

Mental Health in the Workplace and Around the World

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Aim of Analysis: using a micro and macro level approach to the evaluation of the following questions we hope to better understand: 1) how various socio-demographic factors influence self-reported mental health and care-seeking behaviors in the workplace, 2) how mental health diagnosis and the burden of these diseases quantitatively differs from region to region.

How does type of mental illness and relative prevalence vary by geographic location?

Is a person's age and/or gender associated with their likelihood of seeking mental health treatment?

What are the strongest predictors that an employee will self-report that their mental health interferes with their work?

Which workplace factors most strongly predict if an employee will self-report seeking treatment for their mental health?

Based on this data, do commonly sought out factors such as remote work and provision of mental health benefits seem to be associated with a reduction in employee reports of mental health interfering with work?

Are employees with mental health benefits more likely to seek treatment for their mental health?

The economic impact of mental health is a complex and multifaceted issue that can have significant implications for individuals, families, businesses, and societies as a whole

- **Healthcare Costs:** Treating mental health disorders can be expensive, straining healthcare systems.
- **Disability:** Severe mental health conditions can result in long-term workforce exclusion.
- **Educational Impact:** Mental health challenges can hinder learning and educational achievement.
- **Economic Growth:** Widespread mental health problems can limit productivity and innovation.
- **Caregiver Strain:** Family caregivers might face income loss due to providing care.
- **Crime and Legal Costs:** Mental health-related issues can lead to higher crime rates and legal expenses.
- **Stigma and Treatment:** Stigma prevents timely treatment seeking, leading to increased costs.
- **Innovation:** Good mental health support fosters innovation and creative thinking.
- **Intangible Costs:** Human suffering and reduced quality of life also impact societies.
- **Workplace Productivity and Absenteeism:** Mental health issues can lead to decreased productivity and increased absenteeism in the workplace. Conditions like depression, anxiety, and stress can affect concentration, decision-making, and overall job performance. This can result in lower efficiency and reduced output for businesses.

Sources of Data

Survey on
Mental Health in
the Tech
Workplace in
2014 (ongoing
data available)

Global Mental
Illness
Prevalence by
Type

Global Burden of
Mental Illness by
Type (measured
as DALYs)

Definitions

Prevalence:

- proportion or percentage of a specific population that has a particular disease or condition at a given point in time.

DALY= Disability Adjusted Life Year :

- combines the years of healthy life lost due to early death and the years lived with a disability or illness.

Assigning a Value to Health

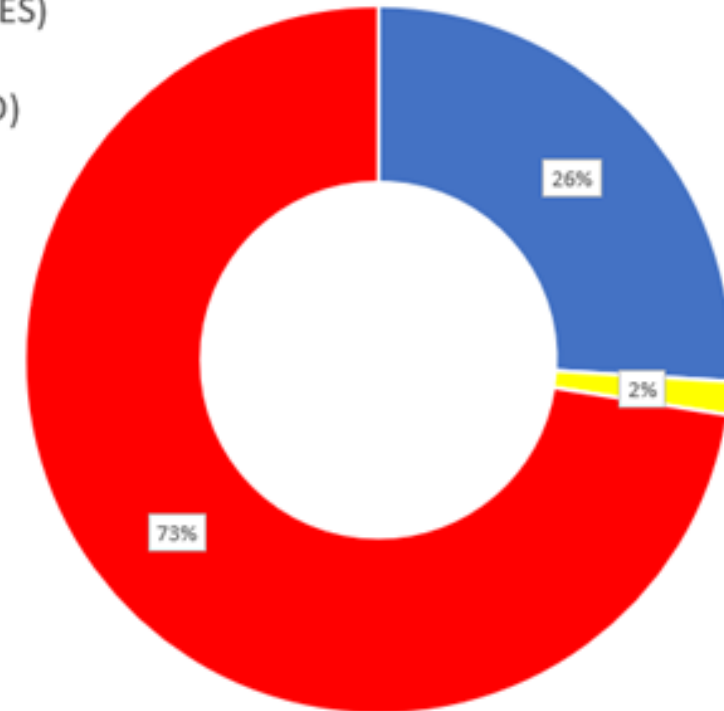
remote_work	mental_health_consequence	phys_health_consequence		NO Occuring across All 3	Yes Occuring Across All 3	Mixed	Total Subjects
1	1	1	3	327	19	913	1259
1	0	1	2	% of Occurance All 3(NO)	% of Occurance All 3 (YES)	% of Occurance (MIXED)	
1	1	1	3	26%	2%	73%	
1	-1	-1	-1				
-1	1	1	1				
1	1	1	3				
-1	0	0	-1				
-1	1	1	1				
1	0	1	2				
1	1	1	3				
-1	1	1	1				
-1	1	1	1				
1	-1	-1	-1				
1	1	1	3				
1	1	1	3				
-1	0	1	0				
1	0	1	2				
-1	1	1	1				
-1	1	1	1				
1	0	1	2				
-1	1	1	1				
-1	0	1	0				
1	0	1	2				
1	1	1	3				
1	-1	1	1				
1	0	0	1				
-1	1	1	1				
-1	1	1	1				
1	-1	0	0				
-1	-1	-1	-3				

■ % of Occurance All 3(NO)

■ % of Occurance All 3 (YES)

■ % of Occurance (MIXED)

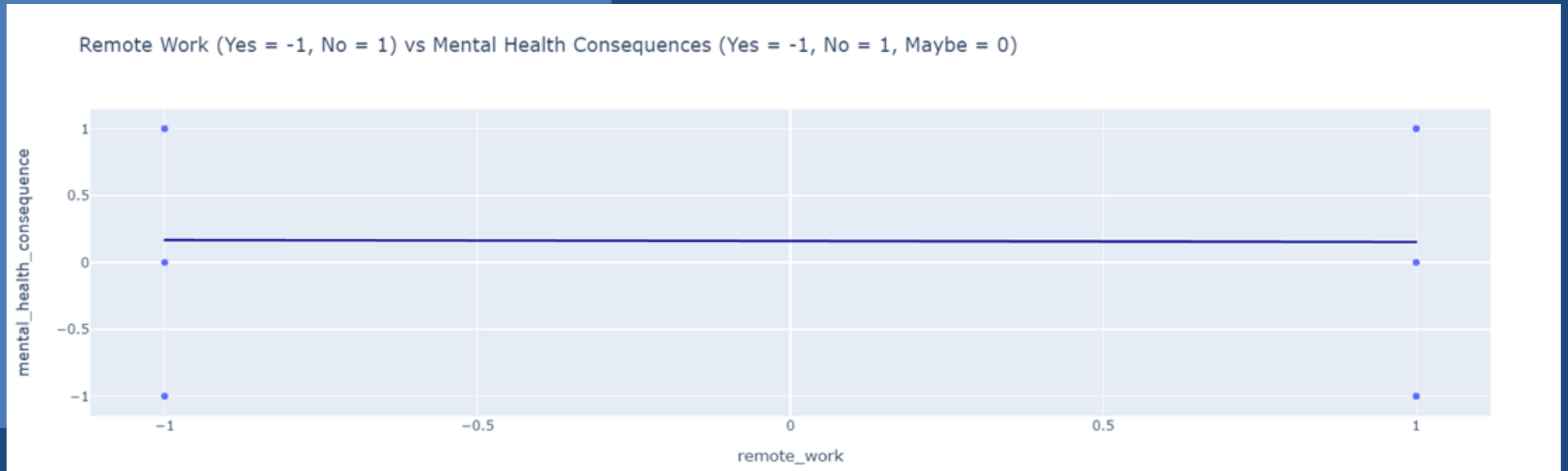
Remote workers vs health occurance



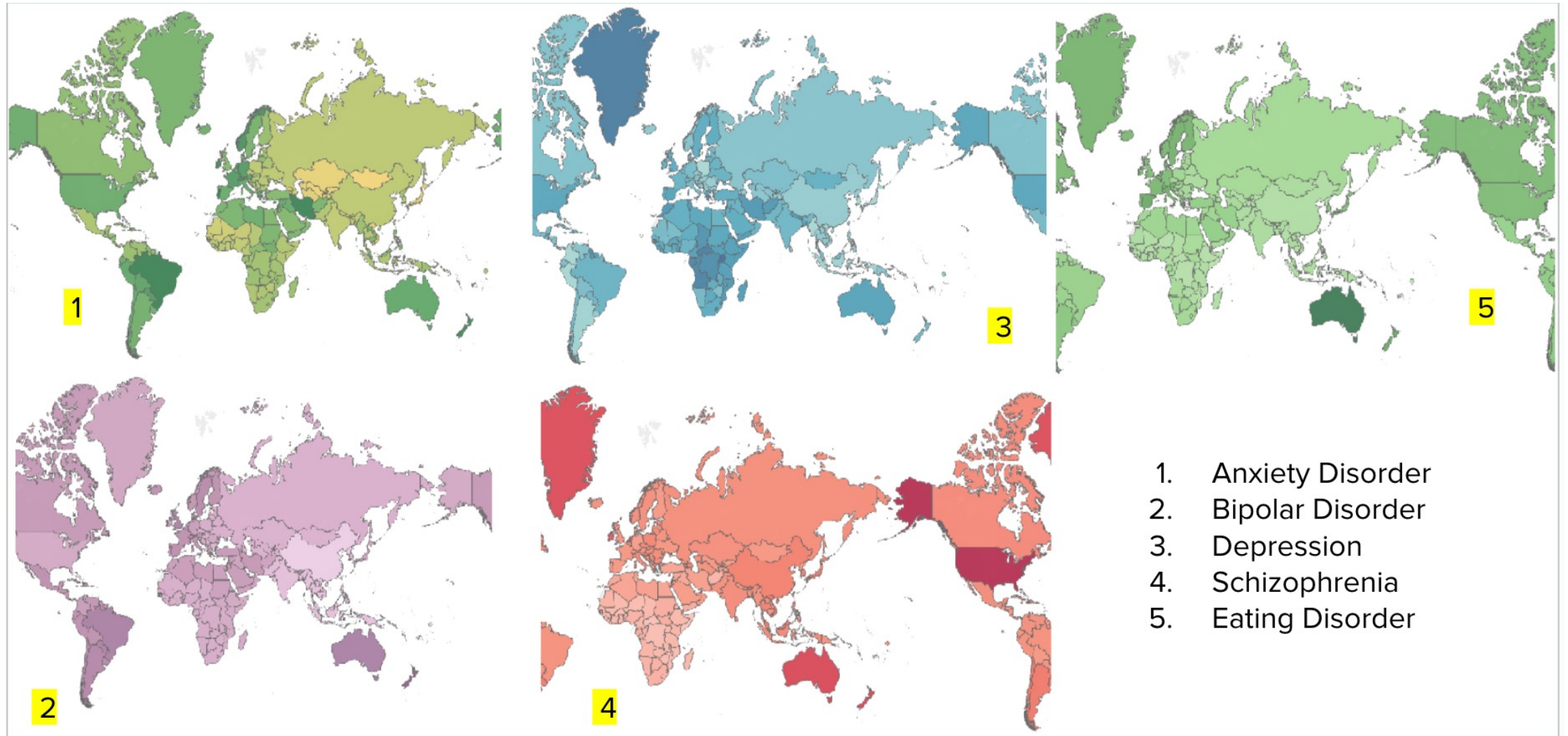
Series 1 Point "% of Occurance (MIXED)"
Value: 73% (73%)

Correlation Coefficient

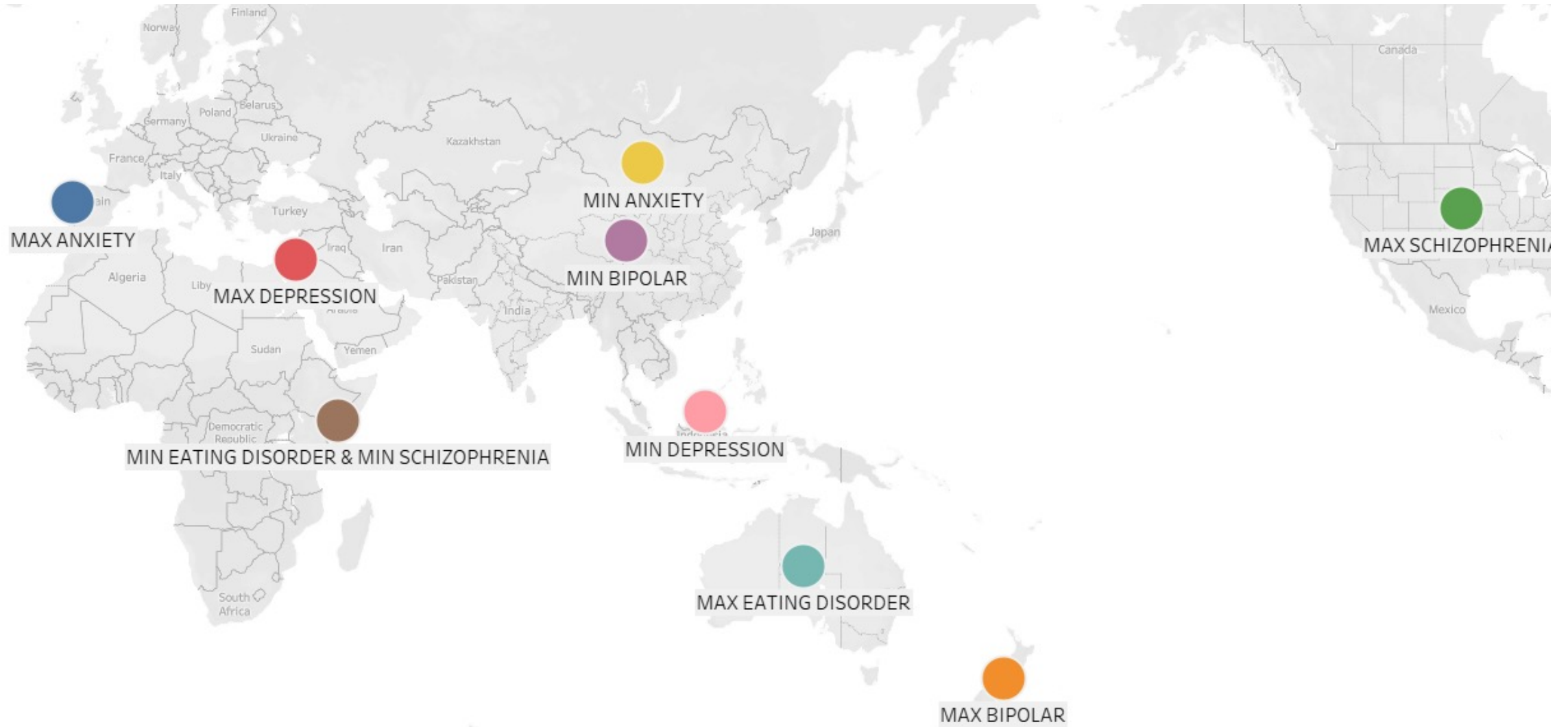
Remote Work vs Mental Health Correlation- (1 positive correlation, 0 No Correlation, -1 Negative Correlation)



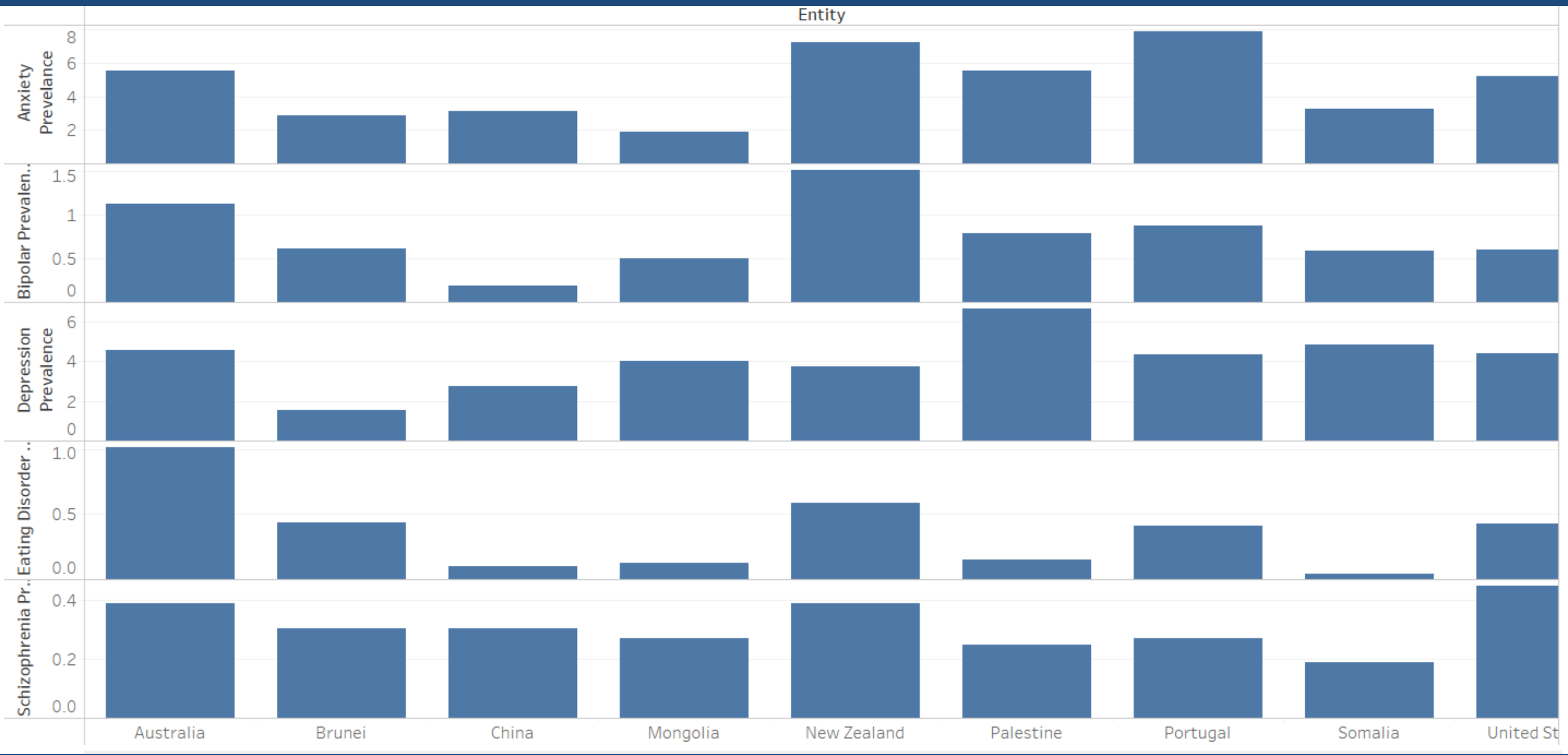
Mental Disorder Impact Worldwide



Maximum and Minimum Disorder Impact Worldwide



Countries with Maximum and Minimum Disorder Compared

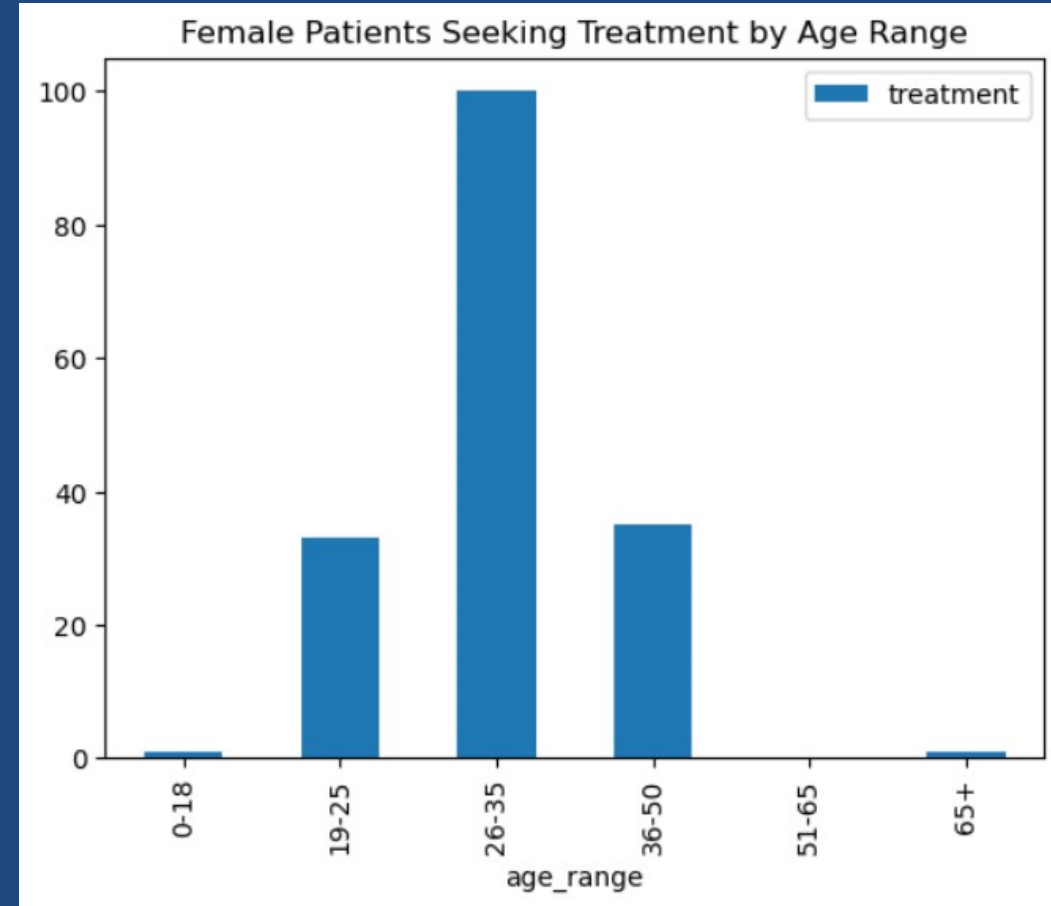
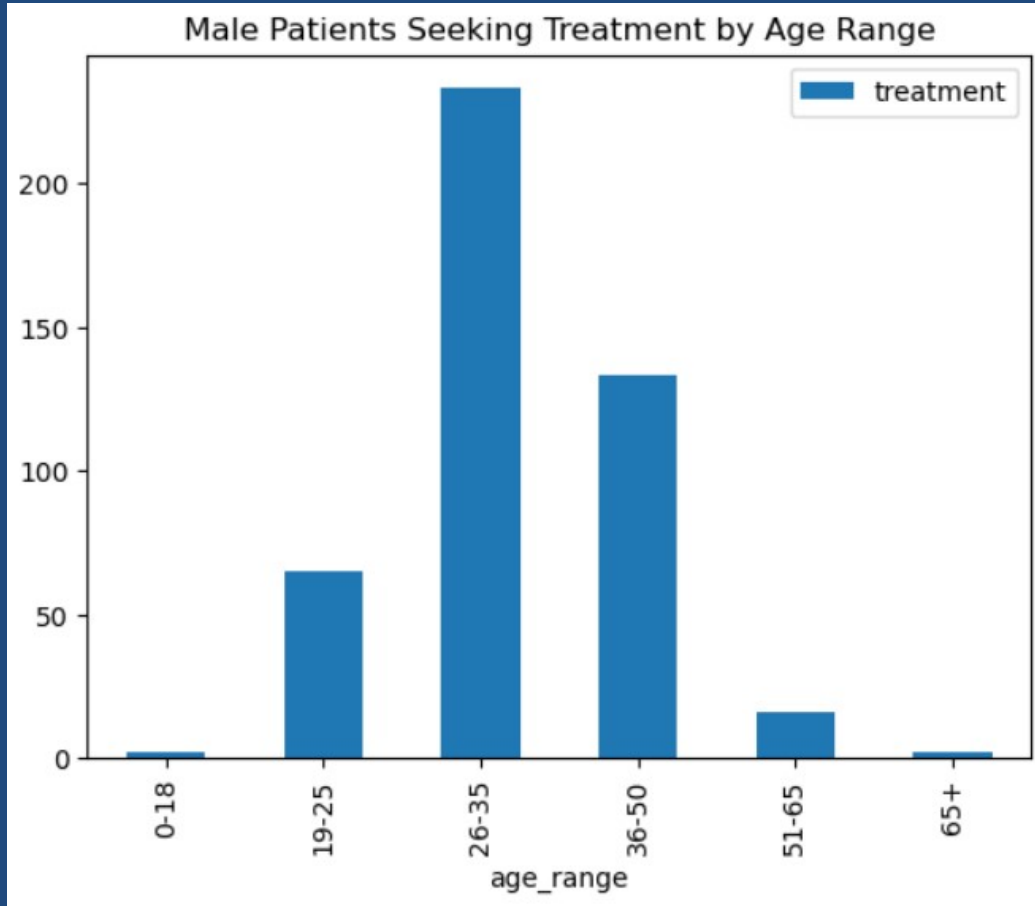


Possible Common Causes for Poor Mental Health Among Men and Women:

- Younger Patients:
 - Social Pressures
 - Peer Relationships
 - Academic Stress
 - Body Image and Self Esteem

Middle of Range:

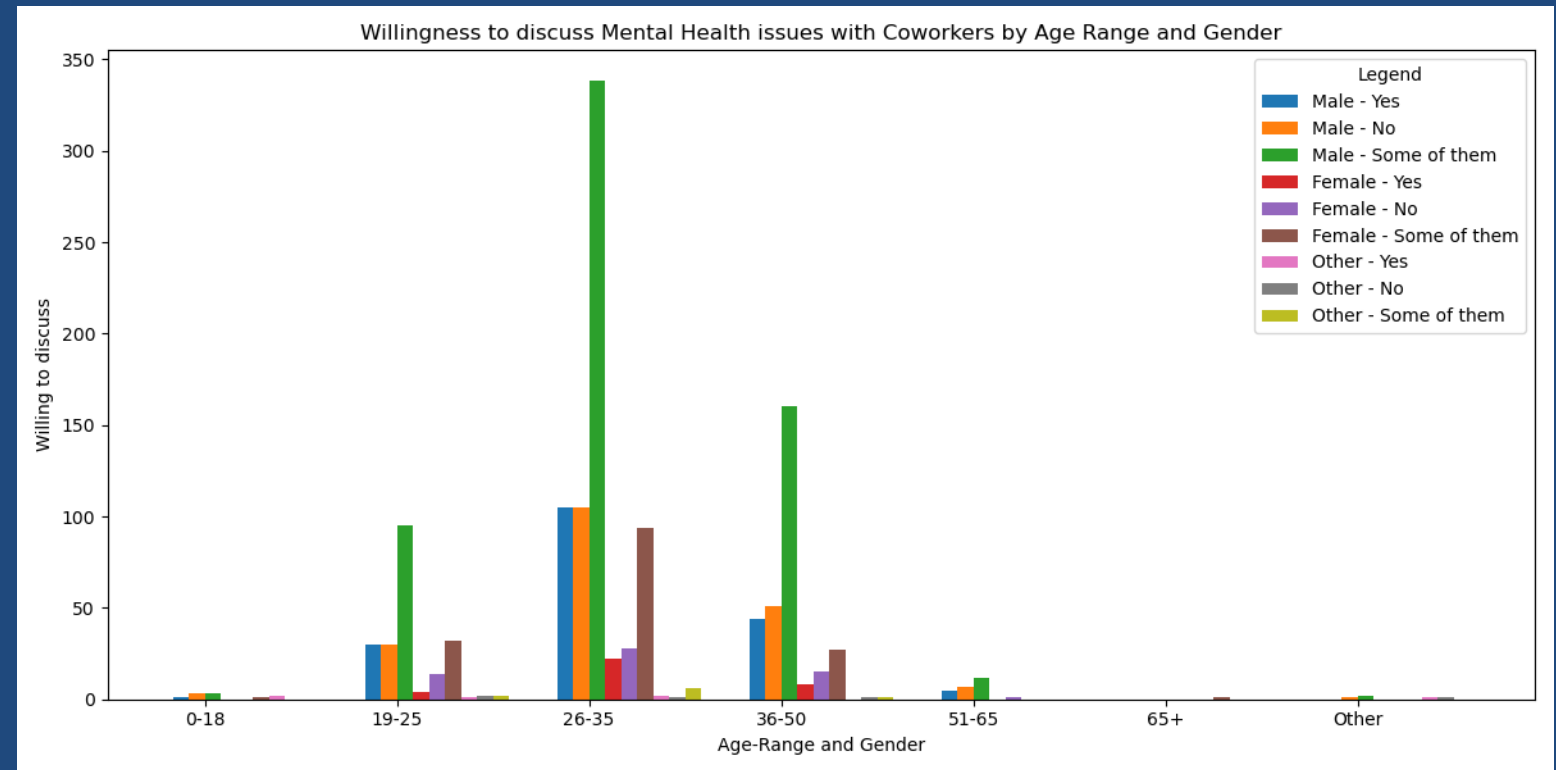
- Work-Life Balance
 - Career Progression
 - Parenting and Caregiving
 - Hormonal Changes
- Older Patients:
 - Empty Nest Syndrome
 - Aging and Self Care
 - Lack of Social Network
 - Loneliness



Comparison of female and male patients who sought treatment by age range.

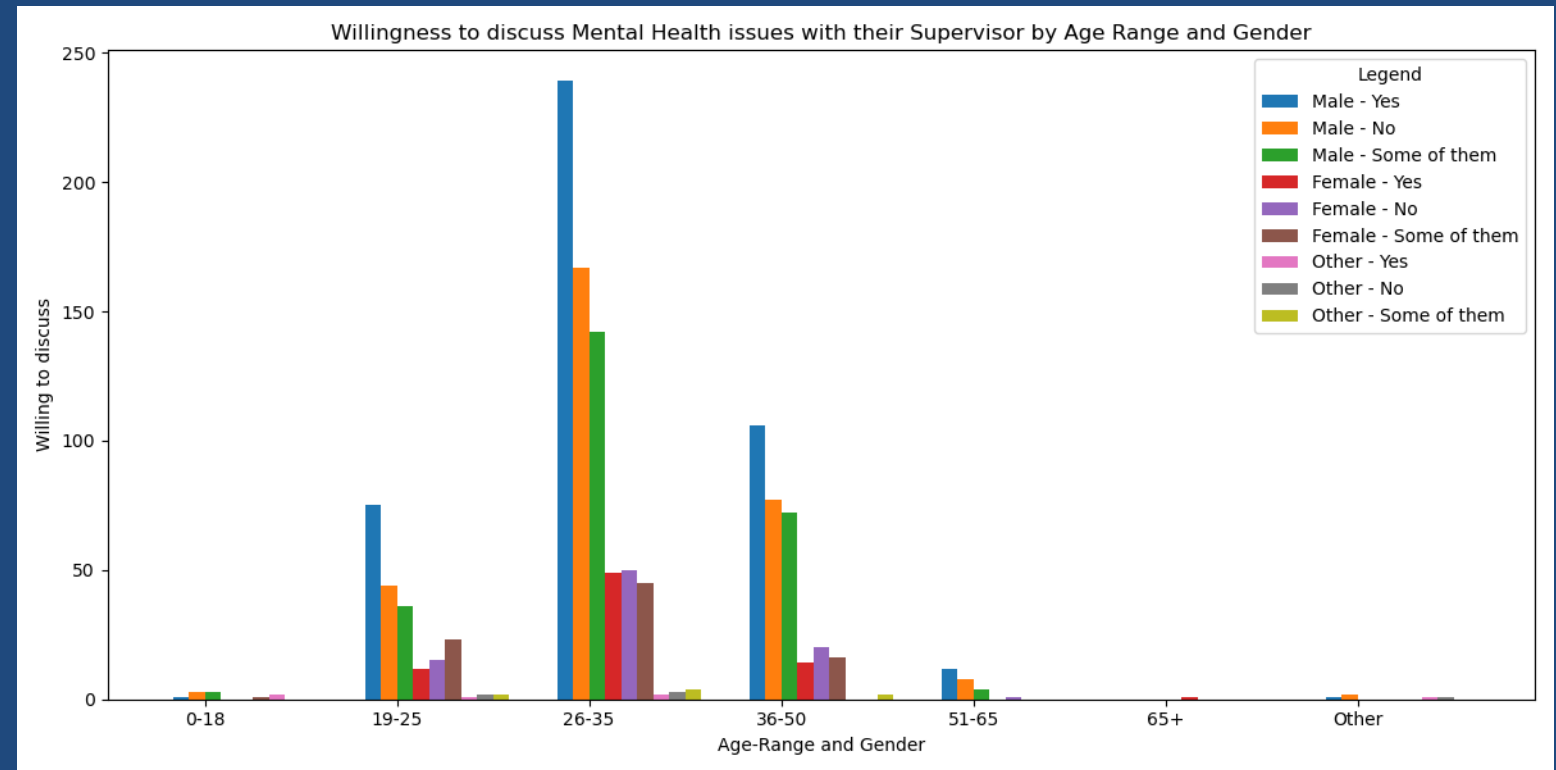
Survey Question: **Would you be willing to discuss a Mental Health issue with your coworkers?**

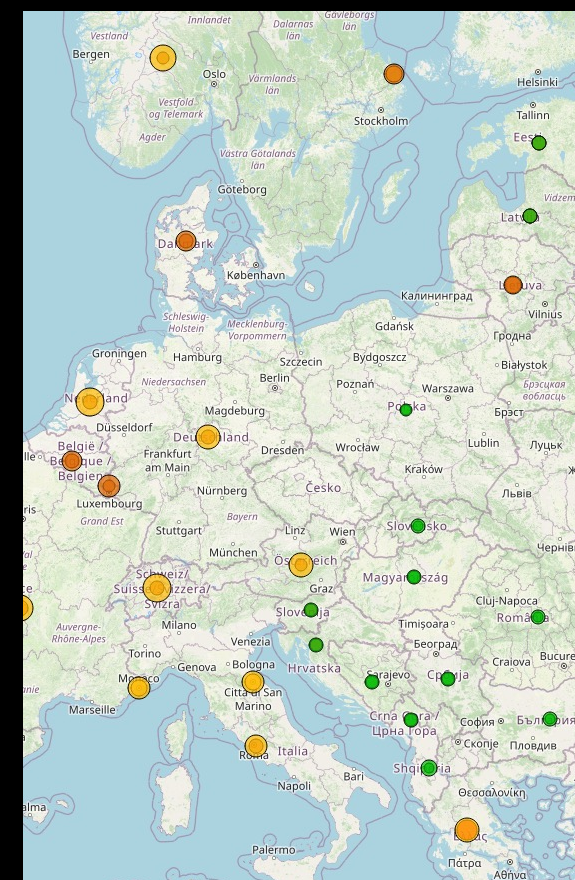
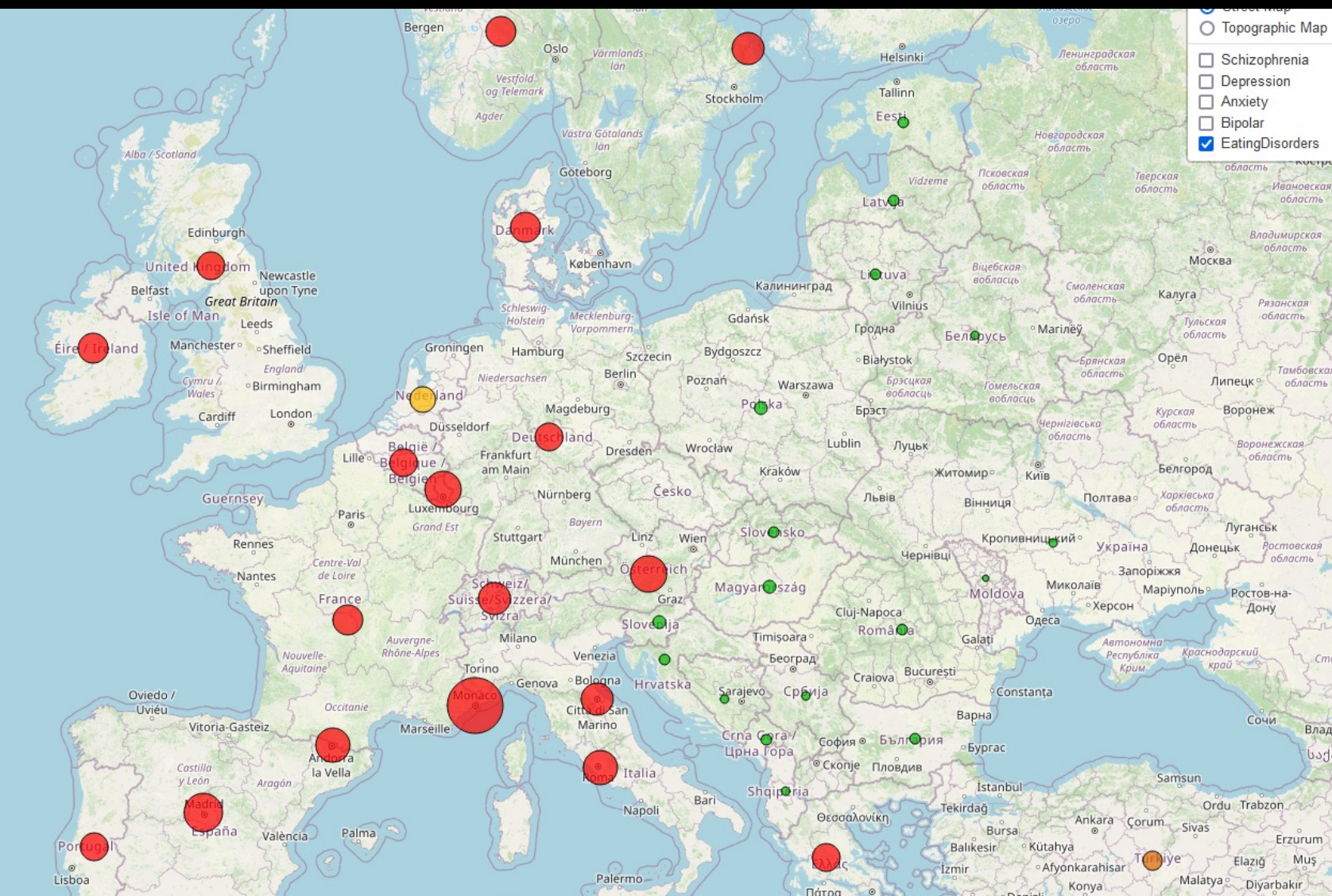
Here, we look at the results of that question based on the respondents age range and gender.



Survey question: **Would you be willing to discuss a Mental Health issue with your supervisor(s)?**

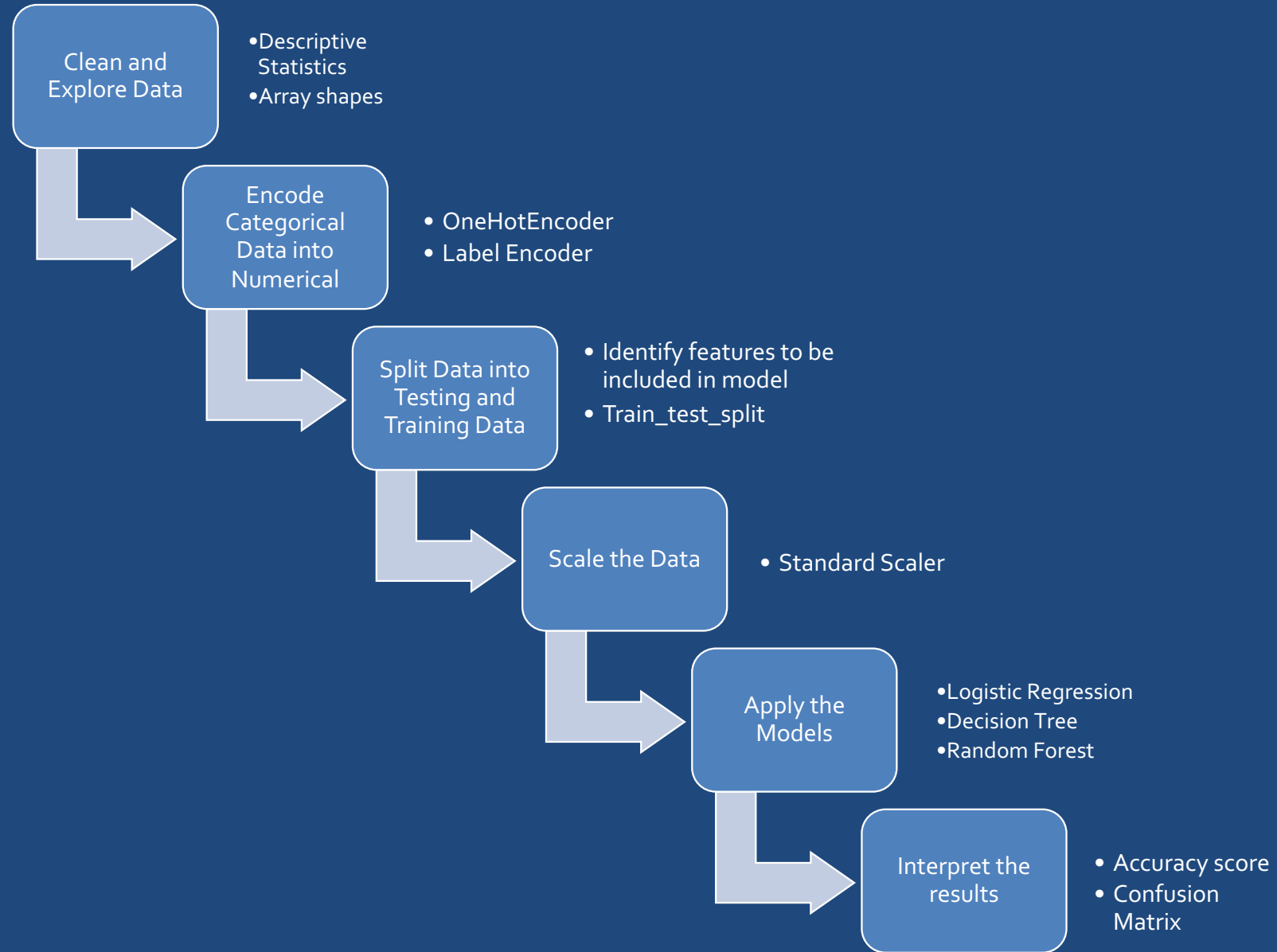
Here, we look at the results of that question based on the respondents age range and gender.





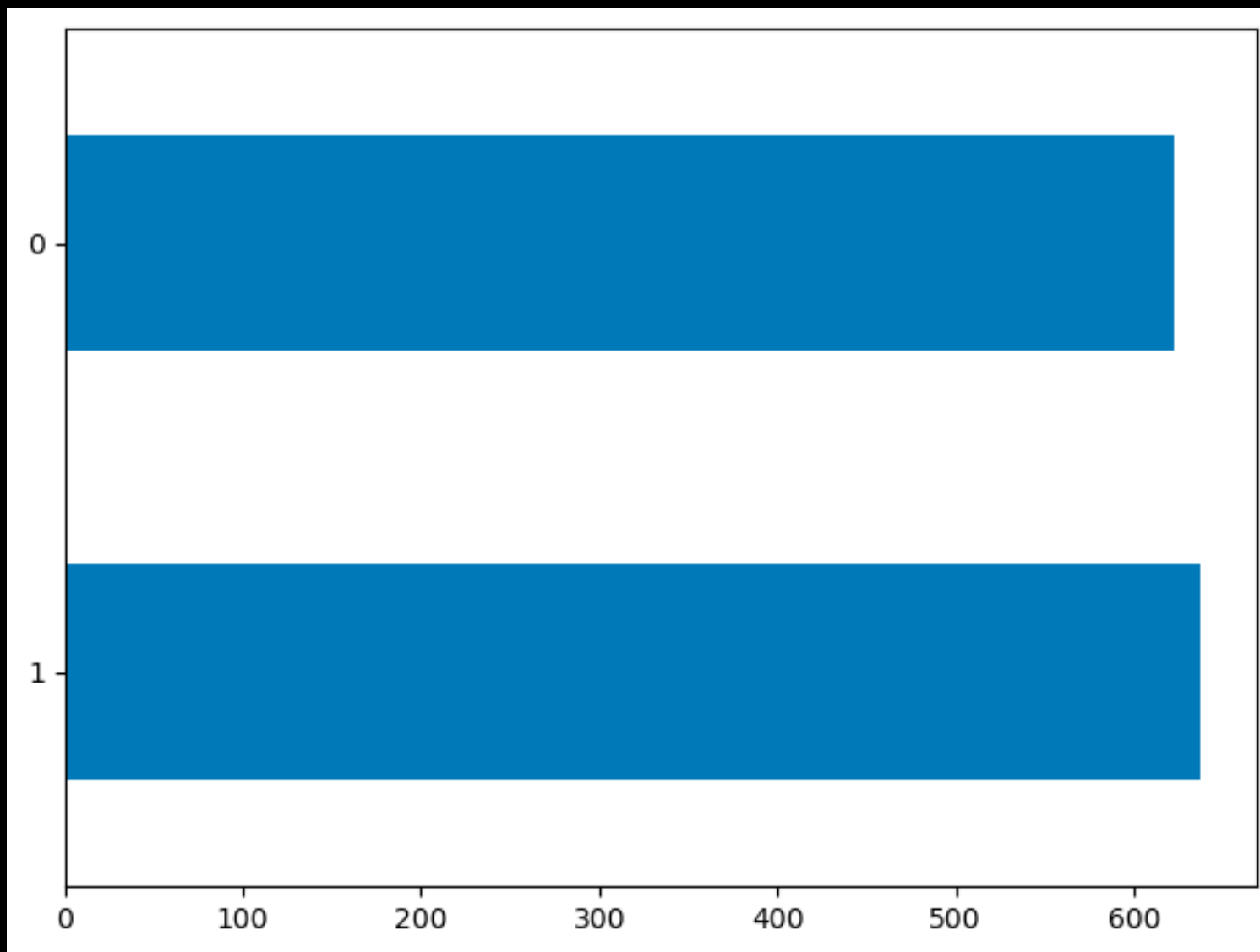
- Constructed in leaflet
- Comes with 5 layers that can be mixed and matched
- Displays data from 2019 for most countries in the world

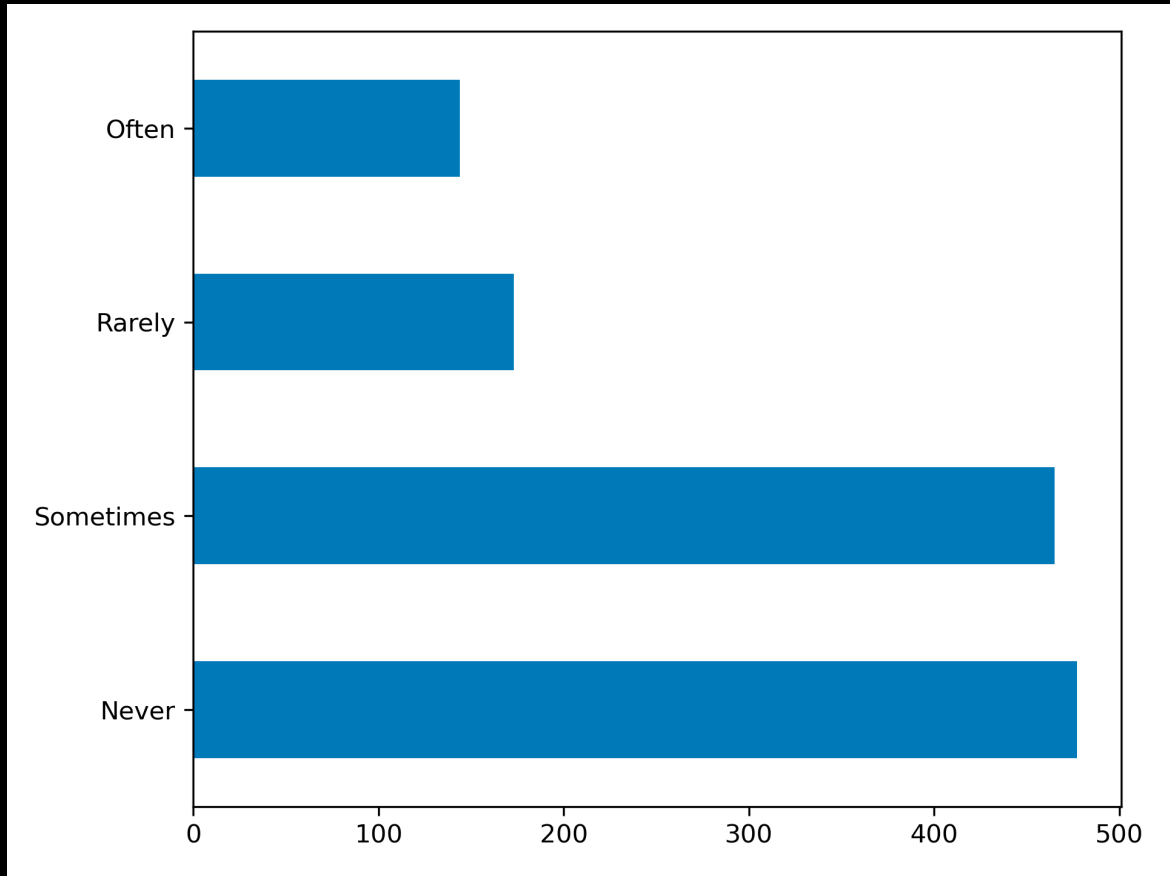
Interactive Map



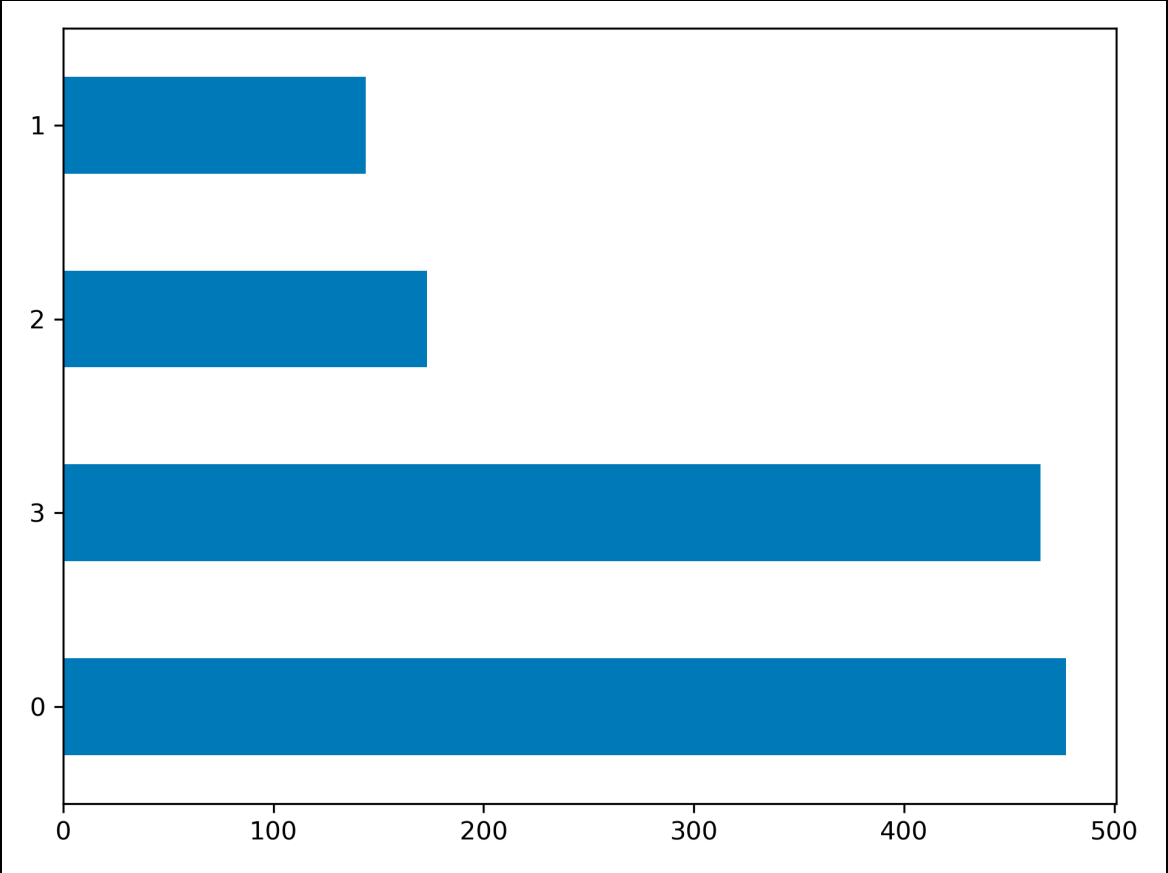
No

Yes

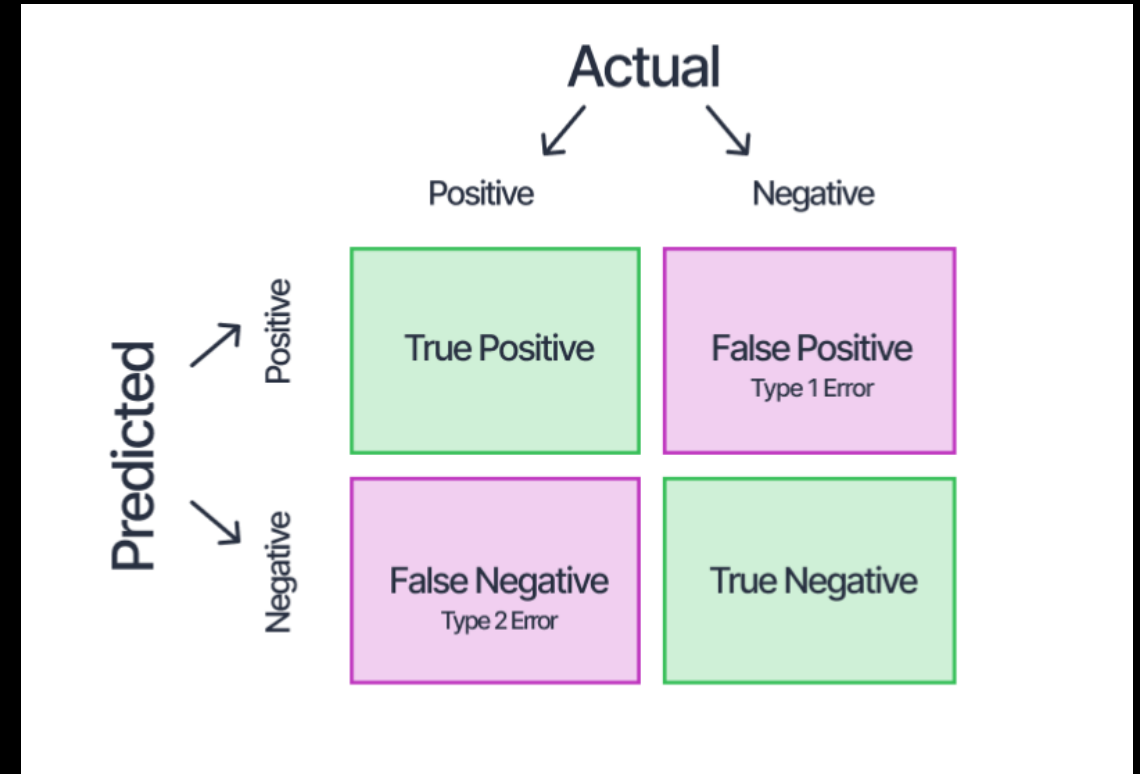
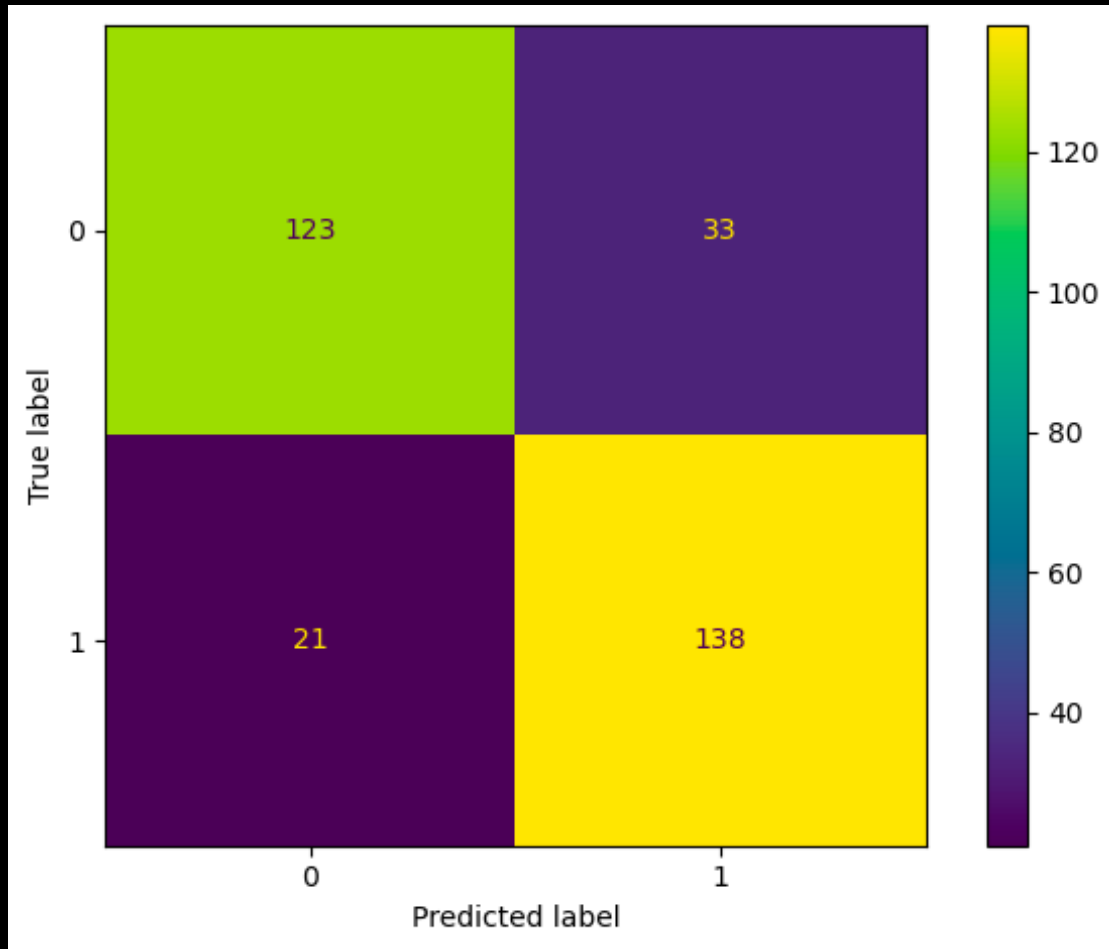




If you have a mental health condition, do you feel that it interferes with your work?



Confusion Matrix for Random Forest Classifier when predicting *Treatment*



Confusion Matrix

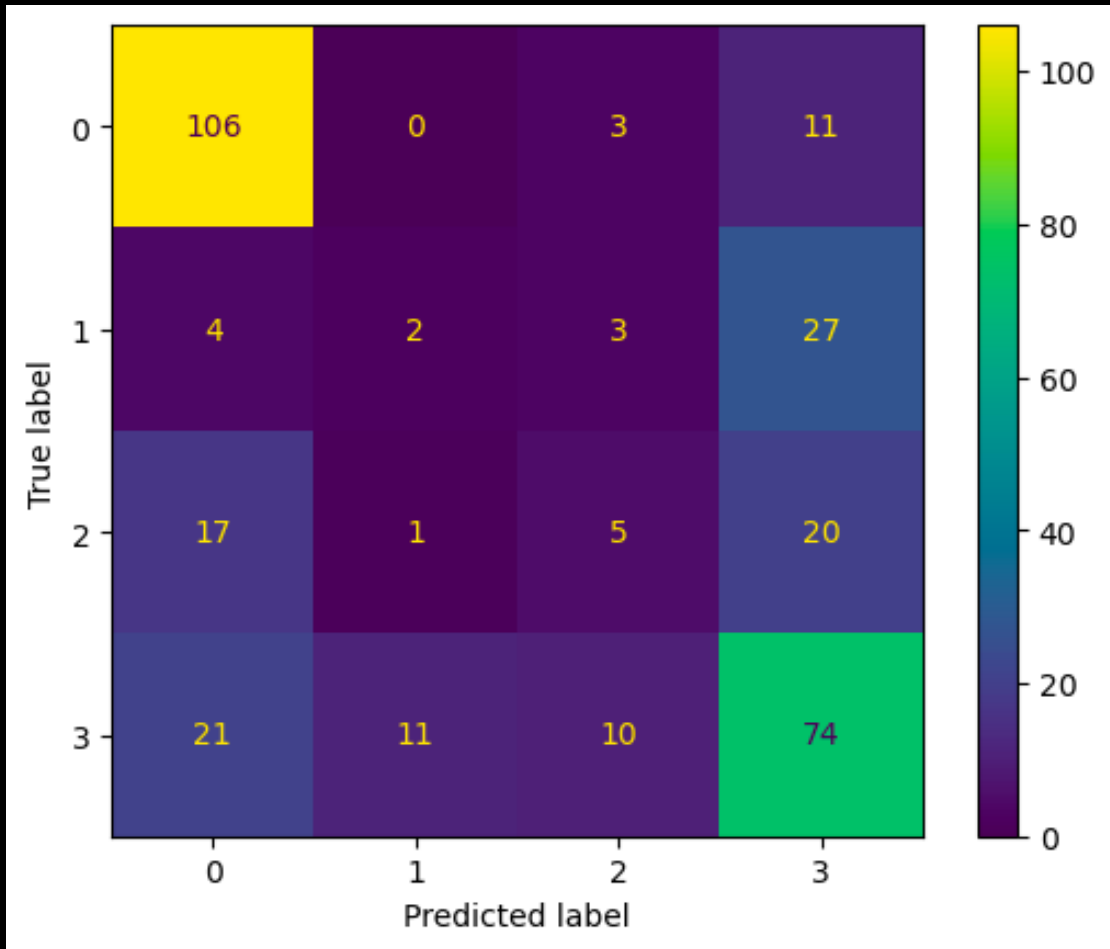
	Predicted 0	Predicted 1
Actual 0	123	33
Actual 1	21	138

Accuracy Score : 0.8285714285714286

Classification Report

	precision	recall	f1-score	support
0	0.85	0.79	0.82	156
1	0.81	0.87	0.84	159
accuracy			0.83	315
macro avg	0.83	0.83	0.83	315
weighted avg	0.83	0.83	0.83	315

Confusion Matrix for Random Forest Classifier when predicting *Interference*



		Expected			
		1	2	3	4
Predicted	1	52	3	7	2
	2	2	28	2	0
	3	5	2	25	12
	4	1	1	9	40

Random Forest Confusion Matrix

	Predicted 0	Predicted 1	Predicted 2	Predicted 3
Actual 0	105	0	5	10
Actual 1	3	3	3	27
Actual 2	17	1	3	22
Actual 3	17	9	11	79

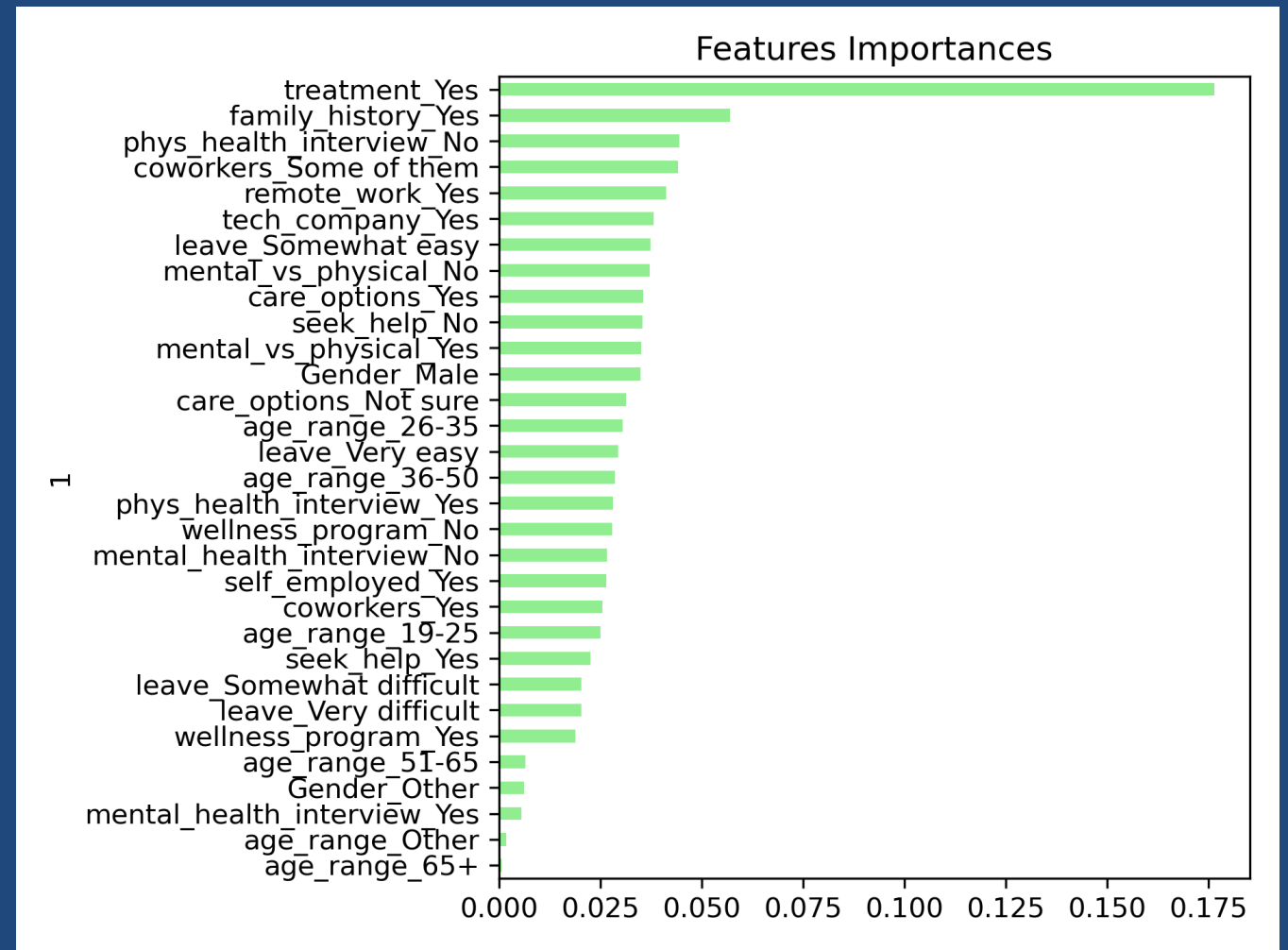
Accuracy Score : 0.6031746031746031

Classification Report

	precision	recall	f1-score	support
0	0.74	0.88	0.80	120
1	0.23	0.08	0.12	36
2	0.14	0.07	0.09	43
3	0.57	0.68	0.62	116
accuracy			0.60	315
macro avg	0.42	0.43	0.41	315
weighted avg	0.54	0.60	0.56	315

Feature Importance:
Based on Random Forest
Model

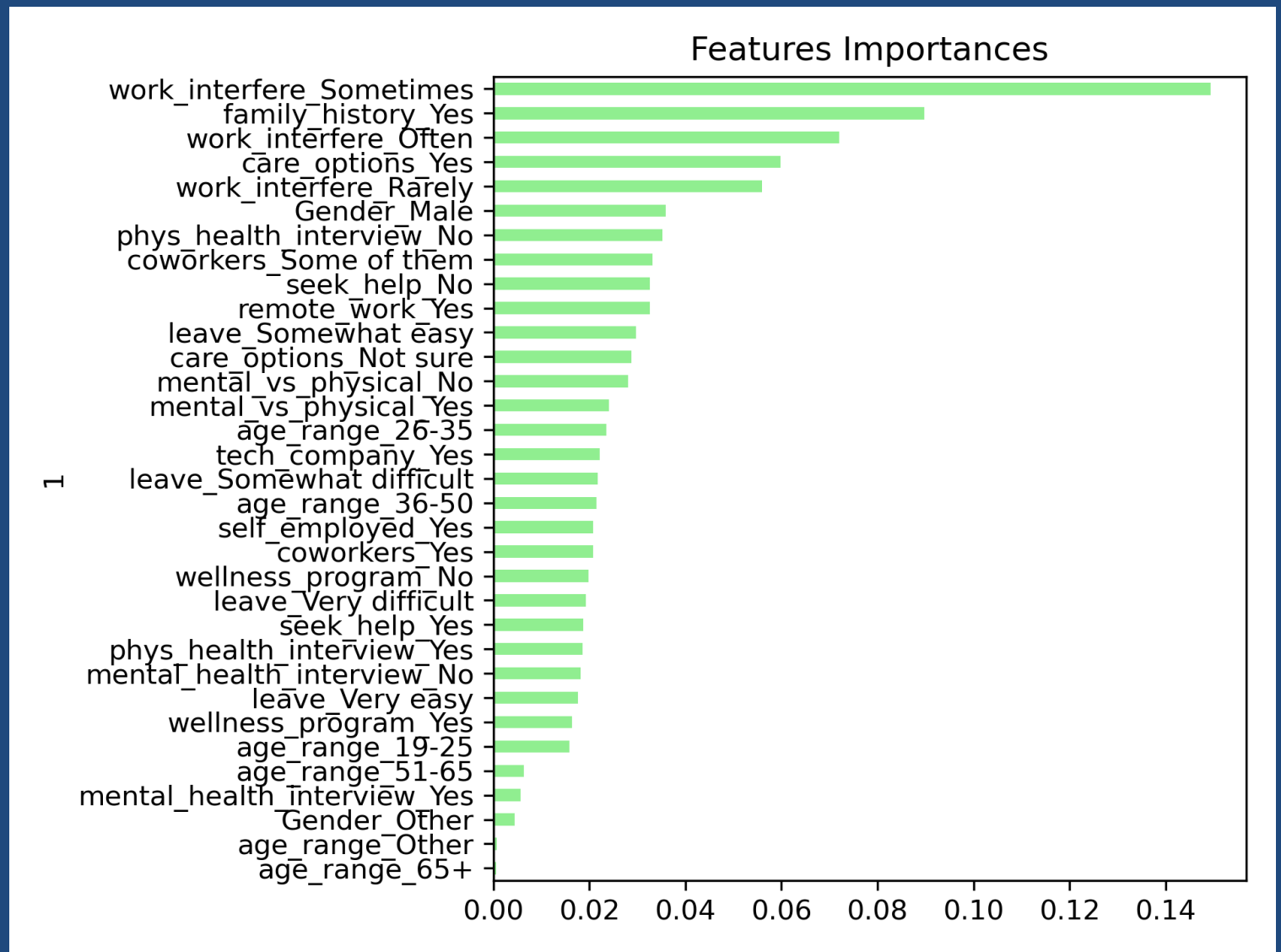
Predicting: If an employee
will report mental health
interferes with their work



Feature Importance:

Based on Random Forest
Model

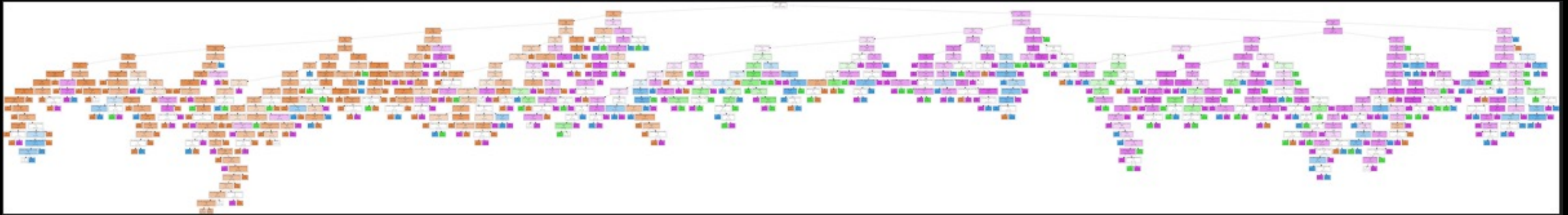
Predicting: If an employee
will seek mental health
treatment



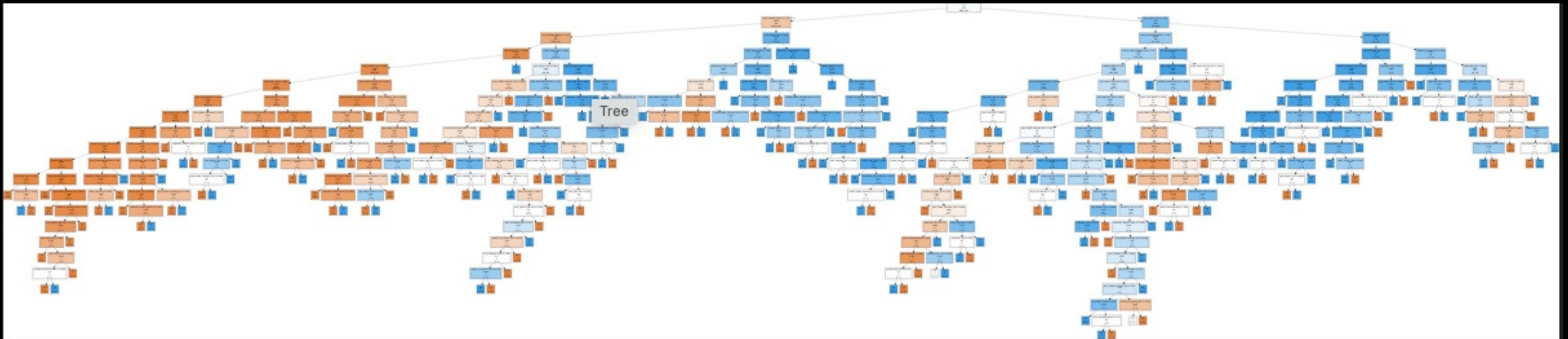
Predictive Models

Model Accuracy Scores by Model and Outcome Predicted

Seeking treatment for mental health	Reporting mental health interferes with work
Logistic regression: .8667	Logistic regression: .6317
Decision Tree Classifier: .7206	Decision Tree Classifier: .47301
Random Forest: .8286	Random Forest: .6031



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Why a company should care ?

- **Workplace Productivity and Absenteeism:** Mental health issues can lead to decreased productivity and increased absenteeism in the workplace. Conditions like depression, anxiety, and stress can affect concentration, decision-making, and overall job performance. This can result in lower efficiency and reduced output for businesses.
- What a company can do to promote mental health:
 - Ensure employees feel better able to access treatment
 - Consider availability of care options, assessing if mental health is interfering with employee's work, availability of care options, access to remote work
 - Assess factors that predict when a person will report their mental interferes with with work