

To: Head of Analytics at Google Maps

From: Analytics Team (Charlotte Lin, Pawan (Sine) Polcharoen, Mika Tanchavanich, Avery Chen, Mingyuan Li, Joanne Lin)

Improving Urban Safety through Data-Driven Navigation

Living in New York City offers an exhilarating yet challenging experience due to its fast-paced lifestyle and crowded streets. Navigating the city becomes particularly daunting for residents and tourists, especially those with limited local knowledge. The urgency for an innovative solution to enhance urban safety becomes evident when considering the statistics related to pedestrian safety in the state. According to the New York Department of Health, injuries to pedestrians are a leading cause of injury-related hospital admissions and death across age groups, with approximately 300 pedestrian fatalities and 15,000 injuries annually due to motor vehicle incidents. Furthermore, a 2022 study revealed that New York City recorded the highest number of pedestrian deaths (1,260) among U.S. cities between 2011 and 2020, emphasizing the critical need for interventions.

In response, we propose integrating crime statistics with Google Maps, offering data-driven navigation and prioritizing safety. This solution addresses the challenge of a lack of real-time, data-driven information about potentially dangerous areas, empowering users to make safer choices. By incorporating crime data and predictive analytics into Google Maps¹, we can achieve our mutual goal, offering users a solution to avoid potentially risky areas and routes and ultimately improve urban safety.

Through predictive analytics, this platform will give users multiple path suggestions, allowing them to select the safest route and minimize their exposure to potential crime risks. This solution's key strength is providing users with data-supported recommendations, a significant improvement over relying solely on intuition or limited local knowledge.

We estimate a **10-12 month** project timeline with ongoing maintenance (5 Phases). While precise costs may fluctuate with new factors, we can provide a rough estimate based on current salary ranges within our company:

Estimated Salary Costs from Glassdoor:

- **Project Manager** \$171K - \$285K/yr
- **Data Scientist** \$181K - \$296K/yr
- **Machine Learning Engineer** \$177K - \$295K/yr
- **User Experience Designer** \$161K - \$270K/yr

Project Phases:

- 1. Data Collection and Cleaning (2 months)** – Acquiring crime data from NYC open database, cleaning, and preparing for the next steps.
 - **Team:** 1 project manager + 1 data scientist
 - **Salary Cost Estimate: \$59K-97K** (2 months x \$171K - \$285K/yr + 2 months x \$181K - \$296K/yr)
- 2. Model Development (3 months)** – Developing predictive models based on historical data to estimate the probability of a crime event in specific areas and times.
 - **Team:** 1 project manager + 1 data scientist + 1 machine learning engineer
 - **Salary Cost Estimate: \$133K-219K**

¹ Google Maps, a subsidiary of Alphabet Inc., aims to empower individuals by offering seamless and up-to-date geographic information, enhancing navigation experiences, and ultimately contributing to safer and more efficient journeys.

3. **System Integration (2 months)** – Seamlessly integrating data-driven crime information into Google Maps.
 - **Team:** 1 project manager + 1 machine learning engineer + 1 user experience designer
 - **Salary Cost Estimate:** \$85K-142K
4. **User Testing and Feedback Gathering (3 months)** – Conducting extensive testing, user satisfaction survey research, and social analysis to refine the system.
 - **Team:** 1 project manager + 1 user experience designer
 - **Salary Cost Estimate:** \$83K-103K
5. **Real-Time Data, Maintenance, and Updates (Ongoing)** – Ensuring that users are always notified of incidents nearby in real-time. Regularly maintaining the system to keep it relevant and effective.
 - **Team:** 1 project manager + 1 data scientist + 1 user experience designer (part-time)
 - **Salary Cost Estimate:** 257K-426K/yr

Total Salary Cost Estimate for Phases 1-4: **360K-561K**

Ongoing Salary Cost Estimate: **257K-426K**

The project's ROI is measured by reducing crime incidents and enhancing safety, fostering increased user trust and engagement. Although the direct financial ROI is challenging to quantify, the long-term social impact and improved user experience are valuable returns. Further budget discussions can be arranged in a subsequent meeting.

Qualitative and quantitative methods will be employed to assess the return on investment (ROI):

- **Qualitative Assessment:**
 - **User Satisfaction Surveys:** Deploy in-app surveys measuring user satisfaction on a Likert scale, asking questions about the user's sense of security, the perceived accuracy of crime data, and the overall impact on their navigation experience.
 - **Longitudinal Study:** Track users' perceptions and usage patterns over time to help us understand the feature's long-term value and its sustained impact on users' sense of safety.
- **Quantitative Assessment:** Track key performance indicators, including the percentage change in reported pedestrian incidents, user engagement, and satisfaction.

Overall, this proposal offers an opportunity to enhance urban safety through the power of data-driven navigation. We believe this initiative perfectly aligns with Google Maps's mission to ensure user safety. We seek your support to invest in this vital project and improve the safety of New York City.

Works Cited

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