Descriptive Statistics Formula Review

Ungrouped Measures

1. Population mean $\mu = \frac{\sum x}{N}$

2. Sample mean $\bar{x} = \frac{\sum x}{n}$

3. First quartile $\frac{n}{4} + .5$

4. Median $\frac{n}{2} + .5$

5. Third quartile $\frac{3n}{4} + .5$

6. Interquartile range $Q_3 - Q_1$

7. x percentiles $\frac{xn}{100} + .5$

8. x deciles $\frac{xn}{10} + .5$

9. Weighted mean $\frac{\sum (W_x X_x)}{\sum w_x}$

10. Average deviation $\frac{\sum |x - \mu|}{N}$

11. Population standard deviation $\sigma = \sqrt{\frac{\sum x^2}{N} - \left(\frac{\sum x}{N}\right)^2}$

12. Sample standard deviation $s = \sqrt{\frac{\sum x^2 - \frac{\left(\sum x\right)^2}{n}}{n-1}}$

13. Population variance $\sigma^2 = \frac{\sum x^2}{N} - \left(\frac{\sum x}{N}\right)^2$

14. Sample variance $s^2 = \frac{\sum x^2 - \frac{\left(\sum x\right)^2}{n}}{n-1}$

15. Coefficient of variation $C.V. = \frac{\sigma}{\mu}(100)$

16. Range $H - L$

17. Chebyshev's rule $1 - \frac{1}{k^2}$

18. Pearson's coefficient of skewness $\frac{3(\bar{x} - \text{md.})}{s}$

Grouped Measures

19. Approximate class width $\frac{\text{range}}{\text{\# of classes}}$

20. Class midpoint $\frac{X_1 + X_2}{2}$

21. Population mean $\mu = \frac{\sum fx}{N}$

22. Sample mean $\bar{X} = \frac{\sum fx}{n}$

23. Location of the median $\frac{n}{2}$

24. Median $L + \frac{\frac{n}{2} - CF_b}{f}(i)$

25. Population standard deviation $\sigma = \sqrt{\frac{\sum f(x-\mu)^2}{N}}$

26. Sample standard deviation $s = \sqrt{\frac{\sum fx^2 - \frac{\left(\sum fx\right)^2}{n}}{n-1}}$

27. Relative frequency $\frac{\text{class frequency}}{\text{total frequencies}}$

28. Sample variance $s^2 = \frac{\sum fx^2 - \frac{\left(\sum fx\right)^2}{n}}{n-1}$