GAMING HABITS AND GENERALIZED ANXIETY DISORDER

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Introduction

Stakeholder:

- Healthy Gamer (HG) is a non-profit organization that aims to improve the mental wellness of the "internet generation" through evidence-based interventions, meditation, and psychiatric principles.

Business Problem

- Healthy Gamer (HG) is interested in developing a coaching program for parents with anxious teens. They want to understand what strategies to recommend to parents to address the severity of their children's anxiety.

Strategy

- Develop a predictive model to classify severity of children's anxiety and explain the influence of predictors to suggest what actions to recommend to parents

Method

Center for Open Science

- Data comes from an 2017 online survey of 13,464 users (male = 94.3%, female = 5.2%, other = 0.38%) between 18 and 63 years old.
- **Participant Demographics**
  - Age and Gender
  - Country of Origin / Residence
- **Gaming Habits**
  - Main game played & Platform
  - Hours played
  - Motivation & Sociality
- **Validated Psychometric Scales**
  - Social Phobia Inventory (SPIN)
  - **Generalized Anxiety Disorder Screener (GAD-7)**
  - Satisfaction with Life Scale (SWL)
  - Single Item Narcissism Scale (SINS)

Class Imbalance

Distribution of anxiety severity
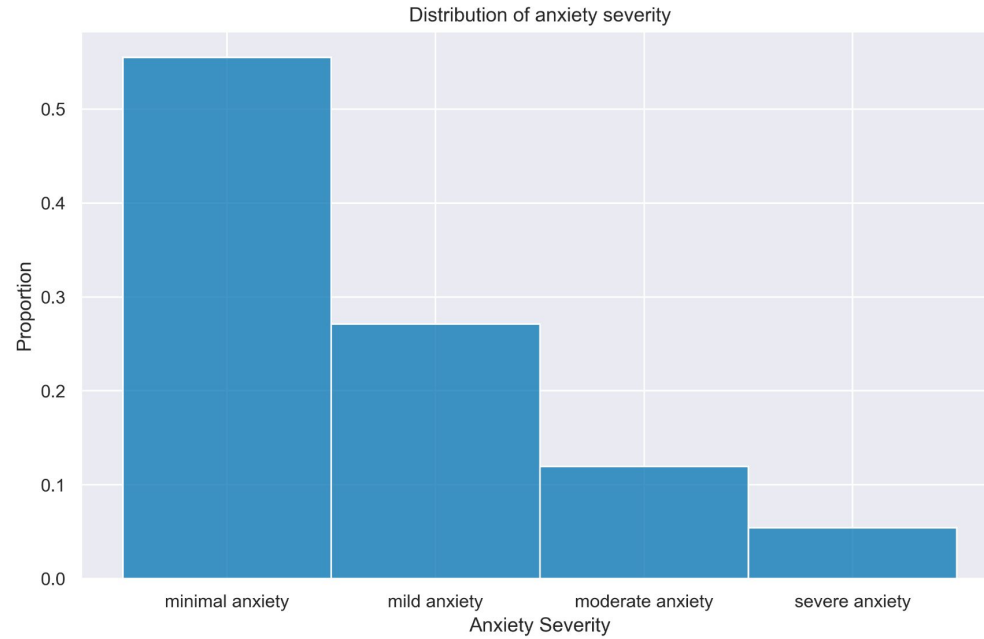
MODEL EVALUATION

Classification Metrics for Multiclass Classification:

(e.g., where mild anxiety = positive class and all other classes = negative)

- **Precision (weighted avg)**

  - *"Across all predictions for those with mild anxiety, how many were correct?"*

- **Recall (weighted avg)**

  - *"Of those with mild anxiety, how many did our model correctly assign?"*

- **F1-Score (weighted avg)**

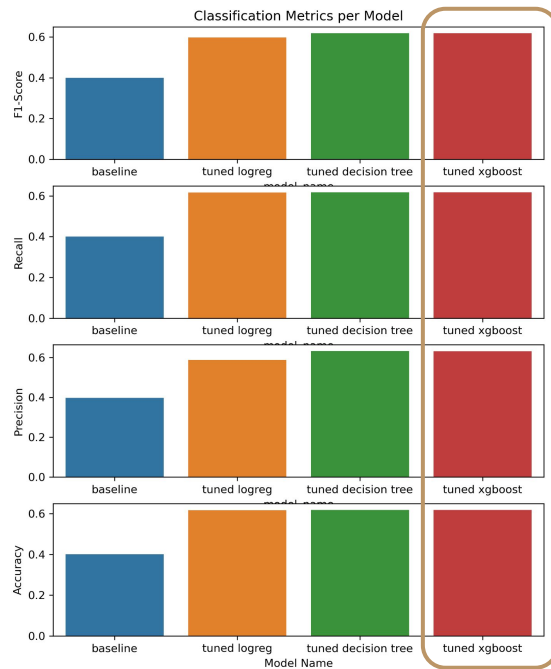 - weighted f1-score across each class accounting for class imbalance

Model Evaluation

Baseline Model (Dummy Classifier)
- accuracy = 40%
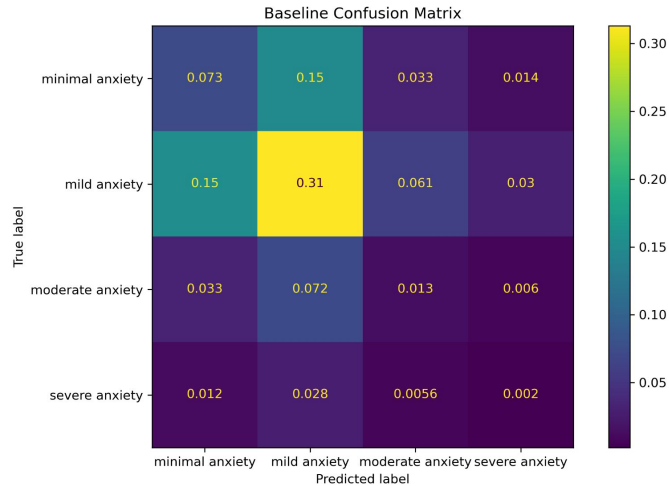- **precision= 40%**
- **recall = 40%**
- **f1-score = 40%**

Best Model (Tuned XGBoost)
- accuracy = 62%
- **precision= 63%**
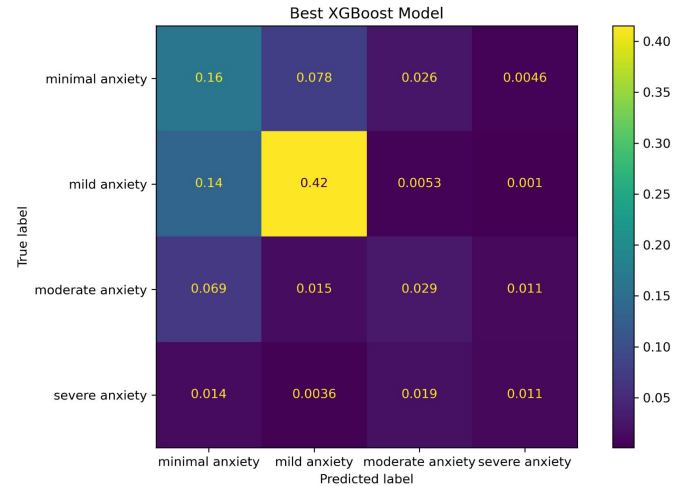- **recall = 61%**
- **f1-score = 61%**

Baseline Model Comparison

Dummy Classifier Model

XGBoost Model
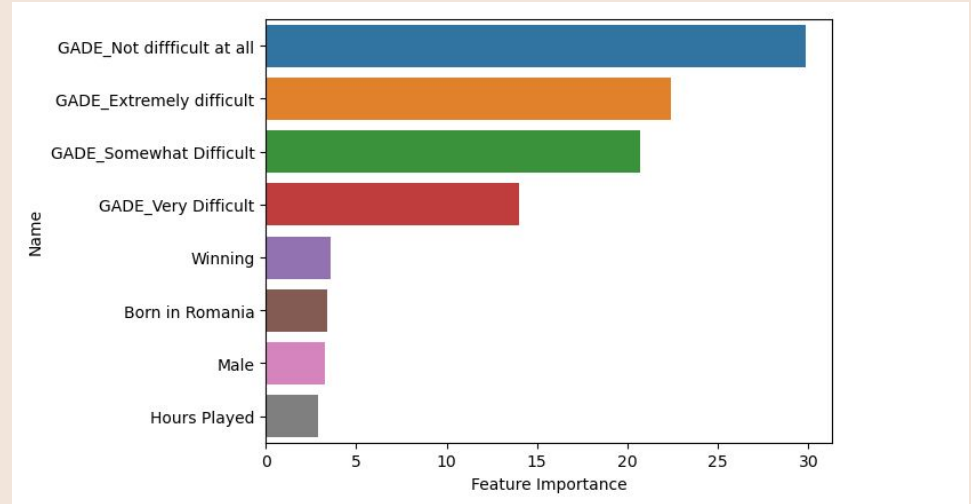
Relative Feature Importance

Predicting Anxiety Severity

Strong Impact:

- **GADE Responses**
- GADE' was an optional item assessing how difficult anxious behavior patterns affected work, self-regulation, and interpersonal relationships

Minor Impact:

- **Motivation for playing was winning**
- **Male**
- **Hours played**

Key Recommendations & Actions

Recommendation #1	Action #1
Focus on understanding how anxious attitudes affect different aspects of a child's life (e.g., professional settings, interpersonal or familial relationships)	Parents working with children to develop sustainable routines adapted around gaming habits
Recommendation #2	**Action #2**
Focus on understanding a child's motivation for gaming(e.g., winning) and how it relates to patterns of anxious behaviors	Parents communicating with their children about motivations behind gaming; compassionate relationships
Recommendation #3	**Action #3**
Monitor hours played per week and how it relates to patterns of anxious behaviors	Parents setting boundaries and limits on hours spent gaming; modeling healthy patterns of tech use

Future Possibilities

- **Predictive power in determining the severity of anxiety can be improved with more recent and aggregated data across different demographics.**

- **Explore other forms of data such as:**

  - **Comorbidity with other mental illness -** anxiety levels can be comorbid with other mental illnesses (e.g., depression)

  - **Interactions between predictors -** motivation and sociality (e.g., winning and playing with online friends)

  - **Game Characteristics -** genres (e.g, first person shooter, action role playing, etc.)

THANKS!

Questions?

Github: Repository Link
Linkedin: Kevin's Linkedin