

Crime Incident Analysis Dashboard Using Splunk

Objective: The goal of this project is to create a dashboard in Splunk to visualize various aspects of Chicago crime data, including the ward with the highest crime rate, domestic simple battery incidents, the most occurring street crime, a bar graph showing Top 10 Blocks with highest Crime Rate, and the most common cases involving handguns.

Skills Required:

- **Data Analysis:** Ability to analyze and understand the structure of Chicago crime data, including its fields and relevant information.
- **Splunk Knowledge:** Proficiency in using Splunk for data ingestion, transformation, and visualization.
- **Search Query Writing:** Capability to write Splunk search queries to extract, filter, and aggregate data based on specific criteria.
- **Dashboard Creation:** Competency in building interactive dashboards in Splunk to present the analyzed data in a visually appealing and insightful manner.
- **Data Visualization:** Understanding of effective data visualization techniques to represent complex information clearly and intuitively.

Project Workflow:

Data Collection and Ingestion:

- Obtain the Chicago crime dataset from a reliable source such as the [Chicago Data Portal](#).
- Ingest the dataset into Splunk using appropriate methods, such as uploading CSV files or connecting to external data sources.

Data Analysis and Exploration:

- Analyze the dataset to understand its structure, including fields like ward, type of crime, location, etc.
- Use Splunk search queries to explore the dataset and identify key insights related to crime trends, types, and locations.

Dashboard Design:

- Determine the layout and components of the dashboard, considering the specified requirements (ward with highest crime rate, domestic simple battery, Top 10 Blocks with highest Crime Rate, etc.).

- Create panels for each visualization element, including charts, graphs, and tables, using Splunk's dashboard editor.

Ward with Highest Crime Rate:

- Write a search query to find Top 10 Blocks with highest Crime Rate based on the number of reported incidents.
- Use a Splunk chart or table visualization to display the ward(s) with the highest crime rate.

```
1 index="chicago_crime"
2 | stats count by Block
3 | sort - count
4 | head 10
```

Domestic Simple Battery:

- Filter the dataset to identify incidents categorized as domestic simple battery.
- Create a panel to display statistics or trends related to domestic simple battery incidents.

```
1 index="chicago_crime"
2 | search Description="DOMESTIC BATTERY SIMPLE"
3 | rename "Location Description" as "location_description"
4 | stats count by location_description
```

Most Occurring Street Crime:

- Analyze the dataset to find the most common types of street crimes.
- Present this information using a suitable visualization, such as a pie chart or bar graph.

```
1 index="chicago_crime"
2 | rename "Location Description" as "location_description"
3 | rename "Primary Type" as "primary_type"
4 | search location_description=STREET
5 | stats count by primary_type | sort - count | head 10
```

Highest Crime Rate Ward:

- Aggregate crime data based on wards.

- Design a Single Value Visualization which depicts the ward with the highest crimes across Chicago.

```
1 index="chicago_crime"
2 | stats count by Block
3 | sort - count
4 | head 1
```

Handgun Use Cases:

- Filter the dataset to isolate cases where handguns were used.
- Display relevant statistics or trends related to these cases using a visualization component.

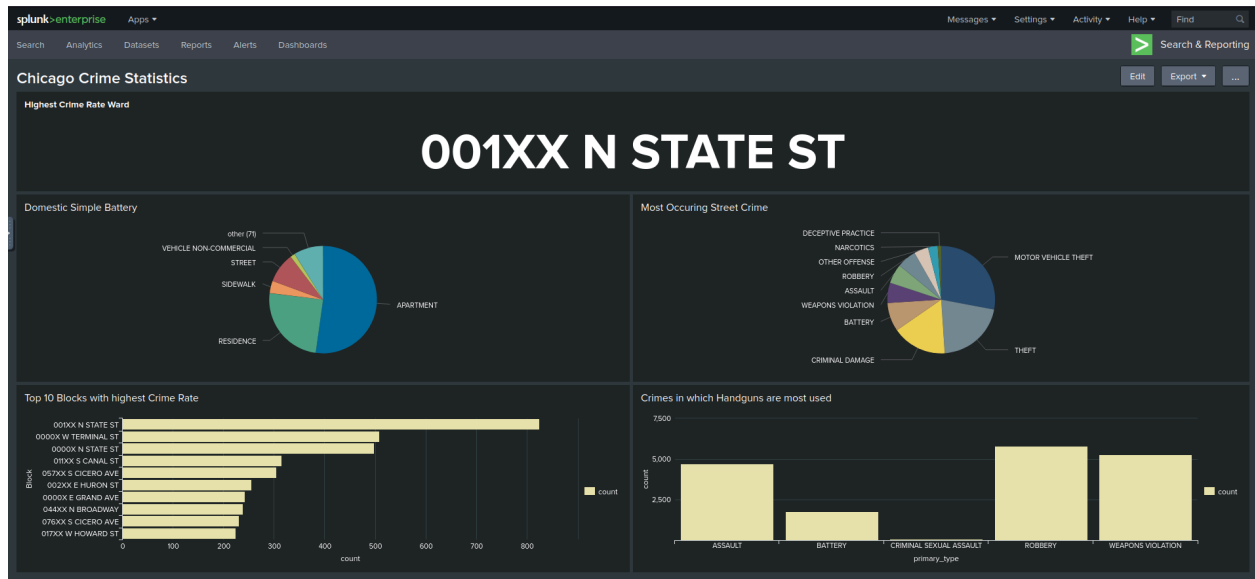
```
1 index="chicago_crime" handgun
2 | rename "Location Description" as "location_description"
3 | rename "Primary Type" as "primary_type"
4 | table Description, primary_type
5 | stats count by primary_type
```

Dashboard Testing and Refinement:

- Test the dashboard thoroughly to ensure that all visualizations are accurate and functional.
- Gather feedback from stakeholders and make any necessary refinements to improve the dashboard's usability and effectiveness.

Documentation:

- Document the process followed for data collection, analysis, visualization, and dashboard creation.
- Provide explanations of the search queries used, visualization techniques employed, and any challenges encountered.
- Include screenshots or examples of the final dashboard to illustrate its features and functionality.



Conclusion:

By following this project workflow and leveraging the required skills in data analysis, Splunk usage, and dashboard design, you can effectively visualize Chicago crime data to identify patterns, trends, and insights that can aid in law enforcement efforts and policy-making decisions.