

FINAL REVIEW

What you should be able to do:

Ch 1-5

- See the midterm review.

Ch 6: Confidence intervals

- Calculate and report a point estimate of a parameter.
- Given a confidence level, determine the number of standard deviations to use in calculating the margin of error E .
- Calculate and report a confidence interval for a mean at various confidence levels.
- Calculate and report a confidence interval for a proportion at various confidence levels.
- Provide a formal interpretation of a confidence interval.
- Know which sampling distribution to use (z or t) for different scenarios (for different sample sizes, population distributions, mean vs. proportion, etc.)
- Given a desired margin of error (E) and confidence level, calculate the necessary sample size.

Ch 7: Hypothesis testing

- Identify the null and alternative hypotheses from a description of a scenario.
- Write hypotheses in their formal notation.
- Identify from a problem whether a hypothesis test is one or two sided.
- Understand what Type I and Type II errors are.
- Check whether the conditions for hypothesis testing are met when testing means and when testing proportions.
- Use the significance level and the distribution of the test statistic to determine a critical value.
- Calculate an appropriate test statistic for means and for proportions.
- Compute a P -value given a test statistic (z-value only).
- Use either a test statistic or a P -value to decide whether to reject the null hypothesis.
- Provide a formal conclusion from the results of a hypothesis test.
- Understand what is meant by statistical power and how sample size affects power.

Ch 8: Hypothesis testing for two samples

- Identify the null and alternative hypotheses from a description of a scenario.
- Write hypotheses in their formal notation.

- Use the significance level and the distribution of the test statistic to determine a critical value.
- Calculate an appropriate test statistic for differences in means and for differences in proportions.
- Use a test statistic to decide whether to reject the null hypothesis.
- Provide a formal conclusion from the results of a hypothesis test.
- Calculate and interpret confidence intervals for differences in means and differences in proportions.
- Understand when and how to use a matched pairs test.

Ch 9: Regression

- Interpret a scatter plot.
- Interpret the sample correlation coefficient.
- Interpret R -squared.
- Interpret the form of a linear model, including intercept and slope.
- Understand how estimates of intercept and slope are obtained.
- Use the test statistic for either the slope or the correlation coefficient to test for a linear association.
- Know the assumptions underlying the linear

model and how to check for violations of these conditions.

- Identify and interpret key numbers from computer output.
- Use computer output to make predictions using the regression line.
- Understand when to use confidence vs. prediction intervals for linear regression.
- Interpret the coefficients from a multiple linear regression.
- Compare competing multiple regression models using R -squared.

Ch 11: ANOVA

- Know the basic null and alternative hypotheses for ANOVA.
- Understand the components of the ANOVA table and how they relate to each other.
- Interpret the ANOVA table to know whether to reject the null hypothesis.

Ch 10: Categorical data

- Given a hypothesized probability distribution and sample size, calculate the expected counts for each category.
- Calculate the Chi-squared test statistic and find appropriate critical values in the Chi-square

table.

- Perform a goodness-of-fit test.
- Given a contingency table, calculate the expected counts for each cell.
- Perform a test Chi-squared test for independence or for homogeneity.