

Probability & Statistics

Bias in Surveys Project Guidelines

The Project: Working in groups of two, you will design and conduct an experiment to investigate the effects of response bias in surveys. You may choose the topic for your surveys, but you must design your experiment so that it can answer at least one of the following questions.

- A. Can the wording of a question create response bias?
- B. Do the characteristics of the interviewer create response bias?
 - C. Does anonymity change the responses to sensitive questions?
 - D. Does providing extra information affect the responses?

This project consists of 3 parts and is worth 100 project points.

Proposal (20 points): Your group must submit a completed project proposal form that outlines your survey question and the details of your experimental design. The proposal is worth 20% of the total grade so don't treat it casually. The proposal form will be provided and the proposal is due Friday, October 11th.

The written report (40 points): The report is due Friday, November 1st and should include the following sections (clearly labeled).

- A. Introduction: What form of response bias were you investigating? What is your topic and why did you choose this topic? What results do you expect?
- B. Methodology: Describe how you conducted your experiment and why you think your design was effective. Note: This section should be very similar to your proposal.
- C. Results: Present the data in both tables and graphs in such a way that conclusions can be easily made. Make sure to label the graphs/tables clearly and consistently.
- D. Conclusions: What conclusions can be drawn from your experiment? Be specific. Were the results as you had anticipated? Did you encounter any problems during your project? Would you do anything different if you were to repeat your experiment? What did you learn from this project?

The written report must be typed and graphs should be done on the computer.

Poster (40 points): The poster is due on Friday, November 15. That day posters will be displayed and presented for classmates to read and outline the results of each survey. As a result, the poster should completely summarize your project yet be simple enough to be understood by a freshman.

Your poster should include:

- A. Title and objective: the type of response bias investigated and the survey questions.
- B. Data collection methods: how you used control, blocking, randomization.

- C. At least 2 visuals: experimental design schematic (required), graphs, tables, digital photos.
- D. Results and conclusions.
(*Bonus 5 points for WOW factor as decided by entire class on presentation day*)

Note: All work is due at the beginning of the period, even if you or your partner is absent. Significant points will be deducted for late work (20% per day).

Examples of Successful Projects:

Milk vs. Orange Juice

1. Which do you prefer, milk or orange juice, as a breakfast drink? (milk: 14%)
2. Milk contains high levels of vitamin D and calcium. Do you prefer milk or orange juice as a breakfast drink? (milk: 64%)

Cheating

1. Do you cheat in class? (anonymous: 47% would)
2. Do you cheat in class? (not anonymous: 15% would)

Make-Up (all questions asked to males)

1. Do you find females who wear makeup attractive? (wearing makeup: 75% yes)
2. Do you find females who wear makeup attractive? (without wearing makeup: 30% yes)

Time Online

1. On average, how many hours do you spend online each week: 0-5, 6-10, 11-16, 17-25, 26-35, or more?
2. On average, how many hours do you spend online each week: 0-5, 6-10, 11-16, or more?

(For this question, the students anticipated that subjects would be embarrassed to put more.)

In the first question, 50% answered over 17 hours, but in the second question, 0% did.)

Scoring Rubrics

The written report will be scored for appropriate content and accuracy.

Introduction—Form of Response Bias Identify topic choice & reasoning and survey questions used	<u>8 points</u>
Methodology—Setup of completely randomized experiment Appropriate use of randomization, replication and control Appropriately labeled experimental design diagram	<u>10 points</u>
Results—Data collection results displayed in appropriate tables and graphs	<u>8 points</u>
Conclusion—Interpret results back to original form of response bias Discussion of problems encountered Changes that would be made if experiment was repeated What was learned	<u>14 points</u>

The poster will be scored for clarity, communication and visual appeal.

Title and Objective—survey question and type of response bias	<u>6 points</u>
Data Collection Methods—brief discussion of how the experiment was carried out	<u>10 points</u>
Visual Aids—experimental design diagram, graphs, pictures	<u>10 points</u>
Results and Conclusions: clear and concise	<u>6 points</u>
Visual Appeal—make it clean, professional and fun to look at	<u>8 points</u>

Probability and Statistics Project Proposal Form

Names:

Bias in Surveys

Each group of two must turn in one project proposal form. Attach extra sheets if necessary.

1. Which of the following four questions are you seeking to answer with your surveys?

- Can the wording of a question create response bias?
- Do the characteristics of the interviewer create response bias?
- Does anonymity change the responses to sensitive questions?
- Does providing extra information affect the responses?

2. Write down your survey question and describe changes you will make to the question, to the interviewers appearance or to the survey design in order to affect the changes you hope to observe in #1.

3. What are your anticipated results?

Outline of Experimental Design

4. Who are your subjects? What is the population that you are sampling from?

5. How will you select the subjects? Be sure to address the issue of randomization. (To address replication use minimum sample size of 50.)

6. Describe your methods of control especially as to how you will you apply the treatments (surveys) to the subjects.

Bias In Surveys Sign up Sheet

Pd _____

Group 1

- 1. _____
- 2. _____

Group 2

- 1. _____
- 2. _____

Group 3

- 1. _____
- 2. _____

Group 4

- 1. _____
- 2. _____

Group 5

- 1. _____
- 2. _____

Group 6

- 1. _____
- 2. _____

Group 7

- 1. _____
- 2. _____

Group 8

- 1. _____
- 2. _____

Group 9

1. _____

2. _____

Group 10

1. _____

2. _____

Group 11

1. _____

2. _____

Group 12

1. _____

2. _____

Group 13

1. _____

2. _____

Group 14

1. _____

2. _____

Group 15

1. _____

2. _____

Group 16

1. _____

2. _____