Test Review

Completely Don’t Need

10.3 10.6 10.10 10.11

For negative autocorrelation the residuals for t-1 and t will be opposite

For positive autocorrelation the residuals for t-1 and t will be the same.

p545 10.7

Our deterministic will only have t as the variable

* No x(t) nothing of the sort
* Only using time t

How to detect autocorrelation

* DW statistics
  + Null hypothesis
    - There is not autocorrelation

No need to know lagging variables

Drawbacks of regression & time series

What are the consequences/benefits of autocorrelated residuals (Ch 10.8)

* When I have autocorrelation residuals are my beta estimates biased?
  + No, they are not
  + Although there is autocorrelation it is still okay
* When there is autocorrelation the standard error for the beta estimates are smaller than the true standard error
  + True, Yes
  + Beta is unbiased but the Standard Error is smaller than expected
  + The p value is larger.
    - Since standard error is in the denominator

Why do we have forecast errors?

* Model can change at any time
* Uncorrelated residual with the variance
* Estimating parameters.
* In book Chapter 10

Don’t need to know regressed r squared or total r squared

No actual predicting of time series

* Need to know the steps though

Chapter 11 (Experimental Design)

No section 11.4, 11.5

Need to know the definition of the replication

* No calculations
* Lots of vocabulary

ANOVA

* Analysis of Variance
* Hypothesis that we test is “Means are equal”
  + Population means for different treatments of categories.
* Variance
  + Between Sample variation and Within Sample Variation
  + If between > within
    - We can conclude that the treatment means are different from each other

Vocab from 11.1 and 11.2

* Experimental Units
  + From the example of drugs
    - The people
  + Whatever is receiving the treatment
* Factors
  + From the example of drugs
    - How many factors?
    - 1
      * How many levels of the factors
  + Variable itself
    - Ex. Sunlight, drug, school type
    - Level = How many of this are there
  + For multiple factors
    - Number of Combination = Levels
* Response variable
  + From the example
    - Fever decrease
  + What is measured
  + Can have more than one response variable

Randomization

* Randomization randomly assigns errors effects to the treatments (T/F)
  + True
* Randomization ensure that there is little to no correlation of x and y
  + False

Chapter 12

12.7 (Tukey) is on the test along with other chapter 12 sections form the syllabus

Null Hypothesis = mu 1 = mu 2 = mu 3 = mu 4 = mu p

* Doesn’t mean they are all zero just equal to each other
* P – 1 dummy variables
* Parameter
  + Population mean for each treatment (THIS IS ANOVA)

Know how to fill in an ANOVA table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | df | SS | MS | F |
| Model | P - 1 | SST   * Variation is explained by the difference in sample means | SST/p-1 | Mst/mse |
| Error | N – P | SSE   * Unexplained error by the sample means | SSE/ n-p | X |
| Total | N - 1 | SS(total) | X | X |

Assumption for ANOVA is about the response

* Confidence interval thus mean its about the mean instead of prediction
* 2 assumption
  + Normality and equal variance about the response variable

Assumption for regression is about the error