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## INTRODUCTION

- The ability to **predict and prevent homelessness** has been an elusive goal.
- The purpose of this study was to **develop a prediction model that identified U.S. Army soldiers at high risk of becoming homeless** after transitioning to civilian life based on information available before the time of this transition.

## METHODS

- This prospective cohort study consisted of observations from **16,589 soldiers who were separated or deactivated from service** and who had previously participated in 1 of 3 baseline surveys of the Army Study to Assess Risk and Resilience in Servicemembers (Army-STARRS) in 2011–2014.
- A **machine learning model was developed to predict self-reported homelessness** in 1 of 2 Longitudinal Study (LS) surveys administered in 2016–2018 and 2018–2019.
- Predictors included **survey, administrative, and geospatial variables** available before separation/deactivation.

## RESULTS

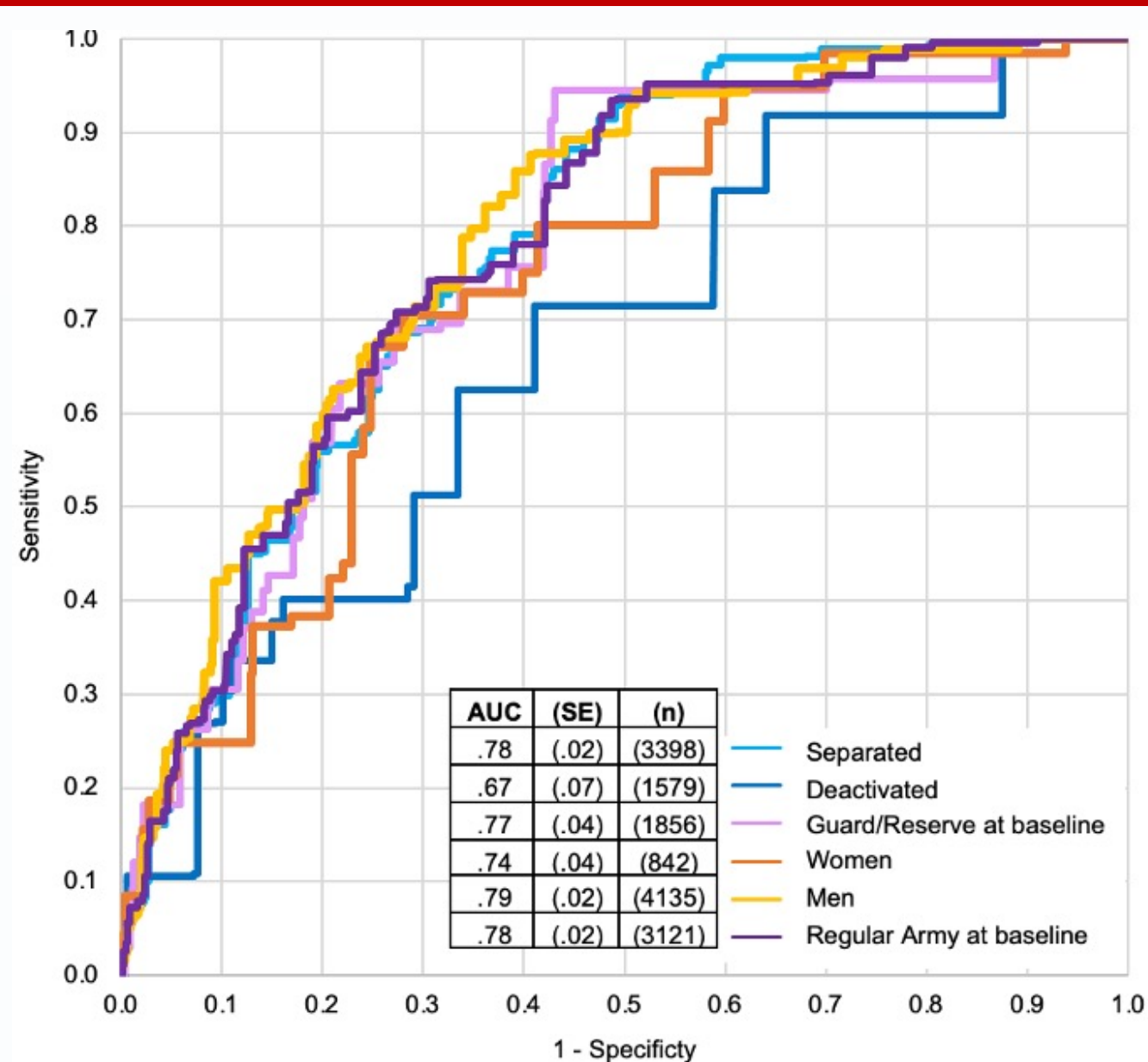


Figure 1. Receiver operating characteristic curves in subsamples of the test sample.

- The **12-month prevalence of homelessness was 2.9%** (SE=0.2%) in the total sample.
- The **area under the receiver (AUC) operating characteristic curve in the test sample was 0.78** (SE=0.02) for homelessness. AUC measures model accuracy (e.g. AUC 0.5 is as good as random chance, 1.0 provides perfect accuracy).

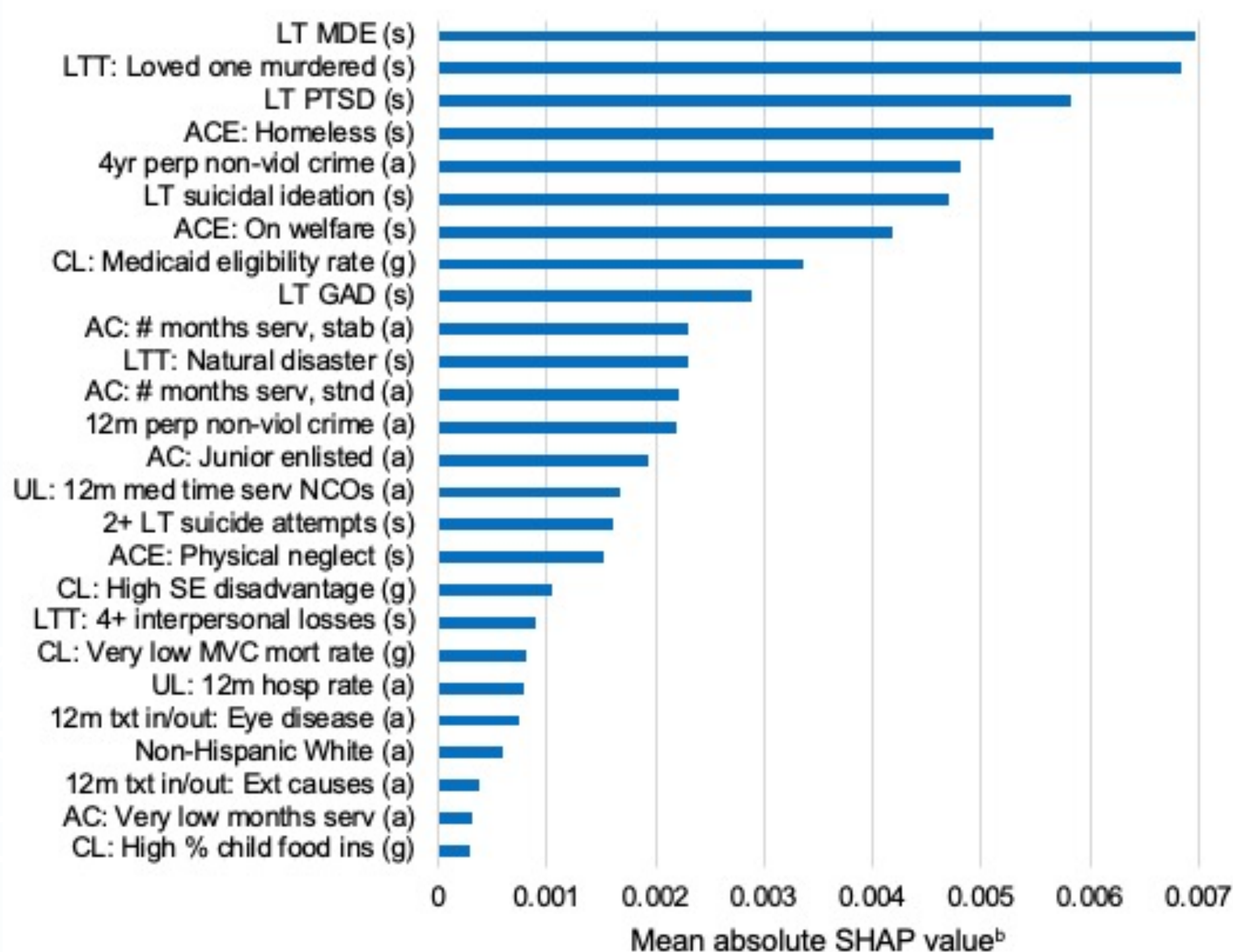


Figure 2. Predictor importance based on kernel SHAP values in the test sample (n=4,977). LT = lifetime; LTT = lifetime trauma; MDE = major depressive episode; GAD = generalized anxiety disorder; UL = unit level; NCO = noncommissioned officer

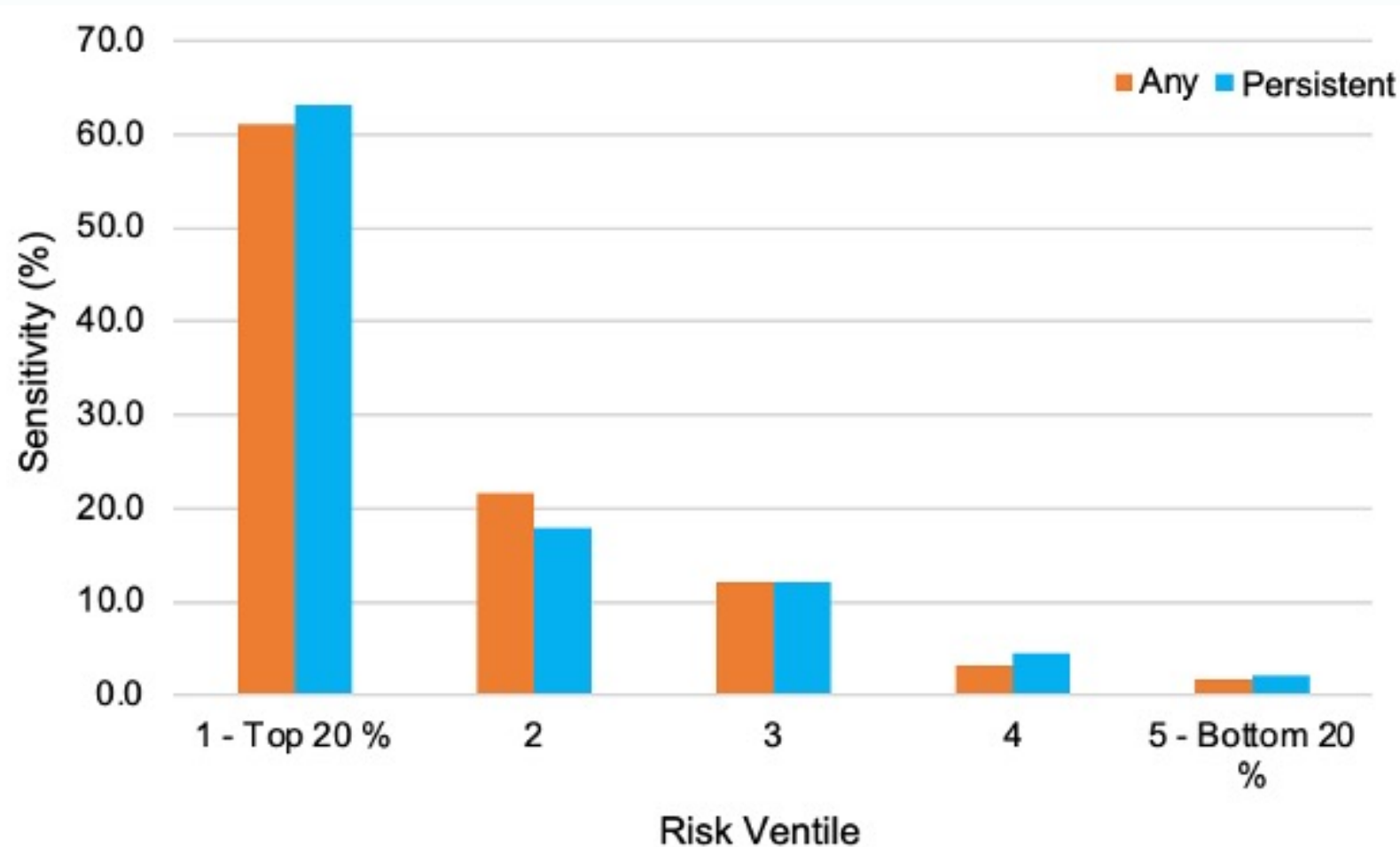


Figure 3. Sensitivity of the model predicting homelessness and persistent homelessness (≥3 months) in the test sample by ventiles of predicted risk.

- Self-reported lifetime histories of **depression, trauma of having a loved one murdered, and post-traumatic stress disorder** were the 3 strongest predictors of homelessness.
- The **4 highest ventiles (top 20%) of predicted risk included 61% of respondents who reported homelessness.**

## CONCLUSIONS

- Indicators of **mental health** emerged as the **most important predictors**, as well as **certain lifetime traumas and childhood homelessness**.
- A prediction model for homelessness can **accurately target soldiers for preventive intervention** before transition to civilian life.

## REFERENCES

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