**Lecture 18**

**Use of Qualitative /Categorical Independent Variables:**

**(i) Qualitative X variable Binary Categories**

How can you measure the effect of gender on wage? i.e. are the wages for male and female same on average? Here we want to explain y = wage with the help of x = gender.

Example: Wage (Rs.) = 20,000 – 3500 Female

The intercept: Average wage for a male person is Rs. 20,000.

The slope: Average wage of a female is Rs. 3500 lower than a male.

**(ii) Qualitative X variable with k categories**. Use k-1 dummy variables:

Consider the house price ($1000) in three different city Zones, East, West and South.

We code and include any two dummy variables e.g.

|  |  |
| --- | --- |
| East = 1 if house is in East Zone, 0 otherwise  West = 1 if house is in West Zone, 0 otherwise  Keeping South Zone as reference. The estimated model may be like:  Price = 200 + 50 East – 75 West  ***Interpretation:*** |  |

200: Average house price in the South Zone is $200,000

50: House price in East Zone is on average $50,000 higher than in the South Zone.

-75: House price in West Zone is on average $75,000 lower than in the South Zone.

**Anderson** **Example pdf p-756,**

**Some further exercises from Anderson:**

**Ex 34 pdf p-761, Ex 35, pdf p-761**