



AN INTRODUCTION TO SCIENTIFIC WRITING

Lecture 4

- Data Visualization (Figures, Plots, Tables, ...)

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Data Visualization

A picture is worth a thousand words



Data Visualization

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How many words is the figure you have drawn worth?



Tools to draw figures

- Tikz/PGF (tex) - [examples](#)
- LibreOffice - [examples](#)
- PowerPoint
- Dia (linux) - [examples](#)
- Xfig (linux) - [examples](#)
- Omnigraffle (mac)
- Visio
- ...(anything that can export in .png, .eps, .pdf., .ps)



Suggestions

(when including figures)

- LaTeX includegraphics [\(example\)](#)
- Check the image dimensions
 - `width=\columnwidth`, `scale=0.5`, etc.
- Font sizes
- Color/BW restrictions if any
- See papers from Nature, PNAS, etc.
 - physics, chemistry, medical journals [\(example\)](#) [\(example\)](#)
[\(example\)](#)



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"I personally find it hard enough to visualize three-dimensional space! However, it is easy to draw diagrams of two-dimensional spaces, such as the surface of the earth" A brief history of time, by Stephen Hawkins



Tables

- Latex Tables (example)
- Example on Cancer Survival Rate
 - The Visual Display of Quantitative Information, by Edward Tufte



Plots

- Tools
 - Gnuplot
 - Matlab
 - R – [ggplot](#)
 - ... many more
- Good vs Bad
 - [example](#)
 - [Creating More Effective Graphs](#) by Naomi B. Robbins
 - [Graphic Examples](#) (rice.edu)



Visualizations in your Report

- Figures
 - Try to draw them & get comfortable with the tools
- Tables
 - Create your own tables
 - Do not import them as figures!
- Plots
 - You can copy them by taking high-res screenshots
 - Please cite the paper from which you copied the plots