The Easter holiday road toll

Annotation

Jasmine poses a statistical question that uses data about the wider population (New Zealand road users). She collects time-series data and uses a combination of two different displays in order to analyse her data. Her line graph shows change over time, and the dot plot shows how the data set is distributed. By looking at the shape of the data distribution in the dot plot, Jasmine can see which years had relatively high, medium or low fatality rates at Easter time. In this way, Jasmine is looking for patterns within, between and beyond the data.

Jasmine makes conclusions that generalise her findings and suggests further areas for investigation. Her conclusion answers her original question in context.

Problem: The Easter holiday road toll

The students in this class are conducting statistical investigations about a wider population. The teacher gives them the following task:

Using data from the media, pose and answer a question for statistical investigation.

Student Response

Jasmine's work sample is as follows:

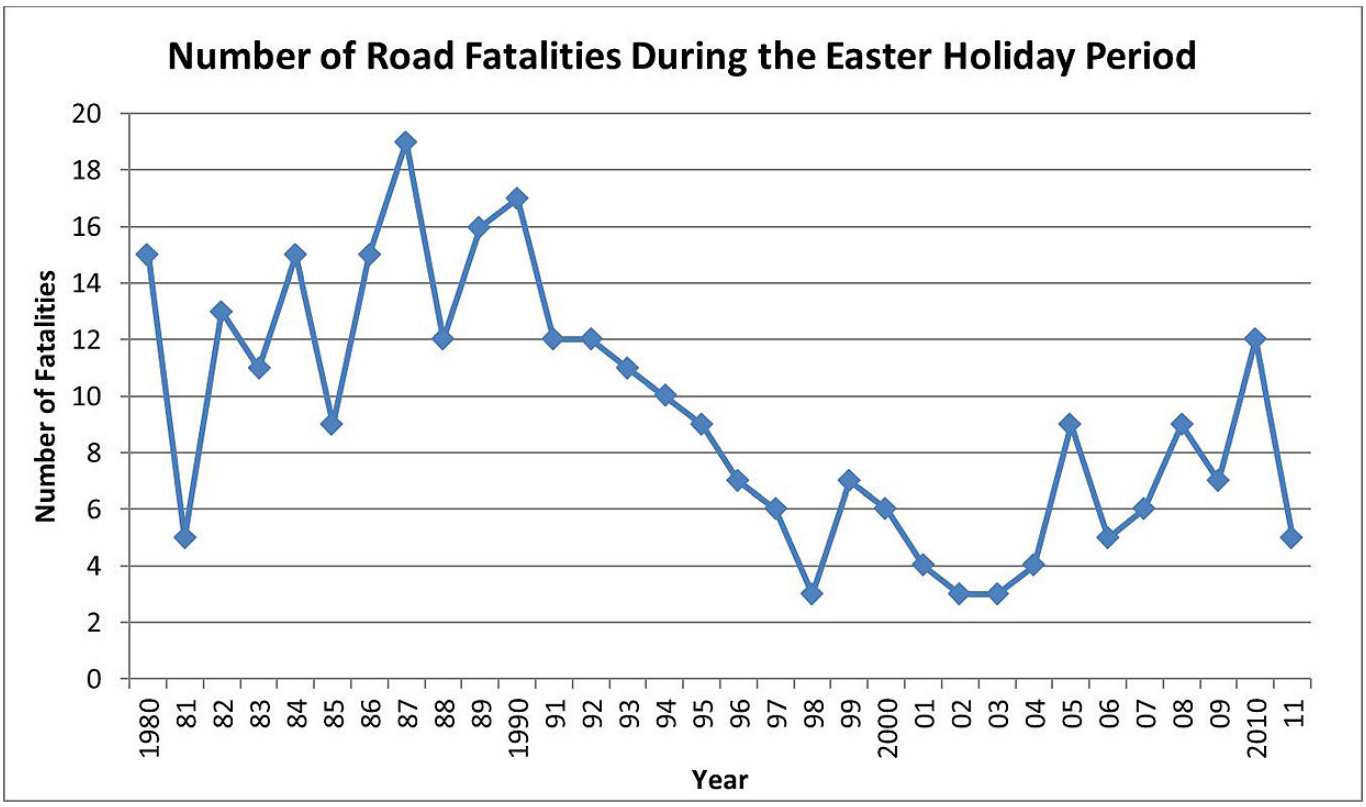
Question

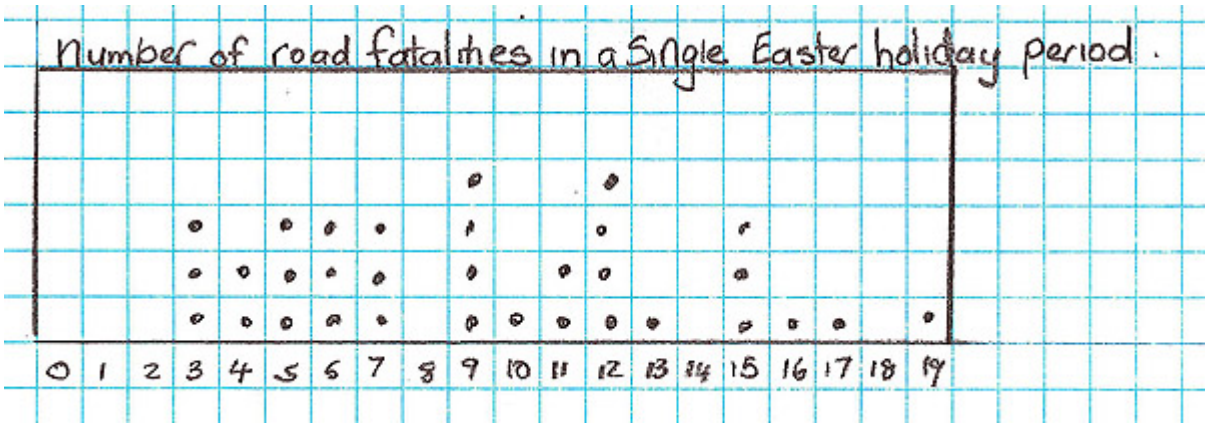
Is the Easter holiday road toll improving or getting worse?

Plan

Use Google to find out the number of fatalities over the Easter holiday period over the last 20 to 30 years.

Results





Analysis

The line graph shows the changing numbers of road fatalities during the Easter period, and the dot plot shows the variation in the number of fatalities. We can see from the dot plot that 3 to 7 fatalities is relatively low, 9 to 12 fatalities is average, and 15 is a high road toll. The line graph shows us that, during the 1980s, there were a lot of high fatalities at Easter time, and in the 1990s, the rate dropped off dramatically. In recent years, the road toll has fluctuated between low and medium fatality rates.

Conclusion

The Easter road toll has improved since the 1980s but has got a little worse since the lows experienced in the early 2000s.

Teacher: Can you tell me what you did?

Jasmine:	I was interested to investigate Easter road tolls because I heard on the news that there had been a zero road toll this year over Easter, and I wanted to know more about the Easter road toll statistics. First I Googled “Easter road toll NZ”, and I found a government website with all the data in a table. Then I put the numbers into Excel and made a line graph. Then I also made a dot plot.
Teacher:	Why did you do that?
Jasmine:	The line graph showed all the increases and decreases, but I couldn’t tell from it what a bad or a good year was. The dot plot showed how the data was clustered into three groups, which I decided to call low, medium and high fatalities.
Teacher:	What did you find out?
Jasmine:	I found out that 2012 with no fatalities was a really good year. Before that, 3 to 7 fatalities was pretty low. I also found out that there were lots of bad years in the 1980s, and there seems to be a big decrease in fatalities in the 1990s. Now I want to find out what might have happened in the 1990s to have caused this.

Data from www.transport.govt.nz/ourwork/Land/landsafety/HolidayRoadToll/