

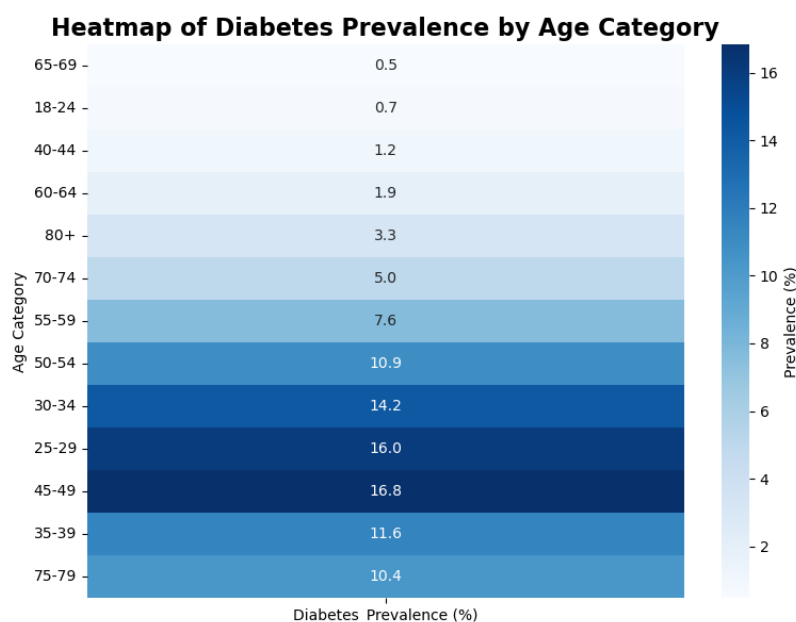


# University of Exeter Business School

**Data Analytics for Public Health:**

**Identifying At-Risk Populations and Drivers of Diabetes Prevalence**

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*Figure 1- Heat Map of Diabetes by age group*

### Identifying Priority Populations: Mapping Diabetes Risk by Age

Diabetes represents a major public health challenge, with prevalence rising steeply among specific age cohorts in recent years. The attached heat map illustrates the concentration of diabetes by age group nationwide, highlighting which demographics are disproportionately affected. This contextual visual provides policymakers and healthcare professionals with a strategic overview, enabling more targeted resource allocation and intervention planning.

By mapping disease prevalence, the project establishes a foundational understanding of the epidemic's reach. This scope not only demonstrates the urgency of tackling diabetes but also lays the groundwork for subsequent analysis. Knowing where the problem is most acute allows stakeholders to prioritize investments and tailor prevention efforts, ultimately driving greater health impact and efficiency.

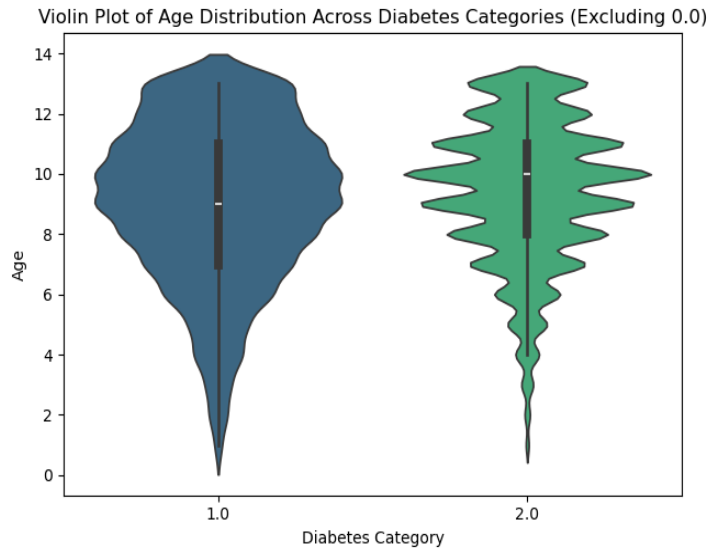
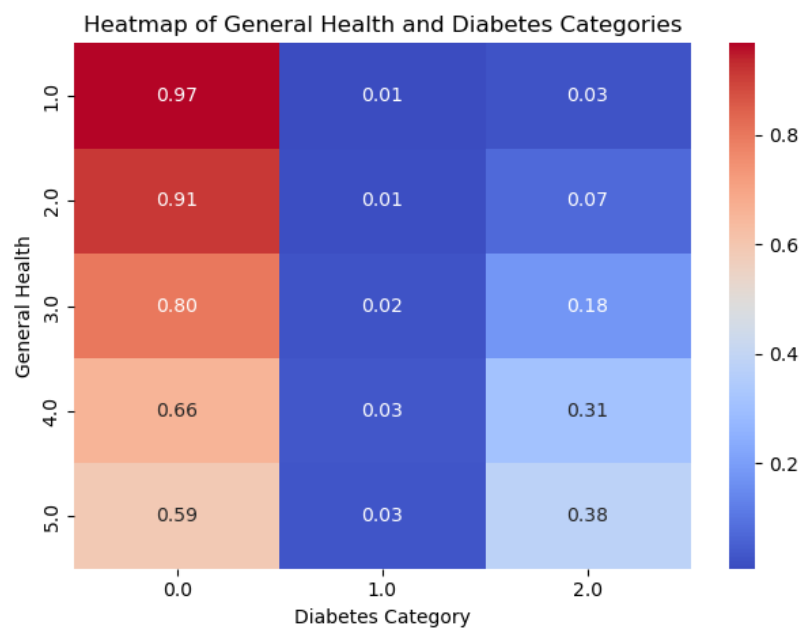
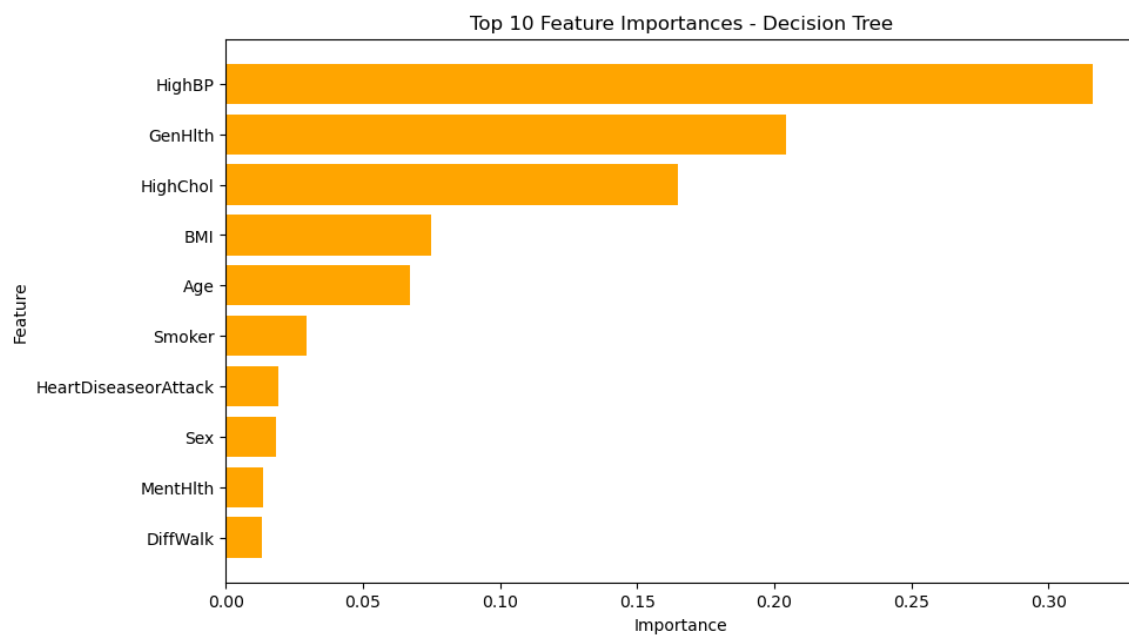
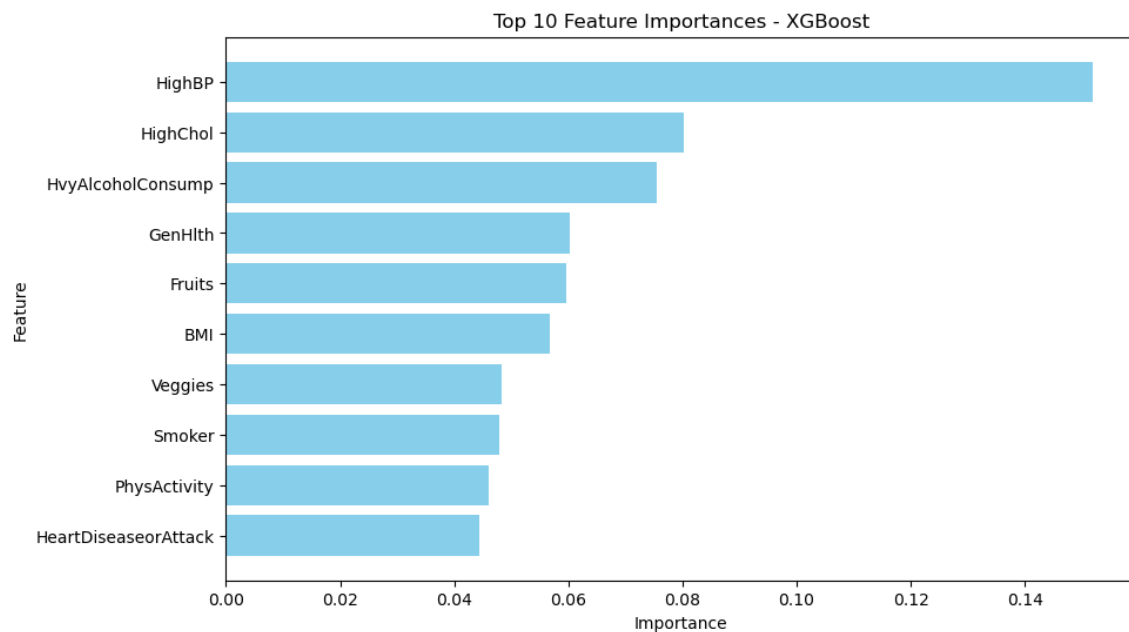


Figure 2-Distribution of age in pre-diabetes and diabetes

### Revealing Hidden Patterns: Data-Driven Segmentation of At-Risk Groups

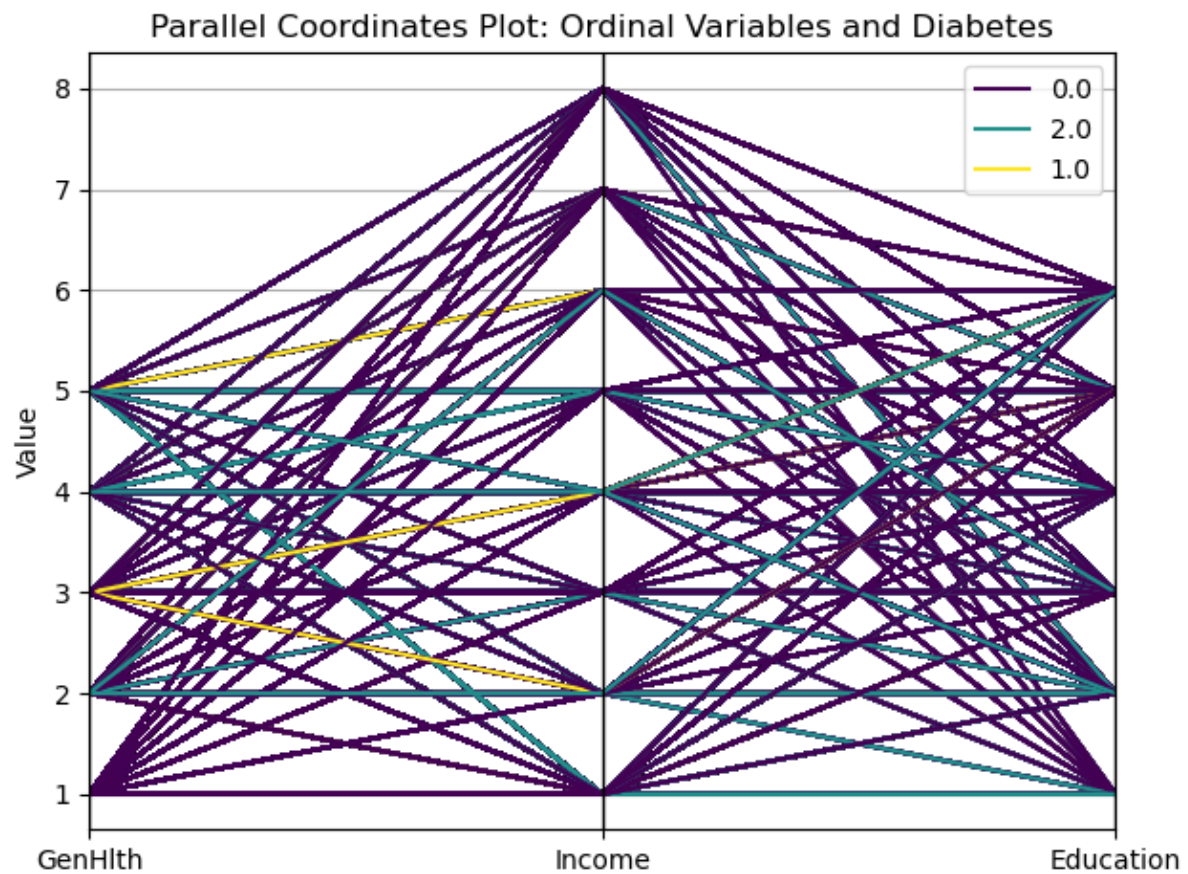
The Diabetes Category Prevalence Chart breaks down the population by diagnostic subtype or control status, offering granular insight into disease heterogeneity. This segmentation supports more precise interventions and sheds light on which categories are growing fastest or responding best to treatments. Data exploration is the bridge between raw information and meaningful, actionable conclusions—the backbone of modern data-driven healthcare.





### Informing Action: Predictive Modelling & Key Risk Factors

Machine learning and statistical modelling play a pivotal role in extracting actionable insights from health data. Feature importance bar charts highlight which variables, such as lifestyle choices, clinical metrics, or demographics, most strongly predict diabetes risk. This ranking empowers healthcare teams to focus efforts on the highest-impact factors, streamlining care strategies and maximizing results.



### Informing Action: Predictive Modelling & Key Risk Factors

Complementing these findings, predictive model probability graphs visualize the performance of algorithms in classifying or forecasting disease status. By quantifying model accuracy and discriminative power, this section demonstrates the effectiveness of data-driven diagnostics. The combined results translate technical rigor into clear recommendations, supporting informed decision-making from clinics to government agencies.

Supporting Strategic Decision-Making: Contextual Risk Analysis & Interactions

