

DRUG ABUSE & PERSONALITY TRAITS

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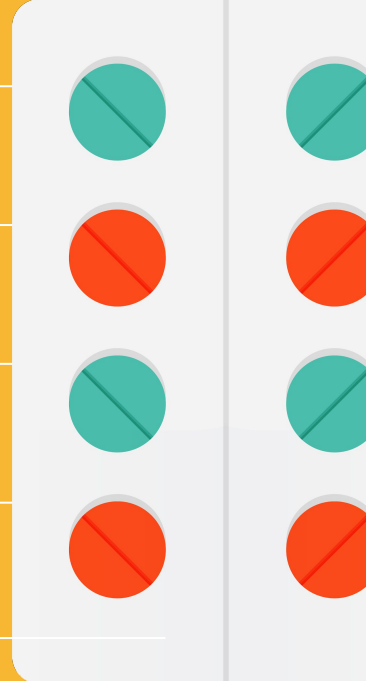
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INTRODUCTION

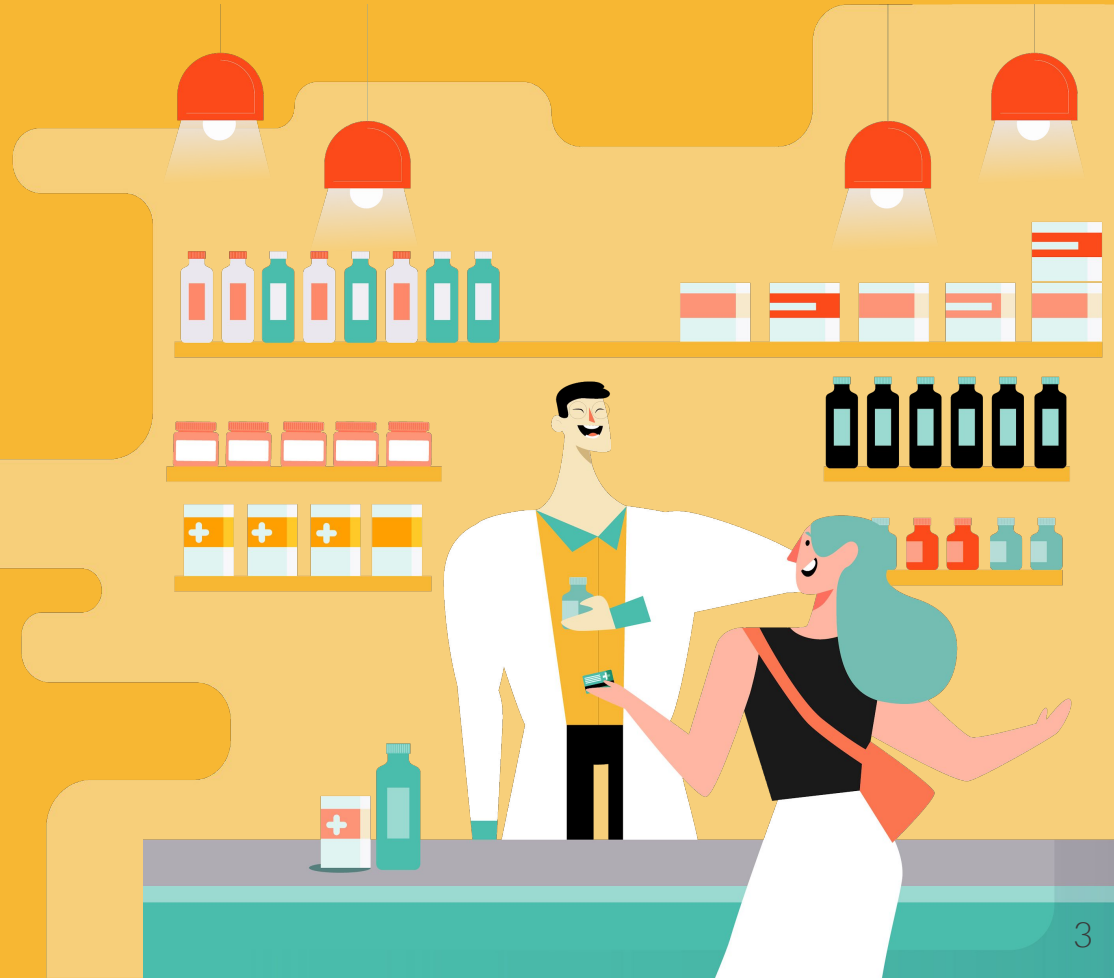
CLIENT

Drug Prevention
Organization

Who takes
illegal drugs?

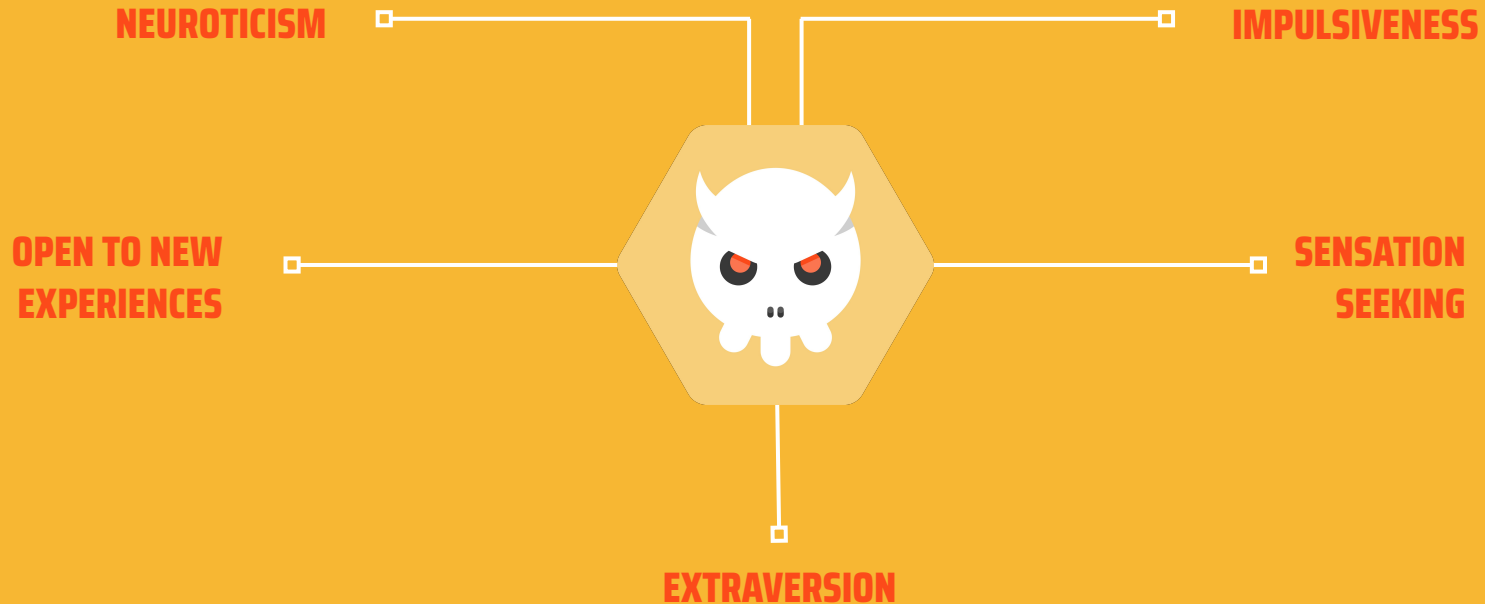


Who is the
most difficult
target group?



hardliners

belong to the 10% of participants
scoring highest on the following
personality traits



illegal drugs



cannabis



crack



shrooms



cocaine



heroin



amphetamines



ecstasy



meth

ketamine

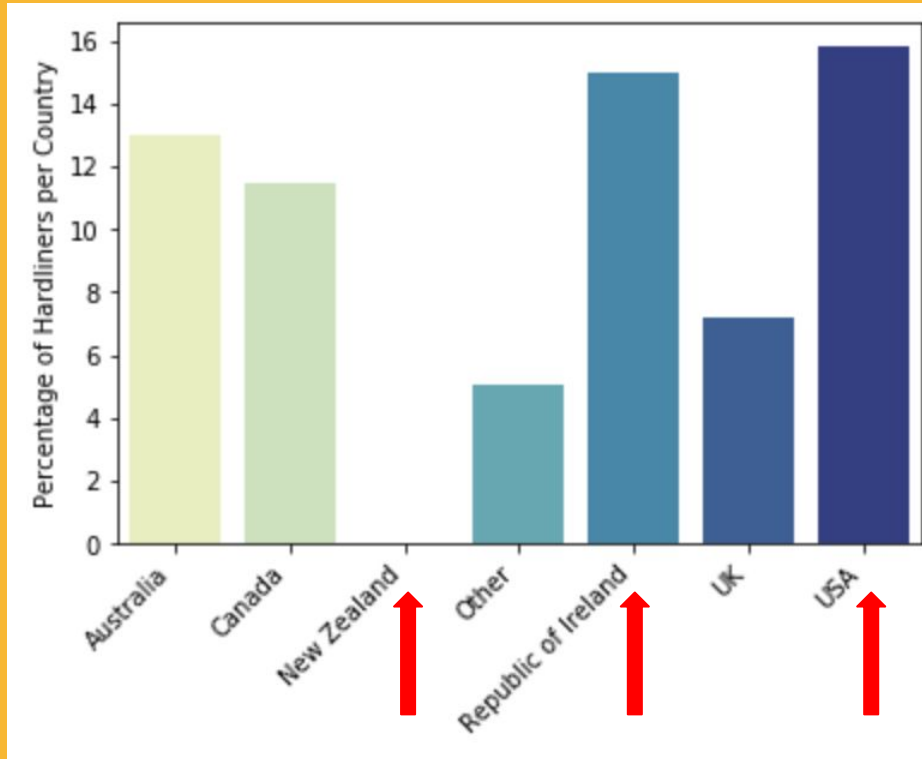
amyl nitrite

LSD



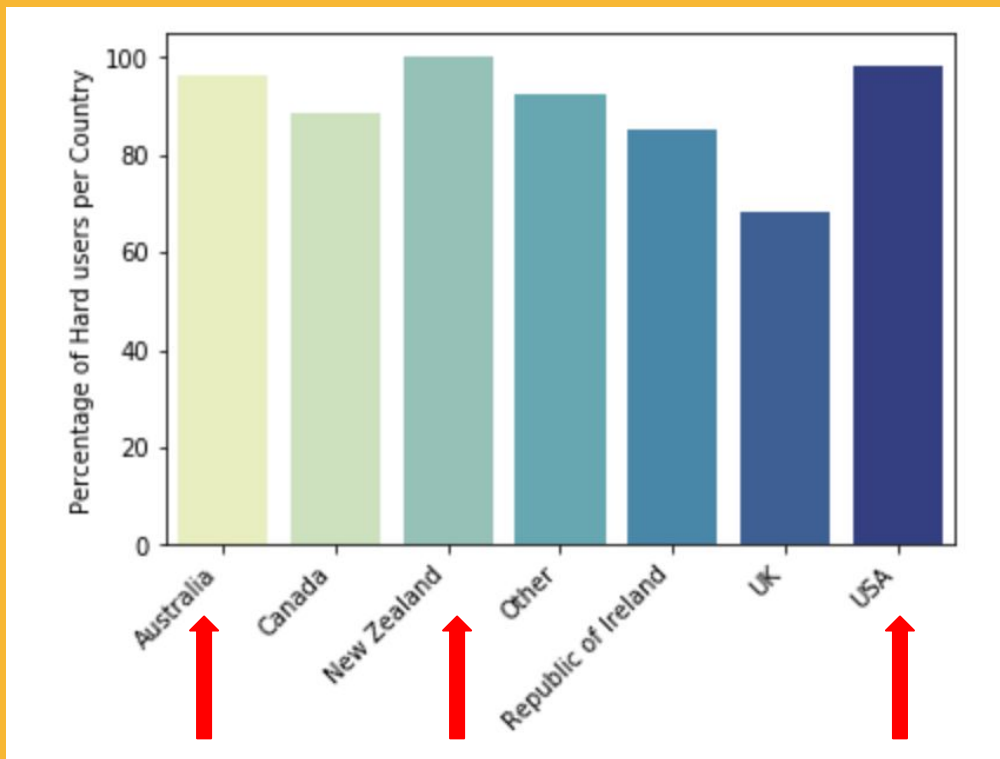
hardliners

Where do we find the most extreme personalities?



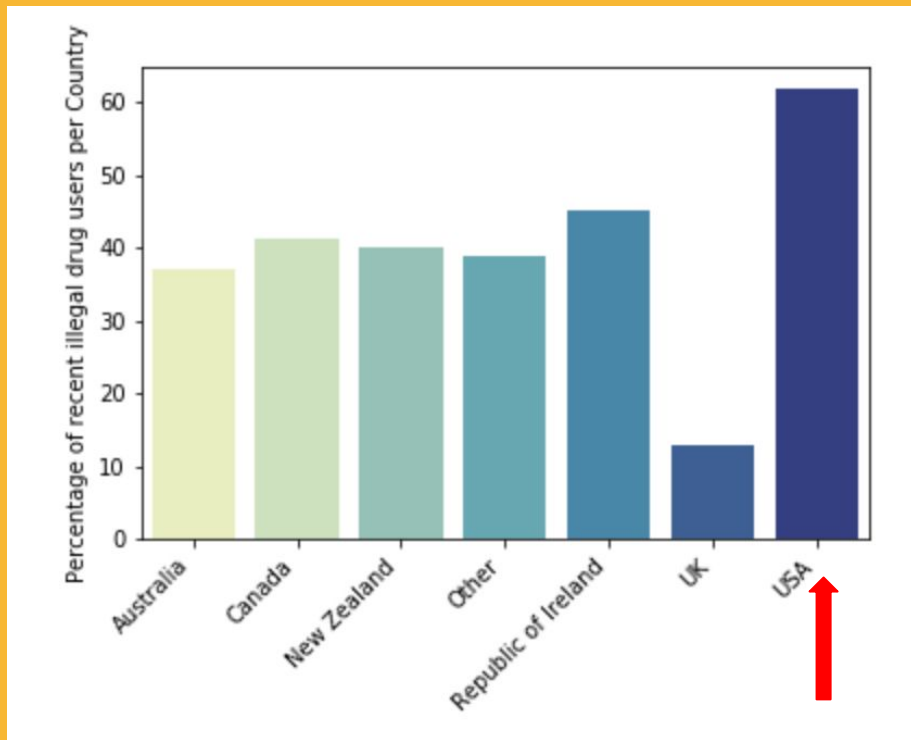
illegal drugs

Where do most people consume illegal drugs?



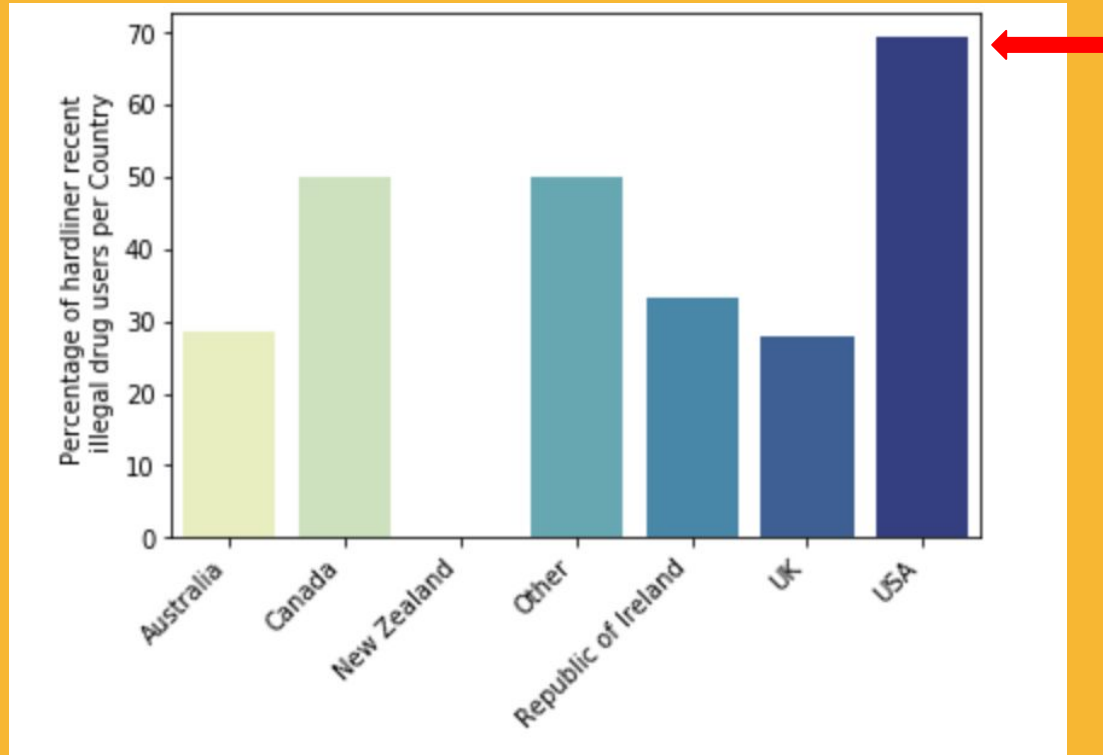
illegal drugs

What about those who consumed recently
(last week, yesterday)?



illegal drugs/hardliners

Where do hardliners consume frequently?



illegal drugs/hardliners

What do hardliners consume more or less frequently than other people?



	cannabis	cocaine	crack	ecstasy	heroin	ketamine	meth	LSD	shrooms	ampheta mines	amyl nitrite	chocolate
hard liners	4.06	2.11	0.51	2.29	0.83	1.12	1.47	1.55	1.77	2.37	0.85	4.96
other	2.87	1.06	0.27	1.21	0.32	0.51	0.75	1.01	1.12	1.23	0.58	5.12

0 = Never Used
 1 = Used over a Decade Ago
 2 = Used in Last Decade
 3 = Used in Last Year
 4 = Used in Last Month
 5 = Used in Last Week
 6 = Used in Last Day

prediction models

XGBoost for prediction of hardliners *after* GridSearch:

- Accuracy of 89 %
- Predicted only 19 % of the hardliners correctly

—————▣ unreliable model for hardliner prediction



SVM for prediction of illegal drug users *after* GridSearch:

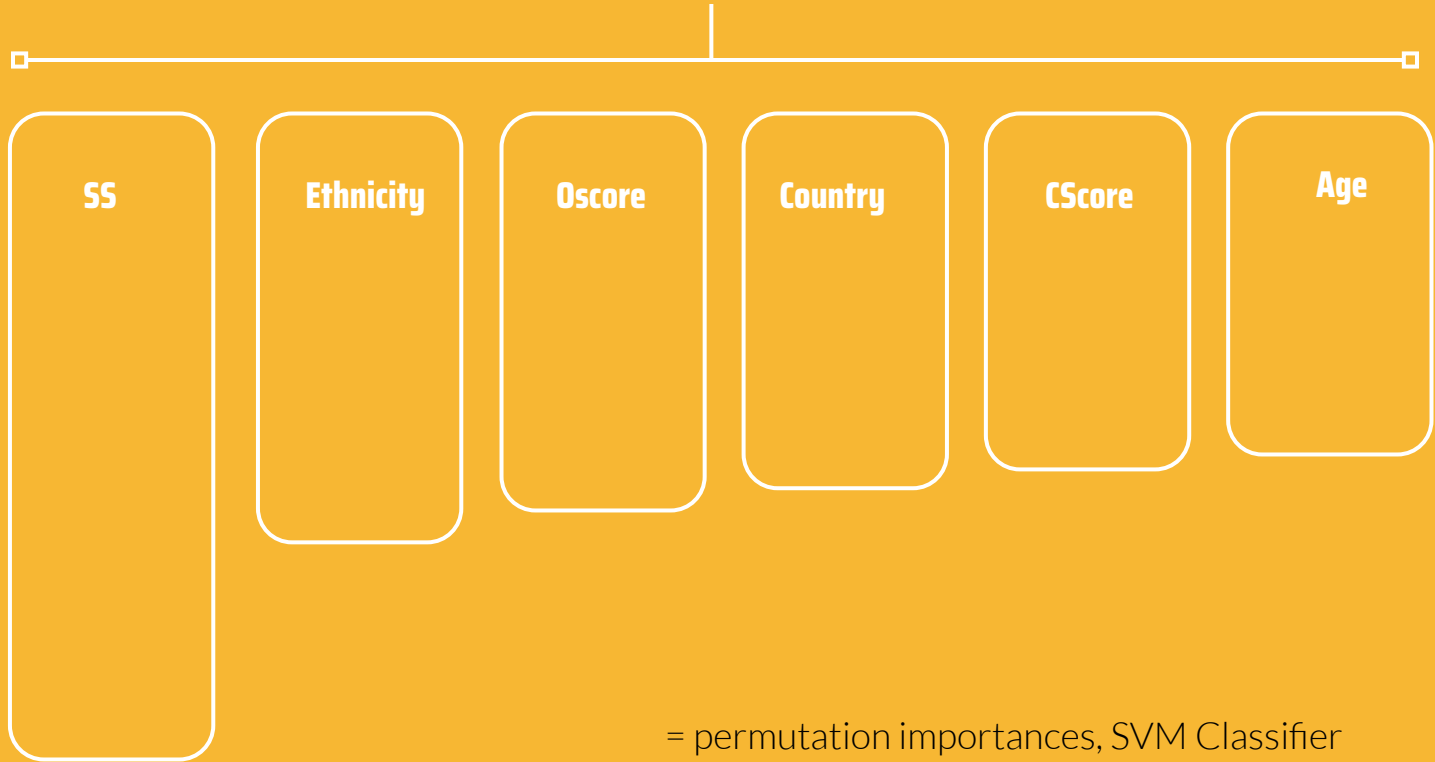
- Accuracy of 84 %
- Predicted 98 % of the illegal drug users correctly

—————▣ good model for illegal drug user prediction





predictors for illegal drugs



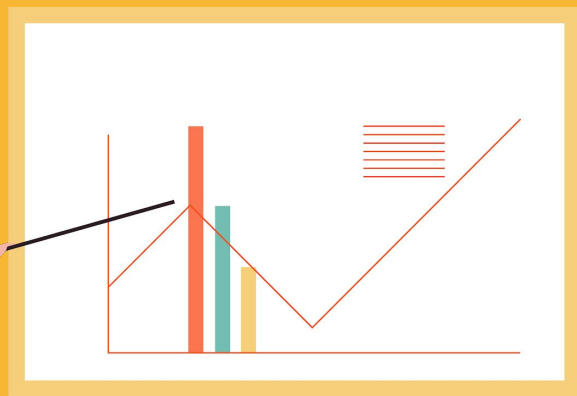
= permutation importances, SVM Classifier

RECOMMENDATIONS

- reliable prediction of hardliners is not possible with current data
- reliable prediction of illegal drug users on the other hand is possible based on: sensation seeking, ethnicity, openness to new experiences, country, conscientiousness, age
- illegal drug use is a widespread issue throughout society



Future Work



□ data related implications:

- collect data on socioeconomic status
- collect data on amount of drug doses
- collect data on clinical diagnoses
- collect data on abuse and addiction
- collect timeline data to identify co-morbidity of diverse substance abuse and/or addiction



□ model related implications:

- try unsupervised machine learning models
- apply regression models on continuous data
- new model for hardliner prediction



The Meme

When you train all night to get a
0.1% increase in accuracy



THANKS

Does anyone have any questions?

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APPENDIX

hardliners

belong to the 10% of participants
scoring highest on the following
personality traits

100
men



89
women



prediction model for hardliners

XGBoost for prediction of hardliners *after* GridSearch:

- Accuracy of 89 %
- Predicted only 19 % of the hardliners correctly

Confusion Matrix :

```
[[495  19]
 [ 42  10]]
```

Accuracy Score : 0.892226148409894

Report :

	precision	recall	f1-score	support
0.0	0.92	0.96	0.94	514
1.0	0.34	0.19	0.25	52
accuracy			0.89	566
macro avg	0.63	0.58	0.59	566
weighted avg	0.87	0.89	0.88	566

❑ unreliable model for hardliner prediction





SVM for prediction of illegal drug users after GridSearch

Confusion Matrix :

```
[[ 28  82]
 [   8 448]]
```

Accuracy Score : 0.8409893992932862

Report :

	precision	recall	f1-score	support
0	0.78	0.25	0.38	110
1	0.85	0.98	0.91	456
accuracy			0.84	566
macro avg	0.81	0.62	0.65	566
weighted avg	0.83	0.84	0.81	566

- good model to predict true positives= illegal drug users!



predictors for hardliners



= feature importances, XGBoost Classifier