



Analysing media reports: Possible answers

<http://topdrawer.aamt.edu.au/Statistics/Misunderstandings/Belief-in-the-media/Questioning-the-media>

There are many possible answers for the tasks set in this activity. The answers provided below can be expanded on. Classroom discussion will depend to some extent on students' experience outside of the mathematics classroom.

In this activity you are asked to explore the information presented and claims made in two newspaper articles about the 'average' spending across Australia on electricity and on household expenses.

Activity 1

The following table gives information about household electricity bills. The accompanying two paragraphs were part of an article from *The Mercury* (24/11/12).

Average annual household electricity bills.

State	Average annual bill
Tasmania	\$2780
South Australia	\$2182
New South Wales	\$2068
Queensland	\$1950
Victoria	\$1842
Western Australia	\$1515

Households in Tasmania have the most expensive electricity bills in the nation, the survey by consumer advocacy company One Big Switch has revealed.

The survey of 418 people has found Tasmanian households face an average annual electricity bill of \$2780, which is 15% higher than the next most expensive jurisdiction, the Northern Territory, with \$2353.

No further information about the averages in the table is given in the article.

1. If you could interview the reporter who wrote the story or a representative from One Big Switch, what are three questions you would ask about the average data presented in the table?

(a) *How was the average calculated? Was it the mean or median (and what difference would this make)?*

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- (b) *How was the sample collected in each state? And what was the sample size in each state?*
- (c) *What interest does the consumer advocate company One Big Switch have in the outcome of the survey?*
2. Show your calculations to check the claim that Tasmanians face an average annual electricity bill that is 15% higher than the Northern Territory.
- (a) $\$2780 - \$2353 = \$427$. To find the increase from the NT,
 $\$427/\$2353 = 18\%$.
3. Is it legitimate to compare the prices in the table? List three reasons why you might question the comparison.
- (a) *What is the difference in climate between Tasmania and the other states and how might this affect annual household electricity bills?*
- (b) *What other sources of energy are available in the states; that is, how dependent is Tasmania on electricity compared with the other states?*
- (c) *Was the sample in each state representative of all types of energy usage? (For example households from city, rural, coastal or mountain areas?)*

Activity 2

The following graph also compares costs across the Australian States and Territories, this time for the average weekly household total spending on goods and services.



1. Describe the representation presented in the graph and how it displays the total weekly household spending across Australia.
- (a) *This is a very unusual type of pictograph as the icons of dollars appear to have little relationship to the amount of money represented and there is no key to tell us.*

- (b) *The heights of the 'columns' bear no relationship to the relative amounts of money. For example, the height for WA is twice (100% more) than that of SA and Tas, but \$1285 for WA is only 23% more than SA (\$1044) and 21% more than Tas (\$1064). Also, the territories have heights about 150% higher than South Australia (or Tasmania) with the actual percentage more being about 44%.*
- (c) *Looking at the dollar values, however, it is clear that South Australia and Tasmania have average total weekly household spending on good and services (including electricity) that are less than the other states (and territories).*
2. Consider the relationship between the values in the two graphs for the six states for these two variables: annual price of electricity, and total weekly spending on goods and services. What patterns do you observe across Australia and in particular, what do you notice about South Australia and Tasmania in relation to the other states for the two variables?
- (a) *Four of the mainland states – Vic, NSW, WA and Qld – are fairly similar in their values for annual electricity bills and for average total weekly household spending on good and services.*
- (b) *SA and Tas have the highest two values for the states in electricity bills but the lowest values of the states for the average total weekly household spending on good and services.*
3. Should Tasmanians complain about their electricity bills? Why or why not?
- (a) *It appears that the overall cost of living in Tasmania in terms of the average total weekly household spending on goods and services is less than the rest of Australia – so overall living is cheaper!*
- (b) *From the definition of weekly household spending electricity is included as a 'service'. So it appears that the cost of electricity has not impacted greatly on weekly spending when weekly spending is compared to the rest of Australia.*

4. What further questions would you ask before making a decision about Tasmanians complaining about their electricity bills?
- (a) *What is the average wage in Tasmania and how does it compare with the average wage in the other states? If Tasmanians earn much less then should they expect lower weekly household expenses?*
- (b) *Is Tasmania contributing more than other states to the fight against global warming because most of their energy is hydro-based (with many dams to create electricity)? So should their electricity bills be subsidised?*

Optional

Draw a graph that shows the relationship of the two variables for the six states.

