

Analyzing the Strongest Predictors and Attributes of Mental Health Illness in Technology Workplace

Asif Ahmed Nelay¹ Dr. Maxime Turgeon² Departments of ¹Computer Science & ²Statistics, University of Manitoba

Summary

- Emphasizing openness to mental health issues and easing accessibility of medical Leave can improve mental health condition by 18.45%.
- Willingness to share mental health issue with family, supervisors and co-workers plays the most significant role in comforting mental health.

Motivation

- Around 45 million men and women currently endure mental disorders and 3rd most concerning illness after Cancer and Heart disease.
- 52% skilled workers in technology industry suffer from mental illness however, No or little research to analyze and identify mental health disorder factors for people working in Technology industry.

Objective

- This particular research targets measuring attitudes toward mental health inside the tech industry.
- The detailed data from the OSMI Mental Health Survey 2018-2019 utilized to acquire how mental health regulation can be viewed within the technology or IT professionals.

Dataset

"Mental Health (MH) Survey for Tech Industry" by OSMI (Open Sourcing Mental Illness) [1].

Experiments & Results

Research Questions

RQ1: Extract qualitative insights for the tech industry to improve mental health support

Method: NLP Vectorization to extract insights and keywords from the survey.

RQ2: Predict comfort level in discussing mental health at workplace using participants' qualitative responses.

Method: Stacked Tree based Classifier (Stacking CV Classifier (KNN, Logistic Regression and Random Forest) with Gradient Boosting to predict comfort level of discussing mental health issues.

RQ3: Prescriptive analysis to reduce factors and find the factors that influence comfort level in discussing mental health.

Method: Unsupervised PCA for reducing dataset features and Ordinal Logistic Regression for testing the hypothesis.

Results

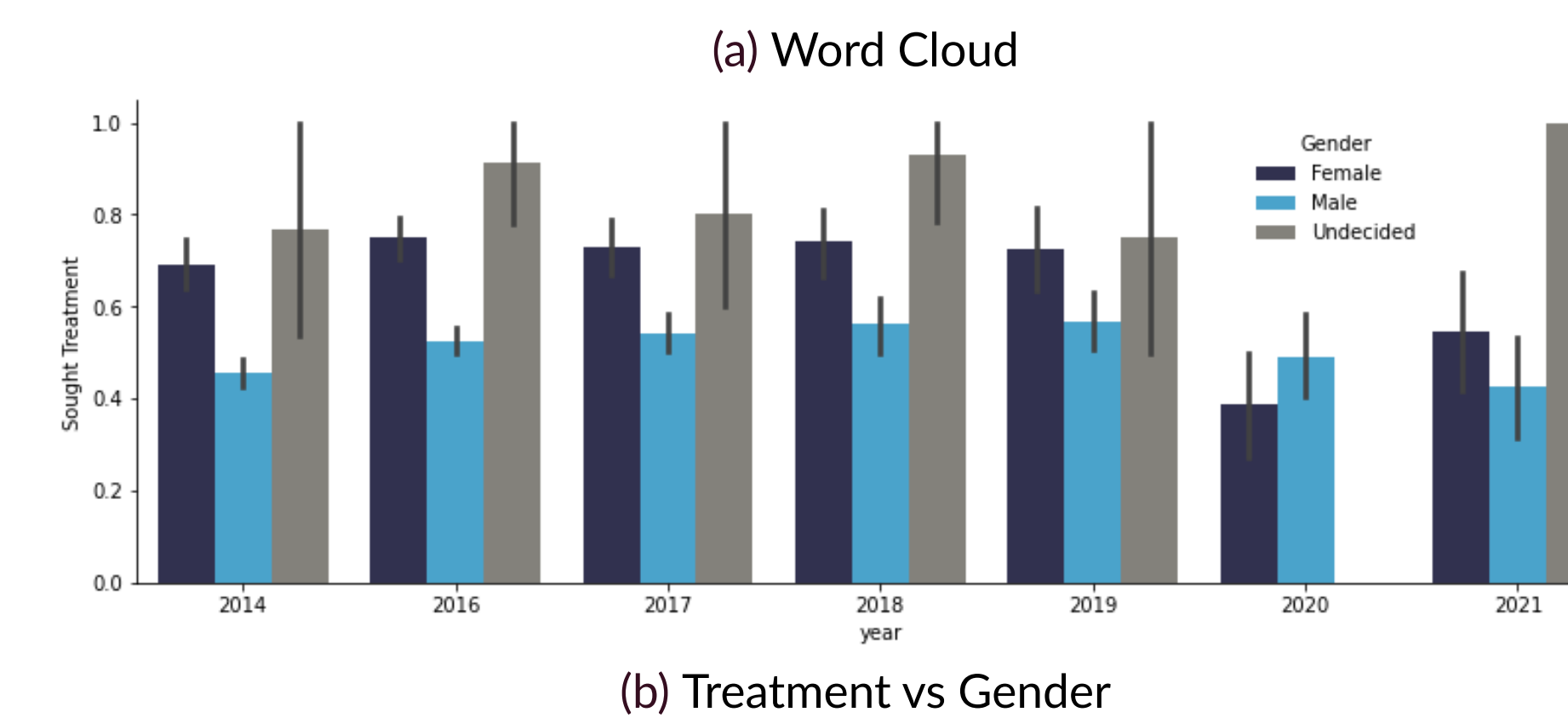


Figure 1. RQ1 Results

Model	Accuracy	F1-score
Stacking CV Classifier	65.97%	40.76%
Gradient Boosting	71.55%	45.56%

Table 1. Classification Results for RQ2

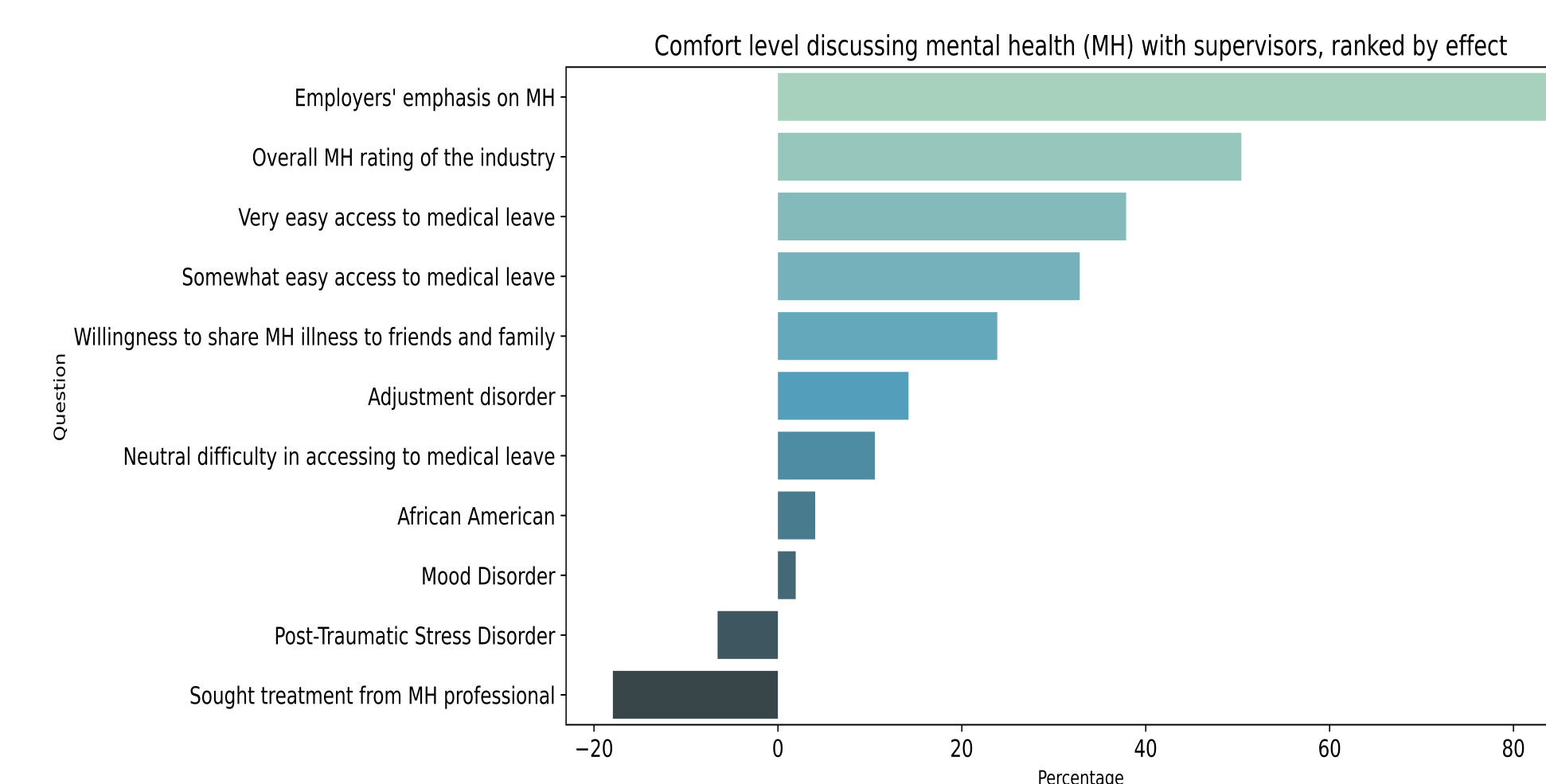


Figure 2. RQ3: Comfort level discussing MH

Hypothesis Testing

- Null Hypothesis:** The features, both individually and together collectively, have no effect on one's comfort in discussing mental health (MH) with coworkers
- Alternative Hypothesis:** The features, either individually or together collectively, have an effect on one's comfort in discussing MH with co-workers.

Table 2. Hypothesis Testing

Model	R-squared	p-value
OLS	0.30	4.26e-62
SMOTE	0.362	3.99e-61

The result suggests that, All features together have an effect on one's comfort level in discussing MH with direct supervisors.

Significance

- Creating a positive attitude and atmosphere to discuss Mental Health issues would encourage those who are more hesitant in opening up and share their thoughts and feelings.
- We identified top 5 factors such as openness to discuss, Medical facilities, Insurance to improve mental health and efficiency of the employees.

References

[1] Osmi. Osmi mental health in tech survey 2017, May 2018.