

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): 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



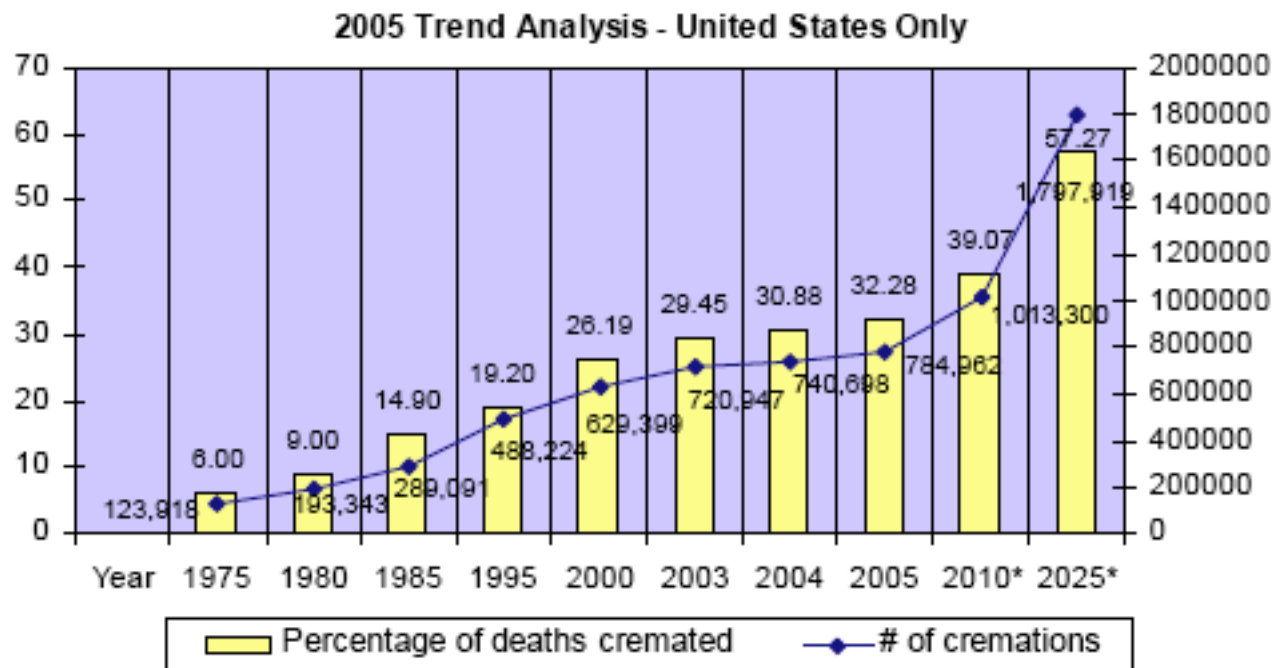
Do's and Don'ts of Statistical Pictures

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]

Cremation Data & Predictions: Data Trends

- Percentage of Deaths Resulting in Cremation Since 1975



*Projected figures

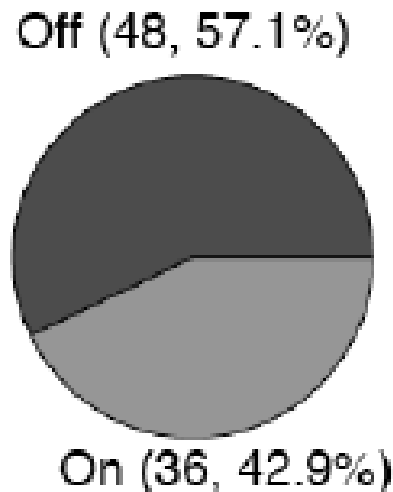


Example: *Checking Pictures for Flaws*

- ❑ **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 _____

Example: #1 *Deciding on Display Type*

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



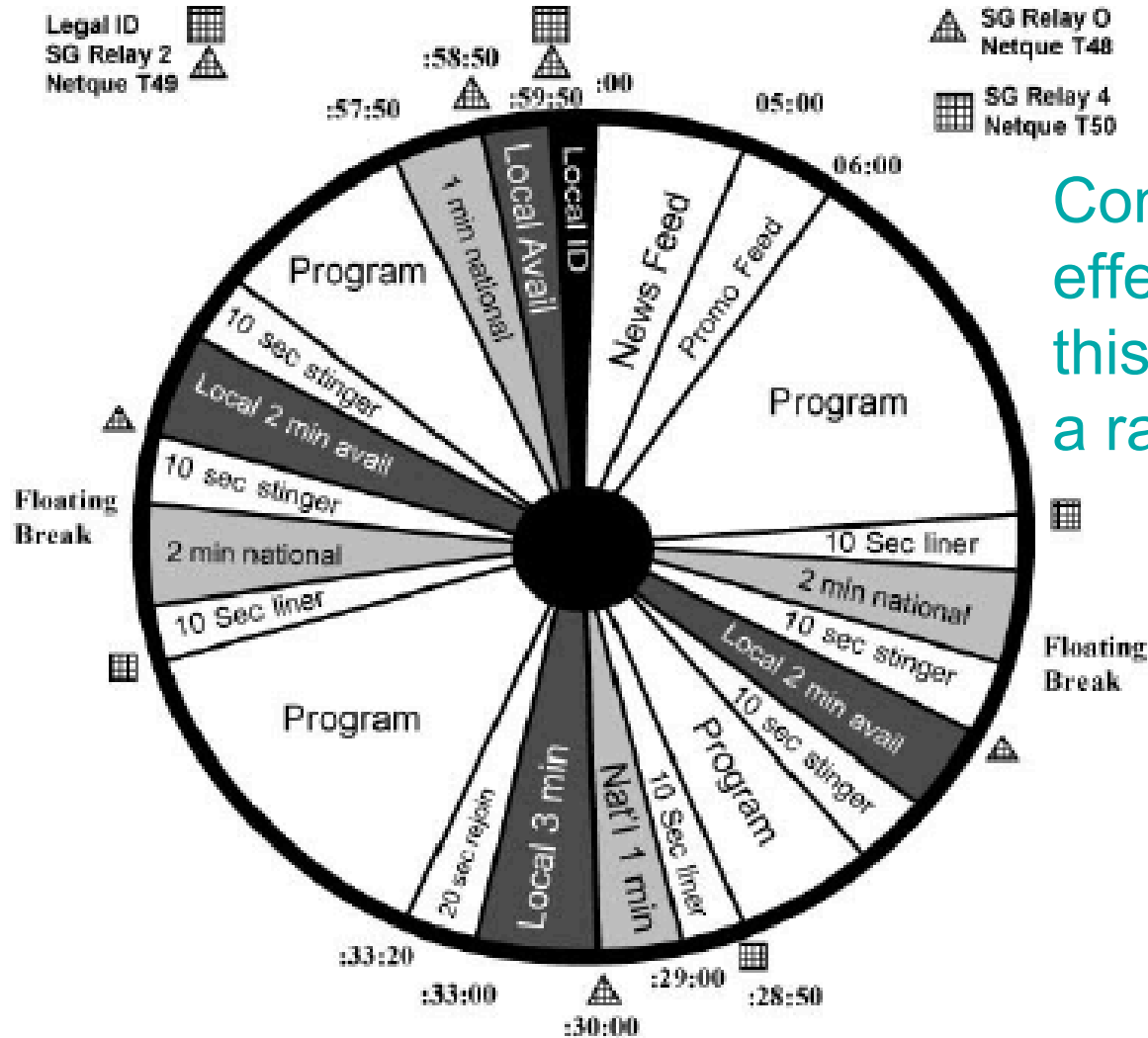


The Michael Reagan Show

ABC Starguide Program Clock

Monday - Friday 6 PM to 9 PM Eastern (Live) / refeed Monday - Friday 9 PM to 12 AM Eastern and Monday 1 - 3 AM EST

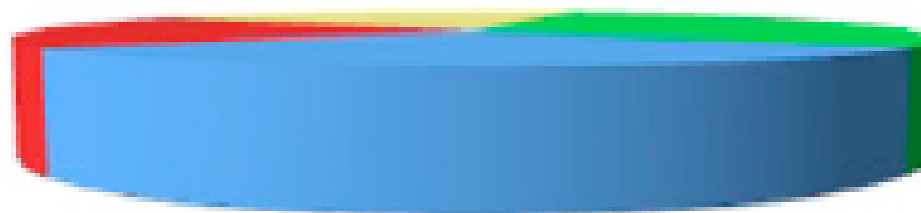
NETWORK TAKES UP TO 6 MINUTES OF AVAILS IN PROGRAM TIME.



Comment on the effectiveness of this pie chart for a radio hour.

Perception of 3D pie charts

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



■ Cool (30%)

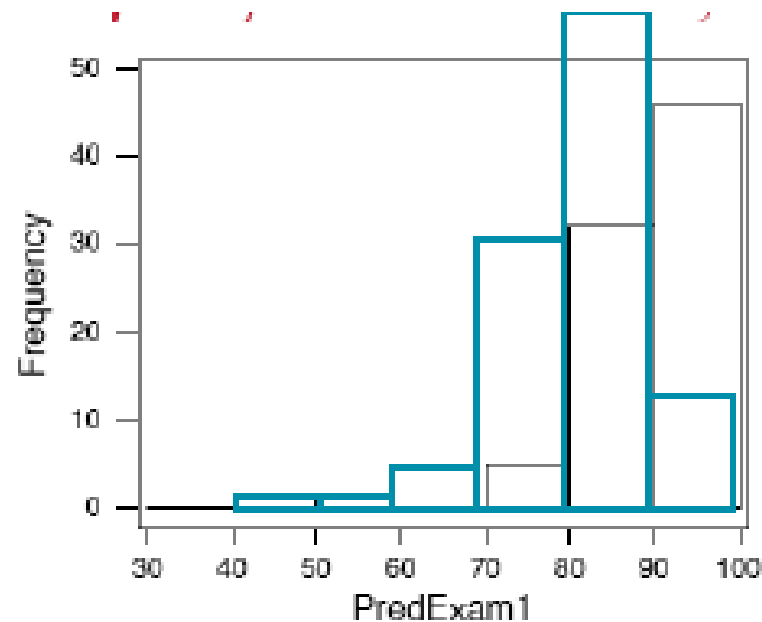
■ Confusing (20%)

■ Misleading (20%)

■ Unreadable (30%)

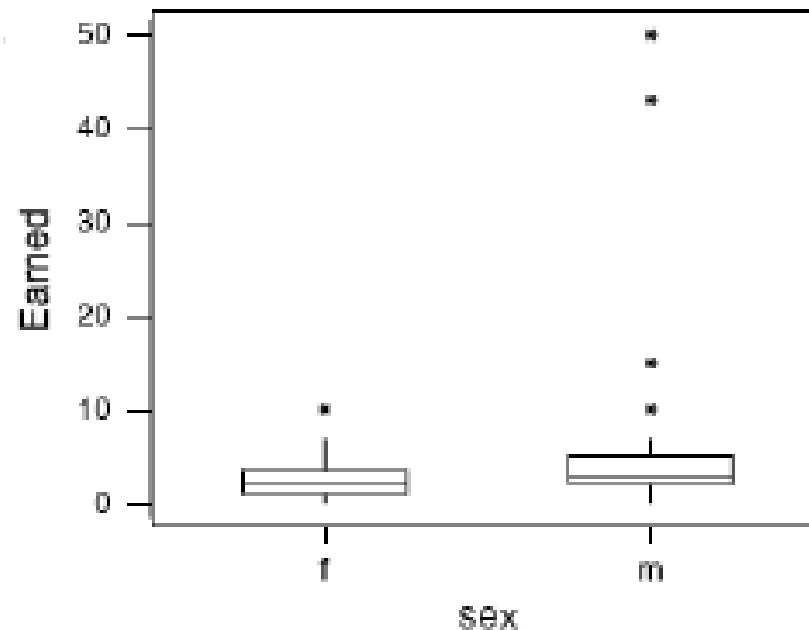
Example: #2 *Deciding on Display Type*

- **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:**



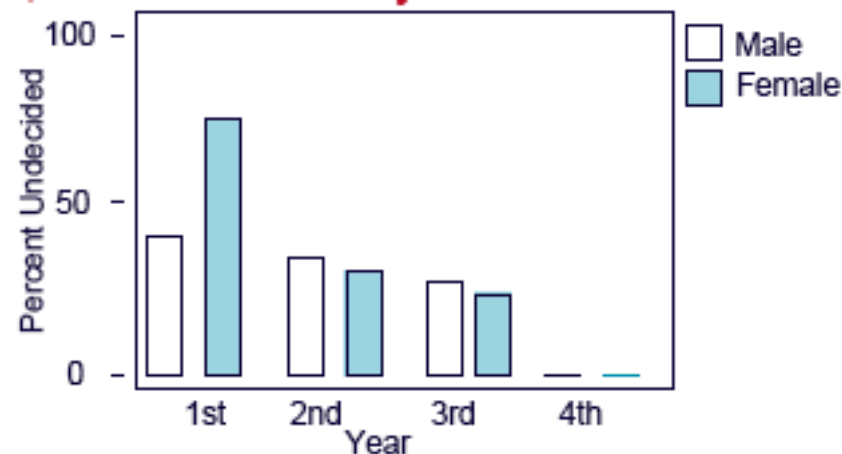
Example: #5 *Deciding on Display Type*

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

Example: #6 *Deciding on Display Type*

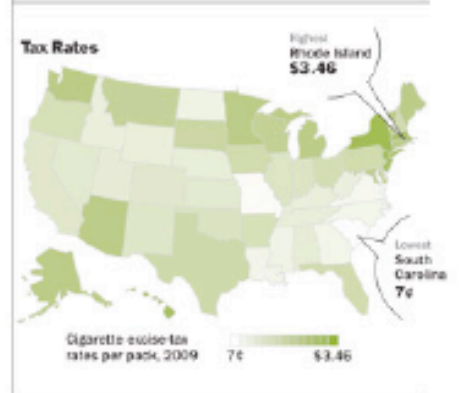
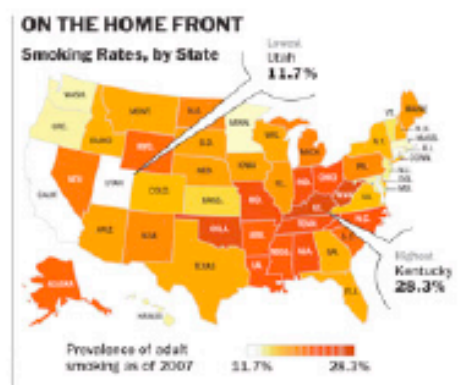
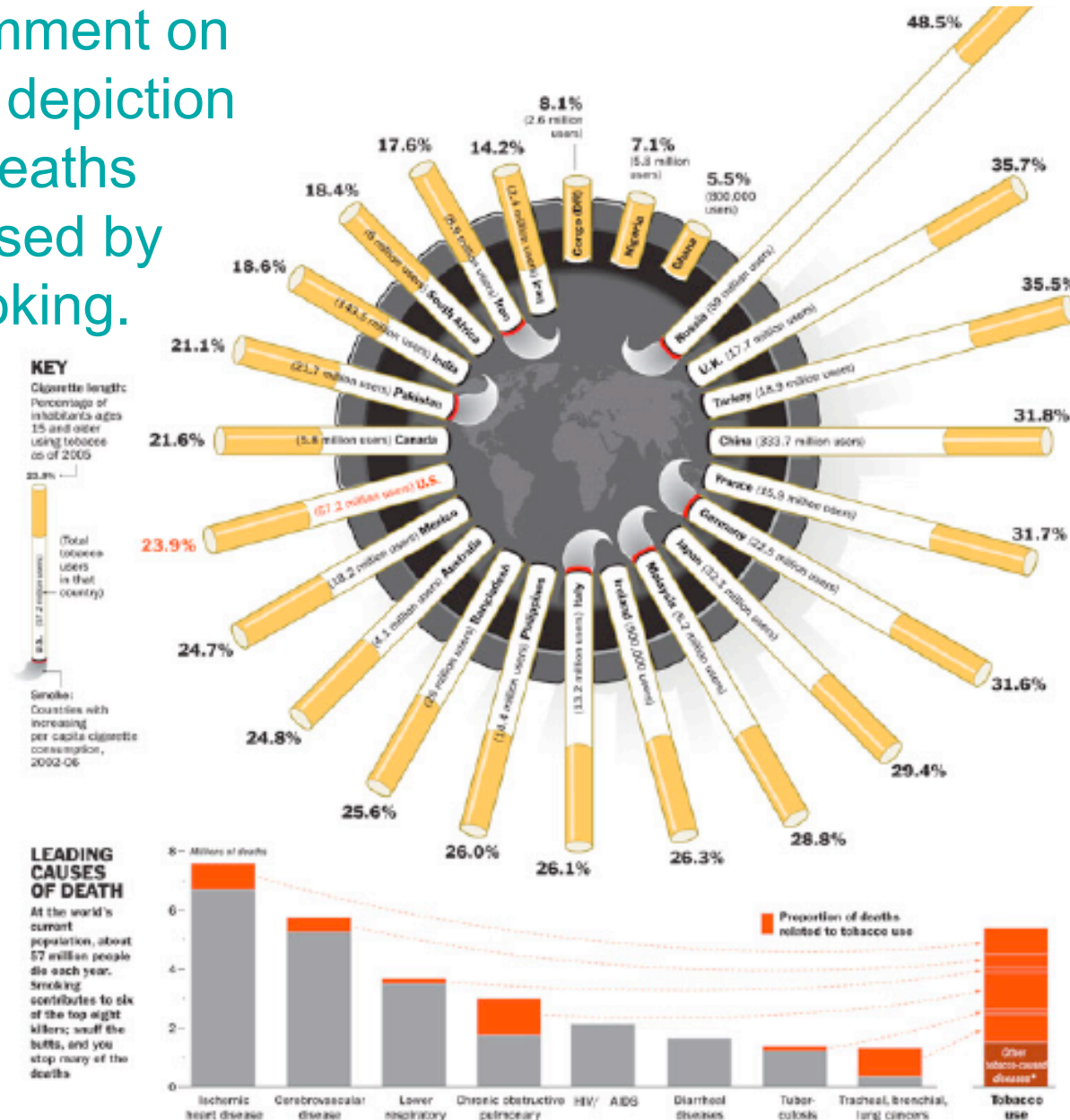
- **Background:** Consider how to display data on
- **Question:** year, major declared or not, sex?
- **Response:**

	1st M	1st F	2nd M	2nd F	3rd M	3rd F	4th M	4th F
Dec	3	1	8	19	3	8	2	2
Und	2 40%	3 75%	4 33%	8 30%	1 25%	2 20%	0 0%	0 0%



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.