

Lecture 12

Chapter 9

Plots, Graphs, and Pictures

- Determining What Display is Appropriate
- Do's and Don'ts of Statistical Pictures
- Examples

Choosing the Right Display

Display type depends on variable types:

- 1 measurement variable (students' heights):
stemplot, boxplot, histogram, freq. curve (chs 7&8)
- 1 categorical + 1 measurement var. (sex + ht):
multiple boxplots (ch 7, see p. 136)
- 2 measurement variables:
 - Time is expl (yr + cremation): bargraph/time series (ch 15)
 - in general (age + wt): scatterplot (ch 10)
- 1 categorical var: (radio show type): piechart (ch 9)
- 2 or more cat vars (sex, smoke, on/off): barchart (ch 9)
(for 2 cat vars, use two-way table to organize data)

Do's and Don'ts of Statistical Pictures

Do:

- Make data stand out clearly from background
- Label clearly to indicate
 - Title or purpose
 - What each of the axes, bars, etc. denotes
 - Scale and starting point of each axis
- Give source of data
- Include only what's needed

Do's and Don'ts of Statistical Pictures

Don't:

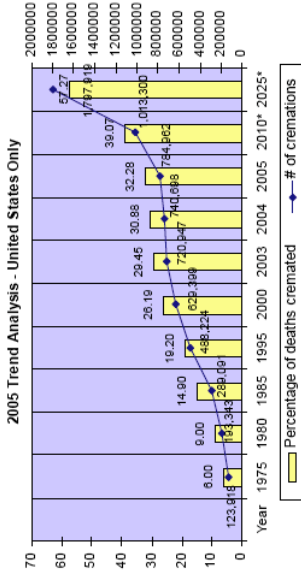
- Fail to label axes. [Remember for homework]
- Exaggerate trends by not starting at 0.
[or have too much dead space]
- Change labeling on axis.
- Use misleading units of measurement.
- Use poor information. [Remember Part I]

Example: Checking Pictures for Flaws

- Background:** Consider cremation plot.
- Question:** Are any of the “don’ts” a problem?
- Response:**
 - Unlabeled axes?
 - Axis starts at an unreasonable origin?
 - Numerical scale inconsistent?
 - Measurements not well defined?
 - Information suspect? (see 7 Critical Components)
 - #1 Source/funding
 - #4 Exact nature of measurements

Cremation Data & Predictions: Data Trends

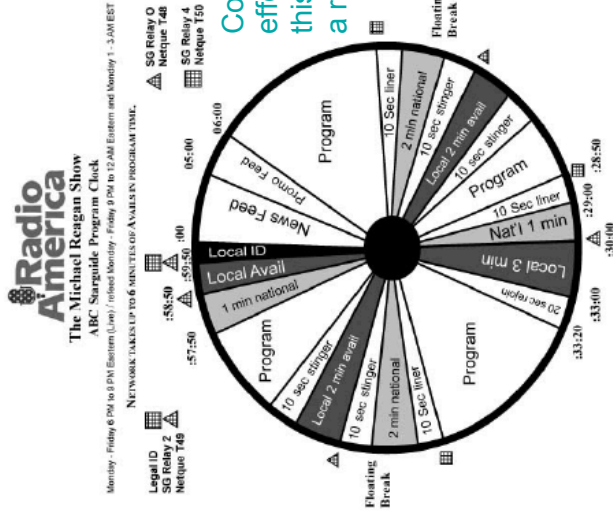
- Percentage of Deaths Resulting in Cremation Since 1975



*Projected figures

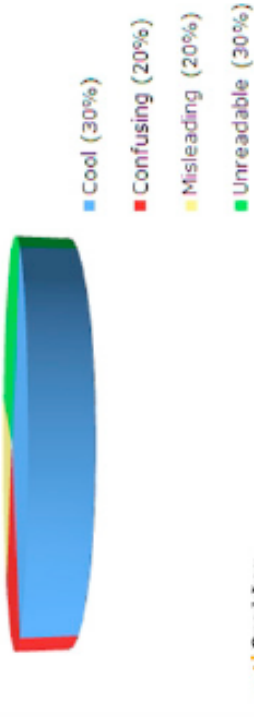
Example: #1 Deciding on Display Type

- Background:** Consider how to display data on
- Question:** dwelling (36 on, 48 off campus)?
- Response:**



Perception of 3D pie charts

Did the vast majority of respondents think 3D pie charts are cool?
What's your visual impression?



GraphJam

Example: #2 Deciding on Display Type

- **Background:** Consider how to display data on
- **Question:** students' predicted Exam 1 score?
- **Response:**

Example: #3 Deciding on Display Type

- **Background:** Consider how to display data on
- **Question:** students' gender and earnings?
- **Response:**

Example: #4 Deciding on Display Type

- **Background:** Consider how to display data on
- **Question:** students' heights and shoesizes?
- **Response:**

Example: #5 Deciding on Display Type

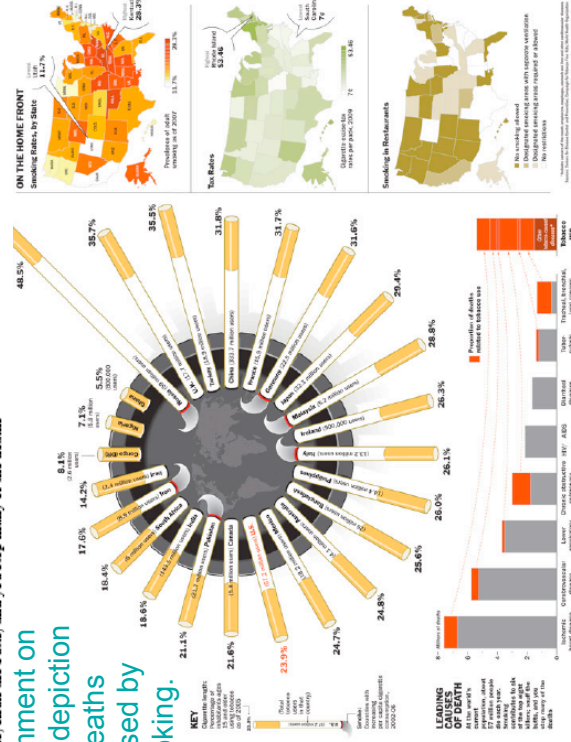
- **Background:** Consider how to display data on
- **Question:** year and major declared or not?
- **Response:**

Example: #6 Deciding on Display Type

- **Background:** Consider how to display data on
- **Question:** year, major declared or not, sex?
- **Response:**

At the world's current population, about 57 million people die each year. Smoking contributes to six of the top eight killers; snuff the butts, and you stop many of the deaths

Comment on this depiction of deaths caused by smoking.



EXTRA CREDIT (Max. 5 pts.) From the internet or a newspaper or magazine, find a picture based on statistical information. Write a paragraph or two describing its strengths and weaknesses, referring to the Do's and Don'ts.