Boston Crime analysis

Functional and NON-functional Requirements Document

# General

## Project Description

Project aims to study in detail about crimes happening in Boston and analyzing the given data and visualizing the data on Microsoft PowerBI and prevent crimes in Boston.

### **Background**

Dataset of Boston crimes has been taken from Kaggle : <https://www.kaggle.com/ankkur13/boston-crime-data>

### **Purpose**

Aim of this project is to analyze and study in detail about crimes in Boston and present the trends observed in crime data on Microsoft PowerBI.

### **Business Use Cases**

1. Safest areas to live.
2. Worst areas to live based on crime rate on streets and shooting cases reported.
3. Crimes based on Offense code
4. Hourly crime rate.
5. Weekly crime rate.

### **Software Requirements**

1. Excel or CSV Reader to read the dataset.
2. Microsoft PowerBI desktop version.

**Pre-requisites for installing PowerBI on Desktop:**

* Windows 7 / Windows Server 2008 R2, or later
* .NET 4.5
* Internet Explorer 9 or later
* Memory (RAM): At least 1 GB available, 1.5 GB or more recommended.
* Display: At least 1440x900 or 1600x900 (16:9) recommended. Lower resolutions such as 1024x768 or 1280x800 are not recommended, as certain controls (such as closing the startup screen) display beyond those resolutions.
* Windows Display settings: If your display settings are set to change the size of text, apps, and other items to more than 100%, you may not be able to see certain dialogs that must be closed or responded to in order to proceed using Power BI Desktop. If you encounter this issue, check your Display settings by going to Settings > System > Display in Windows, and use the slider to return display settings to 100%.
* CPU: 1 gigahertz (GHz) or faster x86- or x64-bit processor recommended.

**Installing Microsoft PowerBI**

1. Download PowerBI desktop from Microsoft website or from Microsoft App Store.
2. Install as an app from the Microsoft Store.

### **Steps involved during implementation**

**Analyzing the dataset:** Dataset needs to be analyzed, understand the meta-data and how that data could be useful to business. Meta-data documentation needs to be performed.

**Data Cleaning :** Preliminary analysis on the data was performed and prepared the data for extracting useful insights. Data had to be cleaned, formatted so that it could be used for analysis. Data Cleaning was performed on Jupyter Notebook using Python.

1. **Identified null values :** There were many missing values in the dataset. Some null values were replaced by text which could be meaningful for the business and columns having excessive null values were removed from the analysis.
2. **Date formats :** Occurred\_On\_Date was formatted so that it could be used for analysis.

**Choosing the right database:**

Brainstorming was done to understand which database suits our requirement and can be connected to Power BI.

**Creating visualizations on PowerBI**

Data visualizations will now be performed, and useful insights are now available for use and analysis. Dashboard to be created which would analyze the data based on below criteria:

1. Incident by Street
2. Incident by Hour of the day.
3. Incident by Day of the week.
4. Incident by District.
5. Incident by UCR Part
6. Shootings on Street
7. Offense Heat Map
8. Incidents by Month.