

5. The makers of Spam (the weird meat, not the annoying e-mails) were planning to enter a new Asian market. Before the final decision about launching its product, management decided to test market the products in two cities. After reviewing the various cities in terms of external criteria, such as demographics, shopping characteristics, and so on, the research department settled on Yokohama and Hiroshima.

- What type of sampling method was used?
  - Critically evaluate the method used.
6. A Credit Union chain in Philadelphia has witnessed a sharp increase in the number of branches it operates and in the company's gross sales and net profit margin in the past five years. Management plans to offer free retirement planning and consultation, a service for which other competing credit unions, banks, and brokerage firms charge a substantial price. To offset the increase in operating expenses, management plans to raise the rates on other services by 7%. Before introducing this new service and increasing rates, management decides to do a survey using customers as a sample and employing the method of quota sampling. Your assistance is required in planning the study.

- What variables would you suggest for the quotas? Why? List the variables with their respective levels.
- Management has kept close track of the demographic characteristics of customers during the five-year period and decides that these would be most relevant in identifying the sample elements to be used.

Variable	Level	%Customers
Age	0-15 years	5
	16-30 years	30
	31-45 years	30
	46-60 years	15
	61-75 years	15
	76 years+	5
Gender	Men	42
	Women	58
Income	\$0-\$9,999	10
	\$10,000-\$19,999	20
	\$20,000-\$29,999	30
	\$30,000-\$39,999	20
	\$40,000+	20

Based on these three quota variables, indicate the characteristics of a sample of 200 subjects.

c. Discuss the possible sources of bias with the sampling method.

7. The following table lists the results of one question taken from a survey conducted for Joe's Bar and Grill. The Grill has recently undergone renovations, and with the new look, management has decided to

change the menu. They are interested in knowing how well customers like the new menus.

- Calculate the mean, standard deviation, and confidence interval for menu preference assuming simple random sampling was used.

Meal Eaten at Joe's Bar and Grill	Respondent	Preference on a 20-Point Scale
Breakfast	1	3
Breakfast	2	5
Breakfast	3	4
Breakfast	4	5
Breakfast	5	5
Lunch	6	10
Lunch	7	9
Lunch	8	8
Lunch	9	10
Lunch	10	10
Lunch	11	14
Dinner	12	15
Dinner	13	15
Dinner	14	14
Dinner	15	16

- Calculate the mean, standard deviation, and confidence interval for menu preference assuming stratified sampling based on the meal eaten was used (i.e., the strata being breakfast, lunch, and dinner customers). Assume that  $N/N = 1/3$  for each stratum. How do the results compare with those you obtained with the previous sampling plan? Why?

8. The Nevada National Bank, headquartered in Las Vegas, has some 400,000 users of its credit card scattered throughout the state. The application form for the credit card ask for the usual information: name, address, phone, income, education, and so on that is typical of such applications. The bank is interested in determining if there is any relationship between the uses of the card and the socioeconomic characteristics of the user; e.g., is there a difference in the characteristics of those people who use the credit card for major purchases only (e.g., appliances and those who use it for minor as well as major purchases)?

- Identify the population and sampling frame that would be used by the bank.
- Indicate how you would draw a simple random sample from the sampling frame identified in part b.
- Indicate how you would draw a stratified sample from the sampling frame.
- Indicate how you would draw a cluster sample from the sampling frame.
- Which method would be preferred? Why?