# Data Transformation

## Select Parts of Data (Subsetting)

### Select Specific Columns

**drop** make
remove the 'make' variable

**keep** make price
opposite of drop; keep only columns 'make' and 'price'

### Filter Specific Rows

**drop if** mpg < 20 **drop in** 1/4
drop observations based on a condition (left)
or rows 1-4 (right)

**keep in** 1/30
opposite of drop; keep only rows 1-30

**keep if inrange(price, 5000, 10000)**
keep values of price between $5,000 – $10,000 (inclusive)

**keep if inlist(**make, "Honda Accord", "Honda Civic", "Subaru"**)**
keep the specified values of make

**sample** 25
sample 25% of the observations in the dataset
(use **set seed** # command for reproducible sampling)

## Replace Parts of Data

### Change Column Names

**rename (**rep78 foreign**) (**repairRecord carType**)**
rename one or multiple variables

### Change Row Values

**replace** price = 5000 if price < 5000
replace all values of price that are less than $5,000 with 5000

**recode price (**0 / 5000 = 5000**)**
change all prices less than 5000 to be $5,000

**recode foreign (**0 = 2 "US"**)(**1 = 1 "Not US"**), gen(**foreign2**)**
change the values and value labels then store in a new variable, foreign2

### Replace Missing Values

**mvdecode** _all, **mv(**9999**)** useful for cleaning survey datasets
replace the number 9999 with missing value in all variables

**mvencode** _all, **mv(**9999**)** useful for exporting data
replace missing values with the number 9999 for all variables

## Label Data

Value labels map string descriptions to numeric values. Value labels allow the underlying data to be Boolean or numeric, which makes logical tests simpler, while also connecting the values to human-understandable text.

**label define** myLabel 0 "US" 1 "Not US"
**label values** foreign myLabel
define a label and apply it the values in foreign

**label list**
list all labels within the dataset

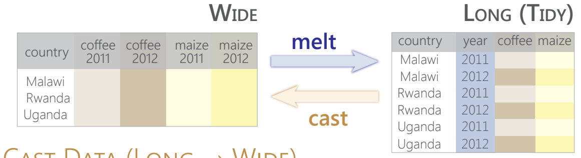
## Reshape Data

**webuse set** https://github.com/GeoCenter/StataTraining/raw/master/Day2/Data
**webuse** "coffeeMaize.dta" load demo dataset

### Melt Data (Wide → Long)

reshape variables starting with coffee and maize
unique id variable (key)
create new variable which captures the info in the column names

**reshape long** coffee@ maize@, **i(**country**) j(**year**)** new variable
convert a wide dataset to long



Tidy Datasets have each observation in its own row and each variable in its own column.

When datasets are tidy, they have a consistent, standard format that is easier to manipulate and analyze.

### Cast Data (Long → Wide)

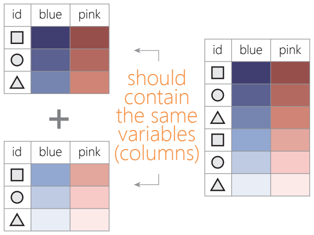
create new variables named coffee2011, maize2012...
what will be unique id variable (key)
create new variables with the year added to the column name

**reshape wide** coffee maize, **i(**country**) j(**year**)**
convert a long dataset to wide

**xpose, clear varname**
transpose rows and columns of data, clearing the data and saving old column names as a new variable called "_varname"

## Combine Data

### Adding (Appending) New Data

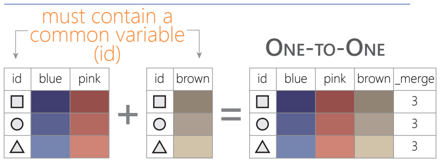


**webuse** coffeeMaize2.dta, **clear**
**save** coffeeMaize2.dta, **replace**
**webuse** coffeeMaize.dta, **clear**
load demo data

**append using** "coffeeMaize2.dta", **gen(**filenum**)**
add observations from "coffeeMaize2.dta" to current data and create variable "filenum" to track the origin of each observation

### Merging Two Datasets Together

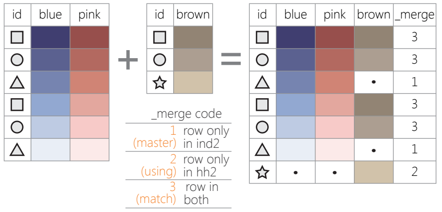
One-to-One



**webuse** ind_age.dta, **clear**
**save** ind_age.dta, **replace**
**webuse** ind_ag.dta, **clear**

**merge 1:1** id **using** "ind_age.dta"
one-to-one merge of "ind_age.dta" into the loaded dataset and create variable "_merge" to track the origin

Many-to-One



**webuse** hh2.dta, **clear**
**save** hh2.dta, **replace**
**webuse** ind2.dta, **clear**

**merge m:1** hid **using** "hh2.dta"
many-to-one merge of "hh2.dta" into the loaded dataset and create variable "_merge" to track the origin

## Manipulate Strings

### Get String Properties

**display length(**"This string has 29 characters"**)**
return the length of the string

**charlist** make * user-defined package
display the set of unique characters within a string

**display strpos(**"Stata", "a"**)**
return the position in Stata where a is first found

### Find Matching Strings

**display strmatch(**"123.89", "1??.?9"**)**
return true (1) or false (0) if string matches pattern

**display substr(**"Stata", 3, 5**)**
return the string located between characters 3-5

**list** make **if regexm(**make, "[0-9]"**)**
list observations where make matches the regular expression (here, records that contain a number)

**list if regexm(make,** "(Cad.|Chev.|Datsun)"**)**
return all observations where make contains "Cad.", "Chev." or "Datsun"

compare the given list against the first word in make

**list if inlist(word(**make, 1**)**, "Cad.", "Chev.", "Datsun"**)**
return all observations where the first word of the make variable contains the listed words

### Transform Strings

**display regexr(**"My string", "My", "Your"**)**
replace string1 ("My") with string2 ("Your")

**replace** make **= subinstr(**make, "Cad.", "Cadillac", 1**)**
replace first occurrence of "Cad." with Cadillac in the make variable

**display stritrim(**" Too much Space"**)**
replace consecutive spaces with a single space

**display trim(**" leading / trailing spaces "**)**
remove extra spaces before and after a string

**display strlower(**"STATA should not be ALL-CAPS"**)**
change string case; see also **strupper**, **strproper**

**display strtoname(**"1Var name"**)**
convert string to Stata-compatible variable name

**display real(**"100"**)**
convert string to a numeric or missing value

## Save & Export Data

**save** "myData.dta", **replace** Stata 12-compatible file
**saveold** "myData.dta", **replace version(12)**
save data in Stata format, replacing the data if a file with same name exists

**export excel** "myData.xls", /*
*/ **firstrow(variables) replace**
export data as an Excel file (.xls) with the variable names as the first row

**export delimited** "myData.csv", **delimiter(",") replace**
export data as a comma-delimited file (.csv)

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Disclaimer: we are not affiliated with Stata. But we like it.