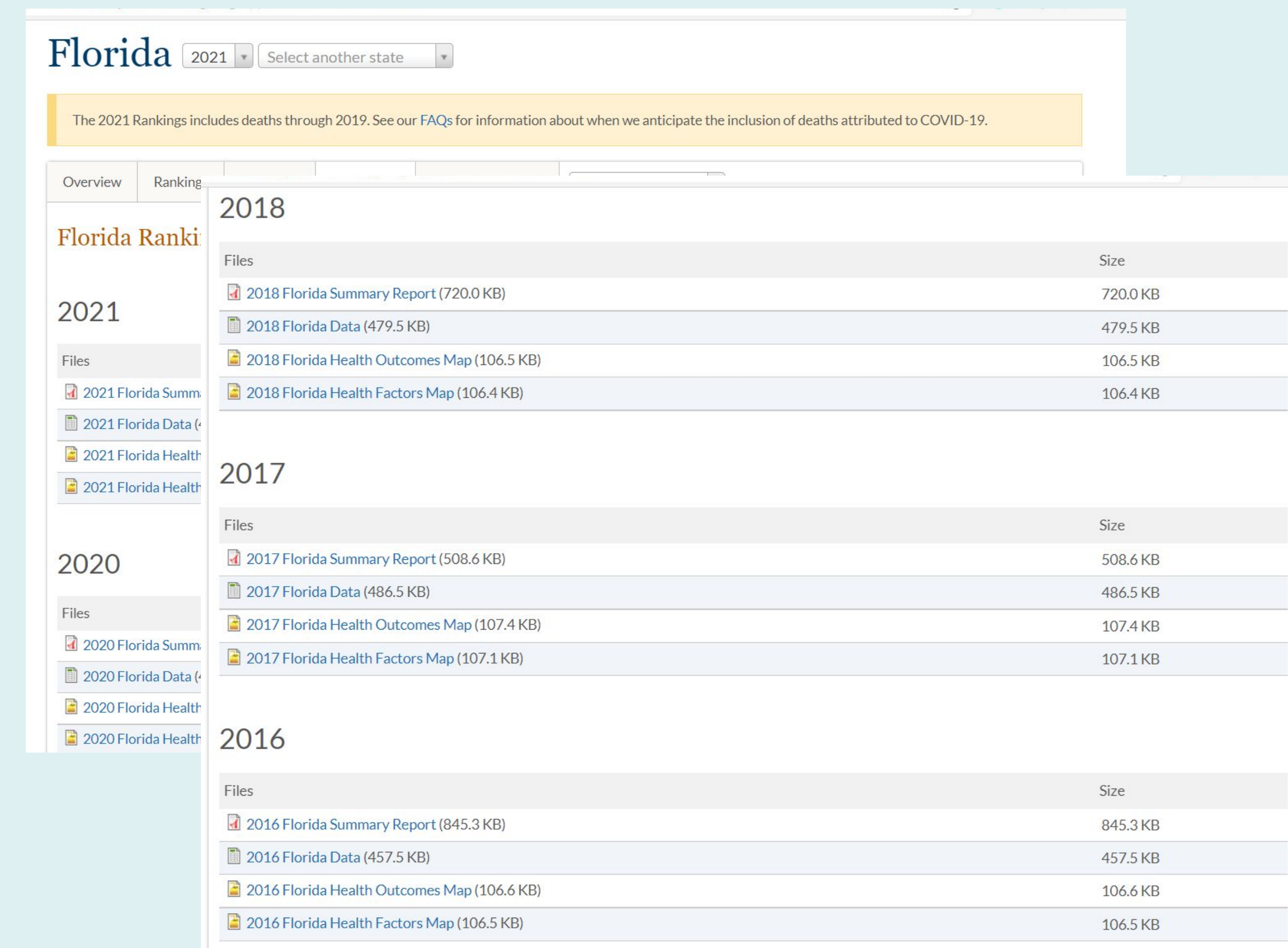
Background

The topic of what work should look like is a highly debated subject right now. People are asking: should you revert to long commutes to work, how much should you be paid in light of growing inflation, how are people being impacted by unemployment, in addition to several other employment factors.

Our goal is to help political leaders understand how these employment factors impact the number of unhealthy mental health days residents experience while understanding the influence of confounding variables.

Data

We used data sourced from the the County Health Rankings and Roadmaps website, which is a collaboration between the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute where they have compiled an aggregation of several data sources.



Model

Given that the data collected is longitudinal with repeated measures at the county level, we elected to fit a Generalized Estimating Equations (GEE) model.

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GEE Regression Results
Dep. Variable:   av_mental_unhealthy_days   No. Observations:   300
Model:         GEE                               No. Clusters:       60
Method:        Generalized Estimating Equations   Min. Cluster Size:  2
Family:        Gaussian                               Mean Cluster Size: 5.0
Dependence Structure: Independence                               Num. Iterations:   2
Covariance Type:  robust                                     Scale:             0.060
Date:          Thu, 22 Jul 2021                               Time:              13:10:50

Intercept      4.8546    0.1566    6.855
C[year][T_2017]  0.1283    0.0000    0.405
C[year][T_2018]  0.1586    0.0000    0.261
C[year][T_2019]  0.2080    0.0000    0.903
C[year][T_2020]  0.5063    0.0071    0.378
C[year][T_2021]  0.8093    0.0093    0.124
av_drink      -0.0124    0.0000   -1.287
unemployment  -0.0079    0.0000   -0.382
per_driving_alone_to_work  0.0016    0.0000    0.365
per_long_commute_drive_alone  -0.0014    0.0000   -0.102
insufficient_sleep  -0.0000    0.0000   -0.106
med_hh_income  -0.0000    0.0000   -0.106
pop           -0.0000    0.0000   -0.106
ratio_mental_hit_pro  -0.0000    0.0000   -0.106

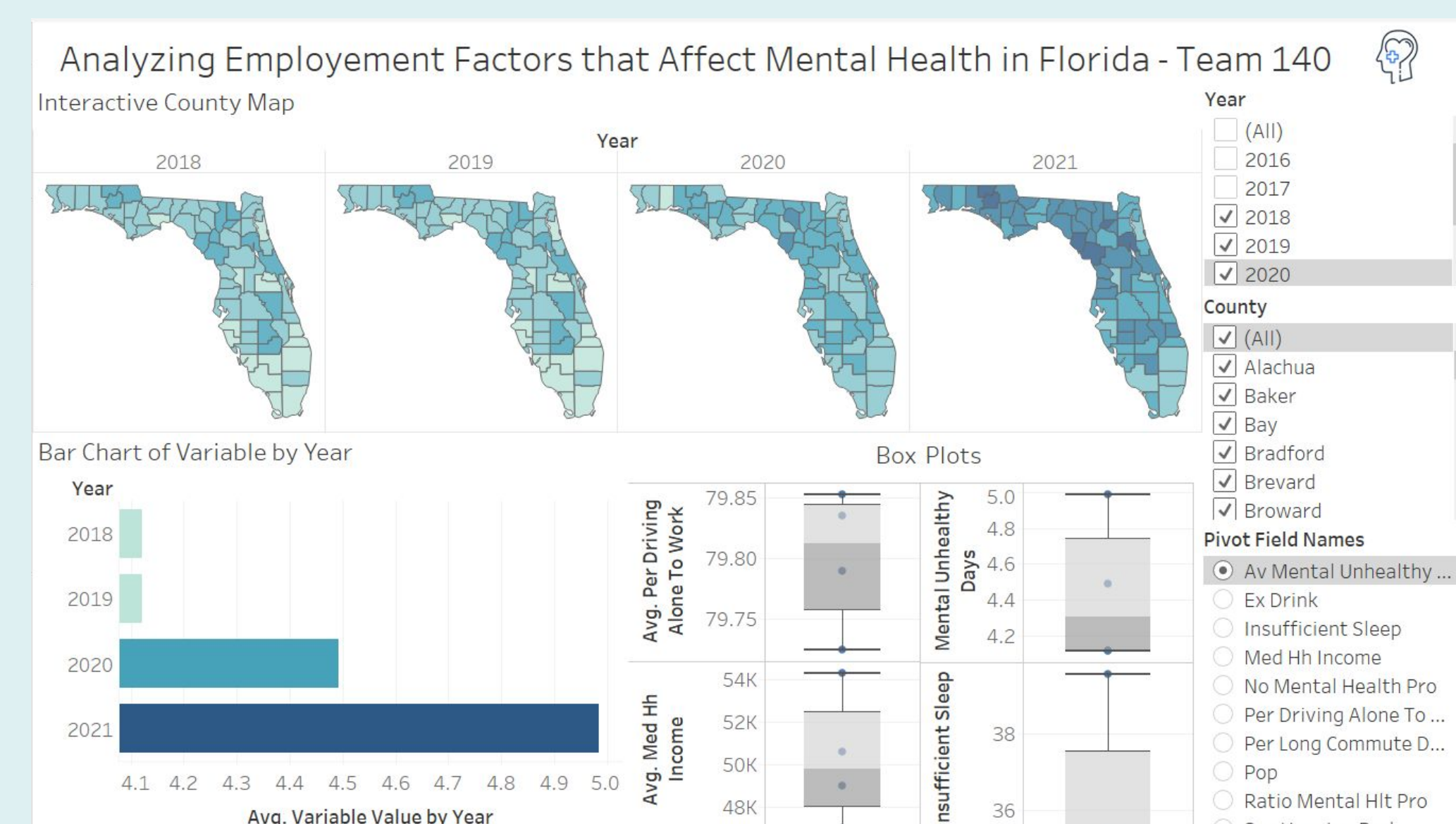
Intercept      3.7772    0.1252   30.152
C[year][T_2017]  0.1310    0.0259    0.472
C[year][T_2018]  0.1628    0.0065    0.524
C[year][T_2019]  0.2000    0.0096    0.508
C[year][T_2020]  0.4023    0.0065    0.075
C[year][T_2021]  0.8123    0.0000   12.174
av_drink      -0.0123    0.0000   -1.274
unemployment  -0.0079    0.0000   -0.374
per_driving_alone_to_work  0.0016    0.0000    0.365
per_long_commute_drive_alone  -0.0014    0.0000   -0.102
insufficient_sleep  -0.0000    0.0000   -0.106
med_hh_income  -0.0000    0.0000   -0.106
pop           -0.0000    0.0000   -0.106
ratio_mental_hit_pro  -0.0000    0.0000   -0.106
  
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We explored two different GEE models:

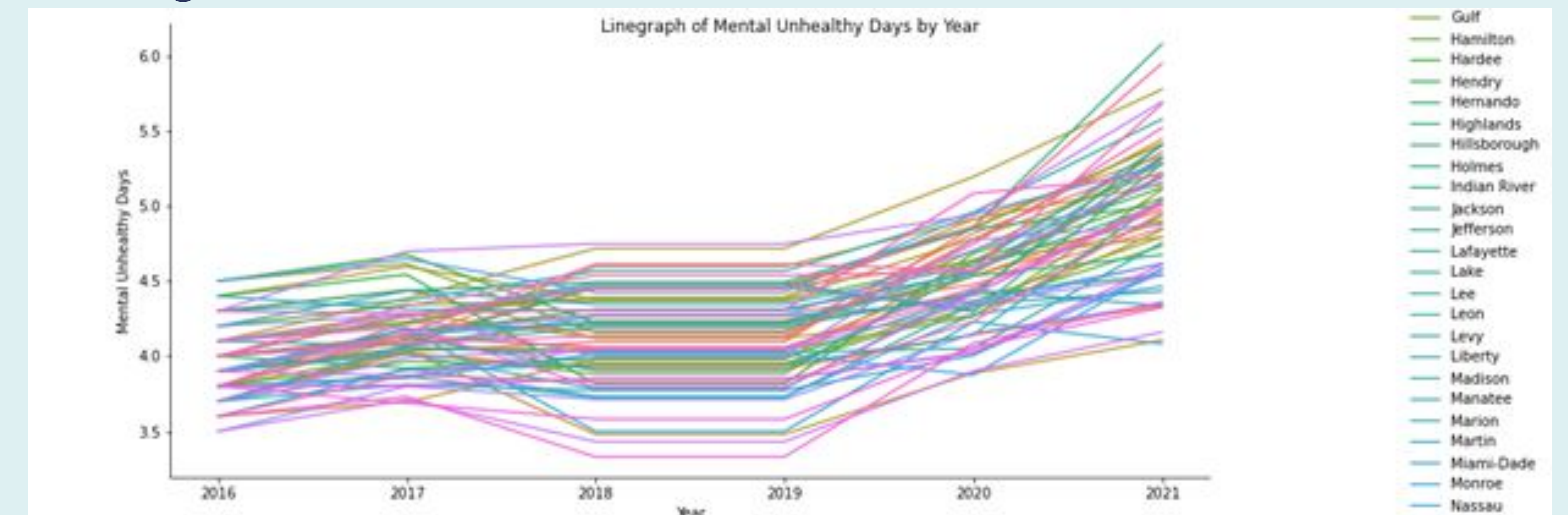
- The independence working structure assumes no dependence within counties
- The exchangeable covariance structure treats any two observations within a county as having a constant, unknown correlation parameter such that pairs of observations in different counties are taken to be independent.

Dashboard

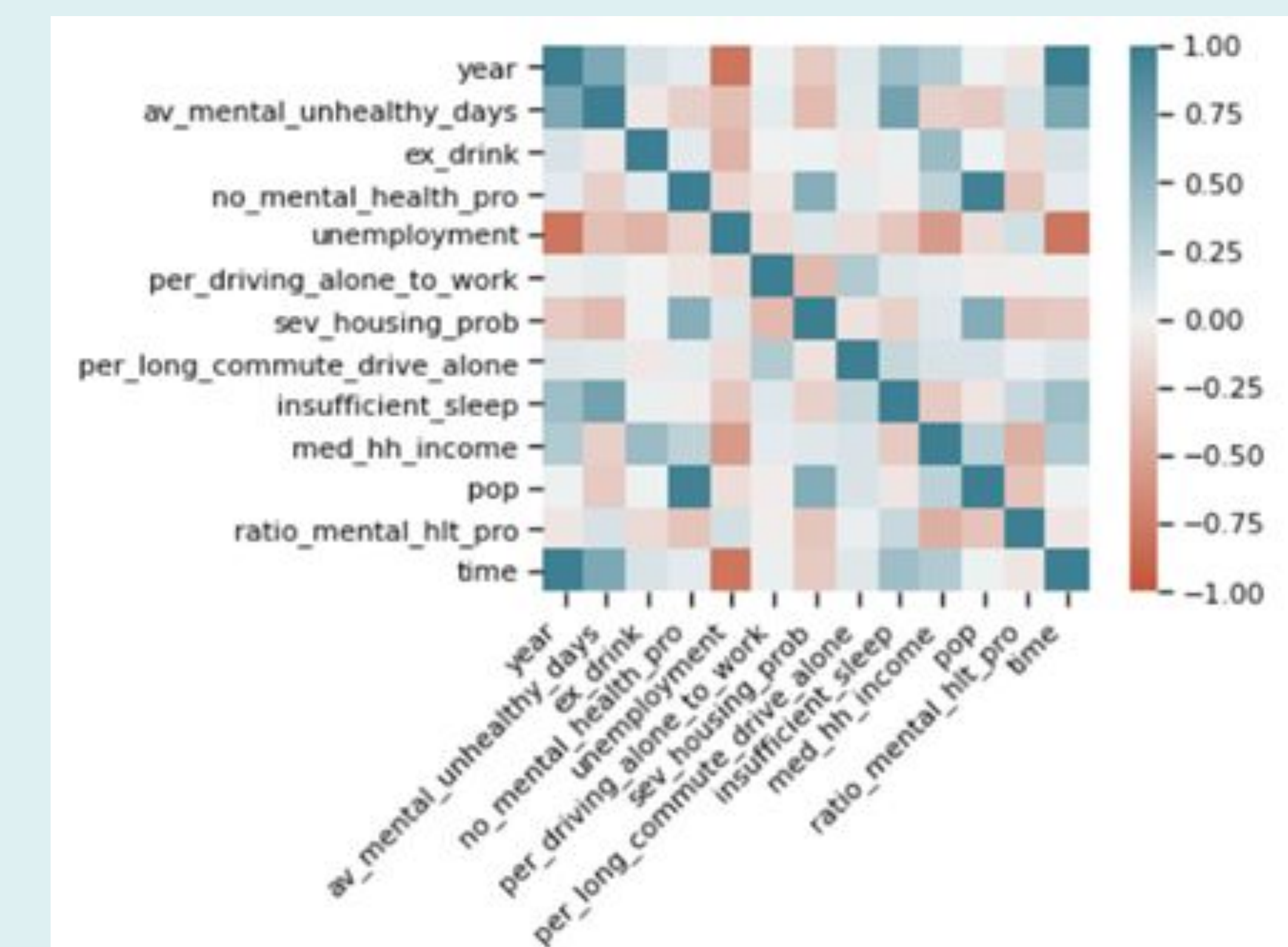
To aid in the understanding of the impact of employment factors on unhealthy mental days, we've designed an interactive dashboard which delivers insights for users to see trends over time as well as the impact of individual employment factors as well as confounding variables.



Findings and Results



The number of unhealthy mental health days across counties in Florida has increased 180% since 2016.



Our findings also showed that:

- Our initial hypothesis, which assumed factors related to commuting to work would have a strong correlation on unhealthy mental days, was incorrect.
- While counterintuitive, as excessive drinking rates increased, the average number of unhealthy mental days decreased across counties over time.
- There is an inverse relationship between median household income and the average number of unhealthy mental health days.
- Insufficient sleep across counties increased as the average number of unhealthy mental health days increased.