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| UI implementation for Victoria state accident database Executive Summary |
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# Abstract

A 100 to 150 word executive summary of your findings. Do this last.

A graphical user interface was created to assist researcher analyzing data. The data set selected was the Victoria State Accident Dataset. There were five methods that the data was analyzed with. All five of these methods were able to produce the desired results. To show case this the time period of between December 31st, 2017, to December 31st, 2018, was selected. Using this time period, the data was analyzed using the five different methods and showcased in this report. These produced graphs, charts and tables. These five methods were all accidents in a time period, impact of alcohol, search by accident types, accidents per hour and the effect of speed zones. The software also allowed the user to input their own CSV files. All methods of analysis as well as the CSV upload were successfully completed.

# Introduction

Explains the purpose of this report. Include the date range covered, and the different analysis tasks performed

Data analysis is a time-consuming task that researchers must undergo. However, these researchers don’t always have the convenience to spend time on data analysis. To combat this issue a graphical user interface will be created. The software created in the project is a graphical user interface which will allows for analysis of data and a visualization. This tool was developed using python and streamlit and is designed with a target audience of researchers. Because streamlit is being utilized it is possible to host the software online but for this stage of development it will not be due to a lack of funding. There will be a user manual to help the end users utilize the software. There will also be a software testing report to showcase the effectiveness of the software as well as demonstrate its current functionality. This UI will be tailor made for car accident reports using the Victoria State Accident DataSet. There were five ways that the data set needed to be analyzed. These being all accidents in a time period, impact of alcohol, search by accident types, accidents per hour and the effect of speed zones. In this report the data will be analyzed for a year time period between December 31st 2017 to December 31st 2018. In 5 years time another data set will be released to the public that will follow this same format, because of this the software that was developed will be compatible with the future data sets. For the first analysis it needed to display a compact version of the data within a time period. For the next analysis the impact of alcohol was covered. A pie chart was created alongside a table to showcase the data. For the analysis of speed zones a table and a bar graph will be generated. For accident type, the software will produce a table which will display data for accidents that belong to the accident type the user inputs. For accidents per hour a bar chart will be generated showcasing the hours at the bottom and the amount of accidents that occurred within that year on the y axis. The software will also allow the user to import their own CSV files; this was to ensure future proofing as well as use for other datasets. All analysis methods were successful and were able to generate the desired content.

# **Analysis 1 <show data for 2018>**

To display the capabilities of the software we have decided to used data between December 31st 2017 to December 31st 2018. If the user selects show data for 2018 it will produce a table. This can be seen here:

A screenshot of a computer

Description automatically generated

In the initial design document, it was planned to have a table which showed the objectID, accident\_NO, accident\_status, accident\_date, accident\_time and the severity. In the figure above that is what is displayed. These data points were identified as the most important for the end users; therefore those data points are being displayed. To achieve this a table was created using python and streamlit that displayed 6 columns instead of the original 65 columns in the raw data.

Based on the requirements of your dataset, put the results of your analysis of a 12 month date period for each of the required functionalities in these sections. Change the title names to reflect your dataset and the analysis being performed. You may include images from your program as well as your own description of the results.

# **Analysis 2 <alcohol impact >**

To display the capabilities of the software we have decided to used data between December 31st 2017 to December 31st 2018. If the user selects alcohol impacts a table will be produced along with a pie chart. This can be seen below.

A screenshot of a computer

Description automatically generated

Within the software design document we had initially planned on generating a table such as the one below. However this was abandoned as it was more beneficial for the researchers in our use case to have a visual representation of the data. A table was still included so that the users can still have access to the necessary data. The pie chart clearly shows the effect alachol consumption has to the number of total accidents. In this chart it is titled “alcohol impacts in 2018” with the year being interchangeable based on the user input. The pie chart has two slices these being accidents with alcohol impact and accidents without alcohol impact.

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| --- | --- | --- | --- |
| Accident types | % of alcohol involvement | Severity with alcohol involvement | Severity without alcohol involvement |
| Collison with fixed object | 20% of collison with fixed objects have alcohol involvement | 20% serious  80%other | 30% serious 70%other |
| Collision with vehicle | 20% of collison with fixed objects have alcohol involvement | 20% serious  80%other | 30% serious 70%other |

# **Analysis 3 <speed zones>**

To display the capabilities of the software we have decided to used data between December 31st 2017 to December 31st 2018. If the user selects speed zones then a table and a bar graph will be generated. This can be seen below.

A screenshot of a computer

Description automatically generated

Within the software design document, we had planned on utilizing just a graph to display the data however it will be easier for researchers to include the results if we provide a table. Because of this both a table and a graph will be generated for the end users. The bar graph gives users a clear and immediate representation of the data. In the graph the x axis consists of the speed zones and the y axis consists of the total accidents that happened in those speed zones within the user selected time period. The table consist of the same data with two columns as speed zones and total accidents. In the chart and table it is titled “Total Accidents per Speed Zone for 2018” with the year being interchangeable based on the user input.

# **Analysis 4 <search by accident type>**

To display the capabilities of the software we have decided to used data between December 31st 2017 to December 31st 2018. If the user selects search by accident type then the software will produce a table which will display data for accidents that belong to that accident type. This data will also be trimmed when compared to the raw data as less relevant data will not be displayed. This can be seen in the figure below. The accident time and date will help users find data on a specific accident with the objectID and the accident\_NO there to help. Using the objectID and accident\_NO the users can then search the raw data for more information about the specific crash.

A screenshot of a computer

Description automatically generated

# **Analysis 5 <accidents per hour>**

To display the capabilities of the software we have decided to used data between December 31st 2017 to December 31st 2018. If the user selects accidents per hour then a chart will be generated which can be seen below. This chart shows the hour on the x axis and the total amount of accidents in 2018 that occurred in that hour on the y axis. This graph clearly depicts which hours of the day have more accidents. In the chart it is titled “Hourly Accident Counts (24h) for 2018” with the year being interchangeable based on the user input. The hours are shown in military 24hour time to reduce the chances of confusion.

A screenshot of a computer

Description automatically generated