**L02: Class Assignment**

In this activity, we will focus on the first step of the Statistical Process: **D**esign the study.

In the United States, there has been a recent push to enact laws against driving while using a cell phone. This is based on the *assumption* that it is more dangerous to drive while talking on a cell phone. In this activity, you will design a study to determine if using a cell phone while driving increases the danger associated with driving.

**Part I:** Answer the following questions.

1. A person can talk on a cell phone by using a hand-held device (i.e. holding the phone while driving) or using a hands-free device (using a headset to talk.) Do you think there will be a significant difference in the danger associated with these two methods? Justify your answer.
2. What are some ways to measure whether it is more dangerous to drive while talking on a cell phone than when not talking on a phone? Give at least three different ways to assess this.
3. Which would be better to test whether talking on a cell phone increases the danger associated with driving: a designed experiment or an observational study? Why?
4. How could you design a study to determine if talking on a cell phone increases the danger associated with driving?

**Part II:** You will complete this part with your group.

With a small team, design a study to determine if talking on a cell phone increases the danger associated with driving. When you are unified, answer the following questions. Write your answers on your own paper in the space provided.

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| Questions | Answers |
| 1. What will each subject do as part of your study? Give a detailed explanation for the experience of a particular subject. |  |
| 2. Is your study an observational study or a designed experiment? |  |
| 3. How will you measure if talking on a cell phone increases the danger associated with driving? |  |
| 4. Is the variable in Question 3 categorical or quantitative? |  |
| 5. What is the population for your study? |  |
| 6. What is the sample for your study? |  |
| 7. How is the principle of randomness applied in your study? |  |
| 8. How many times will a particular subject drive during your study? If they will be driving more than once, explain the difference in their experience each time they drive. |  |
| 9. What equipment will you need as part of the study? (What will the subjects drive? What cellular devices will they use? Will any other equipment be needed?) |  |
| 10. Will both hand-held and hands-free devices be included in your study? Why or why not? |  |
| 11. How many subjects will you recruit for the study? |  |
| 12. What sampling scheme will you use to obtain a sample of subjects from the population: a simple random sample (SRS), a systematic sample, a cluster sample, a stratified sample, or a convenience sample? Explain why you chose this method. |  |

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| 13. How many subjects can be participating at any given time? |  |
| 14. Will the subjects be compensated for their time? If so, how much will they receive? If not, what incentive will they have to participate? |  |
| 15. How long will each subject spend taking part in your study? In other words, what is their total time commitment? |  |
| 16. How long will the entire study take to complete from the time the first subject starts until the time the last subject finishes? |  |
| 17. How many researchers will collaborate on this study? Will there be one expert or a team of experts? |  |
| 18. What is the approximate budget for your study? (Figure $125,000 salary per researcher per year. Estimate your total equipment costs. Be sure to include compensation for the subjects, if applicable. Approximate any additional costs such as automobile insurance or cellular service, if needed.) |  |
| 19. Who will pay for this study? Why are they willing to pay for this study? |  |

Please submit Parts I and II in I-Learn for grading. These will be scored based on the completeness and quality of your responses.