Measurement Types
Quartiles

PIERIAN DATA

Quartiles and IQR

- Another way to describe data is through **quartiles** and the **interquartile range** (IQR)
- Has the advantage that every data point is considered, not aggregated!

Quartiles and IQR

- Consider the following series of 20 values:

9 10 10 11 13	15 16 19 19 21	23 28 30 33 34	36 44 45 47 60

1st quartile | 2nd quartile or median | 3rd quartile

1. Divide the series
2. Divide each subseries
3. These become quartiles

PIERIAN DATA

Quartiles and IQR

- Consider the following series of 20 values:

9 10 10 11 13	15 16 19 19 21	23 28 30 33 34	36 44 45 47 60

1st quartile | 2nd quartile or median | 3rd quartile

1st quartile = 14

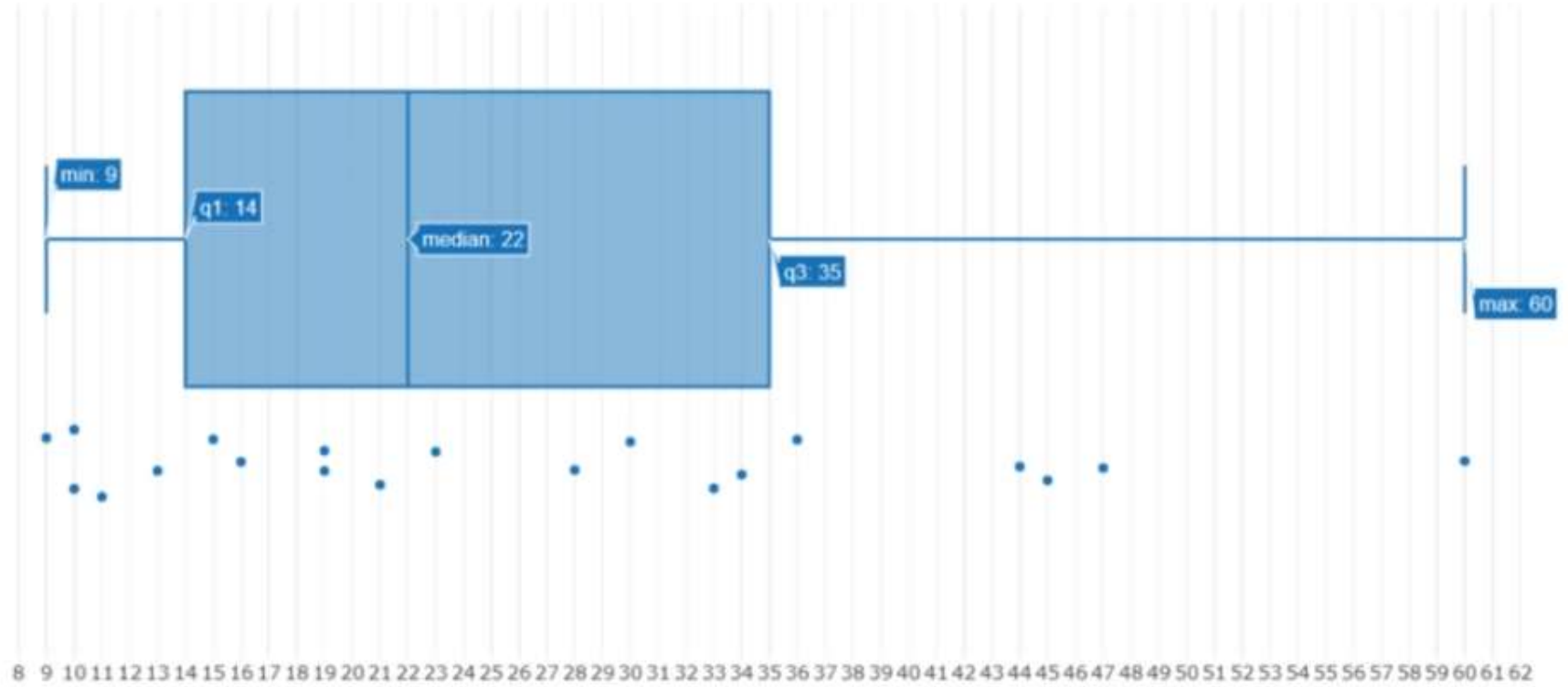
2nd quartile = 22

3rd quartile = 35

PIERIAN DATA

Plot the Quartiles

9 10 10 11 13	15 16 19 19 21	23 28 30 33 34	36 44 45 47 60



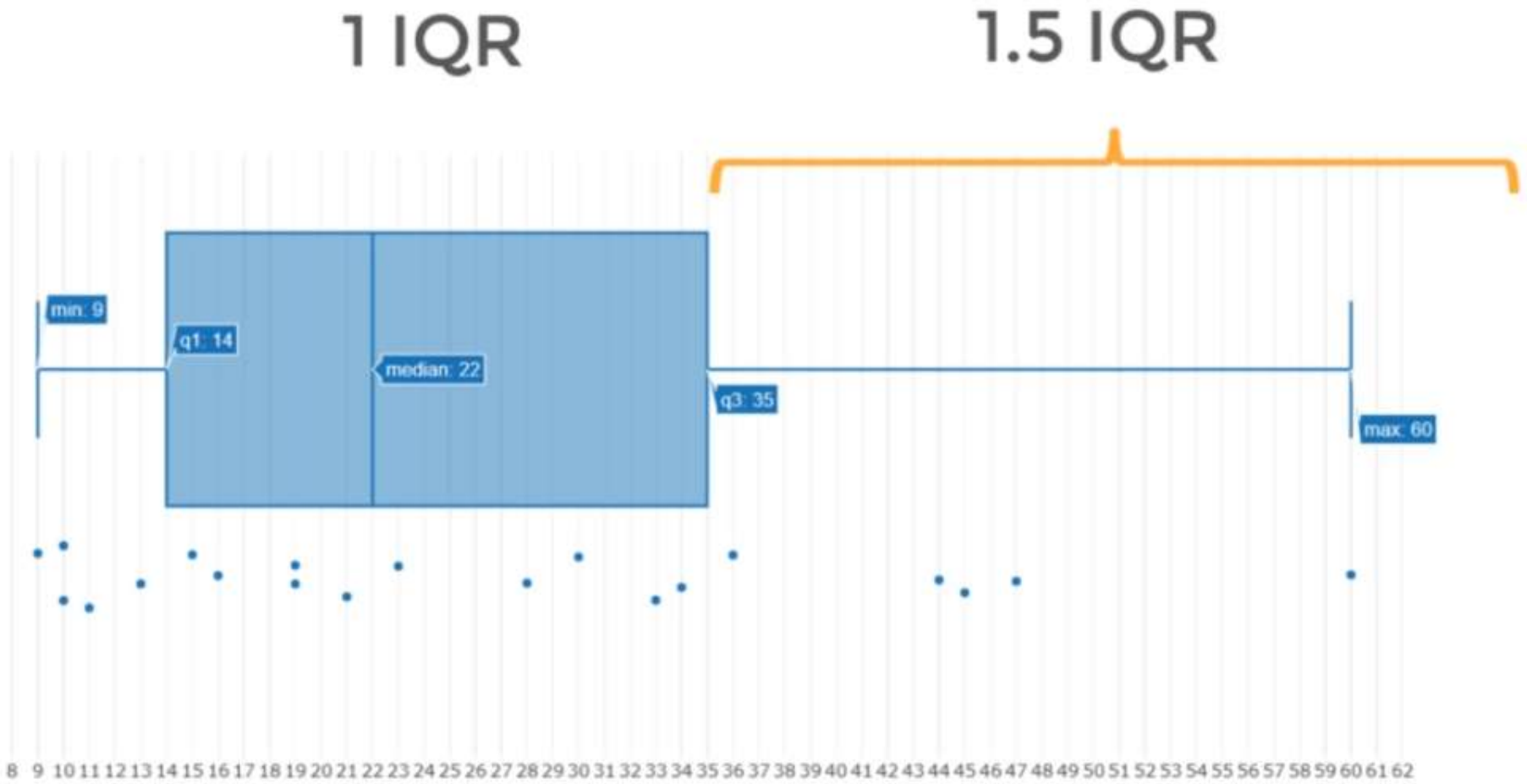
Quartile ranges are seldom the same size!

PIERIAN DATA

Fences & Outliers

- What is considered an "outlier"?
- A common practice is to set a "fence" that is 1.5 times the width of the IQR
- Anything outside the fence is an outlier
- This is determined by the *data*, not an arbitrary percentage!

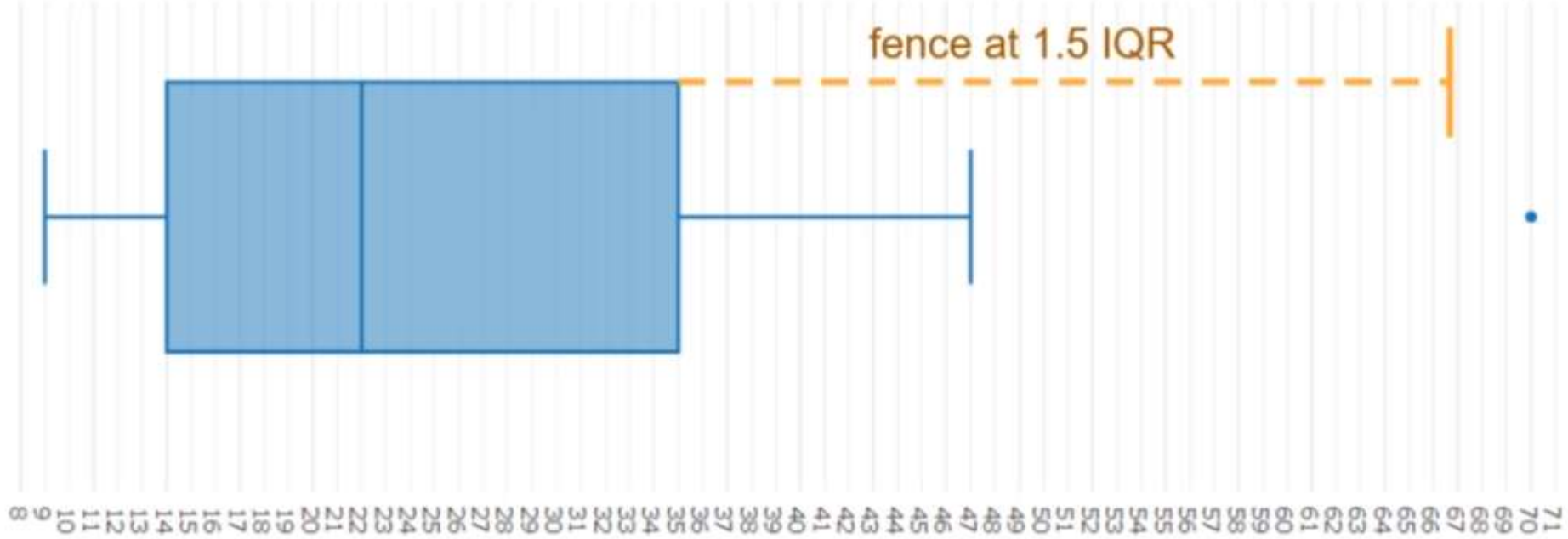
Fences & Outliers



In this set, 60 is *not* an outlier, but 70 would be

Fences & Outliers

9 10 10 11 13	15 16 19 19 21	23 28 30 33 34	36 44 45 47 **70**



Here 70 is a true outlier

- When drawing box plots, the whiskers are brought inward to the outermost values inside the fence.