# Reducing Road Accidents

A Mathematics Case Study

Using the Software (2019)
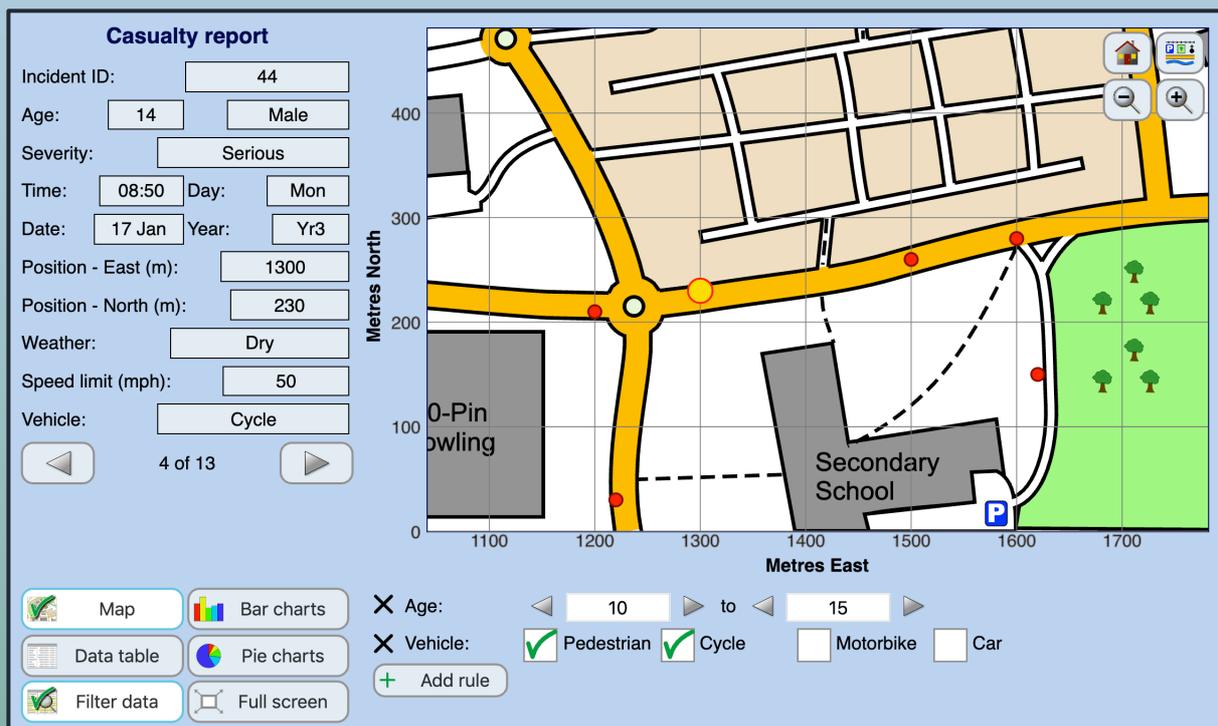
Starting the software

You can use this from any computer with an internet connection:

Go to: www.bowlandmaths.org/materials/projects/online/reducing_road_accidents/

…and click on 'Start the software'. If you have downloaded the files to your own computer, open the 'software' folder and double-click on the file 'start' or 'start.htm'.

Requirements

This version of the software requires a web browser with ES6 and SVG support such as an up-to-date (as of 2019) version of Chrome, Firefox, Safari or MS Edge[1]. It should work on iPads, Android tablets, Chromebooks and large-screen smartphones.

This version will **not** work in Internet Explorer or other older browsers. The old 'Flash' version(s) are still available from the Bowland website if this is a problem.

Full screen mode

On a small screen or a widescreen display, the software works best in 'full screen' mode. In Chrome and Firefox, a full screen button will appear in the App. Otherwise, there may be a full screen option available in your browser.

Differences from the old version

If you are used to the original software, there are a few minor changes.

- The print button and various print options have been removed – but you can still print a paper copy (or save to PDF) of the current display using your browser's print button.

- The 'choose data' button works slightly differently – see the instructions below.

- There are no keyboard shortcuts any more *but* you can still use the tab/shift-tab and space keys to operate the software without a mouse.

- The right-click menu with options has gone. To get a high-contrast version, add '?high' to the end of the web address.

Please send any feedback via the form at www.bowlandmaths.org/about/contact.html.

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[1] Printing does not work on Microsoft Edge as of Aug 2019 – as Edge is due to be replaced with a new Chrome-based version in the near future, this will not be fixed.

Using the map screen

The program will start up showing the map screen.

Casualty report

Incident ID:	9
Age:	23	Male
Severity:	Slight
Time:	02:30	Day:	Sat
Date:	3 May	Year:	Yr1
Position - East (m):	1200
Position - North (m):	1100
Weather:	Dry
Speed limit (mph):	30
Vehicle:	Motorbike

◀ 10 of 120 ▶

✔ Map	📊 Bar charts
🗒 Data table	🥧 Pie charts
🔍 Filter data	⬜ Full screen

Home (reset zoom and position) → 🏠 🗺 ← Show map key

Zoom out → ⊖ ⊕ ← Zoom in

To select a casualty report

Use the arrow buttons to move between records

◀ 10 of 120 ▶
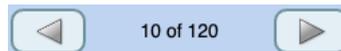
Or click on a red marker on the map.

To move around the map

⊖ ⊕
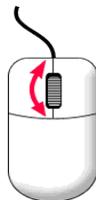
Click on the magnifying glass buttons to zoom in or out on the current casualty marker.

…Or use the mouse wheel
… Or, pinch-to-zoom on a touchscreen
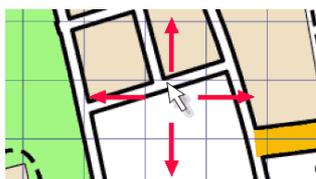
When you have zoomed in,
click and drag the map to move it around.

Choose which casualties to show:
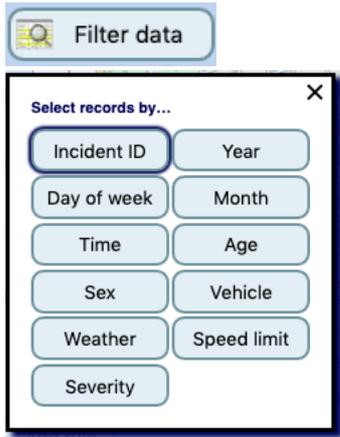
Click on "Filter data"

Decide which variable you want to use to choose reports - for example, type of vehicle.

A line will appear showing what the rule is for choosing records - to start with, it will include all the records and nothing will change.

If you see a line like this, click on the tick boxes to add or remove records in that category. The line above will only show casualties who were in a car, on a cycle or on a motorbike.

If you get a line like this, click on the arrows or type in the boxes to set the range of records to show. This line will only show casualties aged between 10 and 15.

Click on 'Add Rule' to add another rule.

You can have up to 4 rules - records will appear only if they pass all the tests.

The map to the right shows the locations of fatal accidents to males under 30 years that involved cycles, motorbikes or cars.

To remove a test, click on the X alongside it:

To remove all the tests, click on 'Filter data' again.
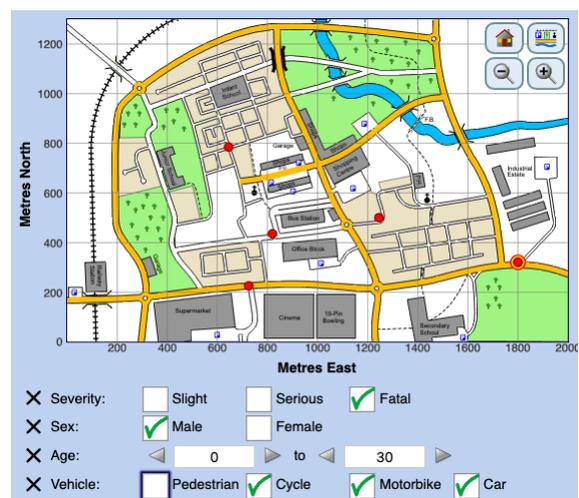
Drawing charts

1. Click on the Pie Charts or Bar Charts button.
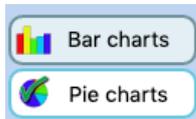
2. Click on "Choose variable"

3. Decide which variable you want to plot.
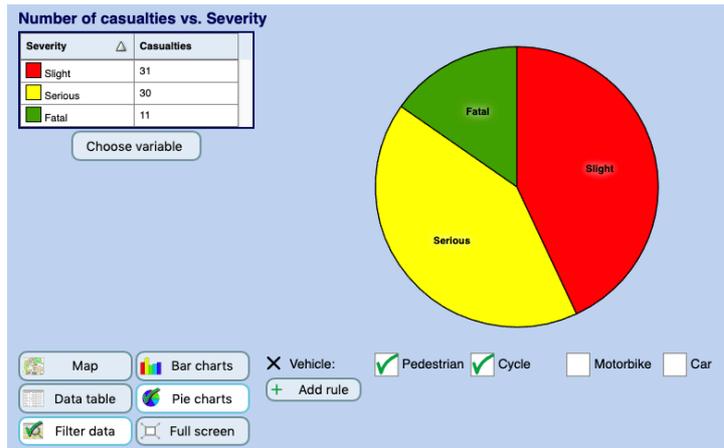
Remember that any "filters" you set will still apply, so the chart might not show all the data.

The Data Table

This shows all the records - subject to any conditions you have set.
Click on the column headings to sort the records by that variable - here, the records are sorted by time of day.

Incident	Year	Date	Day	Time △	Age	Sex	Vehicle	Weather	Limit	Severity
50	Yr3	9 Mar	Wed	07:30	56	Male	Car	Wet	50	Slight
50	Yr3	9 Mar	Wed	07:30	45	Female	Car	Wet	50	Slight
99	Yr4	14 Aug	Mon	07:45	30	Female	Car	Dry	50	Serious
99	Yr4	14 Aug	Mon	07:45	40	Male	Car	Dry	50	Serious
91	Yr4	6 May	Fri	07:50	19	Male	Motorbike	Wet	30	Slight
53	Yr3	4 Apr	Mon	08:15	45	Male	Car	Dry	10	Slight
55	Yr3	9 May	Mon	08:20	16	Male	Cycle	Wet	50	Serious
78	Yr4	3 Feb	Fri	08:20	12	Male	Cycle	Frost	30	Fatal
78	Yr4	3 Feb	Fri	08:20	17	Male	Motorbike	Frost	30	Serious
2	Yr1	7 Jan	Tue	08:30	16	Male	Pedestrian	Wet	50	Slight
5	Yr1	5 Mar	Wed	08:30	9	Female	Pedestrian	Wet	30	Serious
24	Yr2	13 Feb	Fri	08:35	8	Female	Pedestrian	Frost	30	Serious
81	Yr4	15 Feb	Wed	08:35	9	Male	Pedestrian	Frost	30	Slight
48	Yr3	4 Feb	Fri	08:40	5	Female	Pedestrian	Frost	30	Serious
58	Yr3	6 Jun	Mon	08:40	32	Female	Pedestrian	Dry	30	Slight
59	Yr3	7 Jun	Tue	08:40	6	Female	Pedestrian	Dry	30	Serious
12	Yr1	1 Aug	Fri	08:45	9	Female	Pedestrian	Dry	30	Slight

Printing out maps, charts and tables

Use the print option in your web browser (Ctrl-P usually works on Windows).

Printouts will not include buttons and other controls, and will have a plain white background.

In 'table' mode, the whole table will print out.

Inserting into Word or Powerpoint (PC):

If you want to make a paper poster, use the Print feature described above. However, if you are writing a report in a word processor or Powerpoint, you can take a screenshot:

1. Make sure the window showing the accidents software is selected (click on the title bar).
2. hold down the Alt key and press the Print Screen (or Prt Sc) key. Release the Alt key.
3. Switch to your word processor
4. Do Edit -> Paste (or Ctrl-V) - this should paste a copy of the accidents software window into your word document,

Optional: In Microsoft Office you can now use the Crop tool make the result look better - click on the picture you have just pasted in, choose the "Crop" tool from the picture toolbar, then drag the handles on each side of the picture to hide the scroll bars etc.

High contrast and reduced motion

- To get a higher-contrast black-on-white display, add '?high' to the end of the address in your browser's address bar.

- To turn off the flashing data point and reduce the animation used when zooming/panning the map, choose 'reduced motion' or similar in your computer's accessibility settings. If this doesn't work, add "?noanim" to the web address to force this (or "?noanim&high" if you want high contrast as well).

(The software should also select 'high contrast' if you choose this in your computer's accessibility settings but, at the moment, most web browsers don't pass on this information to the app…)

Using the keyboard

Most of the features in the software can be operated via the keyboard in the usual way by using the Tab, Shift-Tab and Space keys.

Using the data with other software

This software was designed to be easy to use so people did not have to spend time learning to use a more complicated program, or fiddling to get graphs and charts looking "just right" in a spreadsheet.

Possibly, you have access to more sophisticated software - such as a spreadsheet database, graphing or statistics package – and would like to try a wider range of graphs and analyses. Or, if you have accessibility issues, you may prefer to use your regular spreadsheet software.

If so, you can find the "raw" data on Road Accidents in a folder called **datafiles** amongst the case study files.

This contains two files – both containing the same data:

accidentdata.xls is an Excel spreadsheet which will also work in many other programs.

accidentdata.csv is a "comma separated" text file – most data handling packages will accept this, even if they won't read Excel files.

We would suggest that, if possible, you complete the main case study using the software supplied, and explore the use of other software as a follow-on activity.