Healthcare Analytics & Diabetes Risk Prediction
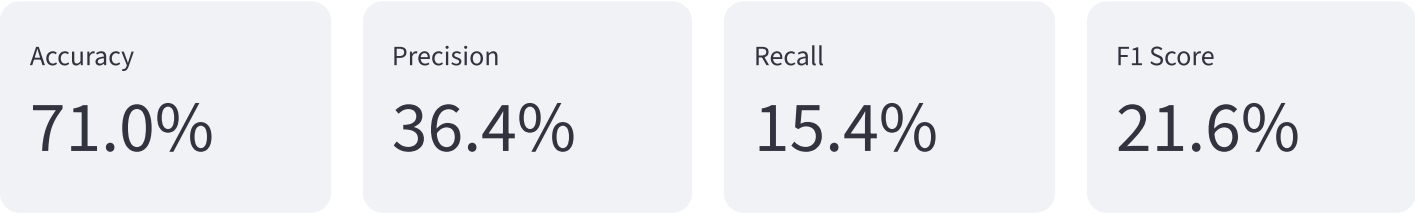
Data-Driven Insights for HR & Wellness Programs

Overview　　Risk Analysis　　Demographics　　ML Model　　Data Export
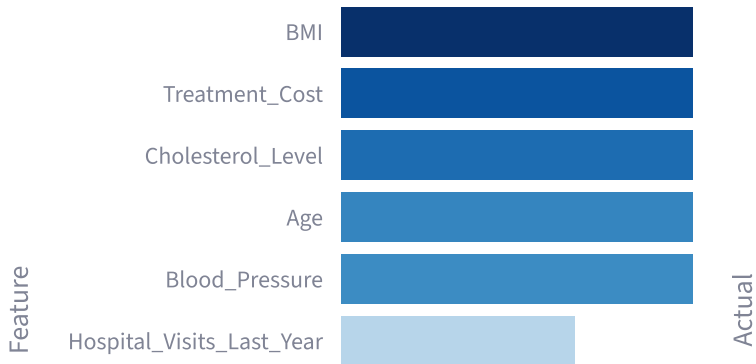
Machine Learning Model - Random Forest Classifier
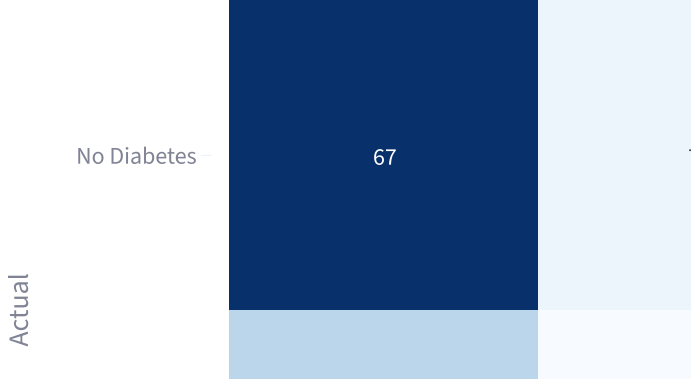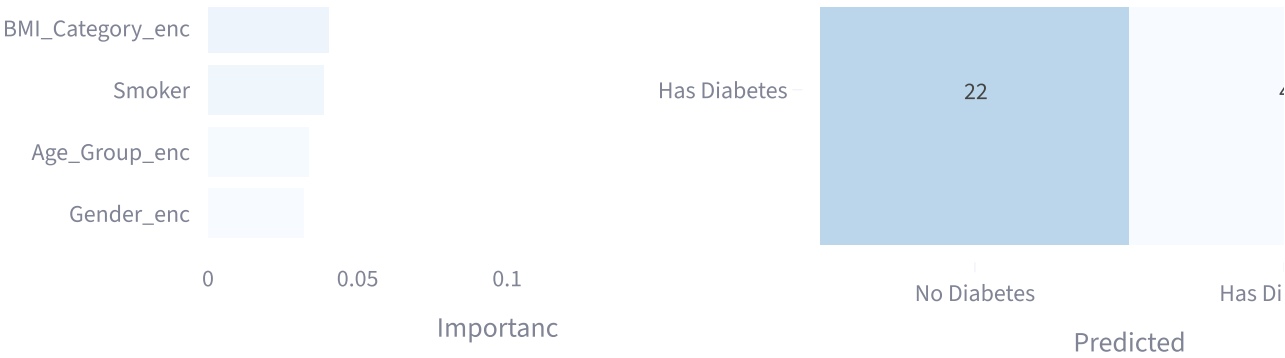
Model Performance Metrics

Accuracy	Precision	Recall	F1 Score
71.0%	**36.4%**	**15.4%**	**21.6%**

> Best Hyperparameters (GridSearchCV)

Feature Importance

Confusion Matrix

BMI_Category_enc

Smoker

Age_Group_enc

Gender_enc

0   0.05   0.1

Importanc

Has Diabetes   22

No Diabetes   Has Di

Predicted

Key Insights from Model

Top Risk Indicators for Diabetes:

1. **High BMI** - Strongest predictor of diabetes risk
2. **Blood Pressure** - Elevated levels significantly increase risk
3. **Age** - Older employees show higher diabetes prevalence
4. **Treatment Cost** - Higher costs correlate with diabetes presence
5. **Smoking Status** - Smokers face elevated risk levels

Actionable Recommendations for HR & Wellness Programs:

- Implement targeted weight management programs for employees with BMI > 30
- Schedule regular health screenings for employees over 50
- Offer smoking cessation programs to reduce risk factors
- Monitor and support employees with high blood pressure
- Use early intervention strategies for high-risk individuals