LESSON PLAN

# Analysing Road Crash Data

STAGE
**7-8**

DURATION
**45 minutes**

SUBJECT
**Maths**

## RESOURCE OVERVIEW

As young people get older and take part in more independent travel, the risk of involvement in road crashes increases.

In this lesson, students use crash fatality data to create different data displays, calculate the mode, median and mean of crash data for different ages of children and young people, and describe and interpret their findings to explain which age groups have been more involved in fatal crashes in Victoria.

*Some students may have experienced trauma as a result of a road crash. Please ensure suitable support is available for them.*

ROAD SAFETY EDUCATION VICTORIA

# Resource Details

## CURRICULUM ALIGNMENT

This lesson supports:

**Data representation and interpretation**

Identify and investigate issues involving numerical data collected from primary and secondary sources (VCMSP268)

Construct and compare a range of data displays including stem-and-leaf plots and dot plots (VCMSP269)

Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data (VCMSP270)

Describe and interpret data displays using median, mean and range (VCMSP271)

## RESOURCE REQUIREMENTS

In this lesson, teacher/s will need:

- Individual copies of the Analysing Road Crash Data sheet
- Road crash data spreadsheet file to be found at https://www.roadsafetyeducation.vic.gov.au/resources?id=668024
- Student laptops/tablets

## LEARNING INTENTION

In this lesson, students will:

- Deepen their understanding of the use of different data displays and statistics to be able to interpret data, through the use of road crash data.
- Understand the increased risk of involvement in road crashes that comes with age and increasing independent travel.

## SUCCESS CRITERIA

By the end of this lesson, students should be able to:

- Decide on the best plot for displaying road crash data for different ages.
- Calculate the mode, median and mean using road crash data.
- Analyse and interpret data displays and statistics.
- Draw conclusions about the risk of involvement in road crashes for different aged children and young people.
- Use data displays and statistics of road crash data to consider their own level of risk when using the road.

# Lesson Plan

## Tuning in

APPROX. 10 MINUTES

Explain that students will be using road crash data that shows the number of children and young people up to 21 years of age who were killed on Victorian roads over a recent 10-year period (2012-2021).

Explain that government at the state and federal levels collects data on road crashes in order to improve road safety.

Ask students:

- Which age groups of children and young people do you think will have been more likely to have been killed in a road crash in Victoria? Why do you think this may be the case?
- Will the numbers of males and females killed be about the same or different? Why do you think this may be the case?

This discussion is designed to provide a focus for the students as they analyse and interpret the crash data.

## Main activity: Safety features & crashes

APPROX. 30 MINUTES

You may like to use the fatality data in the Analysing Road Crash Data sheet (included below) or in the spreadsheet provided at https://www.roadsafetyeducation.vic.gov.au/resources?id=668024. Alternatively, you can select your own dataset and adapt the lesson to suit. If doing so, please refer to the Australian Road Deaths Database (Department of Infrastructure, Transport, Regional Development and Communications): https://www.bitre.gov.au/statistics/safety/fatal_road_crash_database

Provide students with access to the road crash fatality data for children and young people.

Direct them to use the first data set that shows fatalities by age for those up to and including 21 years.

Discuss which types of plots they could use to display the data and which may be more appropriate.

Working in small groups, students should decide the best way to display this data. This can be done on paper or using spreadsheet software.

Allow students time to complete this task, then ask each group to share what they have done with the class.

Instruct students to calculate the mode, median and mean for the data set, revising what each of these statistics show and how they are calculated. Explain that once statistics have been calculated, students should decide which are most relevant and useful for interpreting the data.

Allow students time to complete the task, then ask each group to share the statistics they calculated with the class. (Mode = 4, Median = 5, Mean = 16.455)

In their groups, students will discuss their data display and statistics to answer the following questions:

- Which age groups of children and young people were more likely to have been killed in a road crash in Victoria?
- Why do you think this may be the case?

Allow a few minutes for discussion and have the groups share their findings and ideas with the class.

Highlight that the numbers of children and young people killed were quite low up until 15 years of age, at which point fatalities increase significantly. Explain that this is mostly due to 15 being the age when more independent travel begins, young people become licensed to drive, and are often passengers in vehicles driven by other young people.

Explain the factors contributing to the increase in fatalities, including risk taking behaviour and inexperience as a driver. Point out that young drivers may also drive older cars with fewer modern safety features, such as electronic stability control (ESC), auto emergency braking (AEB) and lane keep assist.

## Extension acitivity

APPROX. 20 MINUTES

Students examine the other data set provided for that shows the gender of those aged 0-21 years who were killed in road crashes in Victoria 2012-2021.

Ask students to display the data for males and females separately, and then to calculate the mode, median and mean for each gender. (MALES: Mode = 1, Median = 2.5, Mean = 11.091; FEMALES: Mode = 1, Median = 3, Mean = 5.364)

Students analyse the data display and statistics then discuss:

- Were the number of males and females killed about the same or different? Why do you think this may be the case?

Ask students to share their findings and conclusions with the class.

## Reflecting activity

APPROX. 5 MINUTES

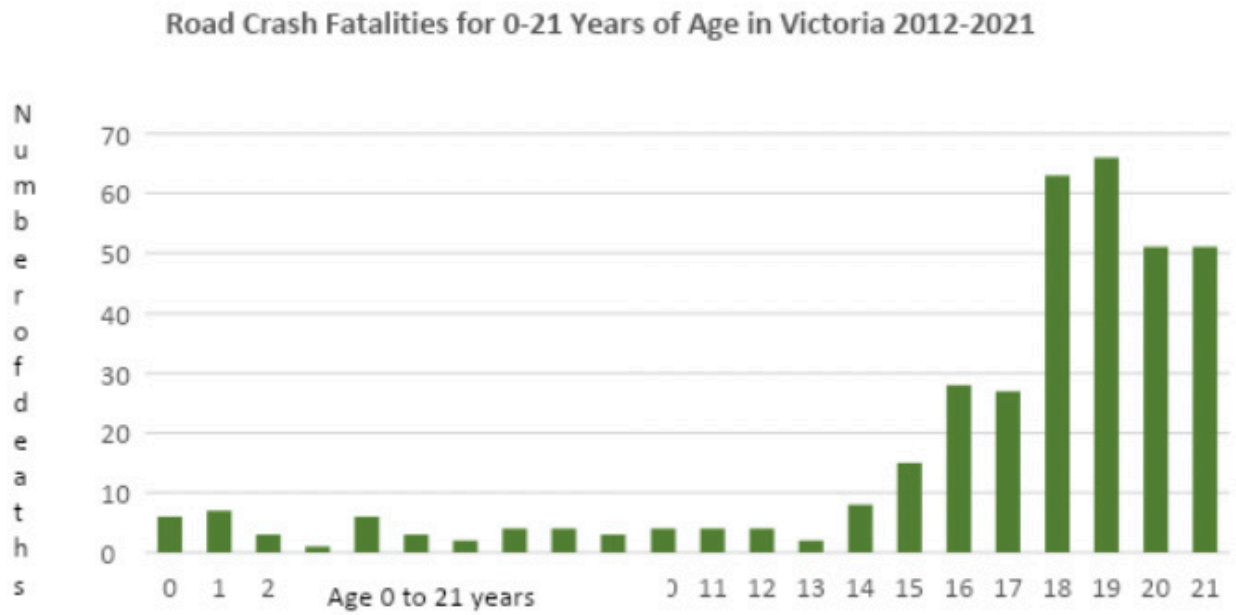
Give students a moment to reflect on their findings and conclusions. Ask them to think about how they use the road now and in the future – as a pedestrian, cyclist, passenger and driver – considering:

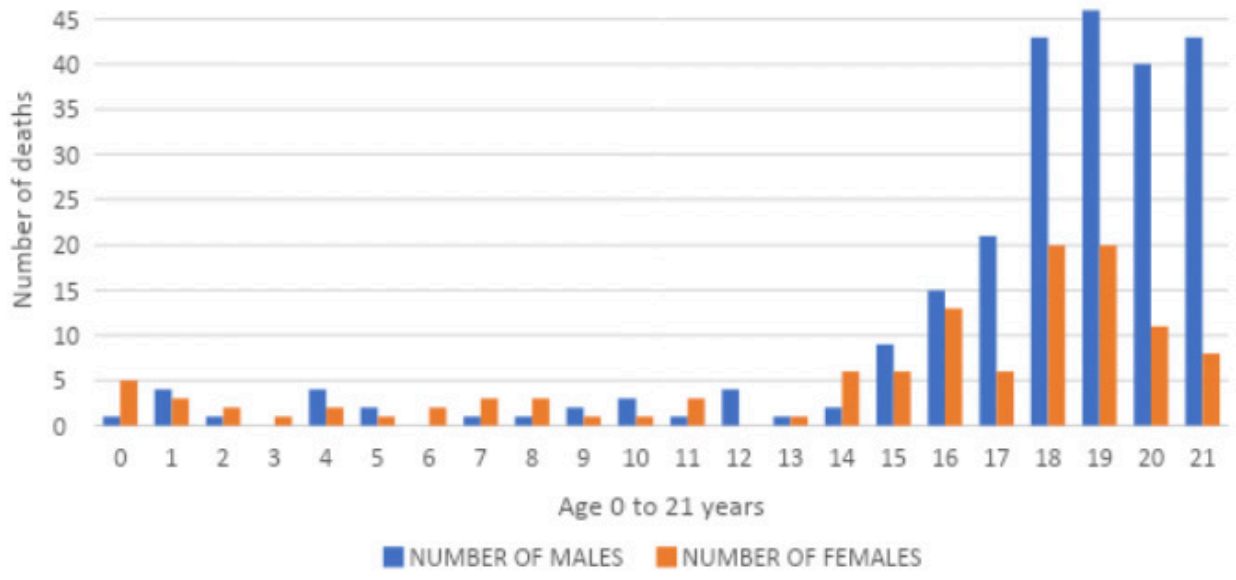
- What do the findings mean for you in terms of your level of risk when you are using the road?
- What could drivers do to reduce risk for pedestrians and cyclists?
- What type of vehicle safety features could reduce risk of a crash or injury in a crash?

Ask students to share their thoughts with the class.

# Resources

## Resource 1: Example Charts



## Resource 2: Analysing road crash data - Data Sheet

Road crash fatalities
for 0-21 years of age
in Victoria 2012-2021

### Task:

1. Decide the best way to display this data. Create the data display you think works best.

2. Calculate the mode, median and mean for the data set.

3. Which age groups of children and young people were more likely to have been killed in a road crash in Victoria? Why do you think this may be the case?

| AGE | NUMBER |
|---|---|
| 0 | 6 |
| 1 | 7 |
| 2 | 3 |
| 3 | 1 |
| 4 | 6 |
| 5 | 3 |
| 6 | 2 |
| 7 | 4 |
| 8 | 4 |
| 9 | 3 |
| 10 | 4 |
| 11 | 4 |
| 12 | 4 |
| 13 | 2 |
| 14 | 8 |
| 15 | 15 |
| 16 | 28 |
| 17 | 27 |
| 18 | 63 |
| 19 | 66 |
| 20 | 51 |
| 21 | 51 |

## Resource 3: Data Sheet

Road crash fatalities for 0-21 years of age *by gender* in Victoria 2012-2021

## Task:

1. Decide the best way to display this data. Create the data display you think works best.

2. Calculate the mode, median and mean for the data set.

3. Which age groups of children and young people were more likely to have been killed in a road crash in Victoria? Why do you think this may be the case?

| AGE | MALE | FEMALE | TOTAL |
|---|---|---|---|
| 0 | 1 | 5 | 6 |
| 1 | 4 | 3 | 7 |
| 2 | 1 | 2 | 3 |
| 3 | 0 | 1 | 1 |
| 4 | 4 | 2 | 6 |
| 5 | 2 | 1 | 3 |
| 6 | 0 | 2 | 2 |
| 7 | 1 | 3 | 4 |
| 8 | 1 | 3 | 4 |
| 9 | 2 | 1 | 3 |
| 10 | 3 | 1 | 4 |
| 11 | 1 | 3 | 4 |
| 12 | 4 | 0 | 4 |
| 13 | 1 | 1 | 2 |
| 14 | 2 | 6 | 8 |
| 15 | 9 | 6 | 15 |
| 16 | 15 | 13 | 28 |
| 17 | 21 | 6 | 27 |
| 18 | 43 | 20 | 63 |
| 19 | 46 | 20 | 66 |
| 20 | 40 | 11 | 51 |
| 21 | 43 | 8 | 51 |

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