

Chapter 4

UNDERSTANDING AND COMPARING DISTRIBUTIONS

1

COMPARING GROUPS

- ✘ When using a graphical display, be sure to use the same scale for all groups.
- ✘ Histograms allow you to see the shape, center, and spread; details can be more difficult to discern on a boxplot.
- ✘ Too many histograms make comparison difficult; boxplots may be easier in this case.

2

COMPARING GROUPS WITH HISTOGRAMS

- ✘ The following histograms compare the average wind speed in summer and winter.

| Average Wind Speed (mph) | Summer (# of Days) | Winter (# of Days) |
|--------------------------|--------------------|--------------------|
| 0 | 75 | 15 |
| 1 | 55 | 15 |
| 2 | 25 | 25 |
| 3 | 15 | 20 |
| 4 | 10 | 15 |
| 5 | 5 | 10 |
| 6 | 2 | 5 |
| 7 | 1 | 2 |

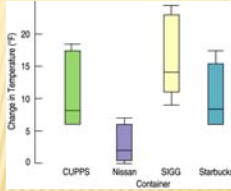
- ✘ What does this graphical display tell you?

From Stats Modeling the World by Bock, Velleman, & De Veaux, 2015, p. 84.

3

COMPARING GROUPS WITH BOXPLOTS

✦ The following set of boxplots compares the effectiveness of various coffee containers:



✦ What does this graphical display tell you?

From Stats *Modeling the World* by Bock, Velleman, & De Veaux, 2015, p. 87.

WHAT ABOUT OUTLIERS?

- ✦ Graphing makes identifying outliers easier.
- ✦ Is the outlier a mistake? Is there a reason for the outlier?
- ✦ Mean and standard deviation should be reported with and without outliers.
- ✦ Note: The median and IQR are not likely to be affected by the outliers.
