MKTG 415 FINAL LAB

A Predictive Model for Identifying & Addressing Anxiety Risk

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Overview

Anxiety disorders are a leading mental health concern, impacting millions worldwide. In the U.S., 19.1% of adults experience an anxiety disorder annually (NIMH, 2021), with 43.5% experiencing mild symptoms, 33.7% moderate impairment, and 22.8% severe limitations. Beyond personal well-being, anxiety contributes to workplace absenteeism, lost productivity, and increased healthcare costs (APA, 2023).

Using predictive analytics, this study identifies key risk factors contributing to anxiety and develops a model to target high-risk individuals. The model enables early interventions by leveraging demographic, financial, and health data, informing healthcare strategies, workplace policies, and mental health initiatives.

Who Is Most Affected?

- Women have a higher prevalence (23.4%) than men (14.3%).
- Young adults (18–29) have the highest rates (22.3%).
- Workplace stress is a significant factor, with 76% of employees reporting work-related anxiety (APA, 2023).
- The global economic burden of anxiety-related absenteeism exceeds $1 trillion annually (WHO, 2022).

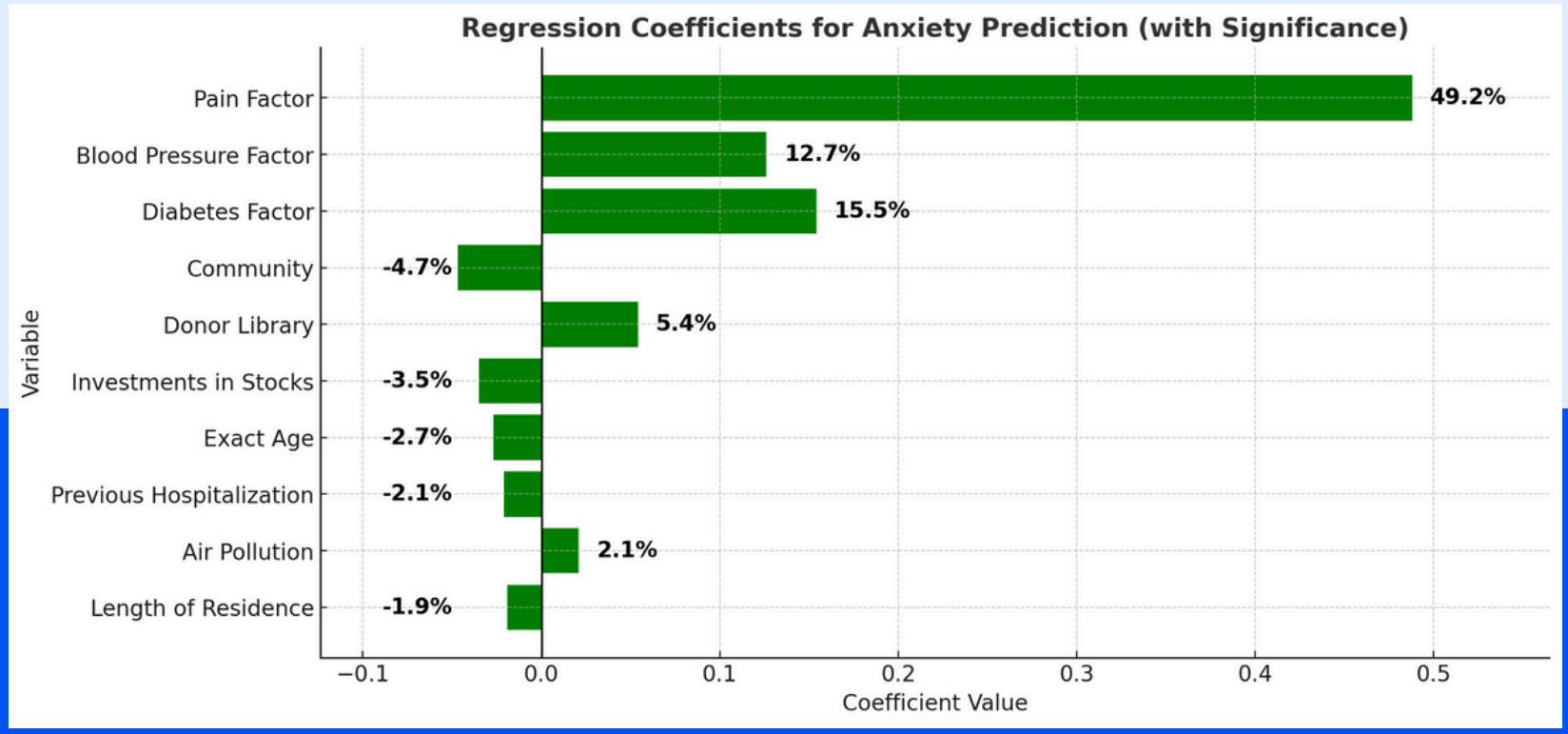
Where Is Anxiety a Problem?

- Anxiety rates are highest in urban settings, high-stress jobs, and economically unstable populations. Financial instability, limited mental health resources, and high work expectations contribute to increased prevalence.

KEY PREDICTORS OF ANXIETY (TOP 10 FACTORS)

Using regression analysis, we identified the most significant predictors of anxiety:

1. Pain Factor (49.2%) – Chronic pain is the strongest predictor of anxiety.
2. Financial Insecurity (-3.5%) – Lower stock investments and savings correlate with higher anxiety risk.
3. Community Stability (-1.9%) – Longer residence in a stable community reduces anxiety risk.
4. Sleep Disorders – Insomnia and irregular sleep patterns contribute to anxiety severity.
5. Social Isolation – Individuals with fewer social connections are more prone to anxiety.
6. Job Security Concerns – Employment instability increases anxiety levels.
7. High Medical Expenses – Individuals with chronic health conditions face higher anxiety rates.
8. Substance Use – Higher alcohol and drug use correlate with anxiety disorders.
9. Physical Activity Levels – Lack of exercise increases risk.
10. Diet and Nutrition – Poor eating habits contribute to mental health instability.



Defining the Dependent Variable:

The dependent variable in our model is the presence of moderate to severe anxiety, determined by diagnostic criteria and self-reported symptoms.

Understanding the Independent Variables:

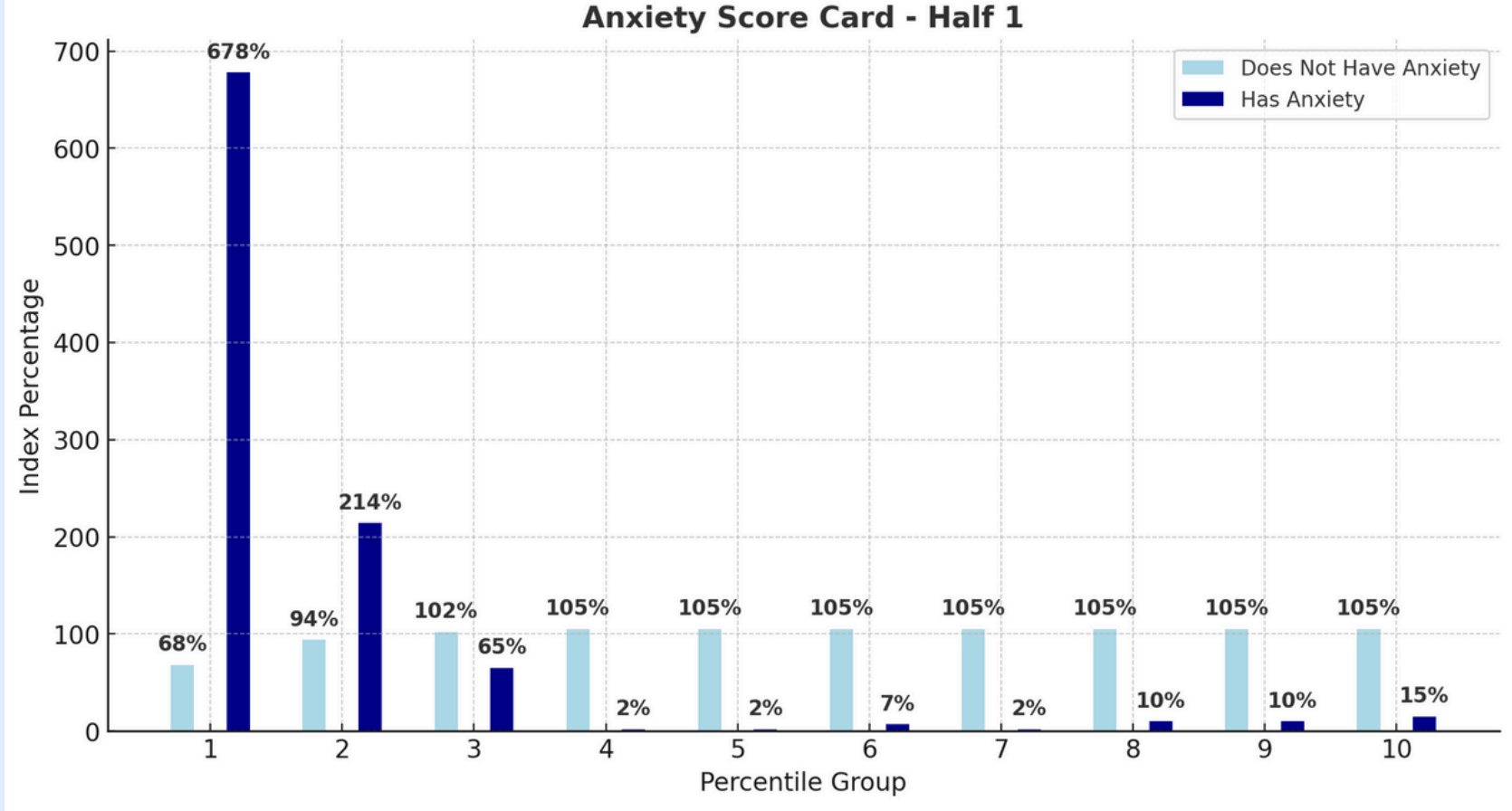
The model incorporates key demographic, health, and financial factors contributing to anxiety risk. We can assess which factors influence anxiety severity most by identifying the strongest predictors.

Identifying Our Targeted Group (Internal Validity)

Our final regression model achieved an R^2 value of 0.262, explaining 26.2% of the variation in anxiety risk.

GRAPH 1: ANXIETY SCORE CARD – HALF 1 (TRAINING DATA)

- **Decile 1 shows the highest concentration of anxiety cases (678%).**
- **Anxiety prevalence significantly drops after the 3rd decile.**
- **This validates our model's ability to rank individuals by anxiety risk.**

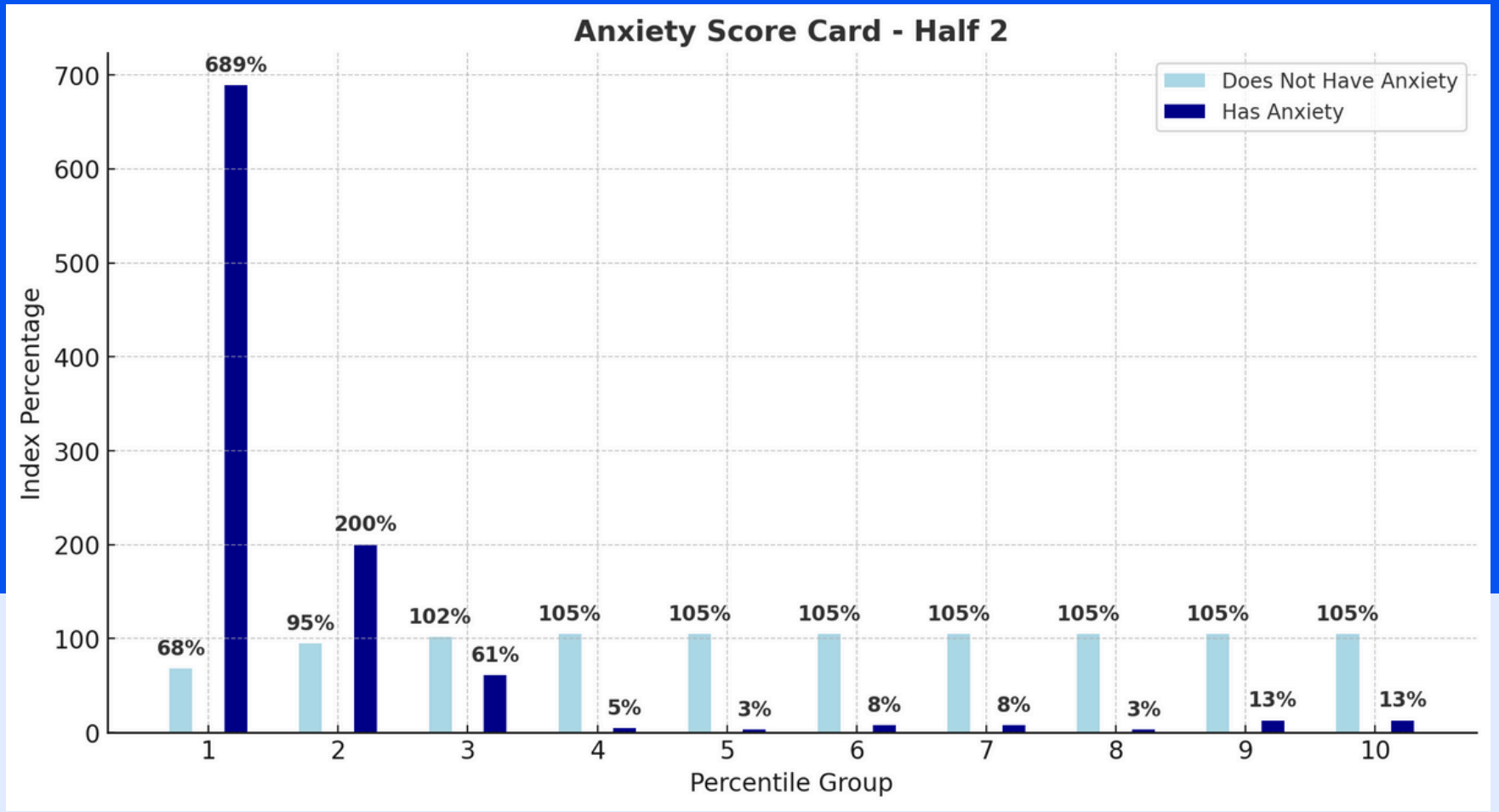


TESTING PREDICTIVE STRENGTH: HALF 2 (EXTERNAL VALIDITY)

In the testing phase, we applied the trained model to an independent dataset to confirm its predictive power. The results showed that our model generalizes well, reinforcing its reliability.

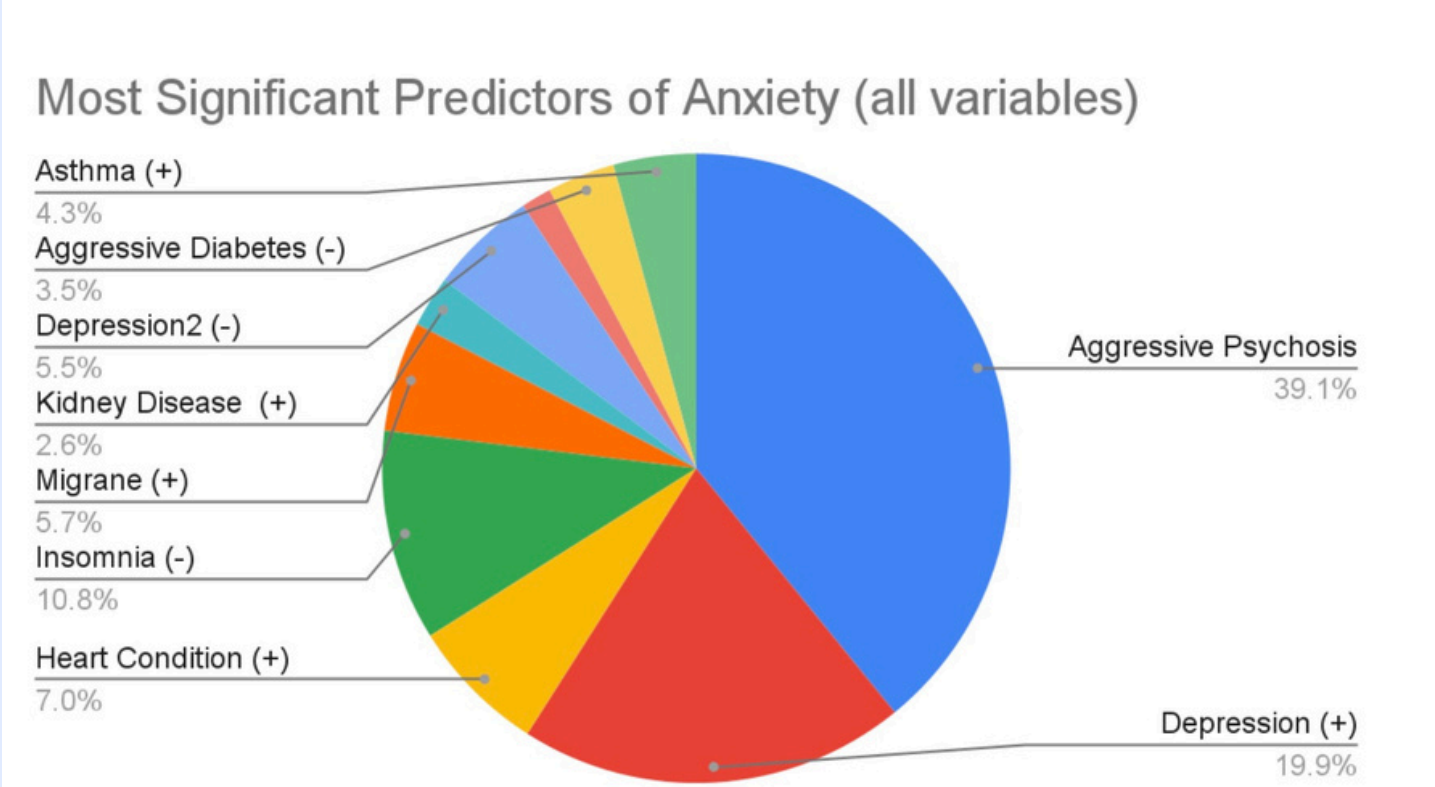
GRAPH 2: ANXIETY SCORE CARD – HALF 2 (TESTING DATA)

- **Model generalizes well to new data, confirming external validity.**
- **Anxiety cases are concentrated in the top deciles, proving predictive accuracy.**

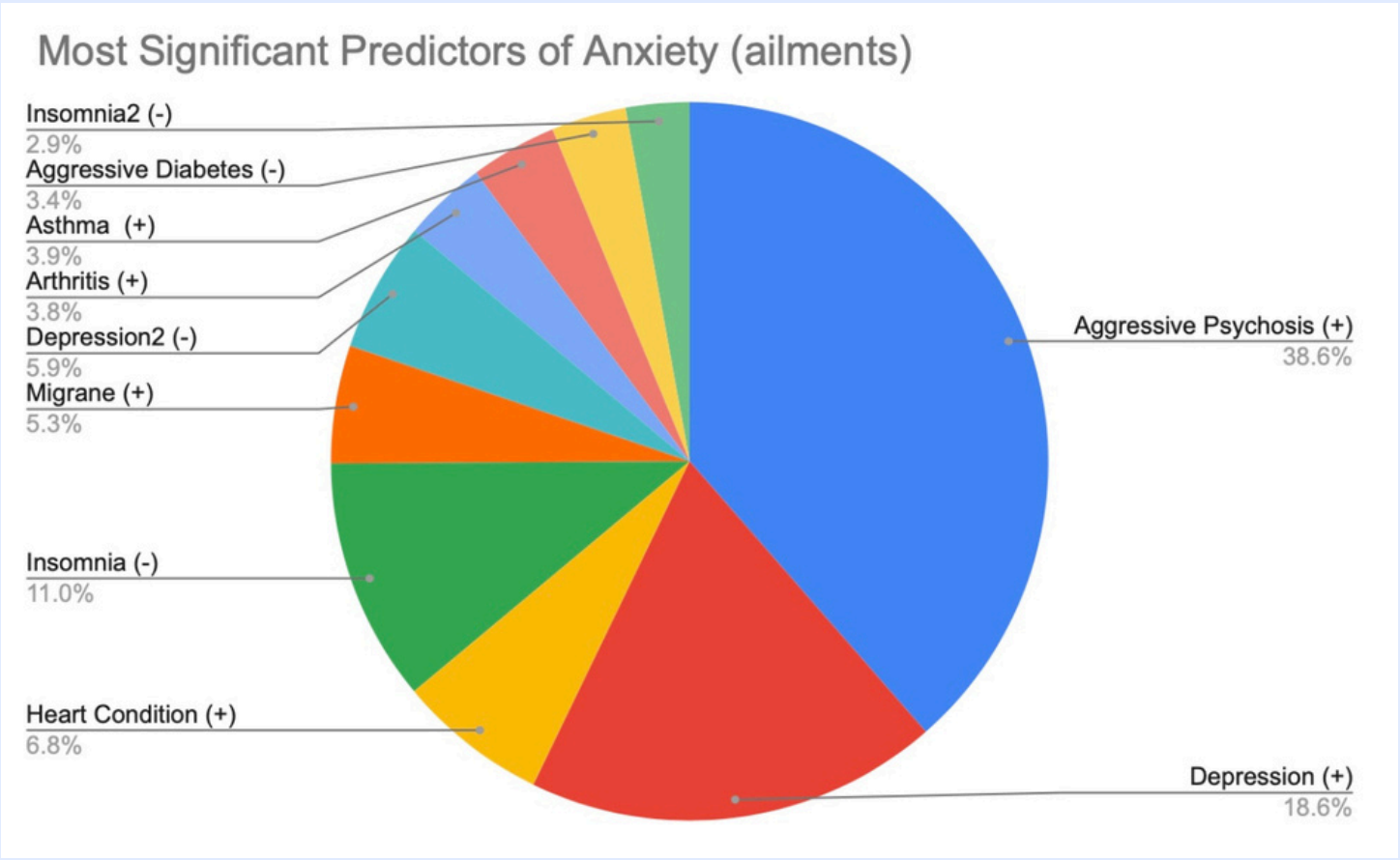


USING STEPWISE, WE CAN DETERMINE THE MOST RELEVANT VARIABLES IN PREDICTING AND IDENTIFYING THOSE SUFFERING

MOST SIGNIFICANT PREDICTORS OF ANXIETY (ALL VARIABLES)



MOST SIGNIFICANT PREDICTORS OF ANXIETY (AILMENTS)



PRACTICAL APPLICATIONS OF THE MODEL

Healthcare Providers

- Early identification of high-risk patients for targeted interventions.
- Personalized treatment plans based on key risk factors.

Employers & Workplace Mental Health

- Data-driven wellness programs to reduce absenteeism.
- Strategies to reduce workplace stress and anxiety triggers.

Public Policy & Resource Allocation

- Mental health funding directed toward high-risk communities.
- Policies addressing job security, financial stability, and community support.

Tech & AI-Driven Mental Health Tools

- Predictive models integrated into mental health screening apps.
- AI-driven therapy bots for early detection and intervention.

CONCLUSION

This study demonstrates how predictive analytics can revolutionize mental health screening. By integrating demographic, health, and financial data, we can proactively identify anxiety risk and implement targeted interventions before conditions worsen. Future improvements include incorporating lifestyle data, wearable health monitoring, and genetic predispositions to refine predictive accuracy further.

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