

# PS12

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May 4, 2023

## 1 6.

At what rate are log wages missing? answer: 0.3068641 so, about 30 percent are missing Do you think the logwage variable is most likely to be MCAR, MAR, or MNAR? answer: MAR, some are married and missing possibly due to being a new mom, having a child, off work. Some are union and missing, like if the wages for union jobs were above a certain threshold and not recorded, this could lead to missing logwage values for union jobs. Some are what seems to be in college years and missing.

## 2 7.

The coefficient b1 represents the returns to schooling.

The true value of  $\hat{b1} = 0.091$ . Comment on the differences of  $\hat{b1}$  across the models. What patterns do you see? What can you conclude about the veracity of the various imputation methods?

a. complete cases only;  $b1=0.059042$   $rSq=0.03472$  -statistically significant-error-0.009035; midrange  $rSq$ , midrange error b. mean-logwage;  $b1=0.0362806$   $rSq=0.01808$  -statistically significant-error-0.0062036; lower  $rSq$ , lower error c. heckit-model;  $b1=0.091461$   $rSq=0.091461$  -statistically significant-error-0.009789; higher  $rSq$ , higher error

Pattern is high  $rSq$ - higher error, lower  $rSq$ -smaller error. I would say the heckit model is the best of the three followed by complete cases only and last I would chose is mean-logwage.

	Unique (#)	Missing (%)	Mean	SD	Min	Median	Max
logwage	1546	31	1.7	0.7	-1.0	1.7	4.2
hgc	14	0	12.5	2.4	5.0	12.0	18.0
exper	1932	0	6.4	4.9	0.0	6.0	25.0
kids	2	0	0.4	0.5	0.0	0.0	1.0

	Complete Cases	Mean Imputation	Heckman Selection
(Intercept)	0.834***	1.149***	0.446***
	0.834***	1.149***	20.553***
	(0.113)	(0.078)	(0.122)
	(0.113)	(0.078)	(1.111)
hgc	0.059***	0.036***	-1.104***
	0.059***	0.036***	0.091***
	(0.009)	(0.006)	(0.010)
	(0.009)	(0.006)	(0.066)
union1	0.222*	0.068	-1.113***
	0.222*	0.068	0.186*
	(0.087)	(0.047)	(0.084)
	(0.087)	(0.047)	(0.213)
college1	-0.065	-0.126**	-0.565*
	-0.065	-0.126**	0.092
	(0.106)	(0.048)	(0.100)
	(0.106)	(0.048)	(0.227)
exper	0.050***	0.021**	-0.506***
	0.050***	0.021**	0.054***
	(0.013)	(0.007)	(0.012)
	(0.013)	(0.007)	(0.030)
	-0.004**	-0.001**	-0.002+
	(0.001)	(0.000)	(0.001)
married1			-2.275***
			(0.162)
kids			0.495***
			(0.114)
invMillsRatio			-0.695***
			(0.060)
sigma			0.696
rho			-0.998
Num.Obs.	1545	2229	2229
R2	0.038	0.020	0.092
R2 Adj.	0.035	0.018	0.088
AIC	3182.4	3808.4	
BIC	3219.8	3848.4	
Log.Lik.	-1584.189	-1897.193	
F		9.207	
RMSE	0.67	0.57	0.66
+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001			