Case Problems #2, Due 7/15(16)/2026

1. Solve one of the following two case studies:

Case Problem 1: A Bipartisan Agenda for Change

In a study conducted by Zogby International for the *Democrat and Chronicle,* more than 700 New Yorkers were polled to determine whether the New York state government works. Respondents surveyed were asked questions involving pay cuts for state legislators, restrictions on lobbyists, term limits for legislators, and whether state citizens should be able to put matters directly on the state ballot for a vote. The results regarding several proposed reforms had broad support, crossing all demographic and political lines.

Suppose that a follow-up survey of 100 individuals who live in the western region of New York was conducted. The party affiliation (Democrat, Independent, Republican) of each individual surveyed was recorded, as well as their responses to the following three questions.

1. *Should legislative pay be cut for every day the state budget is late?*
   Yes _____ *No* _____
2. *Should there be more restrictions on lobbyists?*
   Yes _____ *No* _____
3. *Should there be term limits requiring that legislators serve a fixed number of years?*
   Yes _____ *No* _____

The responses were coded using 1 for a Yes response and 2 for a No response. The complete data set is available in the file *NYReform*.

(a) Use descriptive statistics to summarize the data from this study. What are your preliminary conclusions about the independence of the response (Yes or No) and party affiliation for each of the three questions in the survey?

(b) With regard to question 1, test for the independence of the response (Yes and No) and party affiliation. Use a = 0.05.

(c) With regard to question 2, test for the independence of the response (Yes and No) and party affiliation. Use a = 0.05.

(d) With regard to question 3, test for the independence of the response (Yes and No) and party affiliation. Use a = 0.05.

(e) Does it appear that there is broad support for change across all political lines? Explain.

Case Problem 2: Fuentes Salty Snacks, Inc.

Six months ago, Fuentes Salty Snacks, Inc., added a new flavor to its line of potato chips. The new flavor, candied bacon, was introduced through a nationwide rollout supported by an extensive promotional campaign. Fuentes' management is convinced that quick penetration into grocery stores is a key to the successful introduction of a new salty snack product, and management now wants determine whether availability of Fuentes' Candied Bacon Potato Chips is consistent in grocery stores across regions of the United States. The marketing department has selected random samples of 40 grocery stores in each of its eight U.S. sales regions:

- New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont)
- Mid-Atlantic (New Jersey, New York, and Pennsylvania)
- Midwest (Illinois, Indiana, Michigan, Ohio, and Wisconsin)
- Great Plains (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota Oklahoma, and South Dakota)
- South Atlantic (Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, and Washington, D.C.)
- Deep South (Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Tennessee, and Texas)
- Mountain (Arizona, Colorado Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming)
- Pacific (Alaska, California, Hawaii, Oregon, and Washington)

The stores in each sample were then contacted, and the manager of each store was asked whether the store currently carries Fuentes' Candied Bacon Potato Chips. The complete data set is available in the file *FuentesChips*.

Fuentes' senior management now wants to use these data to assess whether penetration of Fuentes' Candied Bacon Potato Chips in grocery stores is consistent across its eight U.S. sales regions. If penetration of Fuentes' Candied Bacon Potato Chips in grocery stores differs across its eight U.S. sales regions, Fuentes' management would also like to identify sales regions in which penetration of Fuentes' Candied Bacon Potato Chips is lower or higher than expected.

(a) Use descriptive statistics to summarize the data from Fuentes' study. Based on your descriptive statistics, what are your preliminary conclusions about the penetration of Fuentes' Candied Bacon Potato Chips in grocery stores across its eight U.S. sales regions?

(b) Use the data from Fuentes' study to test the hypothesis that the proportion of grocery stores that currently carries Fuentes' Candied Bacon Potato Chips is equal across its eight U.S. sales regions. Use $a = 0.05$.

(c) Do the results of your hypothesis test provide evidence that Fuentes' Candied Bacon Potato Chips have penetrated grocery stores across its eight U.S. sales regions? In which sales region(s) is penetration of Fuentes' Candied Bacon Potato Chips lower or higher than expected? Use the Marascuilo pairwise comparison procedure at $a = 0.05$ to test for differences between regions.

註：各組組員學號總和除以二，根據餘數為0或1，回答Case Problem #1或Case Problem #2。

2. (a) What are the requirements for applying the chi-square test?

(b) What assumptions must be satisfied when conducting an analysis of variance (ANOVA)? Explain why each assumption is important.