

Development and Validation of Prediction Models for Mechanical Ventilation, Renal Replacement Therapy and Readmission in Covid-19 Patients

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INTRO:

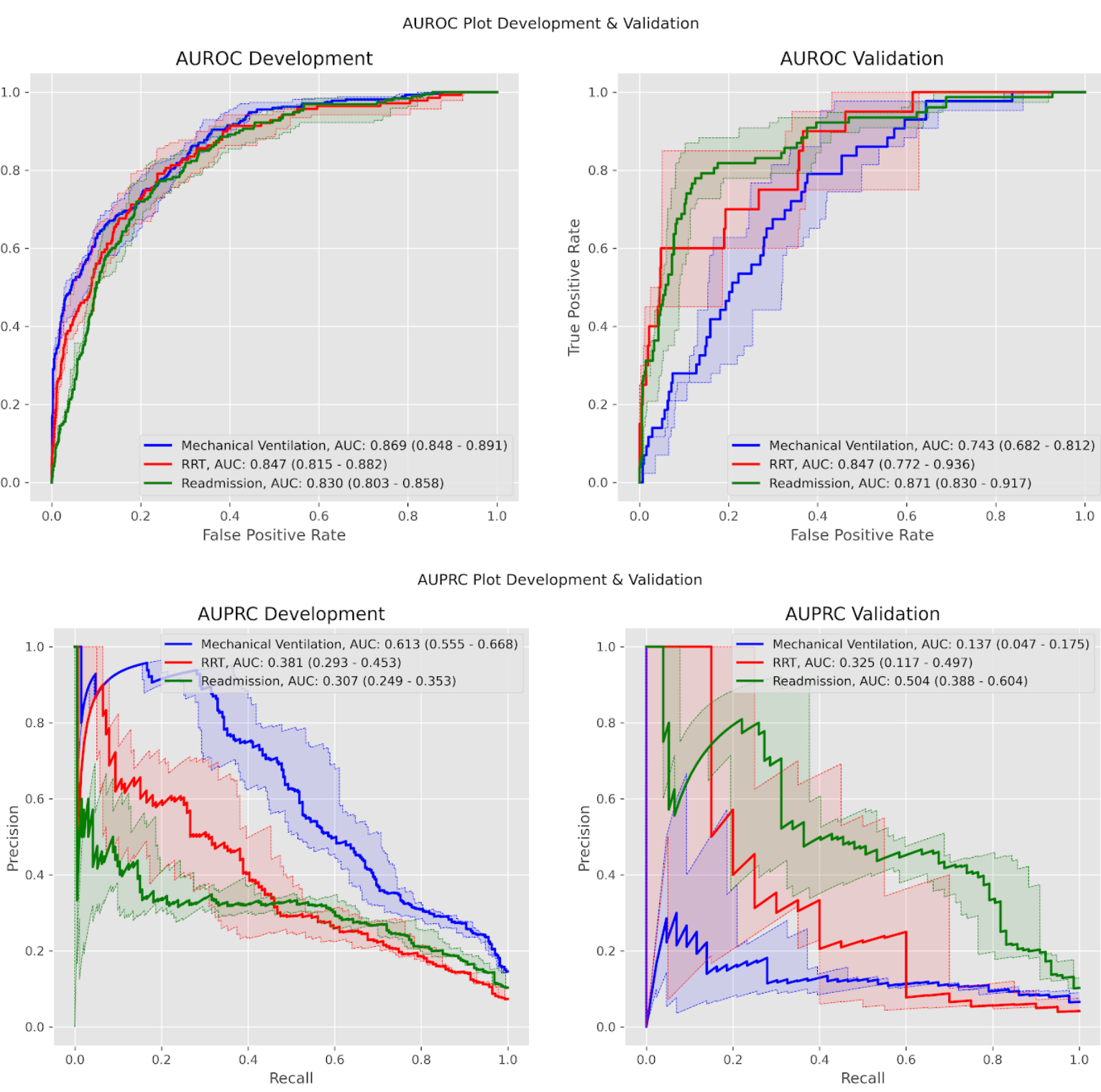
- Hospitalized COVID-19 patients are susceptible to resource-intensive outcomes such as mechanical ventilation, renal replacement therapy, and readmission.
- Predictive models targeting these outcomes could facilitate triage, resource-allocation, and decision support.

METHODS

- Clinical data for cohort of SARS-CoV-2 positive patients from Columbia University Medical Center (March to May)
- Features: demographics, smoking status, laboratory values, vital signs and conditions
- Three different models: XGBoost, Logistic Regression L1, Logistic Regression Elastic Net
- External validation on community hospital in the same health system.

RESULTS

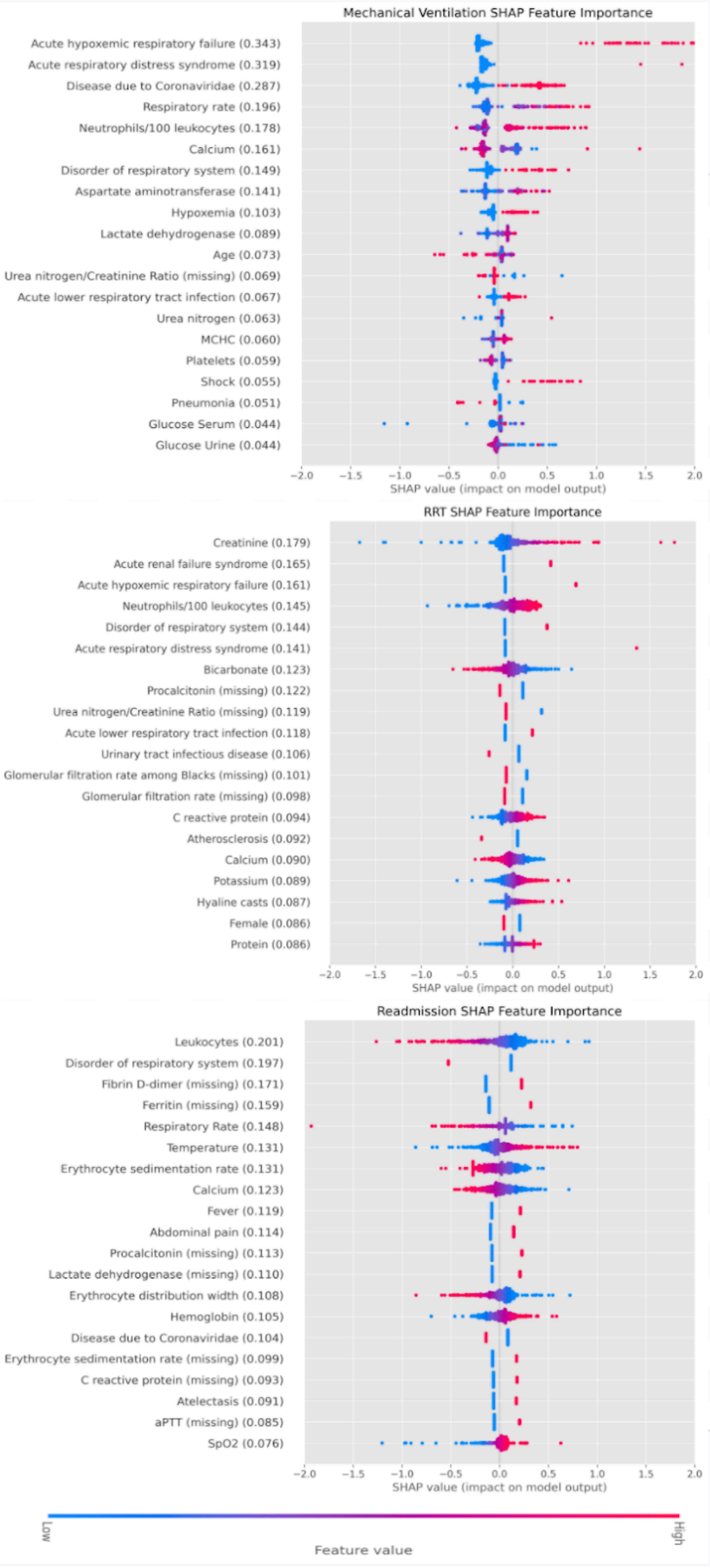
AUROC/AUPRC Curves



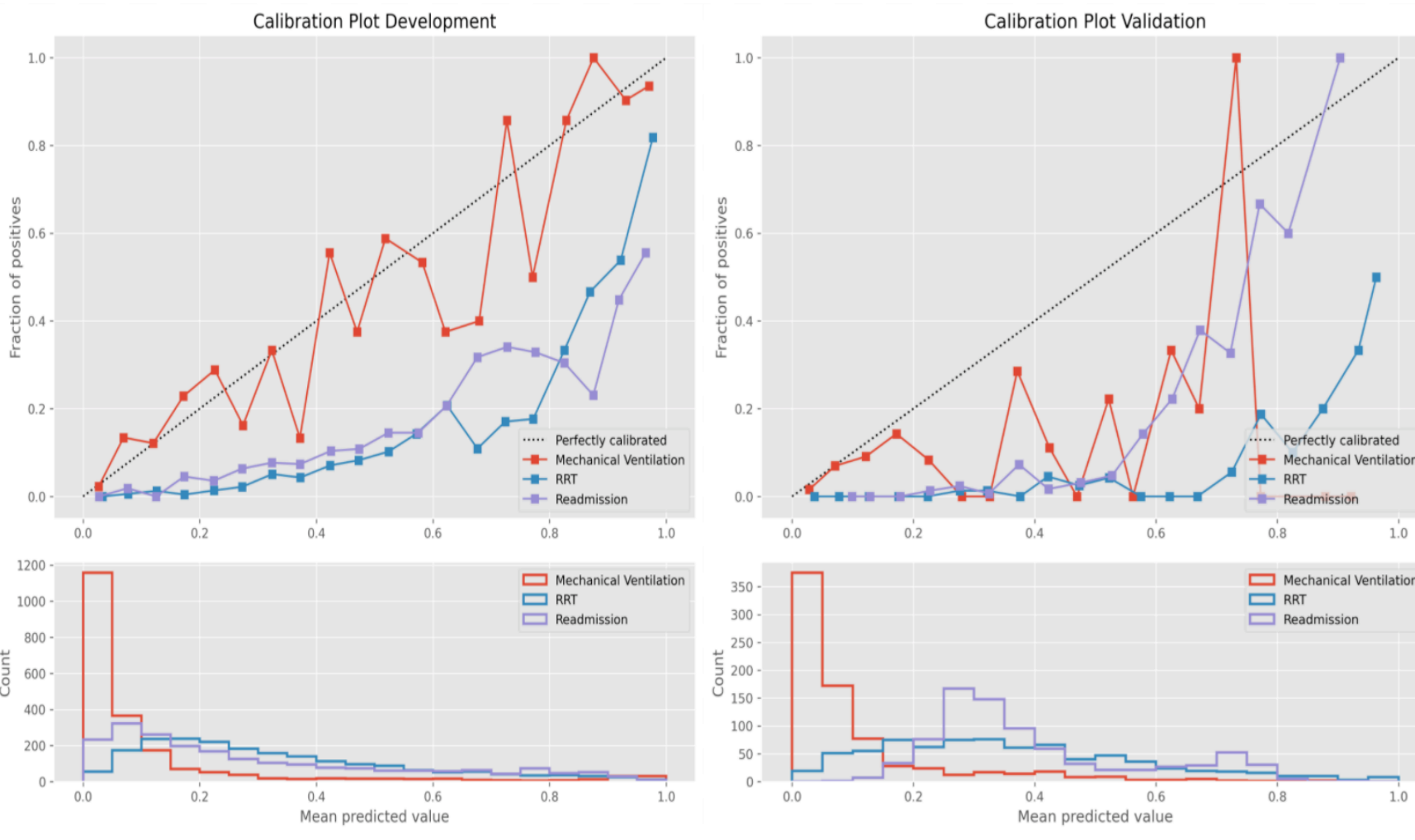
Routinely collected clinical variables enable development of *accurate, interpretable, predictive models* for Ventilation, Renal Replacement Therapy and Readmission in COVID-19 patients

More Results

Feature Importance Value SHAP Plot



Calibration Plots



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