

# Simple Linear Regression Overview (Quiz 1)

Econ 4050 (Soliman)

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1. How would you define the residual in a simple linear regression?
2. What does ordinary least squares (OLS) estimation do?
  - a) give the definition in your own words.
  - b) give the formal definition.
3. Interpret each coefficient in the regression model below, and do not assume causality. This dataset has yearly information on county opioid pills that are dispensed, as well as the number of overdoses deaths in the county. The unit of observation is therefore county-year.

```
countyleveldataonopioids <- read.csv("/Users/adamsoliman/Library/CloudStorage/Dropbox/Clemson/Econometr
head(countyleveldataonopioids)

##   year state                  county overdosedeaths percapitapills
## 1 2006 AK      ALEUTIANS EAST (B), AK     0.4692156    0.1133359
## 2 2006 AK      KETCHIKAN GATEWAY (B), AK    3.2109865   43.8583383
## 3 2006 AK      ALEUTIANS WEST (CA), AK     0.5260695    5.0963924
## 4 2006 AK      NORTH SLOPE (B), AK      1.0075759    0.1882567
## 5 2006 AK WRANGELL-PETERSBURG (CA), AK  25.0000000   5.9383202
## 6 2006 AK      MATANUSKA-SUSITNA (B), AK  24.0000000   32.7841700

lm(overdosedeaths ~ percapitapills, data = countyleveldataonopioids)

##
## Call:
## lm(formula = overdosedeaths ~ percapitapills, data = countyleveldataonopioids)
##
## Coefficients:
## (Intercept)  percapitapills
##           24.39483        0.05046
```

4. What is the implicit statistical assumption we discussed that one must be careful to consider when using OLS?