Statistics in the News

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Article Collection – ST101

During the semester, you will assemble a collection of 16 articles from newspapers and magazines that relate to specified topics in this course. You may use either the print or the online versions of reputable newspapers and magazines. The articles must be news stories — they cannot be course materials designed to teach statistical methods!

For each topic below, turn in the following:

1. The article or a copy of the article.
2. A reference showing where you found the article. (Include the name of the publication, the date, and the page number. If you found the article on the web, include the url.)
3. The requested explanation or calculation.

You must use a different article for each topic. Arrange the articles in the order listed below and label each one clearly. **Highlight the relevant passages of each article!** The article collection is worth a total of 60 points.

- 4 points for neatness and format. Is your collection in a folder or cover? Are the articles in the correct order? Are the relevant passages of each article highlighted?
- 4 points for each article — 2 points for finding an appropriate article and 2 points for the requested explanation or calculation. There are 16 articles, but I'll drop your lowest two grades out of the 16.
- To summarize, the article collection is worth a total of 4 + (14 × 4) = 60 points.

Do not leave the article collection until the last minute! You should keep an eye out for suitable articles every time you read a newspaper or news magazine.

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1. **Voluntary response:** Find an invitation to participate in a voluntary response sample. Are the results of this poll likely to be biased? Explain why or why not. If you think there is likely to be bias, what is the probable direction of the bias?
2. **Margin of error:** Find an article that reports the value of a sample statistic and its margin of error. Use the information in the article to make a confidence statement about the corresponding parameter.

3. **Pre-election poll:** Find an article that describes a pre-election poll and that provides answers to at least five of the eight questions on page 61 of *Statistics: Concepts and Controversies*. Answer the five questions.
4. **Experiment:** Find an article that describes an experiment. Explain clearly what makes the study an experiment rather than an observational study.
5. **Ethical issues:** Find an article about an experiment that raises ethical issues. Describe briefly what makes the experiment controversial. Make sure that your article is about an experiment!
6. **Rates:** Find an article that reports a rate at which something occurs. Explain clearly why it makes sense to measure this variable using a rate, rather than a count.
7. **Percent change:** Find an article that reports a percent increase or decrease in some variable. Your article must provide enough information for you to verify whether the percent change was calculated correctly. That is, the article must report three numbers — the starting value, the ending value, and the percent change. Show clearly how to calculate the percent change.
8. **Graphs:** Find examples of three graphs — a pie chart, a bar graph, and a line graph. For each of the three graphs, comment on whether the graph type is appropriate for the data and comment on anything that is misleading or confusing about each graph.
9. **Measure of center:** Find an article that reports a mean or a median. If your article reports a mean, explain why the mean is — or is not — a better measure of center than the median for this variable. If your article reports a median, explain why the median is — or is not — a better measure of center than the mean for this variable.
10. **Scatterplot:** Find an article that reports data that could be displayed in a scatterplot (if the full dataset were available). (Remember that scatterplots are used to show the relationship between two quantitative variables.) Specify clearly what variable would be plotted on the horizontal axis and what variable would be plotted on the vertical axis. Specify clearly what each point represents (the data for one person? for one city? for one company?). Describe what you think the pattern of points on the scatterplot would look like.
11. **Causation:** Find an article that makes a questionable claim about causation. That is, find a description of a relationship between two variables x and y that could be explained by other variables lurking in the background. Explain clearly how the lurking variable(s) could result in the observed association between x and y. As part of your explanation, draw a diagram like (b) or (c) on page 294 of *Statistics: Concepts and Controversies*. Label the circles in your diagram with the names of the variables, not just with the letters x, y, and z.
12. **Using the CPI:** Find an article that reports the price of some good or service in some past year. Use our updated version of Table 16.1 on the Consumer Price Index to convert the price to 2004 dollars. Show your calculations clearly.
13. **Probability:** Find an article that talks about the probability of some event. (The article should actually use the word "probability.") Does this probability have the interpretation on page 348 of *Statistics: Concepts and Controversies* (a number between 0 and 1 that describes the proportion of times an outcome would occur in a very long series of repetitions) or is it a personal probability (a number between 0 and 1 that expresses an individual's judgment of how likely an outcome is)? Explain your answer.
14. **Lotteries:** Find an article that discusses several reasons why North Carolina should or should not have a state lottery. Summarize the arguments pro and con.

15. **Two-way table:** Find an article that reports counts that can be arranged in a two-way table (similar to the one on page 465 of *Statistics: Concepts and Controversies*). Make two tables — one containing the counts and another showing appropriate percentages based on the counts. Label both tables clearly.
16. **Confidence interval:** Find an article that uses information from a sample to estimate a population proportion. Pretend that the sample was a simple random sample, and use the formula on page 424 of *Statistics: Concepts and Controversies* to calculate a 95% confidence interval for the population proportion. Note that your article must report both the estimated proportion and the size of the sample on which the estimate is based.