Unmasking Anxiety:

the hidden groups with anxiety and depression since 2020

RAM Group

Northwestern AI Boot Camp

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Executive Summary

Key Objectives

Trend Evaluation

- Weekly Levels
- Specified Demographics
- Started April 2020

Trend Data

- Identify At-Risk Demographics
- Seasonal Fluctuations
- Holiday Fluctuations

Client Insights

- Health Care
  (Psychology, Psychiatry, Psychotherapy)
- Resource Planning
- Estimated Predictions
- Potential Growth Opportunities

Data Source: *Centers for Disease Control and Prevention, National Center for Health Statistics, June 27, 2024.*

Data
Cleaning Exploration

Data.gov
Indicators of Anxiety or Depression Based on Reported Frequency of Symptoms During Last 7 Days

https://catalog.data.gov/dataset/indicators-of-anxiety-or-depression-based-on-reported-frequency-of symptoms-during-last-7-

Relevant to Covid

Appeared to be Ample Data

Collection/Exploration:
- Imported dataset.
- Visualize all columns
- Reviewed columns and rated the importance of each.
- Looked at Groups and Subgroups to verify the unique values in each.
- Viewed unique time periods (number of surveys taken from beginning).
- Checked DTypes.

Unanticipated Insights/Problems with Resolution:
Clean up:
- Converted dates into date time format (verified change).
- While running simple linear regression we converted date times into an ordinal value.
- Dropped NA values (in value columns)

Estimated Rate of Return

Estimated New Annual Revenue for Client

Estimated New Annual Revenue for Client

Revenue Source	# Patients	Per Visit	Visits/Yr/ Patient	Total Revenue
Estimated Service Fees for New Annual Patients	10	$250.00	20	$50,000.00
Total New Annual Revenue			**20**	**$50,000.00**

Estimated Cost of Consulting Project

Team Members	Hourly Rate*	Total Hours	Total Cost
Healthcare Data Analyst	$100.00	80	$8,000
Data Modeler	$143.00	80	$11,400
Business Insight & Analytics Manager	$162.50	80	$13,000
Total Consultant Cost		**240**	**$32,440**
Data and Licensing Cost			$500
Administrative and Supplies Cost			$2,000
Infrastructure Cost (4% of Consultants)			$1,298
Total Cost to Client			**$36,238**

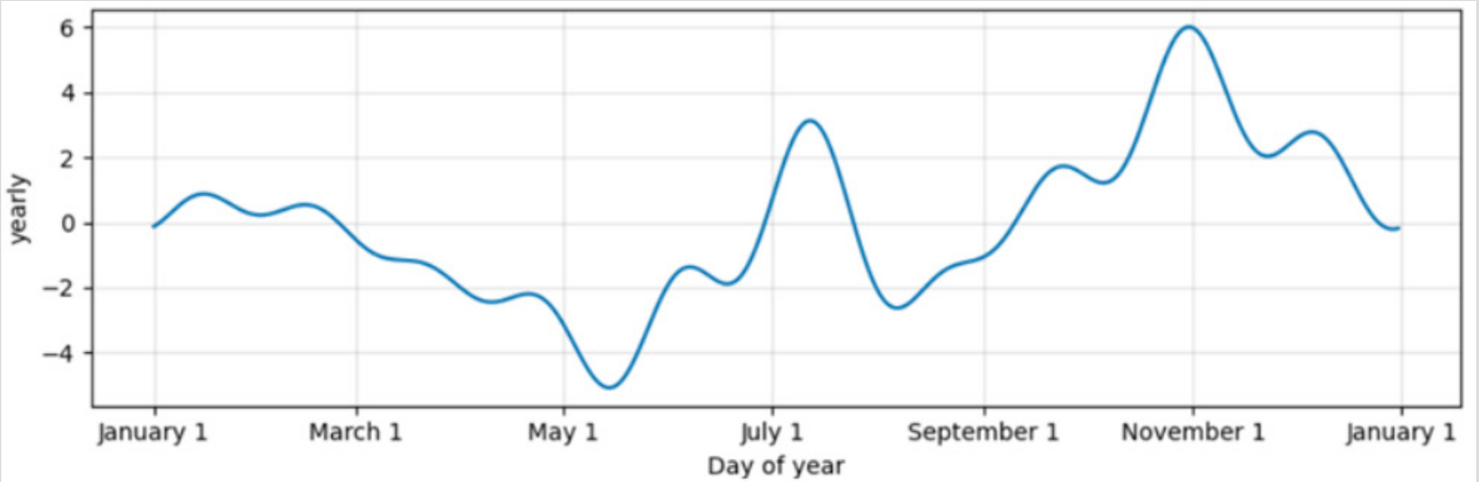
Rate of Return Year 1	**38%**
5 Year Rate of Return	**136%**

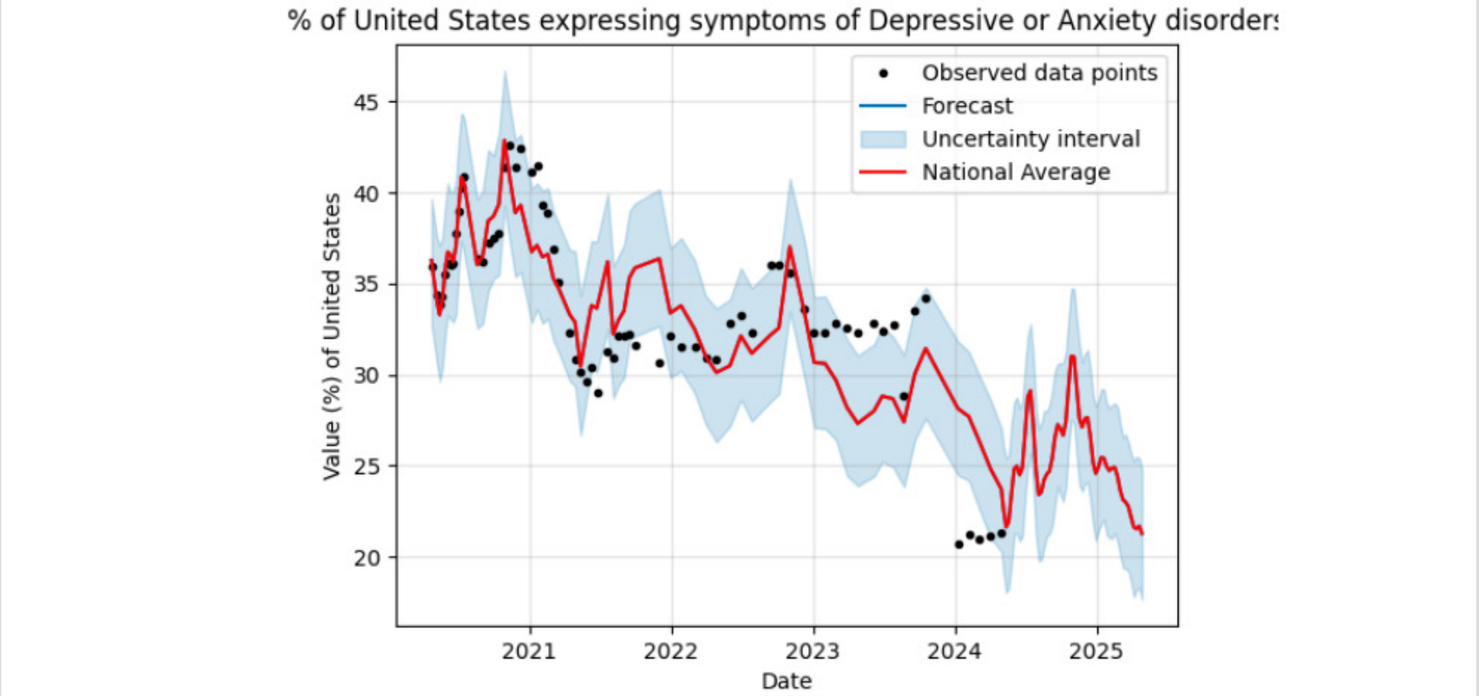
Estimated Hourly rates derived from https://www.mastersofbusinessanalytics.com/careers/
Calculation = Estimated Annual Salary/2,080 Hours/year * 1.3 to include employer benefits x 2.5 Fee upcharge

Trend of Reported Anxiety and Depression

National Average

- October and November have highest rate of reported symptoms.
- May has the lowest reported rates of symptoms.
- Lock-down had highest reported rates, although there was a downward trend.





Exploratory Data Analysis

Top 5 At-Risk Subgroups

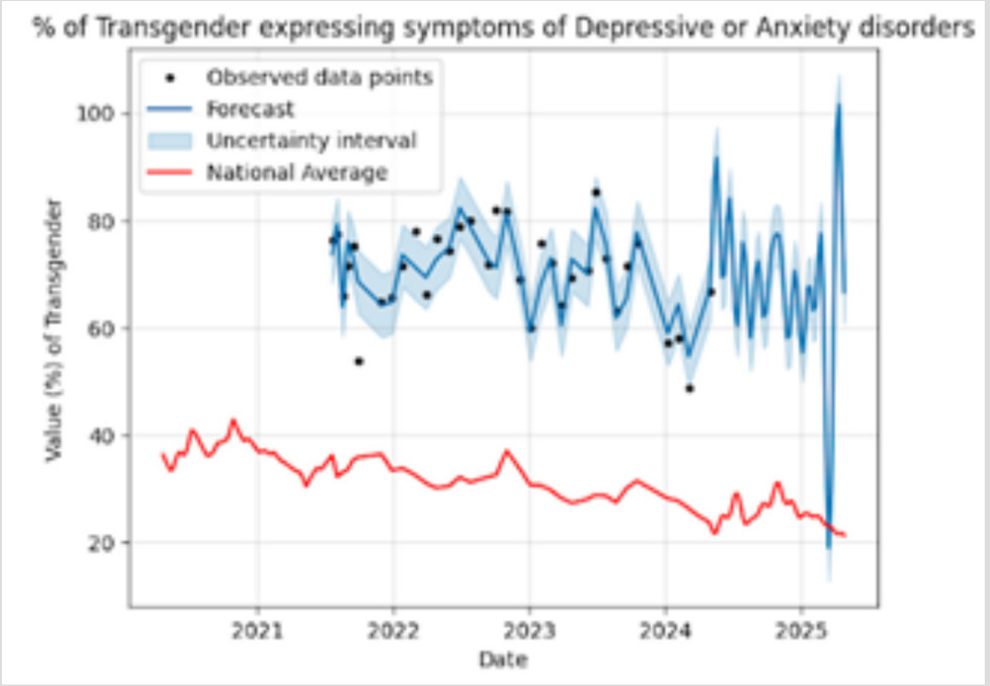
By Gender Identity:
Transgender

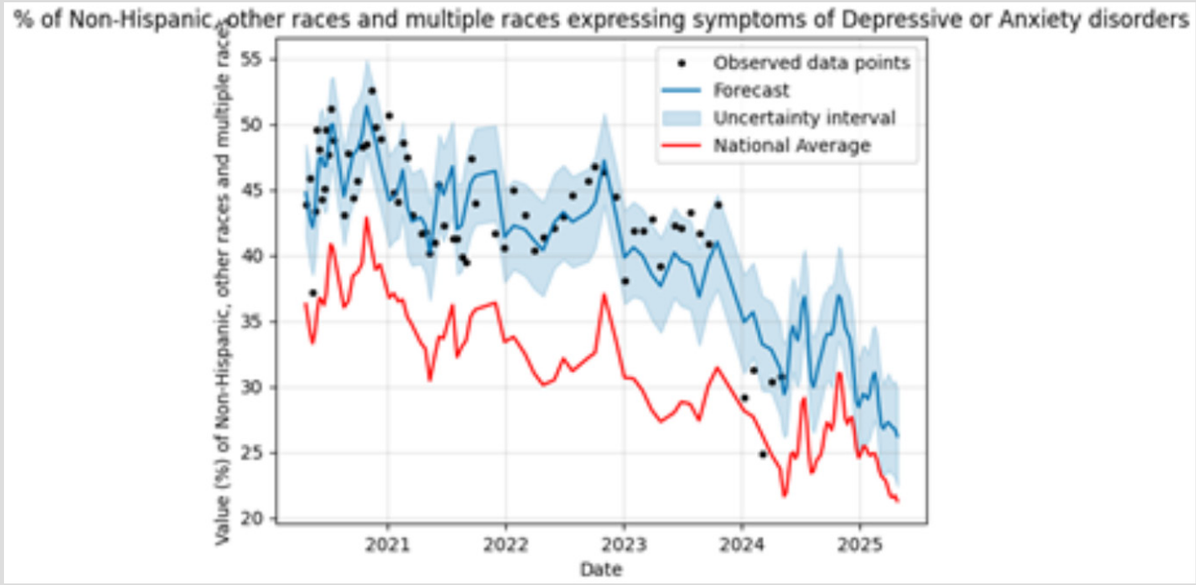
By Disability Status:
With Disabilities

By Sexual Orientation:
Bi-sexual

By Age:
18-29

By Race:
Non-Hispanic, other races and multiple races





At-Risk subgroup's are defined as the largest difference of predicted reported symptoms of Depression and Anxiety between a subgroup and the national average.

Key Client Insights

Transgender

U.S. Population

0.6%

With Disabilities

U.S. Population

13.5%*

Bi-Sexual

U.S. Population

4.4%

18 - 29

U.S. Population

16.0%

Non-Hispanic, other races and multiple races

U.S. Population

2.0%

https://data.census.gov/table/ACSST1Y2022.S0101?q=Populations%20and%20People
https://www.census.gov/library/visualizations/interactive/sexual-orientation-and-gender-identity.html
* https://www.statista.com/topics/4380/disability-in-the-us/#topicOverview

Recommendations

Refocus Media Advertising:
From Covid-19 Resources to At-Risk Groups

Patient Affordable Marketing:
Government Programs, Employer EAP Programs, Health Insurance Plans, etc.

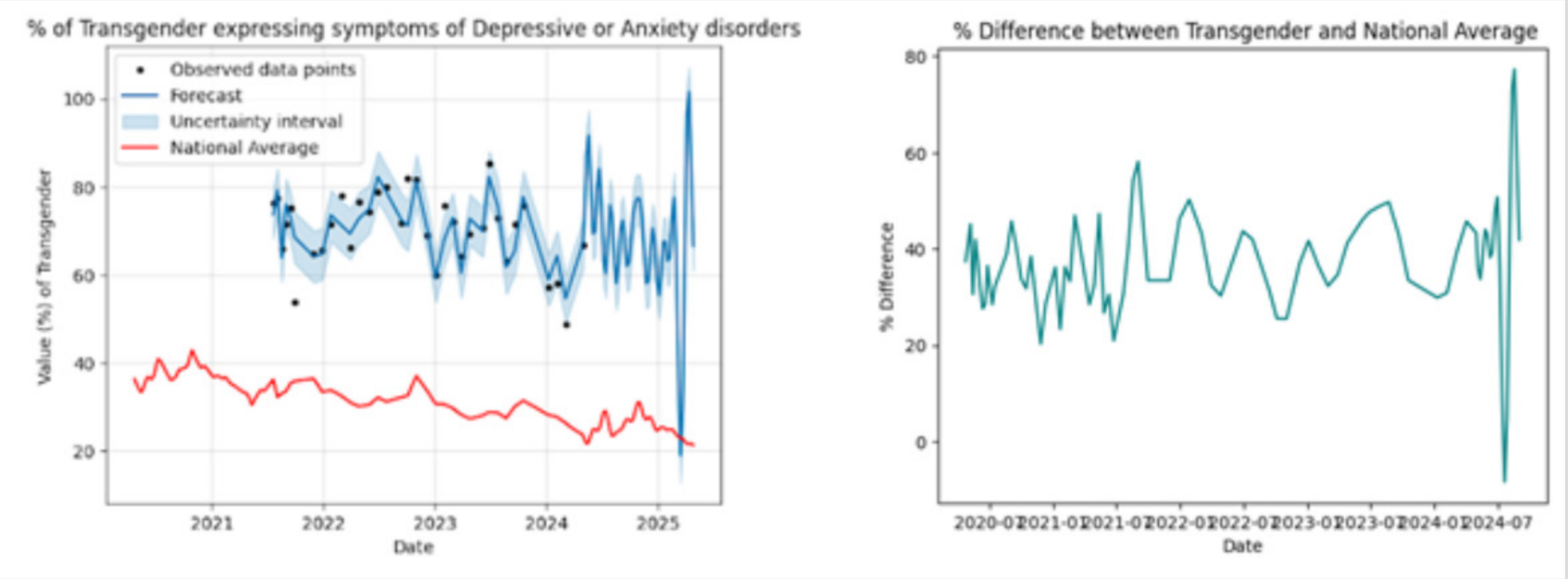
Provide On-site Awareness Campaigns:
Colleges, Universities, LGBTQ Organizations

Establish Office Space Near “At-Risk” Regions

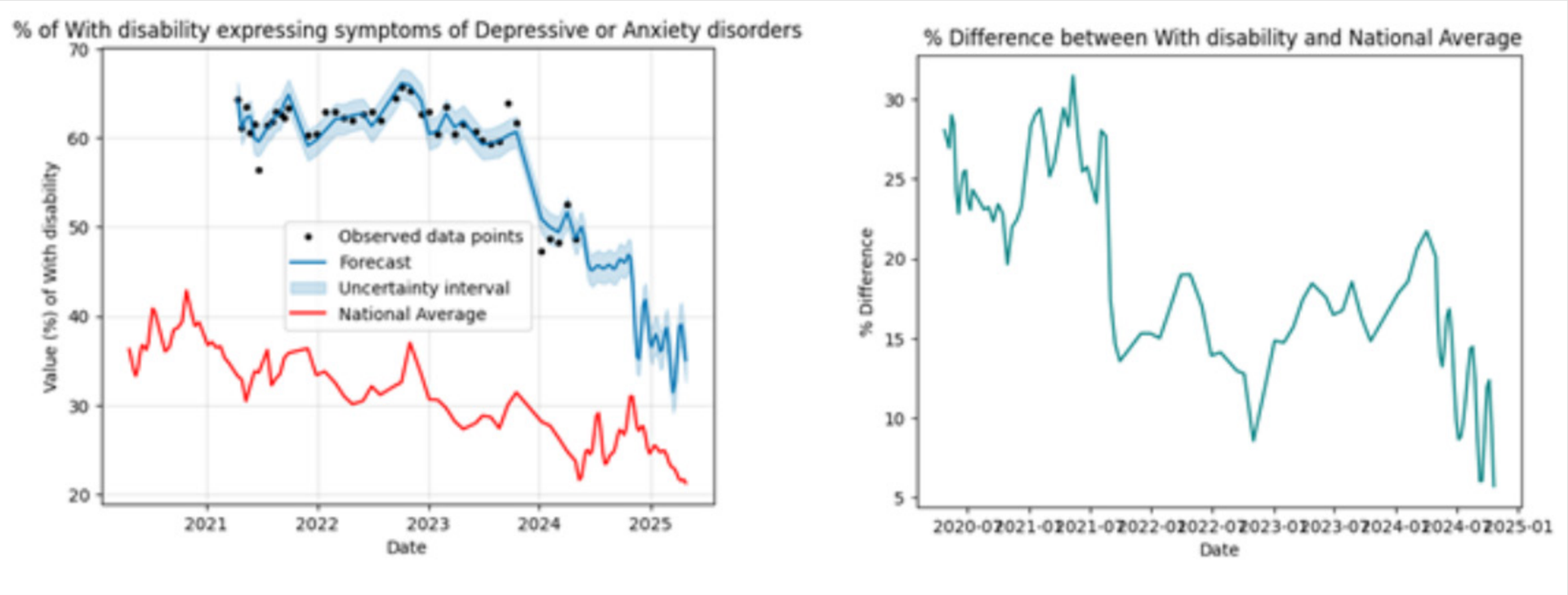
Coordinate Team Resources:
October and November Spikes

Appendix

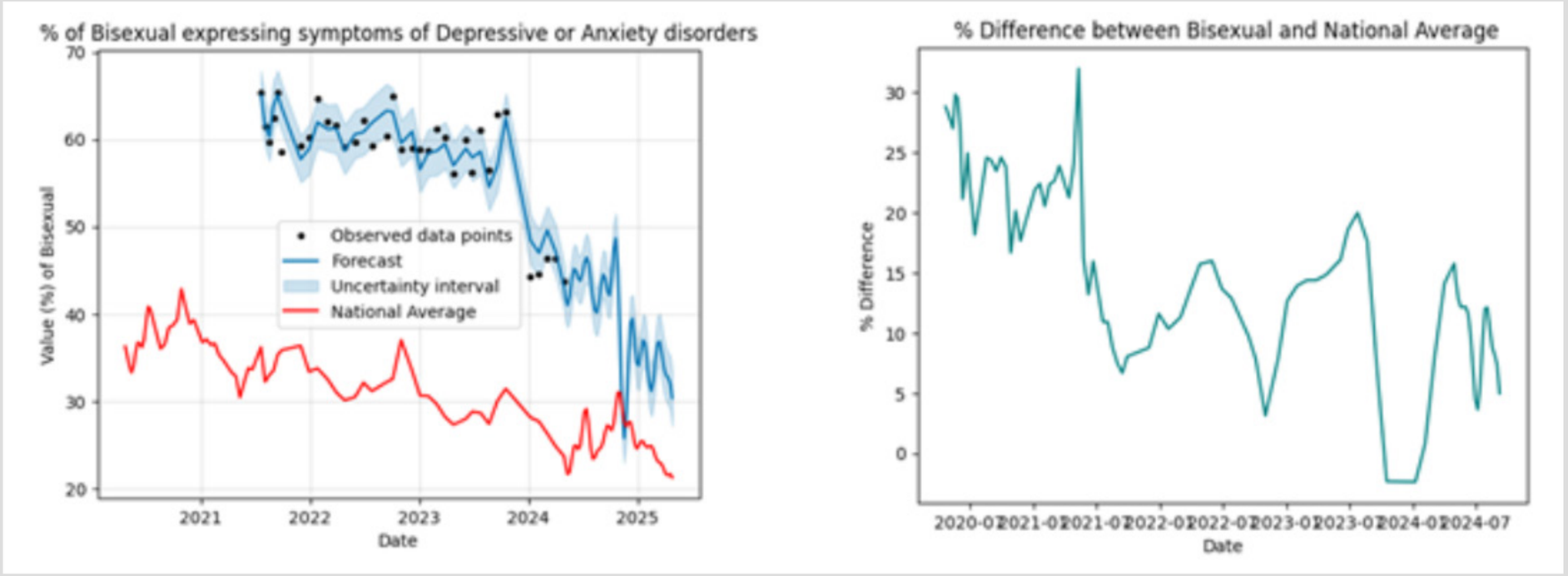
Transgender



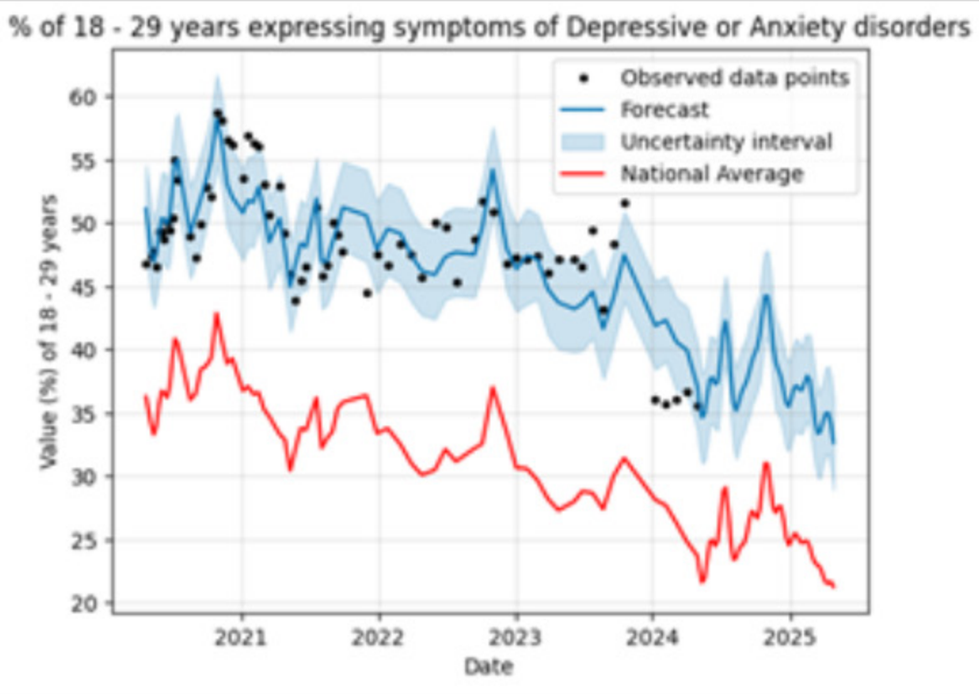
With Disabilities

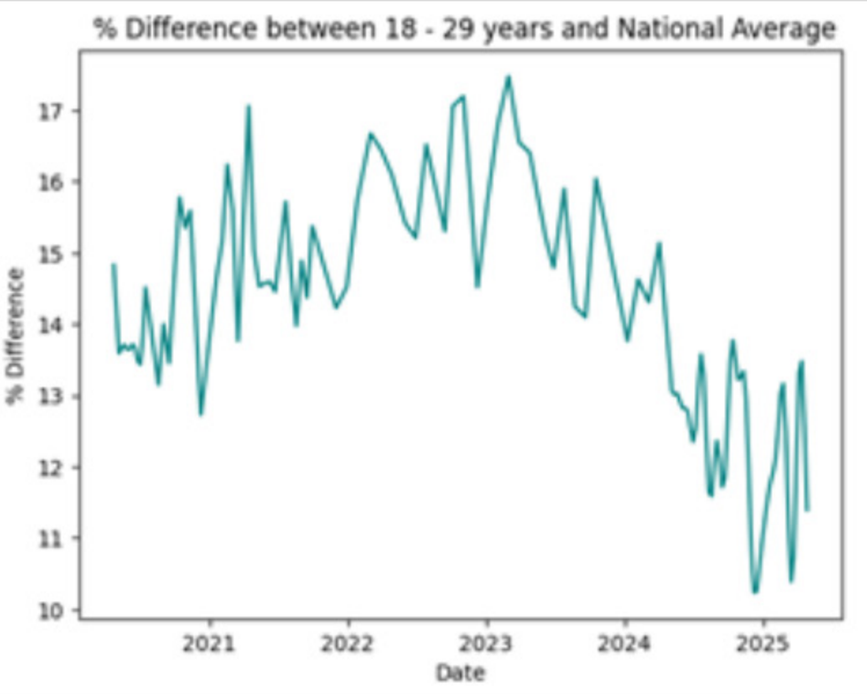
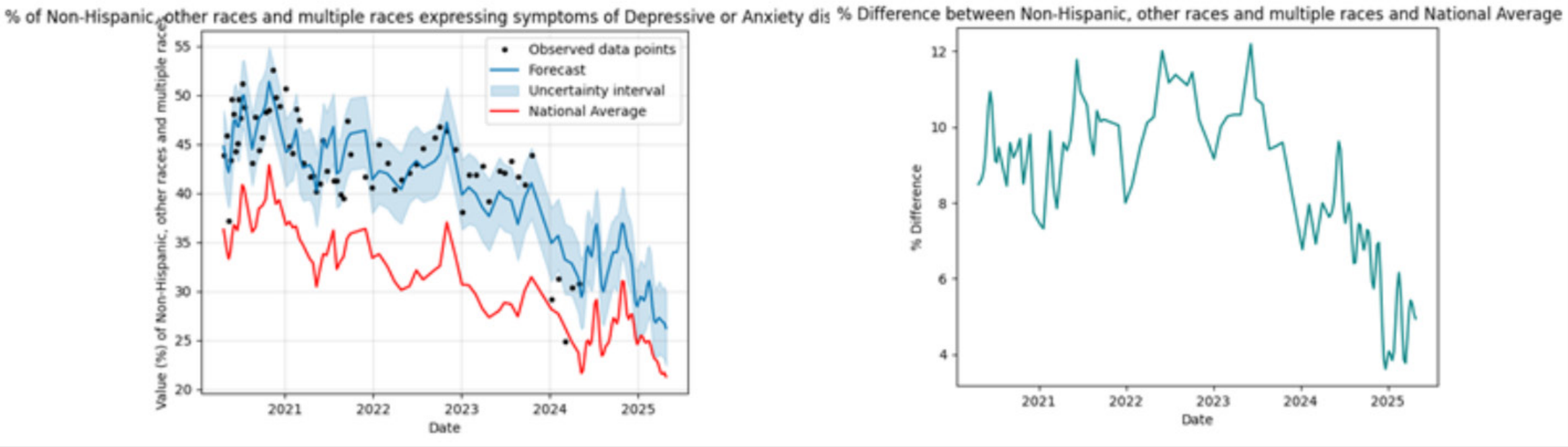


Bi-sexual


% of Bisexual expressing symptoms of Depressive or Anxiety disorders
Value (%) of Bisexual
Date
Observed data points
Forecast
Uncertainty interval
National Average
% Difference between Bisexual and National Average
% Difference
Date

Ages 18 - 29


% of 18 - 29 years expressing symptoms of Depressive or Anxiety disorders
Observed data points
Forecast
Uncertainty interval
National Average
Value (%) of 18 - 29 years
60
55
50
45
40
35
30
25
20
2021
2022
2023
2024
2025
Date


% Difference between 18 - 29 years and National Average
% Difference
17
16
15
14
13
12
11
10
2021
2022
2023
2024
2025
Date

Non-Hispanic,
Other Races and Multiple Races