

A close-up of a person's face, focusing on their eyes, which are looking directly at the viewer. The person has light skin and brown eyes. A semi-transparent world map is overlaid on the lower half of the image, showing the continents in a light blue color against a darker background. The map is positioned such that it appears to be part of the person's face or the background behind them.

Human Trafficking

A Global Problem

Prostitution. Servitude. Forced Labor.

**Human
Trafficking: A
crime that
shames us all.**



Human Trafficking

Human trafficking is a form of modern slavery—a multi-billion dollar criminal industry that denies freedom to 20.9 million people around the world. And no matter where you live, chances are it's happening nearby. From the girl forced into prostitution at a truck stop, to the man discovered in a restaurant kitchen, stripped of his passport and held against his will. All trafficking victims share one essential experience: the loss of freedom.

Source: <https://polarisproject.org/human-trafficking>

Quotable!

**“Human
Trafficking
is the
second largest
&
the fastest growing
criminal enterprise
in the world.”**

The International Labor Organization

Human Trafficking
makes more money than
Google, Starbucks, Nike, and
the NFL Combined



**\$150 Billion/
Year**



\$136.6 Billion
Combined 2015
Revenue

Telling Stories Through Data



The Counter-Trafficking Data Collaborative (CTDC) is the first global data hub on human trafficking, with data contributed by counter-trafficking organizations around the world. It facilitates an unparalleled capacity for cross-border, inter-agency data analysis to provide the counter-trafficking movement with greatly improved evidence for policy and programming. Equipped with up to date data and analytics, decision makers will be empowered to design and implemented more targeted and effective intervention strategies to combat this crime.

The Global Dataset

- Approximately 48,000 records:
 - Gender
 - Majority Status (Adult vs. Minor)
 - Citizenship
 - Country of Exploitation
 - Means of Control
 - Classification of Exploitation
 - Type of industry of Exploitation
 - Is Abduction
 - Recruiter Relationship

Project Overview

Objective:

- To understand the characteristic and type of victims, what kind of exploitation, how they are being controlled, and how they are being recruited. The purpose is to improve the counter-trafficking movement through advance understanding of data.

Model:

- Clustering using K-means

Example of Data

	Datasource	gender	ageBroad	majorityStatus	majorityStatusAtExploit	majorityEntry	citizenship	RecruiterRelationship	CountryOfExploitation
NaN	Case Management	Female	18--20	Adult	Adult	Adult	KZ	Unknown	KZ
NaN	Case Management	Female	18--20	Adult	-99	-99	KZ	Unknown	KZ
NaN	Case Management	Female	18--20	Adult	-99	-99	MD	Unknown	MD
NaN	Case Management	Female	18--20	Adult	-99	-99	KZ	Unknown	KZ
NaN	Case Management	Female	18--20	Adult	-99	-99	KZ	Unknown	KZ

Modeling Process

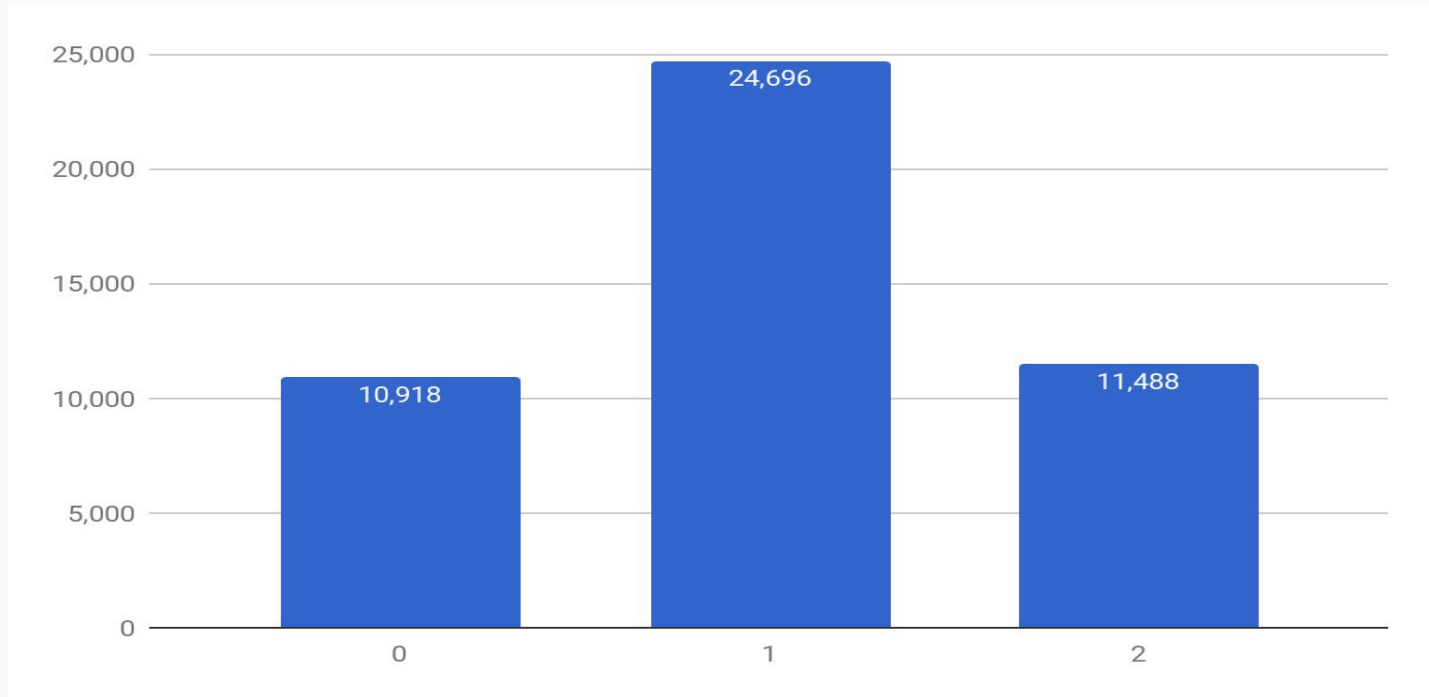
Data Cleanup:

- Converting categorical data to numerical data (i.e., gender, age, status)
- Recoding country data and grouping into regions
- Cleanup null values

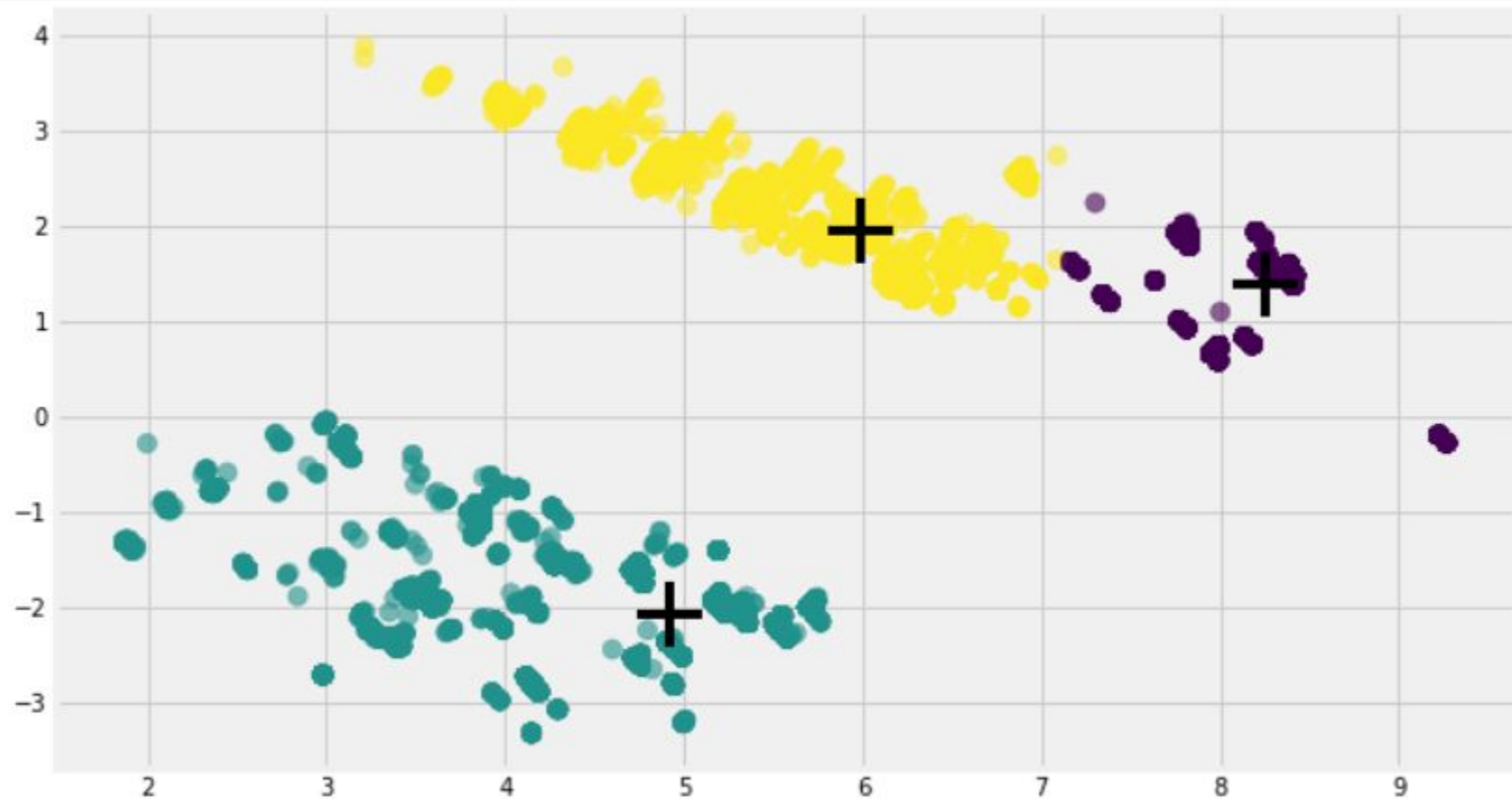
K-means:

- Fit, select, and evaluate clusters
- Conduct further EDA post-modeling to explain characteristics of clusters

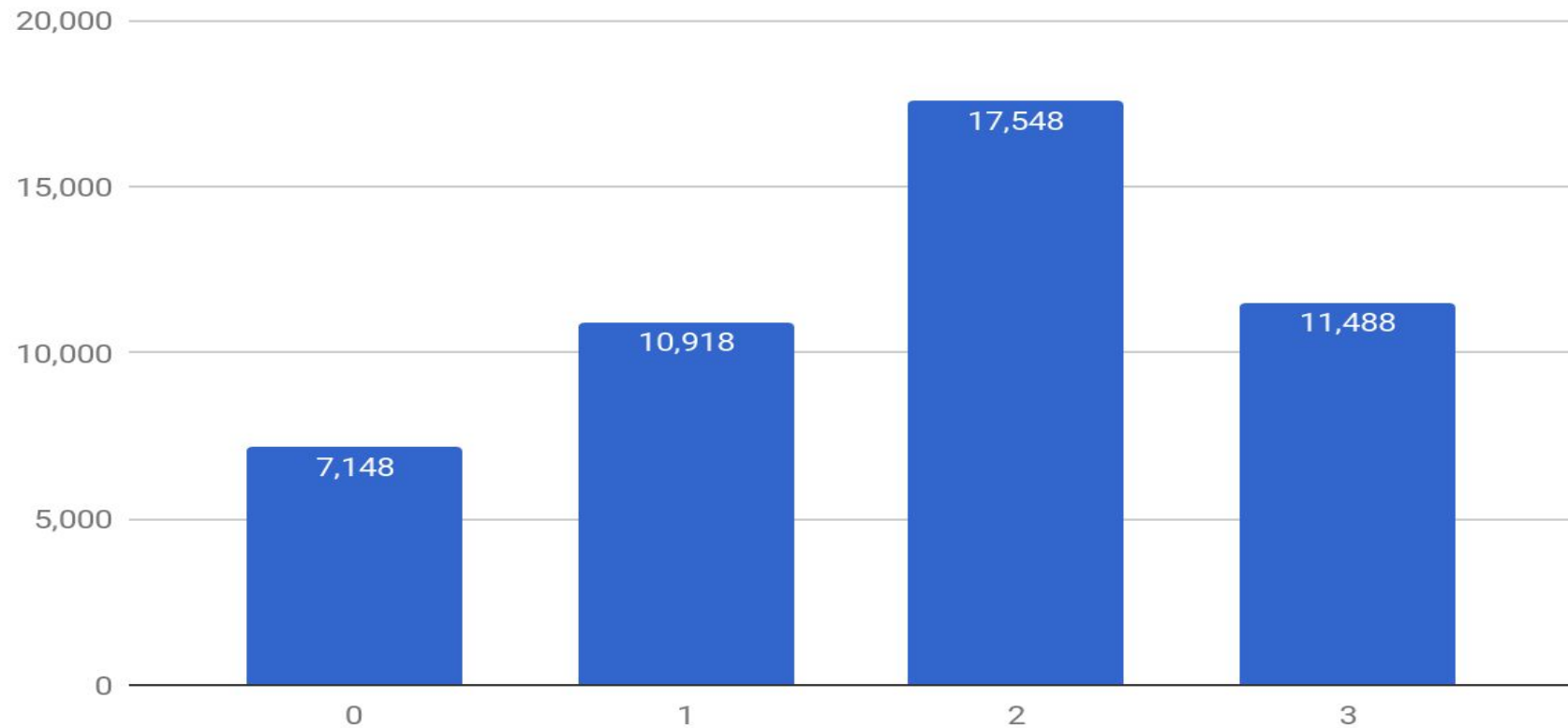
Three Clusters



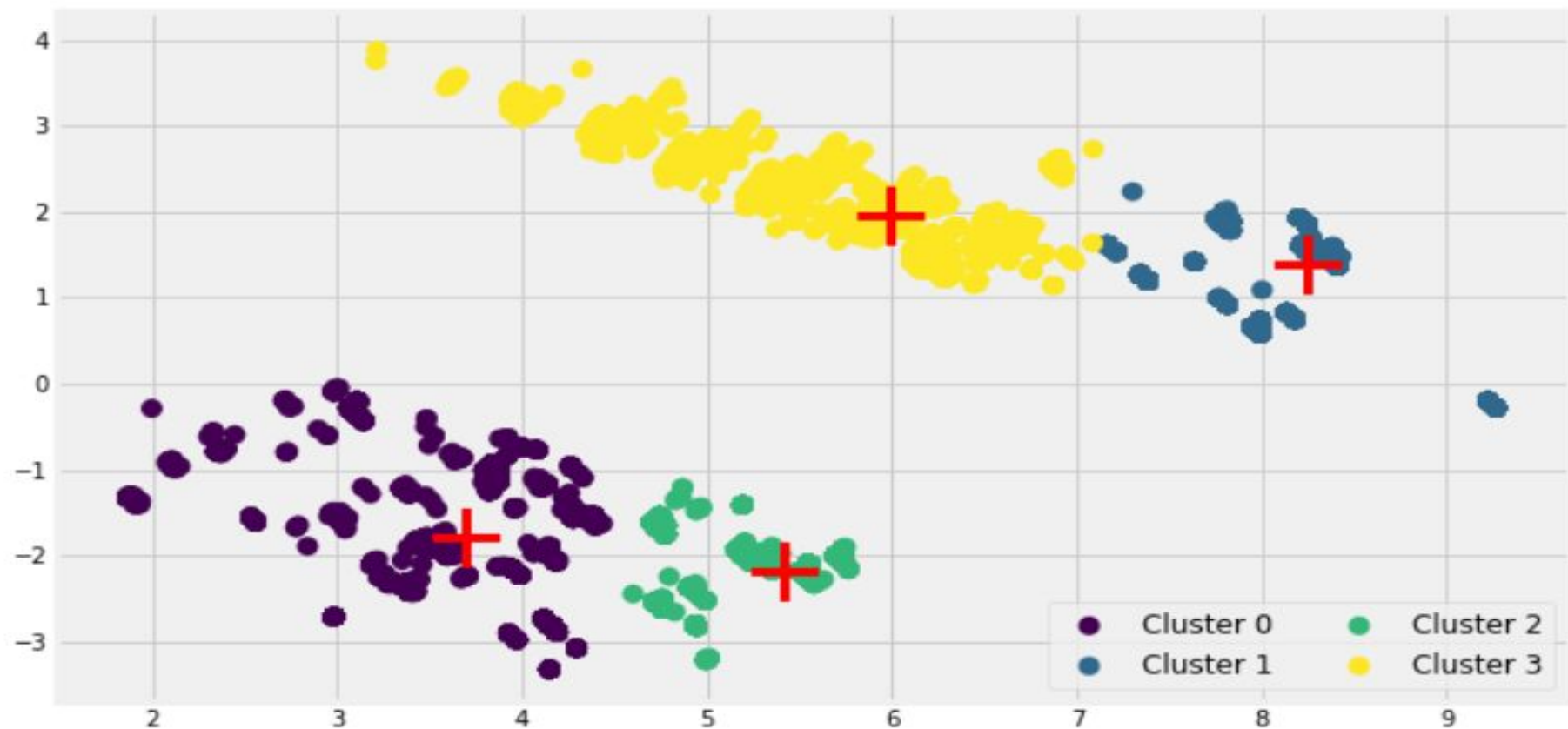
Three Clusters



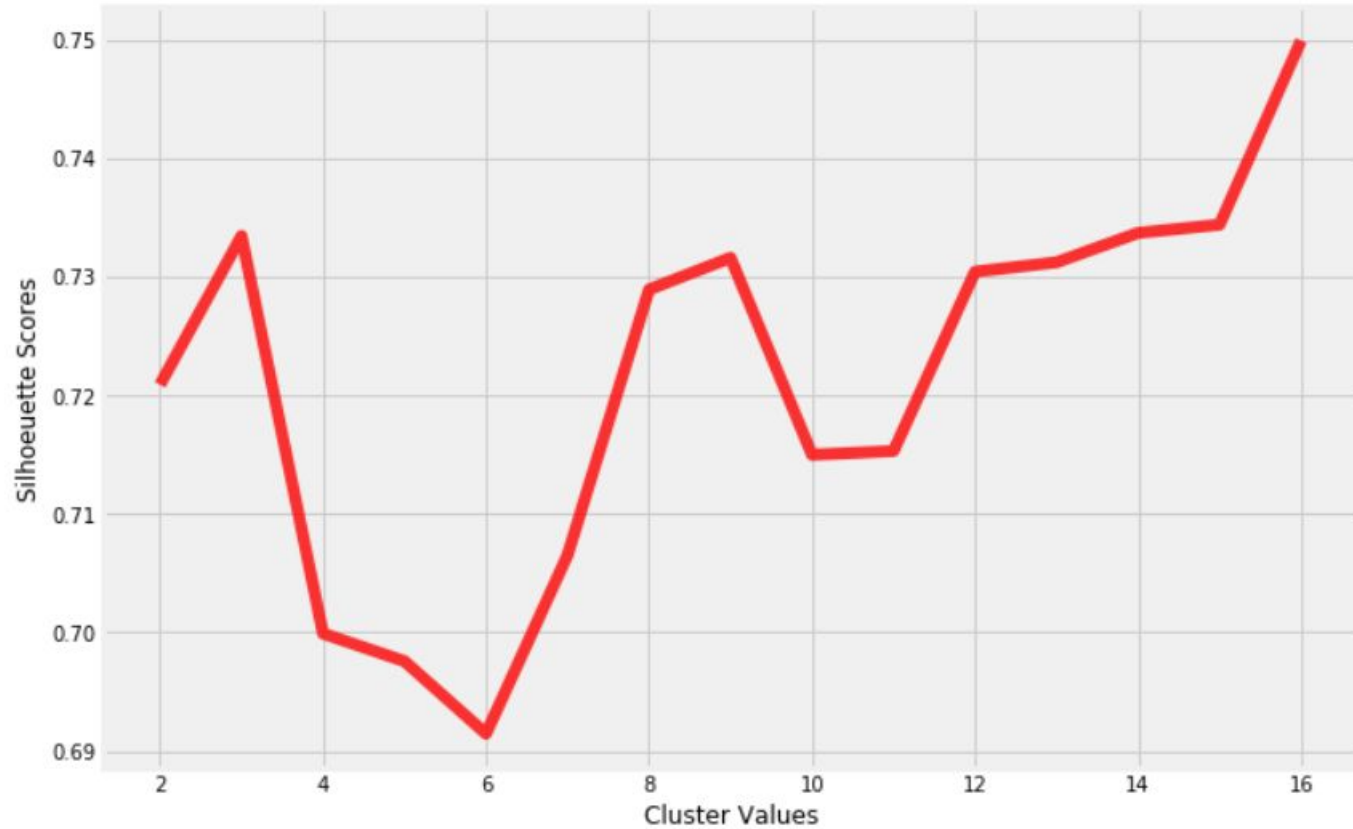
Four Clusters



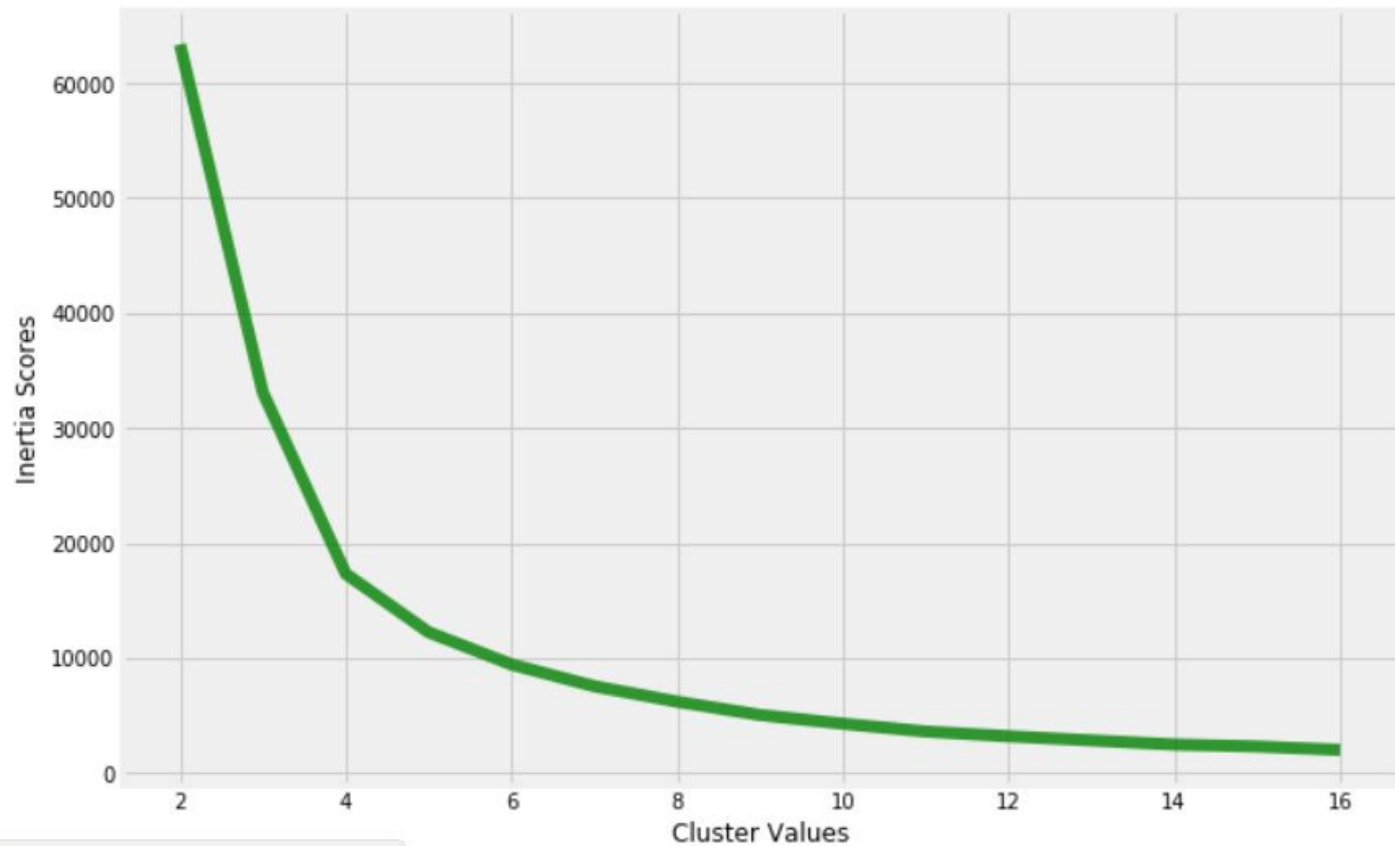
Four Clusters



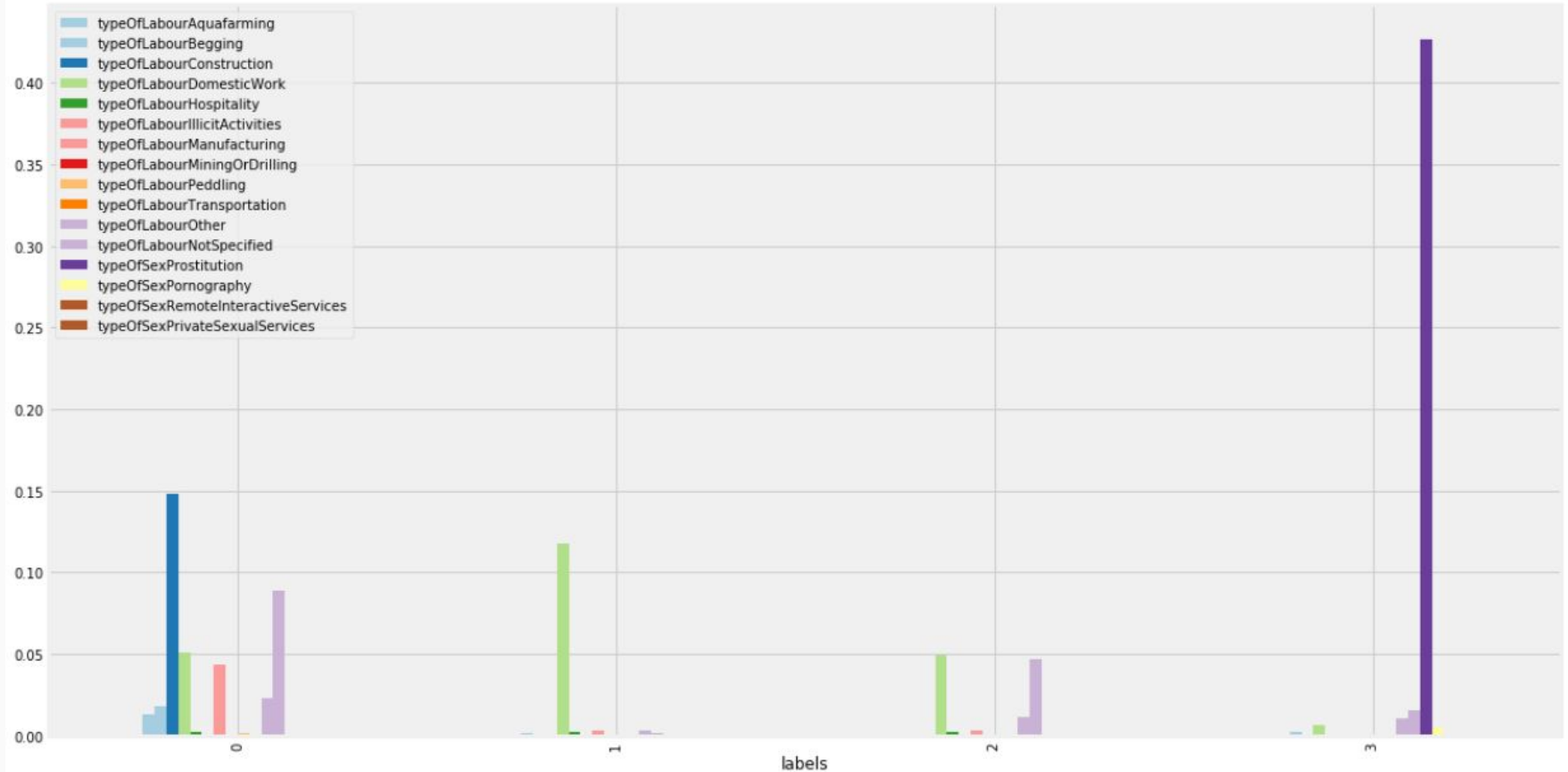
Silhouette Scores



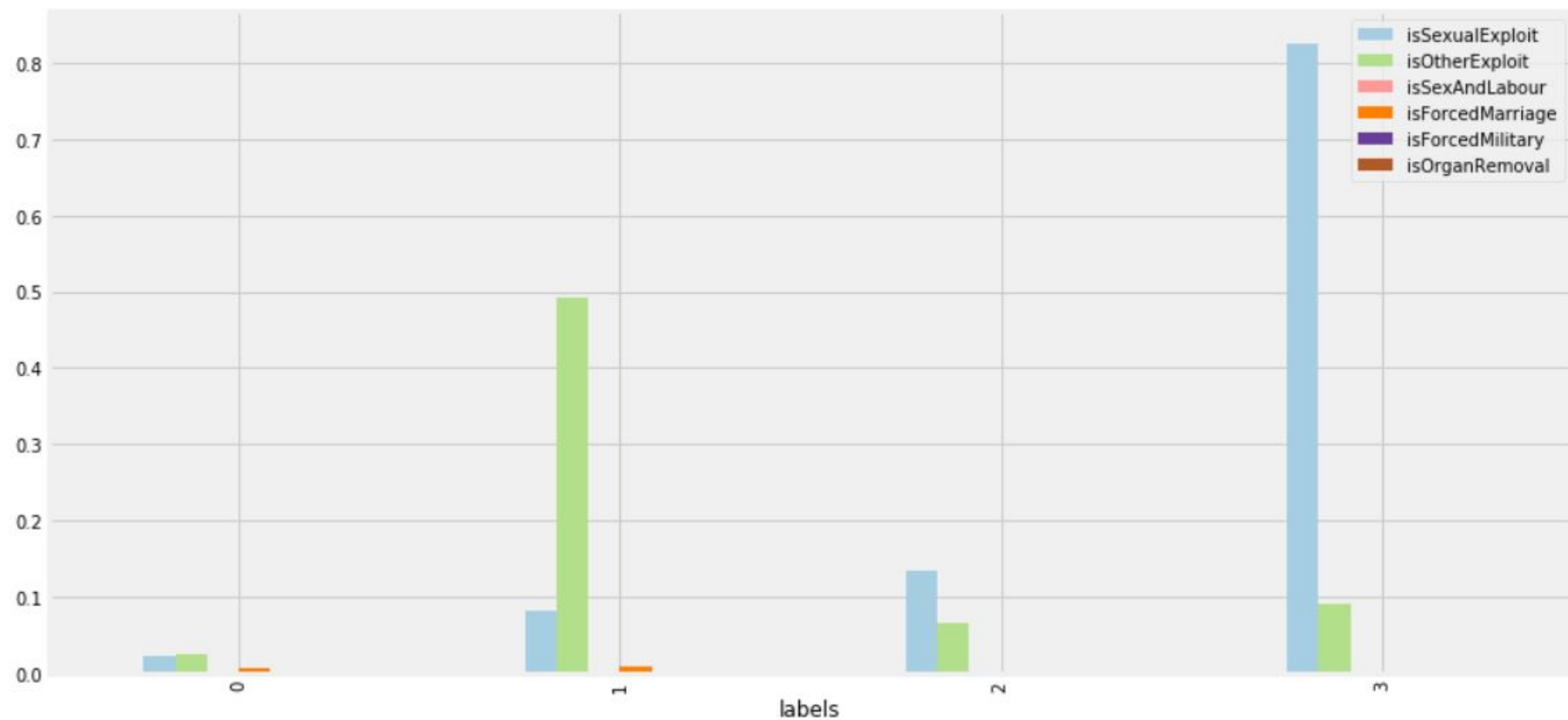
Inertia Scores



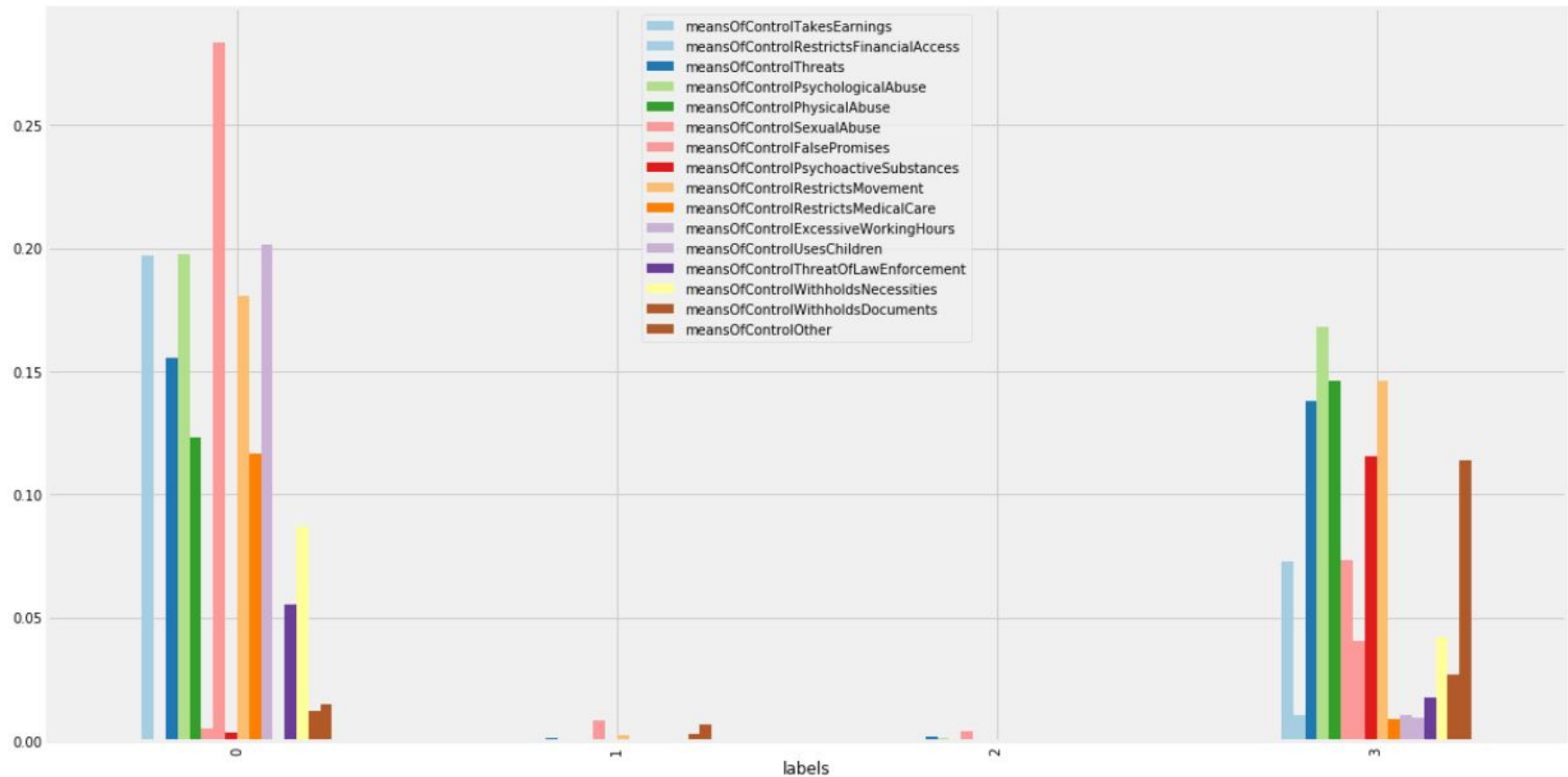
Exploratory Data Analysis of Clusters - by Type Of Exploit



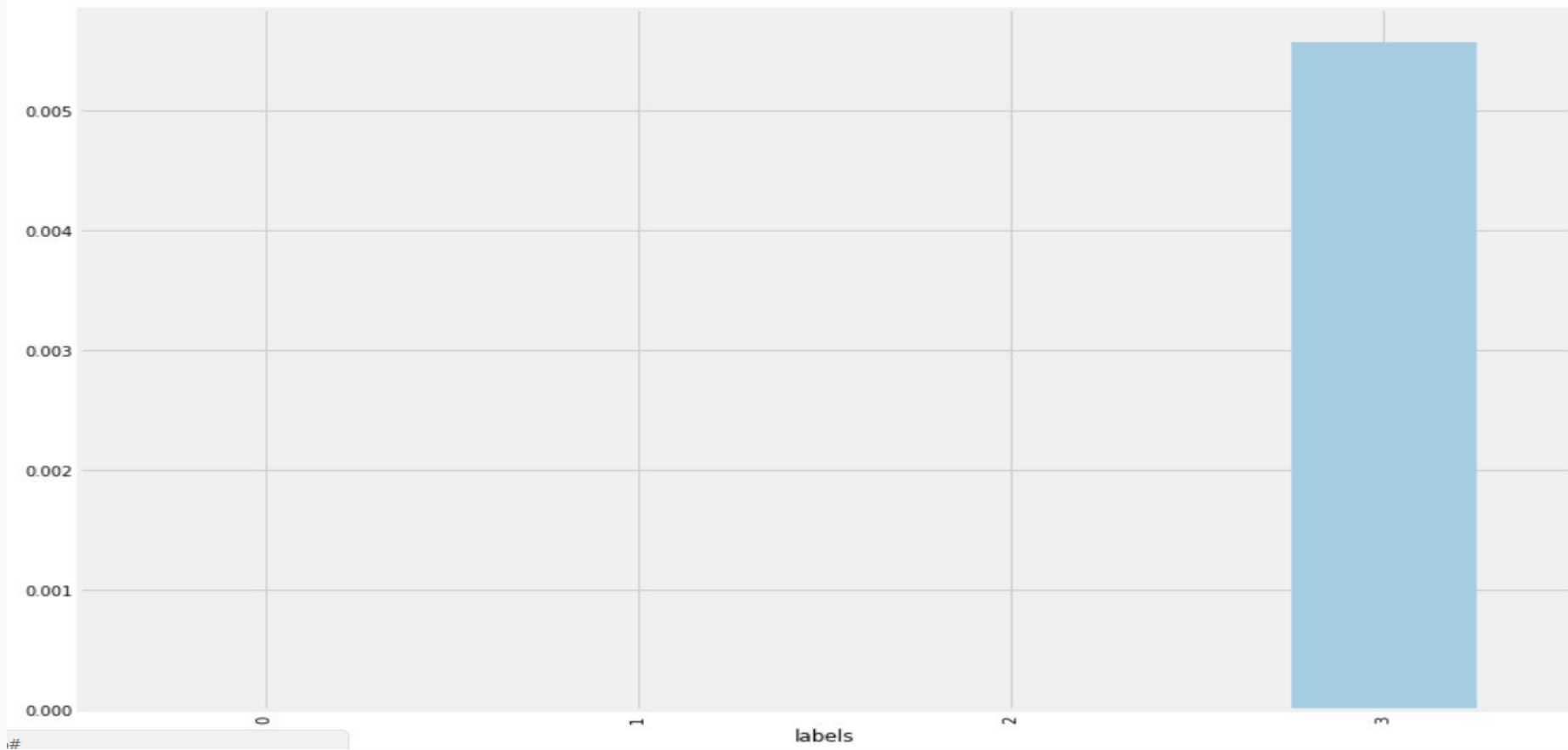
Type of Exploit



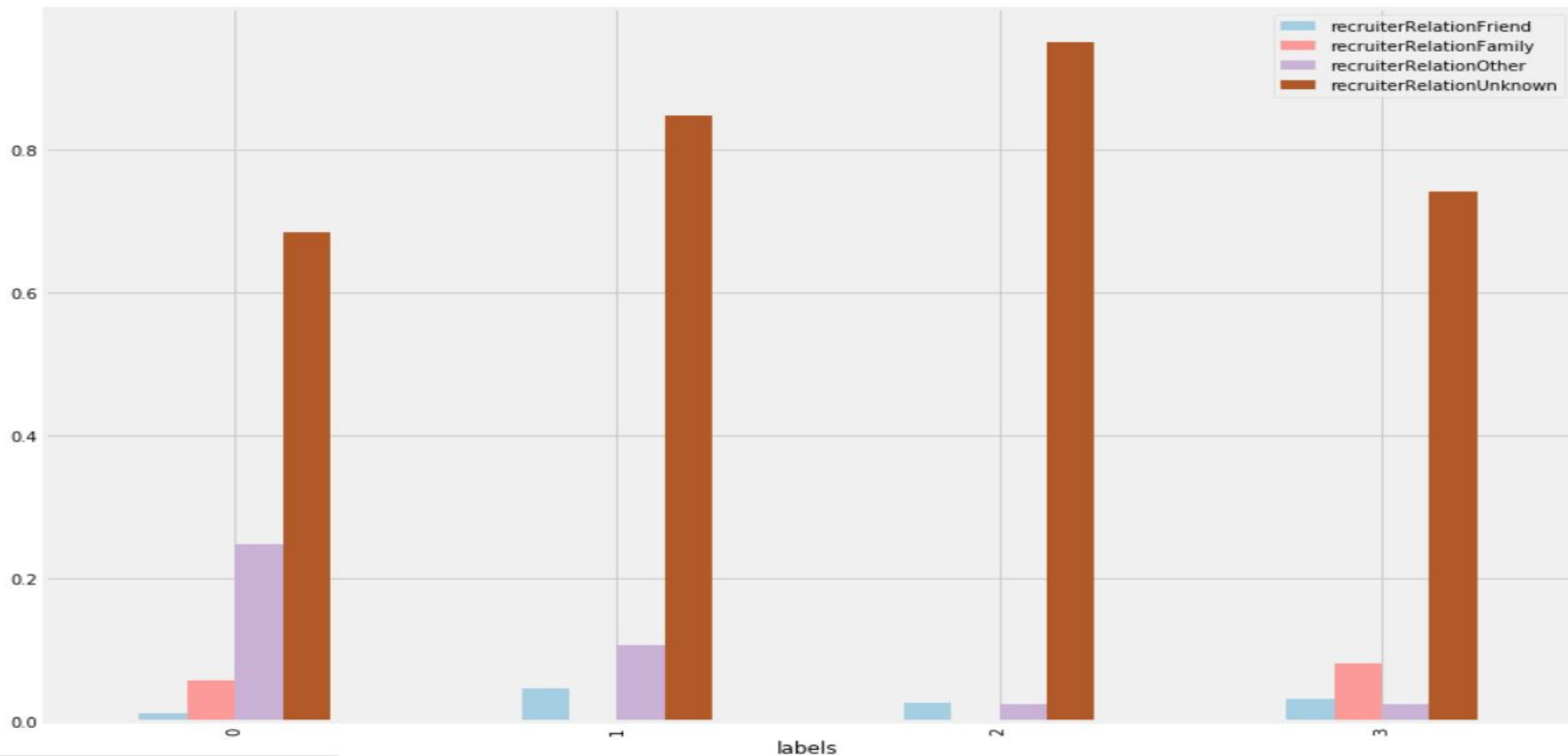
Means Of Control



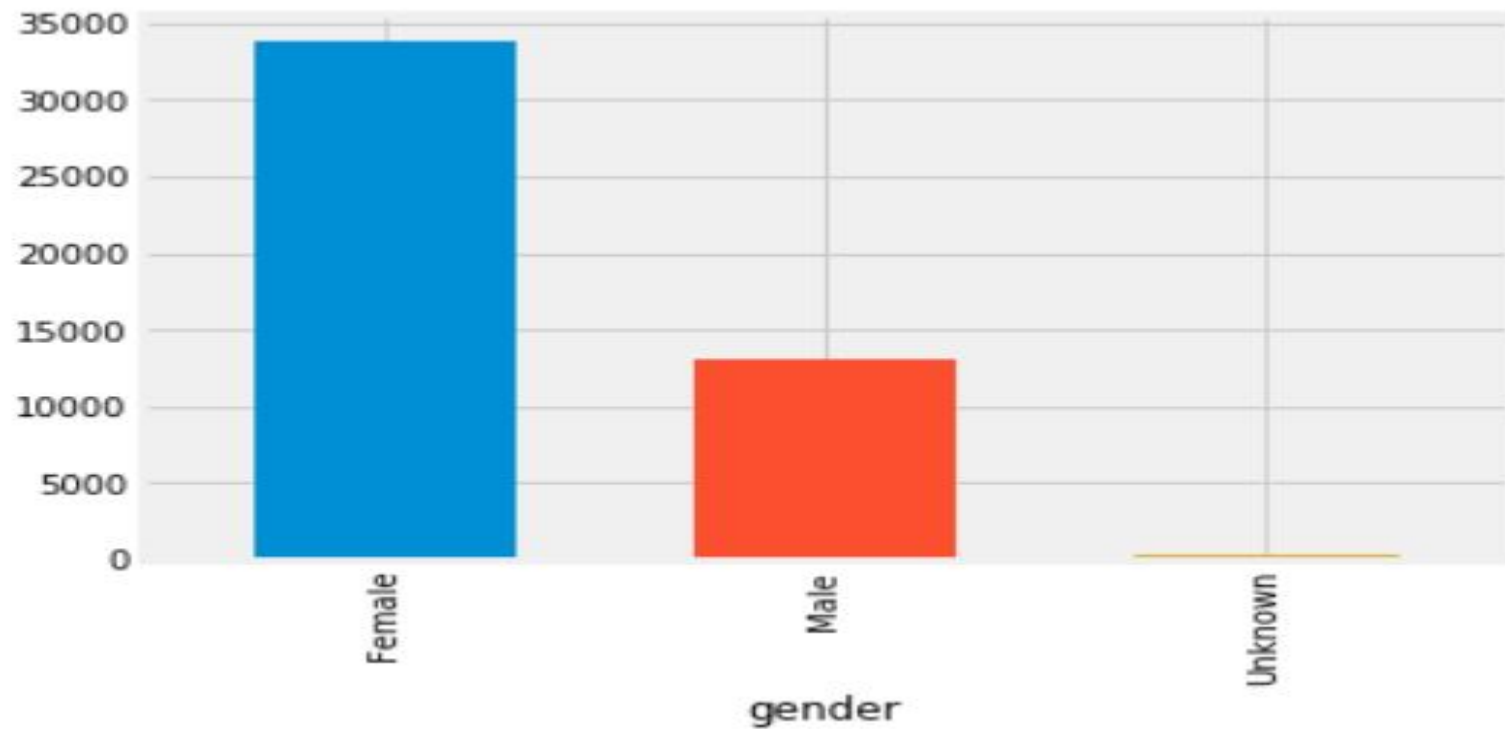
Are they being abducted?



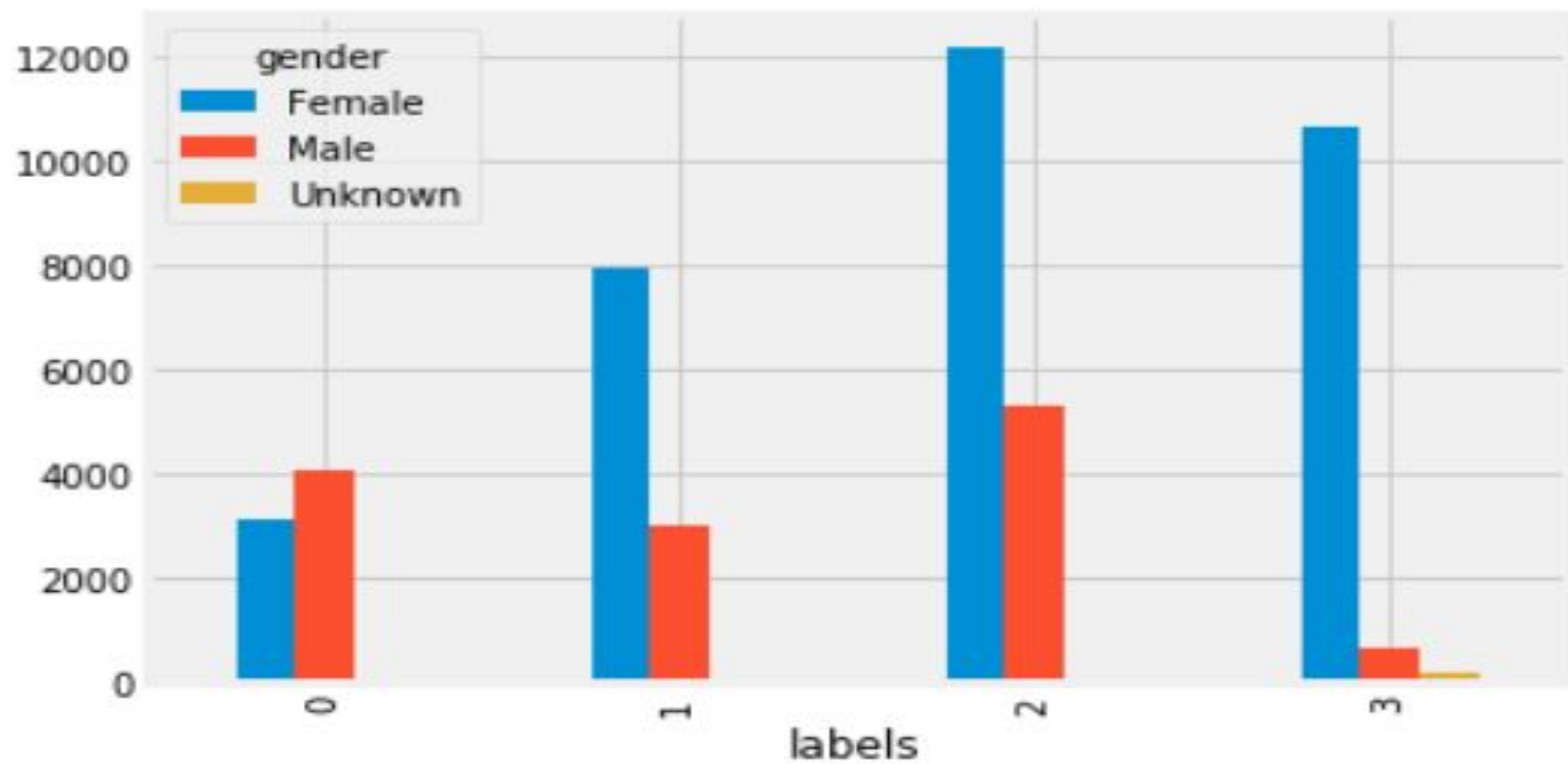
Who are the recruiters?



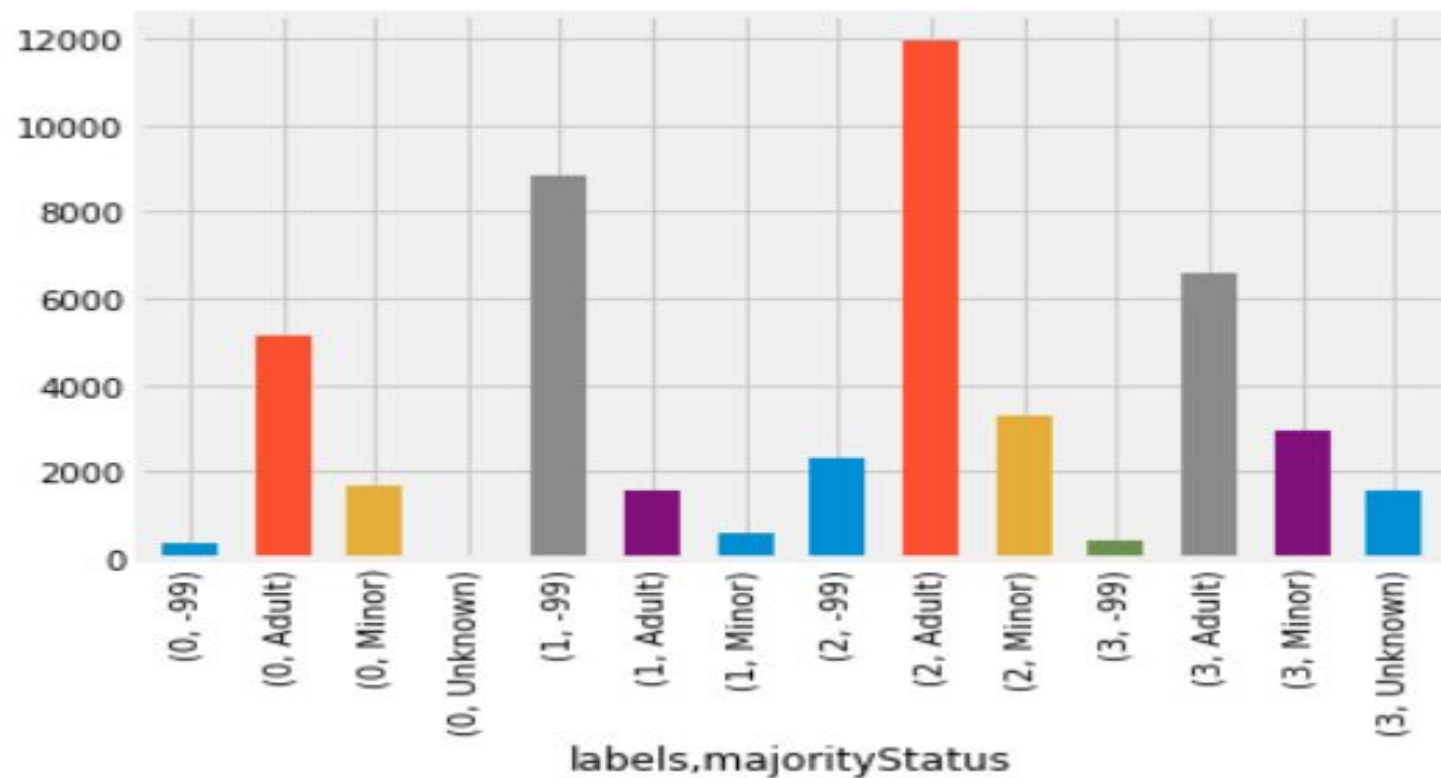
EDA by Gender



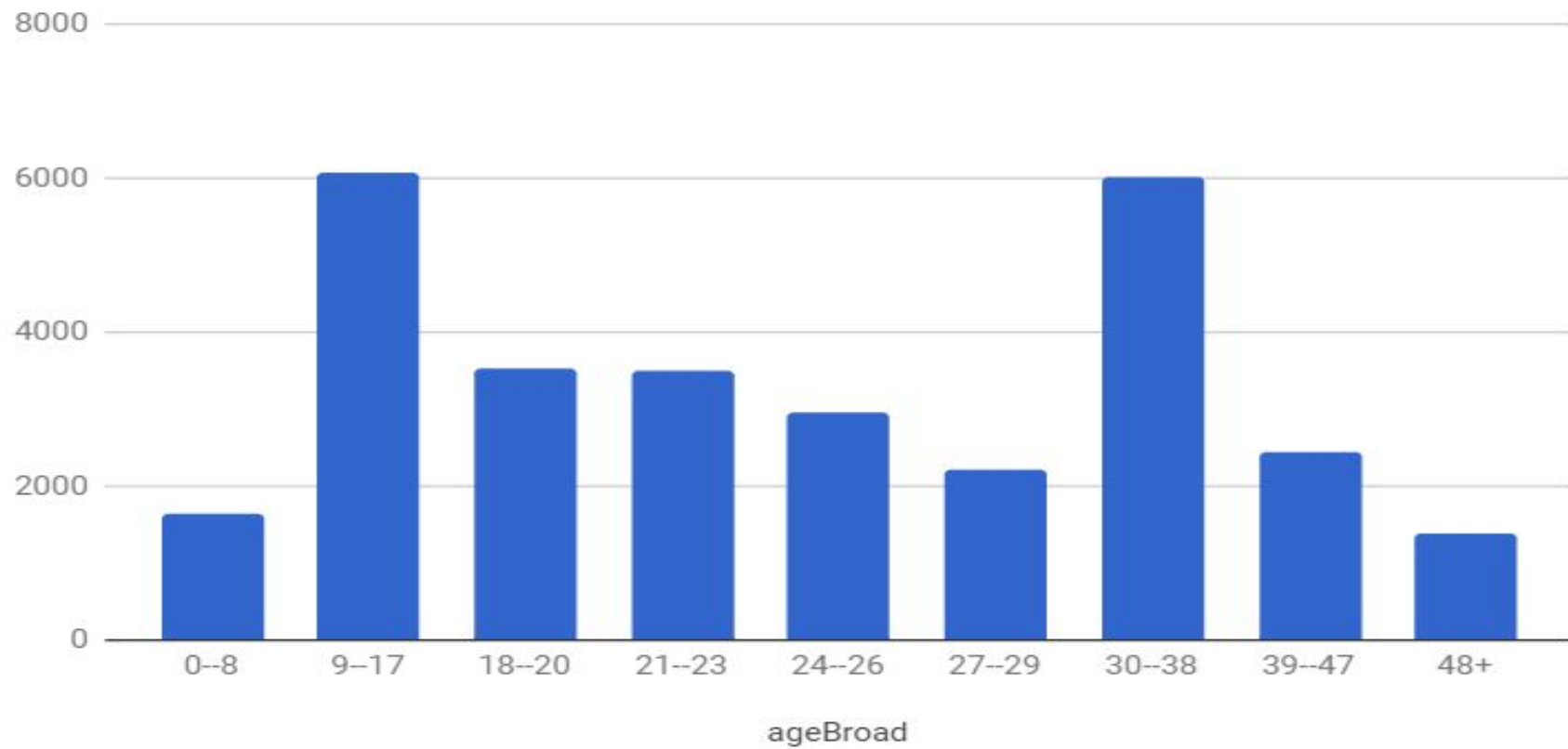
Gender by Cluster



By Majority Status



By Age



Source Countries

Markers:



Volume:

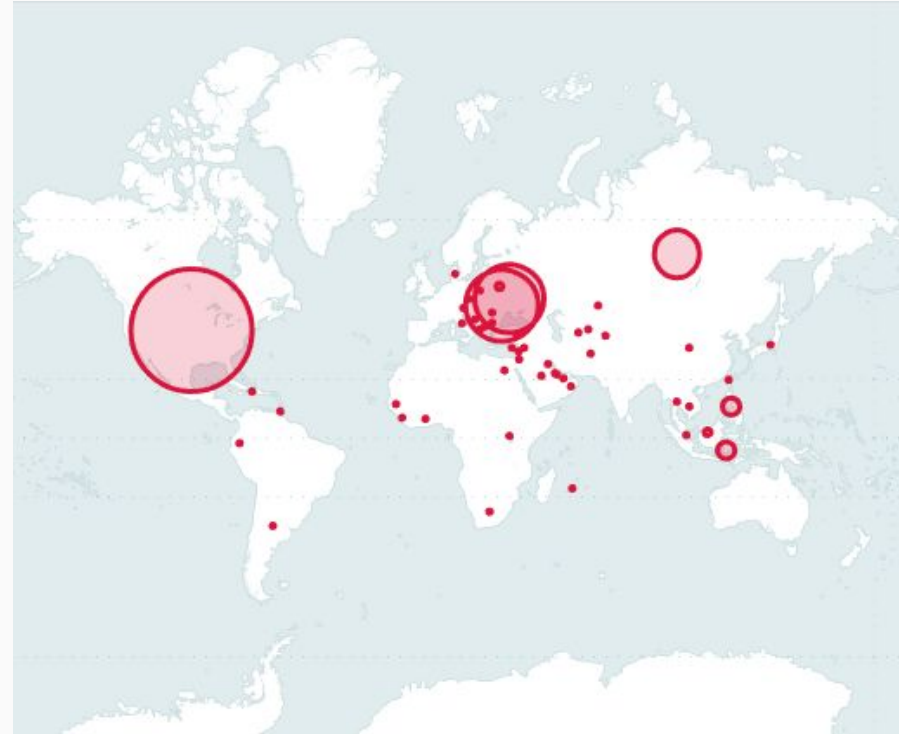


Target Countries

Markers:



Volume:



A close-up photograph of a person's hand holding a pen, writing on a document. The background is blurred, showing some indistinct shapes and colors. The text 'The Solution' is overlaid on the left side of the image.

The Solution

- Recognize the signs
- Identify the victims
- Support law enforcement, and counter-trafficking organizations

How you can help?

- Volunteer opportunities for data scientists, front-end engineers, etc...
 - <https://www.wearethorn.org/join-us>
- Uber Drivers
 - <https://help.uber.com/h/82b6c997-e62e-4b20-ba7b-43f2bc9a7aab>
- Polaris
 - <https://polarisproject.org/>

Q & A

Thank you!

