ESP 178 Applied Research Methods

MIDTERM

NAME: __________________________

You have the entire class period to finish this midterm. Your score on the midterm will count for 10% of your final grade. Keep your answers short and to the point – say just enough to demonstrate your basic comprehension of the concept. There are 74 possible points on this exam.

Part 1:
Although highway safety has improved over the last several decades, there were nearly 6.2 million vehicle crashes in the U.S. in 2004, over 38,000 of them fatal (NHTSA 2005). Although driving under the influence of alcohol is a factor in as many as 40% of fatal crashes, rates of driving under the influence have declined. However, cell phone use while driving has increased and is now a contributing factor in a growing share of crashes. A 2003 study showed that cell phone conversations, even with hands-free cell phones, slowed the reaction of drivers to vehicles braking in front of them (Strayer, et al. 2003). Other studies show that cell phones are a greater distraction for young and relatively inexperienced drivers (Ferguson 2003). In order to reduce this risky behavior, policy makers need a better understanding of the factors that influence cell phone use among young drivers.

1. How would an inductive study differ from a deductive study for the question: What factors influence the use of cell phones among young drivers? Briefly describe each type of study. (4 pts)

2. Draw a conceptual model for this study, with two independent variables you think could be important predictors of cell phone use while driving and indicate the hypothesized direction of the relationship. (Note: we are not looking for any particular independent variables here – you choose) (4 pts)
3. In a survey of individuals, how could you measure cell phone use while driving at…
   a. … a nominal level? (2 pts)
   b. … ordinal level? (2 pts)
   c. … ratio level? (2 pts)

4. How would you test the reliability of your nominal measure of cell phone use while driving? (2 pts)

5. What “gold standard” could you use to test the validity of your measure? (2 pts)

6. What would be your unit of observation for this study? (2 pts)

7. What would be your population for this study? (2 pts)

8. Let’s say you decide to do a survey of your population. What sampling frame could you use? What is a possible limitation of this sampling frame? (4 pts)

9. Why might you want to use stratified sampling for this study? On what variable would you want to stratify? (4 pts)

10. Bonus: what are possible sampling frames for your strata? (2 pts)
11. Why might you want to use cluster sampling for this study? How would you define your clusters? What’s the next step after defining your clusters? (4 pts)

12. How would non-probability sampling differ from these approaches? What’s the downside to doing non-probability sampling? (2 pts)

13. Let’s say you find a statistical association between the number of friends a person has and his or her cell phone use while driving. Can you conclude that the number of friends has a causal effect on cell phone use? Why or why not? (4 pts)

14. What kind of study design could you use to ensure that the number of friends precedes cell phone use? Explain how this would work. (4 pts)

15. Explain how the association might be spurious. A diagram might help. (4 pts)

16. What sort of mechanism might explain the relationship between your independent variable and cell phone use while driving – what are possible intervening variables? (4 pts)
17. Let’s say you use available data to compare average age and share of crashes involving cell phone use by city in California. Your analysis shows that cities with a younger population on average have higher cell phone crash rates. What’s wrong with concluding from this analysis that younger drivers are more likely to be involved in cell-phone crashes? What’s this error in casual reasoning called? (4 pts)

References:


THE EFFECTS OF PUBLIC COMMITMENT AND GROUP FEEDBACK ON CURBSIDE RECYCLING

ISER G. DeLEON obtained his master's degree in psychology at Western Michigan University. He is now a doctoral student at the University of Florida. His current research pursuits involve the assessment and treatment of self-injurious behavior in the developmentally disabled population.

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ABSTRACT: This study examined the effects of three community interventions that rely on socially mediated consequences, rather than financial incentives, to promote consumer recycling. Households in the commitment-only group signed a letter making a public commitment to recycle and giving permission to publish their names in a local newspaper. The feedback-only group received weekly feedback on pounds of recyclable paper generated by their group. A combined-intervention group received a combination of the two previous interventions. Relative to baseline, the feedback-only and the combined-intervention groups increased the weight of recyclable paper by 25.47% and 40.00%, respectively. In contrast, neither the commitment-only group nor a no-intervention control group showed substantial changes over the same period. The implications of these interventions for developing community-wide recycling programs are discussed.

a. What is the primary research question the article addresses? (2 pts)

b. What type of research question is this? (2 pts)

c. What is the dependent variable? (2 pts)
d. What is the independent variable? (2 pts)

e. Draw a conceptual model of this research question, including the directions of association. Use (+/-) as the direction of association where there is no clear hypothesis. (2 pts)

f. What type of study design is this? Be specific. (2 pts)

g. Describe one potential threat to internal validity. (2 pts)

h. What do you think the implications of the study for recycling programs are? (2 pts)