1. **Data-Information Relationship**

**A. What is the difference between data and information? What is needed for business decision-making? Data, information or both? If you think data is different from information, which comes first? Data or information?**

B. Raw data is a list of words or numbers. The purpose of descriptive statistics is to turn raw data into information. What are some of the ways your organization uses plots or graphs to analyze its operations? Do you feel these are accurate depictions of operations?

2. **Data Display**

A. What is the difference between a bar chart and a histogram?

B. Researchers often use charts and tables to display research results in their research report. Check the most appropriate type(s) of chart(s) that you would use to display the following data (*bar, histogram, line, pie, ogive (*cumulative line chart*), or Pareto*).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| No. | Data type | Bar | histogram | Line | Pie | Ogive | Pareto |
| 1 | You want to show the number of people living each city of a metropolitan area. |  |  |  |  |  |  |
| 2 | You want to show the part of each day you spend at various activities |  |  |  |  |  |  |
| 3 | You want to show a hospital patient’s temperature taken each hour for 8 hours. |  |  |  |  |  |  |
| 4 | You want to show the number of books read by a student each month |  |  |  |  |  |  |
| 5 | You want to show the proportion of US households who earn more than $100,000 per year  |  |  |  |  |  |  |
| 6 | You want to show the number of people in each grade of you local school |  |  |  |  |  |  |
| 7 | You want to show that 80 percent of your stock comes from 20 percent of your suppliers |  |  |  |  |  |  |
| 8 | You want to show stock prices on 12 consecutive days for a major publicly traded company. |  |  |  |  |  |  |
| 9 | You want to show the part of each diet people have to eat every day to be healthy |  |  |  |  |  |  |
| 10 | You want to show that 20 percent of your staff will provide 80 percent of your production. |  |  |  |  |  |  |
| 11 | You want to show unemployment rate (%) for the past decade |  |  |  |  |  |  |
| 12 | You want to show rainfall distribution for the past 12 months |  |  |  |  |  |  |
| 13 | You want to show mean monthly temperature for the current year |  |  |  |  |  |  |
| 14 | You want to show monthly accumulated savings for one-year. |  |  |  |  |  |  |

5. What is the purpose of using correlation analysis? How might correlation analysis be used in business decisions or in strategy formulation and implementation? How might correlation analysis be misused to explain a cause-and-effect relationship?

6. Break-even calculations scatter plots used in estimating demand and trends in revenue are examples of data that can be simplified to a straight line. This is useful, but sometimes these data are more complex. They may form a curved line, or instead of there being only one item for the slope, such as with variable costs, there may be several factors involved in the estimate. Demand, for example, may be based on price, convenience, and quality. How does a linear regression allow you to better estimate trends, costs, and other factors in complex situations?

**Individual Assignment - Analyzing Trends for Historical Data - .**

The following data obtained from U.S Department of Education (<http://www2.ed.gov/offices/OSFAP/defaultmanagement/3yrffeldlgraph.pdf>) shows the national student education loan default rates for the period 1995-2008.

|  |  |  |
| --- | --- | --- |
| Year | Code | National Student Loan Default Rate (%) |
| 1995 | 1 | 10.4 |
| 1996 | 2 | 9.6 |
| 1997 | 3 | 8.8 |
| 1998 | 4 | 6.9 |
| 1999 | 5 | 5.6 |
| 2000 | 6 | 5.9 |
| 2001 | 7 | 5.4 |
| 2002 | 8 | 5.2 |
| 2003 | 9 | 4.5 |
| 2004 | 10 | 5.1 |
| 2005 | 11 | 4.6 |
| 2006 | 12 | 5.2 |
| 2007 | 13 | 6.7 |
| 2008 | 14 | 7.0 |

1. Plot the data in Excel using a line chart.

2. Draw the trend-line.

3. Explain the trend-line. Do you see an increasing or decreasing trend in default rate? Why? Explain the reasons for any maximum and minimum points in the trend-line. If needed, you may use the U.S Library or outside resources for explanations.