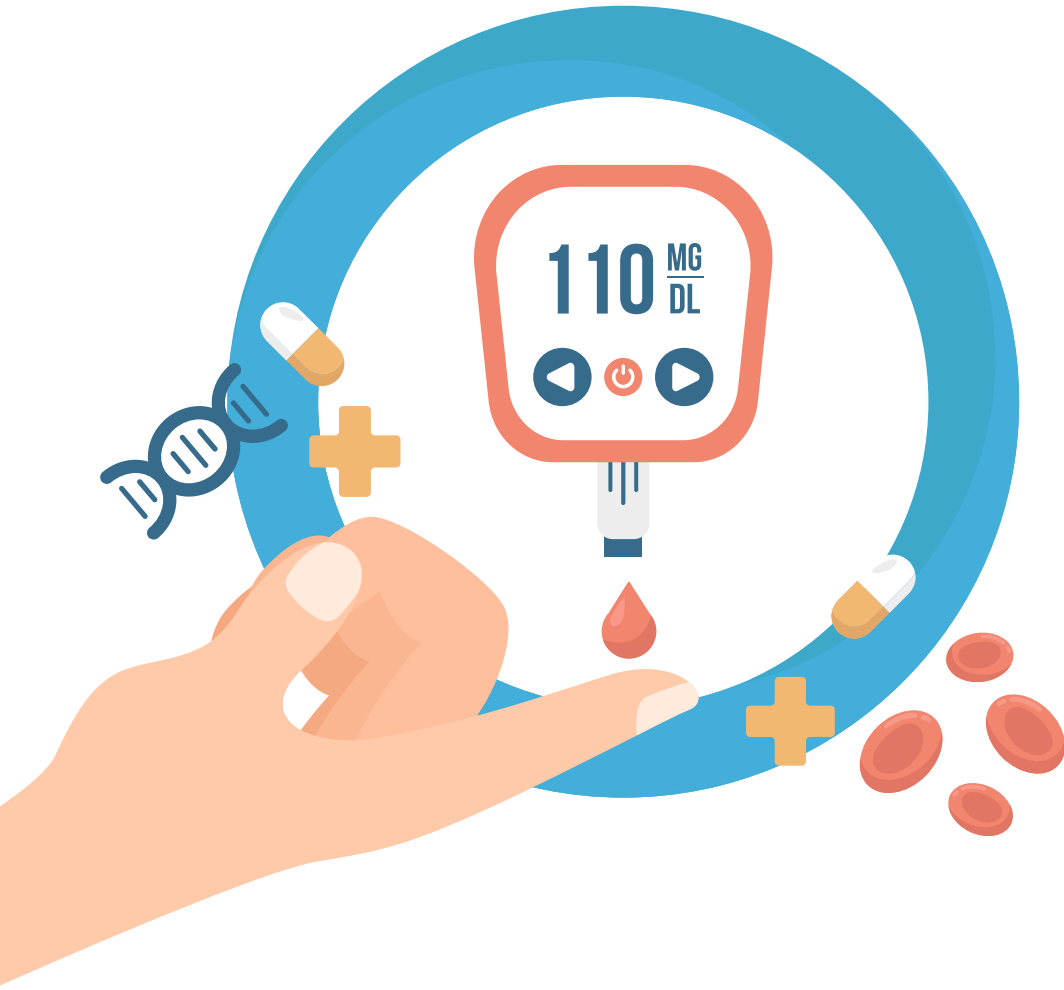


# Diabetes Risk Forecast



By Hernan Trujillo

# Scope

```
graph TD; Scope[Scope] --- Dataset((Dataset)); Dataset --- Target((Target)); Dataset --- ImpactHypothesis((Impact Hypothesis)); Dataset --- EDA((EDA)); Dataset --- Visualization((Visualization));
```



## Target

Predictive Model to  
diagnose Diabetes



## Dataset

2,000 Females from 21  
to 81 Years old



## Visualization

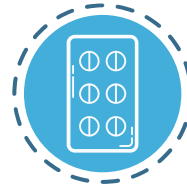
Data Science results  
and recommendations



## Impact Hypothesis

Develop new markets : Pre-diabetic patients

Develop new products or services: Preventive  
treatments offered to patients



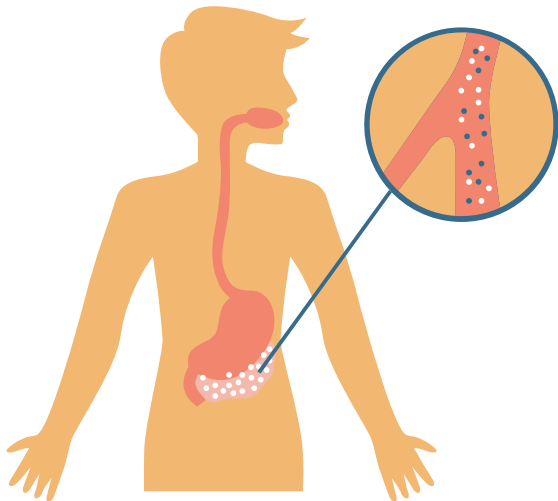
## EDA

Exploratory Data  
Analysis of the features  
and data in general

# Diabetes basics

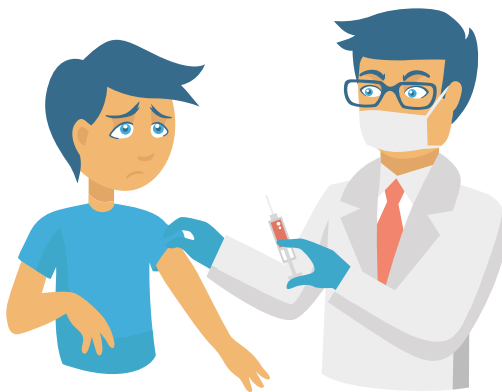
## What is diabetes?

**Diabetes** is a disease in which your blood glucose, or blood sugar, levels are too high. Glucose comes from the foods you eat.



## How is it diagnosed?

**Through blood tests.** The blood tests show if your blood glucose, also called blood sugar, is too high.



## What are the symptoms?



Fatigue



Tingling



No healing



Weight lose

# Diabetes infographic

 80%



At least 80% of patients with diabetes don't know their condition.

## Symptoms



50%  
Weight loss



65%  
Thirst



75%  
Fatigue

## Prevention and treatment



Healthy food

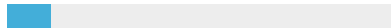


Exercise



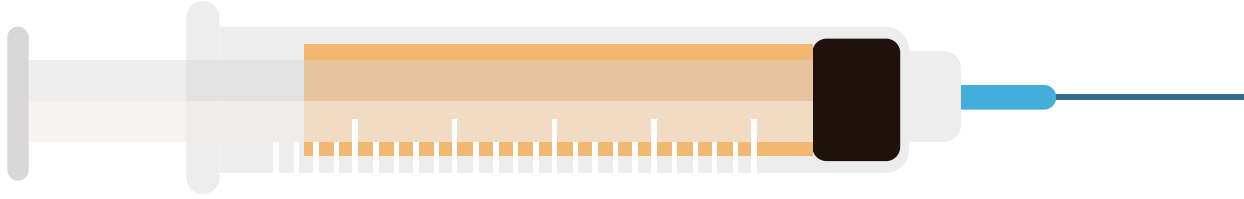
Insulin

## Diabetic Patients in USA

1 in 10  Diabetic

1 in 3  Pre-Diabetic

# Diabetes Diagnostic



TOTAL  
DIABETES

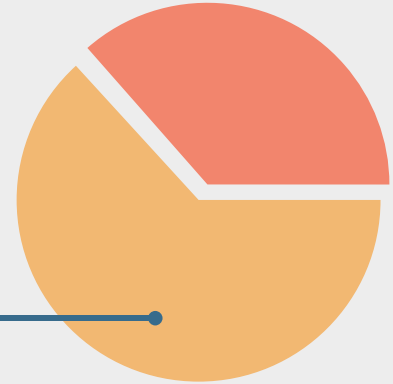
Positive

2,000 Female patients from 21 to 81 years old

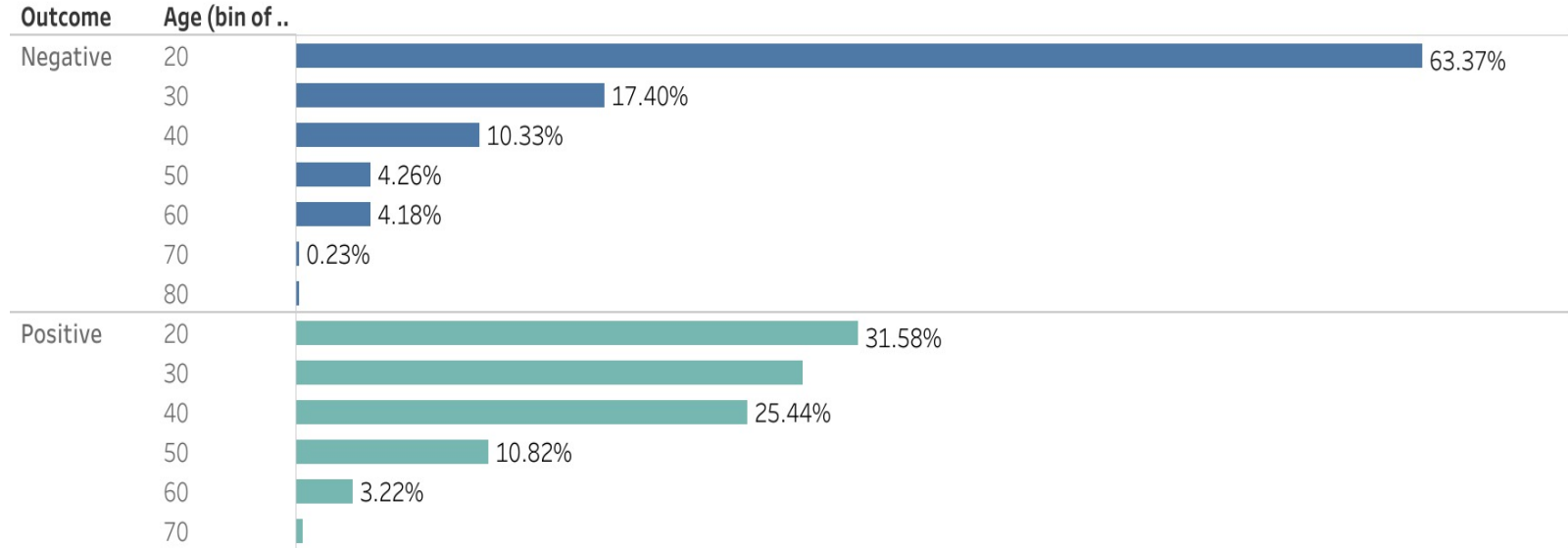
Negative

34%

66%

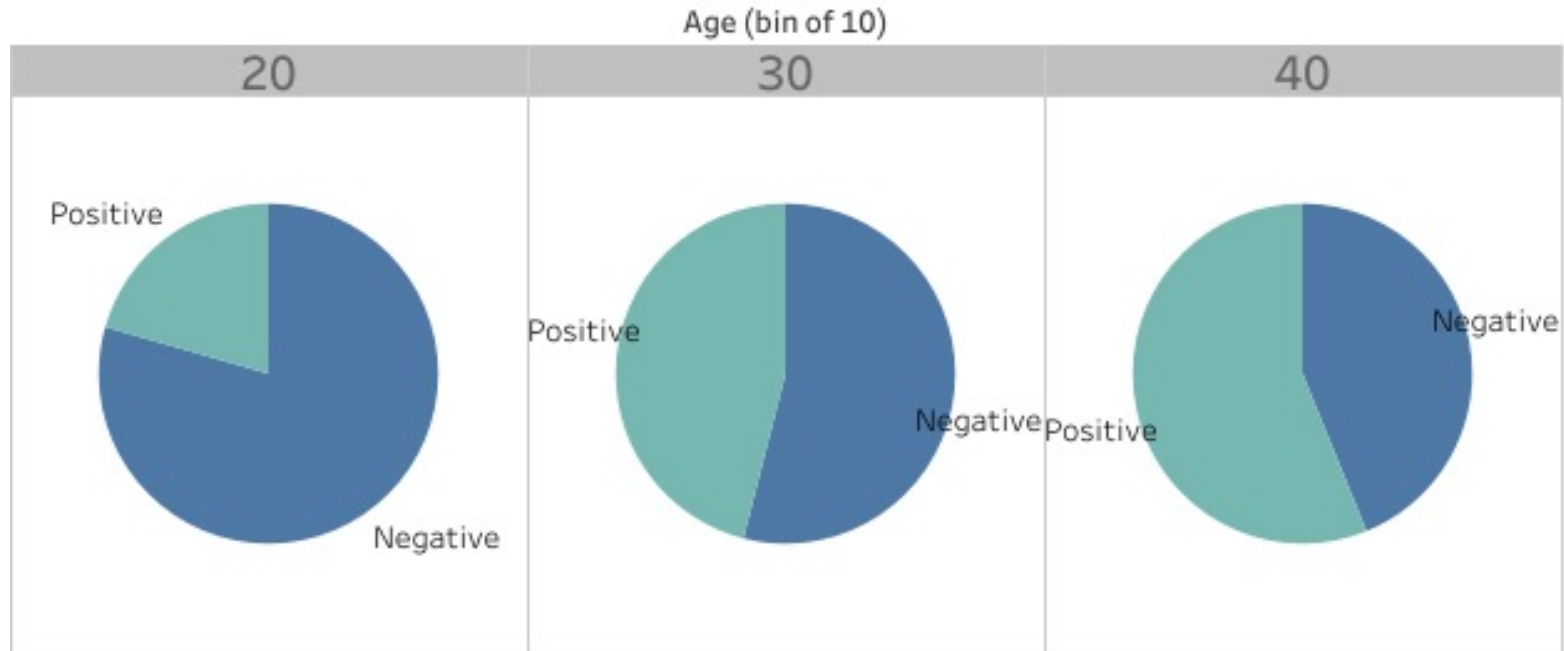


## Diabetes by Age



Among our group of patients that participated in our study, 90% of diabetic patients are grouped between 21 to 49 years old

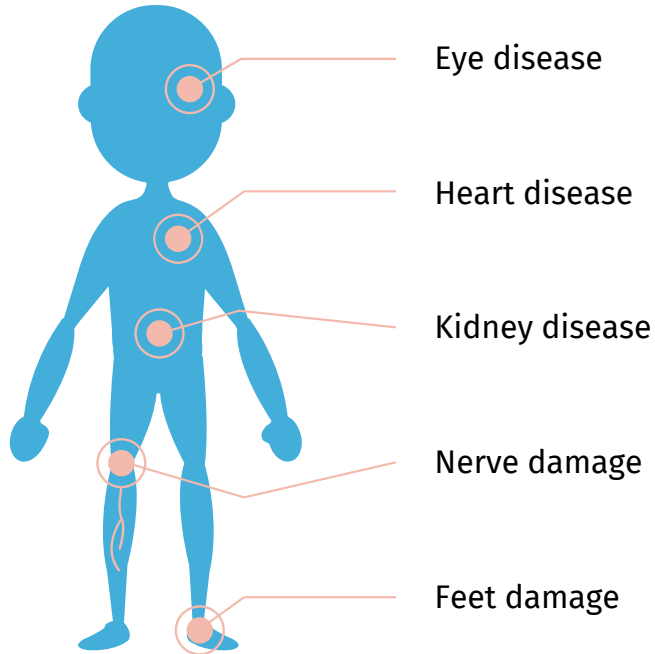
## ***Diabetes by Average Age***



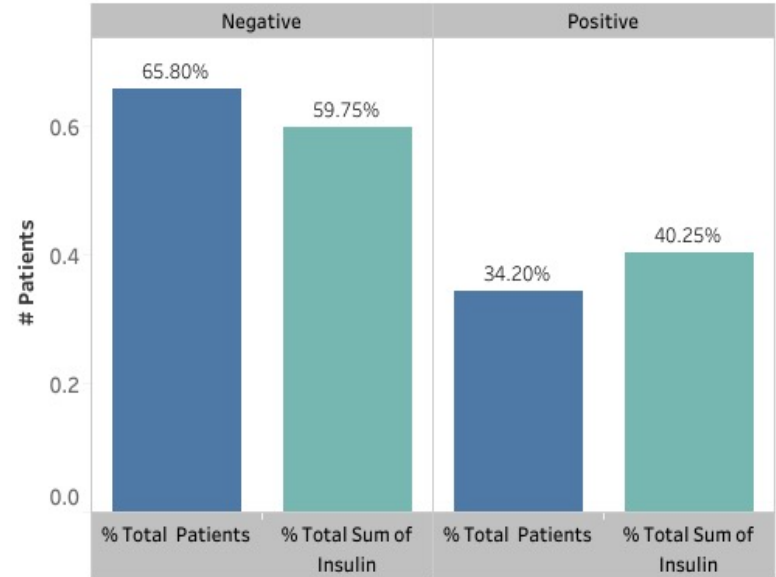
Also, we can notice the increment with "Positive" diagnostic among those groups

# Diabetes and Insulin

## Affects of Diabetes



## Diabetes by Insulin levels



According to a report by the American Diabetes Association (ADA) major brand insulin list prices have increased by 252%

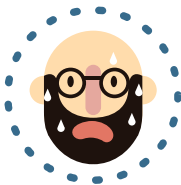


# Diabetes Symptoms

## SYMPTOMS



Slow healing



Sweating



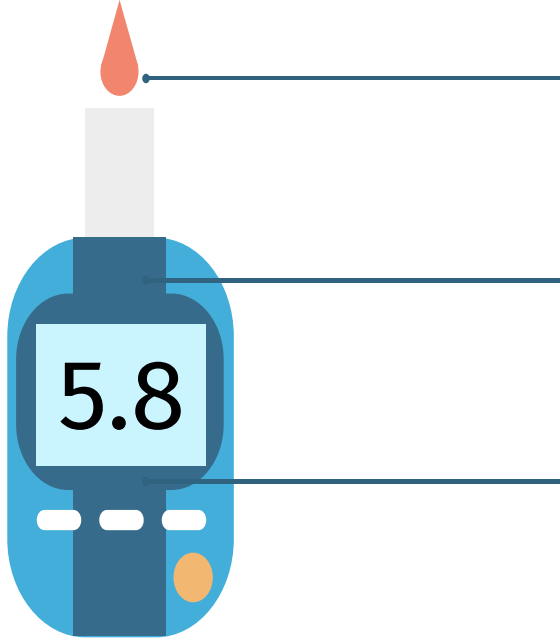
Sugar control



Thirst

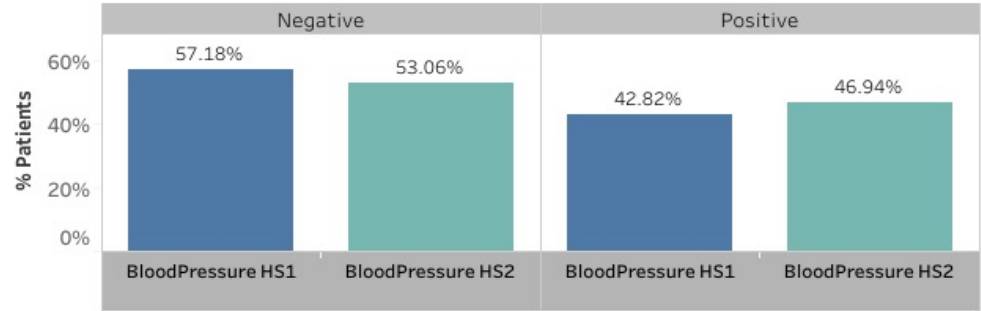


# Monitoring

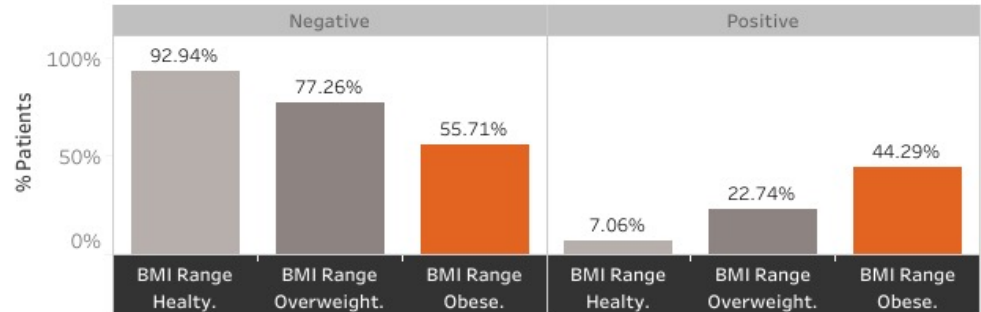


## Sub-segmentation Analysis

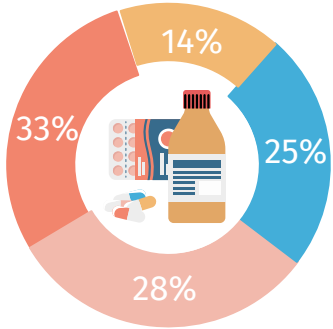
### *Diabetes by BloodPressure Type*



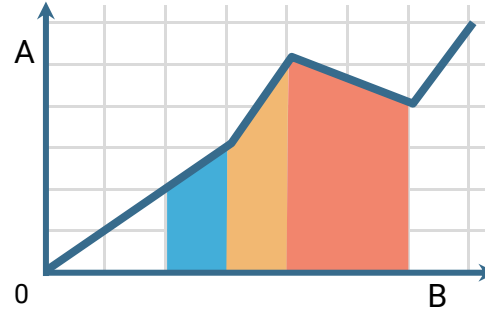
### *Diabetes by BMI Range*



# Diabetes Prevention



- Healthy Diet
- Hydration
- Regular Check-ups
- Visual care



Including Diabetes Risk Forecast as part of your regular check-ups is highly recommended.



Avoid fast food and regular exercise



8 glasses of water daily



At twice once a Year



Once a year minimum

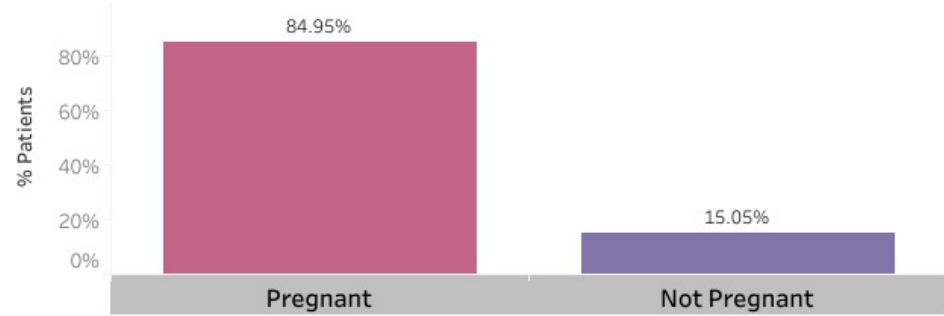


# Pregnancy

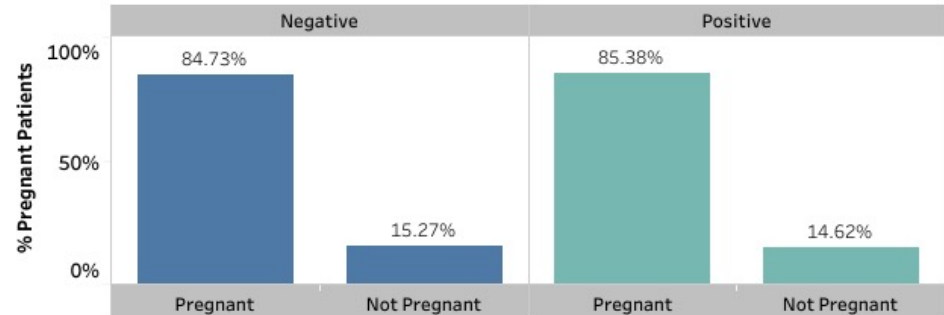


## Pregnancy Analysis

### ***Pregnancy Condition***

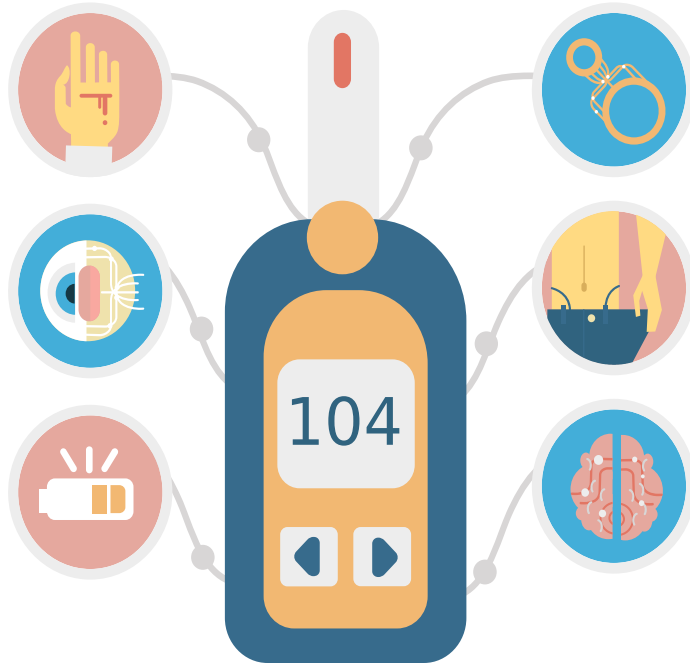


### ***Diabetes by Pregnancy***



# Data Science Solution

## Classification Model



### **Decision Tree Classifier**

CV score: 0.957500  
Sdv:(0.043675)

### **Logistic Regression Classifier**

CV score: 0.743500  
Std : (0.056294)

### **K Neighbors Classifier**

CV score: 0.640500  
Std : (0.047101)

# Recommendations

## Symptoms

## Treatment



Dizziness



Fatigue



Weight loss

Take medicine



Eat healthy



Monitor (Diabetes Risk Test)



# Future Work



## Expand the model

By adding additional features such as race and ethnicity



## Adding Locations

For potential business by selling a successful classification model to other hospitals and government.



## Evaluate other Classification Models

To test the accuracy of our selected model with others.



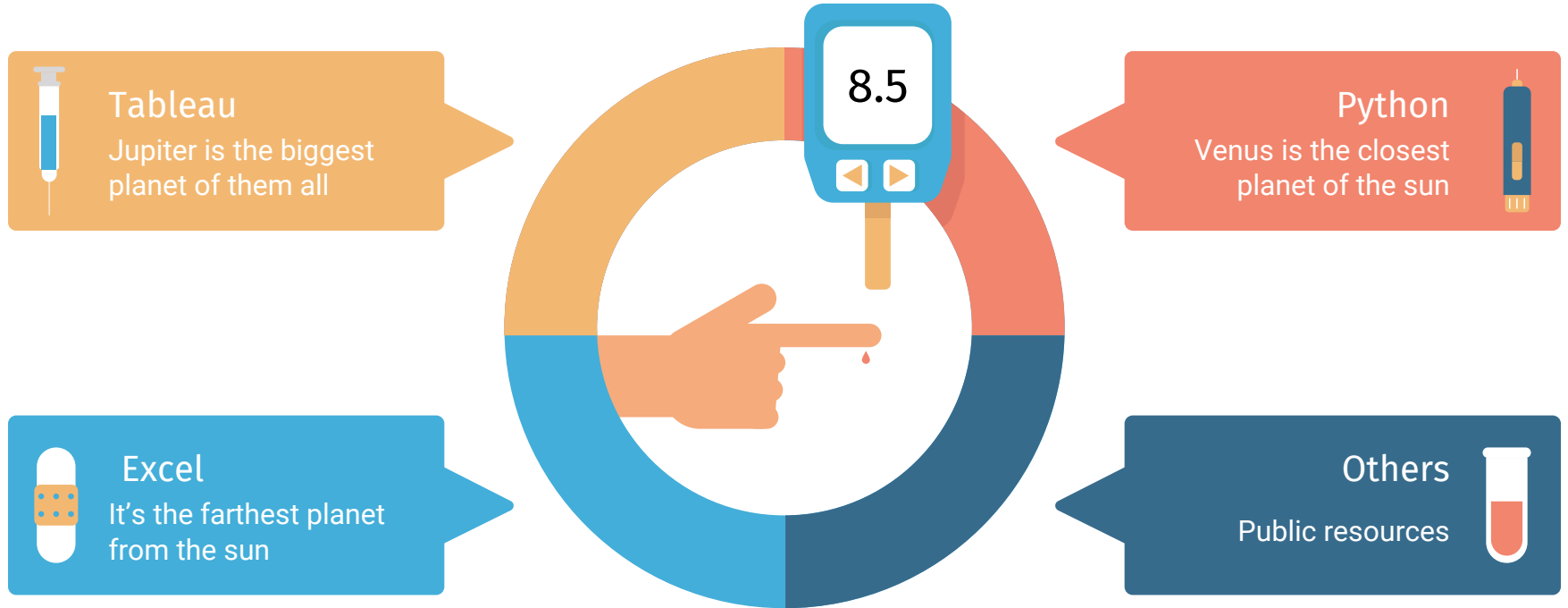


*THANK YOU*



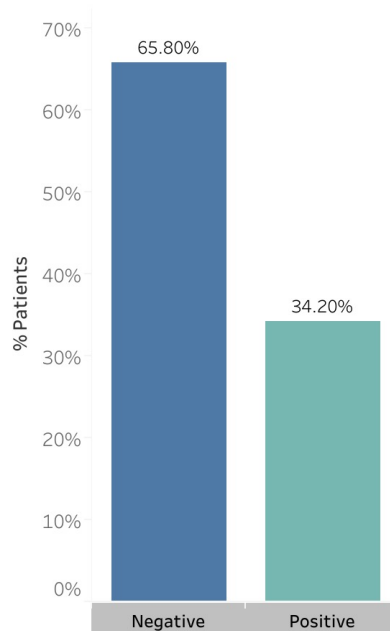


# Appendix

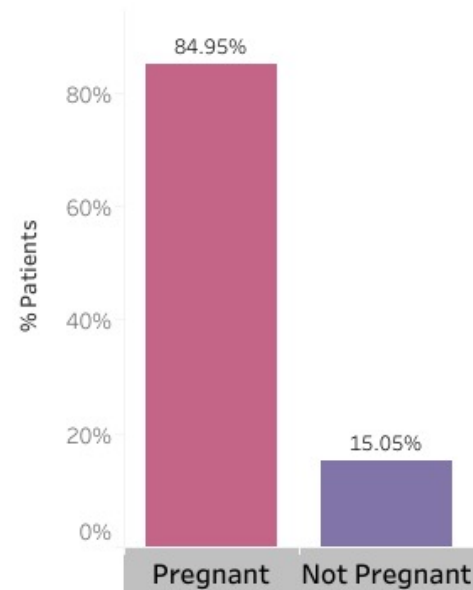


TABLEAU

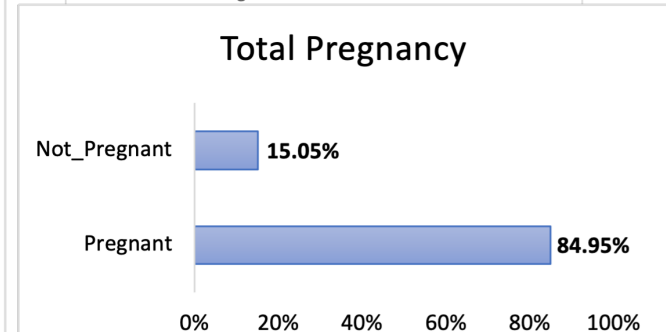
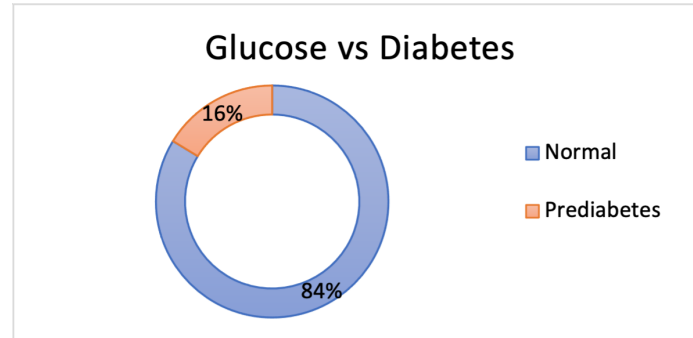
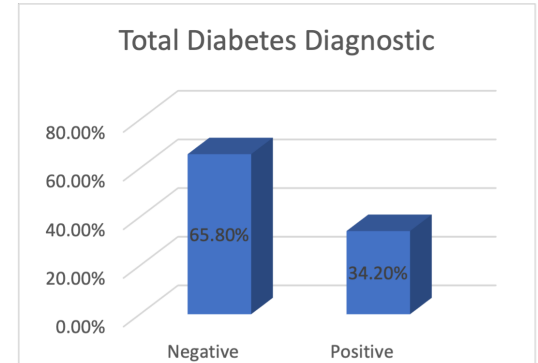
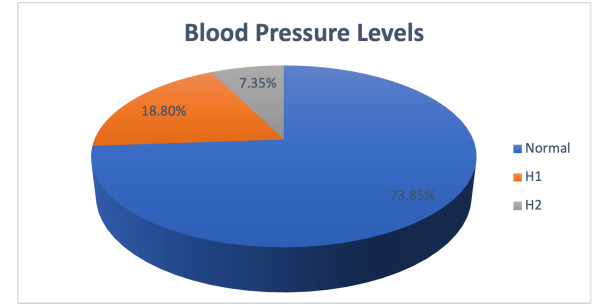
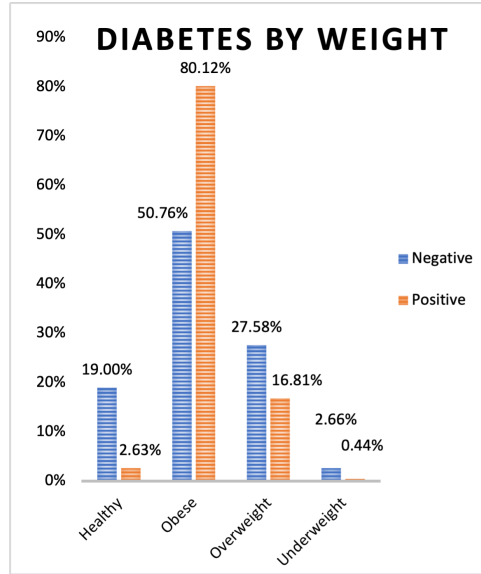
*Total Diabetes Distribution*



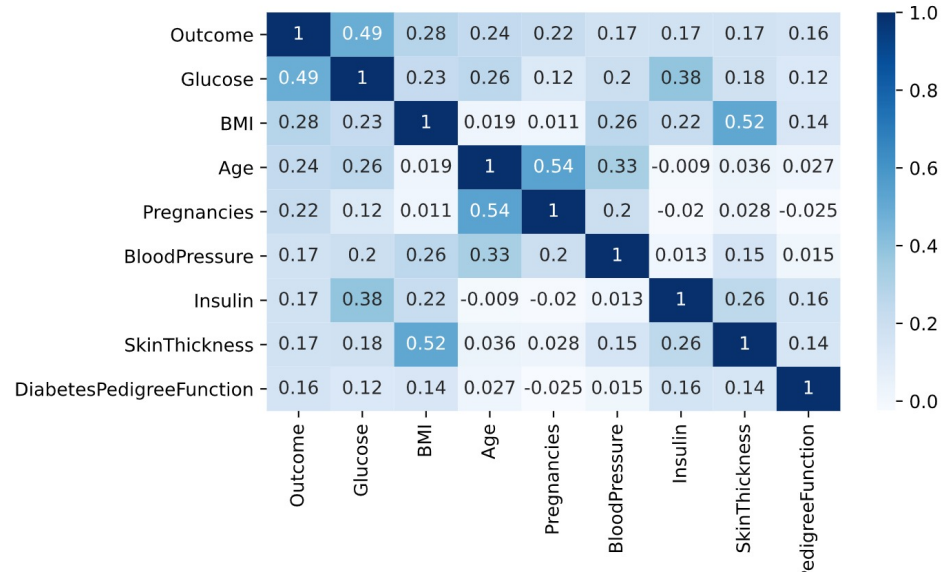
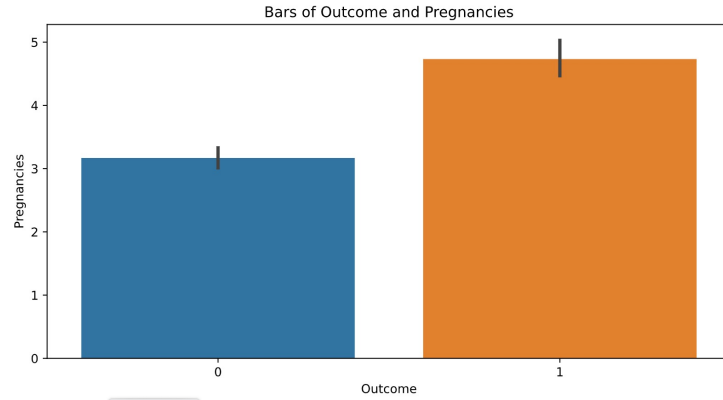
***Pregnancy Condition***



EXCEL



PYTHON



# SOURCES

<https://gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html#>

<https://www.kaggle.com/vikasukani/diabetes-data-set>

<https://slidesgo.com/>