PS7

Anais Ouedraogo

March 28, 2023

1 Data imputation and model summary

There are 560 logwage observations missing which is 1/4 of the total observations. I think the logwage variable is most likely to be MAR.

B1 in the first and second methods is the same(0.062) and B1 in the third and fourth methods is the same value(0.052). There is a 0.031 difference between the true value of B1 and B1 in the first two methods while there is a 0.041 difference between the true value of B1 and B1 in the last two methods. I can conclude that the imputation methods are not ideal but mean imputation and listwise deletion seem to be more accurate in this case compare to the other 2. The estimates of B1 for the last two methods are the predicted values.

I have not made a lot of progress in my project. I am planning to use data that will analyze degree return and I want to use multiple regression.

Below you can see the model summary of the data frame and the table summary of the four methods.

	(1)
(Intercept)	0.534
	(0.146)
hgc	0.062
	(0.005)
tenure	0.050
	(0.005)
tenure ^{2}	-0.002
	(0.000)
age	0.000
	(0.003)
marriedsingle	-0.022
	(0.018)
collegenot college grad	0.145
	(0.034)
Num.Obs.	1669
R2	0.208
R2 Adj.	0.206
AIC	1179.9
BIC	1223.2
Log.Lik.	-581.936
RMSE	0.34

	Complete Cases	Mean Imputation	Regression Imputation	Multiple Imputation
(Intercept)	0.534	0.534	0.718	0.718
	(0.146)	(0.146)	(0.119)	(0.119)
hgc	0.062	0.062	0.052	0.052
	(0.005)	(0.005)	(0.004)	(0.004)
tenure	0.050	0.050	0.039	0.039
	(0.005)	(0.005)	(0.004)	(0.004)
tenure ^{2}	-0.002	-0.002	-0.001	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)
age	0.000	0.000	-0.001	-0.001
	(0.003)	(0.003)	(0.002)	(0.002)
marriedsingle	-0.022	-0.022	-0.020	-0.020
	(0.018)	(0.018)	(0.014)	(0.014)
collegenot college grad	0.145	0.145	0.174	0.174
	(0.034)	(0.034)	(0.026)	(0.026)
Num.Obs.	1669	1669	2229	2229
R2	0.208	0.208	0.158	0.158
R2 Adj.	0.206	0.206	0.155	0.155
AIC	1179.9	1179.9	1219.2	1219.2
BIC	1223.2	1223.2	1264.8	1264.8
Log.Lik.	-581.936	-581.936	-601.579	-601.579
RMSE	0.34	0.34	0.32	0.32