Inf

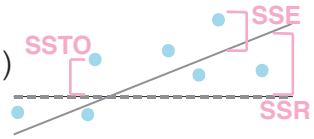
2 pop'n
Causal

Experimental
- randomly assigned trt
- to 1+ grp

Observational
- random sampling

SS

Sum of all sq(e)



SSTO msd-mean
SSE msd-est(RSS)
SSR est-mean
MSE avg SSE,σ^;sq
MSR MSE due to reg, SSR/(p-1)
Least square solution:the set of betas that minimises the SSE

F_{stat}

Look at p value,
F value: MSR / MSE, df1:p-1, df2:n-p
H_0 Regression is not significant $b_1 = b_2 = b_3 = 0$
H_1 at least one $b_i != 0$ with i = 1,2,3

Partial F: Full or Reduced model preferred+tbl
F={[SSE(R)-SSE(F)]/(df(R)-df(F)}/[SSE(F)/df(F)]

Model	Res.DF	RSS	DF	SS	F	Pr(>F)
1(F)	df(F)	SSE(F)				
2(R)	df(R)	SSE(R)				

look @ p

$y = b_0 + b_1x_1 + b_2x_2$
1 unit change is associated w b_1 y change given other x terms are held constant
log(y): (b_1*100)% y change
$b_1$log(x): b_1% inc x, b_1/100 unit y change
both log: 1% inc x, b_1% inc y

MC

x corr, inflated SE, R^2, VIF.
Unbiased but unbiased b
Curved points: sqrt() transformation
Clustered: log

Hierarchical Model
- keep both x terms even if one is not sig

Backward stepwise (testing based)
- full model, remove x with largest p
- not good with many var

Forward stepwise (criterion based)
- null model, add x with smallest p
- multicollinearity - not the best combination

AIC: want small. Balances model fit, simplicity and parameter penalty

[%*%] *matrix multiplier*
[solve] *inverse of matrix*
[t] *transpose a matrix*
[diag] *matrix diagonal*
*** *0.001* ** *0.01* * *0.05*
. *0.1, suggestive, inconclusive*

[RSE] *RMSE of sample, units of Y, RSE/$\bar{y}$ %*
[var] *measures spread of data*
[CV] *coe of var, SD from the sample/mean*
[SE] *of the mean, SD of sample*
[sq(SE)] *stats diff from sample to sample*
[DF] *# of x = p, or # of b-1*
[SS] *SSE, sq E, sum them up.*
[MS] *MSE*
] **ANOVA**

T_{stat}

T stat = (β_i - 0)/SE_i
H_0 $\beta_i = 0$
H_1 $\beta_i != 0$

Dur

X rej H_0 Temporal dependancy
H_0 No autocorrelation; rho = 0
H_1 Positive autocorrelation; rho > 0

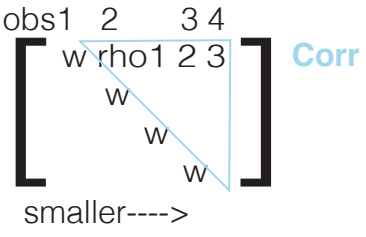
gls

- dependant
- remedy 4 ind assumption
- off diag in ID mtx != 0
- everything is weighted by the inv of tri mtx

wls

- independant
- not identically dist.
- remedy 4 var assumption
- off diag in ID mtx = 0
- diag 1s are individually weighted
- low var --> high weight

Errors



Corr