# DIABETES PATIENTS

Diagnostic Measurements in Diabetes

## ISSUE / PROBLEM

**National Institute of Diabetes and Digestive and Kidney Diseases seeks to develop a predictive model for identifying the likelihood of diabetes in female patients who are at least 21 years**

## RESPONSE

The project focuses on diagnostically predicting diabetes using regression analysis, specifically logistic regression. Since the outcome variable is binary ('Outcome' indicating the presence or absence of diabetes), logistic regression is a suitable method for this categorical prediction task.

## IMPACT

This model predicts diabetes likelihood based on diagnostics, enabling early intervention and optimizing healthcare. It enhances patient well-being, informs healthcare decisions, and contributes to public health efforts by identifying risk patterns
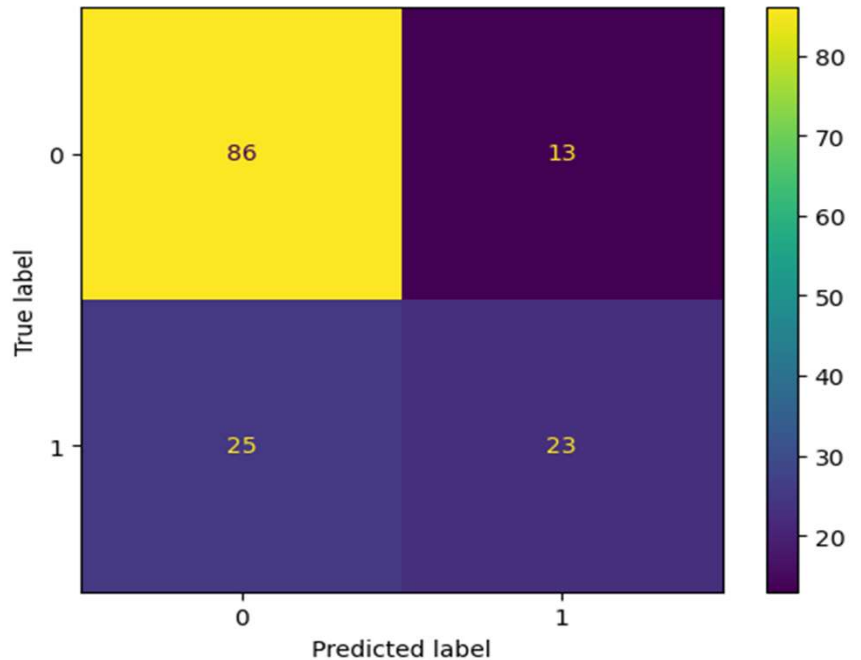


- The efficacy of a binomial logistic regression model is determined by accuracy, precision, and recall scores; in particular, recall is essential to this model as it shows the number of diabetes patients.
- The logistic regression model displays a varied performance in predicting diabetes. It demonstrates commendable precision (81%) for identifying patients with diabetes, suggesting accuracy in positive predictions. However, the recall for this class is slightly higher at 87%, indicating that the model captures a substantial portion of actual positive cases.
- The distribution of outcomes in the dataset shows that about 65.56% of cases represent the non-existence of diabetes (outcome 0), while roughly 34.44% indicate the presence of diabetes (outcome 1). This distribution offers valuable context for interpreting the prevalence of diabetes.

## INSIGHTS/NEXT STEPS

- **Continuous Data Collection: Collect and update diagnostic measurements regularly for a current and adaptable model.**
- **Clinician Collaboration: Collaborate with healthcare professionals for model integration into clinical decision-making.**
- **Patient Education: Develop educational materials to help patients understand diagnostic measurements' role in diabetes predictions.**