

### Multi Linear Regression

Example: Education VS Salary

Claim

$$\text{wage}_i = B_0 + B_1 \text{educ}_i + B_2 \text{experi}_i + \dots + B_k X_{ki} + u_i$$

Key assumption:  $E[u_i | X_{1i} \dots X_{ki}] = 0$   
assume that all other factors are uncorrelated with  $X_1 \dots X_k$ .

$$B_j = dY / dX_j, j=1 \dots k$$

holding all other factors fixed.

### OLSEs for MLR

$$\min_{b_0, b_1, b_2} \sum_{i=1}^n (Y_i - b_0 - b_1 X_{1i} - b_2 X_{2i})^2 = \text{SSR}$$

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By **carol2008**

[cheatography.com/carol2008/](https://cheatography.com/carol2008/)

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