

Homework 1

Due 10/23/25 (pdf format please)

For all questions, please show your work or include a copy of the output, whichever is relevant. Please type your answers in report form, as if you were describing results in a published study. Include the relevant descriptive and statistical values in your write-up (e.g., proportions, chi-squared). Your answers should be **in your own words** and most answers should be approximately one paragraph. You may use **SPSS, R, or SAS** for any of the analyses.

For each of the problems below, I request a specific analysis for the data set I have supplied, which are available at <http://web.pdx.edu/~newsomj/data.htm>. However, you also are **free to use your own data set** for any of the problems. If you use your data set, make sure the variable types match the analysis requested for the problem. **If using a different data set from the one I provide, please supply a one paragraph description** of the study and the variables you will be using.

Data for the next questions come from the Pew American Trends Panel survey of participants who identified as Hispanic from the American Trends Panel and Ipsos KnowledgePanel in March 2021 (`pewtrend.sav`).¹ The survey included questions about COVID, personal finances, political attitudes, and attitudes toward immigration policies.

1. Conduct a single-sample z -proportions test for the question “All in all, are you satisfied or dissatisfied with the way things are going in this country today?” (`country`) to determine whether the respondents were overall more satisfied (1) or dissatisfied (0). Be sure to request and report your instructor’s recommended version of the test. Be sure to include the relevant descriptive statistics as well as the test value, p -value, confidence limits and margin of error. *(Note: if using your own data, you will need one binary variable for which you can ask whether one category has a higher proportion than the other).*

2a. Use a 2×2 chi-square test to find out whether there is a significant difference in satisfaction with how the country is going (`country`) between those who have and have not reported being unfairly stopped by police “Please indicate whether or not each of the following has happened to you in the past 12 months: Been unfairly stopped by police” (`police`). Interpret all of your results in terms of the research problem, including the appropriate percentages, Pearson χ^2 significance test, and phi *(Note: if using your own data, you will need two binary variables for which you can ask whether one group has a higher proportion of an event than another).*

2b. Show how to obtain the phi statistic, the risk difference, the relative risk ratio, and the odds ratio by hand. Give an interpretation of the odds ratio, the risk difference, and the relative risk ratio in terms of the research problem.

3. Use a 2×2 chi-square test to find out whether there is a significant gender (`gender`)² difference in whether the respondent ever reported being unfairly stopped by police (`police`). Interpret all of your results in terms of the research problem, including the appropriate percentages, Pearson χ^2 and significance test, and phi. *(Note: if using your own data, you will need two binary variables for which you can ask whether one group has a higher proportion of an event than another).*

4a. Use a Breslow-Day three-way test to investigate whether the association between reported unfair police stops (`police`) and satisfaction (`country`) differs between women and men (`gender`). Report and interpret the results of the B-D test and the common odds ratio.

¹ <https://www.pewresearch.org/dataset/american-trends-panel-wave-86/>

² Only two gender categories are used here. This survey did include a third nonbinary option. There were very few who chose this option and to keep things simple for the purpose of this assignment I eliminated these individuals.

- 4b. Follow up the previous analysis by conducting 2×2 chi-square tests of `police` \times `country` separately for men and women. Interpret all of your results in terms of the research problem, including the appropriate percentages, Pearson χ^2 and significance test, and the phi. Be sure to discuss how your results explain the three-way test in the previous problem.
5. Data for this problem come from a study conducted by Karen Seccombe to examine the changes from before and after a policy change that eliminated health care coverage for people on the Oregon Health Plan (OHP). Download the data from the data page (`tanf.sav`). Before (`stig1`) and after (`stig2`) the policy change respondents were asked “do you feel stigmatized using OHP by your health provider”. Use McNemar’s test to determine whether there was a significant change in the number of people replying “yes” to this question. Report and interpret your findings, including the appropriate percentages and the significance test.