# BUSINESS CASE

## CRIME RATE ANALYSIS IN TORONTO



## Organization and department

The Toronto Police Service is dedicated to transparency through its open data initiative, which includes the sharing of all non-sensitive information collected or maintained by the organization. Certain data may be exempt due to legal, privacy, security, or confidentiality reasons. Our commitment to upholding privacy and ensuring data quality is unwavering, and we take proactive measures to safeguard sensitive information.

As part of this commitment, the Toronto Police Service provides open analytics to facilitate the visualization and comprehension of police information. Through interactive visualizations, we offer trend analyses, providing stakeholders with quick access to important insights while maintaining the highest standards of privacy and data security

## Requirements and Justification

The widespread impact of crime as a societal concern, profoundly affecting individuals and communities on a global scale, requires a comprehensive exploration of crime prevention strategies, the identification of contributing factors, and an analysis of crime patterns. The primary research objective of this project is to tackle challenges associated with public safety, victimization, and community well-being within the framework of addressing crime in the city of Toronto.

**Functional Requirements**

1. **Data Collection:** Collect and aggregate crime-related data from diverse sources, including law enforcement records, community reports, and other relevant datasets.
2. **Data Analysis and Pattern Recognition:** Implement data analysis techniques to identify patterns and trends in crime data. This could involve statistical analyses, machine learning algorithms, or other analytical methods.
3. **Crime Prevention Strategies:** Develop a framework for exploring and recommending crime prevention strategies based on the identified patterns. This may include predictive modeling to anticipate future crime hotspots.
4. **Contributing Factors Identification:** Implement mechanisms to identify contributing factors to crime. This could involve correlation analyses to understand relationships between various variables and crime occurrence.
5. **Public Safety Assessment:** Assess and report on the current state of public safety in different areas within the city. This involves creating metrics and indicators to measure safety levels.
6. **Victimization Analysis:** Analyze victimization data to understand the demographics and circumstances of victims. This could involve demographic profiling and identifying high-risk groups.
7. **Community Well-Being Metrics:** Develop metrics and indicators to assess community well-being. This may include factors such as residents' perceptions of safety, social cohesion, and quality of life.
8. **Geospatial Mapping:** Implement geospatial mapping capabilities to visualize crime patterns and their spatial distribution across different neighborhoods in Toronto.
9. **Interactive Reporting:** Provide interactive reporting tools and dashboards for stakeholders, allowing them to explore and understand the data. This could include drill-down features and customizable views.
10. **Resource Allocation Optimization:** Develop algorithms or models to optimize the allocation of resources (personnel, budget, etc.) based on the identified crime patterns and prevention strategies.
11. **Privacy and Security Measures:** Implement robust privacy and security measures to ensure the protection of sensitive crime-related data and comply with legal and ethical standards.

**Non-Functional Requirements**

1. **Performance:**

* **Response Time:** The system should provide timely responses for data analysis and reporting, ensuring that stakeholders can access information efficiently.
* **Throughput:** Specify the desired throughput in terms of the number of transactions or analyses the system should be able to handle concurrently.
* **Scalability:** The system should be scalable to handle an increasing volume of crime data without significant degradation in performance.
* **Data Volume:** The system should handle a large volume of crime-related data, considering the potential growth in data over time.
* **User Base:** Design the system to accommodate an increasing number of users as stakeholders engage with the platform.

1. **Reliability:**

* **Availability:** The system should be available for use by stakeholders consistently, with minimal downtime for maintenance or updates.
* **Fault Tolerance:** The system should be designed to handle and recover gracefully from unexpected errors or faults.

1. **Security:**

* **Data Security:** Implement robust security measures to protect sensitive crime-related data, ensuring that only authorized personnel have access.
* **Privacy:** Ensure compliance with privacy regulations and standards to protect the privacy of individuals whose data is included in the analysis.

1. **Usability:**

* **User Interface (UI):** Design an intuitive and user-friendly interface for stakeholders to interact with the system, facilitating easy exploration of data and insights.
* **Accessibility:** Ensure the system is accessible to users with different levels of technical expertise.

1. **Interoperability:**

* **Integration:** The system should be capable of integrating with other relevant data sources and systems to enhance the depth of analysis.

1. **Compliance:**

* **Legal Compliance:** Ensure that the system adheres to legal regulations related to crime data, privacy, and other relevant laws.
* **Ethical Compliance:** Adhere to ethical standards in research and data analysis practices.

1. **Maintainability:**

* **Modularity:** Design the system with a modular architecture to facilitate easier maintenance, updates, and enhancements.
* **Documentation:** Provide comprehensive documentation for the system, including data sources, algorithms used, and maintenance procedures.

1. **Cultural and Social Considerations:**

* **Cultural Sensitivity:** Ensure that the system and its analyses are culturally sensitive, considering the diverse population in the city of Toronto.

## Solution and cost estimation

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| **Resources** | **Cost** |
| Software and tools | 25,000 CAD |
| Server Installation | 18,000 CAD |
| Database | 25,000 CAD |
| Training | 15,000 CAD |
| Implementation | 18,000 CAD |
| Testing | 10,000 CAD |
| Contigency | 5,000 CAD |

**Benefits of investing in this solution:**

In brief, the benefit of investing to this project lies in its potential to empower stakeholders with knowledge, actionable strategies, and insights to effectively address and mitigate crime-related challenges in the community.

* Insights for Stakeholders: The project aims to provide insights for law enforcement agencies, policymakers, and community organizations. This means these stakeholders will gain a deeper understanding of the factors contributing to crime.
* Actionable Recommendations: The project intends to offer actionable recommendations. This implies that the information provided will not just be informative but will include practical and feasible steps that stakeholders can take to address crime-related issues.
* Crime Rate Reduction: By understanding the root causes of crime and developing proactive strategies, the project aims to contribute to the reduction of crime rates.
* Improved Community Safety: The focus on preventing and reducing crime is directly linked to the improvement of community safety. As crime rates decrease, communities become safer for residents.
* Efficient Resource Allocation: The project seeks to help stakeholders allocate resources more efficiently. This suggests that resources, whether financial, personnel, or other assets, can be directed strategically to address the most critical areas affected by crime.