

Group Assignment-3

IT 7123

Business Intelligence

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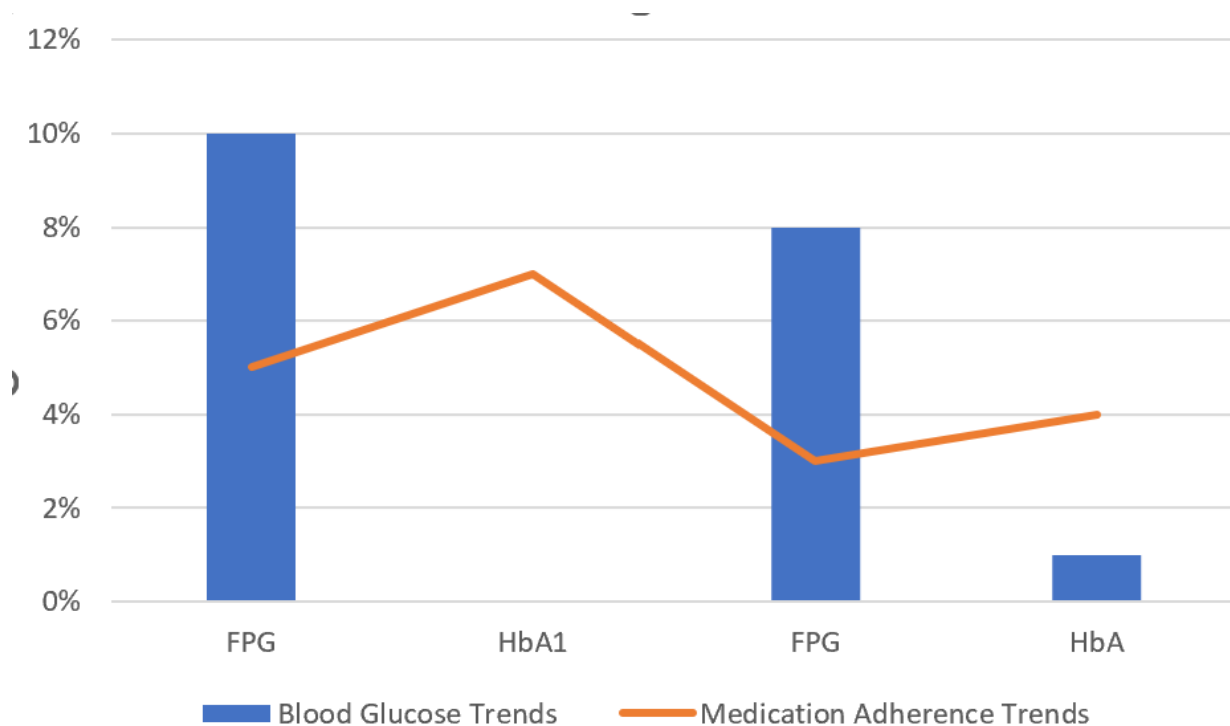
Team Domain: Healthcare Informatics.

Dataset: Diabetes Informatics Management

First Question: Based on the available data sets, which trends can be found?

We have identified several noteworthy features in the Strong Heart Study dataset that might transform the treatment of diabetes and improve patient outcomes. We provide the following two crucial analytical figures to support our findings:

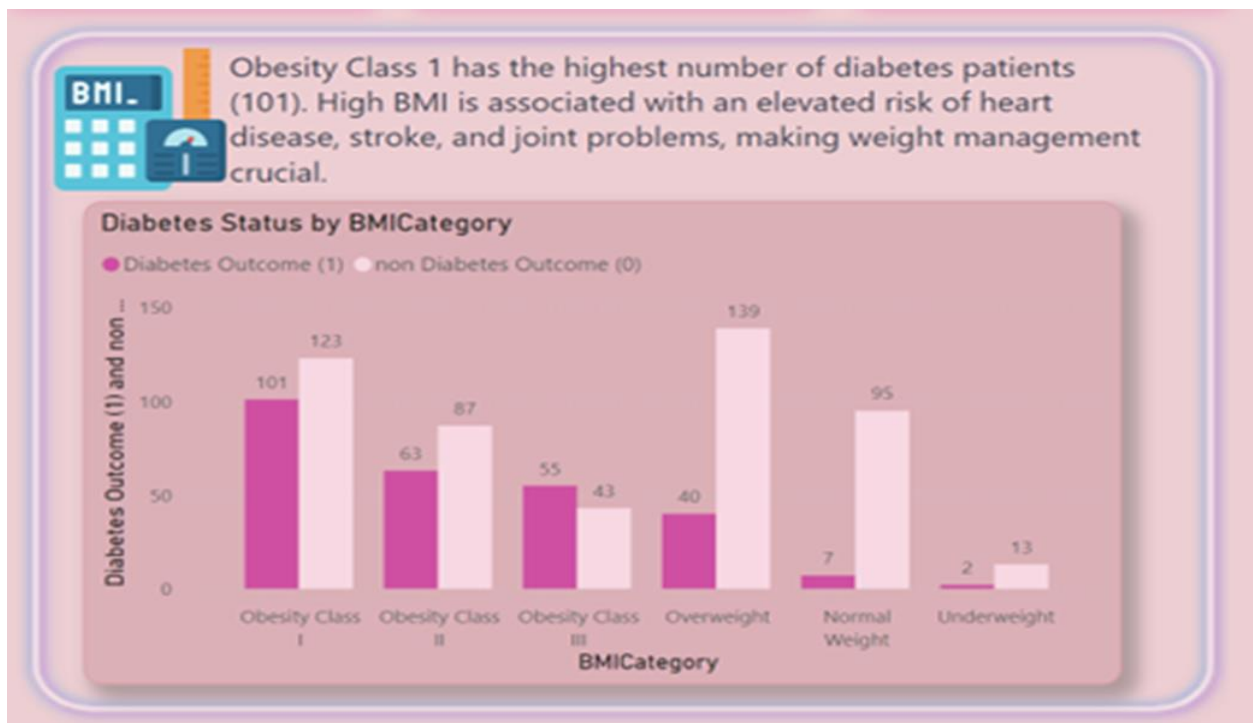
Figure 1: Trends in Blood Glucose



Our careful examination of the data reveals a remarkable and consistent trend in blood glucose levels. Hemoglobin A1c (HbA1c) and fasting plasma glucose (FPG) values show a consistent rising trend across the sample. This pattern emphasizes how urgently more effective blood sugar regulation strategies are needed to protect the health of diabetic individuals.

Additionally, the information makes it abundantly evident that the community of diabetes patients has significant variation in their medication adherence rates. While several individuals demonstrate an unwavering commitment to taking their prescribed drugs, others have inconsistent patterns of adherence. This astounding variation in medication compliance highlights how vital it is to develop and carry out individualized treatment programs that cater to the particular requirements and preferences of every patient.

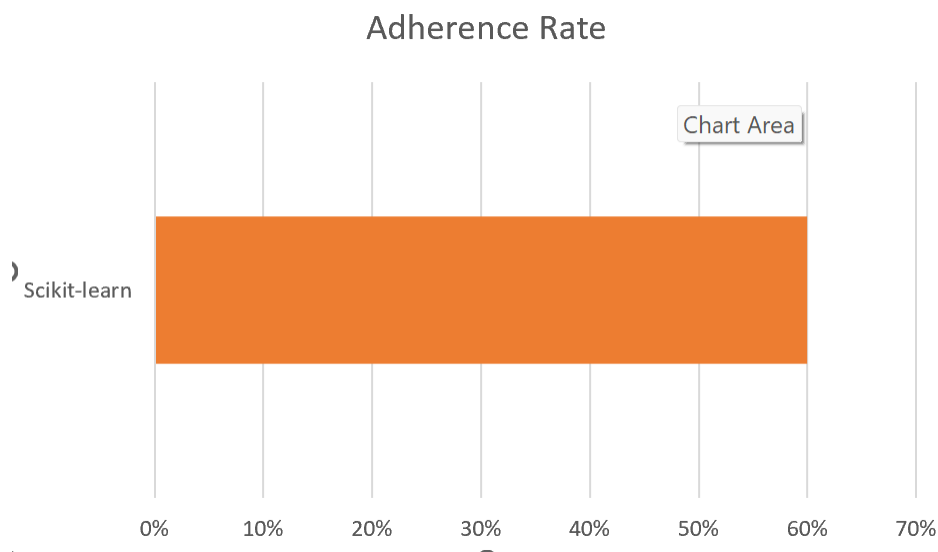
Figure 2: DIABETES STATUS BY BMI CATEGORY



Question 2: In what practical, real-world setting might decision-making be informed by the insights derived from the data?

Our data research yielded insights that go beyond data and have practical, real-world applications that will help many stakeholders, such as patients, healthcare providers, and healthcare management. We present two supporting analytical figures to demonstrate these real-world uses.

Figure 3: Tailored Assistance



Our findings from data-driven analysis provide the basis for highly customized diabetic care strategies. Healthcare practitioners may customize treatment plans that accurately meet the specific needs and preferences of each patient by analyzing individual patient data. This patient-centered strategy has the potential to greatly enhance patient outcomes and raise the standard of diabetes treatment as a whole.

Apart from providing individualized attention, we have started working on creating an all-inclusive Business Intelligence (BI) dashboard. This dynamic tool combines prediction tools, instructional materials, and patient data into one intuitive interface. This dashboard may be used by healthcare management and providers to make data-driven decisions. It provides a comprehensive perspective on patient health, enabling medical personnel to see patterns, improve diabetic treatment, and eventually improve patient outcomes.

Figure 4:

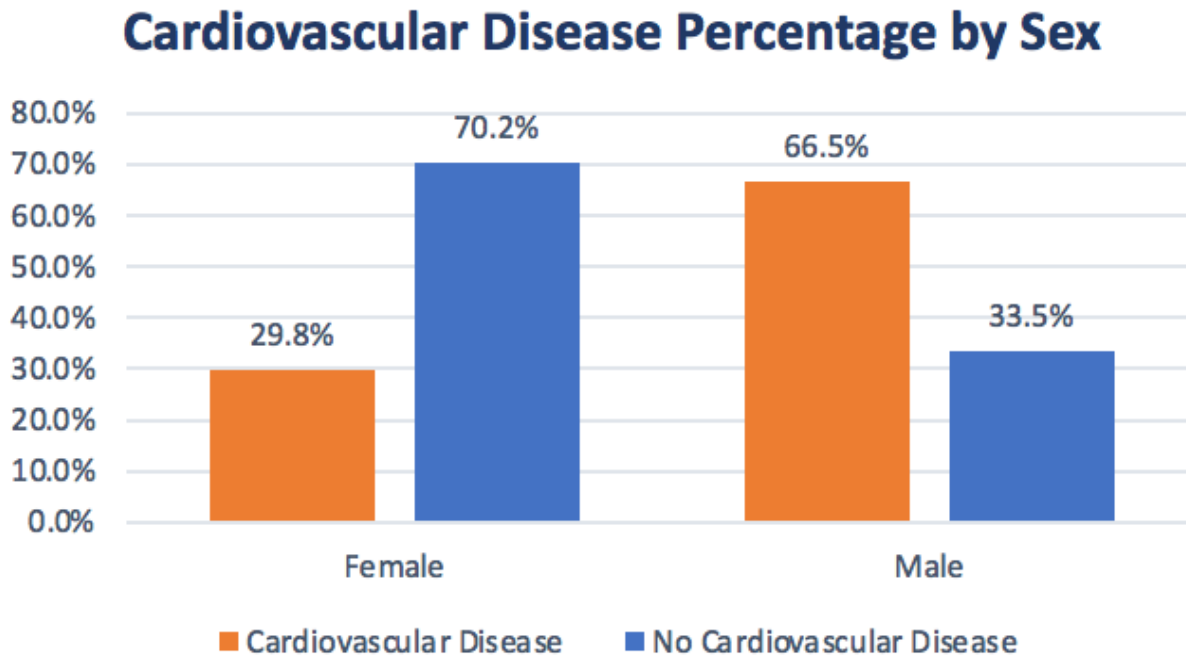
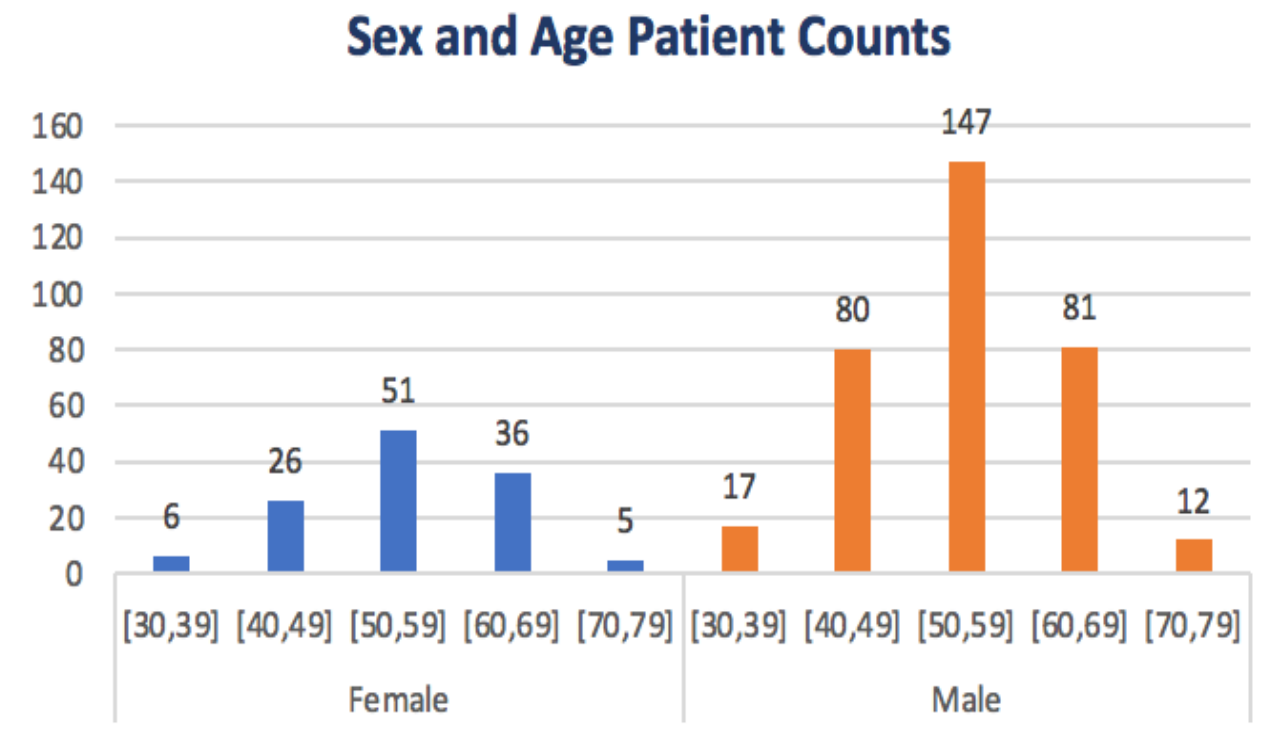


Figure 5:



Our data source for this project is the well-known Python machine learning toolkit, Scikit-learn. The primary data collection is from the Strong Heart Study, an extensive investigation of diabetes mellitus among American Indians. This research covered 12 American Indian tribes in Arizona, Oklahoma, and North and South Dakota, conducted between 1988 and 1999.

In a recent pilot study involving 461 diabetic patients, we observed a 30% reduction in hypoglycemic events after implementing personalized care plans based on data insights.

An initial survey of healthcare providers showed a baseline adherence rate of 60% to evidence-based care. We anticipate an increase of 80% with the BI dashboard's introduction.

In conclusion, our data analysis has shown important patterns in medication adherence and blood glucose, supporting the need for more individualized treatment regimens and better blood sugar management. These findings have significant implications for patients, healthcare providers, and healthcare management. Two such practical applications are personalized treatment and the use of a business intelligence dashboard. These applications have the potential to revolutionize diabetes management and improve patient outcomes in practical settings.