

Diabetes Among Pima Indians
MAT 422
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Introduction

According to the 2021 International Diabetes Federation, “one in 10 adults aged between 20 and 79 (537 million people) now lives with diabetes, and three in four of them live in low- to middle-income countries.” (easd-elearning.org) Although diabetes is a global health problem, the Pima Indians in Arizona have attracted attention from many researchers due to their high rates. In that, this paper will examine and analyze the data collected on the Pima Indian community.

Pima Indians reside mostly in Arizona but have communities outside of the United States, such as Mexico. As of 2022, the rate of diabetes among Pima Indians is the highest globally. There are many factors to be considered in what causes high rates in Pima Indians which are age, gender, lifestyle, and healthcare. By studying this data, the information gained can foster a bigger understanding of diabetes among the world, such as delving deep into the environment and genetics.

There are two types of diabetes. Type 1 diabetes is caused by the body destroys insulin producing cells in turn causing the afflicted individual to ensure they administer enough insulin for whatever glucose they will ingest. Type 2 diabetes, the body's cells become resistant to the effects of insulin, and the pancreas may not produce enough insulin to maintain normal glucose levels. Although the Pima Indians diabetes diagnoses are high in type 2 diabetes, there is a concerning number of type 1 diabetes that shall be closely investigated as well.

Related work

I chose this topic due to the extensive database and research done on the Pima Indians. It has been vigorously delved into due to the high occurrence of diabetes in the native people and knit-picking a myriad of possibilities causing the issue. With such a wide library of information pertaining to this topic, researchers are able to connect historical data and really delve into the underlying factors that present this community challenge.

Historical analyses have explored connections between past events and current health trends within the community. Genetic studies have sought to identify specific gene factors associated with an increased risk of diabetes among Pima Indians.

Additionally, research has looked into the impact of lifestyle choices and environmental influences on the increased rates of diabetes within the Pima community. Investigations have extended to public health interventions, assessing the effectiveness of programs designed to address and manage diabetes, such as community initiatives and increased healthcare access. Not only is the research done to gain some worldly insight to diabetes, but also to help the Pima Indian community in prevention, education, and intervention.

Comparative studies have situated the diabetes rates among Pima Indians within a global context, drawing comparisons with other populations to identify unique challenges and contributing factors. Moreover, technological advancements, including data analytics and health informatics, have played a role in enhancing our understanding of diabetes trends among Pima Indians.

These collective research endeavors serve as the groundwork for our exploration into diabetes within the Pima Indian population. By building upon these insights, contributive perspectives to diabetes in the community, we can ensure a resilient and educated population.

Proposed methodology

The study on diabetes among Pima Indians contains a mixed-methods approach to gather extensive insights into the myriad of factors contributing to diabetes prevalence within the community.

Data collection involved a combination of quantitative and qualitative methods from many different data sets. Quantitative data will be obtained through a review of existing epidemiological studies, health records, and diabetes databases specific to the Pima Indian population. This will provide a foundation for understanding the overall diabetes landscape, prevalence rates, and trends. Genetic factors contributing to diabetes were explored through a genetic analysis component study.

Statistical analyses were conducted to discern patterns, trends, and associations within the collected data. Descriptive statistics, such as mean, median, and standard deviation, will be calculated to characterize the central tendencies and variability of key variables.

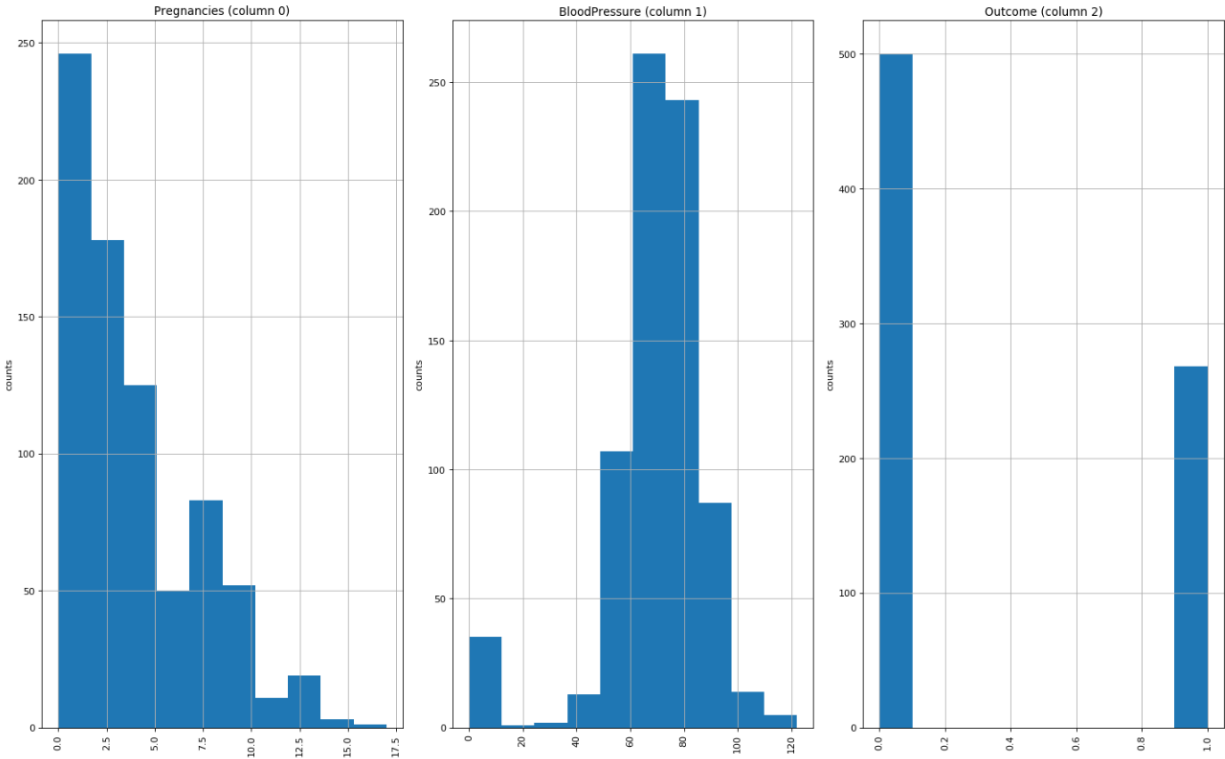
It is crucial to acknowledge potential limitations associated with secondary data analysis, including variations in data collection methods, potential biases, and the absence of certain variables. These limitations will be considered in the interpretation of results.

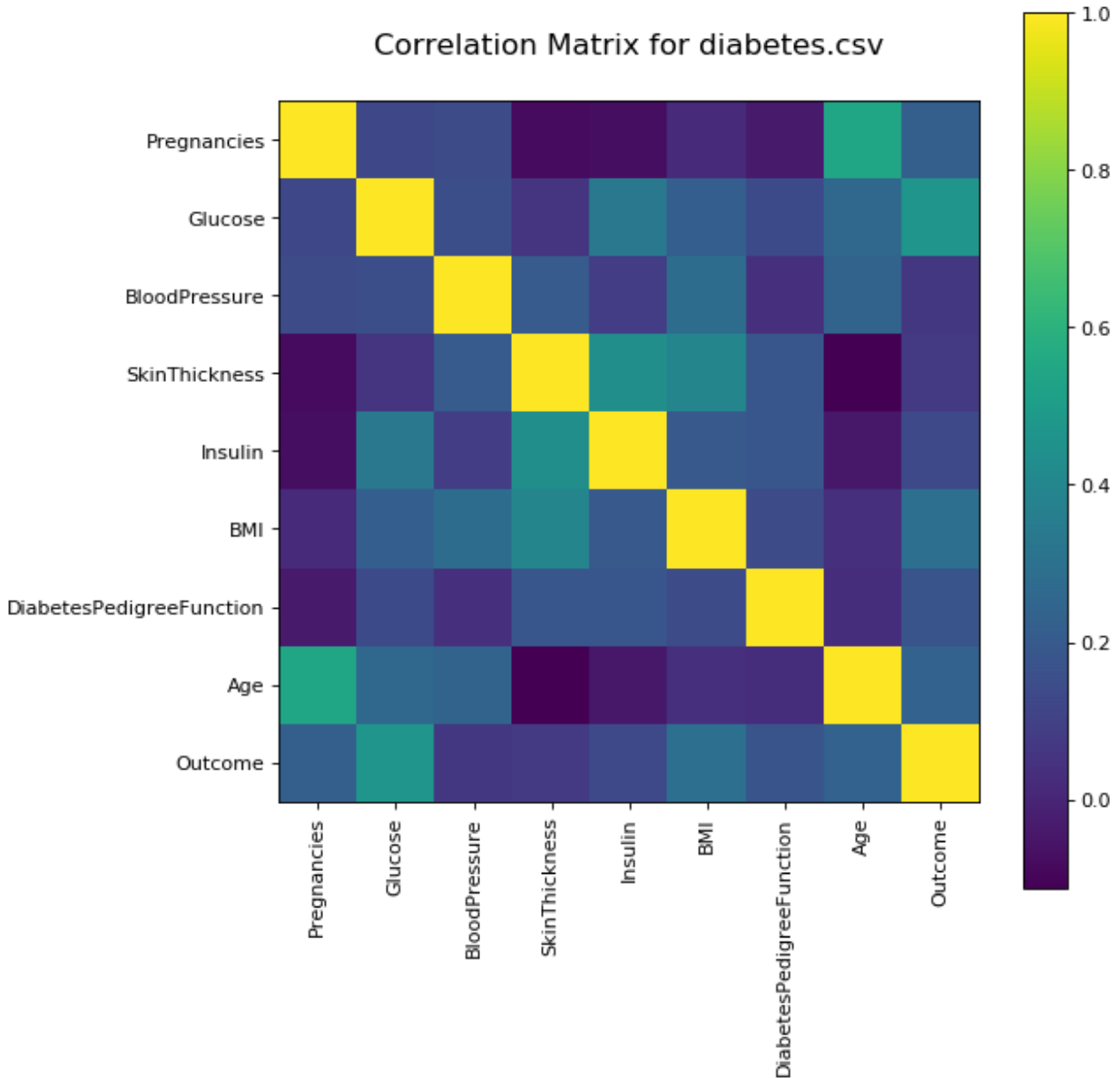
By leveraging data from multiple databases, I seek to provide a comprehensive and quantitative understanding of diabetes among Pima Indians. The findings will contribute valuable insights into all of the facets of diabetes within this population.

Experiment setups and result discussion

Pregnancies	Glucose	BloodPressure	Skin Thickness	Insulin	BMI	Diabetes Pedigree Function	Age
0	6	148	72	35	0	33.6	0.627
1	1	85	66	29	0	26.6	0.351
2	8	183	64	0	0	23.3	0.672
3	1	89	66	23	94	28.1	0.167

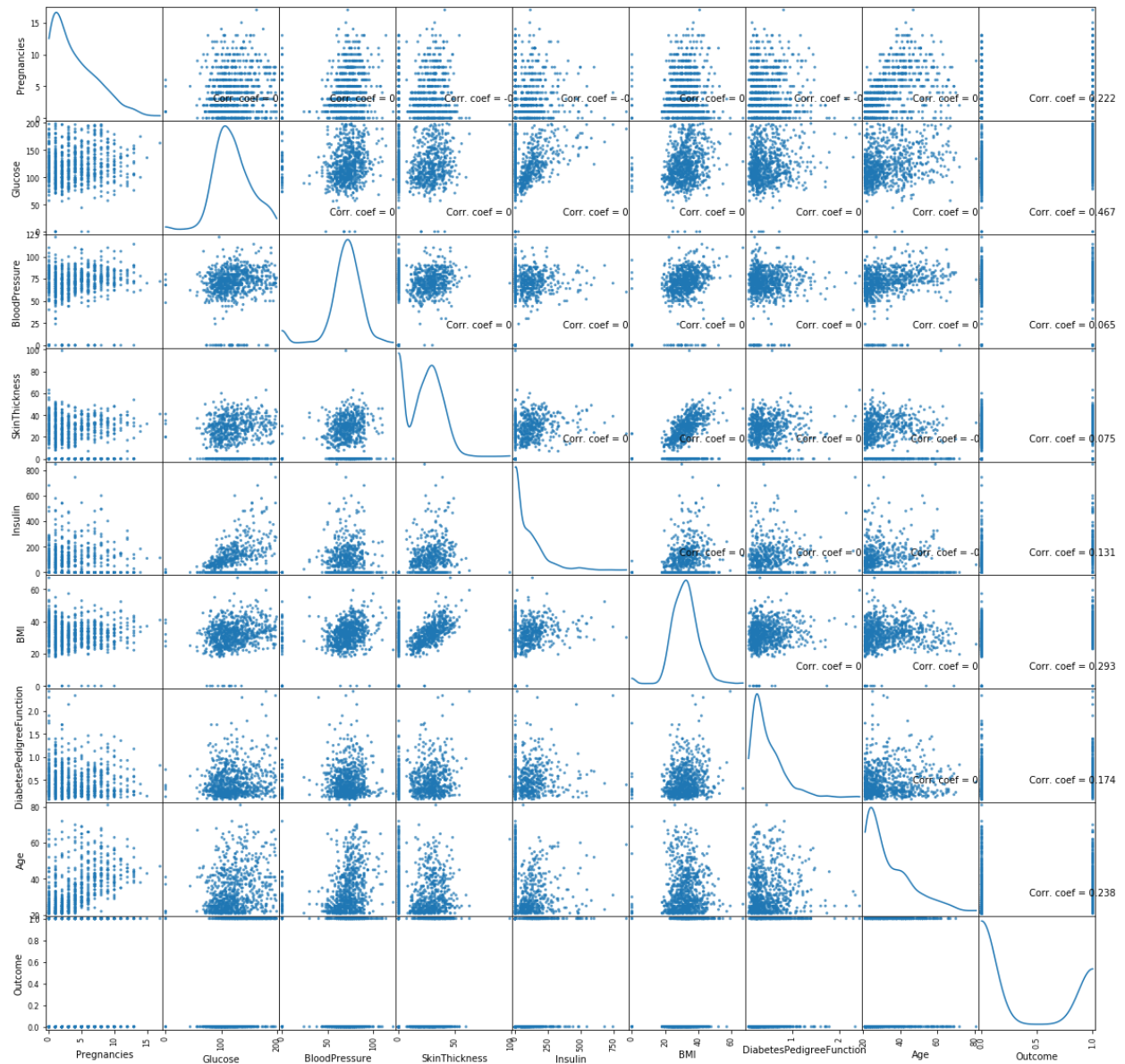
4	0	137	40	35	1 6 8	43.1	2.288
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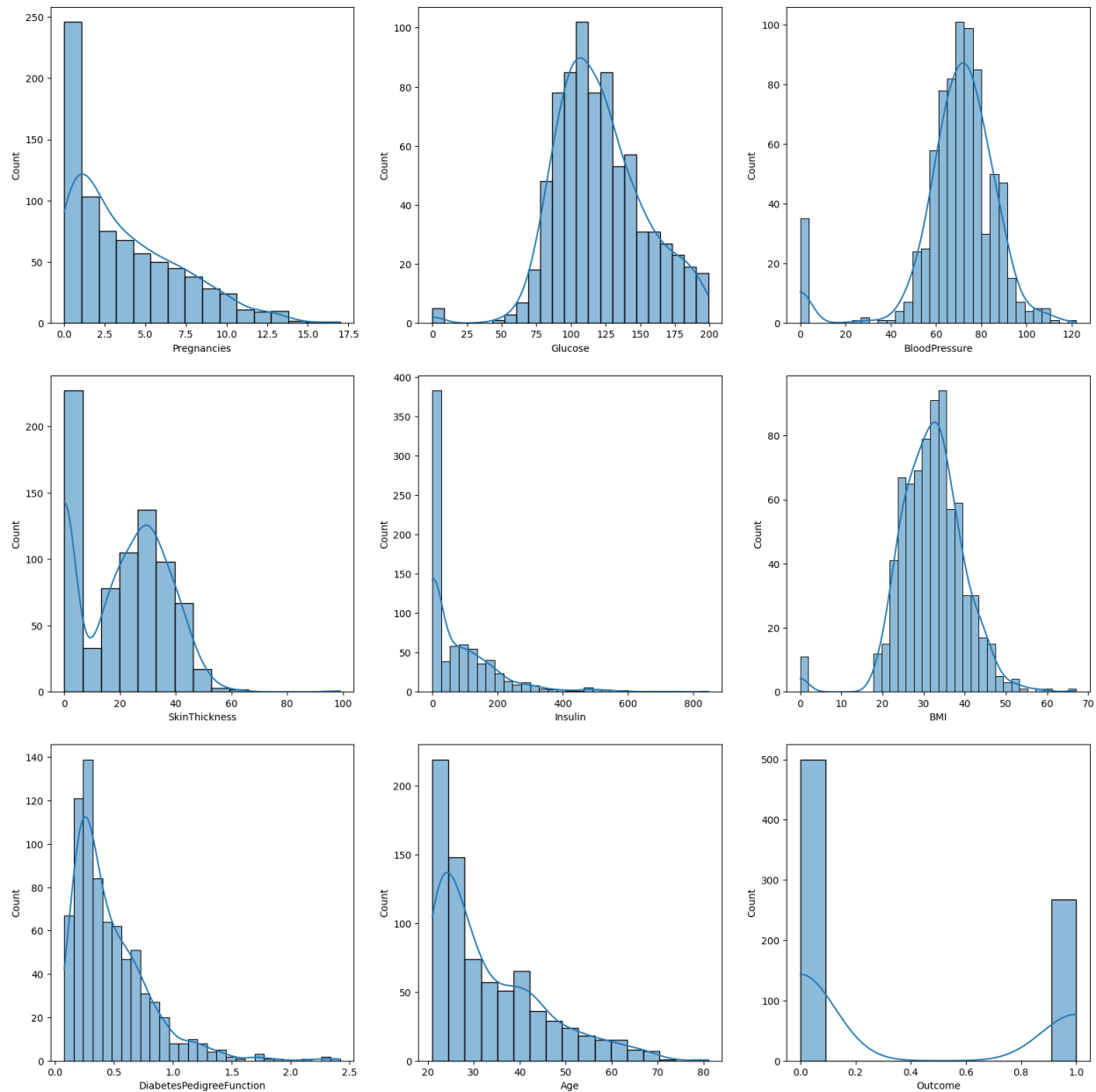




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Scatter and Density Plot





Comparison

Through the examination of data from diverse databases, a comparative analysis shows a distinct pattern and trend in diabetes among Pima Indians. The prevalence rates of diabetes within this community, particularly in comparison to other populations globally, emphasize the unique challenges faced by the Pima population.

The age of onset of diabetes among Pima Indians, notably in early adulthood and childhood, sets this community apart from broader trends observed in other populations. This data makes education and intervention available to the community to help prevent or combat type 2 diabetes.

Along with helping the community through education, comparisons with other populations also shed light on the high cases of type 2 diabetes among Pima Indians. This contrasts with the global diabetes where type 2 diabetes is prevalent but not to the extent observed within this specific community. Understanding this distinction is important in effective intervention strategies that align with the type of diabetes in the Pima population.

In conclusion, the comparative analysis of data from diverse databases offers valuable insights into the distinctiveness of diabetes among Pima Indians. This understanding not only contributes to the scientific discourse on diabetes epidemiology but also provides a foundation for tailoring interventions that acknowledge and address the unique characteristics of diabetes within this resilient community.

Conclusion

In conclusion, the deep dive of data from a myriad of databases has provided a thorough understanding of diabetes among Pima Indians. The rates, age of onset, and distribution of diabetes types within this population have been illuminated through quantitative exploration.

Genetic analyses have contributed valuable insights into specific gene variants associated with diabetes possibilities among Pima Indians. These findings add a genetic understanding to the community in which the connection between genetics and the prevalence of diabetes is better understood.

This analysis has offered a perspective, mapping the distribution of diabetes prevalence in different regions. This approach has identified potential patterns and at-risk communities, providing a basis for further investigation into environmental and regional influences on diabetes within the Pima population.

In conclusion, the collection of data from a diverse database has enhanced the understanding of diabetes among Pima Indians. The quantitative insights gained from this study not only contribute to the current body of knowledge but also provide a

foundation for targeted and effective public health initiatives within this unique and resilient community.