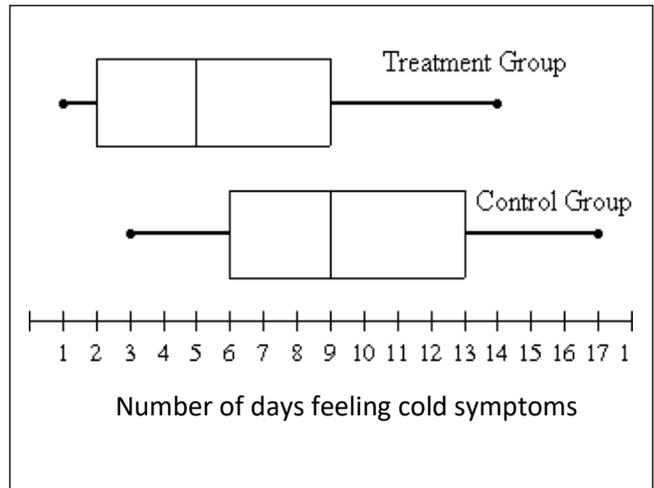


Comparative Box-and Whisker Plots

Example: A new cold medication was tested as to its effectiveness. There was a treatment group, which received the new medication and a control group which received a placebo. The participants were asked how many days it took before their cold symptoms disappeared. The following are the 5-number summaries and boxplots for each group.

<p>TREATMENT GROUP 5-Number Summary: Min = 1 $Q_1 = 2$ Med = 5 $Q_3 = 9$ Max = 14</p>

<p>CONTROL GROUP 5-Number Summary: Min = 3 $Q_1 = 6$ Med = 9 $Q_3 = 13$ Max = 17</p>
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- (a) What percent of the people in the treatment group felt cold symptoms longer than 9 days?
 (The right side whisker, so 25%)
- (b) About what percent of the people in the control group felt cold symptoms longer than 9 days?
 (9 is the median, so 50%)
- (c) Write four sentences that compare the treatment group and control group. Use shape, center, spread, and one other interesting comparison. **(Here you write different sentences that compare the two pictures)**

Shape (symmetrical or skewed): “The Treatment group appears to be skewed left”. “The Control group appears to be symmetrical”.	Center (Median or Mean): “The treatment Median is further left than Control”
Spread (Range and IQR): “The range of both are only different by 1” “The IQR which represents the middle 50% are both the same”	One other comment (25%, 50%, 75%, or 100%): “75% of the Treatment group are better before 50% of the Control group get better”

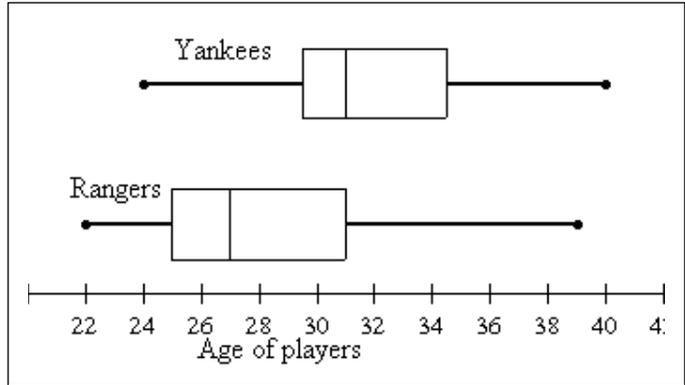
- (d) Do you believe this new cold treatment is more effective at relieving cold symptoms than using nothing at all?

YOU TRY THIS ONE

The following are the 5-number summaries and boxplots for the ages of players on the New York Yankees and the Texas Rangers baseball teams during the 2002 season.

<p>New York Yankees</p> <p>5-Number Summary:</p> <p>Min = 24</p> <p>$Q_1 = 29.5$</p> <p>Med = 31</p> <p>$Q_3 = 34.5$</p> <p>Max = 40</p>

<p>Texas Rangers</p> <p>5-Number Summary:</p> <p>Min = 22</p> <p>$Q_1 = 25$</p> <p>Med = 27</p> <p>$Q_3 = 31$</p> <p>Max = 39</p>
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- (a) About what percent of the Yankees are less than 31 years old? _____
- (b) About what percent of the Rangers are less than 31 years old? _____
- (c) Write four sentences that compare the ages of the Yankees and Rangers. Use shape, center, spread, and one other interesting comparison.

Shape (symmetrical or skewed):	Center (Median or Mean):
Spread (Range and IQR):	One other comment (25%, 50%, 75%, or 100%):

- (d) Which team would you say is the “older team”? Explain.

For completing your homework, you may want to reference your previous notes or use these below:

5-Number Summary:

Min =

Q_1 =

Med =

Q_3 =

Max =

Range =

IQR =

$IQR * 1.5 =$

Fences:

$Q_1 - 1.5(IQR) =$

$Q_3 + 1.5(IQR) =$

Outlier = _____

Mean: _____

5-Number Summary : (Significant features on a Box and Whisker Graph):

Minimum = Least value in data.

Starting point of *whisker*.

1st Quartile (Q_1) = Median of the first half of data. Starting point of *box*.

Median = Middle of data. Could be called Q_2 .
Vertical line in *box*.

3rd Quartile (Q_3) = Median of the last half of data. Ending point of *box*.

Maximum = Greatest value in data
Ending point of *whisker*.

Other Information:

Inner Quartile Range (IQR) = $Q_3 - Q_1$

The range of the *box*.

Fences: $Q_1 - 1.5(IQR)$ and $Q_3 + 1.5(IQR)$

Outlier: Any value outside the fence.

Box and Whisker Plots

