
WARNING
Immediately stop watching and seek medical attention
if you experience any of these symptoms.
The risk of these seizures may be reduced by
taking the following precautions:
• Sit or stand farther from the TV/computer screen, or use a smaller screen
• Watch/play in a well-lit room
• Do not watch/play when drowsy/fatigued

PERSONALITIES & DRUG USE

Finding of our EDA

Ratnakar and Luke

WHAT IT'S ALL ABOUT

Our EDA revieled usefull implications of personality as a contributing factor to drug use.

Here we will look at:

- The data
- Theory
- Statistics
- Important features and results
- And what conclusions we can draw from the EDA

CLEANING THE DATA

Initially the data was converted into a T-Score based on normative data including all categorical variables, but excluding the class values

Categorical values where changed to original values, rather than T values.

Drug-use class was changed to people who *had used drugs* and those who *did not or had not* for more than a decade.

IMBALANCED DATA

Of the classes of user, for every one drug a person used, there were 17 that they did not!

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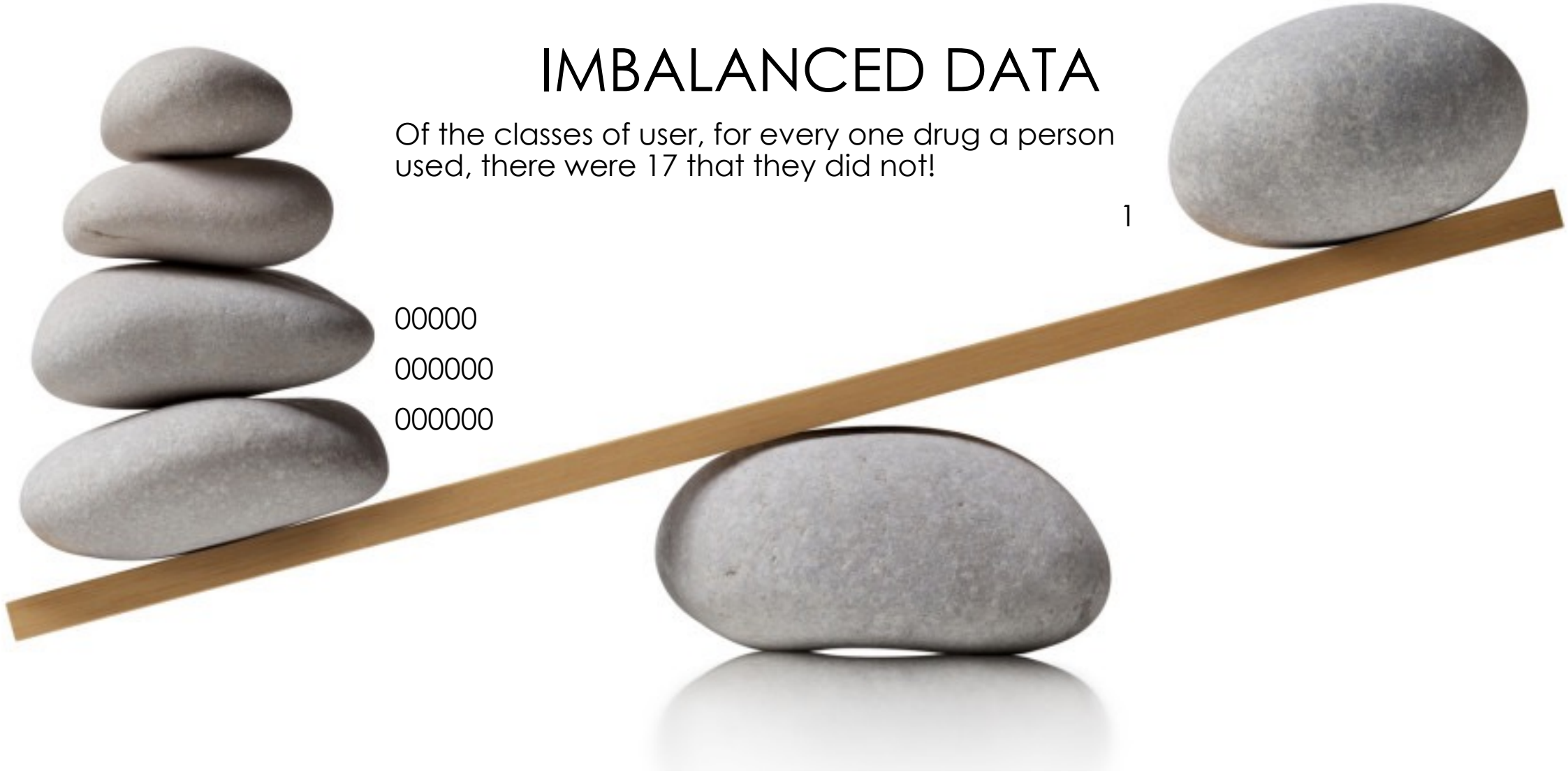
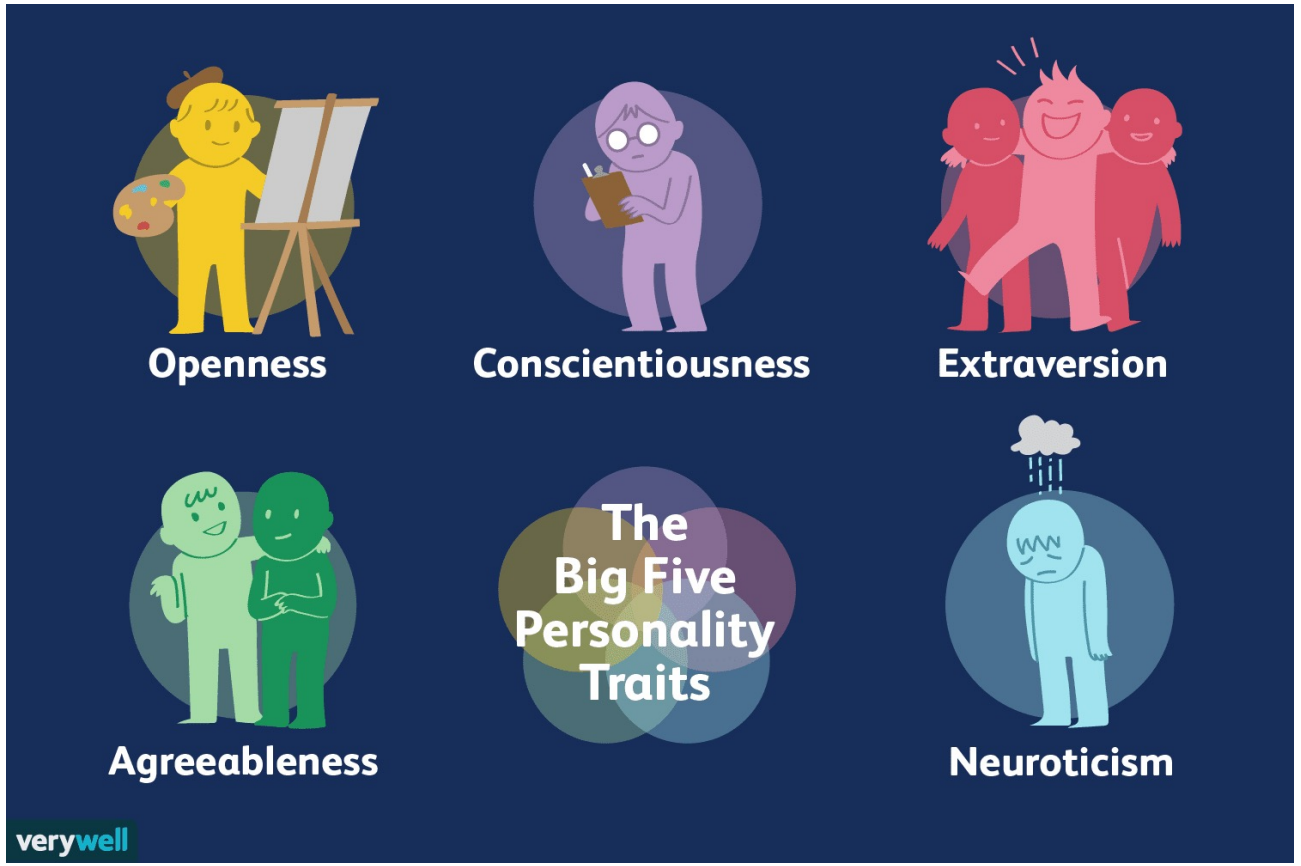


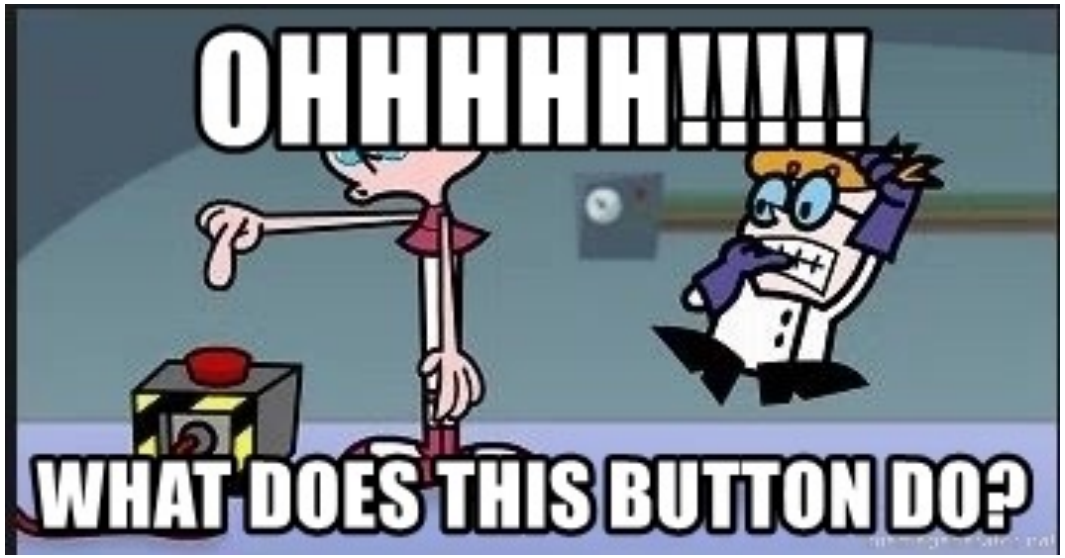
THE BIG 5

- From psychology´s trait theory.
- Made in the 80´s and shown accurate to present date.
- 5 long lasting, boiled down traits.



ADDITIONAL MESURES

- Impulsivity



- Sensation seeking

DEFINITION OF PERSONALITY TRATE

- “A relatively stable, consistent, and enduring internal characteristic that is inferred from a pattern of behaviors, attitudes, feelings, and habits in the individual.”
- - APA

HYPOTHESIS

- At the onset of the project, two hypotheses were posited:
- Hypothesis #1
  - There will be an interaction between personality combinations and particular drug consumption.
- Hypothesis #2
  - Some personality and drug combinations will have stronger effects than others.

CLASSES OF USERS

Non-using

- Never used
- Used over a dacade ago

Using

- Used in the last day
- Used in the last week
- Used in the last month
- Used in the last year
- Used in the last 10 years

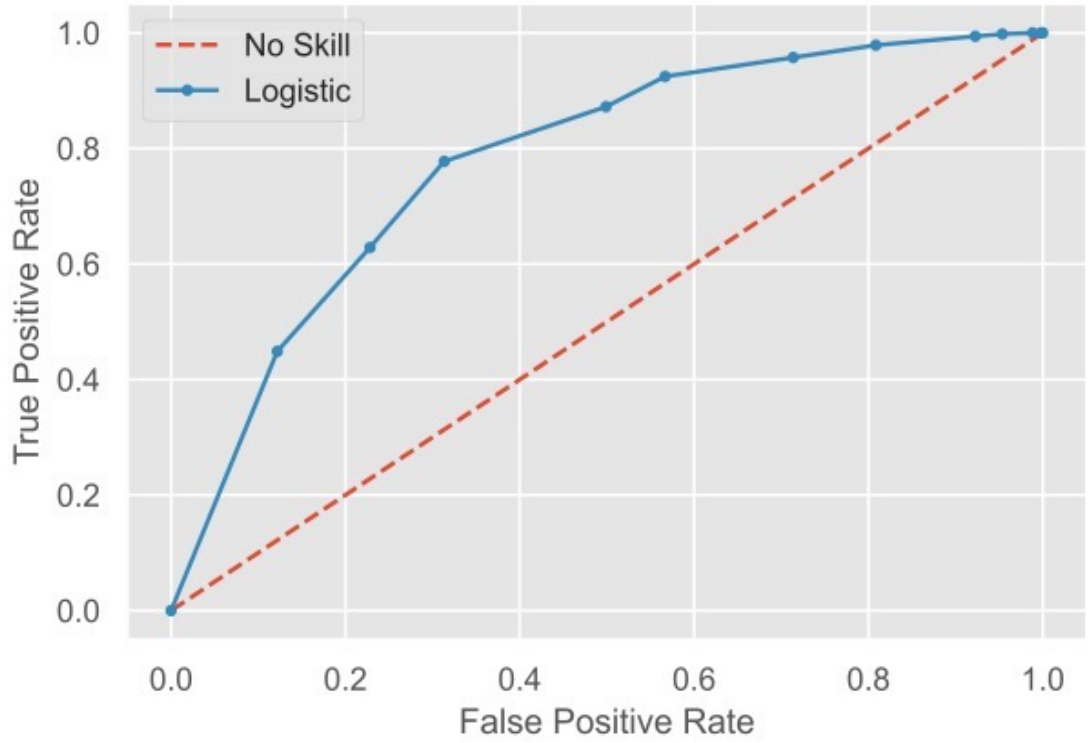
DRUG TYPES

- Alcohol
- Amphetamines
- Amyl nitrite
- Benzodiazepines
- Caffeine
- Cannabis
- Chocolate
- Cocaine
- Crack
- Ecstasy
- Heroin
- Ketamine
- Legal highs
- LSD
- Methadone
- Magic mushrooms
- Nicotine
- Volatile substance abuse (VSA)
- Semeron (Fictisious)
  - removed from analysis

WHY LOGISTIC REGRESSION?

Logistic regression was chosen because of the use of catagorical variables.

We then compared with **Random Forest** and **Adabooster**



LOG REGRESSION MODEL

Alcohol = 50.0%

Amphetamines = 69.85%

Amyl nitrite = 56.76%

Benzodiazepines = 66.23%

Caffeine = 66.67%

Cannabis = 76.61%

Chocolate = 71.43%

Cocaine = 67.27%

Crack = 55.84%

Ecstasy = 68.44%

Heroin = 75.29%

Ketamine = 65.71%

Legal highs = 76.07%

LSD = 75.78%

Methadone = 70.66%

Magic mushrooms = 72.66

Nicotine = 62.65%

VSA = 71.74%

Semeron (Fictisious) = 64.89%

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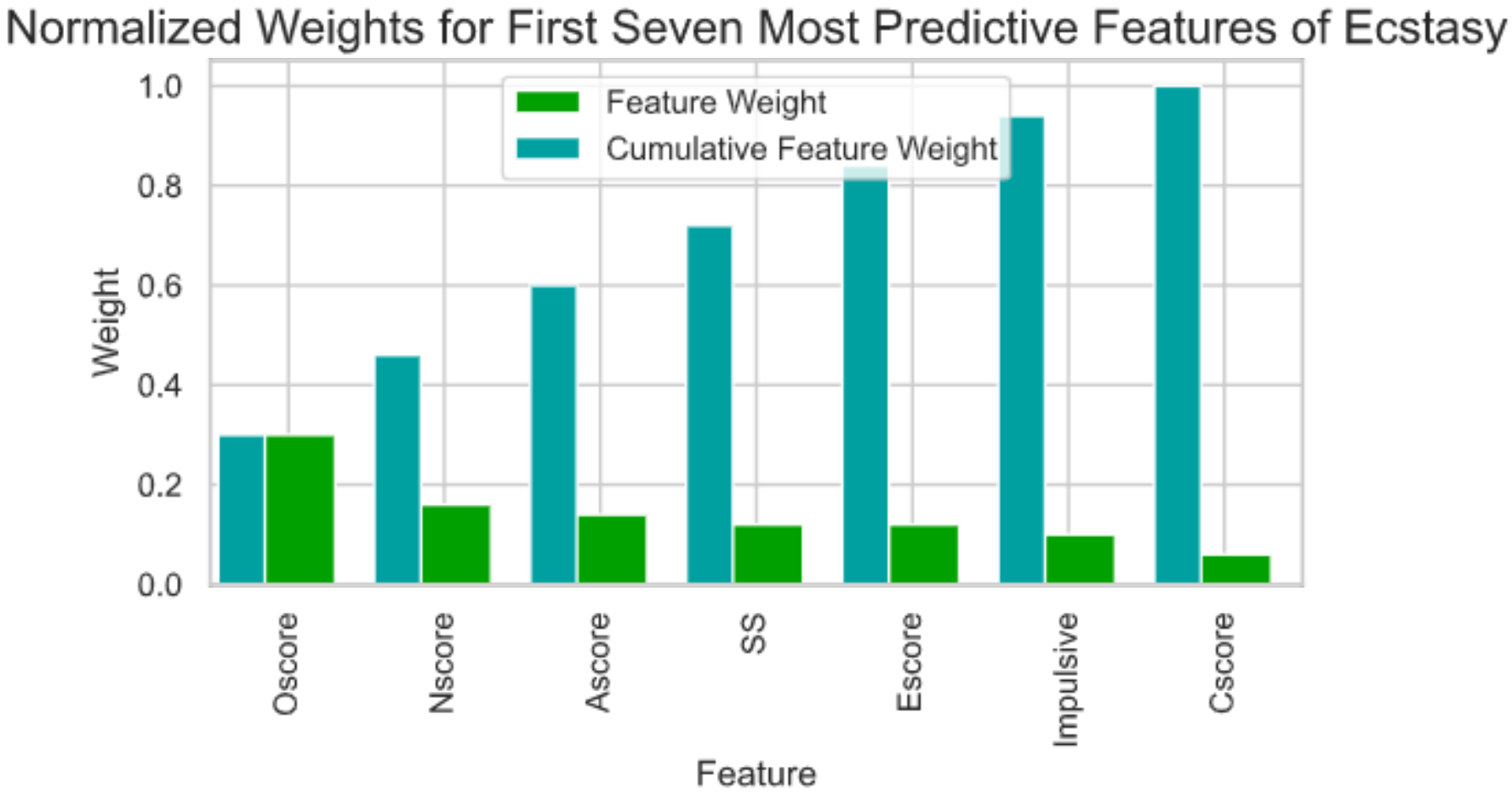
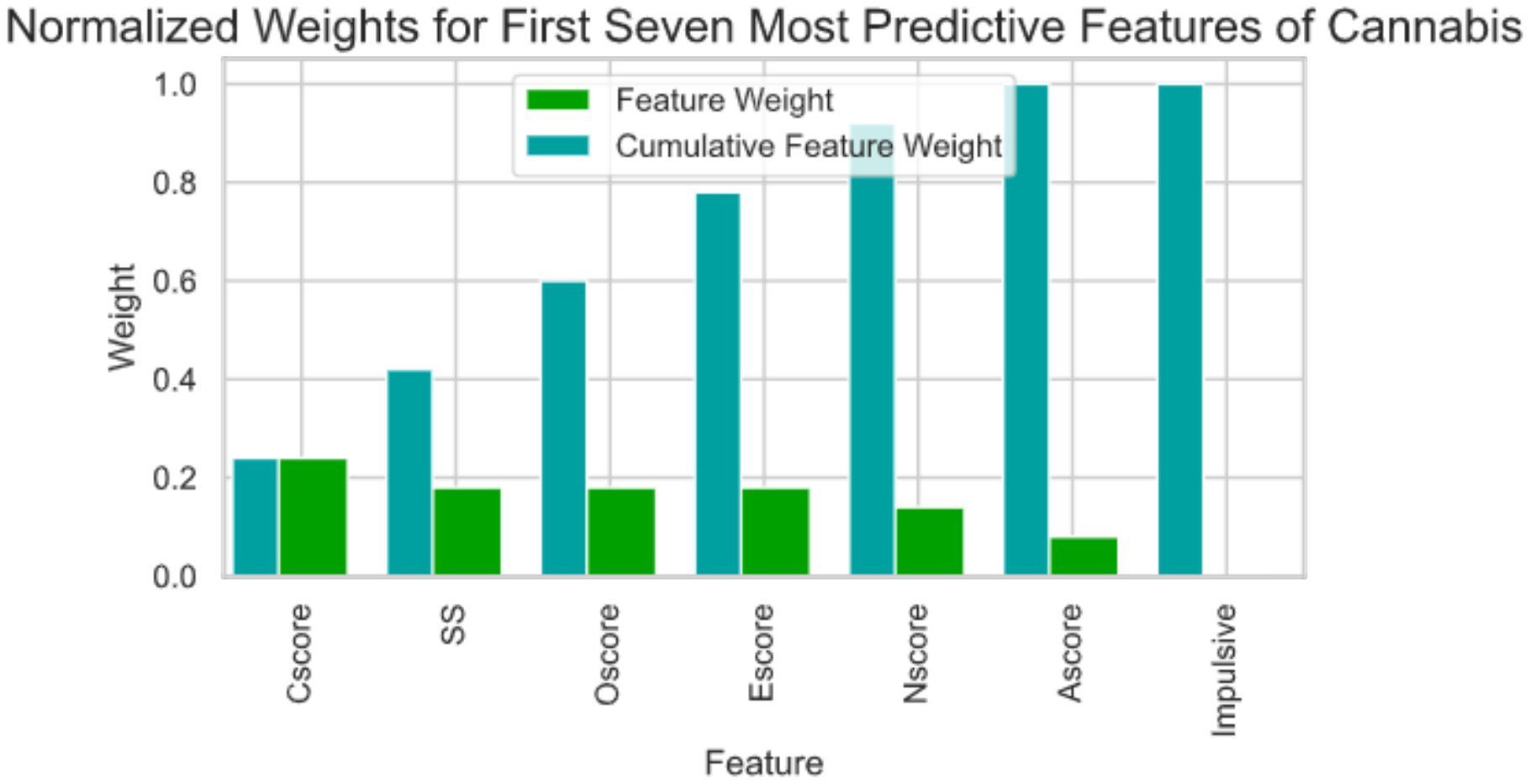
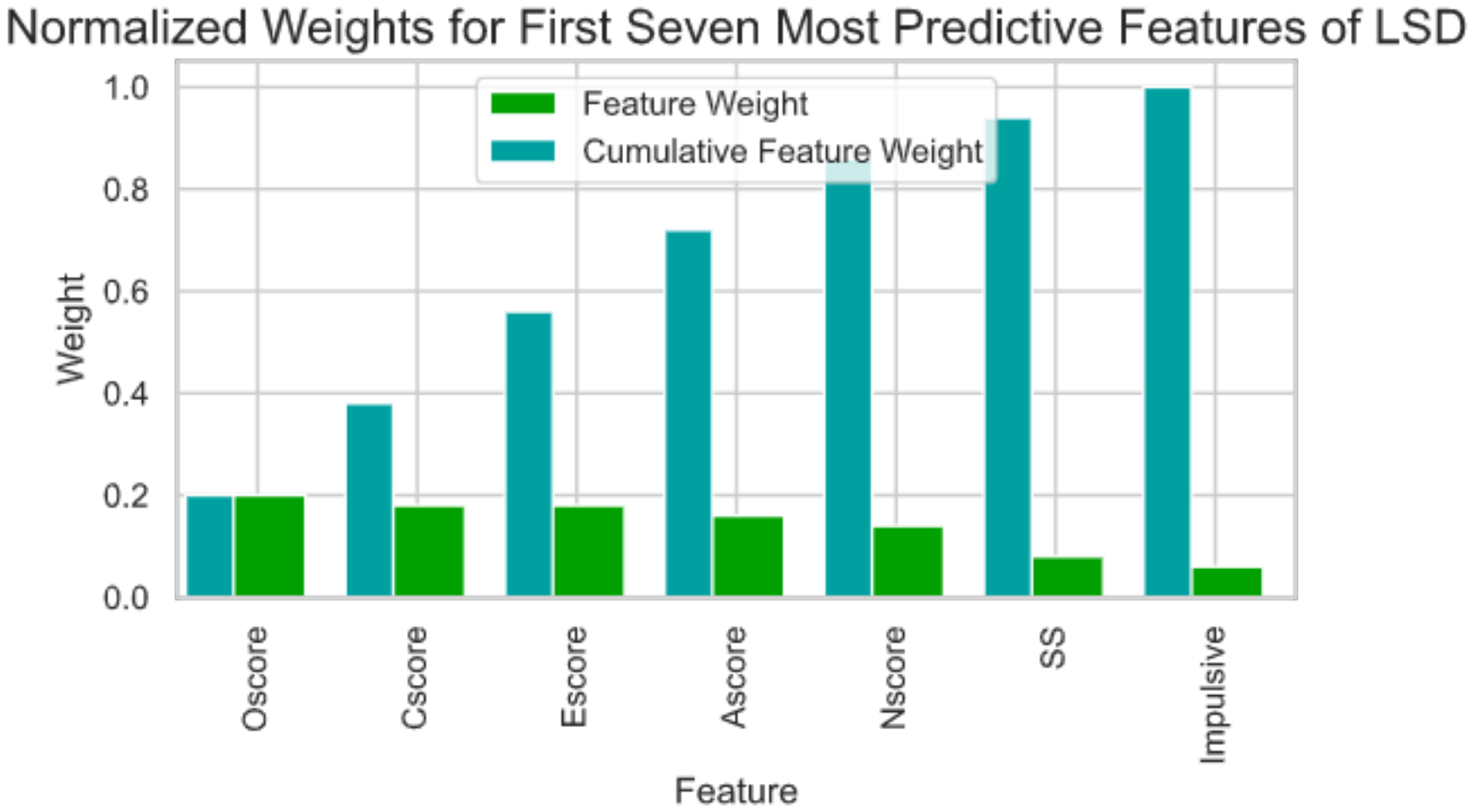
ECSTASY: IMPORTANT FEATURES



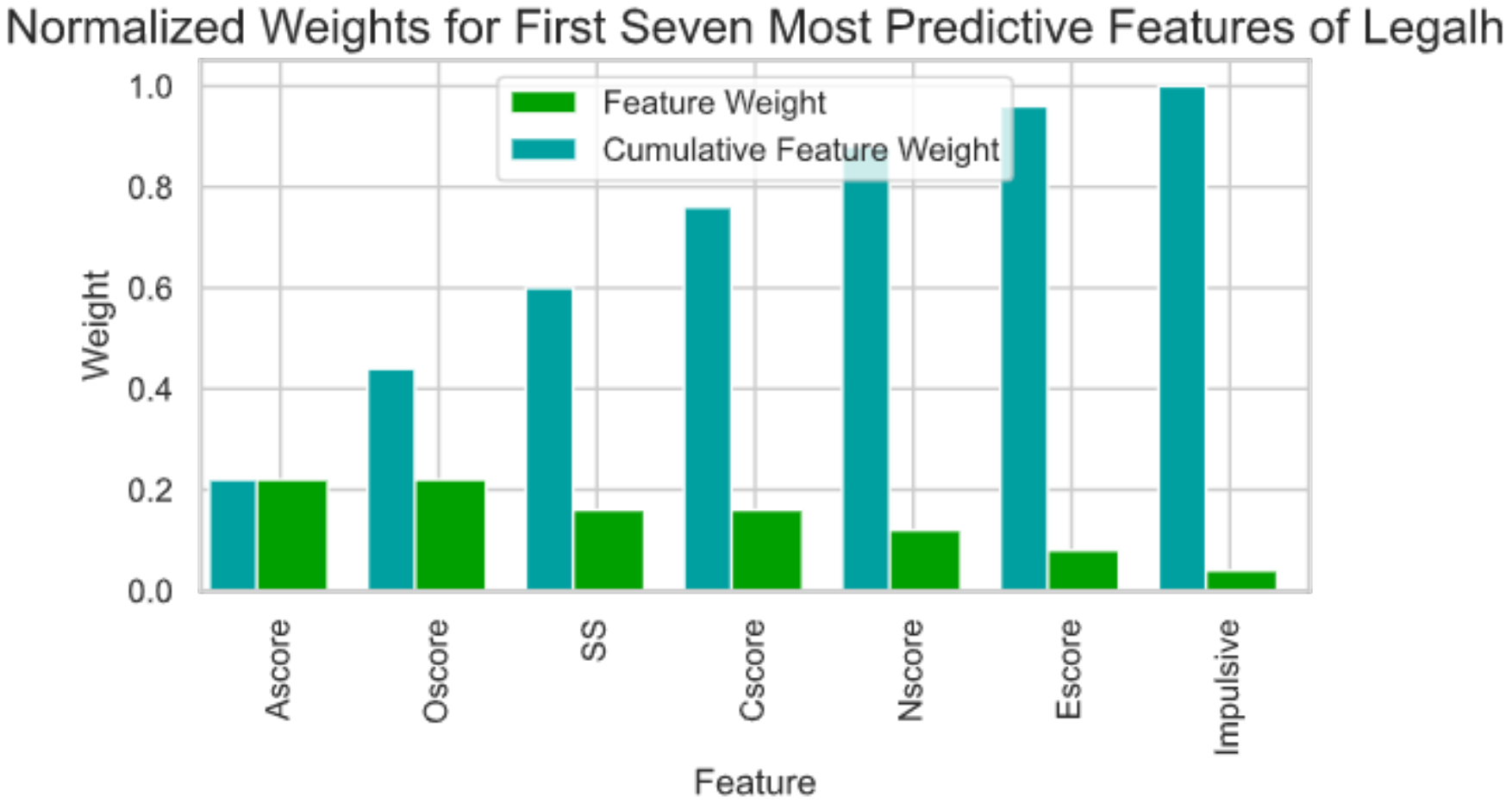
CANNABIS: IMPORTANT FEATURES



LSD: IMPORTANT FEATURES



LEGAL HIGH: IMPORTANT FEATURES



IMPORTANT FEATURES

**Based on F1 scores

Ecstasy

+ Openness
+ Nurotic
- Agreeableness
+ Sensation Seeking
- Extraversion
+ Impulsive
- Contientiousness

Cannabis

- Contientiousness
+ Sensation Seeking
+ Openness
- Extraversion
+ Nurotic
- Agreeableness
+ Impulsive

LSD

+ Openness
- Contientiousness
+ Extraversion
- Agreeableness
+ Nurotic
+ Sensation Seeking
+ Impulsive

Legal high

- Agreeableness
+ Openness
+ Sensation Seeking
- Contientiousness
+ Nurotic
- Extraversion
+ Impulsive

EXAMPLE RESULTS: ECSTASY

Best model: Logistic regression model

Predicted non-using

- 97 correctly identified
- 43 falsly identified

Predicted using

- 56 falsly identified
- 105 correctly identified

EXAMPLE RESULTS: CANNIBUS

Best model: Logistic regression model

Predicted non-using

- 95 correctly identified
- 22 falsly identified

Predicted using

- 33 falsly identified
- 98 correctly identified

EXAMPLE RESULTS: LSD

Best model: Logistic regression model

Predicted non-using

- 80 correctly identified
- 25 falsly identified

Predicted using

- 35 falsly identified
- 83 correctly identified

EXAMPLE RESULTS: LEGAL HIGH

Best model: Logistic regression model

Predicted non-using

- 94 correctly identified
- 28 falsly identified

Predicted using

- 50 falsly identified
- 133 correctly identified

OPTIMIZED HYPERPARAMETERS

- **Ecstasy**
- AdaBoost Classifier
  - Decision Tree max depth = 1
  - Learning rate = 0.1

- **Cannabis**
- AdaBoost Classifier
  - Decision Tree max depth = 3
  - Min sample split = 6
  - Learning rate = 0.1
  - N estimators = 120

OPTIMIZED HYPERPARAMETERS

- **LSD**
- AdaBoost Classifier
  - Decision Tree max depth = 1
  - Learning rate = 0.1

- **Legal High**
- AdaBoost Classifier
  - Decision Tree max depth = 1
  - Learning rate = 0.1
  - N estimators = 120

FINAL SCORES

Ecstasy

- Accuracy on testing data: 0.6678
- F-score on testing data: 0.6576

Cannabis

- Accuracy on testing data: 0.7661
- F-score on testing data: 0.7566

LSD

- Accuracy on testing data: 0.7085
- F-score on testing data: 0.6935

Legal High

- Accuracy on testing data: 0.7475
- F-score on testing data: 0.7503

RESULTS:

- Hypothesis 1: passes

  Of the 18 drug catagories (including the one fictional), the model predicted half of the with an accuracy greater that 70%.

- Hypothesis 2: passes

  It appears that "openness" is a significant indicator for LSD, Cannabis, Ecstasy, Legal highs, appearing in the top 3 for each drug.

CONCLUSION:

Although the model shows people with certain personality types are more suseptable to certain drugs, We cannot say for certain that particular drugs are more dependent on personality than on other factors. The findings of our model indicate that there are people who are at higher risk of developing addiction, with particular personality trait combinations.

CONCLUSION:

It was also shown that there were positive corelations for Opennes, nerotisism, sensation seeking and impulsive personalities, and negative correlations with agreeableness, contientiousnes, and extroversion with the exception of LSD.

CONCLUSION:

In future, a study could be conducted to identify across drug types, which range of personality types are most suseptable to drug use overall.

ANY QUESTIONS?

THANK YOU!!!

And you're welcome…