IS428 Visual Analytics for Business Intelligence

User Guide

Team Collision

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1. Introduction

In United Kingdom (UK), road traffic accidents have resulted in 1,732 deaths in the year 2015, which is a 2% dip as compared to the year 2014. Despite the drop in the number of deaths, the casualties across all severities remained at an alarming figure of 186,130. As there is an increasing demand for the use of public roads, there is a strong need for us to prevent road traffic accidents and make the public roads as safe as possible. In order to prevent such accidents, it is therefore crucial to understand what are the different factors that contribute to road traffic accidents, and these understandings may then be used to prevent road traffic accidents from occurring.

Our team's visualisation is being built to allow users to analyse the casualties incurred from traffic accidents, and also to look at what are the different factors, which caused the accidents. The factors consist of:
- Age of driver involved in accident
- Time of the accident
- Day of the week of the accident
- Weather condition
- Road surface condition

2. Web Application Setup

For your convenience, you can directly access the web app through the link below.
Web-application Host Link: https://va-team-collision.herokuapp.com/

However, if you wish to run a local copy of the web application on your local machine, please follow the steps below:

- Ensure the software perquisites as of below:
  - Web-Browser *(Google Chrome is strongly recommended)*
  - Local Web Sever (e.g., EasyPHP)
- Download the source code: https://github.com/limtingzhi/VA_Team_Collision
- Unpack the zip package into the local web directory (e.g., www directory or localweb directory)
- Ensure the unpacked files has the structure as of below:
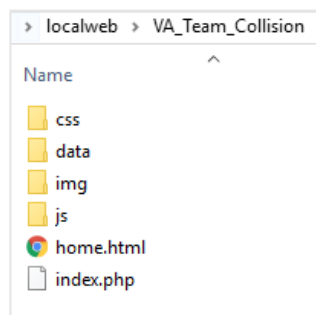
- Start the local web server
- Access the link (http://127.0.0.1:8080/VA_Team_Collision/index.php) through your web browser. *(Note: your port number may differ, please check configuration of your local web server).*

3. Interactive Visualisation Guide

If you managed to configure the local web-server correctly, then you should be greeted by the main screen of the application when you access the link provided.

3.1 Main Screen

As you can observe from Figure 3.1, you will notice the screen estate is being segmented into two sections.

Left section:
The left section serves as a visual and navigation tool, where it allows you to understand the distribution of casualty age, class (driver/rider, passenger or pedestrian) and severity of casualty. It is also interactive where you are able to click on the desired portion of the distribution and analyse further.

Right section:
The right section allows the user to focus on the details, such as how the different factors contribute to the road traffic accidents.
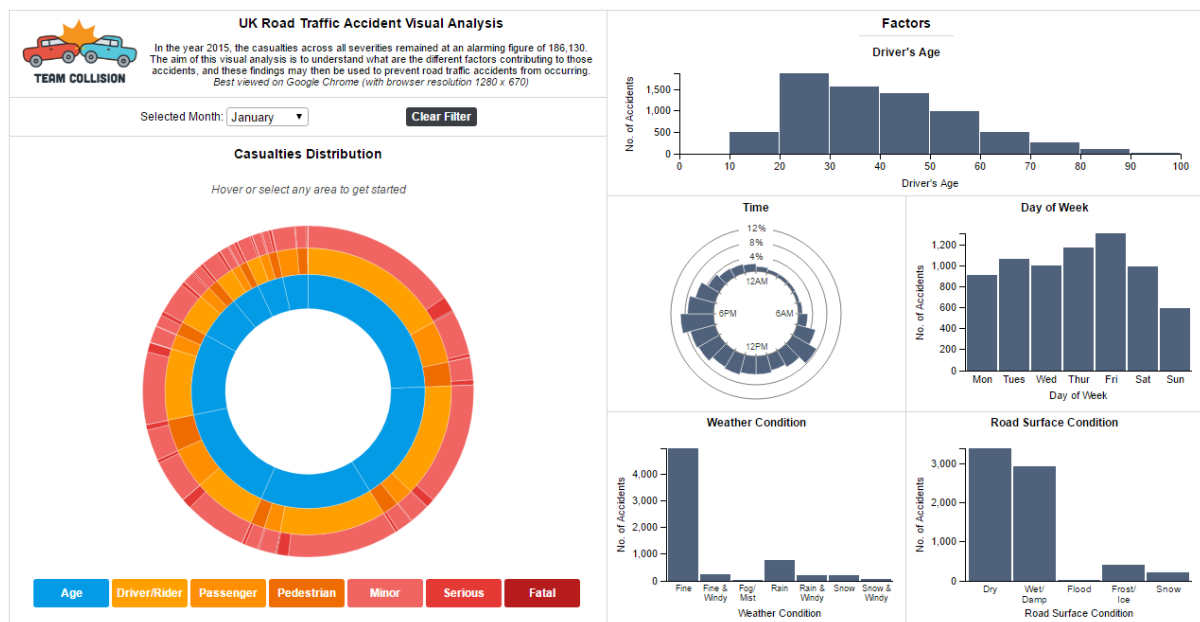

Figure 3.1

3.2 Data Selection

As some of the factors are time-sensitive (e.g., weather conditions like "Snow" will only happen during winter period), thus our team put in the option where you are able to view by the different months.

Figure 3.2

3.3 Sunburst Diagram

As mentioned above, the Sunburst Diagram serves as a visual analytical and navigation tool, which allows the user to analyse casualty distributions and drill deeper for further analysis.

The highlighted portion in Figure 3.3 shows the navigation indicator, which performs two important tasks:
1. It tells you the information at the point which your mouse is hovering at.
2. Once you select the sequence within the Sunburst Diagram, it will act as an indicator to show what you have selected.
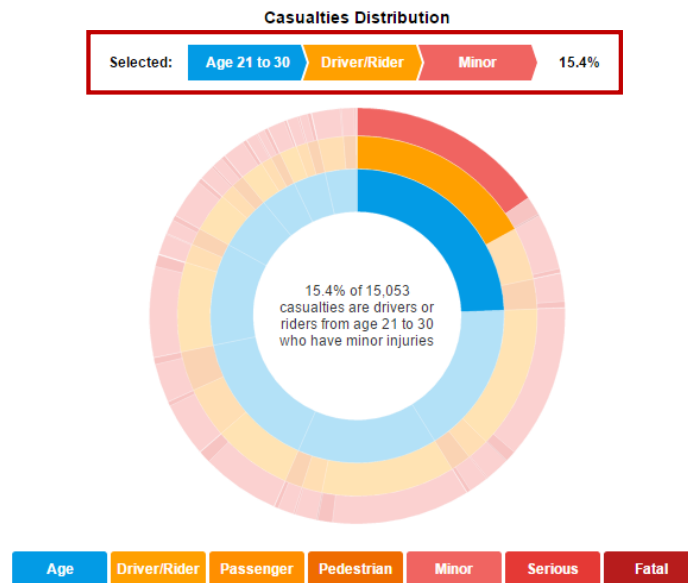

Figure 3.3

If you would like to navigate to other sequences or portions within the Sunburst Diagram, there is no need to clear the filter, you are able to continuously click on other sequences or portions on the fly. This allows for fast navigation, which does not hinder in visual analysis.

However, if you wish to clear the filter, you can click on the filter button as shown in Figure 3.4.

Figure 3.4

3.4 Factors Graphical Furniture

Any clicking-interaction on the Sunburst Diagram will instantly update the factors graph as shown in Figure 3.5.

The factors' graphs also support a tooltip function, where any mouse-over action will trigger a tooltip to assist the user in understanding the information in the graph. This is also demonstrated by the highlighted portion in Figure 3.5.
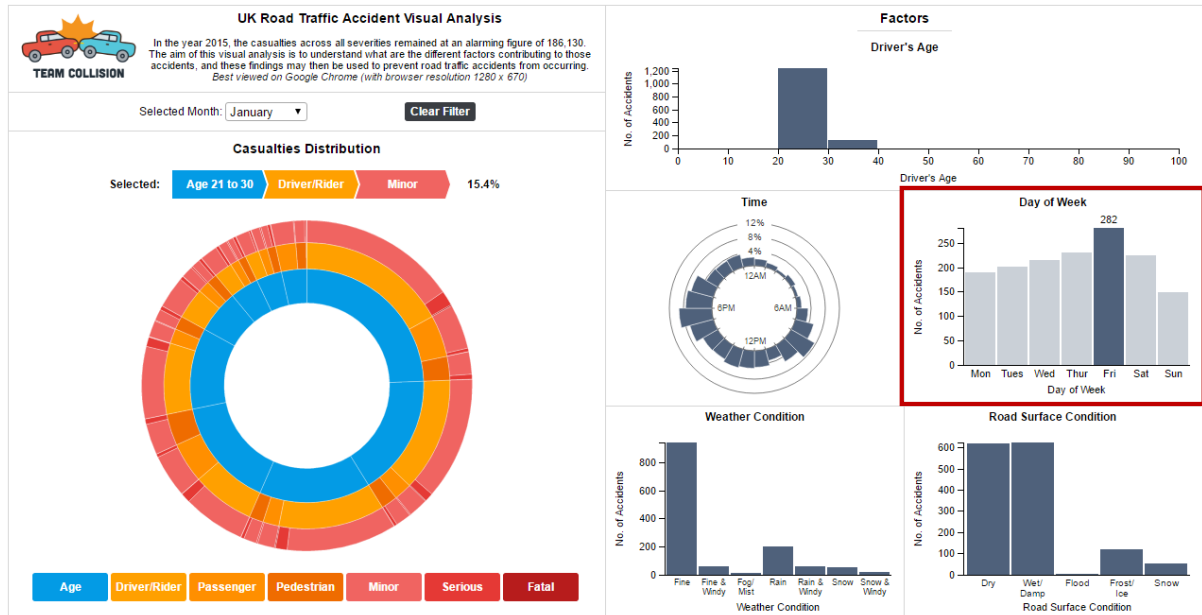

Figure 3.5