# 'Reasoning from Evidence'
# Traffic Accidents - Example #4 (solution)

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The aims of this assessment are to provide the opportunity for you to:

- use appropriate graphs and/or diagrams to analyze data
- reason clearly and convincingly.

In this task, you are a Road Safety Advisor for Smallville.

Your task is to produce some suggestions about how road safety in Smallville might be improved.

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To help you, below you have a map of Smallville and a database of traffic accidents that took place during the last year. These figures show the time and place of the accident, details of the victim and the type of vehicle that caused the accident. (Times are given as decimals, to make graphing easier).

Your task is to:

1. Find the trouble spots in the town.

2. Try to decide *why* they are trouble spots.

3. You have $100,000 to spend on improving road safety.

What recommendations do you have?

Here are some things that could be done with costs.

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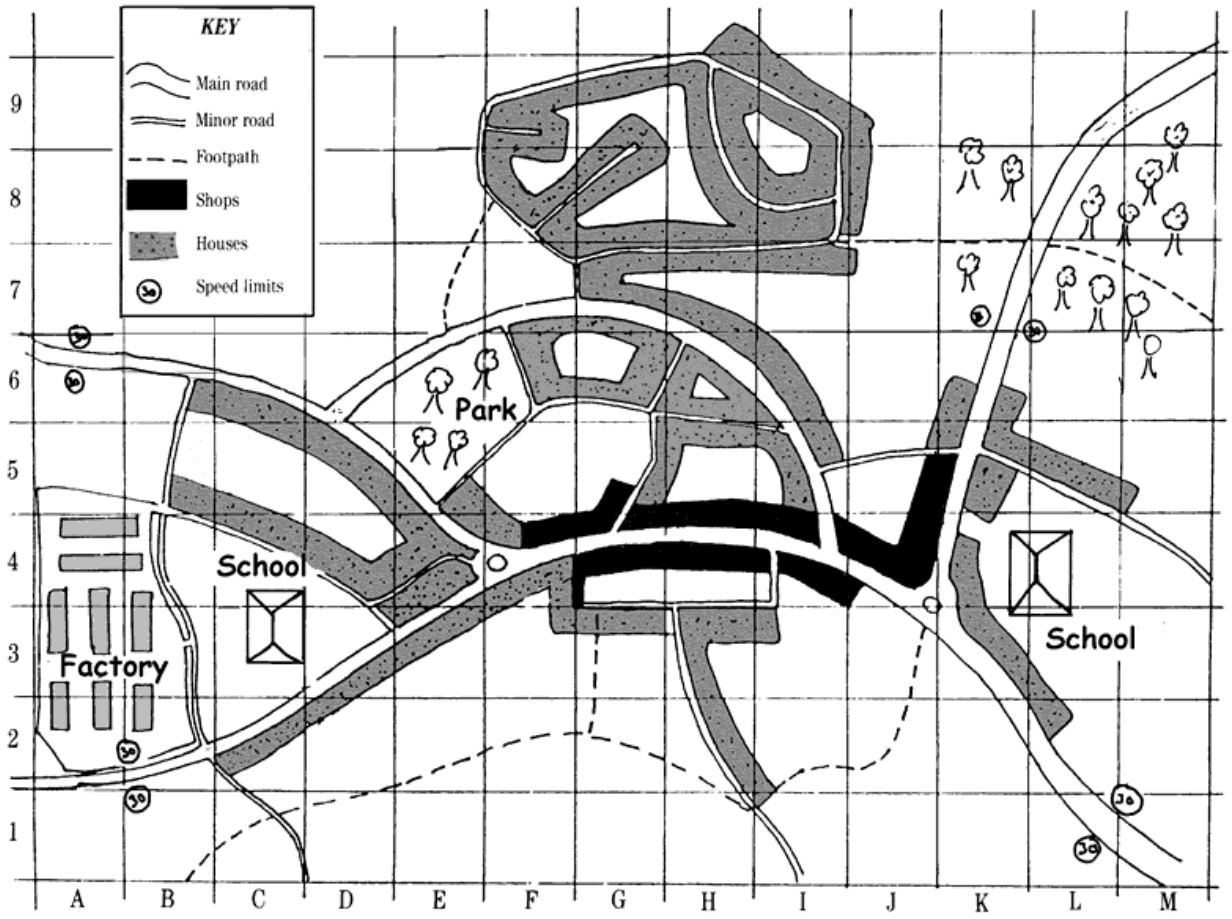
|---|---|
| Educational campaign in the schools | $4,000 |
| Publicity campaign in the town | $10,000 |
| Changing speed limit signs | $4,000 |
| Pedestrian crossing | $16,000 |
| Traffic Lights | $40,000 |
| Footbridge | $90,000 |

**Accident Data Sheet**

| No. | Map | Time | Day | Month | Casualty | Age | Person | Vehicle |
|---|---|---|---|---|---|---|---|---|
| 1 | D3 | 08.75 | Tues | January | pedal cyclist | 12 | boy | car |
| 2 | H4 | 09.25 | Sat | January | pedestrian | 65 | woman | m/cycle |
| 3 | I9 | 17.9 | Thurs | January | pedestrian | 14 | girl | bus |
| 4 | L7 | 12.17 | Sun | January | pedestrian | 44 | man | car |
| 5 | I5 | 15.75 | Sat | February | pedal cyclist | 16 | boy | car |
| 6 | K4 | 12.50 | Tues | February | pedestrian | 7 | girl | car |
| 7 | H6 | 20.50 | Thurs | February | passenger | 28 | man | lorry |
| 8 | B6 | 23.17 | Sat | February | passenger | 54 | man | car |
| 9 | J3 | 19.00 | Tues | March | pedal cyclist | 16 | boy | car |
| 10 | K5 | 12.75 | Thurs | March | pedestrian | 7 | boy | car |
| 11 | I5 | 16.00 | Wed | March | driver | 56 | man | bus |
| 12 | F4 | 23.00 | Tues | March | pedal cyclist | 38 | woman | car |
| 13 | K7 | 16.00 | Sun | March | pedestrian | 24 | woman | car |
| 14 | I4 | 14.58 | Fri | March | pedestrian | 55 | woman | bus |
| 15 | I8 | 16.50 | Wed | April | pedestrian | 14 | boy | car |
| 16 | G6 | 23.00 | Sat | April | pedestrian | 62 | man | m/cycle |
| 17 | M1 | 10.75 | Mon | April | passenger | 12 | boy | car |
| 18 | K4 | 12.25 | Tues | April | pedestrian | 8 | girl | car |
| 19 | D3 | 12.50 | Fri | May | pedestrian | 14 | girl | bus |
| 20 | A2 | 18.50 | Sat | May | pedal cyclist | 22 | woman | car |
| 21 | D4 | 08.00 | Sat | May | pedestrian | 45 | man | car |
| 22 | L7 | 16.75 | Sun | June | pedestrian | 39 | woman | car |
| 23 | B2 | 17.17 | Wed | June | driver | 58 | man | car |
| 24 | H6 | 14.00 | Tues | June | pedestrian | 72 | man | bus |
| 25 | J4 | 20.50 | Mon | July | pedal cyclist | 18 | man | bus |
| 26 | F4 | 12.75 | Thur | July | pedestrian | 16 | boy | car |

| No. | Map | Time | Day | Month | Casualty | Age | Person | Vehicle |
|---|---|---|---|---|---|---|---|---|
| 27 | B6 | 07.75 | Fri | July | passenger | 23 | woman | car |
| 28 | H4 | 15.75 | Sat | July | pedestrian | 62 | woman | car |
| 29 | G6 | 06.83 | Mon | August | passsenger | 15 | boy | bus |
| 30 | M9 | 23.83 | Sat | August | motorcycle rider | 18 | boy | lorry |
| 31 | K6 | 10.00 | Sun | August | pedestrian | 45 | man | car |
| 32 | E6 | 12.50 | Sat | September | pedestrian | 12 | girl | lorry |
| 33 | K4 | 12.25 | Wed | September | pedestrian | 7 | boy | car |
| 34 | I5 | 23.75 | Sat | September | pedestrian | 46 | man | car |
| 35 | F4 | 12.83 | Mon | October | passenger | 3 | girl | lorry |
| 36 | L9 | 18.00 | Fri | October | motorcyle rider | 19 | man | tractor |
| 37 | K4 | 12.75 | Wed | October | pedestrian | 8 | girl | bus |
| 38 | D6 | 13.75 | Sat | October | pedal cyclist | 13 | girl | car |
| 39 | F7 | 22.00 | Fri | November | motorcyle rider | 19 | girl | car |
| 40 | J7 | 15.50 | Sat | November | pedestrian | 61 | man | car |
| 41 | H1 | 12.00 | Tues | November | motorcycle rider | 21 | man | tractor |
| 42 | G5 | 21.21 | Sat | November | passenger | 38 | man | car |
| 43 | K5 | 16.00 | Wed | November | pedestrian | 9 | boy | car |
| 44 | K5 | 16.00 | Wed | November | pedestrian | 8 | boy | car |
| 45 | B2 | 21.75 | Sat | November | passenger | 23 | man | car |
| 46 | J4 | 21.75 | Wed | November | pedestrian | 23 | woman | bus |
| 47 | B2 | 23.75 | Sun | December | motorcycle rider | 28 | man | car |
| 48 | H9 | 13.83 | Tues | December | pedestrian | 45 | woman | bus |
| 49 | K7 | 17.00 | Sun | December | pedestrian | 52 | man | car |
| 50 | J5 | 18.00 | Fri | December | passenger | 45 | woman | bus |
| 51 | B2 | 17.17 | Mon | December | passenger | 23 | man | car |
| 52 | B2 | 17.17 | Mon | December | driver | 24 | man | car |
| 53 | A6 | 23.83 | Sat | December | passenger | 34 | woman | m/cycle |
| 54 | K5 | 12.75 | Wed | December | pedestrian | 6 | girl | car |
| 55 | E9 | 10.75 | Sat | December | pedal cyclist | 12 | boy | bus |
| 56 | B2 | 17.08 | Fri | December | driver | 48 | woman | m/cycle |
| 57 | B2 | 17.08 | Fri | December | motorcycle rider | 17 | boy | car |
| 58 | K4 | 12.25 | Wed | December | pedestrian | 7 | boy | car |

## Map of the Neighborhood




**Traffic Accidents - Sample solution**

This is a complex problem containing many variables and there is no single correct answer. It is most helpful if the data set is input into a spreadsheet or database so that data may be sorted and graphs may rapidly be drawn. Rather than give a specimen solution, we suggest that you just allow students to play with the data and assess their quality of reasoning.