

CHAPTER 2

READING THE NEWS

SECTION 2.1

THE EDUCATED CONSUMER OF DATA

FREE RESPONSE QUESTIONS

1. Name one way in which you can encounter stories whose conclusions are based on data.
ANSWER: ANY REASONABLE ANSWER OK. EXAMPLES: NEWSPAPER; EVENING NEWS; INTERNET; MAGAZINES; MEDICAL REPORTS, ETC.
2. One of the goals of this course is to help you become an educated consumer of data. Name one way in which you 'consume' data.
ANSWER: ANY REASONABLE ANSWER OK. EXAMPLES: READ THE NEWSPAPER; LISTEN TO THE RADIO; WATCH TV NEWS; READ WEATHER REPORTS; READ MAGAZINES, ETC.
3. Explain briefly what it means to be an educated consumer of data.
ANSWER: ANY REASONABLE ANSWER OK. EXAMPLES: ASK QUESTIONS BEFORE YOU BELIEVE THE RESULTS; DON'T BELIEVE EVERYTHING YOU SEE/READ/HEAR, ETC.
4. Why is it difficult to be an educated consumer of data in today's 'age of sound bytes'?
ANSWER: WHEN YOU SEE/HEAR/READ THE RESULTS OF A STUDY, YOU ARE RARELY PRESENTED WITH THE ACTUAL DATA. SOMEONE HAS USUALLY SUMMARIZED THE INFORMATION FOR YOU AND ALREADY DRAWN THE CONCLUSIONS. IT'S YOUR JOB TO ASK THE QUESTIONS.

MULTIPLE CHOICE QUESTIONS

5. Which of the following is the best definition of the term 'data'?
 - a. Any number, such as 1, 3, or 10.
 - b. Numbers such as 1 and 10 and words such as yes or no.
 - c. Any number or other piece of information to which meaning has been attached.
 - d. None of the above.**ANSWER: C**
6. Which of the following are examples of data?
 - a. The gender of each member of your statistics class.
 - b. Your opinion on whether smoking should be banned in all public places (support, oppose, no opinion).
 - c. The number of deaths in each state in a given year due to accidents.
 - d. All of the above.

ANSWER: D

7. How you determine whether or not to believe a statistic you come across depends on what?
- How the data were collected.
 - How the data were measured.
 - How the data were summarized.
 - All of the above.

ANSWER: D

8. Which of the following is true about statistics?
- Numbers don't lie. All statistics have to be believed.
 - Statistics can be made to say whatever you want them to say. No statistic should be believed.
 - Any statistic that is based on data is likely to be correct.
 - All statistics should be carefully scrutinized before determining whether or not they can be believed. Some are correct, and some are not.

ANSWER: D

FILL-IN-THE-BLANK QUESTIONS

9. _____ is a collection of numbers or other pieces of information to which meaning has been attached (such as your height in inches or your gender).

ANSWER: DATA

10. The _____ we can attach to data and to the resulting conclusions depends on how well the information was acquired and summarized.

ANSWER: MEANING (BELIEVABILITY, OR CREDIBILITY)

SECTION 2.2

ORIGINS OF NEWS STORIES

FREE RESPONSE QUESTIONS

11. Give one example of where a news story involving a statistical study can originate.

ANSWER: ANY OF THE FOLLOWING ARE OK: ACADEMIC CONFERENCES; SCHOLARLY JOURNALS; PRESS RELEASES.

12. What is one of the problems with news stories based on conference presentations?

ANSWER: THERE IS UNLIKELY TO BE A CORRESPONDING WRITTEN REPORT BY THE RESEARCHERS AT THE TIME OF THE PRESENTATION, MAKING IT DIFFICULT TO OBTAIN MORE INFORMATION.

13. One source of news stories about statistical studies involves in-depth research reports provided by government and private agencies. Name one disadvantage of these types of reports.

ANSWER: THEY ARE NOT NECESSARILY PEER-REVIEWED OR CHECKED BY NEUTRAL EXPERTS ON THE TOPIC.

14. Suppose you hear a news story about a Harvard University study on teenage binge drinking and you want to find out more information. Who or what source can you contact (besides the writer of the news article)?

ANSWER: THE NEWS OFFICE OF THE LEAD RESEARCHER'S INSTITUTION; OR THE JOURNAL ARTICLE THAT THE RESEARCH ORIGINALLY APPEARED IN (IF ONE IS MENTIONED); OR THE LEAD RESEARCHER.

MULTIPLE CHOICE QUESTIONS

15. Which of the following describes possible origins of news stories?

- a. Academic conferences
- b. Scholarly journals
- c. Government and private agency reports
- d. All of the above

ANSWER: D

16. How do reporters find stories based on statistical studies in their areas of interest?

- a. Routinely reading scholarly journals.
- b. Attending academic conferences.
- c. Watching for government reports.
- d. All of the above.

ANSWER: D

17. Which of the following would give a news reporter the best and most comprehensive foundation for a news story involving a statistical study?

- a. A press release gives everything they need because it's written just for them.
- b. Another newspaper article written by a competitor.
- c. An article in a peer-reviewed scholarly journal, accompanied by a press release.
- d. A conference presentation given by the researchers themselves.

ANSWER: C

18. Which of the following would not necessarily be considered a good source for a news story?

- a. A peer-reviewed journal
- b. A government report
- c. A press release
- d. Another newspaper story

ANSWER: D

FILL-IN-THE-BLANK QUESTIONS

19. A(n) _____ summarizes the information from a study so that journalists don't have to be as versed in the technical aspects of the research to write a good story.

ANSWER: PRESS RELEASE

20. Every academic discipline holds a(n) _____, usually annually, in which researchers can share their results with others. Reporters routinely attend them to look for interesting news stories.

ANSWER: CONFERENCE

SECTION 2.3

HOW TO BE A STATISTICS SLEUTH: SEVEN CRITICAL COMPONENTS

FREE RESPONSE QUESTIONS

21. Your book lists three major reasons that studies are conducted. Name one of them.
ANSWER: ANY OF THE FOLLOWING IS ACCEPTABLE: 1) TO COLLECT DATA IN ORDER TO MAKE A DECISION; 2) TO ASK AND ANSWER QUESTIONS ABOUT THE WORLD AROUND US; OR 3) TO CONVINCE CONSUMERS THAT A CERTAIN PROGRAM OR PRODUCT WORKS BETTER THAN THE COMPETITION.
22. Explain why it is important to find out not only who conducted a study, but also who funded the study.
ANSWER: IF THE STUDY WAS FUNDED BY AN ORGANIZATION THAT WOULD LIKELY HAVE A STRONG PREFERENCE FOR A CERTAIN OUTCOME, THERE MAY BE A CONFLICT OF INTEREST THAT COMPROMISES THE RESULTS. YOU MUST BE SURE PROPER SCIENTIFIC PROCEDURES WERE CONDUCTED.
23. In the case of a cola taste test, explain why it is important that both the researchers and the participants be blind as to which brands are which.
ANSWER: ANY CLUES MIGHT BIAS THE RESPONDENTS TO CHOOSE THE BRAND THAT (THEY THINK) THE RESEARCHERS WANT THEM TO CHOOSE.
24. Give an example of how the timing of a survey can easily bias the results of a study.
ANSWER: ANY ACCEPTABLE ANSWER OK. EXAMPLES: A SURVEY ASKING OPINIONS ON GUN CONTROL IMMEDIATELY FOLLOWING A SCHOOL SHOOTING INCIDENT; EMPLOYMENT SURVEY QUESTIONS ASKED IN A TELEPHONE SURVEY GIVEN BETWEEN 9AM AND 5PM DURING THE WEEK.

MULTIPLE CHOICE QUESTIONS

25. Which of the following is not an important component of a good news report regarding a statistical study?
- a. The source of the research.
 - b. Who paid for the research.
 - c. The extent or size of any claimed effects or differences.
 - d. All of the above are important components.
- ANSWER: D**
26. Why is it important to know how the individuals or objects in a study were selected?
- a. It is important to know to whom the results can be extended.
 - b. It is important for determining whether or not there is bias in the results.
 - c. Both a) and b) are true.
 - d. It is not important to know how the individuals were selected; only the size of the sample matters.
- ANSWER: C**

27. Suppose a group of students who reported smoking marijuana was found to have lower test scores than a group of students who reported they don't smoke marijuana. What is the most that can be concluded with regard to the population of all students?

- a. Smoking marijuana causes lower test scores.
- b. Smoking marijuana may be related to lower test scores.
- c. Students who smoke marijuana have lower test scores than students who don't.
- d. None of the above.

ANSWER: B

28. Which of the following components of a good news report does not pertain to the issue of bias?

- a. Knowing the source of the research and of the funding.
- b. Knowing how the individuals or objects studied were selected.
- c. Understanding any differences in the groups being compared, in addition to the factor of interest.
- d. All of these relate to the issue of bias.

ANSWER: D

FILL-IN-THE-BLANK QUESTIONS

29. Surveys relying on voluntary responses are likely to be _____ because only those who feel strongly about the issues are likely to respond.

ANSWER: BIASED

30. In a survey, both the wording and the _____ of the questions can influence answers.

ANSWER: ORDERING; OR TIMING

SECTION 2.4

FOUR HYPOTHETICAL EXAMPLES OF BAD REPORTS

FREE RESPONSE QUESTIONS

31. A psychology student conducts a study to measure the amount of motivation students have for their math courses. She hands out a survey in every math class at her school on the day before spring break. What is the problem with her sampling process?

ANSWER: STUDENTS WHO ARE MOST LIKELY TO BE IN MATH CLASS THE DAY BEFORE SPRING BREAK WILL BE MORE MOTIVATED THAN THOSE WHO ARE GONE THAT DAY. THIS WILL BIAS THE RESULTS.

32. A social worker wants to determine the extent to which people remember a tragedy (like September 11). She conducts a survey of a random sample of students in the General Psychology 101 course at her university. To whom can these results be generalized?

ANSWER: ONLY THOSE STUDENTS AT THAT UNIVERSITY WHO TOOK GENERAL PSYCHOLOGY 101, OR STUDENTS SIMILAR TO THEM.

33. Suppose you find out that a certain drug reduces side effects of a certain therapy by 50 percent. Assuming the study was conducted properly, explain why this statistic of 50% may not be as meaningful as it sounds.

ANSWER: THE ORIGINAL PERCENTAGE EXPERIENCING SIDE EFFECTS MAY BE SMALL (FOR EXAMPLE 2%) SO TAKING A DRUG TO REDUCE THESE ALREADY SMALL CHANCES BY 50% (FROM 2% TO 1% IN THIS CASE) MIGHT NOT MAKE PRACTICAL OR ETHICAL SENSE.

34. When you see the phrase 'of those who responded' in reference to the results of a survey, what do you need to worry about? Explain your answer.

ANSWER: YOU NEED TO WORRY ABOUT THE PERCENTAGE OF PEOPLE WHO RESPONDED. IF THE RATE OF RESPONSE IS LOW, THEN THE RESULTS WILL BE BIASED BECAUSE THEY ARE BASED ON PEOPLE WITH STRONG OPINIONS.

MULTIPLE CHOICE QUESTIONS

35. Suppose you want to compare per capita income for the U.S. vs. all other countries and you use per capita income figures from last year's World Almanac and exchange rates from last Friday's financial pages. Which of the following components of a good news report is being affected most?
- The setting of the study.
 - The nature of the measurements used.
 - The way the sample was selected.
 - The source of the research and the way it is funded.

ANSWER: B

36. Why is it important to know about any differences in two groups being compared, in addition to the factor of interest?
- If the groups are too different, it becomes difficult to see the effects that are due only to the factor of interest.
 - If the groups are too similar, then any difference found in the factor must be simply due to chance.
 - Unless there is a big difference in the results, it doesn't matter whether or not the groups themselves are different.
 - None of the above.

ANSWER: A

37. A survey of female readers of a certain women's magazine showed that of those responding, slightly over 90% answered no to the question: 'If you had it to do over again, would you marry the same man?' What does this mean to you, as an educated consumer of data?
- It means that the overwhelming majority of married women regret marrying their spouse.
 - It means you should find out what percentage of the readers responded before you decide anything.
 - It means little or nothing; this survey is too biased to be credible.
 - None of the above.

ANSWER: C

38. Which of the following components of a good news report cannot be controlled by the researcher?
- The exact nature of the measurements made.
 - The individuals or objects studied and how they were selected.
 - The differences in the groups being compared, in addition to the factor of interest.
 - The amount of difference in the actual results.

ANSWER: D

FILL-IN-THE-BLANK QUESTIONS

39. The people who are most likely to respond to a volunteer response survey are those who have a strong _____ about the questions being asked.
ANSWER: OPINION OR EMOTIONAL RESPONSE
40. Using volunteers for a study introduces problems in the form of _____.
ANSWER: BIAS

SECTION 2.5

PLANNING YOUR OWN STUDY: DEFINING THE COMPONENTS IN ADVANCE

FREE RESPONSE QUESTIONS

For Questions 41-44 use the following narrative

Narrative: Supermarket pricing

Suppose you are interested in determining which of three local supermarkets has the best prices so you can decide where to shop.

41. {Supermarket pricing narrative} Suppose you are approached by one of the supermarkets and they said they would fund your study if they would be allowed to select the products for price comparison. Which of the seven critical components of a good study is at issue here?
ANSWER: THE SOURCE OF THE FUNDING IS CAUSING A DEFINITE CONFLICT OF INTEREST HERE AND WOULD SERIOUSLY BIAS THE RESULTS.
42. {Supermarket pricing narrative} What are the objects studied in this example?
ANSWER: ITEMS IN THE GROCERY STORES FOR WHICH PRICES WILL BE RECORDED.
43. {Supermarket pricing narrative} Discuss one of the issues that would come up when defining the cost of an item in a supermarket and how you would handle it as the researcher.
ANSWER: ANY ACCEPTABLE ANSWER OK. EXAMPLE: WHETHER OR NOT TO USE THE SALE PRICE; WHICH SIZE OF THE PRODUCT TO USE; WHETHER OR NOT TO WORRY ABOUT THE BRAND NAME; USING THE ADVERTISED PRICE VS. THE ACTUAL PRICE THAT SHOWS UP ON THE REGISTER (IF DIFFERENT).
44. {Supermarket pricing narrative} Explain briefly how you would use the results of your study to decide where to shop after the study is done.
ANSWER: ANY ACCEPTABLE ANSWER OK. EXAMPLES: LOOK AT THE AVERAGE AMOUNT OF MONEY YOU COULD SAVE AT A PARTICULAR STORE OVER A GIVEN YEAR (COMPARED TO A GIVEN DAY); LOOK AT WHICH STORE DOES BEST ON CERTAIN TYPES OF PRODUCTS (FOOD ITEMS, HOUSEHOLD ITEMS, ETC.)

MULTIPLE CHOICE QUESTIONS

45. Which of the following is a well worded survey question for determining a voter's opinion on a tax increase for education?

- a. Would you be willing to agree to a small tax increase that would help the education of our children?
- b. Do you agree with a tax increase for education?
- c. How do you feel about a tax increase for education (agree, disagree, neutral)?
- d. All of the above are well worded questions.

ANSWER: C

46. What impact can nonrespondents have on survey results?

- a. The nonrespondents will have a negative impact; the results of the survey will be biased toward the opinions of the respondents.
- b. The nonrespondents will have no effect because they didn't respond to the survey.
- c. The nonrespondents will have a positive impact; without them, the results of the survey will be more dramatic and more likely to be picked up by the news media.
- d. None of the above.

ANSWER: A

47. What type of sample would give the most unbiased data?

- a. A volunteer response sample.
- b. A random sample.
- c. A sample with a high number of respondents.
- d. None of the above.

ANSWER: B

48. Which of the following is a true statement?

- a. You can't totally eliminate bias in a study, no matter what you do.
- b. If you do everything right, you will come out with the right conclusion every time when using statistics.
- c. You don't need all seven of the components of a good study in order to be confident in your results; you only need most of them.
- d. All of the above are true statements.

ANSWER: A

FILL-IN-THE-BLANK QUESTIONS

49. The time to consider the seven components of a good statistical study is _____ the study has been (is being) conducted.

ANSWER: BEFORE

50. Sometimes jury trials use _____ as expert witnesses to point out strengths or weaknesses in surveys or experiments used as evidence in the trial.

ANSWER: STATISTICIANS