

# Developing a predictive model for conversion of Age-Related Macular Degeneration

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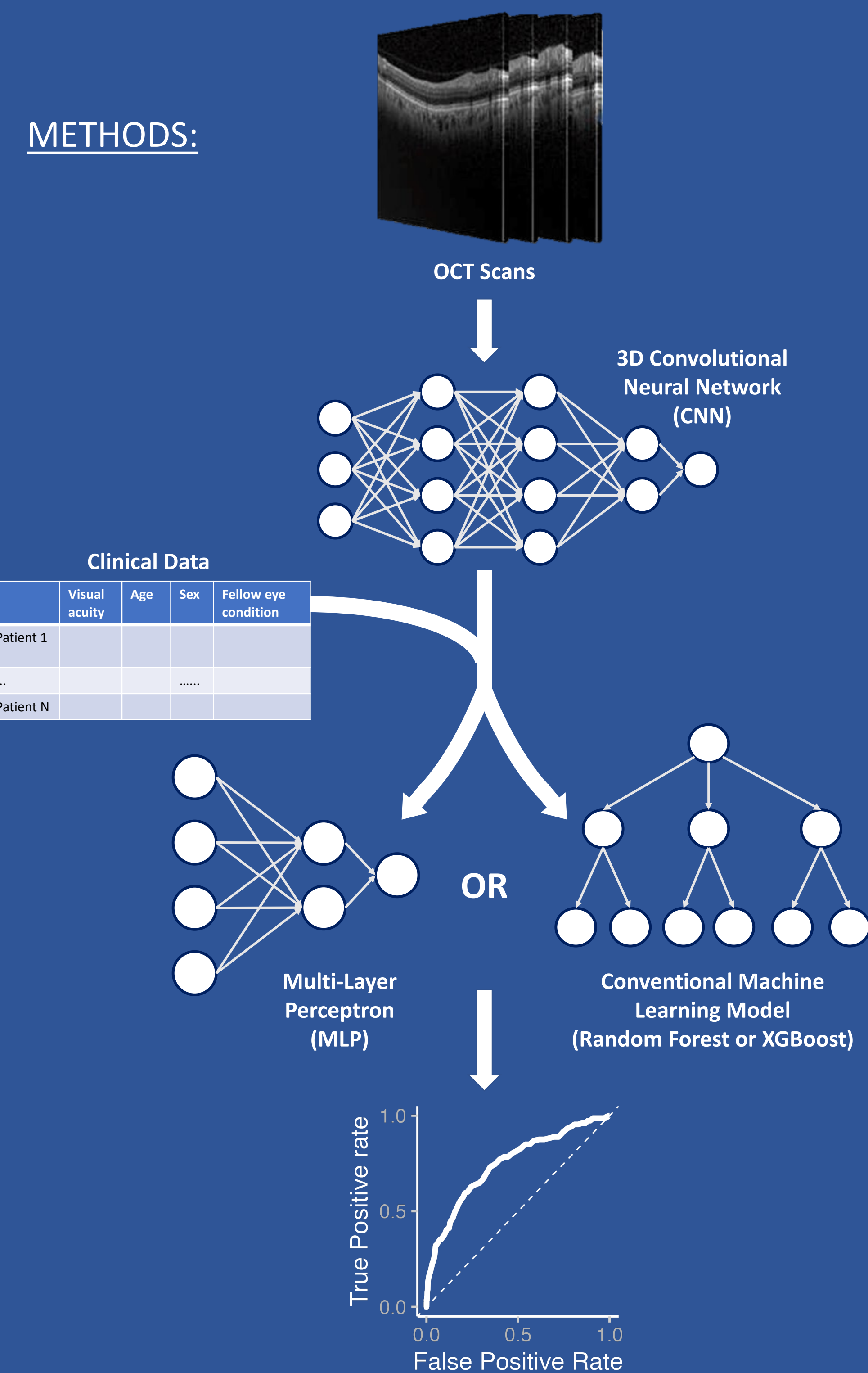
## AGE RELATED MACULAR DEGENERATION (AMD):

- Leading cause of vision loss in persons over 50
- **300 million people** will have AMD globally by 2040 [1]
- All patients start with the dry form and some will convert to **wet AMD which causes central vision loss**
- Optical Coherence Tomography (OCT) scans are used to diagnose and manage the disease [2]
- **Early intervention** is crucial for treatment success [1]

**PROBLEM:** Retinal specialists can only provide average risk estimates for conversion from dry to wet AMD over 5 years; **these estimates are not fine-grained enough to provide meaningful, actionable information.**

**NEED:** Clinicians need a way to predict if a patient will convert to wet AMD prior to their next screening, which is typically every 6 months. This will allow for earlier intervention, leading to improved treatment outcomes.

## METHODS:



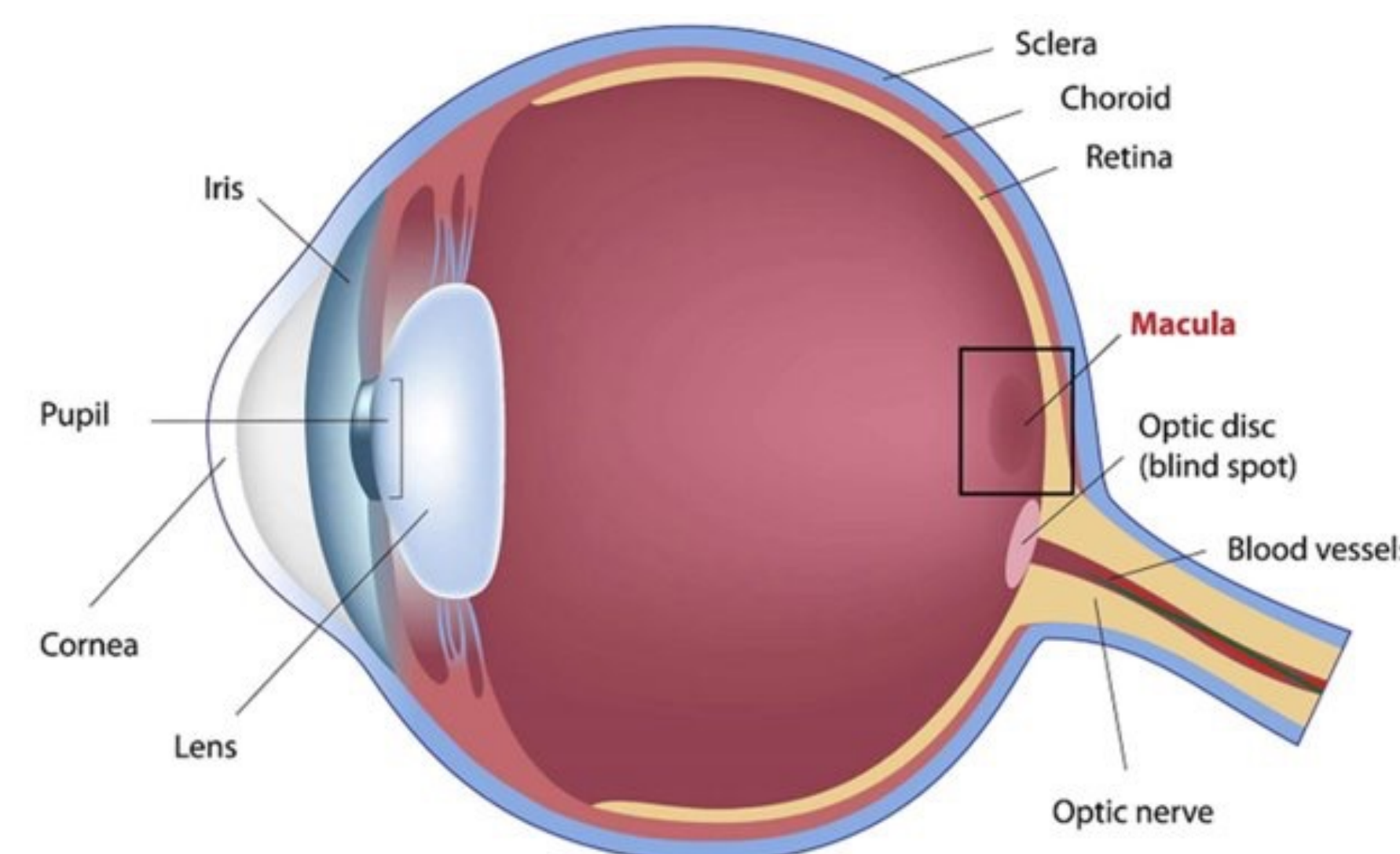
## CONCLUSIONS:

- Our models can provide clinically actionable predictions for conversion to wet AMD
- Clinical data provides a slight increase in predictive power over OCT scans alone
- This framework can be used to predict treatment response

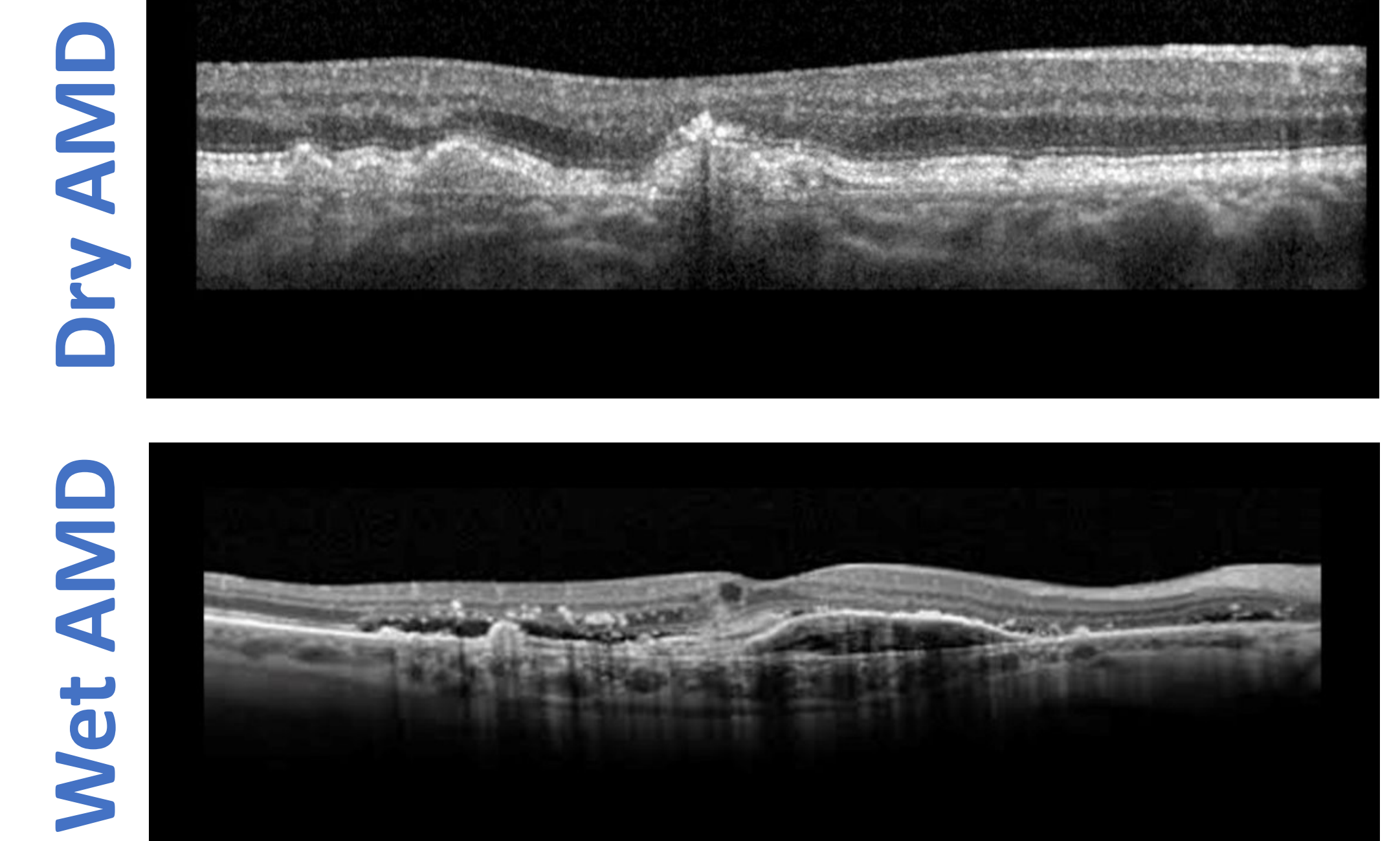
References: [1] Mitchell, *The Lancet*, 2018 [2] Yim, *Nat. Med.*, 2020

# Deep learning with multimodal data can predict imminent conversion to wet Age-Related Macular Degeneration.

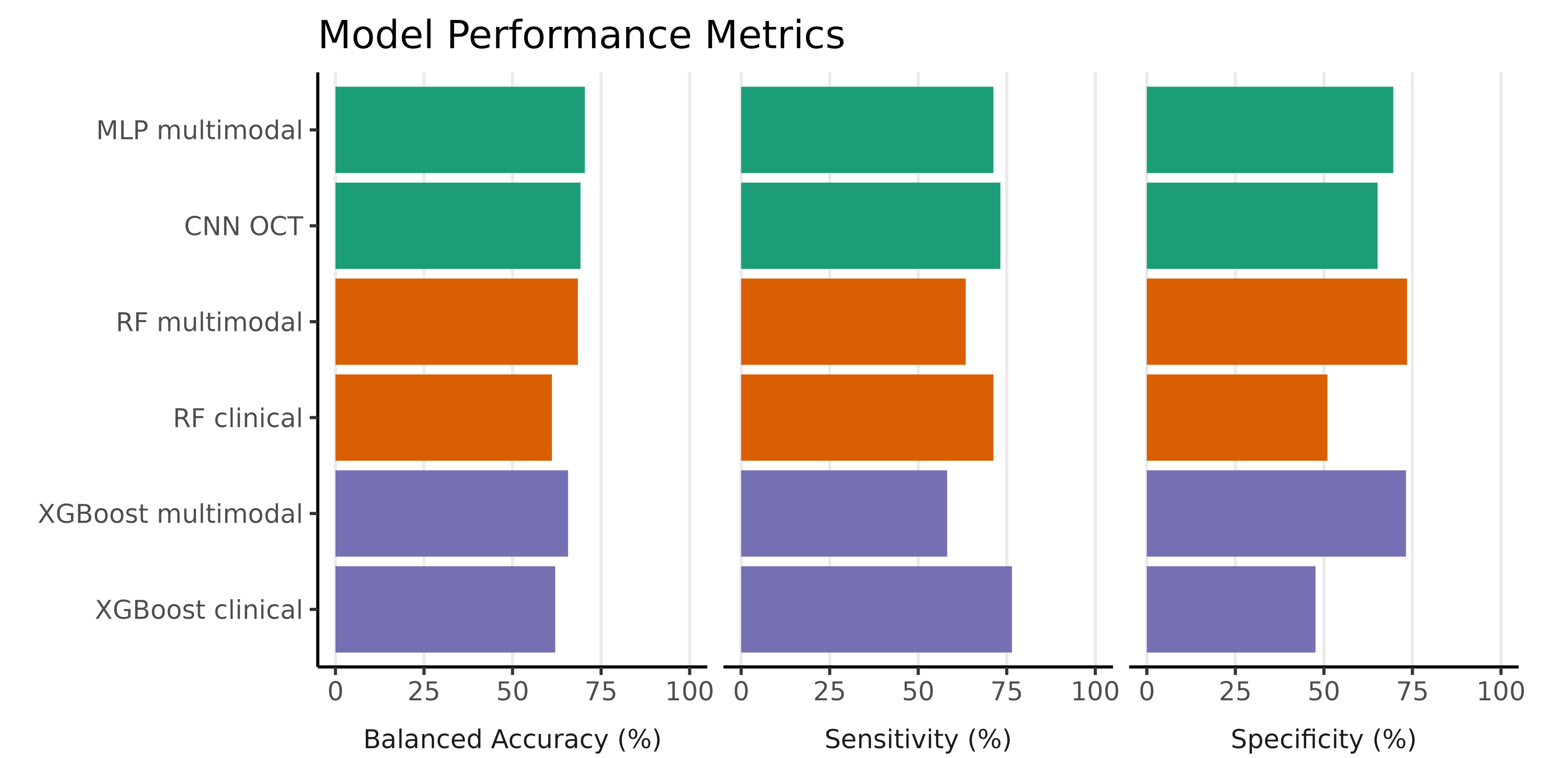
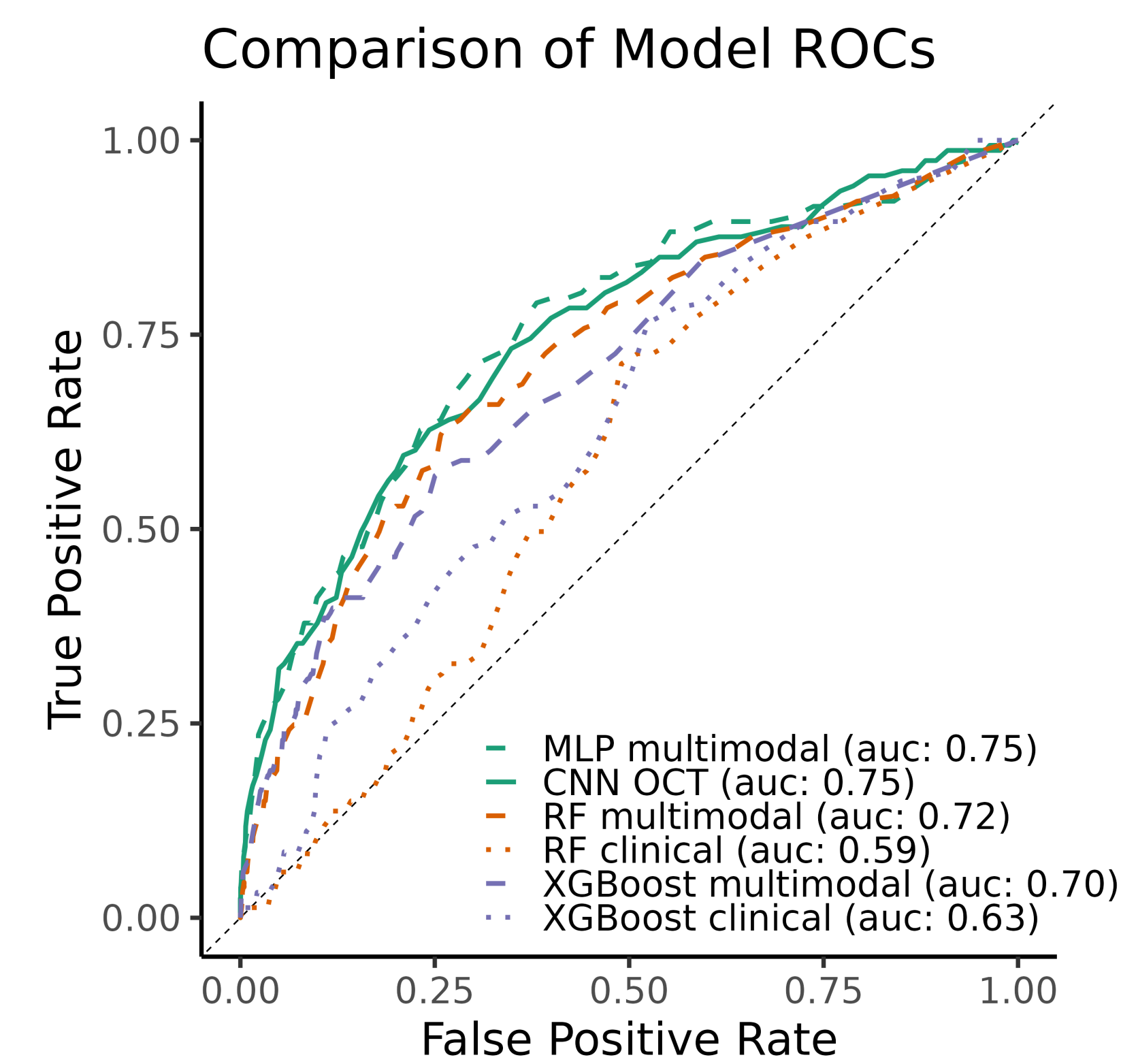
BIOMEDICAL  
ENGINEERING



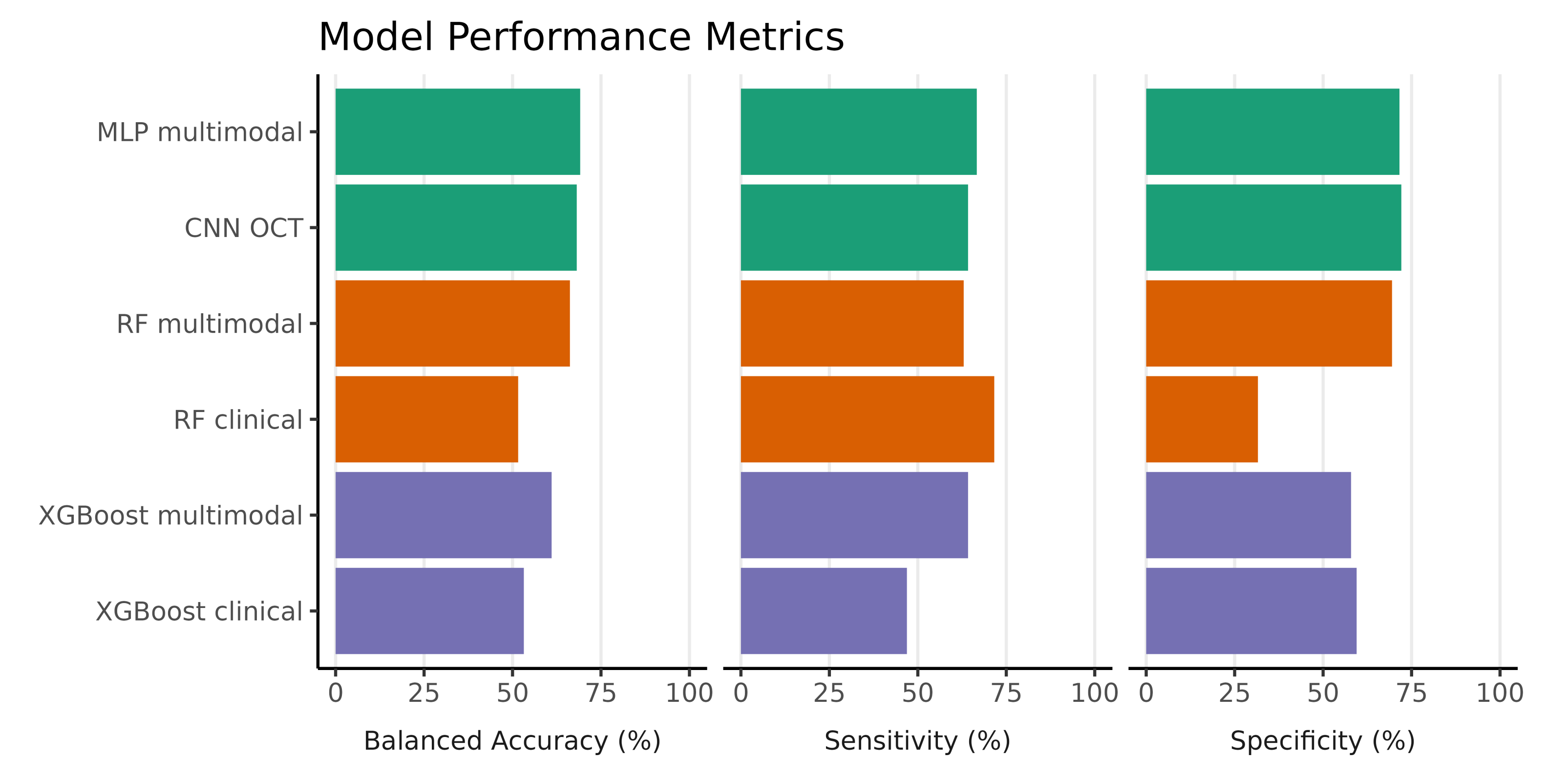
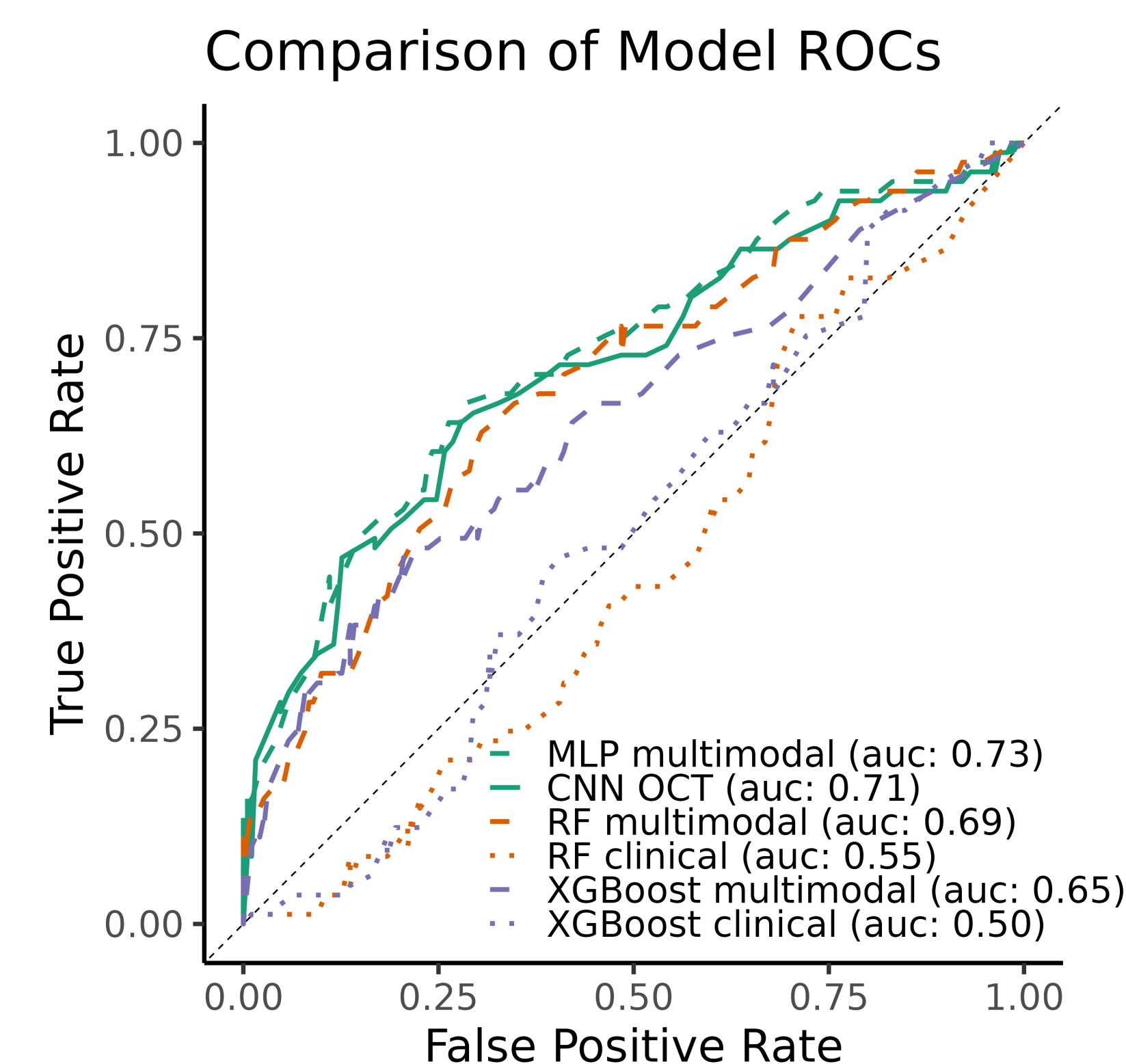
OCT Scans



Including multimodal data increases diagnostic specificity for predicting conversion.



Incorporating multimodal data in a neural network boosts performance for predicting first eye conversions.



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