SafeTrip User Manual

Table of Contents

1. Introduction

SafeTrip, designed by second-year software engineering students from the University of Canterbury, is a unique, New Zealand-based safety routing app, providing visual displays of crash data and enabling users to plan routes based on comprehensive safety ratings using public data from Waka Kotahi. Targeting New Zealand road users with a keen focus on safety, SafeTrip distinguishes itself by combining features of potential competitors, offering unique functionality to prioritize your safety on the roads. Below are details on how to set up and run the application.

Note: By using SafeTrip, you understand you are responsible for your own safety and that the app provides recommendations based on the data provided.

2. Installation

Prerequisites

- JDK >= 17 click here to get the latest stable OpenJDK release (as of writing this README)
- Maven Download and Install JDK >= 17 click here to get the latest stable OpenJDK release (as of writing this README)
- Maven Download and Install

What's Included

This project includes some of the following:

- JavaFX
- Logging (with Log4J)
- Junit 5
- Mockito (mocking unit tests)
- Cucumber (for acceptance testing)

We have also included a basic setup of the Gradle project and Tasks required for the course including:

- Required dependencies for the functionality above
- Build plugins:

JavaFX Gradle plugin for working with (and packaging) JavaFX applications easily

Importing Project (Using IntelliJ)

IntelliJ has built-in support for Gradle. To import your project:

- Launch IntelliJ and choose Open from the start up window.
- Select the project and click ‘open’
- At this point in the bottom right notifications you may be prompted to 'load gradle scripts'. If so, click load.

Note: *If you run into dependency issues when running the app or the Gradle pop up doesn't appear then open the Gradle sidebar and click the Refresh icon.*

Build Project

1. Open a command line interface inside the project directory and run ./gradlew jar to build a .jar file. The file is located at `build/libs/safetrip-2.0.jar

Run App

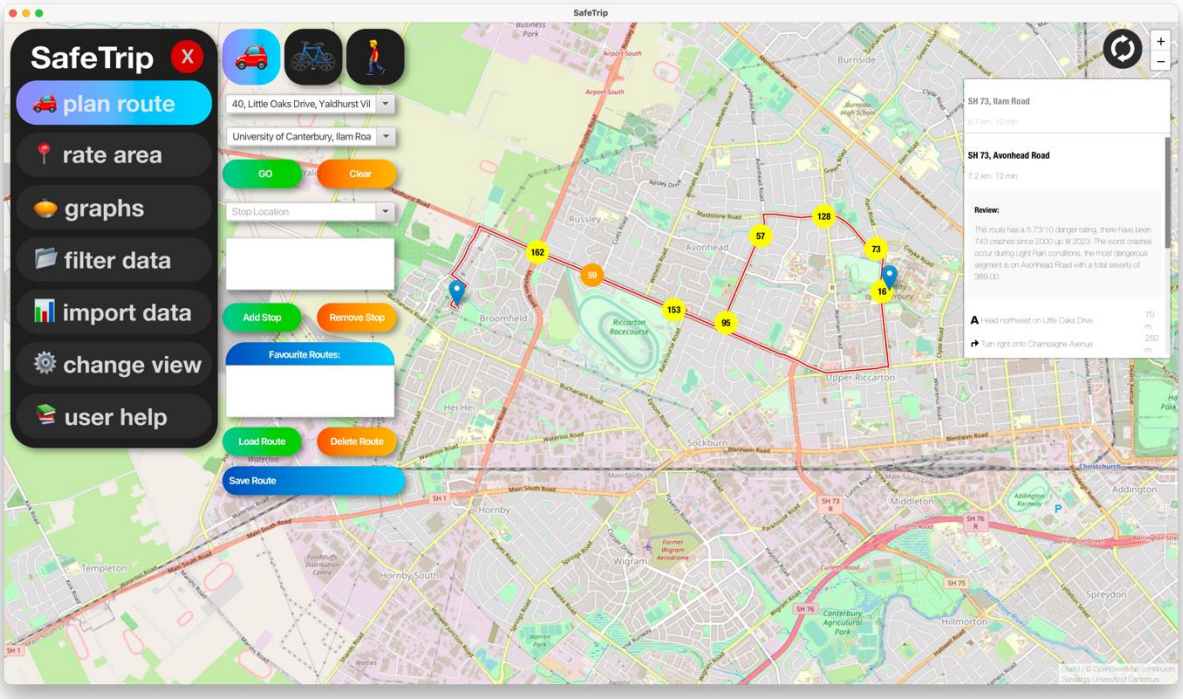
- Open a terminal and move to the directory with the jar file
- Run the command “java -jar safetrip-2.0.jar”
- Enjoy!

3. Getting Started

Once installed, open SafeTrip. You will see a map of New Zealand with various icons and options.

4. Main Features

Route Planning

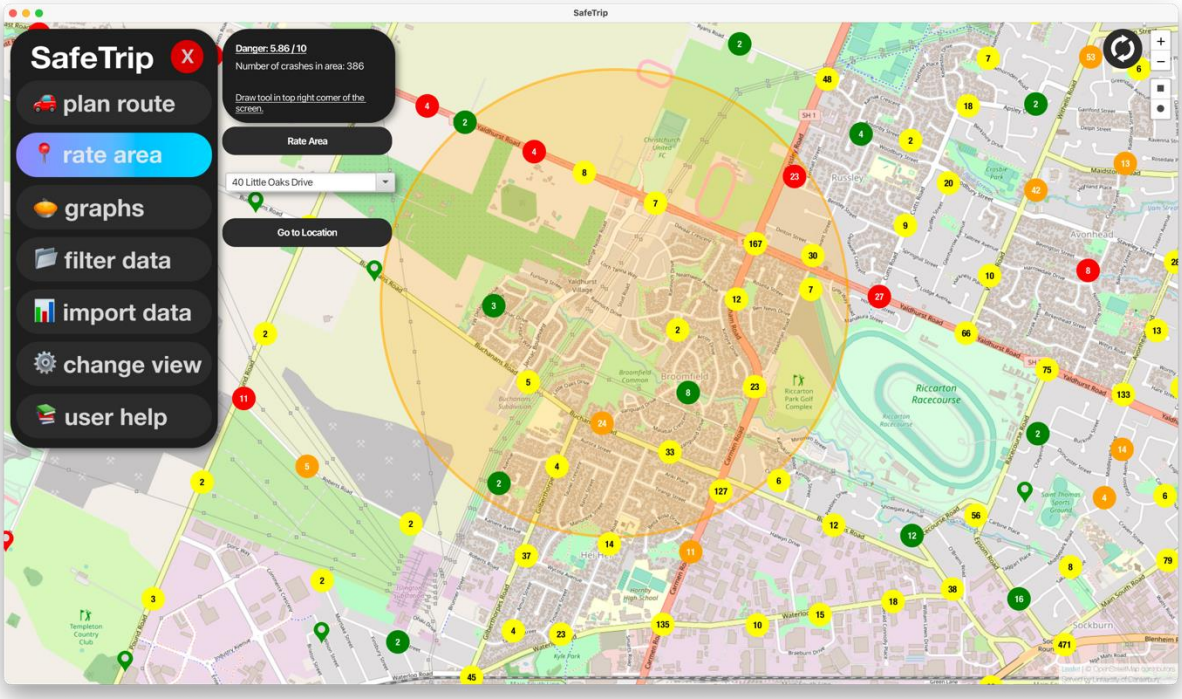


- To plan a route, tap on the "Route Planning" icon on the main screen.
- Select your mode of transportation from the car, bike or walk options.
- Enter your starting point and destination, and click ‘Go’.
- SafeTrip will provide you with up to 3 routes that show relevant crash data from Waka Kotahi’s Crash Analysis System.
- Distance, journey time and directions are provided for each route generated, as well as a safety review showing relevant information.

- You can add a stop to your route by entering an address and clicking ‘Add Stop’.
- SafeTrip will recalculate the routes and add the stop.
- You are able to add and remove stops.

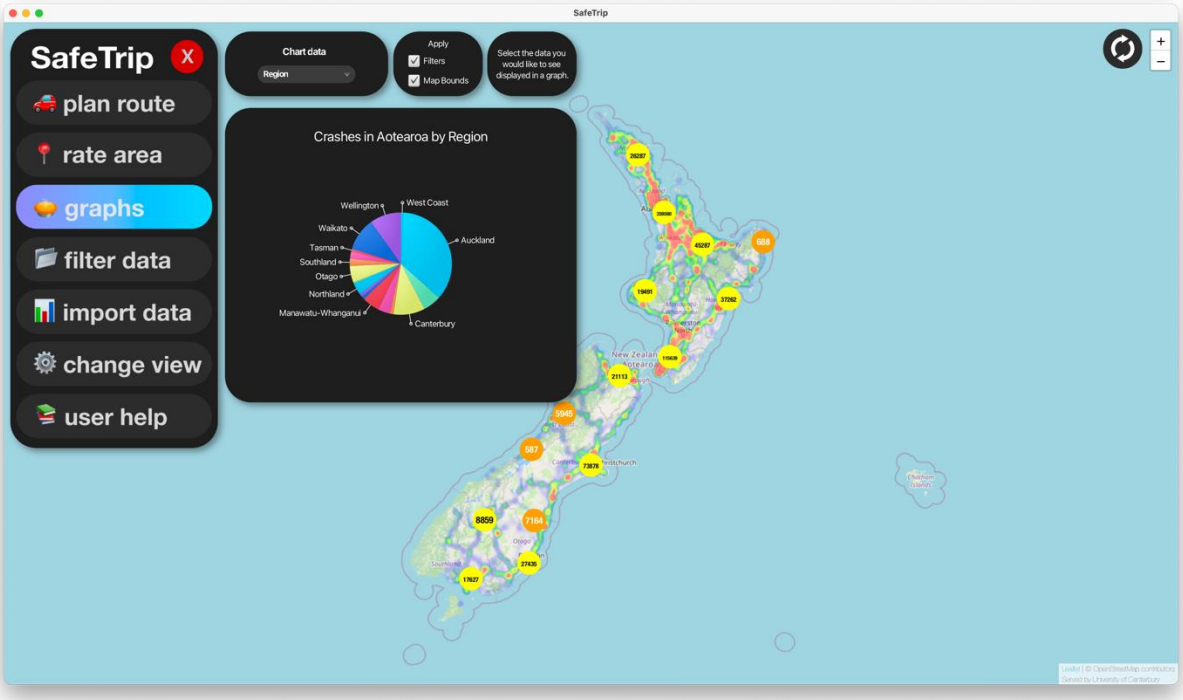
- You can also save a route e.g. as “Home”
- It will appear under ‘Favourite Routes’
- You can then load this route and delete this route as required.

Rate Area



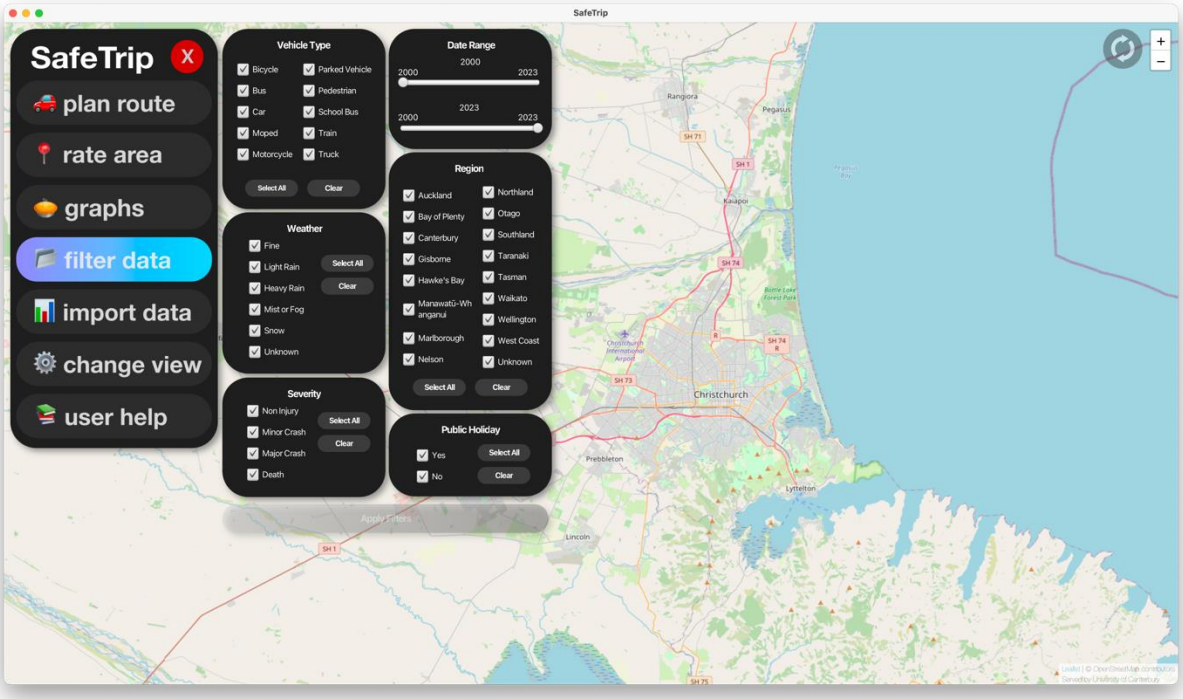
- Use the "Draw Tool" to find the safety rating of a specific area.
- You can choose between a rectangular draw tool and a circular draw tool.
- You may also set a starting location as the centre of the map displayed.
- The app will calculate a safety rating based on crash data within that area, and colour the selected area accordingly.
- You may also filter the data through the ‘Filter data’ button e.g. if you only want to see crashes in a certain year.

Graphing Data (Pie Chart)



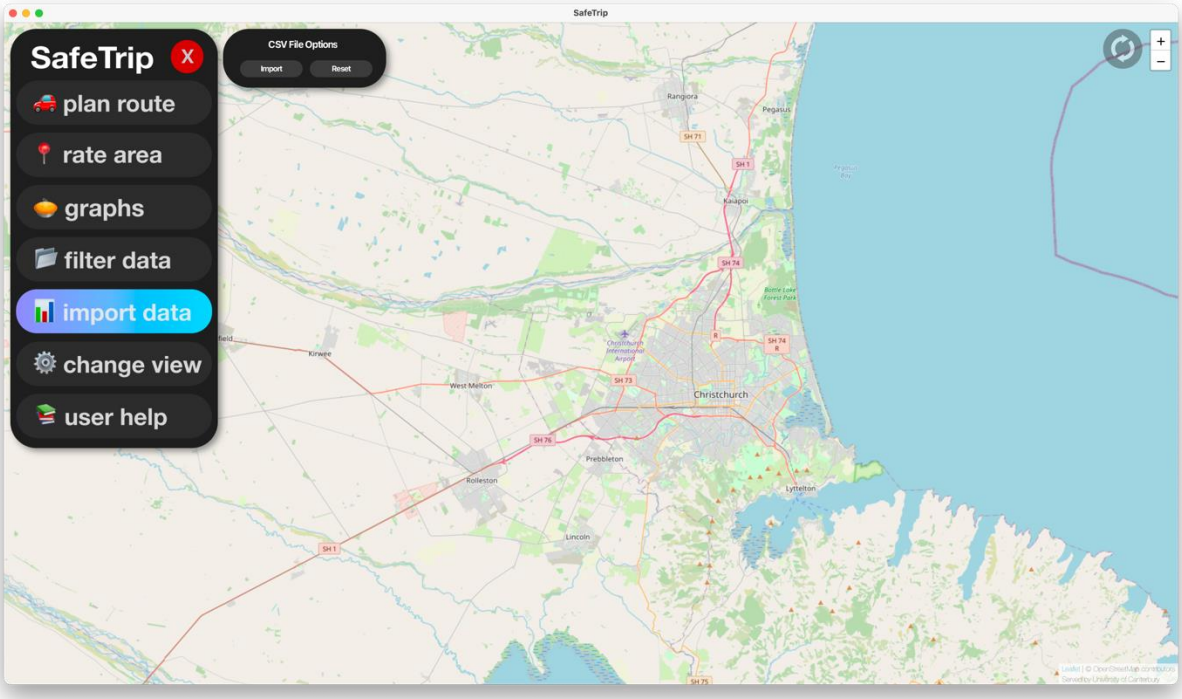
- To access the Pie Chart, go to the "Graphs" section.
- Choose a data parameter to observe (e.g., Region, Weather).
- SafeTrip will generate a pie chart to visualize the data.
- You can tick the corresponding tickboxes if you wish to keep the filters selected applied to the pie graph, or if you wish for the pie graph data to only be based on the area of the map on the screen.

Data Filtering



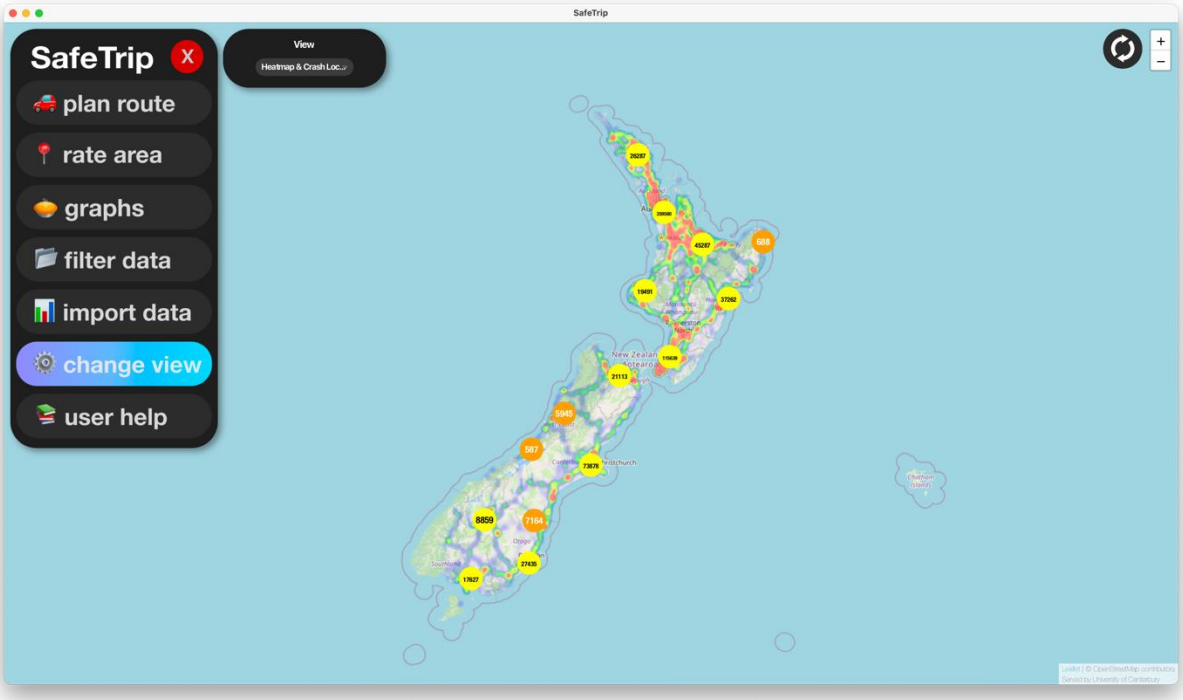
- The filters selected will typically apply throughout the rest of the app features, such as view options on the map.
- Tap on the "Filter data" button to open the filter options.
- You can filter by vehicle type, weather, severity, year, region and if it was a holiday to focus on specific data points.
- Click ‘Apply filters’ to ensure the changes are saved.

Data Import



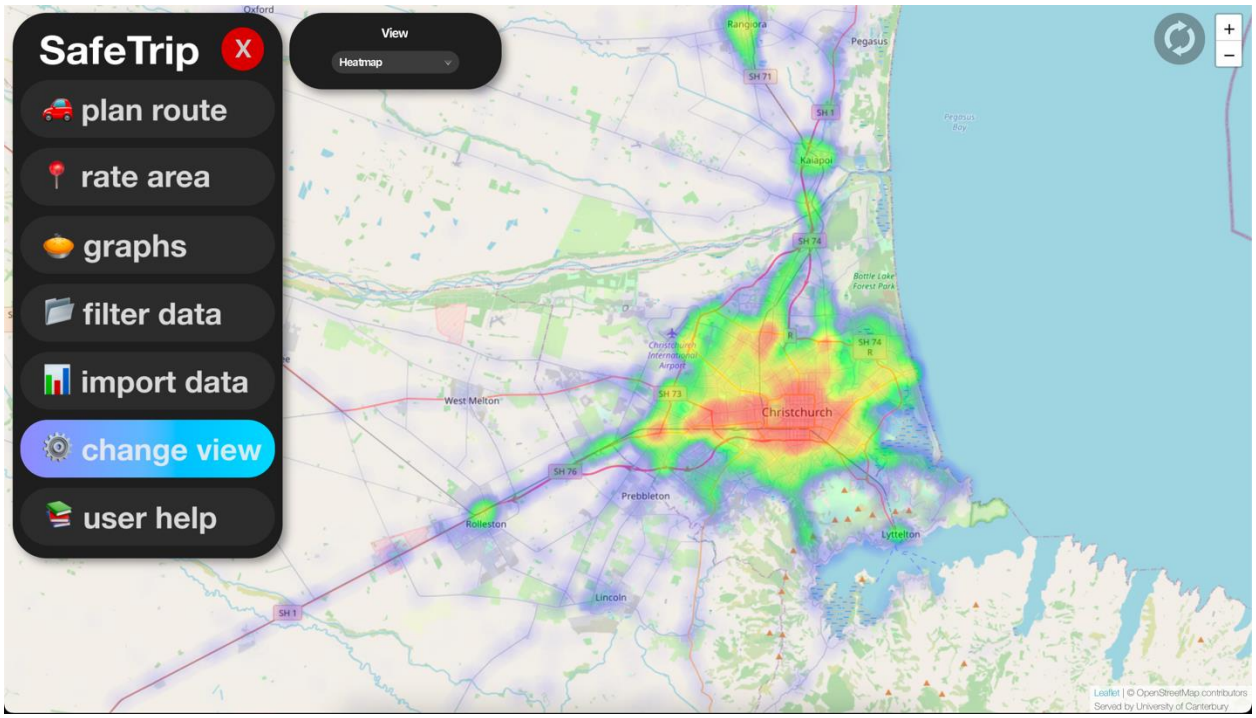
- To import external data, tap on "Import Data."
- Choose between:
    - ‘import data’ which opens your file browser for you to select a csv file
    - ‘reset data’ which clears the database
- The app will display the imported data on the map.

Change View



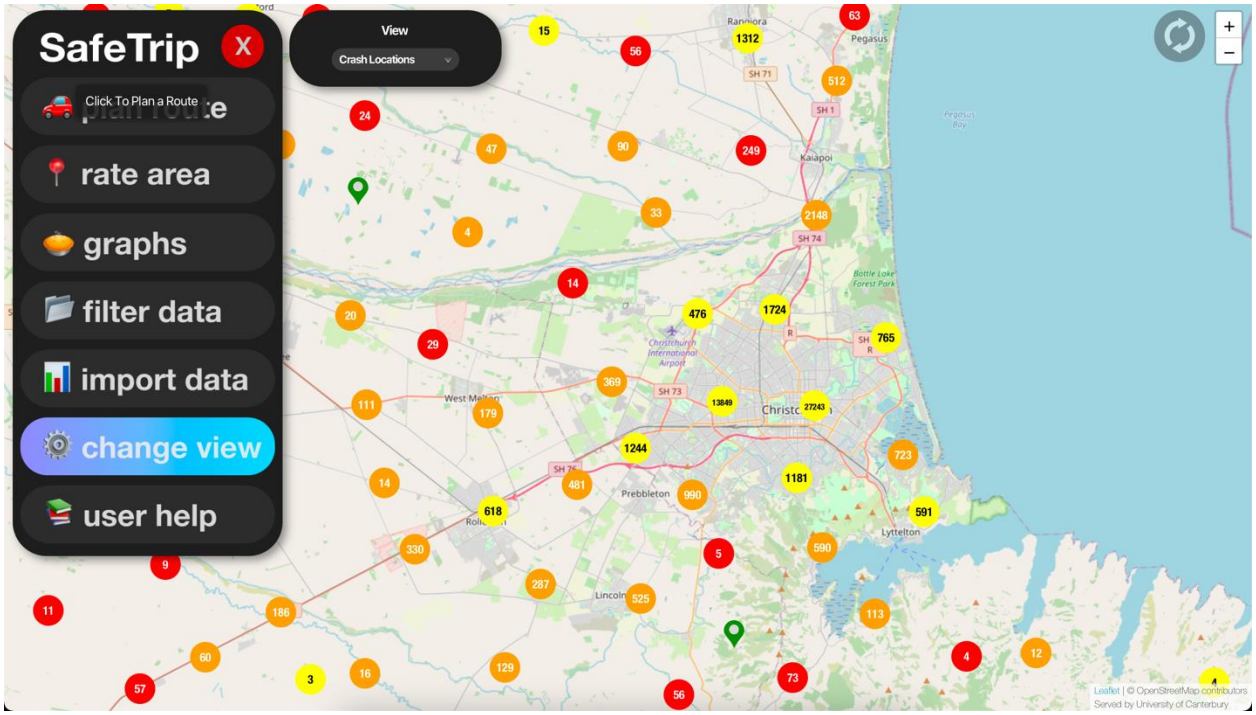
- To change the data representation on the map, click on ‘Change view’.
- There are 5 view options to visualise the data on the map: None, Automatic, Heatmap, Crash Locations, and Heatmap & Crash Locations.
- Please select an option from the dropdown menu.
- Automatic displays a heatmap until the map is 70% zoomed in, which is when the display switches to show crash locations.
- Once again you can choose to filter the data shown by clicking ‘Filter data’ and refreshing.

Heatmap



- To enable Heatmap Mode, tap on the "Heatmap" option.
- The map will display color-coded areas based on the frequency of crashes.
- Red shows areas with more frequent crashes, then yellow and green indicate a lower frequency and blue shows areas with the lowest frequency.

Crash Locations



- The "Crash Locations" feature shows clusters of accidents on the map.
- These clusters change depending on the zoom level.
- Clicking a cluster zooms further.
- If you zoom close enough, individual crash points appear as pins
- Clicking a pin shows information about the crash such as latitude, longitude, severity, year and weather.
- Individual crash pins are coloured by severity: red is fatal, orange is serious, yellow is minor and green is non-injury.
- The number shown in the centre of the circle shows the number of crashes in the cluster
- Clusters are coloured based on the average severity of the crashes in the cluster, with red being a high average severity, and going down with orange and yellow. Hence, green shows a low average severity.

These are the main features of SafeTrip. Please explore the app and make use of its features to stay informed about road safety in New Zealand. If you encounter any issues or have questions, please refer to the app's Help section for further assistance.

Note: For specific guidance you may also refer to the app's relevant tooltips.