

Predictive analysis model for recommending police workforce

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Benchmark Data Set

➤ Data Set contains the following:

- Cases Registered under IPC (state and year wise)
- Population Census(state and year wise)
- Structure of police
 - State
 - Year
 - No of hawaladar, inspector ,DSP etc

➤ Dataset Link

- [Nature of complaints received by police.csv](#)
- [population.XLS](#)
- [Police strength actual and sanctioned.csv](#)

Data Pre-Processing Techniques

Missing Data :

- filling global constant, if algorithm work with NULL
- otherwise, ignore whole tuple

Data Summaries:

- 5 point summary of data of
- FIR per state
- Population of each state

Data Pre-Processing Techniques (cont.)

Normalization

We cannot compare registered cases and structure of polices between state because there might be a significant difference between the population density (Ex : Haryana and Mizoram)

We can do the following to encounter that : -

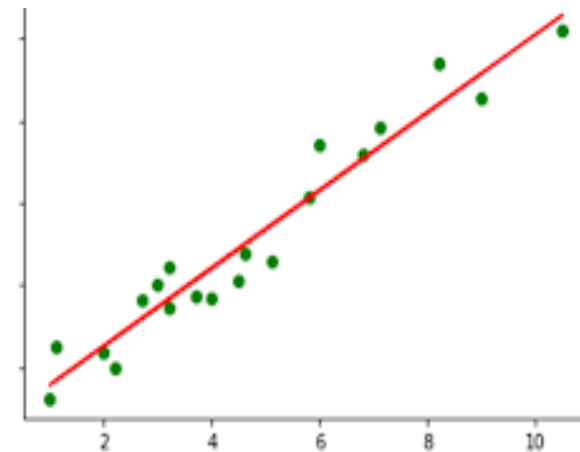
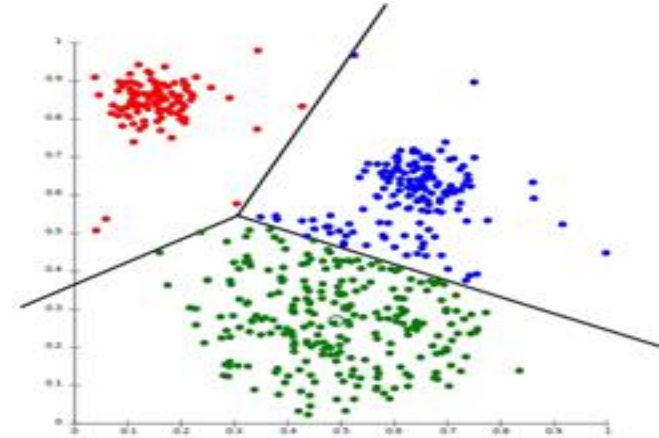
Step 1 : FIR per 10,000 person

Step 2 : Convert into ration (Ex. Hawaladar :: Inspector :: DSP)

Now since the scale is different we will use **MIN-MAX normalization**.

Methodology Used

- Finding State with Good Performance
 - **Clustering of State into two category using**
 - **K-Means clustering algorithm**
- Predicting number of FIR
 - **Multiple Linear Regression**
- Applying BI to find the optimal number of police force required for the predicted number of FIR
 - **Artificial Neural Network**



Proposed Frame Work

