



DataCamp

Learning by doing

Scales

- Scales of measurement
 - For example, in chapter 2 body temperature was presented in both Fahrenheit and in Celsius
 - Different scales but both measure temperature
 - F° can be converted to C° and vice-versa

Scales

- In statistics, there is a standard scale
 - The Z scale
- Any score from any scale can be converted
 - To Z scores
- Allows for efficient communication

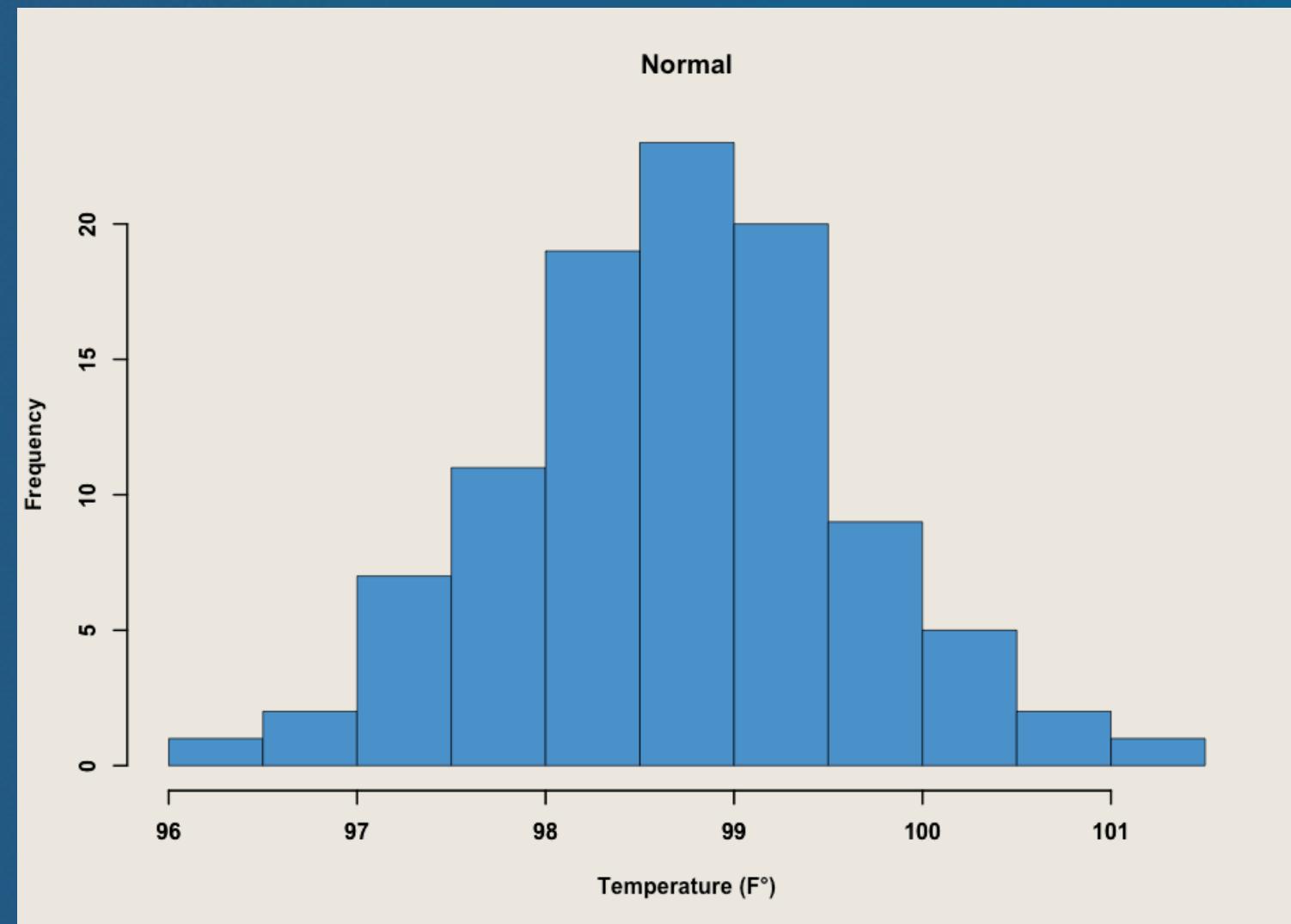
Z scores

- $Z = (X - M) / SD$
 - X is a score on an original scale (raw score)
 - M is the mean
 - SD is the standard deviation

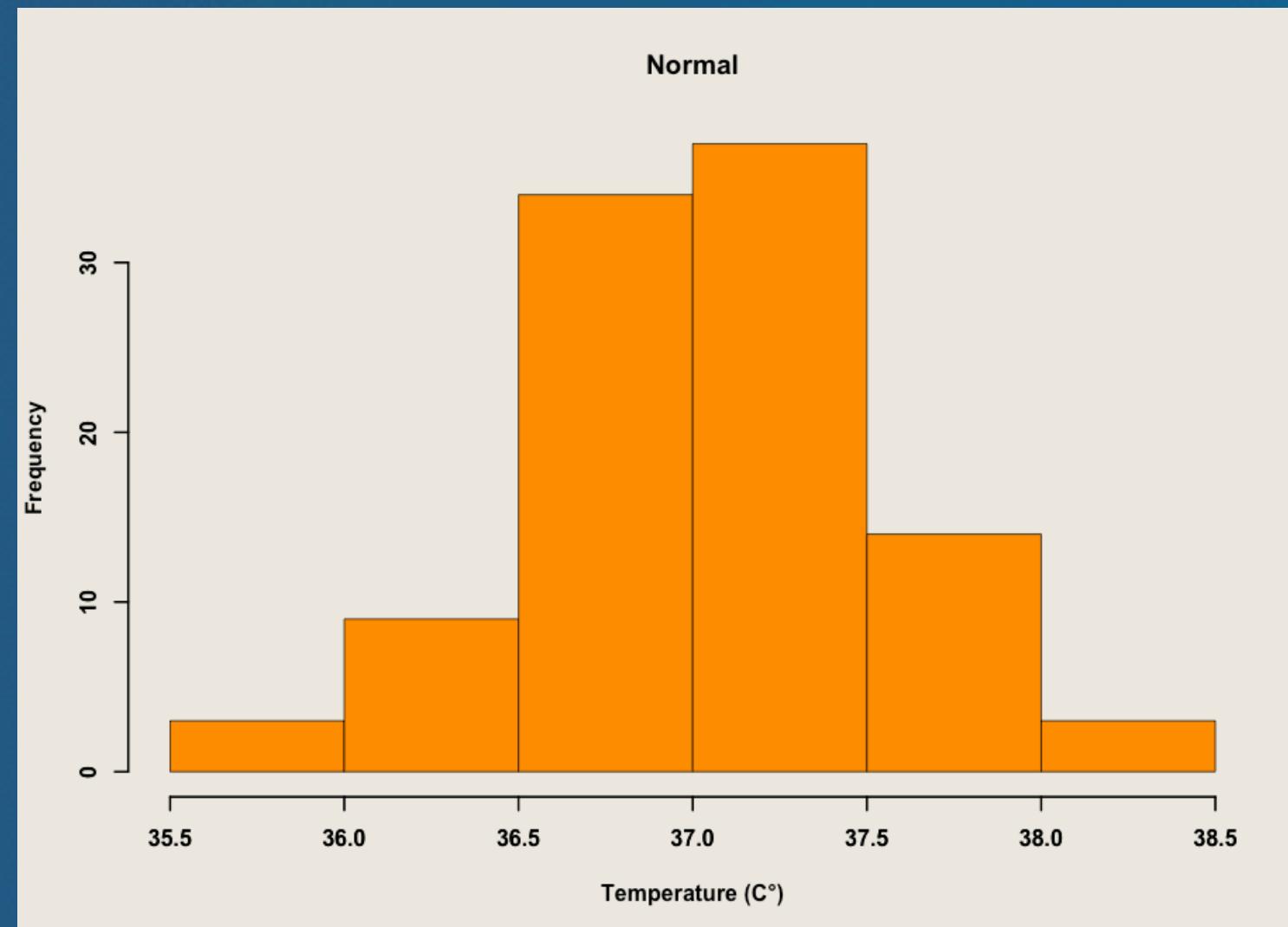
Z scores

- $Z = (X - M) / SD$
 - The mean Z-score is $Z = 0$
 - Positive Z scores are above average
 - Negative Z scores are below average

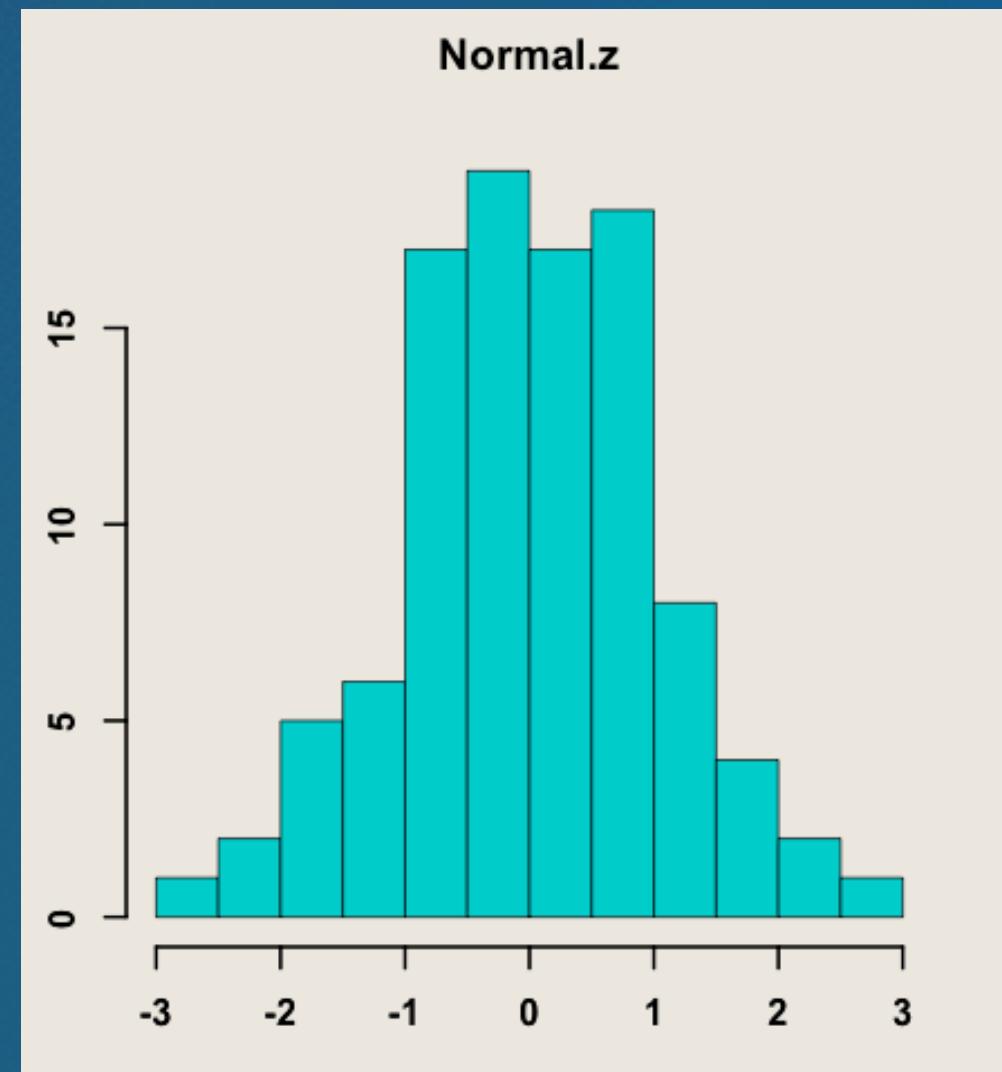
Body temperature F°



Body temperature C°



Body temperature Z



Z scores

- For example, assume $M = 98.6$, $SD = .5$
- Suppose an individual, $X = 99.6$
- Convert X to Z

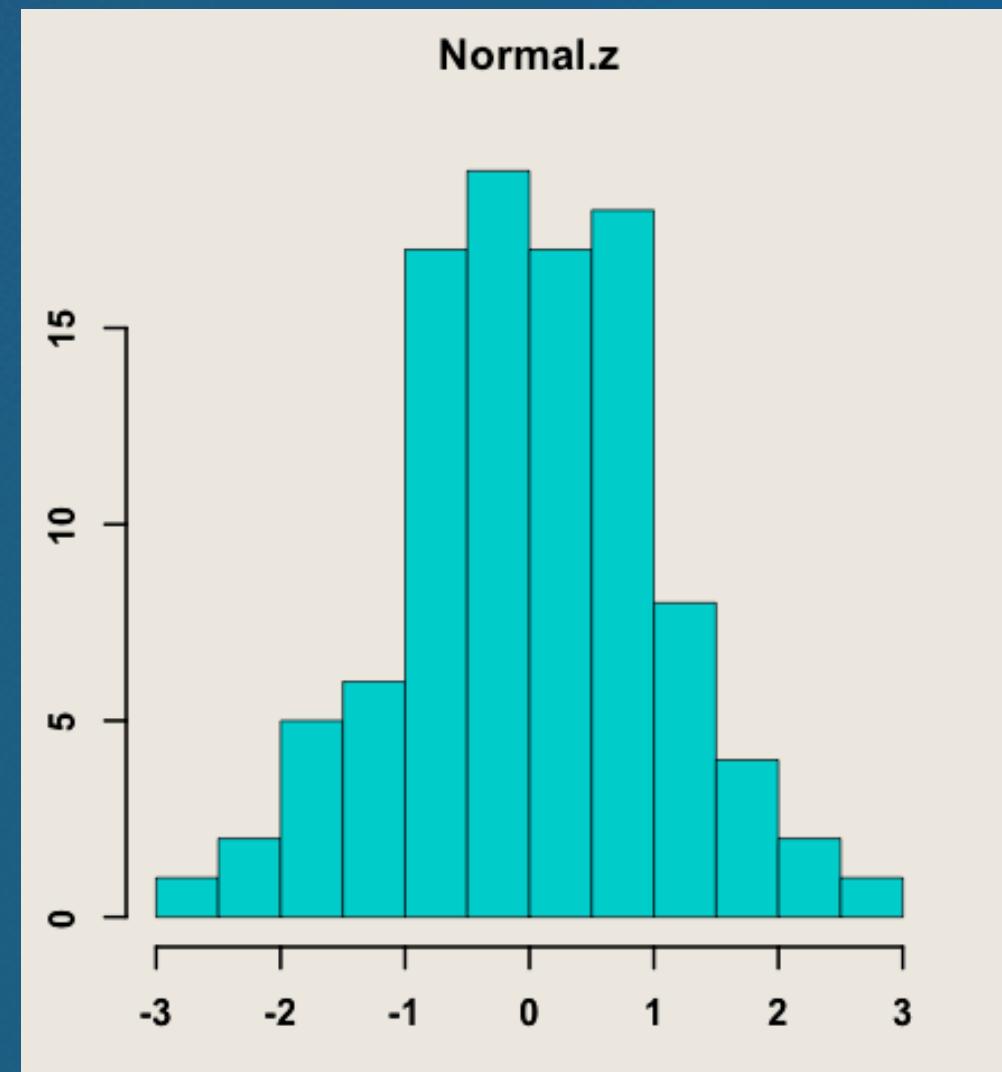
Z scores

- Convert X to Z
 - $Z = (X - M) / SD$
 - $Z = (99.6 - 98.6) / .5 = 2$
 - $Z = 2$

Percentile rank

- Percentile rank
 - The percentage of scores that fall at or below a score in a distribution
 - Assume a normal distribution
 - If $Z = 0$ then the percentile rank = 50th
 - 50 percent of the distribution falls below the mean

Body temperature Z



Chapter summary

- The Z-scale is the standard scale in statistics
- Raw scores can be converted to Z-scores
- Z-scores can be used to find percentile rank
 - Raw score ~ Z-score ~ Percentile rank