

ALL ABOUT
DIABETES



About 1 in 10 Americans have diabetes.

More than 1 in 3 are pre-diabetic.

Diabetics monitor their condition through a hemoglobin A1c test.

A1c tests measure a three-month average of the amount of blood sugar attached to hemoglobin.



A1c results are given in percentages. 6.5% or above indicates the patient has diabetes.

9%

A score above 9% indicates poor diabetic control and increases risk of long-term complications.

THE
PROBLEM

Samaritan Health Services is rated on quality health metrics to track how well the organization improves care, eliminates health disparities, and makes quality care accessible to its patients.

The type 2 diabetes metric is determined by the number of patients with A1c levels above 9%. Currently, SHS meets the metric requirements at some clinics and fails at others.

The objective is to identify the most significant factors affecting patient A1c scores. Using data analysis and simulations, a clear focus area will be provided to optimize clinic performance, meet the metric, and improve the health of diabetes patients across Samaritan Health's 80 primary care and specialty physician clinics.



THE OPTIMIZATION OF DIABETIC CARE

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Identifying the Factors:

- The team conducted research and worked with Samaritan Health professionals to identify various factors affecting patient A1c scores.
- Six factors were selected and deemed most important.



Collecting Data:

- Surveys were created and distributed to various SHS professionals to determine the relative importance of each factor.
- The team used XLSTAT to perform a conjoint analysis, a statistical analysis method that determines the importance of each factor as it affects A1c levels.



Data Analysis & Simulation:

An Arena simulation was developed using the results from the conjoint analysis to calculate simulated A1c levels for patients in the system.

An analysis was conducted on the simulation to determine which factors have the most significant impact on patient A1c.

Results:

The simulation allows the team to input actual clinic data and finds which factor provides the most significant changes to A1c levels.

The team used the results to recommend areas of improvement to SHS clinics. SHS can then allocate resources to these areas to improve metric performance.



PROJECT
STAKEHOLDERS



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LOOKING
AHEAD

Diabetes is a complex disease caused by lifestyle habits, insulin resistance, genetics, and family history. Medical providers at Samaritan Health seek to provide the best treatment possible to diabetic patients. The ultimate goal is for a patient to walk into any clinic and receive the same quality care.

Industrial engineers can assist these efforts by finding solutions to improve efficiencies and productivity of healthcare systems, eliminate waste, and save money by adjusting healthcare operations.

Our project's solution provides a solid baseline to allow future capstone teams to dive deeper into the specific treatment processes needing improvement at Samaritan Health.