AST_531

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```
//lec - 01

//long-->wide

//jegula over th time change hoy jeshob variable, ogula wide form ee ashbe.

bysort id : gen time_f1= _n

reshape wide age weight brthwt, i(id) j(time_f1)


corr

pwcorr //flexibility beshi

pwcorr weight1 weight2 weight3 weight4 weight5

pwcorr weight* //3 ar 5 corr 1
//limitation : unbalanced data, sample shobar na so sample size kom onek gular jonno.
//expect korechilam with time corr kombe but ta hoy nai.

pwcorr weight*, star(0.05)

use "C:\Users\training.DESKTOP-R24PH8H\Downloads\childweight.dta" , clear //longformat pailam abar

bysort id : gen time_f1=_n

graph bar weight, over(id)

graph bar (median) weight, over(id) //lagbe na, just chaile emne median gr kora jay dekhlam


graph bar weight, over(time_f1)

scatter weight age

scatter weight brthwt //expected jehutu ekta time inv ekta time variant

use "C:\Users\training.DESKTOP-R24PH8H\Downloads\jsp.dta", clear //eta real clustr data

//ei data bhul ase
```

```
use "C:\Users\training.DESKTOP-R24PH8H\Downloads\jsp_728.dta" , clear

egen mn_math_yr3 = mean(math_yr3), by(school_id)

egen sd_math_yr3 = sd(math_yr3), by(school_id)

egen n = count(math_yr3), by( school_id)

gen se = sd_math_yr3/ sqrt(n)

serrbar mn_math_yr3 se school_id

sort mn_math_yr3

gen rank_school = _n

bysort school_id : drop if _n>1

sort mn_math_yr3

drop rank_school

gen rank_school = _n

serrbar mn_math_yr3 se rank_school,  addplot(scatter    mn_math_yr3 rank_school, mlabel(school_id))

//lec - 02

tab school_id //no. of school 5 ta

//junior school research program jsp

//school gula treatment, school gula edu quality increase korte pare naki dekhte chai naki student ee
// baseline ache school er --> mathyr1 , reading ability etc (ekta  common ques er under ee exam nea h
// gender background characteristic. pore follow up er jnno change hocche naki dekhte mathyr3. so base
*student  randomly assign korse, then baseline nise erpor follow up korse.
* Then at the end oi school gula ranking korse, last class ee ja korsi.
*last class ee ja korsi crude estimate chilo, gender er jnno adjust korsilam na.

*ekhon is it okay? mane adjust na kore ja korsi ta thik ase naki? --> na. hence, model korte hobe.

*ekhon ekhane ekta clustering effect ache --> school adminstration.


// amader analysis model based hotey hobe.

use "C:\Users\training.DESKTOP-R24PH8H\Downloads\jsp_728.dta" , clear

xtmixed math_yr3 math_yr1 gender__boy_1 social_class_ses__manual_1 || school_id:

predict b, reffects level(school_id)
predict seb, reses level(school_id)
```

```
 predict yhat1, fitted level(school_id)

//hw rand predicted diye ar ager ranking gula eki naki dekha.


 //lec - 03

 xtmixed math_yr3 math_yr1 gender__boy_1 social_class_ses__manual_1 || school_id: //mle estimar=te
estimate store m1
 xtmixed math_yr3 math_yr1 gender__boy_1 social_class_ses__manual_1 || school_id: math_yr1
estimate store m2

lrtest m2 m1 //sig na random slope.

xtmixed math_yr3 math_yr1 gender__boy_1 social_class_ses__manual_1 || school_id: , reml //reml estimati

 //fixed effect (beta coeff) er jonno lrtest reml ee meaningless, random component er ta okay.

 xtmixed math_yr3 math_yr1 gender__boy_1 social_class_ses__manual_1 || school_id: , vce(robust)

 predict betax, xb //fixed effect part er prediction

 hist betax  //normal howar kotha

 predict xbu, fitted //b1i and b2i o predict kore sum kore mean dise.

 predict b , reffects level(school_id)
 predict seb, reses level(school_id) //robust er jnno eta ashbe na. ager model ta run diye erpor abar r

 // b ekta empirically estimated mean/median. so eta ke rank korle better hobe cause eta model based es
 // b posterior mean

 bysort school_id: drop if _n>1

 sort b
 gen rank = _n

 serrbar b seb rank //ucla library theke label kora shikho.

 //addplot

 //Lec - 04

  use "C:\Users\training.DESKTOP-R24PH8H\Downloads\productivity.dta"

tab state
* 48 ta state er over the time change ta kemon dekhbo.


twoway (lfit gsp year if state==1)(lfit gsp year if state==2)(lfit gsp year if state==3)(lfit gsp year

twoway (lfit gsp year), by(state) //eta diye compare kora jay na, so ager plot tai better
```

```
twoway (line gsp year if state==1)(line gsp year if state==2)(line gsp year if state==3)(line gsp year i

scatter gsp public

scatter gsp public if year == 1970

twoway (line gsp public if year==1970, sort)(line gsp public if year==1971, sort)(line gsp public if yea

twoway (line gsp public if state==1, sort)(line gsp public if state==2, sort)(line gsp public if state==

xtmixed gsp year || state: //state ke randome untercept dhortesi
 xtmixed gsp year public || state:
// ekhon sd(public) = 0 almost, so kono interpretation pacchi nacause beta o onek choto.

//gr ee dekhechilam non-linearity ache, hence ota add kore dekhi.

gen public2 = public^2

 xtmixed gsp year public public2 || state:
 //non-linearity significant
```