

# Gretl Workshop 3

Data Descriptives

Functional Forms

# Data Entry and summary statistics

- Launch gretl; click on File/Open data/sample file, select data7-11 under Ramanathan tab.
- Select Data/Select all and then choose View/Summary statistics
- Note the means and standard deviations (S.D.) for price, sqft, and pool. Pool is a dummy variable; interpret its mean.

# Histograms

- From main window click on the variable “price” and select Variable/frequency plot/simple. Do the same for the variable “yard”
- *How would you describe the distributions of price and yard? Do these distributions appears to be normal?*

# Pairwise Correlations

- **Hold down the Ctrl key and click on the variables price, yard, sqft, age to highlight these variables.**
- **Select View/Correlation matrix**
- ***Based on these simple correlations which variables are positively related to price? Does age have any relation to price or the other variables? Interpret the negative correlation between age and sqft?***

# Transformations

- Hold down the Ctrl key and click on price, sqft, and yard.
- Then select Add/logs of selected variables to create l\_price, l\_sqft, and l\_yard. Look at frequency plot of l\_yard. Is this more 'normal' than yard?
- Click on age, select Add/squares of selected variables to create sq\_age.

# Functional Forms

- **Select Model/Ordinary least squares, choose  $l\_price$  as the dependent variable,  $bedrms$ ,  $age$ , and  $l\_sqft$  as independent variables. Ok.**
- ***Interpret the coefficient on  $l\_sqft$ . If one house is 10% larger than another house what is expected price difference? (Note double-log form)***
- ***What is the quantitative effect of one additional bedroom on the price of a house? (Note semi-log form)***

# Quadratic Form

- *Add sq\_age to the previous model [Select model/ordinary least squares; highlight sq\_age and hit “Add” and then “Ok”].*
- *Is the relation between l\_price and age U-shaped or inverted U-shaped? At what age is this relation maximized (or minimized)?*

# Scaling and units

- ***Estimate model in linear form: price as a function of age, sqft, and bedrms.***
- ***By how many dollars does the expected price of a house increase for each additional square foot of space? [price is given in thousands of dollars].***
- ***What is the dollar effect of one additional bedroom on the expected price of a house?***
- ***Do not close this model.***

# Re-scaling

- Select Add/Define new variable, and type the equation

$$\text{Dollarprice} = \text{price} * 1000$$

- *Dollarprice is then the price in dollars.*
- *Similarly, define hundredsqf = sqft/100, which expresses size in hundreds of square feet.*

# Re-scaling

- **Estimate the linear model using dollarprice as a function of age, bedrms, and hundredsqft.**
- **What is the effect of one additional bedroom on the price of a house? Is it same meaning as before? Are the t-statistics the same?**
- **What is the effect of one additional square foot of space on the expected price?**
- **Confirm that the meanings of the estimates have not changed.**