

Midterm Review

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Contents

1	Chapter 2: Descriptive Statistics and Displays	1
2	Chapter 3: Relationships Between Variables	2
3	Chapter 4: Probability and Combinatorics	2
4	Chapter 5: Distributions	2
5	Chapter 6: Confidence Intervals	2
6	Chapter 7: Hypothesis Tests	2

1 Chapter 2: Descriptive Statistics and Displays

- Categorical:
 - Frequency Tables, bar charts
- Continuous:
 - Histograms, Sturges' formula
 - Boxplots, modified boxplots
 - Center: mean, trimmed mean, median, mode
 - Dispersion: quantiles, IQR, variance, standard deviation, coefficient of variation, skewness
 - concentration: z-scores, empirical rule
 - Normality, quantile plots, linear transformations, Box-Cox transformation

2 Chapter 3: Relationships Between Variables

- CQ: side-by-side histograms or boxplots
- CC: two-way tables
- QQ: Scatterplot
 - Strength, direction, form, outliers
 - correlation(direction and correlation) and covariance(only tells directions, not frequently used when talking about correlation, but good concept for later study)

3 Chapter 4: Probability and Combinatorics

- Probability:
 - intersection, union, complement of events
- Combinatorics:
 - Permutations (ordered)
 - product and sum rules
 - star and bars

4 Chapter 5: Distributions

- Discrete and continuous random variables:
 - PMFs, PDFs, CDFs, quantiles
 - Expected value, linearity of expectation, variance, transformations
 - independence, covariance
- Distributions
 - for cheat sheet, the mean and variance for all of the distributions discussed
 - Discrete:...
 - Continuous:...
 - Sampling distributions, CLT
 - ??? if $X \sim \text{Binom}(n, p)$, sample for 50 times, $\bar{X} \sim N(np, \sqrt{p^*(1-p)/n})$

5 Chapter 6: Confidence Intervals

6 Chapter 7: Hypothesis Tests