**Math 110 Technical Writing #2**

**Focus:** Using tables and graphs to display data.

Tables and graphs are useful for displaying a large amount of data efficiently and in a form that is easy for the reader to interpret. Lists of numbers are difficult to read in a sentence. Anytime you have a list of values, consider using a table or a graph. The decision to use a table or graph depends upon what you want the reader to understand about the data. Tables are useful when the specific numerical values for a limited data set are important or when highlighting a numerical pattern. Graphs give a good visual representation and general overview of the data especially for a large amount of data. Sometimes it is appropriate to use both a table and a graph.

**Correct Formatting of Tables and Graphs**

Tables

* Title
* Columns or Rows labeled with item and unit

Graphs

* Title
* Both axis labeled with item and unit
* Appropriate and consistent scales (unless the graph is a “sketch”)
* Functions are labeled with their equations or names either on the graph or using a key
* Important points are labeled (depends on purpose of graph – this might include intersections, intercepts, maximum/minimum, or a specific point that has importance in the context)

**Common Uses of Tables and Graphs**

**1. Illustrating Patterns or Trends**

Example: The height of a ball as it bounces increases then decreases over time.

**Height of Bouncing Ball**



|  |  |
| --- | --- |
| Time (sec) | Height (ft) |
| 0.00 | 0.00 |
| 0.17 | 2.03 |
| 0.34 | 3.00 |
| 0.42 | 3.14 |
| 0.71 | 1.90 |
| 0.84 | 0.49 |
| 0.88 | 0.00 |

Note: Table is most useful for seeing exact values. The graph gives an immediate visual image. Since both the table and the graph are giving the same information, one title can be used for both.

**2. Comparing Values**

If the actual values of a comparison (such as a difference or ratio of two values) is important, it is often useful to add a column to the table to give the actual values.

Example: The disparity between the median income for males and females increases as the level of education increases.

**\*2005 Median Income (in Dollars) of Americans by Level of Education and Gender**

|  |  |  |  |
| --- | --- | --- | --- |
| **Level of Education** | **Male** | **Female** | **Difference** |
| < High School | 22,138 | 13,076 | 9,062 |
| High School Diploma | 31,683 | 20,179 | 11,504 |
| Some college/Assoc. Degree | 39,601 | 25,736 | 13,865 |
| Bachelors Degree | 53,693 | 36,250 | 17,443 |
| Graduate or Professional Degree | 71,918 | 47,319 | 24,599 |

*Note*: Here the data is fairly limited and the actual values are of interest so a table is a good choice. A bar graph could also be used for a visual representation.

\*US Census Bureau

Example: $1000 invested at 5% will eventually have a greater value than $2000 invested at 2.5%.



Note: Here the general trends are more important than specific values. The comparison is illustrated effectively with the graph.

**3. Showing Change Over Time**

The investment example above also demonstrates how a graph can be used to demonstrate change over time. This graph could have been used to show how the earnings for the investments are gradual at first and then increase.

Tables can also be used to show change over time for a small data set. Sometimes a horizontal orientation can help the reader see the change more easily.

Example: With one exception. employer costs for employee compensation rose every year from 1993 to 2000.

**\*Average Employer Cost for Employee Compensation (per hour worked ($))**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | **1993** | **1994** | **1995** | **1996** | **1997** | **1998** | **1999** | **2000** |
| **Cost ($)** | 17.88 | 18.30 | 18.21 | 18.68 | 19.22 | 19.76 | 20.29 | 21.16 |

\*Bureau of Labor and Statistics

**Using Technology to Create Graphs and Tables in Written Work**

1. There is an easy to use freeware program called *Graph* that makes high quality graphs. This program was used to make the graphs in this document. This program DOES NOT work on Macs.
   * If you have your own computer and would like to download the program, go to your instructor’s webpage. Select FMP Website 🡪 Links to Resources 🡪 [Freeware Graph Program Utility](http://www.padowan.dk/graph/) 🡪Download.
   * If you would like to use this program on campus, you can access the program by doing the following:

* Select My Computer 🡪 acadcommon on 'faculty'(O:) 🡪 Spriggs\_Sherri 🡪 Graph 🡪 
* You can also find this program on any campus lab computer in the Math and Stats folder.
* Once you have completed your graph, select Edit🡪Copy Image. Once you have your Microsoft Word document opened, select Paste.

1. Microsoft Word has a **Table** feature that is very easy to use. In Office, the **Table** feature is found under the **Insert** tab. The **Table** feature is easy to use. You can find instruction in the Microsoft Office Word Help by typing in “create table”. Ask your instructor or a computer lab assistant for additional help.

**Math 110 Technical Writing #2: Using Tables and Graphs**

|  |  |  |  |
| --- | --- | --- | --- |
| Date Assigned: | Wednesday, February 26th | Date Due: | Wednesday, March 5th |

**Assignment**:

Two siblings have been accumulating stickers for a number of years. The number of stickers that they have in their shoe boxes, *S*, since 2001 can be modeled by the following equations:

Esmee’s Stickers: 

Bella’s Stickers: 

where *t* represents the time in years since 2001.

1. Compare the equations for the number of stickers in each person’s shoe box.
2. Use your graphing calculator to find the point at which one person’s sticker collection becomes more than the other’s. How many stickers do they have at that time?
3. Create a graph **and** a table that will illustrate the important points of the situation.

*Must be completed using the computer!!!*

**Rubric**:

|  |  |  |
| --- | --- | --- |
|  | **Item** | **Points** |
| A | Properly formatted (typed, double spaced, stapled, rubric attached) |  |
| B | Complete sentences with proper grammar, spelling, and punctuation |  |
| C | Language is precise (limited use of pronouns, correct terminology, etc.) |
| D | Introduction summarizes important information |  |
| E | Completely and correctly answers the question(s) |  |
| F | All variables are identified (letter, what it represents, units, ind/dep) |  |
| G | Equation/formula/model is given and parts of equation are identified and explained (e.g. slope, factor/rate, vertical intercept) |  |
| H | Calculations are introduced verbally and mathematical steps are shown |  |
| I | Results of calculations are interpreted in a complete sentence |  |
| J | Table has a title and columns are labeled with item and unit |  |
| K | Graph has a title, is properly labeled, scales are appropriate and function and/or data is graphed correctly. It should be a **FULL**-page. |  |
| **Total Points** | |  |