

Section 2.3

Part III

Summarizing Data Using Averages.

Frequency Table for Adult Female Heights

Estimating a Mean From a Frequency Table.

Class Midpoint = $\frac{(\text{Lower Limit}) + (\text{Upper Limit})}{2}$

class	frequency = f	Class midpt. = x	f.x
148.0-155.2	5	151.6	758.0
155.3-162.5	16	158.9	2542.4
162.6-169.8	5	166.2	831.0
169.9-177.1	3	173.5	520.5
177.2-184.4	1	180.8	180.8

$$n = \sum f = 30$$

$$4832.7 = \sum fx$$

Mean from a frequency table = $\frac{\sum f \cdot x}{n}$

f = frequency
x = class midpoint

$$n = \sum f = \text{sample size}$$

↑ similar

$$= \frac{4832.7}{30} = 161.09 \quad (\text{off by } 0.3 \text{ from } \bar{x})$$

Weighted Mean = $\frac{\sum w \cdot x}{\sum w}$ Quadratic mean = $\sqrt{\frac{\sum x^2}{n}}$
(for positive values)

Advantages & Disadvantages of Averages.

	Advantage	Disadvantage
→ Mean	Takes all values into account.	It is pulled toward outliers/skew.
→ Median	Not influenced by outliers/skew. (can work w/ ordinal data)	It doesn't have a formula & thus no algebraic properties.
→ Mode	Can be used with nominal data.	Also doesn't have a formula.
→ Midrange	Quick / Easy	Only uses the most extreme values & is sensitive to non-symmetry.