

4 Chapter 1

know whether its increased business is due to the new buffet or the extra traffic created by the theater.

25. a. Possibly; no. Stratified random sampling can employ either the same sample size for each stratum or different sample sizes for the various strata. It results in a random sample only when the sample size for each stratum is proportional to the size of the stratum -- i.e., the same proportion (and not the same number) of each stratum is selected for the sample. If the strata are all the same size, then use the same sample size for each; if one stratum is half the size of the others, then its sample size should be half the other sample sizes. If one stratum is half the size of the others and the same sample size is used for each of the strata, then an element in the smaller stratum has a larger chance of being selected than an element in a larger strata -- and that violates the definition of a random sample that requires that each element has the same chance of being selected. Stratified sampling can never result in a simple random sample. It guarantees that the total sample will always include elements from each of the strata, and that total samples without any elements from one of the strata can not occur -- and that violates the definition of simple random sampling that requires that each total sample has the same chance of being selected.
- b. Possibly; no. When each element in the population is in one and only cluster, cluster sampling always results in a random sample. The chance that any element is selected is the chance that its cluster is selected; since each cluster has the same chance of being selected, each element has the same chance of being selected -- and that satisfies the definition of a random sample. Cluster sampling can never result in a simple random sample. It guarantees that total samples with elements from each of the clusters can not occur -- and that violates the definition of simple random sampling that requires that each total sample has the same chance of being selected.

1-5 Introduction to Excel

1.
 - a. A collection of data organized into rows and columns.
 - b. Worksheet.
 - c. An Excel data file.
 - d. 3.

3.
 - a. Items too big for the allotted cells are accepted, but partially hidden behind adjacent occupied cells to the right. Alpha-numeric items are left justified within each cell, and numerical values are right justified within each cell.
 - b. Click on the **save** icon (diskette) on the tools bar and follow the
 - c. The printed worksheet is reproduced in the same format it appeared on the screen -- i.e. with the same amount of material showing and same within-cell justification, but the cell lines do not appear.
 - d. Click on the lower **X** in the upper right corner.
 - e. Click on the **open** icon (opening file folder) on the tools bar.
 - f. When the **delete** key is pressed the highlighted cells become empty -- i.e., the items that occupied the cells have been deleted. When the **undo** arrow is clicked, the items reappear.

5. same as #3
7. There will be 8 columns, with 1 title row followed by 36 rows of data.
9. There will be 6 columns, with 1 title row followed by 30 rows of data.
11. Clicking on the **help** cue on the top line activates an interactive help icon that asks for a question. Typing the word **save** leads to a series of prompting questions to click on. The path indicating a desire to **save a workbook** and then save a **copy of a workbook using a different name or in a different location** leads to the desired information -- viz., click on the **file** cue on the top line, then click on the **save as** option and follow the directions.

Review Exercises

1.
 - a. Discrete, since the number of shares held must be an integer.
NOTE: Even if partial shares are allowed (e.g., $5\frac{1}{2}$ shares), the number of shares must be some fractional value and not any value on a continuum -- e.g., a person could not own π shares.
 - b. Ratio, since differences between values are consistent and there is a natural zero.
 - c. Stratified, since the set of interest (all stockholders) was divided into subpopulations (by states) from which the actual sampling was done.
 - d. Statistic, since the value is determined from a sample and not the entire population.
 - e. There is no unique correct answer, but the following are reasonable possibilities.
(1) The proportion of stockholders holding above that certain number of shares (which would vary from company to company) that would make them "influential." (2) The proportion of stockholders holding below that certain number of shares (which would vary from company to company) that would make them "insignificant." (3) The numbers of shares (and hence the degree of influence) held by the largest stockholders.
 - f. There are several possible valid answers. (1) The results would be from a self-selected group (i.e., those who chose to respond) and not necessarily a representative group. (2) If the questionnaire did not include information on the numbers of shares owned, the views of small stockholders (who are probably less knowledgeable about business and stocks) could not be distinguished from those of large stockholders (whose views should carry more weight).
2.
 - a. Systematic, since the selections are made at regular intervals.
 - b. Convenience, since those selected were the ones who happened to attend.
 - c. Cluster, since the stockholders were organized into groups (by stockbroker) and all the stockholders in the selected groups were chosen.
 - d. Random, since each stockholder has the same chance of being selected.
 - e. Stratified, since the stockholders were divided into subpopulations from which the actual sampling was done.
3. Let N be the total number of full-time students and n be the desired sample size.
 - a. Random. Obtain a list of all N full-time students, number the students from 1 to N , select n random numbers from 1 to N , and poll each student whose number on the list is one of the random numbers selected.
 - b. Systematic. Obtain a list of all N full-time students, number the students from 1 to N ,