

REDITUS - RECIDIVISM ANALYSIS

HOW TO REDUCE RECIDIVISM?

Highlights

1. Characterization of recidivism in Colombia.
2. In depth EDA, clustering a classification models to understand recidivism.
3. Friendly data visualization and web based platform.
4. Helpful and friendly tool for public policy design.

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INTRODUCTION

According to the data governance division of the Ministry of Justice, there is a lack of accurate tools capable of identifying, classifying, and making a follow-up process to the convict population that relapses.

IN-DEPTH EDA

145k

Ministry of Justice
recidivist database
processed

2.5M

Crimes reported to police
t in the country were
compared

9+
YEARS

Of data from DANE
economic and employee
indexes per department

2010  2020



37.19%



16.74%



11.76%

Theft, Drug dealing and use
and fabrication of weapons are
the top 3 most common crimes

25%

of recidivists committed
the same crime in a second
instance

2
YEARS

is the time lapse to
re-offend for 50%
of prisoners

76%

of them
relapsed in
theft crimes

90%

of recidivist
population is not
high school
graduated

DATA ANALYSIS PIPELINE



THE MODELS

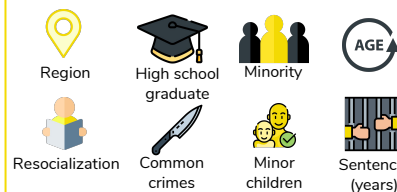
- 1 Multiple correspondence analysis, followed by a K-means algorithm and obtain:

6
Clusters
defined by
7 features

- Region
- Resocialization
- Minority
- Common crimes
- High school graduate
- Age
- Sentence duration

- 2 Logistic regression algorithm to predict the probability of second re-offense.

INPUT:



RESPONSE VARIABLE:

0: 1 = Relapse
1: 2 ≥ Relapse

- All KNN undersampling
- 80%-20% train-test
- 5-Fold cross validation
- L2 regularization

ACCURACY: 0.87
F1 SCORE: 0.87
AUCROC: 0.89

Predict probability of second re-offense

Prediction of the probability that an inmate re-offends a second time. Please modify the parameters on the left and then press Run predictor to obtain the prediction.

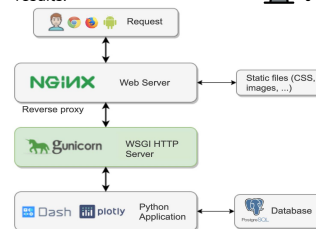
Run predictor

90.14%

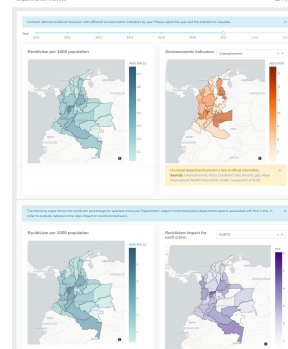
RESULTS

OUR PRODUCT

We designed a Web based platform to show all our results.



A powerful application capable to identify, classify and measure recidivist groups according to time lapses and spatial locations.

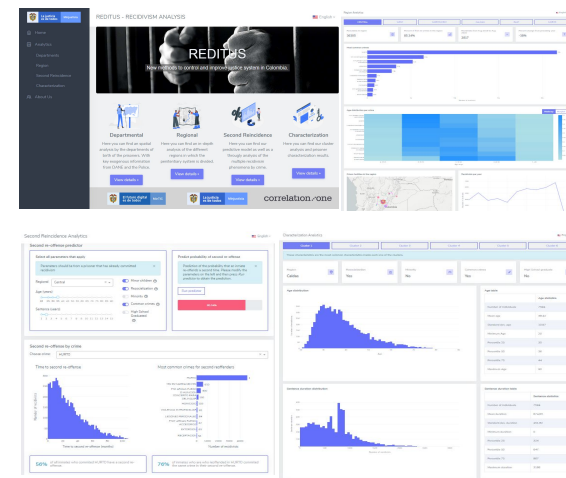


The API for our platform can be found @ <http://minjusticia.rt4apps.com/>



WHAT CAN YOU FIND IN OUR APP?

A home page with initial description about the four analytics sections with in depth departmental and regional analysis of recidivism, a predictive model of the second reincidence and a cluster characterization. And a section about the team.



This app allows policy makers to interact not only with the provided information from the Ministry of Justice but with databases from the national statistics bureau, the Colombian police, and other publicly available datasets.