

Problems and Exercises

1. Create a line chart for the closing prices for all years, and a stock chart for the high/low/close prices for August 2013 in the Excel file *S&P 500*.
2. The Excel file *Traveler* contains the months of a year and the number of travelers that arrive by flight in the morning (AM) and the evening (PM). Prepare a line chart showing the number of AM and PM travelers for each month.
3. The Excel file *Facebook Survey* provides data gathered from a sample of college students. Create a scatter diagram showing the relationship between Hours online/week and Friends.
4. The Excel file *Sales* contain list of the products in different regions. Sort the list of products in ascending order of the sales volume in Asia. Arrange the regions (from left to right) in ascending order for the sales volume of Product 5 and determine which region has the highest sales.
5. Create a bubble chart for the first five colleges in the Excel file *Colleges and Universities* for which the x-axis is the Top 10% HS, y-axis is Acceptance Rate, and bubbles represent the Expenditures per Student.
6. The Excel file *Expenditure* shows the spending of a country on various sports during a particular year. Create a pie chart and determine the percentage of total spending on tennis.
7. The Excel file *Internet Usage* provides data about users of the Internet. Construct stacked bar charts that will allow you to compare any differences due to age or educational attainment and draw any conclusions that you can. Would another type of charts be more appropriate?
8. The Excel file *McDonald's* contains the monthly sales data of their burgers in a year. Construct the histogram and predict which type of burger has the highest sale.
9. In the Excel file *Banking Data*, apply the following data visualization tools:
 - a. Use data bars to visualize the relative values of Median Home Value.
 - b. Use color scales to visualize the relative values of Median Household Wealth.
 - c. Use an icon set to show high, medium, and low bank balances, where high is above \$30,000, low is below \$10,000, and medium is anywhere in between.
10. Apply three different colors of data bars to lunch, dinner, and delivery sales in the Excel file *Restaurant Sales* to visualize the relative amounts of sales. Then sort the data (hint: use a custom sort) by the day of the week beginning on Sunday. Compare the nonsorted data with the sorted data as to the information content of the visualizations.
11. For the *Store and Regional Sales* database, apply a four-traffic light icon set to visualize the distribution of the number of units sold for each store, where green corresponds to at least 30 units sold, yellow to at least 20 but less than 30, red to at least 10 but less than 20, and black to below 10.
12. For the Excel file *Closing Stock Prices*,
 - a. Apply both column and line sparklines to visualize the trends in the prices for each of the four stocks in the file.
 - b. Compute the daily change in the Dow Jones index and apply a win/loss sparkline to visualize the daily up or down movement in the index.
13. Convert the *Store and Regional Sales* database to an Excel table. Use the techniques described in Example 3.11 to find:
 - a. the total number of units sold
 - b. the total number of units sold in the South region
 - c. the total number of units sold in December
14. Convert the *Purchase Orders* database to an Excel table. Use the techniques described in Example 3.11 to find:
 - a. the total cost of all orders
 - b. the total quantity of airframe fasteners purchased
 - c. the total cost of all orders placed with Manley Valve.
15. The Excel file *Economic Poll* provides some demographic and opinion data on whether the economy is moving in the right direction. Convert this data into an Excel table, and filter the respondents who are homeowners and perceive that the economy is not moving in the right direction. What is the distribution of their political party affiliations?

16. The total runs scored by 30 players in a test cricket match in the year 2011 were recorded to determine which score was the highest and which the lowest. The runs are:

423, 369, 387, 411, 393, 394, 371, 377, 389, 409, 392, 408, 431, 401, 363, 391, 405, 382, 400, 381, 399, 415, 428, 422, 396, 372, 410, 419, 386, 390

Construct the frequency distribution table and calculate relative frequency.

17. Sort the data in the Excel file *Automobile Quality* from highest to lowest number of problems per 100 vehicles using the sort capability in Excel.
18. In the *Purchase Orders* database, conduct a Pareto analysis of the Cost per order data. What conclusions can you reach?
19. Use Excel's filtering capability to (1) extract all orders for control panels, (2) all orders for quantities of less than 500 units, and (3) all orders for control panels with quantities of less than 500 units in the *Purchase Orders* database.
20. In the *Sales Transactions* database, use Excel's filtering capability to extract all orders that used PayPal, all orders under \$100, and all orders that were over \$100 and used a credit card.
21. The Excel file *Credit Risk Data* provides information about bank customers who had applied for loans.⁶ The data include the purpose of the loan, checking and savings account balances, number of months as a customer of the bank, months employed, gender, marital status, age, housing status and number of years at current residence, job type, and credit-risk classification by the bank.
- Compute the combined checking and savings account balance for each record in the database. Then sort the records by the number of months as a customer of the bank. From examining the data, does it appear that customers with a longer association with the bank have more assets? Construct a scatter chart to validate your conclusions.
 - Apply Pareto analysis to draw conclusions about the combined amount of money in checking and savings accounts.
 - Use Excel's filtering capability to extract all records for new-car loans. Construct a pie chart showing the marital status associated with these loans.
 - Use Excel's filtering capability to extract all records for individuals employed less than 12 months. Can you draw any conclusions about the credit risk associated with these individuals?
22. The Excel sheet *Engagement* contains the number of rings sold each day of the week in a jewelry store chain in different cities across India. Use sparklines to summarize the data.
23. Use the *Histogram* tool to construct a frequency distribution of lunch sales amounts in the *Restaurant Sales* database.
24. A community health-status survey obtained the following demographic information from the respondents:

Age	Frequency
18 to 29	297
30 to 45	743
46 to 64	602
65 +	369

Compute the relative frequency and cumulative relative frequency of the age groups.

25. Construct frequency distributions and histograms for the numerical data in the Excel file *Cell Phone Survey*. Also, compute the relative frequencies and cumulative relative frequencies.
26. Use the *Histogram* tool to develop a frequency distribution and histogram with six bins for the age of individuals in the Excel file *Credit Risk Data*. Compute the relative and cumulative relative frequencies and use a line chart to construct an ogive.
27. Use the *Histogram* tool to develop a frequency distribution and histogram for the number of months as a customer of the bank in the Excel file *Credit Risk Data*. Use your judgment for determining the number of bins to use. Compute the relative and cumulative relative frequencies and use a line chart to construct an ogive.
28. Construct frequency distributions and histograms using the Excel *Histogram* tool for the Gross Sales and Gross Profit data in the Excel file *Sales Data*. First let Excel automatically determine the number of bins

⁶Based on Efraim Turban, Ramesh Sharda, Dursun Delen, and David King, *Business Intelligence: A Managerial Approach*, 2nd ed. (Upper Saddle River, NJ: Prentice Hall, 2011).

and bin ranges. Then determine a more appropriate set of bins and rerun the *Histogram* tool.

29. The Excel sheet *Sampling* contains the responses on a scale of 1 to 5 from consumers regarding a product. Construct a cluttered pivot table, and show the sampling data in the histogram.
30. Find the 20th and 80th percentiles of home prices in the Excel file *Home Market Value*.
31. Find the 10th and 90th percentiles and 1st, 2nd, and 3rd quartiles for the combined amounts of checking and savings accounts in the Excel file *Credit Risk Data*.
32. Construct cross-tabulations of Gender versus Carrier and Type versus Usage in the Excel file *Cell Phone Survey*. What might you conclude from this analysis?
33. Using the data in the Excel sheet *Hardware Store*, construct a pivot table and calculate the percentage of sales, the total revenue generated in the month of March and the percentage of sales for the month of August.
34. Use PivotTables to construct a cross-tabulation for marital status and housing type in the Excel file *Credit Risk Data*. Illustrate the results on a PivotChart.
35. Create a PivotTable to find the average amount of travel expenses for each sales representative in the Excel file *Travel Expenses*. Illustrate your results with a PivotChart.
36. Use PivotTables to find the number of loans by different purposes, marital status, and credit risk in the Excel file *Credit Risk Data*. Illustrate the results on a PivotChart.
37. Use PivotTables to find the number of sales transactions by product and region, total amount of revenue

by region, and total revenue by region and product in the *Sales Transactions* database.

38. Create a PivotTable for the data in the Excel file *Weddings* to analyze the wedding cost by type of payor and value rating. What conclusions do you reach?
39. The Excel File *Rin's Gym* provides sample data on member body characteristics and gym activity. Create PivotTables to find:
 - a. a cross-tabulation of gender and body type versus BMI classification
 - b. average running times, run distance, weight lifting days, lifting session times, and time spent in the gym by gender.
 Summarize your conclusions.
40. Create useful dashboards for each of the following databases. Use appropriate charts and layouts (for example, Explain why you chose the elements of the dashboards and how a manager might use them.
 - a. *President's Inn*
 - b. *Restaurant Sales*
 - c. *Store and Regional Sales*
 - d. *Peoples Choice Bank*
41. A marketing researcher surveyed 92 individuals, asking them if they liked a new product concept or not. The results are shown below:

	Yes	No
Male	30	50
Female	6	6

Convert the data into percentages. Then construct a chart of the counts and a chart of the percentages. Discuss what each conveys visually and how the different charts may lead to different interpretations of the data.

Case: Drout Advertising Research Project

The background for this case was introduced in Chapter 1. For this part of the case, use appropriate charts to visualize the data. Summarize the data using frequency distributions and histograms for numerical variables,

cross-tabulations, and other appropriate applications of PivotTables to break down the data and develop useful insights. Add your findings to the report you started for the case in Chapter 1.