

# AP Statistics First Semester Project: Response Bias

**The Project:** You and your partner (or you by yourself) 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:

- Can the wording of a question create response bias?
- Does providing additional information create response bias?
- Do the characteristics of the interviewer create response bias?
- Does anonymity change the responses to sensitive questions?
- Does manipulating the answer choices/order of answer choices change the response?
- Can revealing other peoples' answers to a question create response bias?

## Proposal (25 points):

- The proposal is due: Monday, November 11th.
- The proposal will be worth 25% of the grade, so don't treat it casually.
- If the proposal isn't approved the first time, you will need to resubmit it.

In your proposal, you should:

- Describe your topic and state which type of response bias you are investigating
- Describe how you will obtain your subjects in an unbiased manner (minimum sample size is 50). This must be practical!! Your population does not need to be from school (but can be) nor should you interrupt any classes.
- Describe what your questions will be and how they will be asked, including how you will incorporate the principles of a good experiment and avoid potentially confounding variables. You should also indicate what your hypotheses are. Convince me that you have a good design!

## Poster (75 points):

- The poster is due: TBD
- The key to a good statistical poster is communication and organization. Make sure all components of the poster are focused on answering the question of interest.
- The poster should be standard sized and not on foam board. Make sure the poster is light enough to be hung on the wall.

The poster should include:

- Title (in the form of a question).
- Introduction. In the introduction you should discuss what question you are trying to answer, why you chose this topic, and what your hypotheses are.
- Data Collection. In this section you will describe how you obtained your data. Be specific.
- Graphs and Summary Statistics. Make sure the graphs are well labeled, easy to compare, and help answer the question of interest. The graphs should "stand alone"!
- Discussion and Conclusions. In this section, you will state your conclusions. You should also discuss any errors you made, what you could do to improve the study next time, and any other comments based on your own critical reflection on the project.
- Live action pictures of your data collection in progress.

**Presentation:** Each pair (or individual) will be required to give a 5 minute oral presentation to the class. Both members need to participate equally and should be prepared to answer questions.

<b>Response Bias Project</b>	<b>4 = Complete</b>	<b>3 = Substantial</b>	<b>2 = Developing</b>	<b>1 = Minimal</b>
<b>Intro</b>	<ul style="list-style-type: none"> <li>Describes the context of the research</li> <li>Has a clearly stated question of interest</li> <li>Provides a hypothesis about the answer to the question of interest</li> <li>Question of interest is of appropriate difficulty</li> </ul>	<ul style="list-style-type: none"> <li>Introduces the context of the research and has a specific question of interest</li> <li>Suggests hypothesis OR has appropriate difficulty</li> </ul>	<ul style="list-style-type: none"> <li>Introduces the context of the research and has a specific question of interest OR has question of interest and a hypothesis</li> </ul>	<ul style="list-style-type: none"> <li>Briefly describes the context of the research</li> </ul>
<b>Data Collection</b>	<ul style="list-style-type: none"> <li>Method of data collection is clearly described</li> <li>Includes appropriate randomization</li> <li>Describes efforts to reduce bias, variability, confounding</li> <li>Quantity of data collected is appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Method of data collection is clearly described</li> <li>Some effort is made to incorporate principles of good data collection</li> <li>Quantity of data is appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Method of data collection is described</li> <li>Some effort is made to incorporate principles of good data collection</li> </ul>	<ul style="list-style-type: none"> <li>Some evidence of data collection</li> </ul>
<b>Graphs and Summary Statistics</b>	<ul style="list-style-type: none"> <li>Raw data is included in a two-way table (categorical data) or in two lists (quantitative data)</li> <li>Appropriate graphs are included</li> <li>Graphs are neat, easy to compare and clearly labeled, including clear identification of treatments</li> <li>Appropriate summary statistics are included in discussion (e.g., percentages for categorical data, means for quantitative data)</li> </ul>	<ul style="list-style-type: none"> <li>Appropriate graphs are included (to help answer the question of interest)</li> <li>Graphs are neat, clearly labeled, and easy to compare</li> <li>Appropriate summary statistics or raw data are included</li> </ul>	<ul style="list-style-type: none"> <li>Graphs and summary statistics are included</li> </ul>	<ul style="list-style-type: none"> <li>Graphs or summary statistics are included</li> </ul>
<b>Conclusions</b>	<ul style="list-style-type: none"> <li>Uses the results of the study to correctly answer question of interest</li> <li>Discusses what inferences are appropriate based on study design</li> <li>Shows good evidence of critical reflection (discusses possible errors, shortcomings, limitations, alternate explanations, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Makes a correct conclusion</li> <li>Discusses what inferences are appropriate or shows good evidence of critical reflection</li> </ul>	<ul style="list-style-type: none"> <li>Makes a partially correct conclusion</li> <li>Shows some evidence of critical reflection</li> </ul>	<ul style="list-style-type: none"> <li>Makes a conclusion</li> </ul>
<b>Poster, Presentation, &amp; Communication</b>	<ul style="list-style-type: none"> <li>Has a clear, holistic understanding of the project</li> <li>Poster is well organized, neat and easy to read</li> <li>Poster included pictures of data collection in progress and is visually appealing</li> <li>Oral presentation is well organized</li> </ul>	<ul style="list-style-type: none"> <li>Has a clear, holistic understanding of the project, but poster is unorganized, lacks pictures, isn't visually appealing or oral presentation is not organized</li> </ul>	<ul style="list-style-type: none"> <li>The poster and oral presentation have several problems</li> </ul>	<ul style="list-style-type: none"> <li>Communication and organization are poor</li> </ul>