

## **Description of Additional Supplementary Files**

Supplementary Data 1. Summary of contextual-level SDoH

Supplementary Data 2. Overall performance (AUROC) for T2D hospitalization prediction on the independent testing set

Supplementary Data 3. Bootstrapping Prediction performance for different feature sets by random under sampling

Supplementary Data 4. Model Fairness Assessment

Supplementary Data 5. Model Prediction Performance Assessment

Supplementary Data 6. Baseline Performance Assessment

Supplementary Data 7. Fairness Mitigation Results

Supplementary Data 8. HyperParameters