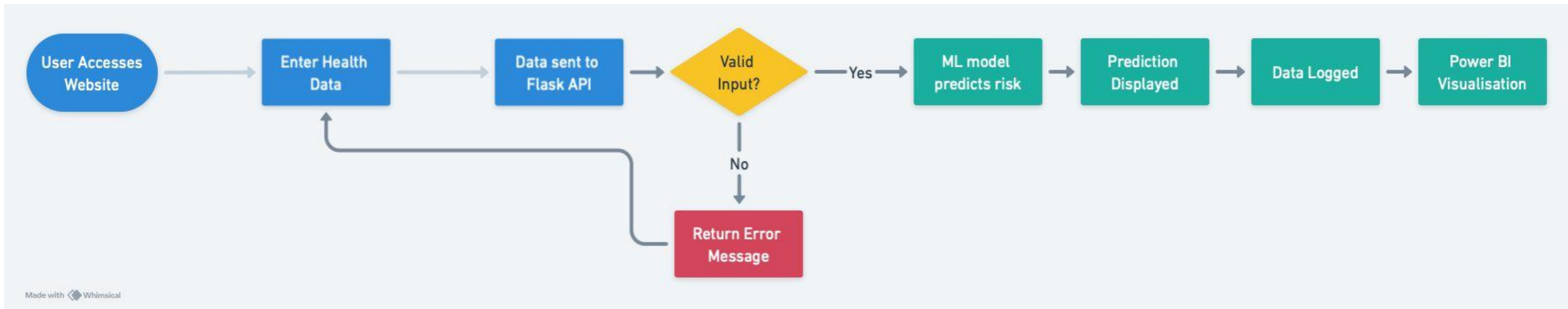# Heart Attack Monitor

Business objective

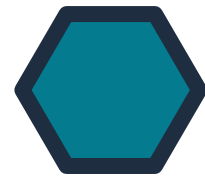✔ Predict heart attack risk, visualize live results

Project Pathway

Dataset description

Size: Over 250,000 records
Target Variable: HeartDiseaseorAttack (0 = No, 1 = Yes)

Features:
Behavioral: Smoking, Alcohol, Physical Activity
Biological: BMI, Blood Pressure, Diabetes, High Cholesterol
Mental/General Health: Depression, Days with Poor Health
Lifestyle: Sleep time, Race, Income level

Model delivering process

**Tools: scikit-learn, pandas, joblib, numpy**

Steps:

1. **Data Cleaning – Removing nulls, correcting datatypes.**
2. **Feature Engineering – Dropping irrelevant columns, encoding categoricals**
3. **Model Used – GradientBoostingClassifier**
4. **Train-Test Split – 80% train / 20% test**
5. **Hyperparameter Tuning – Performed using GridSearchCV**
6. **Model Export – Saved as heart_disease_model.pkl using joblib.**

Power BI Integration

BMI	Diabetes	Education	DiffWalk	Fruits	HighBP	GenHlth	HighChol	HvyAlcoholConsump	Income	NoDocbcCost	MentHlth	PhysActivity	PhysHlth	Sex	Stroke	Smoker	Veggies	Age	Timestamp
24.00	1.00	5.00	1.00	1.00	1.00	2.00	1.00	0.00		1.00		1.00		1.00	0.00	1.00	0.00	24.00	02-24-25
25.00	0.00	3.00	0.00	1.00	0.00	4.00	0.00	0.00		0.00		1.00		1.00	0.00	0.00	1.00	23.00	02-23-25
25.00	0.00	3.00	0.00	1.00	0.00	4.00	0.00	0.00		0.00		1.00		1.00	0.00	0.00	1.00	63.00	02-23-25
25.00	0.00	6.00	0.00	1.00	0.00	2.00	0.00	0.00		0.00		1.00		0.00	0.00	0.00	1.00	2.00	02-23-25
25.00	1.00	2.00	1.00	0.00	0.00	5.00	0.00	1.00		1.00		1.00		0.00	1.00	1.00	1.00	8.00	02-23-25
25.00	1.00	4.00	1.00	0.00	0.00	3.00	0.00	1.00		0.00		0.00		1.00	1.00	0.00	0.00	8.00	02-23-25
30.00	1.00	3.00	0.00	1.00	1.00	4.00	1.00	0.00		0.00		1.00		1.00	1.00	1.00	1.00	65.00	02-23-25
30.00	1.00	3.00	0.00	1.00	1.00	4.00	1.00	0.00		0.00		1.00		1.00	1.00	1.00	1.00	65.00	02-23-25
32.00	1.00	3.00	1.00	0.00	1.00	1.00	1.00	0.00		1.00		1.00		0.00	1.00	1.00	0.00	55.00	04-11-25
32.00	1.00	3.00	1.00	0.00	1.00	1.00	1.00	0.00		1.00		1.00		0.00	1.00	1.00	0.00	55.00	04-11-25
33.00	0.00	5.00	1.00	0.00	1.00	5.00	1.00	1.00		0.00		1.00		1.00	1.00	1.00	0.00	54.00	02-25-25
33.00	1.00	3.00	1.00	1.00	1.00	2.00	1.00	1.00		1.00		0.00		1.00	1.00	1.00	0.00	33.00	02-23-25

Count of Prediction

29

0   58
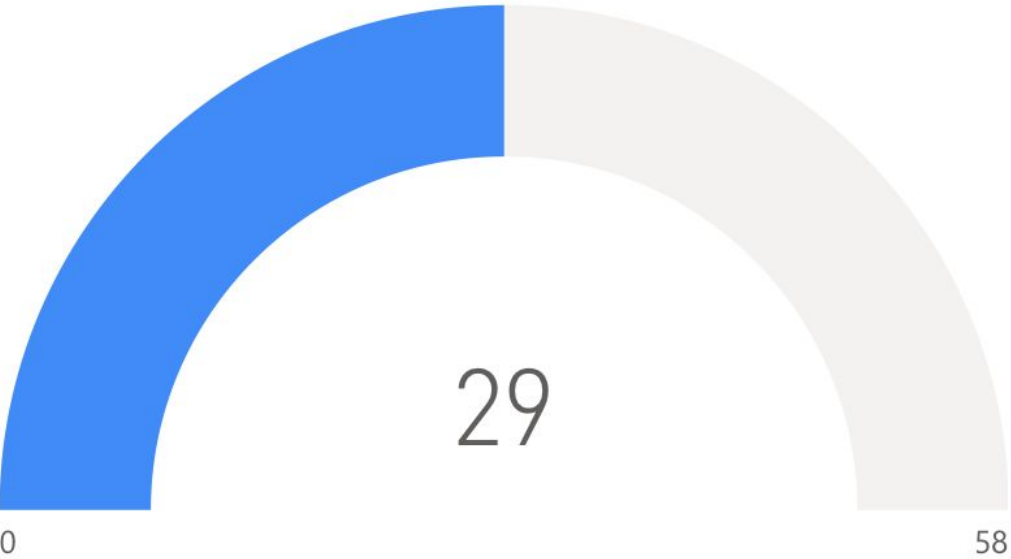
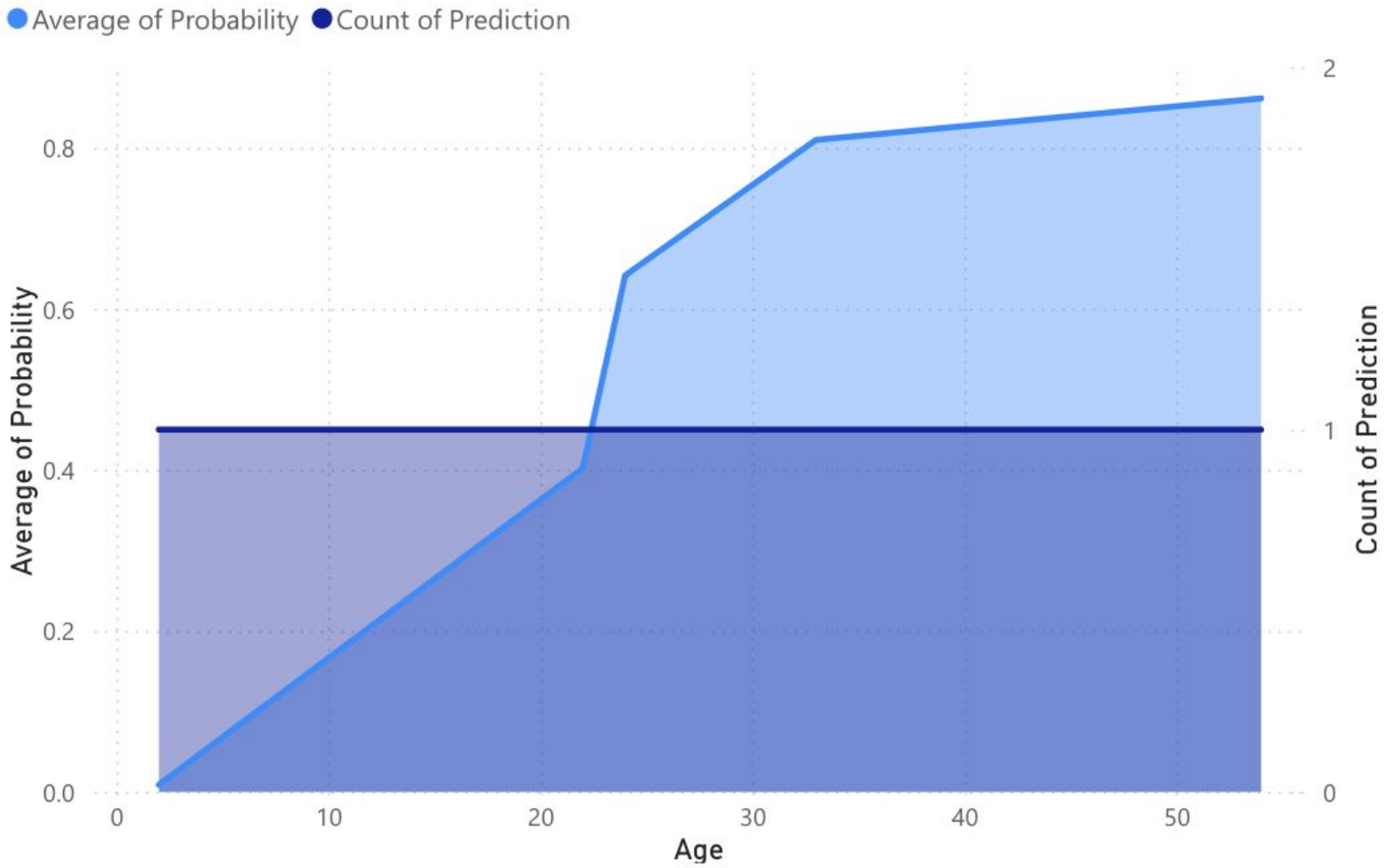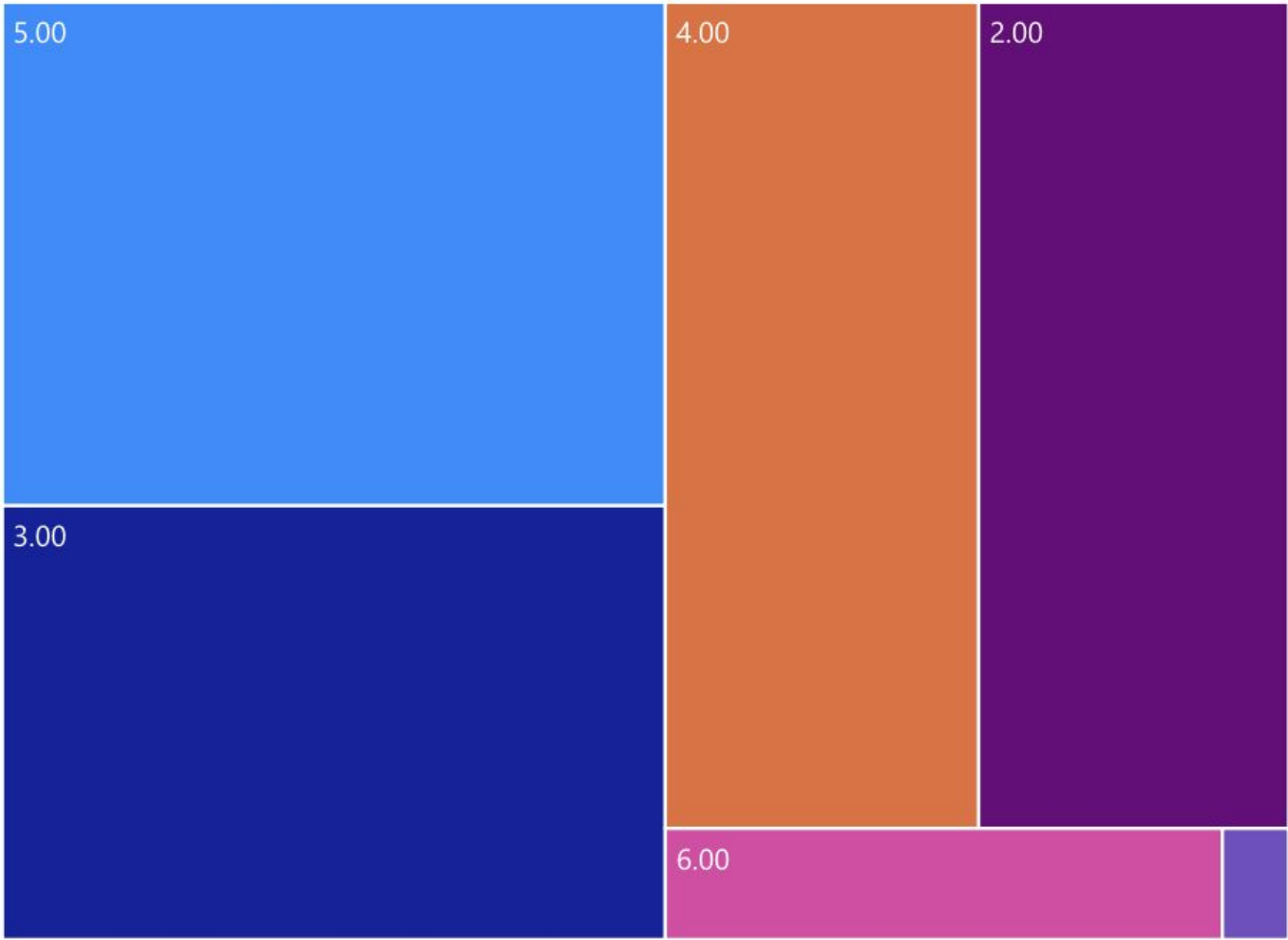## 13.00
Sum of Prediction

29
Count of Prediction

0.36
Average of Probability

Average of Probability and Count of Prediction by Age

● Average of Probability ● Count of Prediction
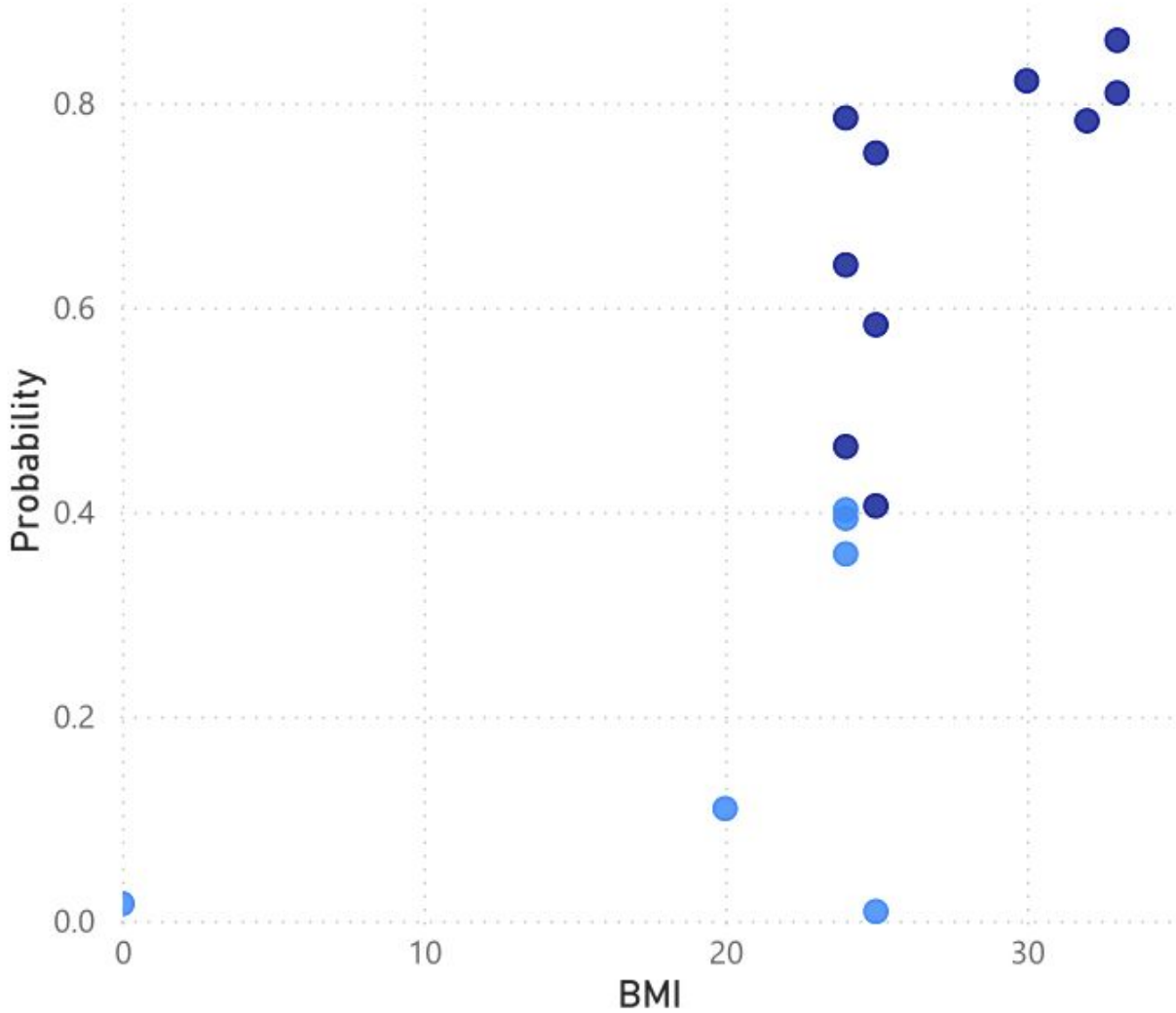

Average of Probability by Education

5.00

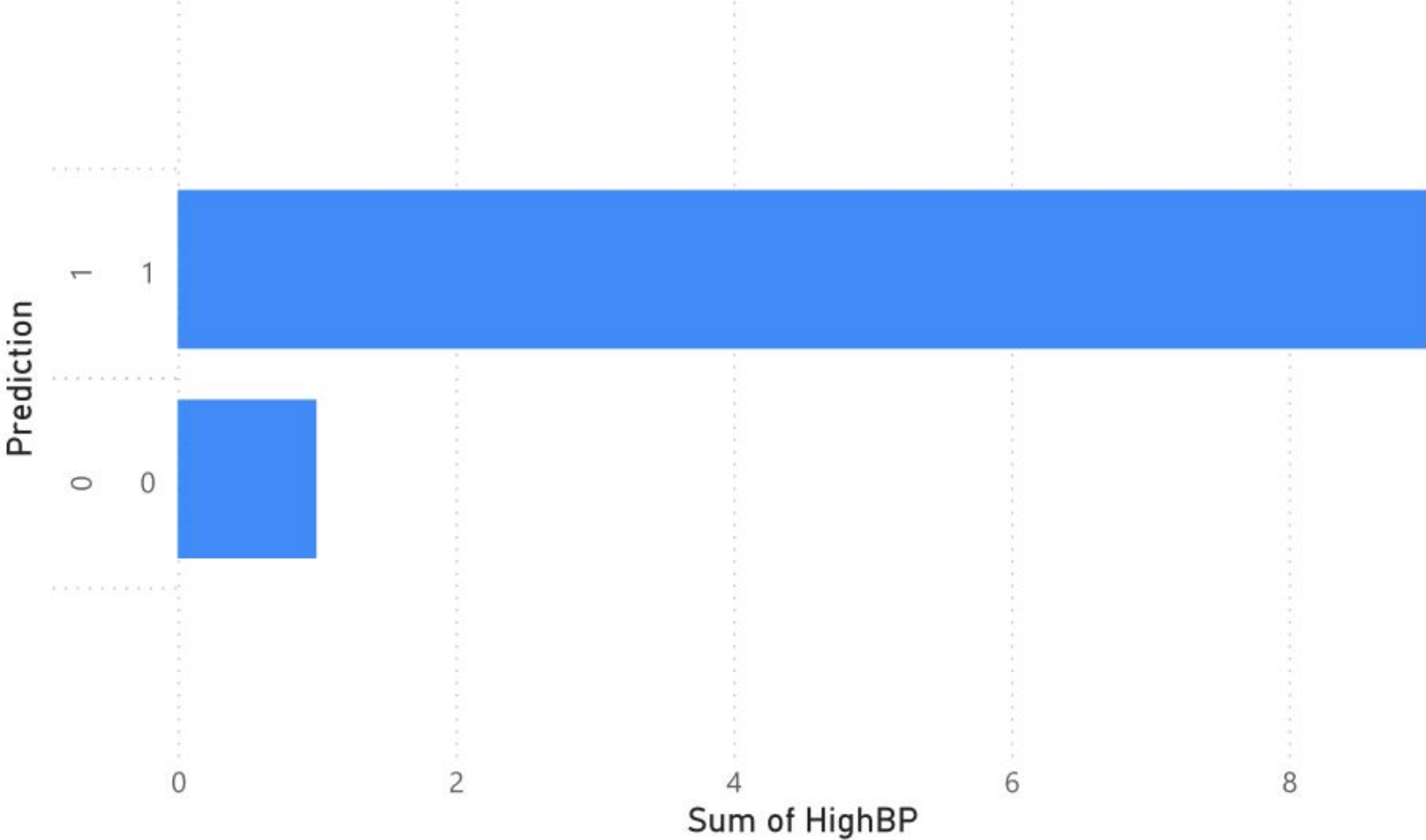4.00

2.00

3.00

6.00

Sum of Prediction by Sex

3 (23.08%)

10 (76.92%)

Sex
● 1
● 0
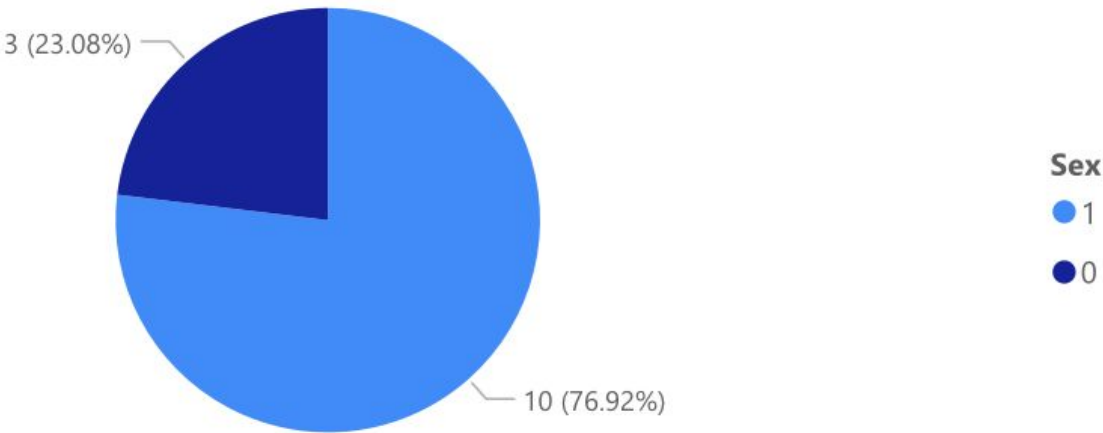
Prediction, BMI and Probability

Prediction ● 0 ● 1

Sum of HighBP by Prediction and Prediction

Business use cases

- Can act as a quick digital survey at check in

- Prioritize patients according to prediction

- Targeted Communication and Marketing Campaigns

- Prioritize testing (e.g., ECG, echo) for those most in need

- Send customized emails for online consulting based on the risk