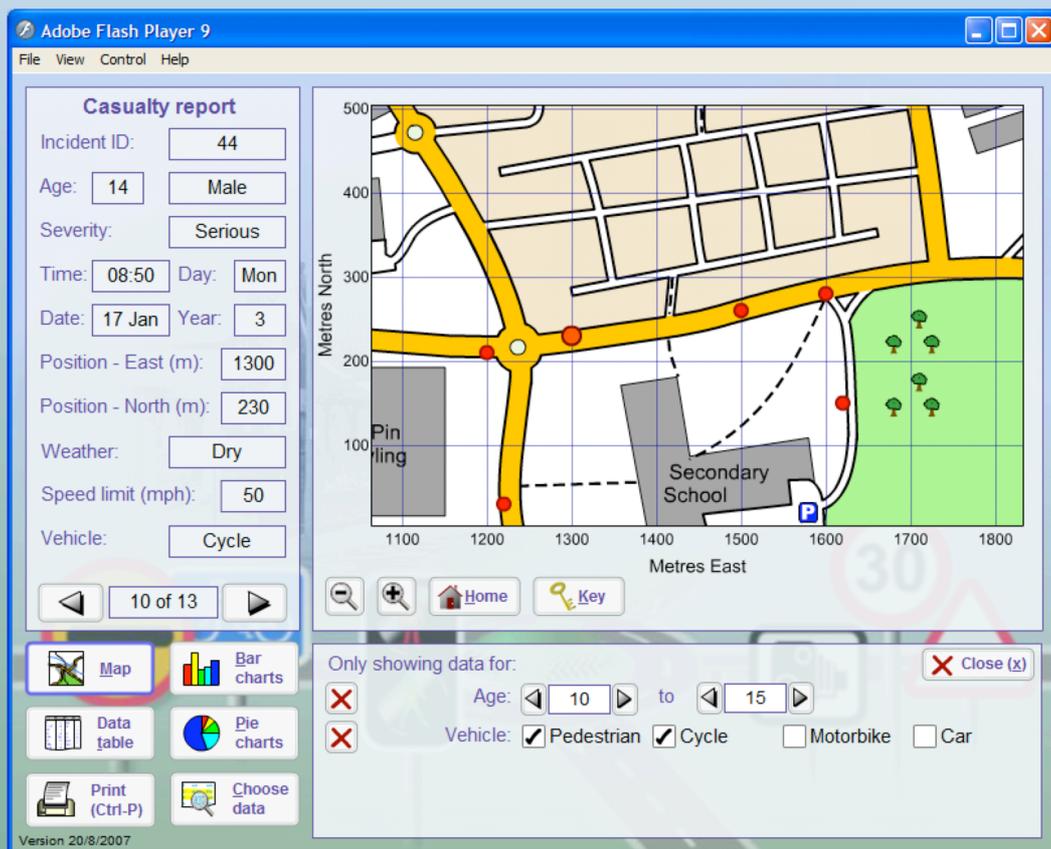


# Reducing Road Accidents

A Mathematics Case Study

Using the Software





## Starting the software

This assumes that the software has already been installed on your computer. How you start the software depends on how this has been done.

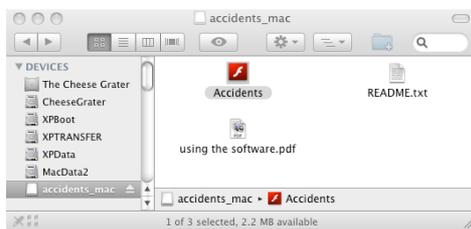
Software installation instructions are available on the Bowland DVD or website.

### **Method A: Windows Start menu**

Click on the *Start* menu and choose:

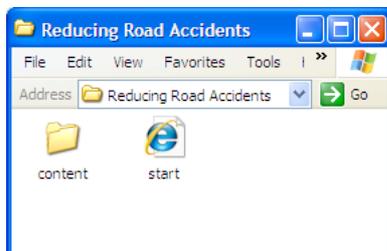
All Programs → Bowland Mathematics → Reducing Road Accidents → Accidents

### **Method B: Apple Mac**



- Find the application called *Accidents* and double-click.

### **Method C:**



- Find and open the folder *Reducing Road Accidents*
- Double-click on the file called *Start* or *Start.htm*

### **Method D: Running over the web**

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

Go to: [www.mathshell.org/bowland/accidents](http://www.mathshell.org/bowland/accidents)

Username: accidents

Password: clunkclick

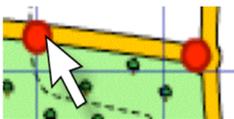
**Note:** If you are using Internet Explorer, you may see a warning the first time you use the software - if so, you should click on the information bar that appears at the top of the screen and choose to “allow active content”.

### Using the map screen

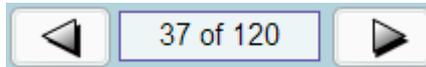
The program will start up showing the map screen.  
 The “Key” button shows the key to the map symbols.  
 To get back to the map screen, click the Map button.



#### To select a casualty report

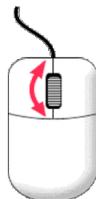


Use the arrow buttons to move between records



Or click on a red marker on the map.

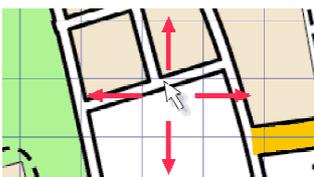
#### To move around the map



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

Or

If your mouse has a wheel, point the mouse at the map and turn the wheel to zoom in and out.



When you have zoomed in, click and drag the map to move it around.



Click the *Home* button to return the map to its original scale and position.

**Choose which casualties to show:**



Click on "Choose data"

Select records by...

Incident ID [1]	Year [2]
Day of week [3]	Month [4]
Time [5]	Age [6]
Sex [7]	Vehicle [8]
Weather [9]	Speed limit [10]
Severity [11]	

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.

Only showing data for: Close (x)

Vehicle: 
  Pedestrian 
  Cycle 
  Motorbike 
  Car

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.

Only showing data for: Close (x)

Age: 
  to

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.

You can have up to 4 tests - records will appear only if they pass all the tests. The map below shows the locations of fatal accidents to males under 30 years that involved cycles, motorbikes or cars.

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

Gender: 
  Male 
  Female

Click "Close" to remove all the tests.

Close (x)

**Casualty report**

Incident ID: 92

Age: 20 Male

Severity: Fatal

Time: 17:30 Day: Thu

Date: 5 Oct Year: 4

Position - East (m): 1245

Position - North (m): 500

Weather: Dry

Speed limit (mph): 30

Vehicle: Car

1 of 6

Metres North

Metres East

Map | Bar charts | Data table | Pie charts | Print (Ctrl-P)

Version 20/8/2007

Only showing data for: Close (x)

Age:  to

Vehicle: 
  Pedestrian 
  Cycle 
  Motorbike 
  Car

Sex: 
  Male 
  Female

Severity: 
  Slight 
  Serious 
  Fatal

### Drawing charts

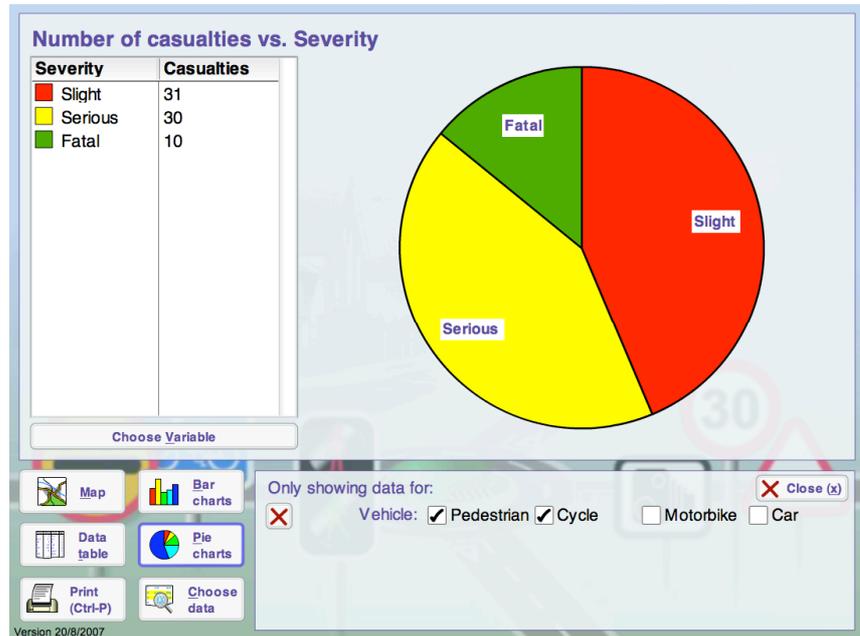
1. Click on the Pie Charts or Bar Charts button.



2. Click on "Choose variable"



3. Decide which variable you want to plot.



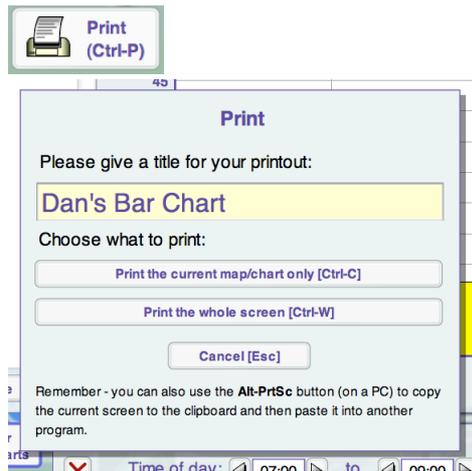
Remember that any "conditions" you set will still apply, so the chart might not show all the data.

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

### Printing out maps, charts and tables



Click "Print"

Type in a title for your printout.

This is very important if you are sharing a printer!

Now choose what you want to print.

Use "Print the current map or chart..." if you want a clear printout without the coloured backgrounds, buttons or icons.

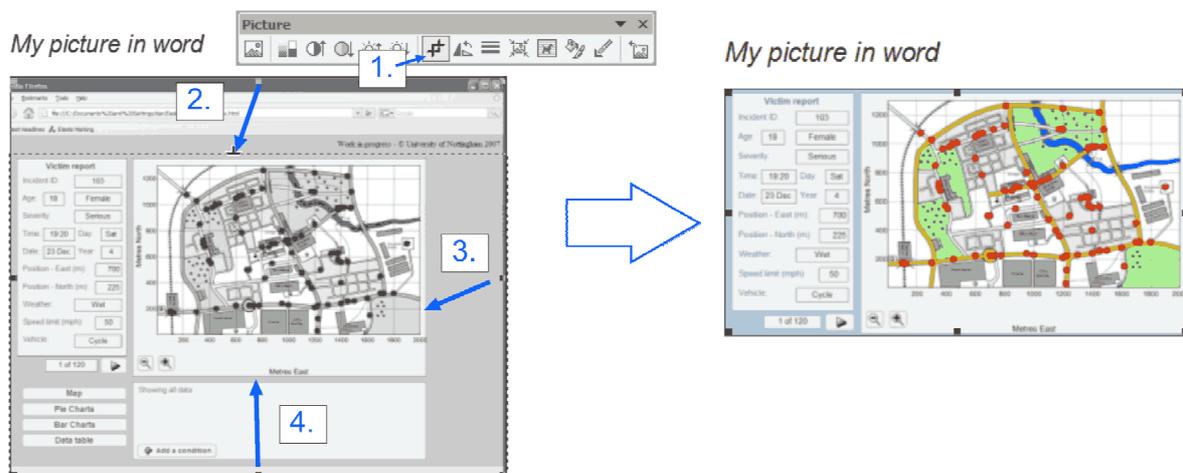
Use "Print the whole screen" if you want a printout showing the software in use.

### 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.



## Colours and zooming

It is possible to turn off some of the “eye candy” used in the software – this may be useful before printing out on a black-and-white printer, if you have students with visual difficulties or if your data projector is less than perfect...

If you click on the **right hand** mouse button (on a Mac with only one button, hold down “Ctrl” and click) you will get a menu that lets you:

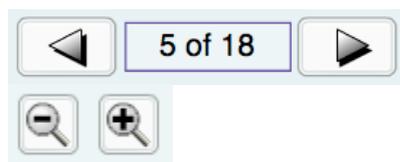
- Show or hide the background image
- Switch between “high contrast” and “full colour” mode
- Zoom in/out (Unlike zooming in on the map, this magnifies the whole screen). When you are zoomed in, click anywhere in the window other than on a button or inside the map and drag to move the view around.

## Using the keyboard

Almost all of the features of the program can be controlled from the keyboard.



Many of the buttons have one letter in the label underlined – you can type this letter instead of clicking the button. For instance, press **B** to switch to the “Bar chart” screen.

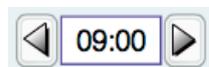


In map mode, use the **left- and right-arrow** keys to move between casualty records.

Use the “+” and “-” keys to zoom in and out on the map.

You can’t move the map around from the keyboard, but if you zoom in and then use the left- and right-arrow keys to change the current casualty record, the map will move to show the location of the current casualty.

You can also press the **tab** key repeatedly to select the button you want, and then press **space** to “click” that button.



For controls like this, press **tab** repeatedly until a box appears around the control. You can then, either:

- Use the **up and down arrows** on the keyboard to change the value in large steps
- Use shift + up or down arrow to change the value in smaller steps
- Type in a new value

In “Data table” mode, press **tab** until a box appears around the table, then use **up- and down-arrow** to scroll. It is not possible to change the sorting order without the mouse, though.

### ***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.