

THE SYMPTOM IN THE MACHINE

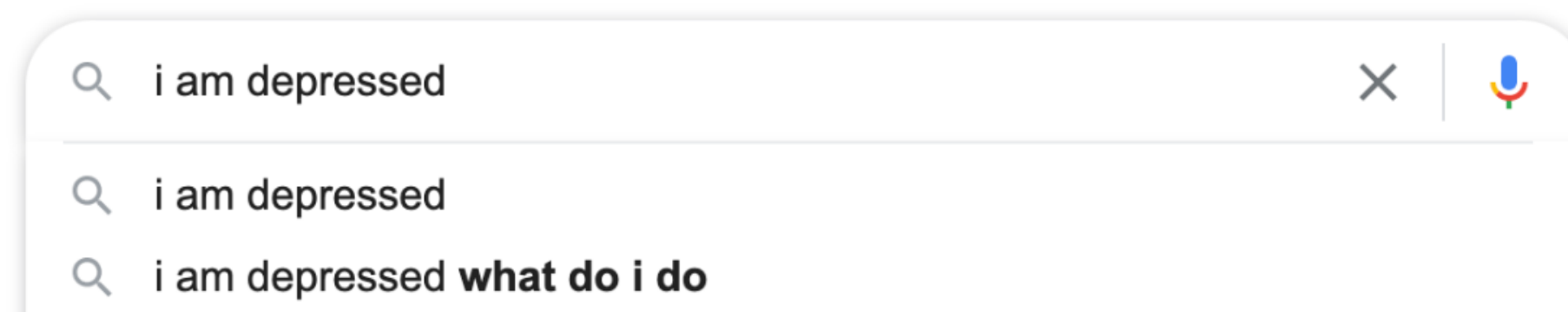
LEVERAGING SYMPTOM SEARCH DATA TO UNDERSTAND DISPARITIES IN U.S. MENTAL HEALTH CARE

AUTHORS

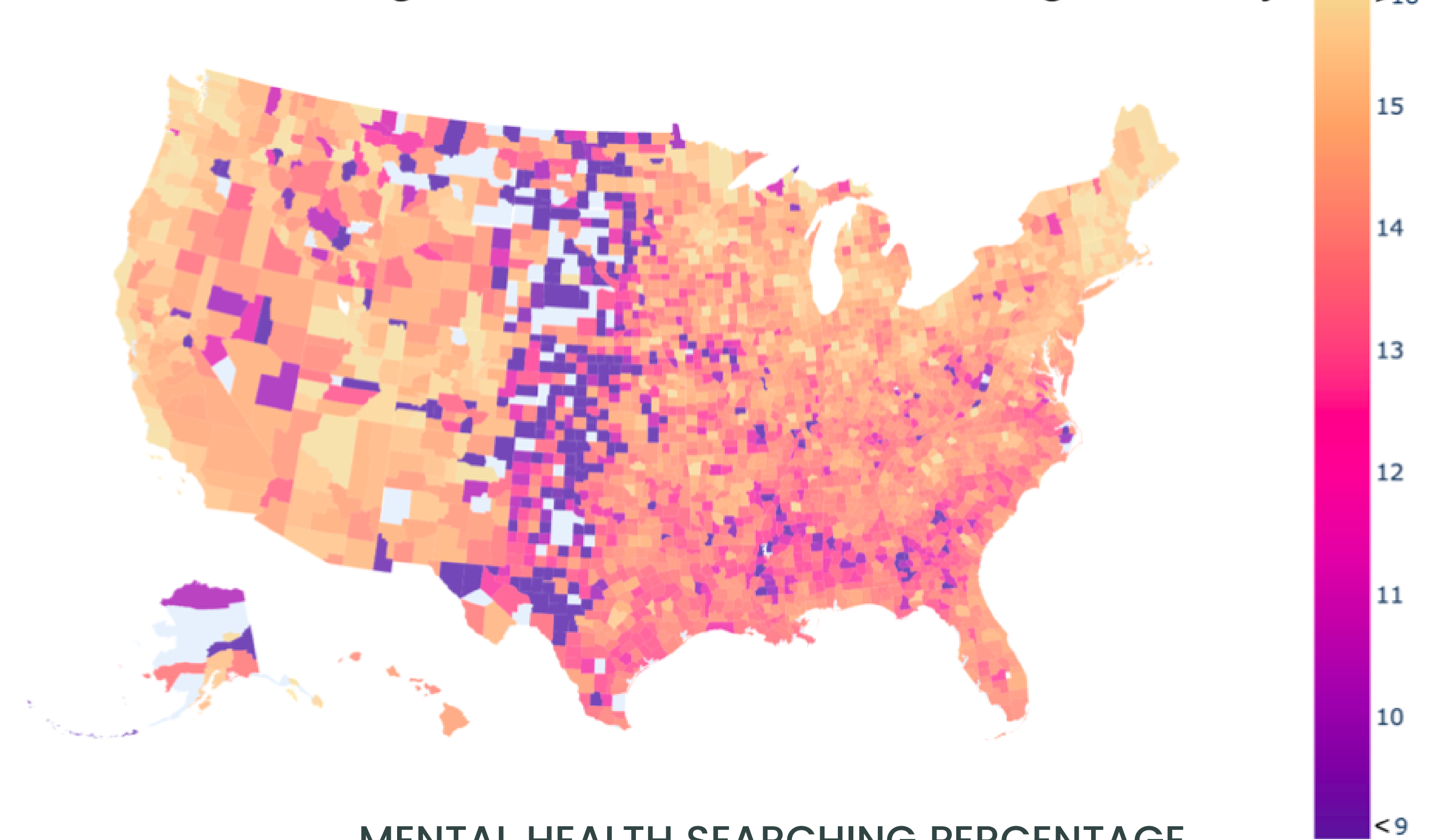
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AFFILIATION

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Percentage Share of Mental Health Searching Per County



MENTAL HEALTH SEARCHING PERCENTAGE OF TOTAL SYMPTOM SEARCH. PURPLE -> LOWER PERCENT OF SEARCHING, YELLOW -> HIGHER PERCENT OF SEARCHING.

INTRODUCTION

1/3 of people in the U.S. live in a Mental Health Professional Shortage Area. These areas tend to be rural, impoverished, and have poorer mental health outcomes. Past work finds these poorer outcomes may result from a lack of resources and a lack of recognition of mental illness by medical professionals. We aim to understand differences in how people in shortage areas and non-shortage areas search for mental health information online.

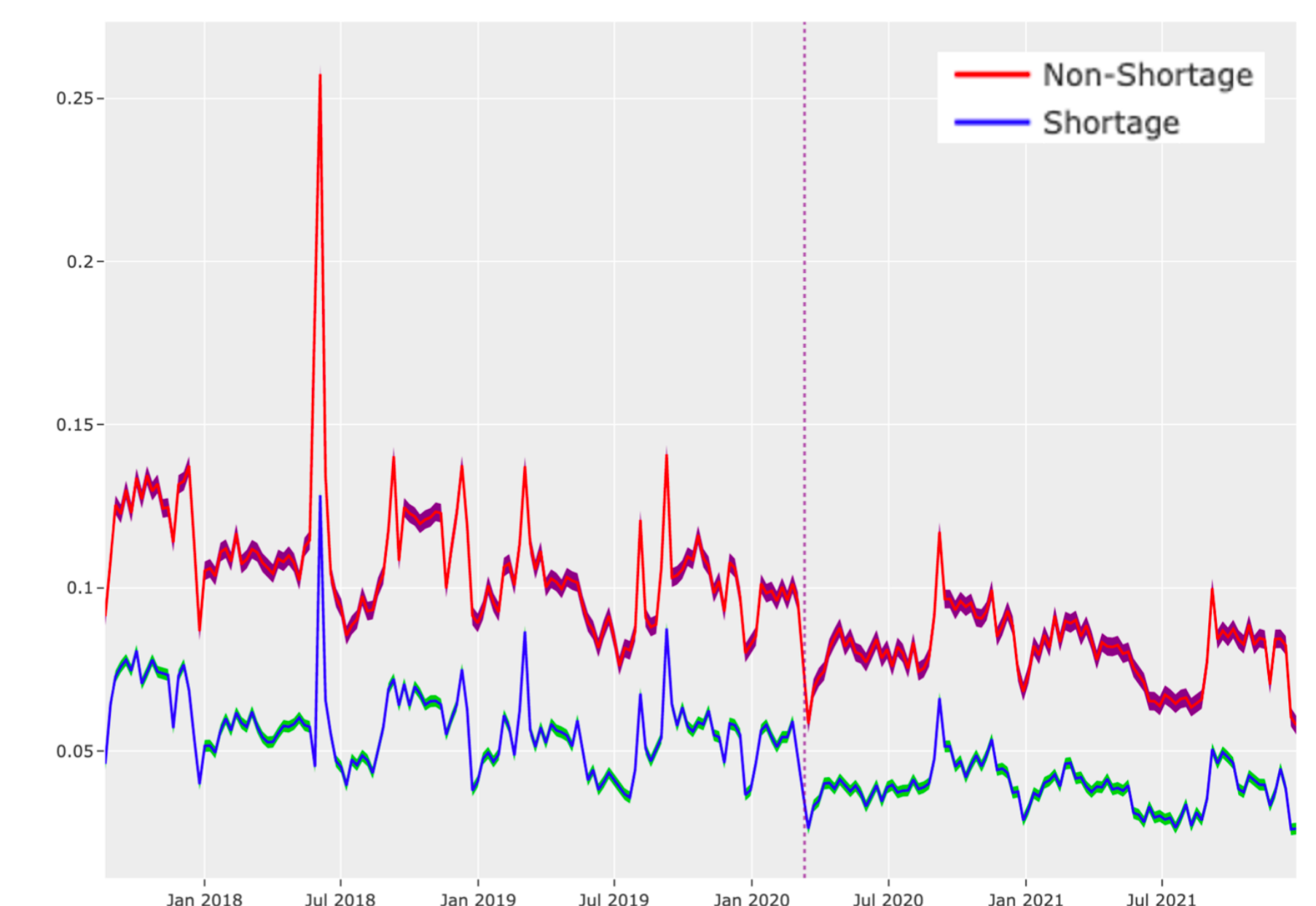
RESULTS

In shortage areas, broader mental health symptom categories like Anxiety, Depression, Fatigue, and Headache tend to be searched more often. On the other hand, more specific terminology like Binge Eating, Psychosis, and ADHD are searched more in non-shortage areas. Also, while rates of suicide are known to be higher in shortage areas [1] and in rural areas [2], rates of suicide-related searching are actually lower in shortage areas, and even lower when a shortage area is rural.

METHODOLOGY

We analyze search engine log data of queries related to health from 2017-2021 and examine the differences in mental health search behavior between shortage and non-shortage areas along several axes, including shortage/non-shortage comparisons, urban/rural comparisons, and temporal comparisons.

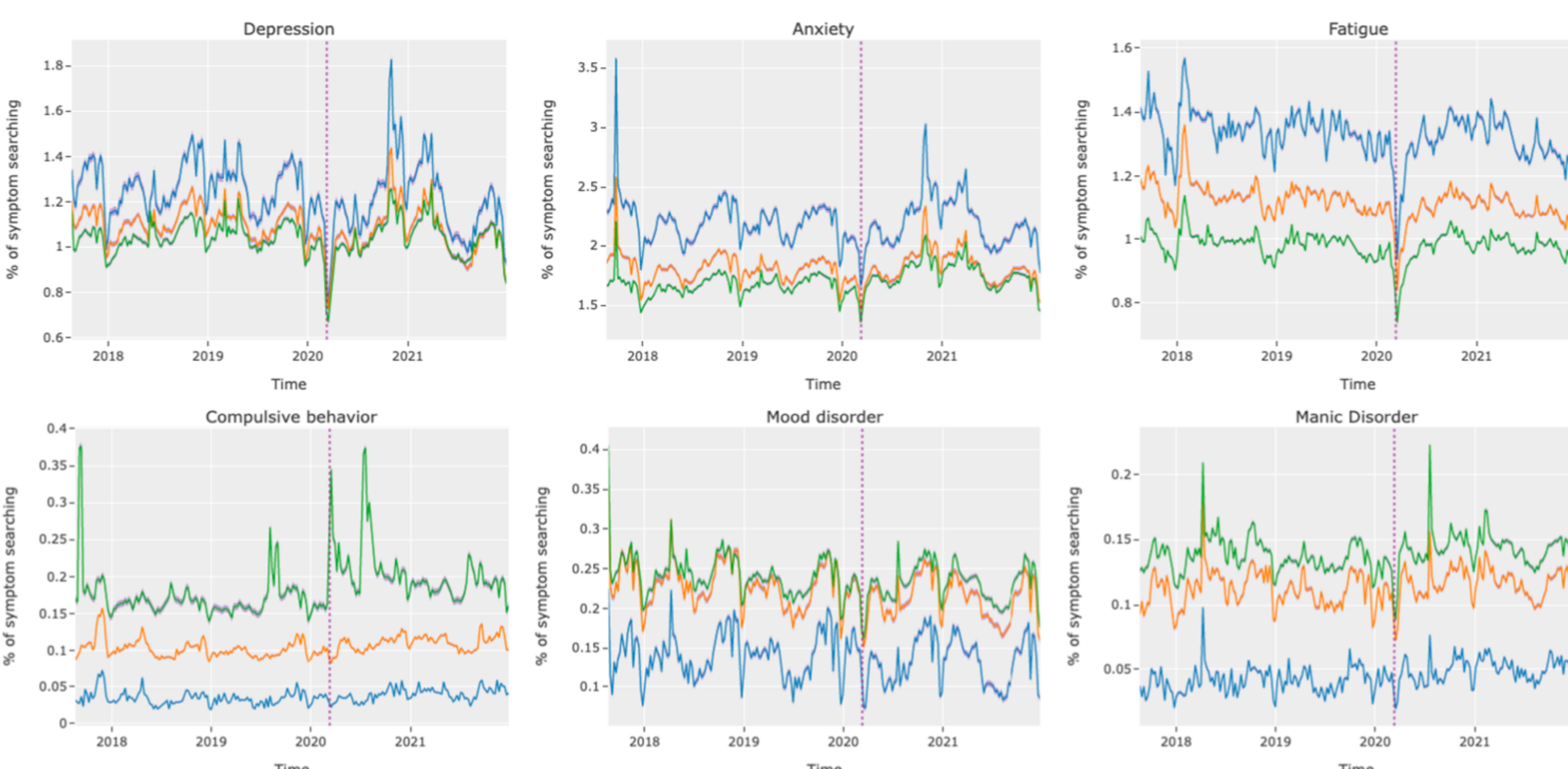
Shortage vs. Non-Shortage Suicidal ideation Searching



SYMPTOM SEARCH DISTRIBUTIONS FOR SUICIDAL IDEATION. VERTICAL LINE REPRESENTS MARCH 11TH, 2020, THE DAY THAT THE WHO DECLARED COVID-19 A GLOBAL PANDEMIC.

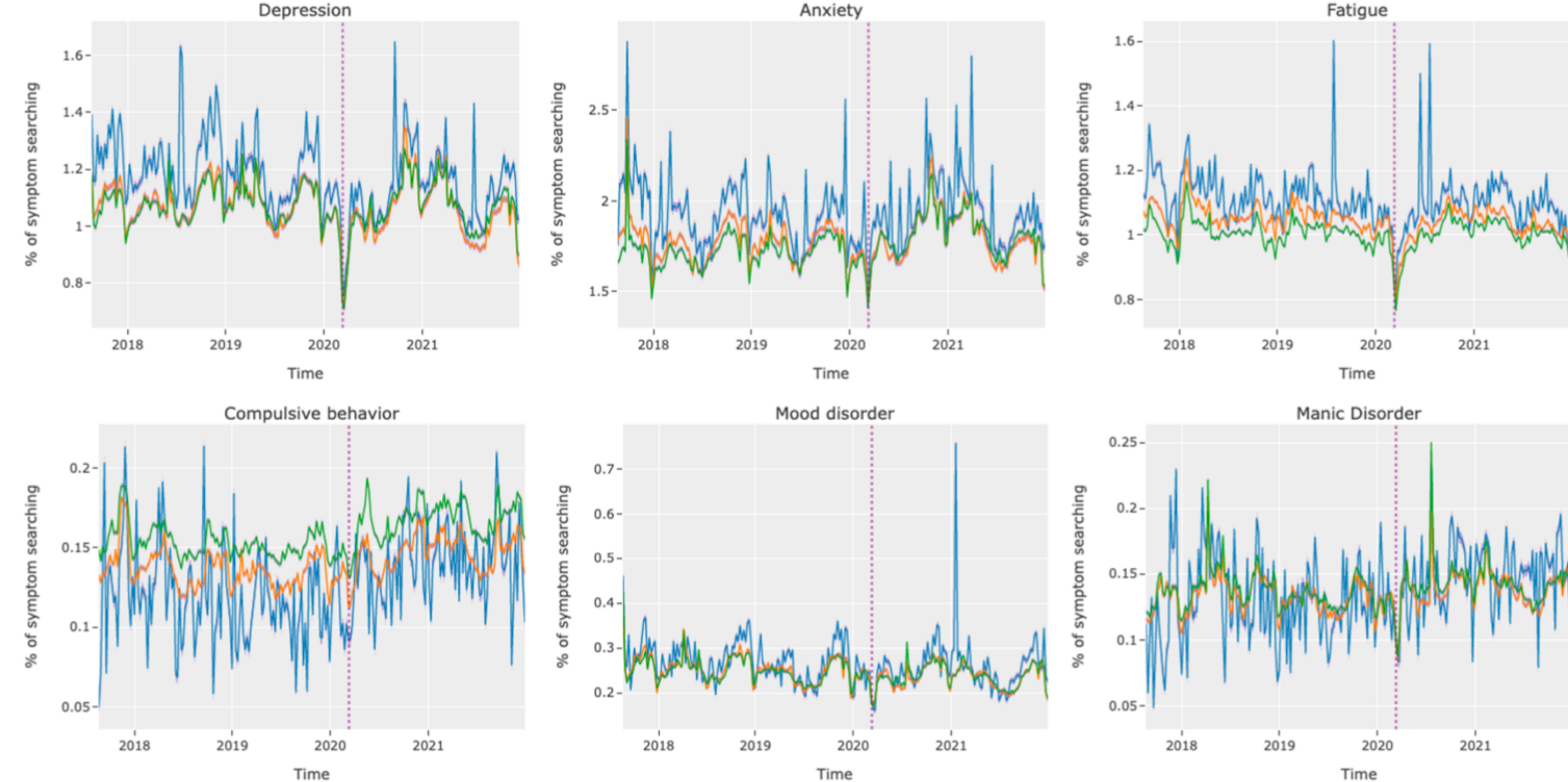
Symptom Search Share Percentages in Mental Healthcare Shortage Areas

metro-shortage
urban-shortage
rural-shortage



Symptom Search Share Percentages in Mental Healthcare Non-Shortage Areas

metro-non-shortage
urban-non-shortage
rural-non-shortage



CONCLUSION

We've shown significant differences between how individuals in areas with fewer mental health professionals search online about mental health. We emphasize that search engine algorithm designers might be aware of the role structural factors play in expressions of distress, and design search engine algorithms and interfaces to close current gaps in care.

RELATED LITERATURE

1. Ku BS, Li J, Lally C, Compton MT, Druss BG. Associations between mental health shortage areas and county-level suicide rates among adults aged 25 and older in the USA, 2010 to 2018. *Gen Hosp Psychiatry Elsevier*; 2021;70:44-50.
2. Control C for D, Prevention, others. Americans in rural areas more likely to die by suicide. Retrieved January 2017;11:2018.