BUAN 6312.003
Project CODE

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STATA CODE:

```
use "H:\BUAN 6312\Project\car_fatalities.dta"
clear
sum
xtdescribe
xtset state year

*correlations;
cor mrall spircons unrate beertax sobapt mormon mlda dry yngdrv vmiles jaild comserd mralln mra1517
mra1517n mra1820 mra1820n mra2124 mra2124n mraidall pop pop1517 pop1820 pop2124 miles gspch

gen pop1517_rate = pop1517/pop
gen pop1820_rate = pop1820/pop
gen pop2124_rate = pop2124/pop

gen ln_perinc = ln(perinc)
histogram perinc
histogram ln_perinc

gen ln_sobapt = ln(sobapt+1)
histogram sobapt
histogram ln_sobapt
sum ln_sobapt sobapt

inspect sobapt ln_sobapt ln_sobapt2
summarize sobapt ln_sobapt ln_sobapt2

histogram mormon
gen ln_mormon = ln(mormon+1)
histogram ln_mormon

*vmiles=miles/pop - yes
gen miles_pop = miles/pop
```

```
cor mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild comserd pop pop1517_rate pop1820_rate pop2124_rate gspch
corr mrall pop pop1517 pop1820 pop2124 pop1517_rate pop1820_rate pop2124_rate
corr mrall mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall pop pop1517 pop1820 pop2124 pop1517_rate pop1820_rate pop2124_rate

*a) pooled ols
*all variables, model 1;
reg mrall spircons unrate beertax sobapt mormon mlda dry yngdrv vmiles jaild comserd mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall pop pop1517 pop1820 pop2124 miles gspch, vce (cluster state)
estimates store OLS
*some variables, model 2;
reg mrall beertax mlda dry vmiles jaild comserd gspch, vce (cluster state)
estimates store OLS
*model 3;
reg mrall spircons unrate perinc beertax sobapt mormon mlda dry yngdrv vmiles jaild comserd pop1517_rate pop1820_rate pop2124_rate gspch, vce (cluster state)
*model 4 variables in model 3 removed;
reg mrall spircons unrate perinc beertax sobapt mormon dry yngdrv vmiles jaild pop1517_rate pop1820_rate, vce (cluster state)
*model 5;
reg mrall spircons unrate perinc sobapt mormon dry yngdrv pop1517_rate pop1820_rate, vce (cluster state)
*model 6;
reg mrall spircons unrate ln_perinc sobapt mormon dry yngdrv pop1517_rate pop1820_rate, vce (cluster state)
*12/9
*model 1.9;
reg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild comserd pop pop1517_rate pop1820_rate pop2124_rate gspch, vce (cluster state)
estat ic
*model 2.9;
reg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon dry yngdrv vmiles jaild comserd pop1517_rate pop1820_rate, vce (cluster state)
estat ic
*model 3.9;
reg mrall spircons unrate ln_perinc beertax ln_sobapt dry vmiles pop1517_rate pop1820_rate, vce (cluster state)
estat ic
*model 4.9;
reg mrall spircons unrate ln_perinc dry pop1517_rate pop1820_rate, vce (cluster state)
estat ic
*model 5.9;
```

```
reg mrall spircons unrate ln_perinc dry pop1517_rate, vce (cluster state)
estat ic
reg mrall spircons unrate perinc dry pop1517, vce (cluster state)
estat ic
*model 1.11;
reg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild comserd
mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall pop pop1517_rate
pop1820_rate pop2124_rate gspch, vce (cluster state)
estat ic

*b) year as dummy variables
*model 1;
xtreg mrall spircons unrate beertax sobapt mormon mlda dry yngdrv vmiles jaild comserd mralln
mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall pop pop1517 pop1820 pop2124
miles gspch i.year, fe vce(cluster state)
estat ic
estimates store Dummy_Year
testparm i.year
*model 2;
xtreg mrall beertax mlda dry vmiles jaild comserd gspch i.year, fe vce(cluster state)
estat ic
estimates store Dummy_Year
testparm i.year
*model 3;
xtreg mrall spircons unrate perinc beertax sobapt mormon mlda dry yngdrv vmiles jaild comserd
pop1517_rate pop1820_rate pop2124_rate gspch i.year, fe vce (cluster state)
estat ic
estimates store Dummy_Year
testparm i.year
*model 4;
xtreg mrall spircons unrate perinc beertax sobapt mormon dry yngdrv vmiles jaild pop1517_rate
pop1820_rate i.year, fe vce(cluster state)
estat ic
estimates store Dummy_Year
testparm i.year
*model 5;
xtreg mrall spircons unrate perinc sobapt mormon dry yngdrv pop1517_rate pop1820_rate i.year, fe
vce(cluster state)
*model 6;
xtreg mrall spircons unrate ln_perinc sobapt mormon dry yngdrv pop1517_rate pop1820_rate i.year, fe
vce(cluster state)
predict ehat2ln, res
graph twoway scatter ehat2ln sobapt, mlabel(state) yline(0)
*model 1.9;
```

```
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild comserd pop pop1517_rate pop1820_rate pop2124_rate gspch i.year, fe vce(cluster state)
estat ic
estimates store Dummy_Year
testparm i.year
*model 2.9;
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon dry yngdrv vmiles jaild comserd pop1517_rate pop1820_rate i.year, fe vce (cluster state)
estat ic
estimates store Dummy_Year
testparm i.year
*model 3.9
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt dry vmiles pop1517_rate pop1820_rate i.year, fe vce(cluster state)
estat ic
estimates store Dummy_Year
testparm i.year
*model 4.9;
xtreg mrall spircons unrate ln_perinc dry pop1517_rate pop1820_rate i.year, fe vce(cluster state)
estat ic
estimates store Dummy_Year
testparm i.year
*model 5.9;
xtreg mrall spircons unrate ln_perinc dry pop1517_rate i.year, fe vce(cluster state)
estat ic
estimates store Dummy_Year
testparm i.year
*model 6.9;
xtreg mrall spircons unrate ln_perinc dry ib7.year, fe vce(cluster state)
estat ic
estimates store Dummy_Year
testparm i.year
xtreg mrall spircons unrate perinc dry pop1517 i.year, fe vce(cluster state)
estat ic
estimates store Dummy_Year
testparm i.year

*1.11 mra variables included;
*Round 2 Regressions;
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild comserd mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall pop pop1517_rate pop1820_rate pop2124_rate gspch i.year, fe vce(cluster state)
estat ic
estimates store Dummy_year1
```

```
testparm i.year
*2.11 mra variables included;
xtreg mrall spircons unrate ln_perinc dry vmiles comserd mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall, fe vce(cluster state)
estat ic
estimates store Dummy_year2
testparm i.year
*3.11 mra variables included;
xtreg mrall spircons unrate ln_perinc dry vmiles mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall, fe vce(cluster state)
estat ic
estimates store Dummy_year2
testparm i.year

*c&d) fe
*model 1;
xtreg mrall spircons unrate beertax sobapt mormon mlda dry yngdrv vmiles jaild comserd mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall pop pop1517 pop1820 pop2124 miles gspch, fe cluster(state)
estimates store fe_cluster
xtreg mrall spircons unrate beertax sobapt mormon mlda dry yngdrv vmiles jaild comserd mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall pop pop1517 pop1820 pop2124 miles gspch, fe
estimates store fixed
*model 2;
xtreg mrall beertax mlda dry vmiles jaild comserd gspch, fe cluster(state)
estimates store fe_cluster
xtreg mrall beertax mlda dry vmiles jaild comserd gspch, fe
estimates store fixed
*model 3;
xtreg mrall spircons unrate perinc beertax sobapt mormon mlda dry yngdrv vmiles jaild comserd pop1517_rate pop1820_rate pop2124_rate gspch, fe cluster(state)
xtreg mrall spircons unrate perinc beertax sobapt mormon mlda dry yngdrv vmiles jaild comserd pop1517_rate pop1820_rate pop2124_rate gspch, fe
*model 4
xtreg mrall spircons unrate perinc beertax sobapt mormon dry yngdrv vmiles jaild pop1517_rate pop1820_rate, fe cluster(state)
xtreg mrall spircons unrate perinc beertax sobapt mormon dry yngdrv vmiles jaild pop1517_rate pop1820_rate, fe
estimates store fixed_4
*model 5;
xtreg mrall spircons unrate perinc sobapt mormon dry yngdrv pop1517_rate pop1820_rate, fe cluster(state)
xtreg mrall spircons unrate perinc sobapt mormon dry yngdrv pop1517_rate pop1820_rate, fe
```

```
estimates store fixed_5
*model 6;
xtreg mrall spircons unrate ln_perinc sobapt mormon dry yngdrv pop1517_rate pop1820_rate, fe cluster(state)
xtreg mrall spircons unrate ln_perinc sobapt mormon dry yngdrv pop1517_rate pop1820_rate, fe
estimates store fixed_6
*model 1.9;
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild comserd pop pop1517_rate pop1820_rate pop2124_rate gspch, fe cluster (state)
estat ic
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild comserd pop pop1517_rate pop1820_rate pop2124_rate gspch, fe
estat ic
estimates store fixed_19
*model 2.9;
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon dry yngdrv vmiles jaild comserd pop1517_rate pop1820_rate, fe cluster(state)
estat ic
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon dry yngdrv vmiles jaild comserd pop1517_rate pop1820_rate, fe
estat ic
estimates store fixed_29
*model 3.9
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt dry vmiles pop1517_rate pop1820_rate, fe cluster(state)
estat ic
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt dry vmiles pop1517_rate pop1820_rate, fe
estat ic
estimates store fixed_39
*model 4.9;
xtreg mrall spircons unrate ln_perinc dry pop1517_rate pop1820_rate, fe cluster(state)
estat ic
xtreg mrall spircons unrate ln_perinc dry pop1517_rate pop1820_rate, fe
estat ic
estimates store fixed_49
*model 5.9;
xtreg mrall spircons unrate ln_perinc dry pop1517_rate, fe cluster(state)
estat ic
xtreg mrall spircons unrate ln_perinc dry pop1517_rate, fe
estat ic
estimates store fixed_59

xtreg mrall spircons unrate perinc dry pop1517, fe cluster(state)
xtreg mrall spircons unrate perinc dry pop1517, fe
```

```
*1.11;
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild comserd mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall pop pop1517_rate pop1820_rate pop2124_rate gspch, fe cluster(state)
estat ic
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild comserd mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall pop pop1517_rate pop1820_rate pop2124_rate gspch, fe
estat ic
estimates store fixed_111
*2.11;
xtreg mrall spircons unrate ln_perinc dry vmiles comserd mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall gspch, fe cluster(state)
estat ic
xtreg mrall spircons unrate ln_perinc dry vmiles comserd mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall gspch, fe
estat ic
estimates store fixed_211
*3.11;
xtreg mrall spircons unrate ln_perinc dry vmiles mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall gspch, fe cluster(state)
estat ic
xtreg mrall spircons unrate ln_perinc dry vmiles mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall gspch, fe
estat ic
estimates store fixed_311
*4.11;
xtreg mrall spircons unrate ln_perinc dry vmiles mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall, fe cluster(state)
estat ic
xtreg mrall spircons unrate ln_perinc dry vmiles mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall, fe
estat ic
estimates store fixed_411
estimates store fixed_59

xttrans comserd

*e) re;
*model 1;
xtreg mrall spircons unrate beertax sobapt mormon mlda dry yngdrv vmiles jaild comserd mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall pop pop1517 pop1820 pop2124 miles gspch, re
```

```
estat ic
estimates store random
*model 2;
xtreg mrall beertax mlda dry vmiles jaild comserd gspch, re
estimates store random
*model 3
xtreg mrall spircons unrate perinc beertax sobapt mormon mlda dry yngdrv vmiles jaild comserd
pop1517_rate pop1820_rate pop2124_rate gspch, re
*model 4
xtreg mrall spircons unrate perinc beertax sobapt mormon dry yngdrv vmiles jaild pop1517_rate
pop1820_rate, re
estimates store random_4
*model 5;
xtreg mrall spircons unrate perinc sobapt mormon dry yngdrv pop1517_rate pop1820_rate, re
estimates store random_5
hausman fixed_5 random_5
*model ;
xtreg mrall spircons unrate ln_perinc sobapt mormon dry yngdrv pop1517_rate pop1820_rate, re
estimates store random_6
hausman fixed_6 random_6
*model 1.9;
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild
comserd pop pop1517_rate pop1820_rate pop2124_rate gspch, re
estimates store random_19
hausman fixed_19 random_19
*model 2.9;
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon dry yngdrv vmiles jaild comserd
pop1517_rate pop1820_rate, re
estimates store random_29
hausman fixed_29 random_29
*model 3.9;
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt dry vmiles pop1517_rate pop1820_rate, re
estimates store random_39
hausman fixed_39 random_39
*model 4.9;
xtreg mrall spircons unrate ln_perinc dry pop1517_rate pop1820_rate, re
estimates store random_49
hausman fixed_49 random_49
*model 5.9;
xtreg mrall spircons unrate ln_perinc dry pop1517_rate, re
estimates store random_59
hausman fixed_59 random_59

*1.11;
```

```
xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild
comserd mralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall pop pop1517_rate
pop1820_rate pop2124_rate gspch, re
estimates store random_111
hausman fixed_111 random_111
*2.11;
xtreg mrall spircons unrate ln_perinc dry vmiles comserd mralln mra1517 mra1517n mra1820 mra1820n
mra2124 mra2124n mraidall gspch, re
estimates store random_211
hausman fixed_211 random_211
*3.11;
xtreg mrall spircons unrate ln_perinc dry vmiles mralln mra1517 mra1517n mra1820 mra1820n
mra2124 mra2124n mraidall gspch, re
estimates store random_311
hausman fixed_311 random_311
*4.11;
xtreg mrall spircons unrate ln_perinc dry vmiles mralln mra1517 mra1517n mra1820 mra1820n
mra2124 mra2124n mraidall, re
estimates store random_411
hausman fixed_411 random_411

-- Visualizing Data --
xtline mlda, t(year) i(state) overlay

twoway scatter mrall  perinc, mlabel(state) || lfit mrall perinc, clstyle(p2)

reg mrall gspch
predict ehat127, res
graph twoway scatter ehat197 gspch, mlabel(state) yline(0)

*plot variables ..
xtset state year
xtline year allmort
scatter mrall spircons
line mrall beertax
xtsum spircons unrate perinc ln_perinc beertax sobapt ln_sobapt mormon ln_mormon mlda dry yngdrv
vmiles jaild comserd pop pop1517 pop1517_rate pop1820 pop1820_rate pop2124 pop2124_rate gspch
xtline mrall beertax
twoway scatter mrall mra2124 || lfit mrall mra2124
graph scatter mrall
twoway lfit mrall yngdrv

twoway histogram mormon
```

variables
spircons unrate perinc beertax sobapt mormon mlda dry yngdrv
vmiles jaild comserd allmort mrall allnite mralln allsvn a1517 mra1517 a1517n mra1517
a1517n mra1517n a1820 a1820n mra1820 mra1820n a2124 mra2124 a2124n mra2124n aidall
mraidall pop pop1517 pop1820 pop2124 miles gspch;
class state year;

SAS CODE:

```
*10.1, input data for project;
proc univariate data=work.car; run;
proc contents data=pr.car; run;
data pr.car; set work.car; run;
proc means data=pr.car sum; var jaild; by state; run;
proc tabulate data=pr.car; class state year; var pop; table state * year * pop; run;
proc tabulate data=pr.car; class year; var allmort; table year * allmort; run;

*compare total deaths per year to deaths related to alcohol;
proc means data=pr.car sum;
var allmort aidall;
class year;
run;

proc sort data=pr.car; by year; run;
proc means data=pr.car sum; var spircons; class state; run;

*per capita pure alcohol consumption (annual, gallons) sum over all states per year. increase from 82-
88;
proc means data = pr.car sum; var spircons; class year; run;
proc means data = pr.car sum; var perinc; class year; run;
proc means data=pr.car sum; var allmort aidall; class year; run;
proc means data=pr.car
proc tabulate data=pr.car; class state year jaild comserd; table state, year, jaild comserd; run;

*drinking age per state per yr;
proc tabulate data=pr.car; class state year; var mlda; table state, year, mlda; run;

*per capita al consumption;
proc tabulate data=pr.car; class state year; var spircons; table state, year, spircons; run;

*dry county;
proc tabulate data=pr.car; class state year; var dry; table state, year, dry; run;

*distribution of dry per state and per year;
```

```
proc univariate data=pr.car; var dry; id state year; histogram dry; probplot dry; run;

proc univariate data=pr.car; var sobapt mormon; id state year; histogram sobapt mormon; probplot
sobapt mormon; run;

*young drivers;
proc tabulate data=pr.car; class state year; var yngdrv; table state, year, yngdrv; run;
proc sort data=pr.car; by state year; run;

*create total allmort per state (combined years);
proc means data=pr.car2 noprint;
class state year;
var allmort;
output out=pr.allmort_tot
sum(allmort) = allmort;
run;

proc sort data= pr.cars; by state; run;

*examine histograms of variables;
proc sgplot data=pr.cars;
histogram yngdrv / group=year;
run;

proc sgpanel data=pr.cars; panelby year; histogram spircons; run;

*examine variable dry;
proc univariate data=pr.car; var dry;
run;

proc means data=pr.cars sum noprint; var spircons; by state;
output out=pr.cars_sp sum(spircons) = tot_spir;
run;

proc sort data=pr.cars_sp; by tot_spir; run;
proc print data=pr.car; where jaild = 0; var state year; run;
proc univariate data=pr.car; var mrall; histogram mrall; probplot mrall; run;

*sum of deaths per year;
proc means data = pr.car; var allmort; by year; run;

*view variation in policy variables;
proc means data=pr.car mean min max;
var spircons unrate perinc beertax sobapt mormon mlda dry yngdrv
```

```
vmiles jaild comserd allmort mrall allnite mralln allsvn a1517 mra1517 a1517n mra1517
a1517n mra1517n a1820 a1820n mra1820 mra1820n a2124 mra2124 a2124n mra2124n aidall mraidall
pop pop1517 pop1820 pop2124
miles gspch;
class state year;
run;

proc print data=pr.car; where jaild = 0; var state year; run;
```