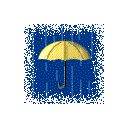
**Driving in Inclement Weather**

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**Overview**  
Many people believe that weather patterns influence driving safety. As a result, there are many web sites and other publications dedicated to giving people tips about how to drive in various weather conditions (see references and links below). Additionally, car accidents are often attributed to bad weather (e.g., see Taylor & Quinn, 1991). This study examines the beliefs and behaviors of people with respect to the important topic of driving in inclement weather.

The participants in this study filled out a questionnaire consisting of some demographic questions and then questions asking about their transportation habits and other beliefs concerning inclement weather. This questionnaire was administered to a convenience sample of 61 University of Houston - Downtown students at various locations (i.e., classrooms, hallways, and the food court).

**Questions to Answer**  
Is gender or age related to the likelihood of driving in inclement weather? Does the number of accidents that someone thinks occur during inclement weather relate to how often he or she takes public transportation or chooses to drive during inclement weather?   
Design Issues   
This is a correlational study, so we cannot infer causation.   
**Descriptions of Variables**

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| **Variable** | | **Description** |
| Age | | The age of the participant in years |
| Gender | | 1 = female, 2 = male |
| Cho2drive | | How often he or she chooses to drive in inclement weather 1 = always, 3 = sometimes, 5 = never |
| Pubtran | | % of travel time spent on public transportation in inclement weather |
| Accident | | % of accidents thought to occur from driving in inclement weather |
| **References** | | |
| Galski, T., Ehle, H. T, & Bradley, W. J. (1998). Estimates of driving abilities and skills in different conditions. American Journal of Occupational Therapy, 52, 268-275.  Griffin, J., & Murdock, G. (1993, August). Wet weather driving. Consumers' Research Magazine, 76, 2.  Taylor, G. W., & Quinn, H. (1991, January 14). An arctic winter rage. Maclean's, 104, 12-13. | | |

**Links**

[Driving on Wet Roads](javascript:newWindow2('http://www.familycar.com/Articles/WaterHazards.htm','750'))  
[Jokes about Driving in Inclement Weather](javascript:newWindow2('http://www.doggiesnot.com/morinc.htm','750'))

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| **Exercises** |
| 1. What are the mean and median ages? 2. Plot a histogram of the distribution of the ages. Using this plot and the information from #1, determine if the age variable is normally distributed, positively skewed, or negatively skewed. 3. What is the mean percentage of time that the participants in this study spend traveling on public transportation during inclement weather? 4. What is the standard deviation of Pubtran? 5. What is the correlation between age and how often the person chooses to drive in inclement weather? Is this correlation statistically significant at the .01 level? Are older people more or less likely to report that they drive in inclement weather? 6. Compute a 95% confidence interval on the correlation between age and how often the person chooses to drive in inclement weather. 7. Is there a gender difference in the likelihood to drive in inclement weather? Do the following exercises to find out.    1. Plot side-by-side (parallel) box plots of Cho2drive by gender.    2. What is the mean difference in how much men and women choose to drive in inclement weather?    3. Perform an independent samples t test.    4. Is there any evidence that the assumption of homogeneity of variance is violated?    5. What is the 95% confidence interval for the mean difference?    6. Can you reject the null hypothesis if α = .05? 8. What is the correlation between how often a person chooses to drive in inclement weather and the percentage of accidents the person believes occur in inclement weather? Is this correlation significantly different from 0? 9. What is the correlation between how often someone rides public transportation in inclement weather (Pubtran) and what percentage of accidents the person thinks occur in inclement weather (Accident)? 10. Use linear regression to predict how often someone rides public transportation in inclement weather from what percentage of accidents that person thinks occur in inclement weather. (Pubtran by Accident)     1. Create a scatter plot of this data and add a regression line.     2. What is the slope?     3. What is the intercept?     4. Is the relationship at least approximately linear?     5. Test if the slope is significantly different from 0.     6. Comment on possible assumption violations for the test of the slope.     7. What is the standard error of the estimate? |