

Session/Poster#

Presenter

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Comparative Predictive Analysis of Type 2 Diabetes with Social Determinants of Health

This study aimed to develop and compare prediction models for identifying risk factors associated with type 2 diabetes using social determinants of health. The study utilized a cross-sectional survey, the Behavioral Risk Factor Surveillance System, and multiple classifiers to predict type 2 diabetes. The independent variables were significantly associated with the target outcome, with all social determinants of health being highly significant predictors of type 2 diabetes.

The developed models had comparable performance in terms of accuracy, specificity, negative likelihood ratios, and AUC. However, the SAS logistic regression model showed superior sensitivity and positive likelihood ratios compared to the Python predictive models. The MLP model had the highest accuracy and AUC, while the Gaussian Naïve Bayes model showed higher sensitivity and detection rates, making it better for social determinants of health screening for type 2 diabetes.

The study rejected the null hypothesis that AnyHealthcare, NoDocbcCost, Sex, Age, Education, Income, and the responder variable diabetes binary are not statistically significant and accepted the alternative hypothesis that they are. In conclusion, this study provides evidence for the effectiveness of machine learning models in predicting type 2 diabetes using social determinants of health. The findings of this study can aid in early diagnosis and intervention and reduce medical costs associated with type 2 diabetes. Further research is needed to identify potential biases in the datasets used to train these models and to develop strategies for mitigating them. The development and refinement of these models could have broader implications for the field of predictive medicine.