Step 5: Look back and ahead

14. If you were to repeat this study, what improvements might you make? What further research might you propose related to this topic in the future?

PART II

Now suppose another class conducts the same study with exactly half as many students, and suppose the proportional breakdown in the four categories is identical to the class of 28. In other words, 7 out of 14 students answered, “right front.”

15. Before you analyze the data, would you expect to find stronger evidence for the research conjecture (that people pick the right front tire more than ¼ of the time), weaker evidence, or the same strength of evidence? Explain your thinking.

16. Conduct a simulation analysis to produce a simulated p-value. How does it compare to the p-value from the study of the class with 28 students? Is this what you expected? Explain.

PART III

Suppose we didn’t have a preconceived notion that the right front tire would be chosen more often, but just wanted to find out if it was chosen at a rate that was different than one-fourth. Let’s use our original data where 14 out of 28 chose the right front tire to test this.

17. Write the null and alternative hypotheses for this new question.

18. Use a theory-based test to find the p-value. How does this compare with the p-value you obtained back in question 10c.

19. Do you have strong evidence that the probability a student will choose the right front tire is different than one-fourth?

Research Article: Infants prefer to harm those who are different

Read “Not like me = Bad: Infants prefer those who harm dissimilar others” by Hamlin, Mahajan, Liberman and Wynn. Psychological Science, 2013. 24:589-594, and then answer the following questions.
Step 1. Ask a research question

1. In no more than 1-2 sentences state a broad research question (or related questions) that the researchers were trying to investigate in this study.

2. Identify at least two (cited) points of evidence the researchers cite as to why the research question(s) are important. Include the citation in your response.

The following questions (3-13) refer to Experiment #1, which is described on page 590

Step 2. Design a study and collect data

3. What is the sample size of 14 month olds, not counting those eliminated from the final sample?

4. Why was Phase I of Experiment 1 necessary?

5. What variable is being measured in Phase 1 of Experiment 1? Is it categorical or quantitative? If categorical, what are the outcomes?

6. Explain the purpose of Phase 2 of Experiment 1.

7. Is there a variable being measured in Phase 2 of Experiment 1?

8. In Phase 3 of the experiment, of the babies saw the similar puppet (bunny who liked the same food they did), while the other of the babies saw the dissimilar puppet (bunny who liked different food than they did). Why was it necessary to report that in Phase 3 “Infants were permitted to observe the outcome of each event until they had looked away for 2 s or until 30 s elapsed?”

9. What variable is being measured in Phase 4 of Experiment 1? Is it categorical or quantitative? If categorical, what are the outcomes?

Step 3. Explore the data

10. In Figure 1a, explain how to generate the height of the white bar for 9-month olds? The black bar?¹

11. What percent of 14-month olds who saw the similar target (bunny who like same food they did) chose the helper puppy? What percent who saw the dissimilar target chose the helper puppy?

Step 4. Draw inferences

12. In describing the results of Phase 1, the researchers state that “53% of 9-month olds chose graham crackers [when given a choice between graham crackers and green beans].” While no p-value is

¹The sample size for 9-month olds is correctly stated in Figure 1a as 16 who saw the similar target, and 16 who saw the dissimilar target, for a total of 32 infants. The sample size is misstated in the first sentence of “Participants and
provided in the article, name at least two reasons it’s likely that there is little evidence (large p-value) against a null hypothesis that “50% of all 9-month olds will choose graham crackers”

13. Identify the null and alternative hypothesis for the p-value reported in the following sentence from the results: “…whereas infants who saw interactions involving the dissimilar rabbit puppet preferred the harmer dog puppet over the helper dog puppet (81% of 9 month olds, p=0.02).”

The following questions (14-16) refer to Experiment #2 which is described on page 593

Step 2. Design a study and collect data

14. In no more than 1-2 sentences summarize the main purposes of Experiment #2.

Step 3. Explore the data

15. Identify a statistic from Experiment #2 explain what it means.

Step 4. Draw inferences

16. State a null and alternative hypothesis from Experiment #2, and indicate the related p-value (any is fine). Indicate the strength of evidence provided by the p-value and provide an appropriate (in context) interpretation.

The remaining questions apply to the entire study

Step 5. Formulate conclusions

17. While the authors say little about how the infants were selected to participate in the study, why might this be important to the studies’ conclusions?

Step 6. Look back and ahead

18. Identify at least two things that, if you were running the study and had a reasonable amount of financial resources, you would do differently. You must justify your answer.

19. On page 592, the researchers state that “Additionally, infants’ evaluations did not differ according to which food the target liked…” Why is this statement important to the researchers’ findings? Explain how it potentially undermines their conclusions if it is not true.

20. The final paragraph of the paper argues that they researchers “…did not demonstrate (a) that infants generated, either prior to or during the study, categories of “green-been lovers” and “graham cracker lovers” or even of “individuals like me” and “individuals not like me.” How do the researchers argue that this is not important to their final conclusion?