|  |  |
| --- | --- |
| EGC_Black | Student Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_    **Eastern Goldfields College**  Mathematics Essentials 2015  Investigation 5 – Road Fatalities  1 |

**DUE DATE**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **TOTAL MARKS**: 80

This is a 4 lesson investigation worth 20% of your mark.

**PART A: Comparing Total Fatalities across all States of Australia**

**Question 1 (8 marks: 4, 4)**

Collate the data from **2010** (Jan) into the table below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| State | Driver | Passenger | Motorcycle | Bicycle | Motorcycle Passenger | Pedestrian | Total |
| ACT |  |  |  | 1 |  |  | 1 |
| NSW | 20 | 10 | 4 | 2 | 1 | 6 | 43 |
| NT | 4 | 1 |  |  |  |  | 5 |
| Qld | 9 | 2 | 2 | 1 |  | 2 | 16 |
| SA | 9 | 8 | 3 |  |  |  | 20 |
| Tas | 1 |  | 1 |  | 1 | 1 | 4 |
| Vic | 9 | 9 | 4 | 1 |  | 3 | 26 |
| WA | 6 | 1 | 3 |  |  | 1 | 11 |
| TOTAL |  |  |  |  |  |  | **126** |

Collate the data from **2015** (Jan) into the table below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| State | Driver | Passenger | Motorcycle | Bicycle | Motorcycle Passenger | Pedestrian | Total |
| ACT |  |  |  | 1 |  |  | 1 |
| NSW | 15 | 7 | 11 |  | 1 | 3 | 37 |
| NT |  | 1 |  |  |  |  | 1 |
| Qld | 5 | 3 | 6 |  |  | 2 | 16 |
| SA | 7 | 3 | 2 | 1 |  |  | 13 |
| Tas | 2 |  | 1 |  |  |  | 3 |
| Vic | 11 | 7 | 3 | 1 |  | 2 | 24 |
| WA | 6 | 1 | 3 |  |  | 1 | 11 |
| TOTAL |  |  |  |  |  |  | **106** |

**Question 2 (1 mark)**

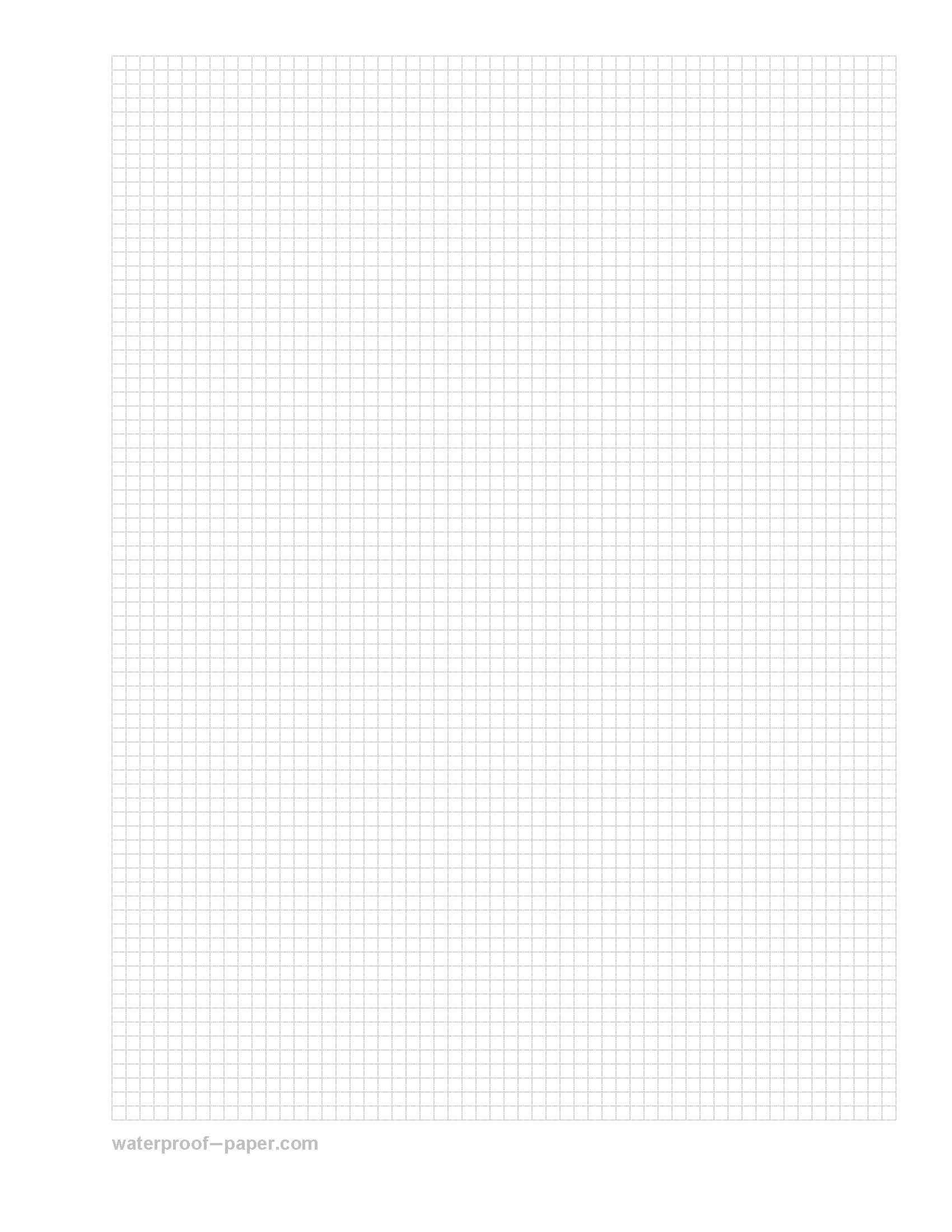
Why would someone put this data into a table?

**Question 3 (2 marks)**

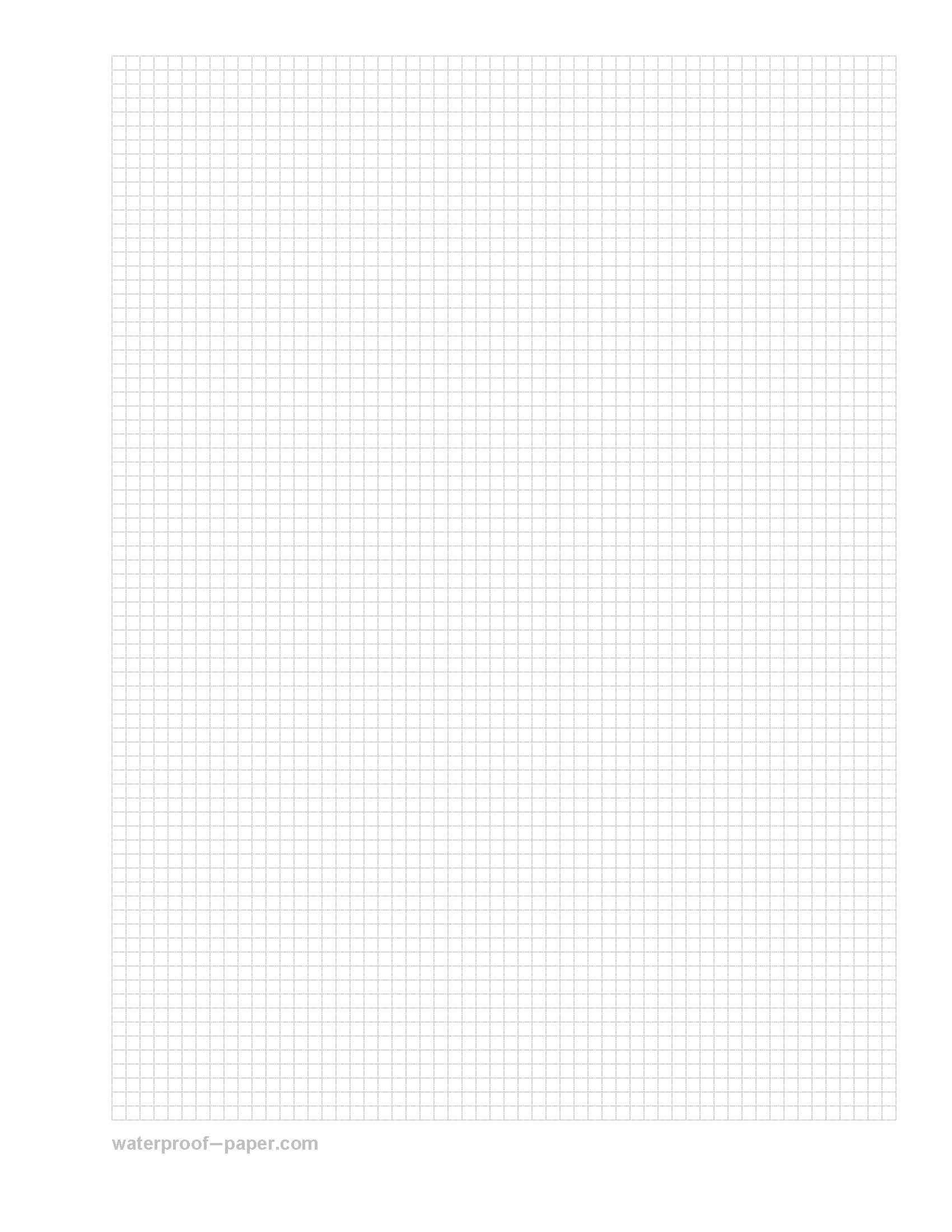
Give 2 reasons why the government would collect this data?

**Question 4 (8 marks: 4, 4)**

Construct a column graph, in the space below, for the total fatalities for **each state** of Australia in **2010**.



Construct a column graph, in the space below, for the total fatalities for **each state** of Australia in **2015**.



**Question 5 (4 marks: 2, 1, 1)**

Compare the 2015 and 2010 graphs from question 4 and answer the questions below.

1. Which state(s) showed the greatest decrease in fatalities and by how much?
2. Which state(s) showed the greatest increase in fatalities? \_\_\_\_\_\_\_\_\_\_\_\_
3. What is the range of fatalities in 2015? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**PART B: Comparing Total Fatalities between Western Australia and South Australia**

**Question 6 (4 marks: 2, 2)**

Complete the tables below for Western Australia and South Australia fatalities for 2015.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WA Fatalities** | |  | **SA Fatalities** | |
| Type | Frequency |  | Type | Frequency |
| Driver |  |  | Driver |  |
| Motorcycle Rider |  |  | Motorcycle Rider |  |
| Pedestrian |  |  | Bicyclist |  |
| Passenger |  |  | Passenger |  |
|  |  |  |  |  |

**Question 7 (4 marks: 1, 1, 2)**

The following questions relate to the two tables in question 6.

1. State one similarity between the two states.
2. State one difference between the two states.
3. Motorcyclists made up 25% of road deaths in Jan 2015.  
   1. True or False (circle)
   2. Justify your answer

**PART C: Comparing Ages**

**Question 8 (6 marks: 3, 3)**

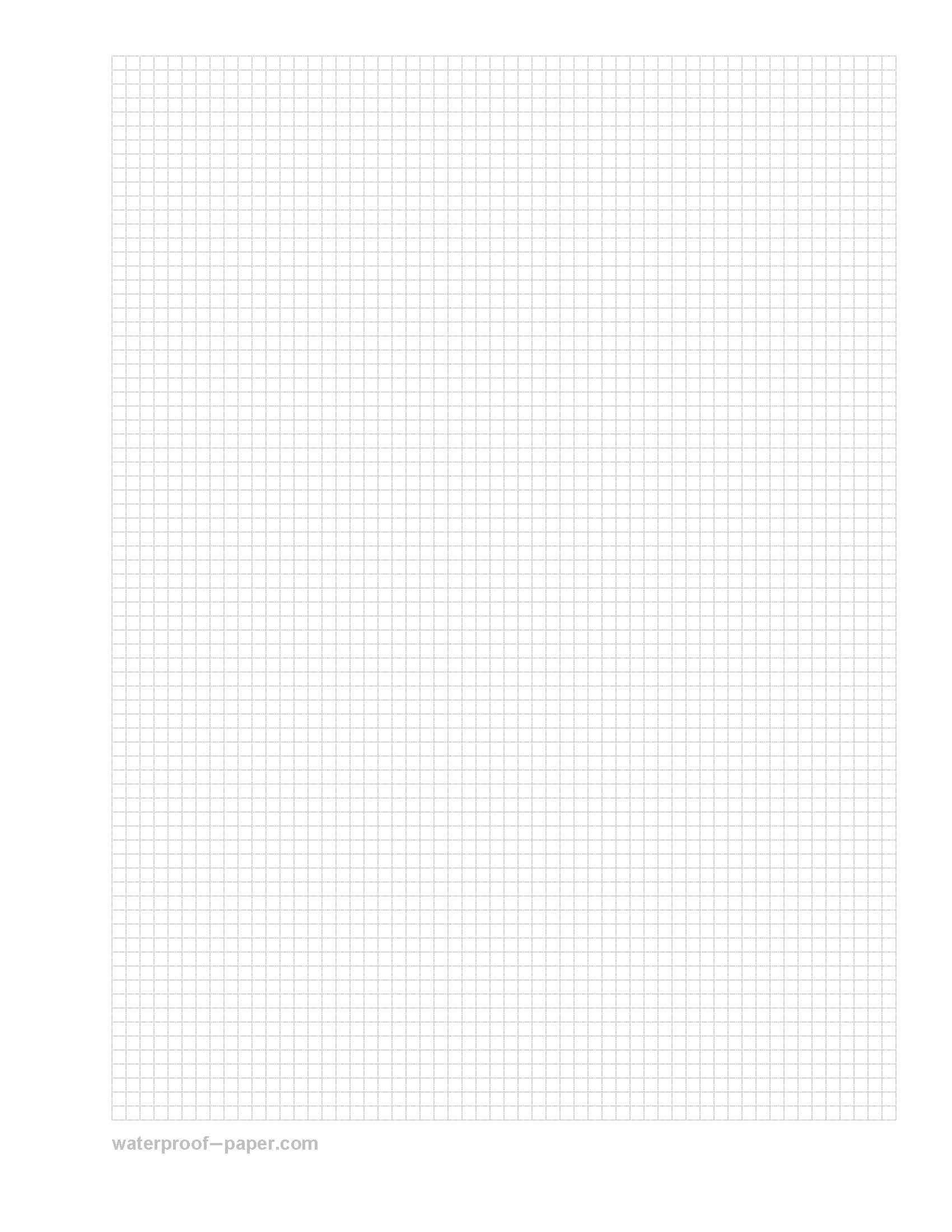
Complete the tables below to collate the ages of all fatalities into groups for both 2015 and 2010.

*NB: means all ages equal to 0 and greater than 0 but less than 10 and not equal to 10*.

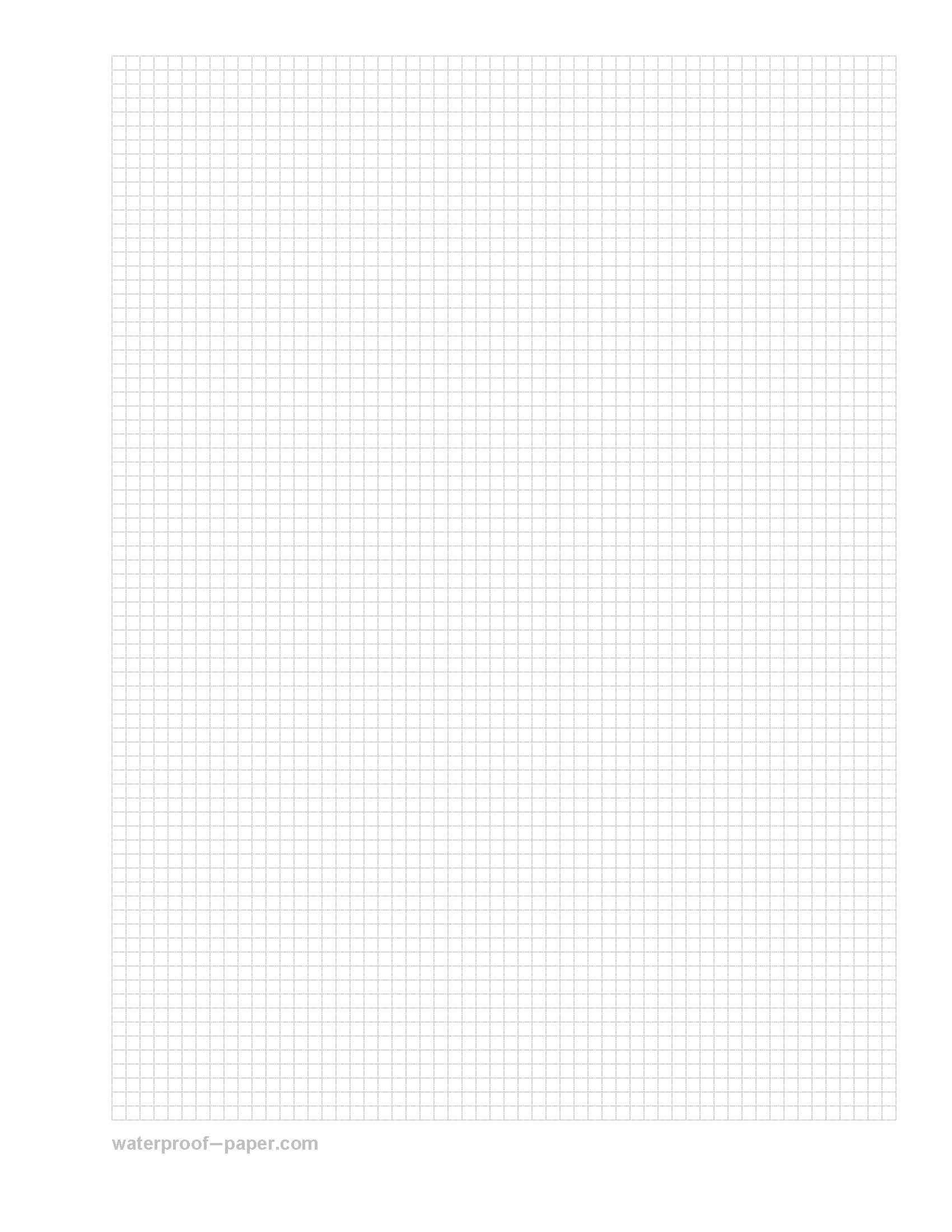
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Ages 2010 Road Fatalities** | | |  | **2015 Road Fatalities** | | |
| **Age** | **Tally** | **Frequency** |  | **Age** | **Tally** | **Frequency** |
|  |  | 5 |  |  |  | 3 |
|  |  | 23 |  |  |  | 7 |
|  |  | 23 |  |  |  | 23 |
|  |  | 16 |  |  |  | 18 |
|  |  | 14 |  |  |  | 16 |
|  |  | 18 |  |  |  | 14 |
|  |  | 11 |  |  |  | 7 |
|  |  | 10 |  |  |  | 9 |
|  |  | 5 |  |  |  | 9 |
|  |  | 1 |  |  |  | 0 |
|  |  | 126 |  |  |  | 106 |

**Question 9 (8 marks: 4, 4)**

Construct a histogram to display the ages of road fatalities for **2010**.



Construct a histogram to display the ages of road fatalities for **2015**.



**Question 10 (8 marks: 6, 1, 1)**

Using the histograms in question 9, complete the table and answer the following questions.

|  |  |  |
| --- | --- | --- |
|  | 2010 | 2015 |
| Modal Class | 10-20 , 20-30 | 20-30 |
| Range | 93-0 = 93 | 89-4 = 85 |
| Median Class | 30-40 | 40-50 |

1. State one similarity between the age of road fatalities for 2010 and the age of road fatalities for 2015.
2. State one difference between the age of road fatalities for 2010 and the age of road fatalities for 2015.

**PART D: Comparing the Ages of the Fatalities in Western Australia for 2010 and 2015**

**Question 11 (2 marks: 1, 1)**

Write the ages of all fatalities in Western Australia in the year 2010.

Write the ages of all fatalities in Western Australia in the year 2015.

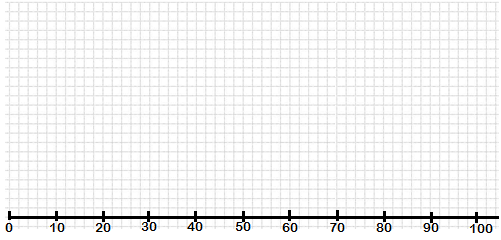
**Question 12 (6 marks)**

For each year, determine the five number summaries.

|  |  |  |
| --- | --- | --- |
| **Five Number Summary** | **2010** | **2015** |
| Minimum |  |  |
| Lower Quartile |  |  |
| Median |  |  |
| Upper Quartile |  |  |
| Maximum |  |  |

**Question 13 (6 marks: 3, 3)**

Draw the box plots for each year on the grid below.



**Question 14 (4 marks: 1, 1, 1, 1)**

Using the data, answer True or False to the following statements.

1. The interquartile range for 2010 is 32. \_\_\_\_\_\_\_\_\_\_\_\_
2. The minimum aged fatality, for 2015, is 11. \_\_\_\_\_\_\_\_\_\_\_\_
3. The range for 2010 is 56. \_\_\_\_\_\_\_\_\_\_\_\_
4. 40% of fatalities in 2015 were older than 45. \_\_\_\_\_\_\_\_\_\_\_\_

**PART E: General Questions**

**Question 15 (9 marks: 2, 2, 1, 1, 1, 1, 1)**

Looking at all data collated, your statistics and the original data given, answer the following questions.

1. On what dates in January did no fatalities occur in:
   1. 2010? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. 2015? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Which day of the week did most fatalities occur in:  
   1. 2010? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. 2015? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Which state had the most fatalities for both years in January? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What percentage of fatalities in 2015 were male?

1. In 2010, what percentage of fatalities were aged less than 20?

1. In 2015, what percentage of fatalities were aged 50 or over?

1. Based on all the data you have analysed, identify the age, gender and state of a person who would be at most risk of being a road fatality in Australia.