

Categorical data

The model is Y= u + e

What’s the design matrix X? (no intercept, so no column of 1s)

What’s the sum of diagonal entries of ? (the number of samples for each category)

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Estimate of SE

2.prove.

True model is Y = X where

1. Is the least square estimator unbiased?

Let Y be income, X be age and education, D is gender, we only regress Y on X, so we might miss some information, D definitely contributes to the Y.

3.prove

Simple linear regression. Y = a + bx +e, suppose we regress y on new x’= x +10, what’s the coefficients of least square estimator and their variances?

And suppose we let y’ = y + 10, then we regress y’ on x, what’s the coefficients of least square estimator and their variances?

(replace x’ by x+10 in the formula of

4.R output, fill in missing parts

F statistic, what’s the F statistic test on? (Answer: test on beta1=beta2=...=beta\_p=0)

t-test is equivalent to F-test when we test the hypothesis

Cov (

5 some true and false

Note that how to prove

What’s the value range for Hat matrix’s entry? Diagonal and non-diagonal?