



HowToFit

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Table of Contents

- 01 Design**
1x Motivating Question
1x Measurement
- 02 Data**
1 Source, 5x Data Tables
- 03 Methodology**
KNN x F1 x Sampling x CV x
GridSearch x Models
- 04 Result**
Heatmap

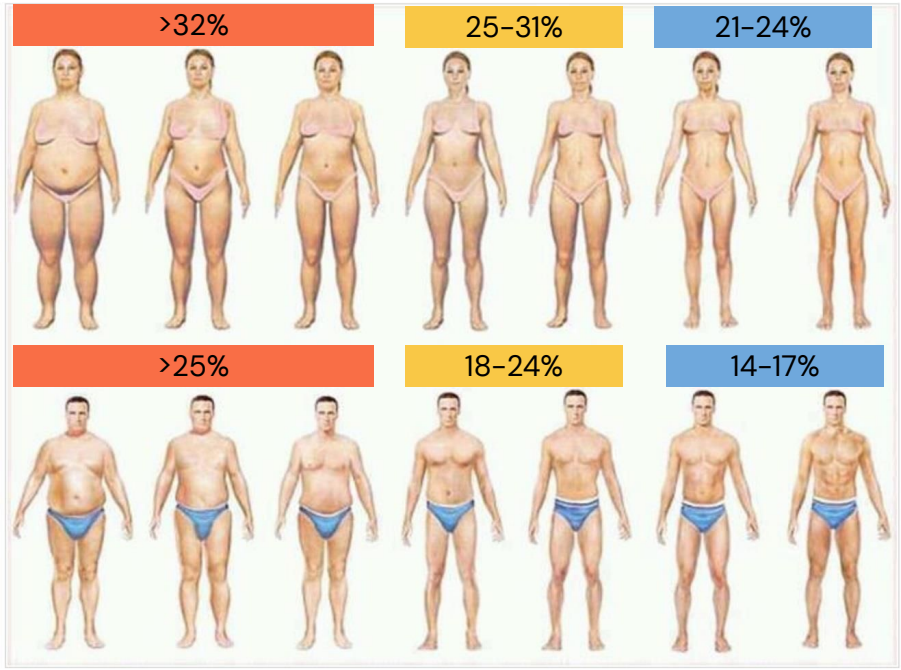
Design

Motivating Question:

If I want to get in shape,
should I diet or exercise?

Obese, Acceptable, and Fit Body Fat%

(as determined by the American Council on Exercise)



Data

National Health and Nutrition Examination Survey (NHANES)

Survey years:
2011-2018

Adults:
11,406



Demographic



DEXA Scan



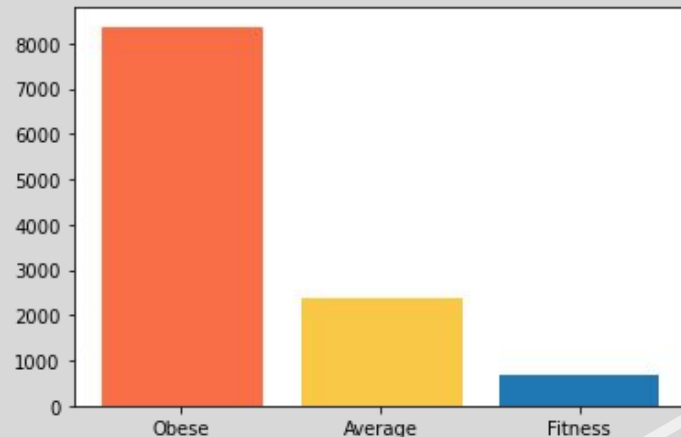
Weight History



Dietary Interview



Physical Activity



Methodology

Data: SQL Database, Pandas

Preprocessing: KNN for missing Nutrition

Scoring: F1 for Fitness

Sampling: Oversampling, SMOTE, ADASYN

Validation: K-fold cross-validation (5)

GridSearch:

Parameters including class weights (Balanced)

Models evaluated:

Decision Tree, Logistic Regression,
Random Forest, XGBoost, Naive Bayes

Model performance:

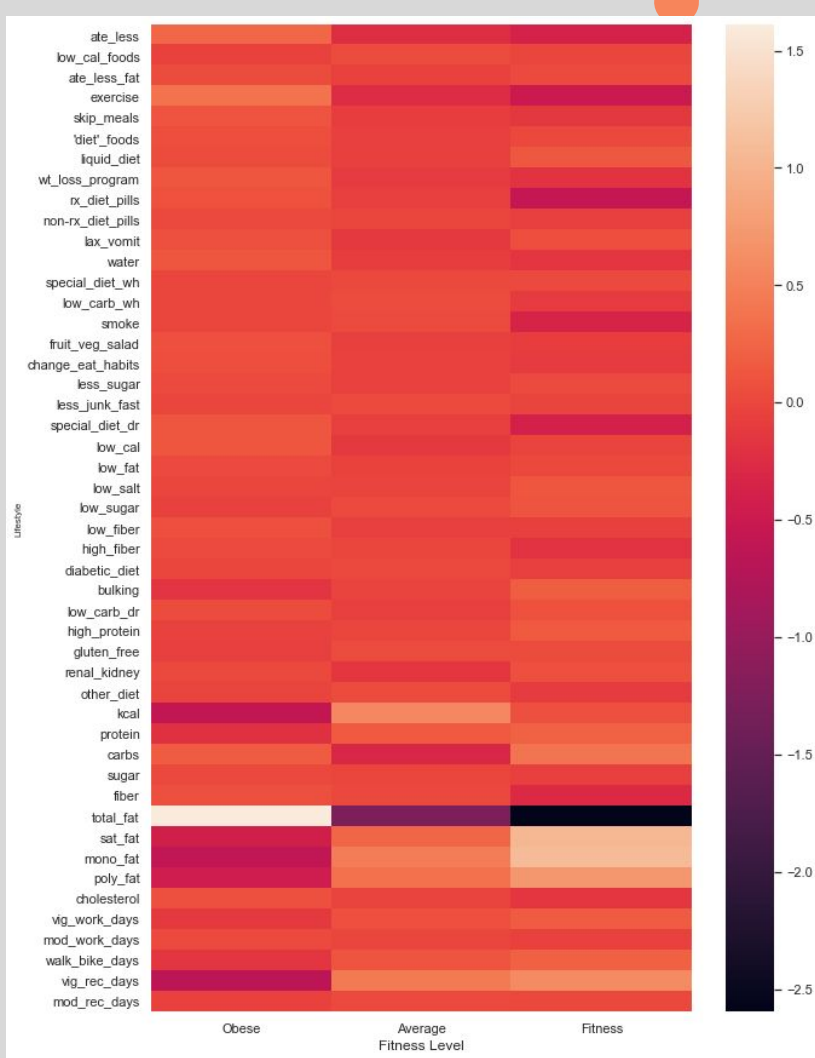
F1: 0.46 (vs 0.32 dummy)

F1-fitness: 0.24 (vs 0.04)



Confusion Matrix:

	Predicted				
Actual	Obese	Average	Fitness	Total	v FNR
Obese	1,502	138	66	1,706	3.9%
Average	275	108	69	452	15.2%
Fitness	55	33	36	124	29.0%
Total	1,832	279	171	2,282	^Recall
FDR>	3.0%	11.8%	21%	<Precision	





Feature Importance

Exercise!!!!



Future Work

Create a webapp so that people can input their desired lifestyle and see the likelihood that it will result in a certain fitness level.





Credits

Slidesgo for the template

Icons by FlatIcon

