

Teenage Motor Vehicle-Related Deaths

Suggested Grade Levels: 7 and up

Possible Subject Area(s): Social Studies, Health

Math Skills: reading and estimating from graphs; calculating proportions

Overview: Students will be presented with a graph showing data on the number of motor vehicle-related deaths among teenagers. They will examine the information and answer a series of questions designed to help them interpret the graph.

Student Activities

- A. What proportion of teenage car crash fatalities nationwide do you think are boys?
- All are boys
 - More than half are boys
 - About half are boys
 - Less than half are boys
 - None are boys
 - Other _____

Do you think there are equal numbers of teenage boys and girls with their driver's licenses? If not, which do you think has more and why?

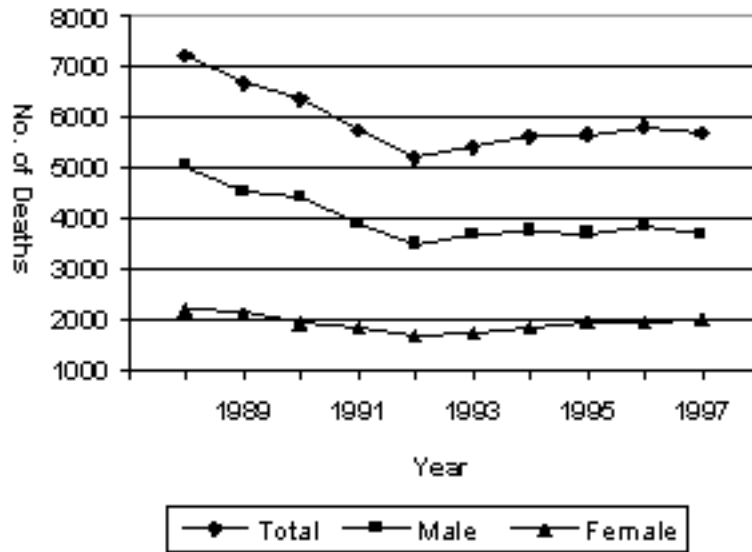
Do you think teenage boys and girls spend equal amounts of time driving? If not, which do you think drives more and why?

Do you think teenage boys and girls spend equal amounts of time as passengers? If not, which do you think spends more and why?

- B. The following graph provides some real data on the number of teenage motor vehicle-related deaths by sex. Carefully review the information in the graph and then answer the following questions

<http://www.cdc.gov/ncipc/factsheets/teenmvh.htm>

Motor Vehicle-Related Deaths Among Teenagers, by Sex, 1988-1997



Source: Insurance Institute for Highway Safety

1. Approximately how many total teenagers died in motor vehicle-related deaths in 1997?
2. Approximately how many female teenagers died in motor vehicle-related deaths in 1997?
3. Approximately how many male teenagers died in motor vehicle-related deaths in 1997?
4. Add up your estimates of females and males (add your answers to questions 2 and 3).
5. Is your answer to question 4 the same as your answer to question 1? If not, go back to the graph and make new estimates. Remember the number of females plus the number of males should add up to the total.
6. Does the graph indicate how many teenagers died as passengers vs. how many died as drivers?
7. Does this graph indicate how many teenagers died in motor vehicle-related deaths compared to older people?
8. How did the total number of teenage motor vehicle-related deaths change from 1988 to 1997?

9. Which sex accounts for most of the change between 1988 and 1997, males or females?
10. Why do you think the number of deaths changed from 1988 to 1992?

C. Use the information from the graph to calculate the proportion of deaths of teenage males vs. females in 1988, 1992, and 1997.

| Year | Calculation | Males | Females |
|------|---|-------|---------|
| 1988 | a. Number of deaths, by sex | | |
| | b. Total number of deaths (same for males and females) | | |
| | c. Proportion, by sex (Calculation a ÷ b) | | |
| 1992 | a. Number of deaths, by sex | | |
| | b. Total number of deaths (same for males and females) | | |
| | c. Proportion, by sex (Calculation a ÷ b) | | |
| 1997 | a. Number of deaths, by sex | | |
| | b. Total number of deaths (same for males and females) | | |
| | c. Proportion, by sex (Calculation a ÷ b) | | |

D. Indicate whether the following statements are true, false or not supported by the graph and explain why.

1. “ About 71% of teenage motor vehicle-related deaths in 1988 were boys.”
2. “ More teenagers die motor vehicle-related deaths than adults.”
3. “ The number of teenage motor vehicle-related deaths has been steadily decreasing since 1988.”

Information for the Teacher

Part A can be presented to the whole class and discussed.

Parts B-D can be done individually or by groups of students.

In part C, students' numbers may vary, but as long as their estimates for males and females sum to the total for every year, their calculated proportions should be close to the answers provided.

Answers to Problems and Questions

1. Approximately how many total teenagers died motor vehicle-related deaths in 1997?
5600
2. Approximately how many female teenagers died motor vehicle-related deaths in 1997?
2000
3. Approximately how many male teenagers died motor vehicle-related deaths in 1997?
3600
4. Add up your estimates of females and males (add your answers to questions 2 and 3).
 $2000 + 3600 = 5600$
5. Is your answer to question 4 the same as your answer to question 1? If not, go back to the graph and make new estimates. Remember the number of females plus the number of males should add up to the total.
Yes, they match
6. Does the graph indicate how many teenagers died as passengers vs. how many died as drivers?
No
7. Does this graph indicate how many teenagers died motor vehicle-related deaths compared to older people?
No
8. How did the total number of teenage motor vehicle-related deaths change from 1988 through 1997?
The number of deaths was highest in 1988 and decreased until 1992 and then slightly increased up to 1997
9. Which sex accounts for most of this change, males or females?
Males
10. Why do you think the number of deaths changed from 1988 to 1992?
Maybe seatbelt use in males increased from 1988 to 1992 (there are other possible answers)

- C. Use the information from the graph to calculate the proportion of deaths of teenage males vs. females in 1988, 1992, and 1997.

| Year | Calculation | Males | Females |
|------|---|-------------|-------------|
| 1988 | a. Number of deaths, by sex | 5100 | 2100 |
| | b. Total number of deaths (same for males and females) | 7200 | 7200 |
| | c. Proportion, by sex (Calculation a ÷ b) | 0.71 | 0.29 |
| 1992 | a. Number of deaths, by sex | 3500 | 1700 |
| | b. Total number of deaths (same for males and females) | 5200 | 5200 |
| | c. Proportion, by sex (Calculation a ÷ b) | 0.67 | 0.33 |
| 1997 | a. Number of deaths, by sex | 3600 | 2000 |
| | b. Total number of deaths (same for males and females) | 5600 | 5600 |
| | c. Proportion, by sex (Calculation a ÷ b) | 0.64 | 0.36 |

- D. Indicate whether the following statements are true, false or not supported by the graph and explain why.

- “ About 71% of teenage motor vehicle-related deaths in 1988 were boys.”
True, the proportion of male deaths in 1988 was 0.71, or 71%
- “ More teenagers die motor vehicle-related deaths than adults.”
Not supported by the given information, there is no information about adults provided
- “ The number of teenage motor vehicle-related deaths has been steadily decreasing since 1988.”
False, it decreased until 1992 and then increased again

References and Resources

Teen Driving

<http://www.cdc.gov/ncipc/factsheets/teenmvh.htm>

Leading Causes of Mortality by State

<http://www.cdc.gov/nccdphp/dash/yrbs/pies99/index.htm>