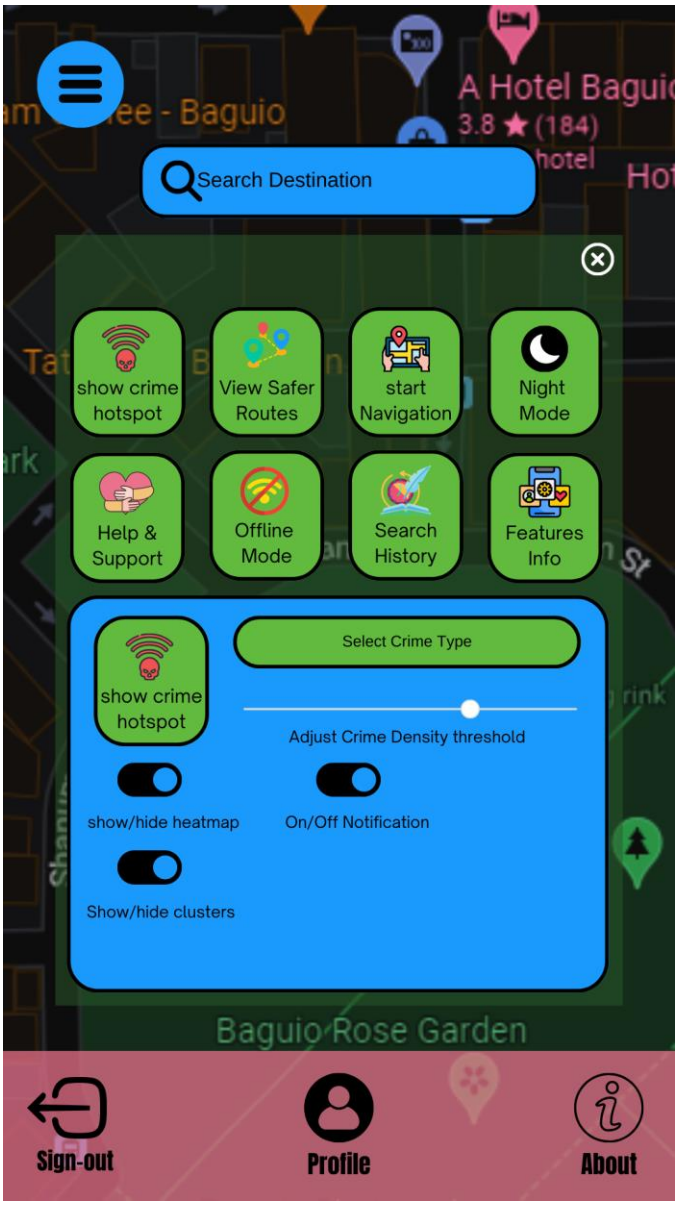
These are the features that are not implemented due to the change of pathfinding feature implementation

Crime Hotspot Identification:

Toggle switch: "Notify about crime hotspots"

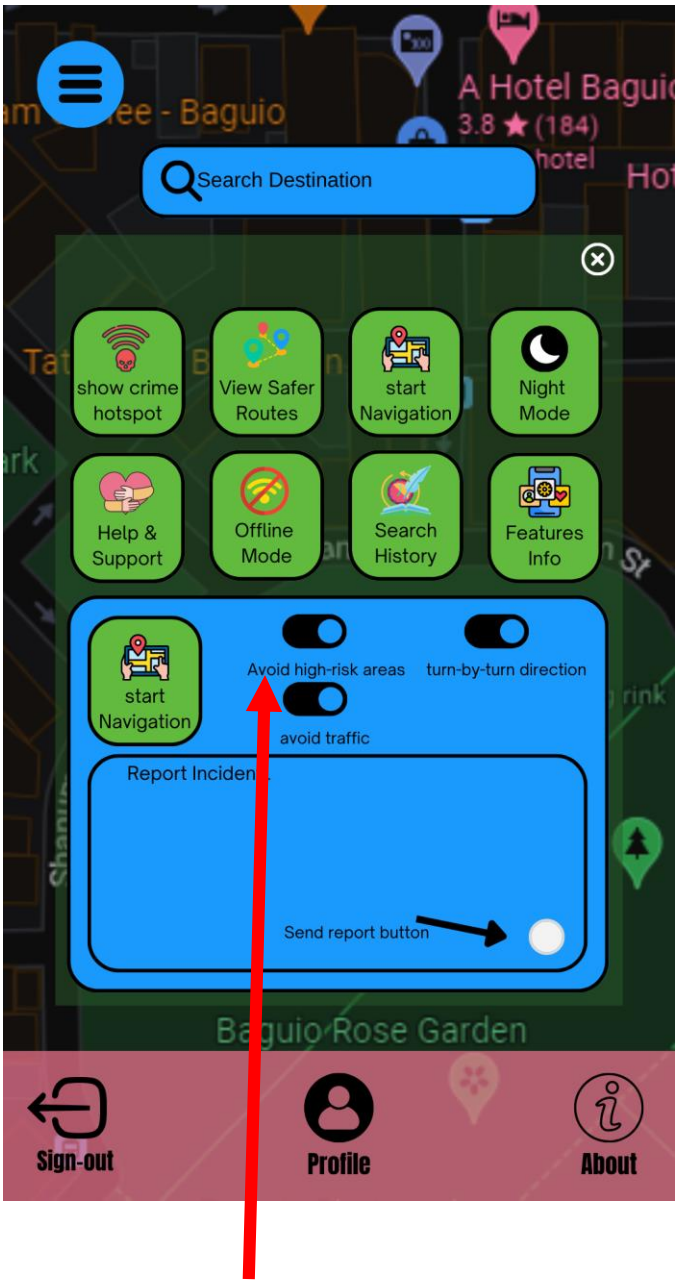
This switch enables or disables the notification feature for crime hotspots.



Pathfinding Algorithms:

Toggle switch: "Avoid high-risk areas during navigation"

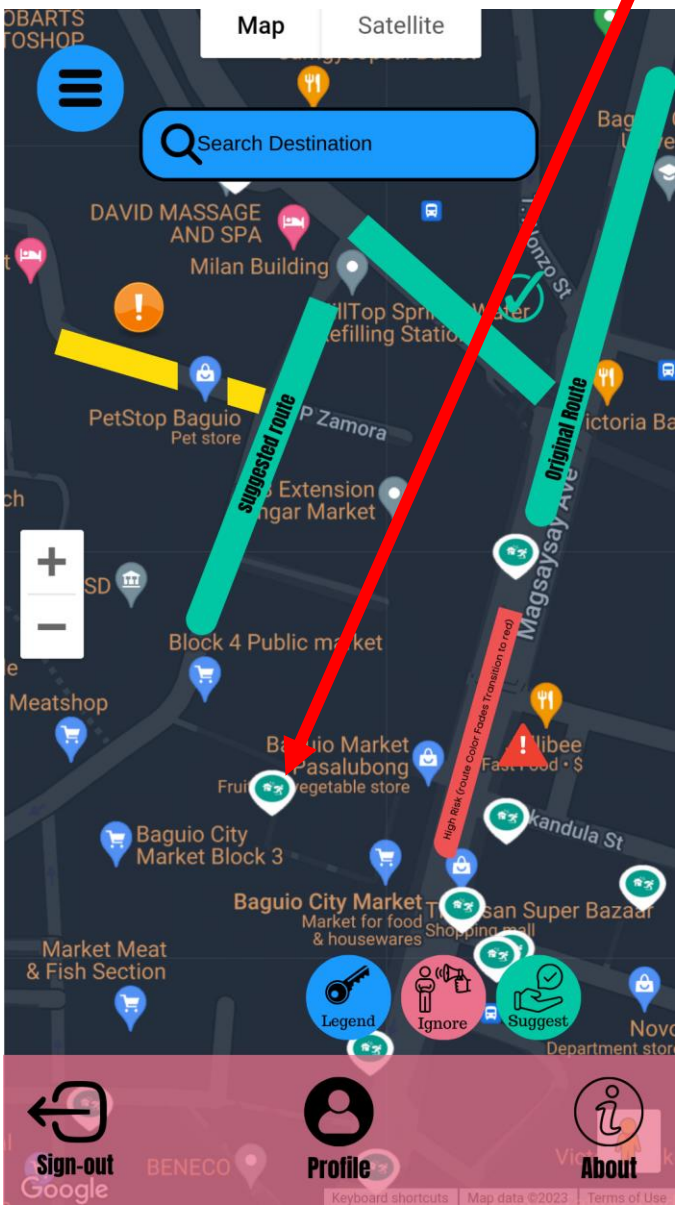
Enabling this switch will instruct the routing algorithm to consider avoiding high-risk areas while calculating the route in real-time.



When you enable the toggle switch "Avoid high-risk areas during navigation" and visualize it on the Google Map, the following changes will occur:

Routing Algorithm Calculation: The routing algorithm will take into account the high-risk areas while calculating the route from the user's current location to the destination. It will aim to avoid these high-risk areas and find an alternative path that is safer in terms of crime risk.

Updated Route Display: The Google Map will display the updated route on the map interface, showing the alternative path that avoids high-risk areas. This route will be highlighted with a different color or line style to differentiate it from the original route.



Turn-by-Turn Directions: The turn-by-turn directions provided by the app will guide the user along the new route, ensuring they stay on the path that avoids high-risk areas. The directions will be updated to reflect the changes in the route.

Crime Hotspot Markers: The Google Map may also display markers or symbols representing crime hotspots on the map. These markers can provide an additional visual indication of the areas with higher crime rates. It can help users understand the context and make informed decisions while navigating.

Notification of Avoided High-Risk Areas: If the user had previously enabled the "Notify about crime hotspots during navigation" toggle switch, they may receive notifications indicating that the app has successfully avoided high-risk areas on the new route. These notifications can provide reassurance and enhance the user's sense of safety during the journey.

Overall, turning on the "Avoid high-risk areas during navigation" toggle switch will adjust the route calculation to give priority to safer paths, and the Google Map interface will visibly depict this alternate route, giving users a safer navigation experience through areas with reduced crime risk.

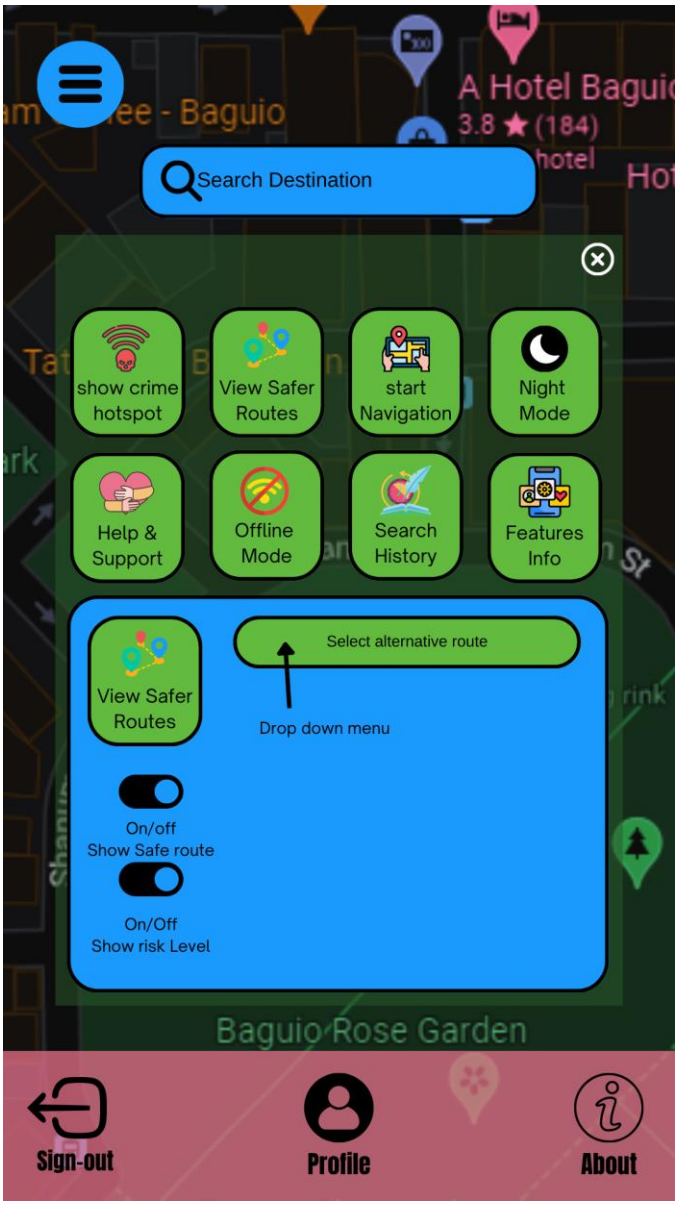
High Risk Ui

Dropdown menu: "Alternative route selection"

Add the option "Safest route" based on the crime risk level.

When the user selects "Safest route," the app calculates the crime risk level for each available route and provides the route with the lowest risk level as an alternative.

If the original path is determined to be less safe, show an informational message to the user and prompt them to reroute to a safer path.

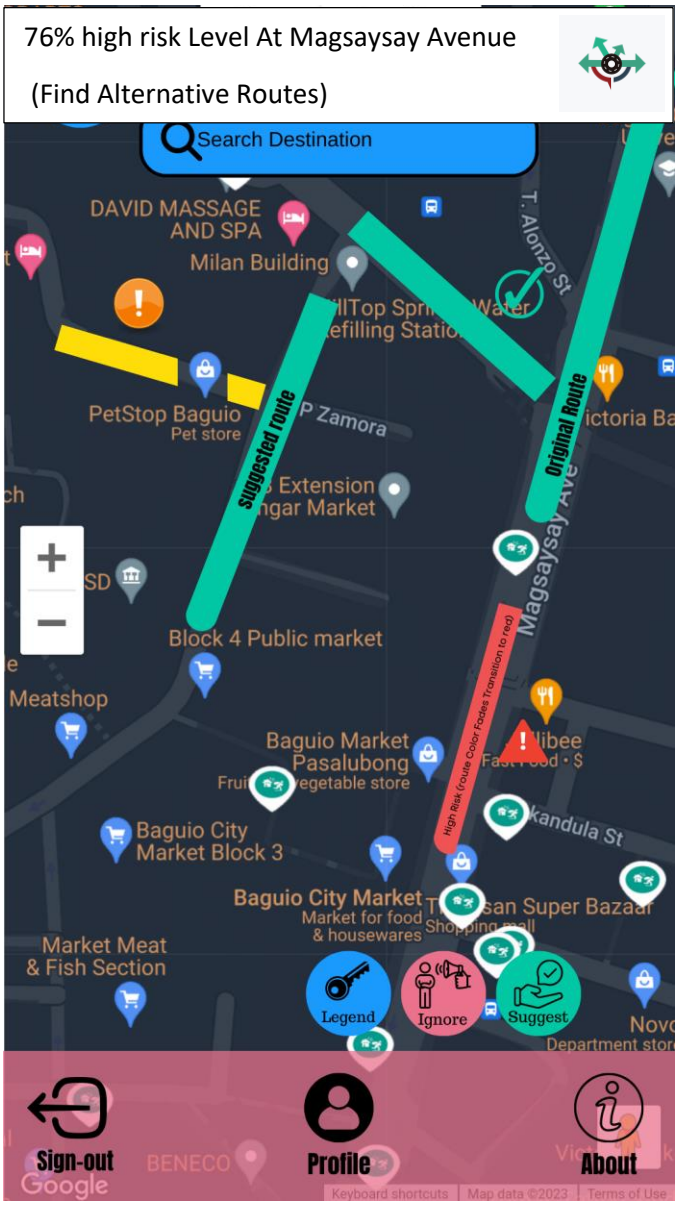


Real-time Navigation:

Toggle switch: "Notify about crime hotspots during navigation"

When enabled, the app continuously monitors the user's location and notifies them if they are approaching or passing through a crime hotspot.

If the user receives a notification about a crime hotspot during navigation, provide a prompt to suggest an alternative safer route.



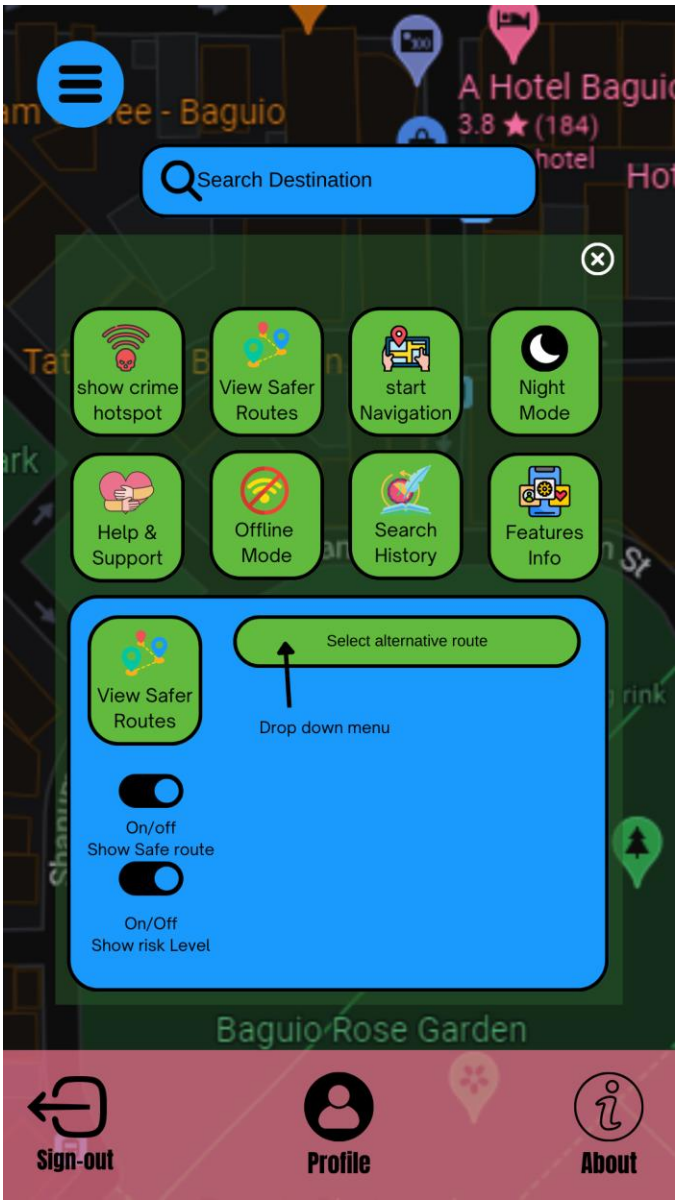
Additional Safer Route Suggestions:

Toggle switch: "Show safer routes"

Enabling this switch displays multiple safer route options to the user.

Toggle switch: "Show risk level"

Enabling this switch displays the risk level of each route option, helping users make informed decisions.



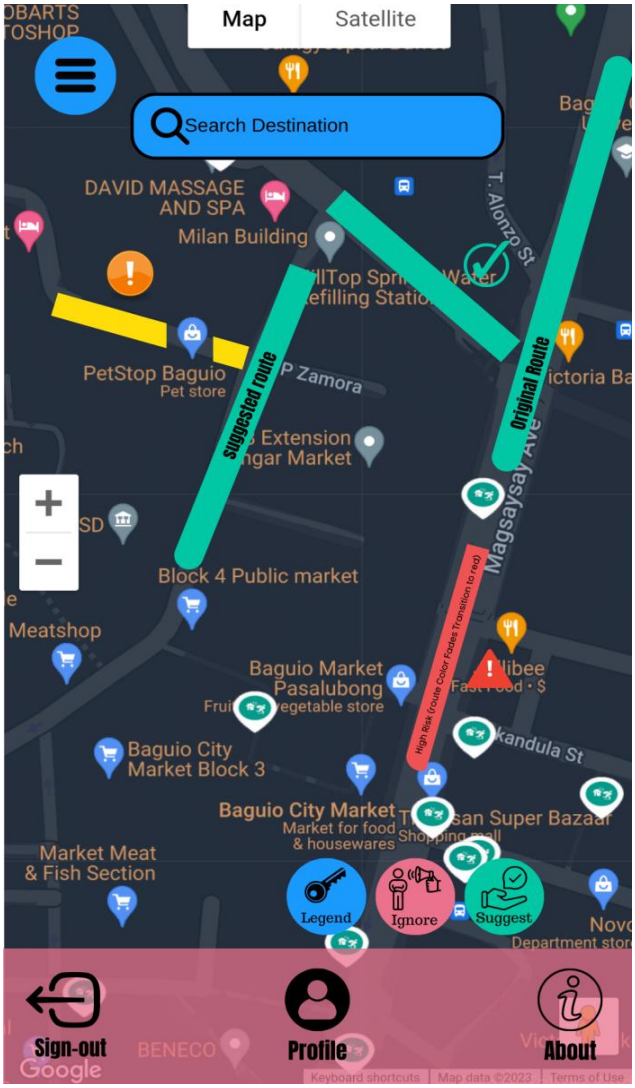
When the "Show Risk Level" toggle switch is enabled on the Google Map API, the following display changes will occur:

Route Line Color or Style:

Each route option on the map will be assigned a different color or line style to represent its risk level. For example, routes with lower risk levels may be displayed in green, while routes with higher risk levels may be displayed in red.

Risk Level Indicator:

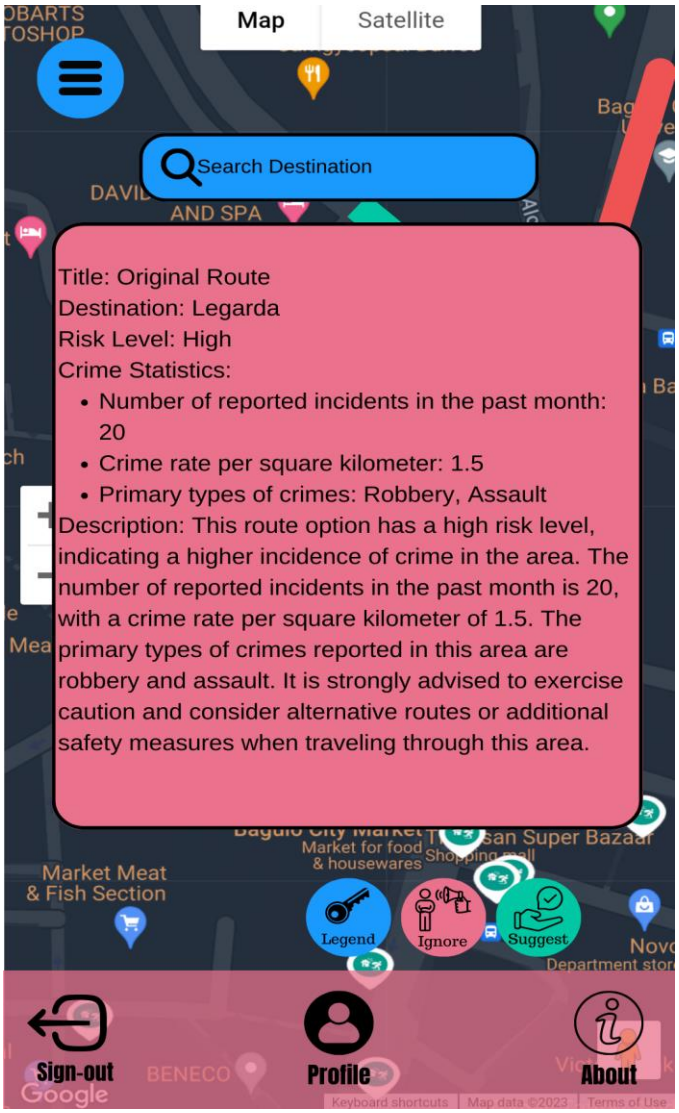
Alongside each route option, a risk level indicator will be displayed. This indicator could be represented by icons, labels, or a numerical value to convey the risk level associated with that particular route. For instance, a route with a low risk level may have a green checkmark, while a route with a high risk level may have a red warning symbol.



Tooltip or Info Window:

When the user hovers over or clicks on a route, a tooltip or info window will appear, providing additional details about the risk level. This information may include a description of the risk level (e.g., low, medium, high), crime statistics, or any other relevant information that helps users assess the safety of the route.

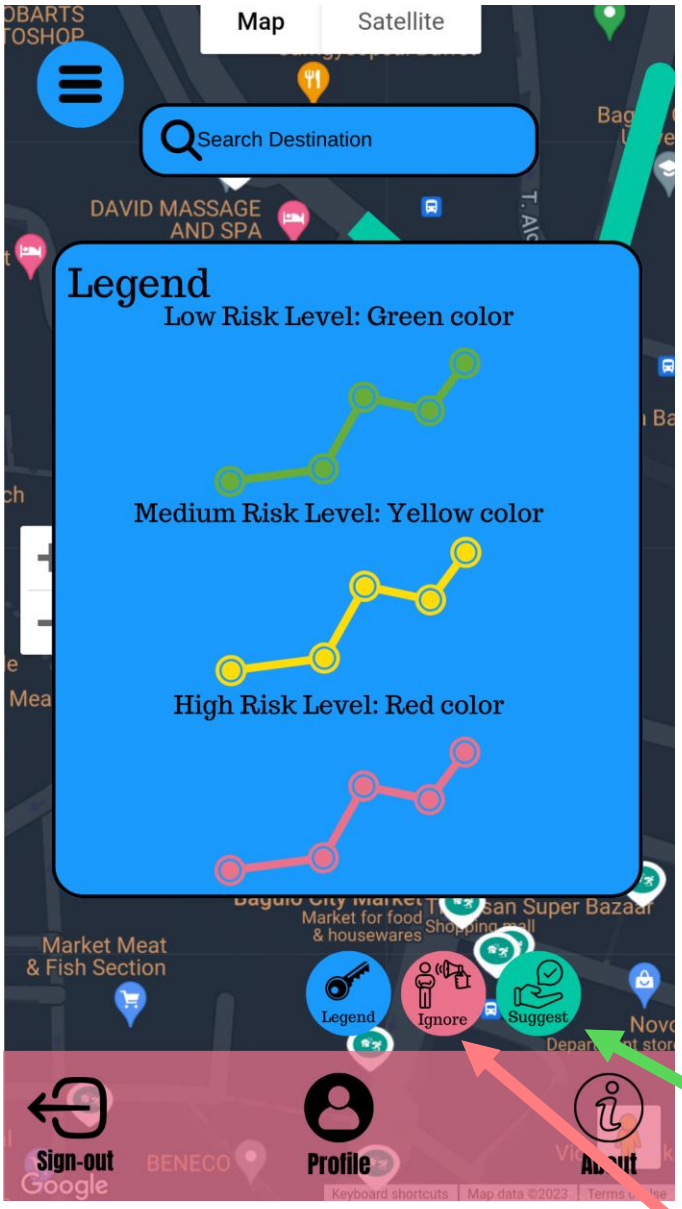
UI of high risk level example



By enabling the "Show Risk Level" toggle switch, users can gain a visual understanding of the risk levels associated with different route options. This feature empowers them to make informed decisions by considering the safety factor in their navigation choices.

Legend or Key:

The map interface may also include a legend or key that explains the color or style codes used to represent different risk levels. This legend will provide a visual guide for users to interpret the risk level display on the map accurately.



Legend:

Low Risk Level: Green color

Medium Risk Level: Yellow color

High Risk Level: Red color

Here's a brief description of each risk level:

Low Risk Level: Routes marked with a low risk level (green color) indicate a relatively safe path. These routes have a lower incidence of reported incidents and a lower crime rate per area. While traveling along these routes, it is still recommended to remain vigilant and take standard safety precautions.

Medium Risk Level: Routes marked with a medium risk level (yellow color) suggest a moderate level of risk. These routes may have a slightly higher incidence of reported incidents or a slightly higher crime rate per area compared to low-risk routes. It is advisable to exercise caution and be aware of your surroundings when navigating along these routes.

High Risk Level: Routes marked with a high risk level (red color) indicate a significant risk of crime or safety concerns. These routes may have a higher incidence of reported incidents or a higher crime rate per area. It is strongly advised to exercise caution, consider alternative routes if possible, and take additional safety measures when traveling along these routes.

options. This feature empowers them to make informed decisions by considering the safety factor in their navigation choices.

"Apply suggested route" button

This button allows the user to select and navigate through the chosen safer route.

"Ignore suggestion" button

This button dismisses the safer route suggestion if the user prefers to continue with the original path.

Dear Clients

I hope this letter finds you well. I want to take a moment to provide you with an update on the progress of our project and discuss the requirements that need to be proposed. I understand the importance of these requirements and the impact they will have on the functionality and usability of the system.

Firstly, I would like to express my gratitude for entrusting me with this project. As the sole developer working on this project, it has been a challenging yet fulfilling experience. I am pleased to inform you that several key features have been successfully developed and implemented in the application.

Crime Hotspot Identification: The application now includes a fully functional crime hotspot identification feature. By utilizing machine learning algorithms such as KDE, k-means, DBSCAN, and Classification, users can access information on identified crime hotspots within the specified areas. This feature empowers users to make informed decisions while navigating through the application.

Real-time Navigation: The real-time navigation feature has been seamlessly integrated into the application, providing users with accurate routing information and directions. It is important to note that the pathfinding functionality has been implemented by leveraging the capabilities of the Google Maps API. The integration with Google Maps offers reliable and efficient pathfinding capabilities, which may differ from the specific Dijkstra's algorithm you originally requested.

Additional Safe Route: The application incorporates the concept of providing users with safer route options. Users can view alternative routes and select the one that best suits their preferences. The implementation utilizes the route alternatives feature provided by the Google Maps API. However, please note that if you specifically desire the Dijkstra's algorithm for pathfinding, its inclusion would require additional development work and result in additional costs.

Incident Report Feature Control: The incident report feature has been fully developed and seamlessly integrated into the system. Users can report incidents they encounter, thereby contributing valuable real-time data updates to enhance the application's ability to identify and navigate around potential hazards.

I want to emphasize that these additional requirements, including the integration of the pathfinding feature with the Google Maps API, were based on your specific requests. As the sole developer working on this project, I have provided the necessary resources and details for future development. It would be my pleasure to continue working with you or be considered for any future projects. Alternatively, if you decide to hire another developer for the project, I am more than happy to assist in the transition and provide any necessary documentation.

While the feature controls for viewing safer routes, navigation, and crime hotspots have been incorporated into the application, it is important to understand that these features may not function as expected if users are seeking the specific pathfinding algorithm

implementation of Dijkstra's algorithm. The current implementation relies on the pathfinding capabilities provided by the Google Maps API.

I want to clarify that the original plan for development included the implementation of the Dijkstra's algorithm for pathfinding. However, based on your request, we modified the pathfinding functionality to integrate with the Google Maps API instead of developing a separate algorithm. This change in approach allowed me to deliver the requested features while utilizing the pathfinding capabilities provided by Google Maps. Should you wish to continue with the development of the Dijkstra's pathfinding algorithm, it would require additional work and incur additional costs.

I understand that implementing these additional requirements will involve significant work and may impact the development timeline. Therefore, I kindly request your understanding regarding the associated costs for integrating these features into the system.

I genuinely value our working relationship and remain committed to providing the best possible solution. I want to assure you that I am here to help prevent unnecessary additional development and provide necessary details for the future development of the project.

Thank you for your understanding. If you have any further questions or would like to discuss the details of the additional requirements, please feel free to reach out to me. I am more than willing to collaborate and find the most suitable way forward.

Yours Truly,