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1. What are the assumptions of the linear regression model?
   1. There is a linear relationship between the variables
   2. The variance of each residual is the same
   3. Observations are independent
   4. Normally distributed data
2. Interpretations of the parameters of a linear regression model?
   1. B0 = y intercept = value of Y when Xi is equal to zero
   2. Bi = slope = amount of change in Y for a 1 unit change in Xi
   3. Epsilon = error coefficient = “deviation of the ith observation from its expected value”
3. T statistics for testing weather slope is zero
   1. F statistic
   2. T statistic
   3. Z statistic
4. SSR, SSE and SST?
   1. SST: Total sum of squares – sum of the squared deviations around the value that minimizes sum of squared deviations for Yi = Sigma (Yi-Ybari)^2 = total variation of the model
   2. SSE = Sum of squared differences between observations and sample mean = measure of variation – variability left over around the fitted values to the regression line, error that isn’t explained by the model = Sigma(xi - xbar)^2
   3. SSR = sum of squares due to regression = differences between predicted values and mean of dependent var= Sigma(Yhati-Ybar)^2
   4. SST = SSE + SSR
   5. An analysis of variance for regression would be the analysis using the above factors on how much variability is not explained by the model (like R^2 value as described below)
5. R^2
   1. SSR/SST
   2. Literally means what proportion of the variability of the data can be explained by the model?
6. MSR
   1. Mean square for regression
   2. SSR/1
   3. Can be used with MSE to compute F statistic
7. MSE
   1. Mean Squared Error
   2. SSE/n-2
8. Wald statistic for testing weather slope is zero
   1. F statistic
   2. F = MSR/MSE
   3. Large F -> slope != zero
9. Distribution theory and approximate theory for the test statistics
   1. “When errors are normal, F statistic has an F1n-2 distribution. For large n, the distribution is approximately X2 on one degree of freedom”
   2. Ask Rich in office hours what the rest of question means.