

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 dispenses, 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	overdosedeadths	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(overdosedeadths ~ percapitapills, data = countyleveldataonopioids)  
  
##  
## Call:  
## lm(formula = overdosedeadths ~ 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?