

# AI-augmented Personalized Medication Recommendation for Neurodivergent Children

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## Background

While medications can improve **outcomes** in neurodivergent children, there are no biological **markers** to guide selection. Determining the appropriate medication remains a significant clinical **challenge**.

## Objective

Implement an AI-based decision model to generate medication recommendations for stimulant, antidepressant, and antipsychotic drug classes. Additionally, identify and evaluate biases in this model.

## Method

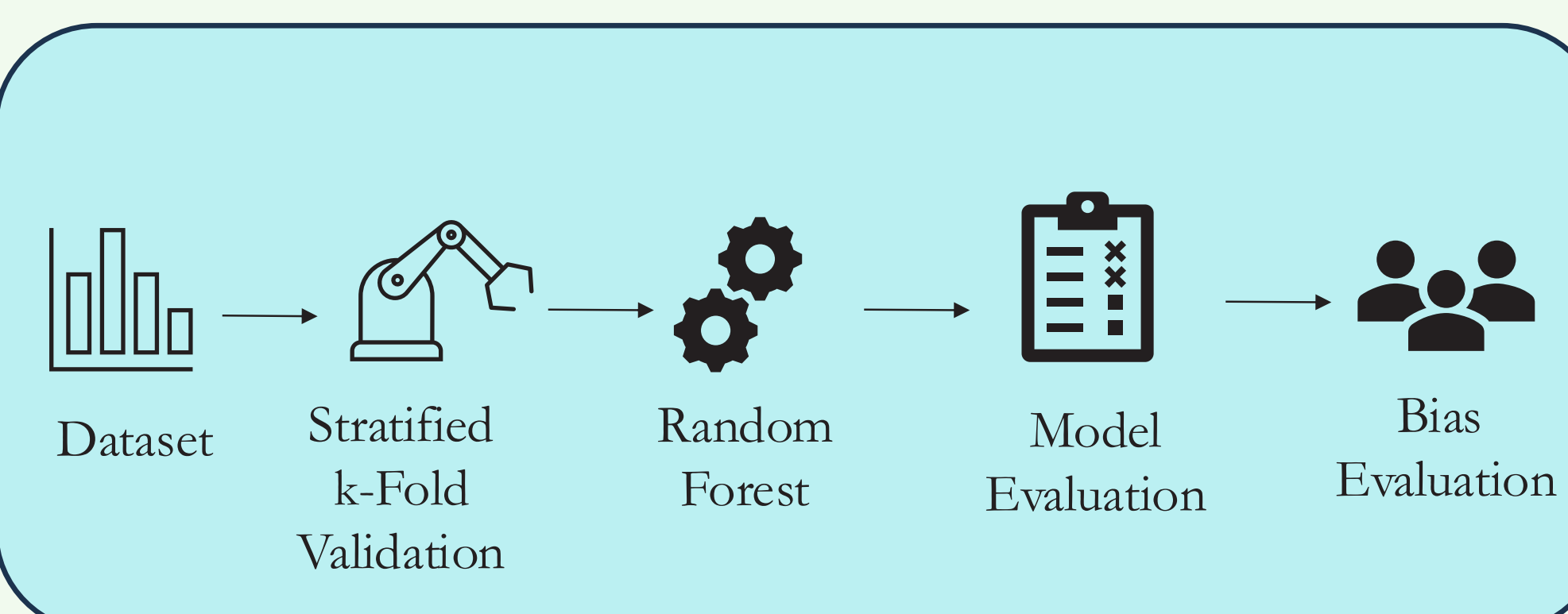
### Datasets

#### Holland Bloorview Psychopharmacology Program (PPP)

n = 277    Mean age = 10.50 years    83.75% male    26% intellectual disability

#### Province of Ontario Neurodevelopmental Disorder (POND)

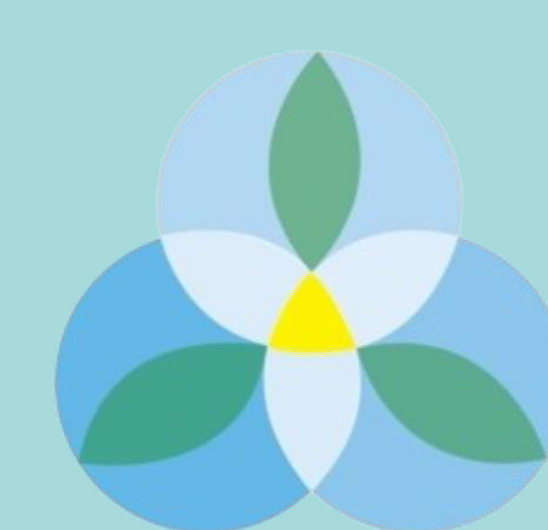
n = 499    Mean age = 10.82 years    68.73% male    73.34% white    8.82% intellectual disability



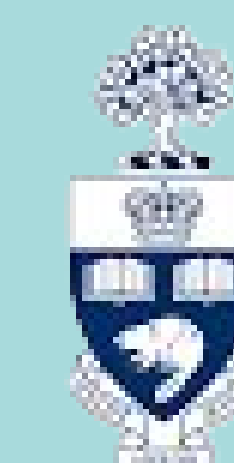
# AI demonstrates potential in the medication prescription of neurodivergent children



# Holland Bloorview Kids Rehabilitation Hospital



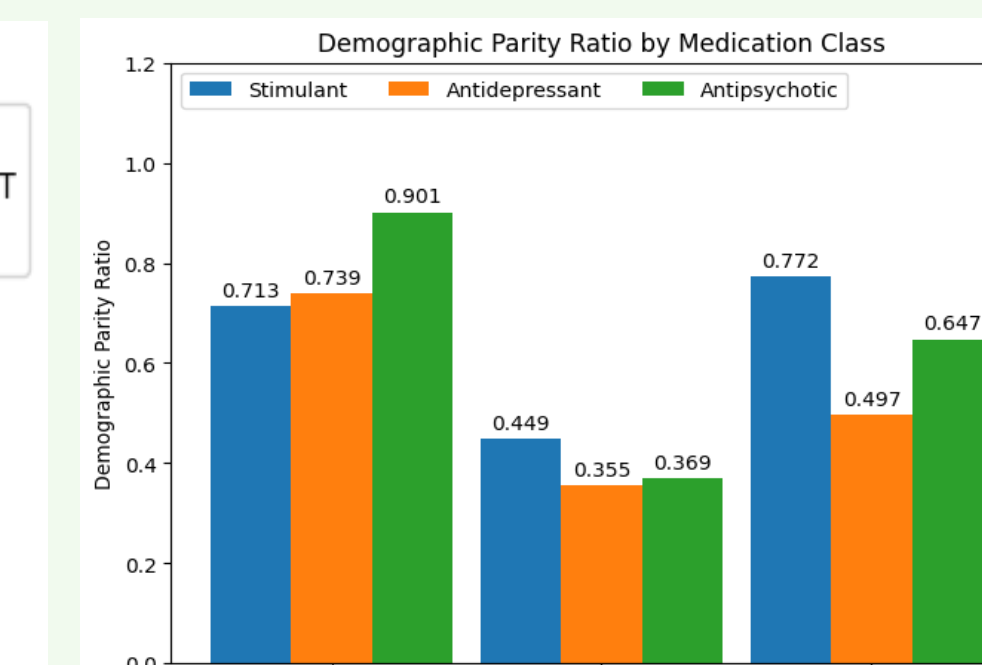
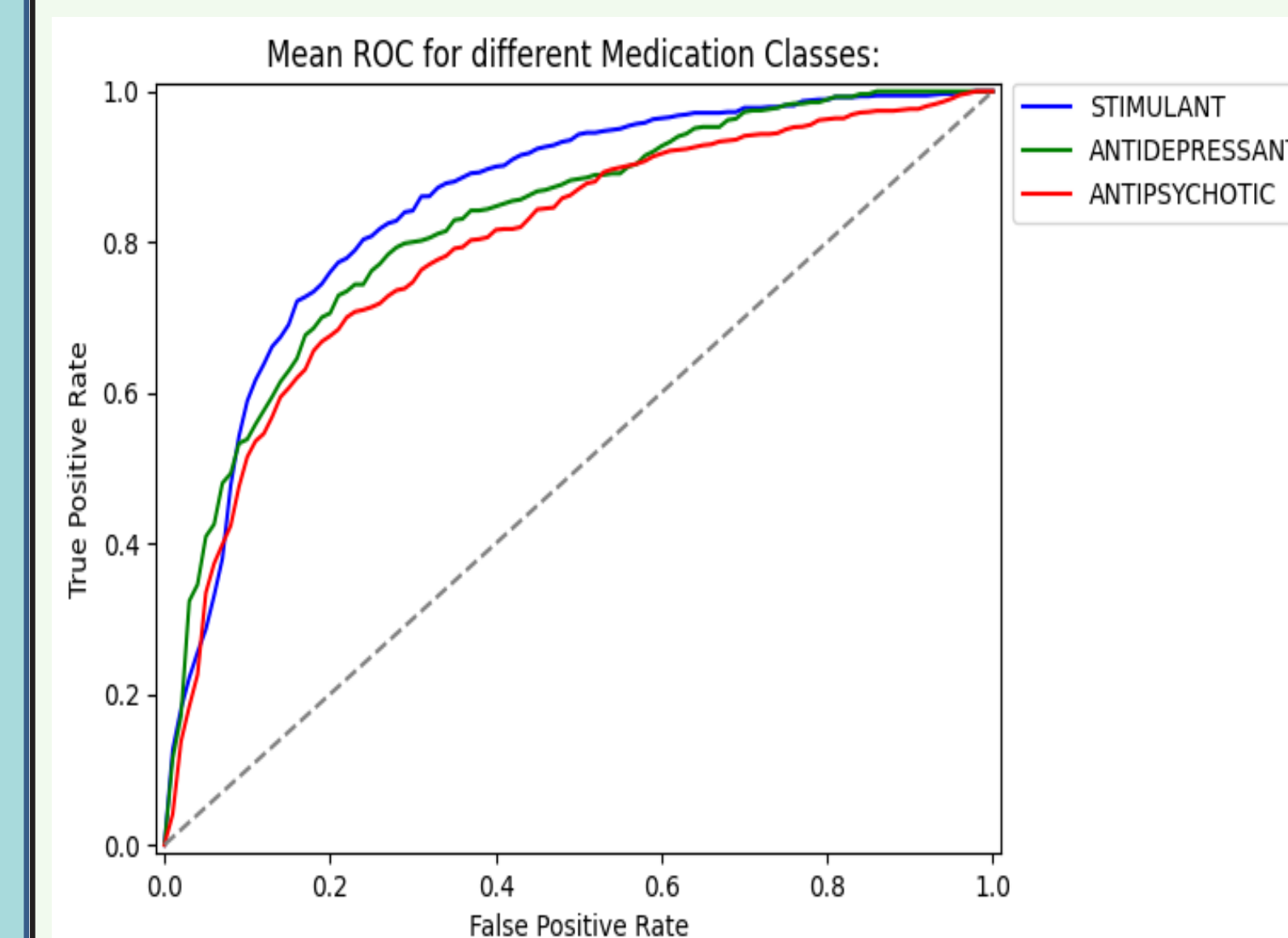
POND NETWORK  
Province of Ontario Neurodevelopmental Disorders



UNIVERSITY OF TORONTO

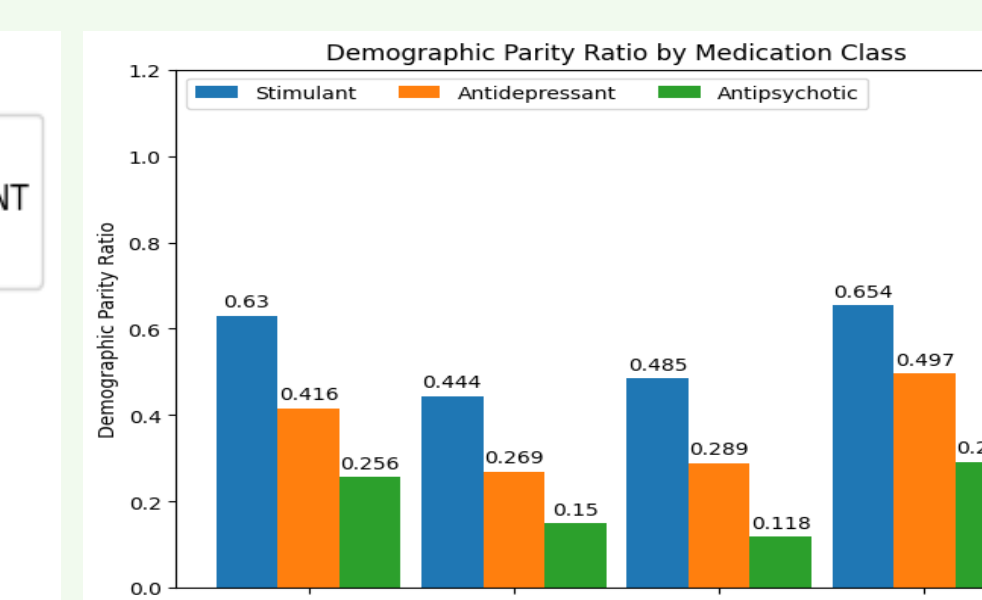
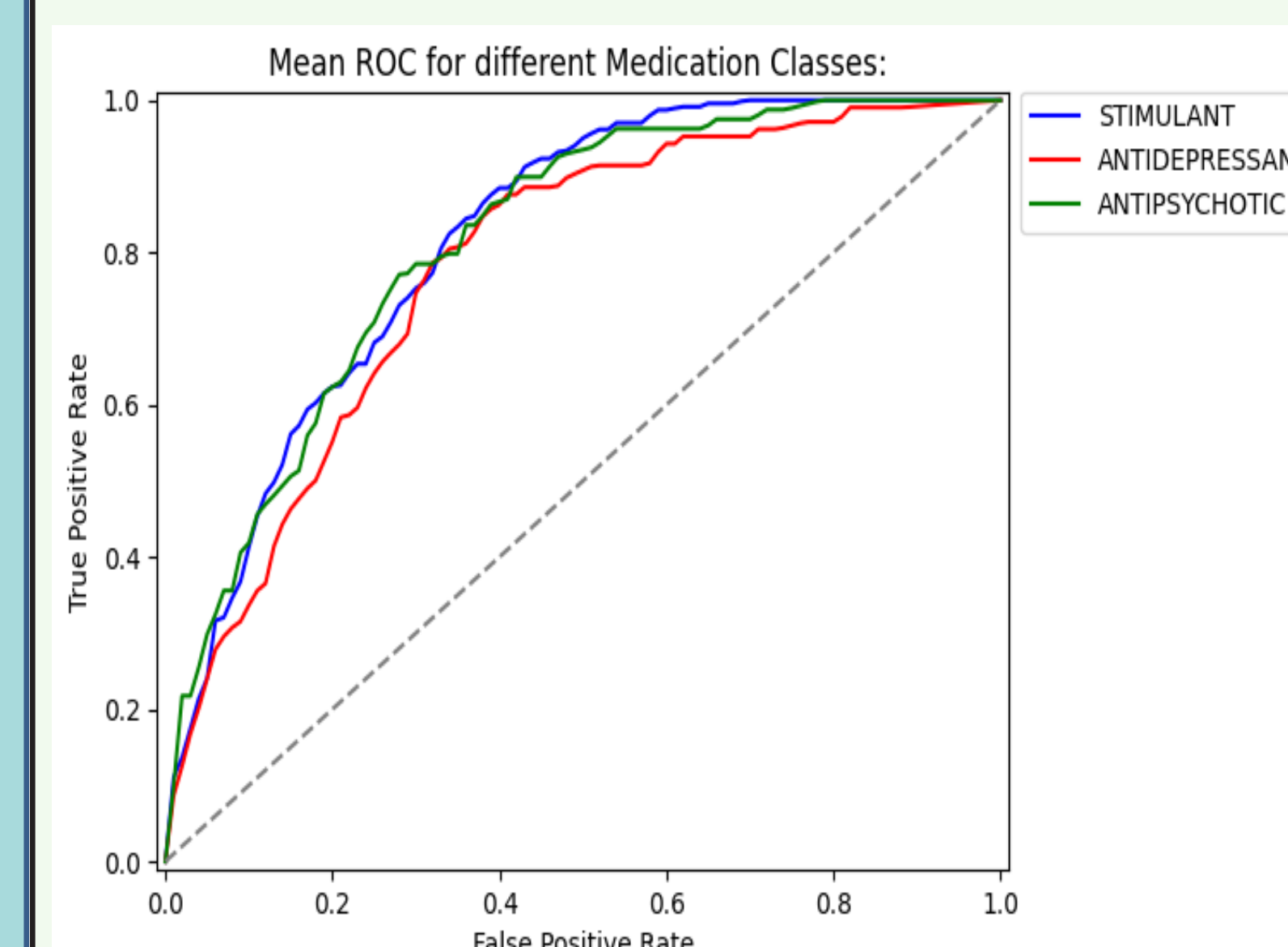
## Results

### PPP



**Best Predictive Features:**  
Stimulant: Adhd  
Antidepressants: Anxiety  
Antipsychotics: Age

### POND



**Best Predictive Features:**  
Stimulant: Adhd  
Antidepressant: Age  
Antipsychotics: ABAS Social Composite Score

Good to excellent ROC-AUC (> 0.75) across all drug classes

Significant biases present, particularly for intellectual disability.

## Conclusion & Relevance

Model demonstrates good to excellent performance in predicting medication prescription of neurodivergent children. Additionally, significant biases are found within the model.

These findings demonstrate...

**Potential** for AI medication prescription

**Reduced** trial-and-error and risk

**Avenues** for future research

Next Steps

Identify **interest** from clinicians and families

Development of **bias-aware** models

Prediction of **specific** medications