Problem Set 7

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Q6

	logwage	hgc	college	tenure	age	married
X	Min. :0.00494	Min.: 0.0	Length:2229	Min.: 0.000	Min. :34.00	Length:2229
X.1	1st Qu.:1.46037	1st Qu.:12.0	Class :character	1st Qu.: 1.583	1st Qu.:36.00	Class:character
X.2	Median $:1.62519$	Median $:12.0$	Mode :character	Median: 3.750	Median $:39.00$	Mode :character
X.3	Mean $:1.62519$	Mean: 13.1		Mean: 5.971	Mean $:39.15$	
X.4	3rd Qu.:1.83740	3rd Qu.:15.0		3rd Qu.: 9.333	3rd Qu.:42.00	
X.5	Max. $:2.26150$	Max. :18.0		Max. :25.917	Max. $:46.00$	

This variable is MAR.

Q7

Q7-a

	Model 1
(Intercept)	0.708
	(0.116)
hgc	0.050
	(0.004)
collegenot college grad	0.168
	(0.026)
tenure	0.038
	(0.004)
	-0.001
	(0.0002)
age	0.0002
	(0.002)
marriedsingle	-0.027
	(0.014)
Num.Obs.	2229
R2	0.147
R2 Adj.	0.145
AIC	1091.2
BIC	1136.8
Log.Lik.	-537.580
F	63.973
RMSE	0.31

Q7-b

(Intercept) 0.708 (0.116) (0.050 hgc 0.050 (0.004) (0.004) collegenot college grad 0.168 (0.026) (0.026) tenure 0.038 (0.004) -0.001 (0.0002) (0.0002) marriedsingle -0.027 (0.014) Num.Obs. R2 0.147 R2 Adj. 0.145 AIC 1091.2 BIC 1136.8 Log.Lik. -537.580 F 63.973 RMSE 0.31		Model 2
hgc 0.050	(Intercept)	0
Collegenot college grad (0.004)		(0.116)
$\begin{array}{c} \text{collegenot college grad} & 0.168 \\ & (0.026) \\ \text{tenure} & 0.038 \\ & (0.004) \\ & -0.001 \\ & (0.0002) \\ \text{age} & 0.0002 \\ & (0.002) \\ \text{marriedsingle} & -0.027 \\ & (0.014) \\ \hline \\ \text{Num.Obs.} & 2229 \\ \text{R2} & 0.147 \\ \text{R2 Adj.} & 0.145 \\ \text{AIC} & 1091.2 \\ \text{BIC} & 1136.8 \\ \text{Log.Lik.} & -537.580 \\ \text{F} & 63.973 \\ \hline \end{array}$	hgc	0.050
$\begin{array}{c} \text{tenure} & (0.026) \\ \text{tenure} & 0.038 \\ (0.004) \\ -0.001 \\ (0.0002) \\ \text{age} & 0.0002 \\ (0.002) \\ \text{marriedsingle} & -0.027 \\ (0.014) \\ \hline \text{Num.Obs.} & 2229 \\ \text{R2} & 0.147 \\ \text{R2 Adj.} & 0.145 \\ \text{AIC} & 1091.2 \\ \text{BIC} & 1136.8 \\ \text{Log.Lik.} & -537.580 \\ \text{F} & 63.973 \\ \end{array}$		(0.004)
$\begin{array}{c} \text{tenure} & 0.038 \\ & (0.004) \\ & -0.001 \\ & (0.0002) \\ \text{age} & 0.0002 \\ & (0.002) \\ \text{marriedsingle} & -0.027 \\ & (0.014) \\ \hline \text{Num.Obs.} & 2229 \\ \text{R2} & 0.147 \\ \text{R2 Adj.} & 0.145 \\ \text{AIC} & 1091.2 \\ \text{BIC} & 1136.8 \\ \text{Log.Lik.} & -537.580 \\ \text{F} & 63.973 \\ \hline \end{array}$	collegenot college grad	0.168
(0.004) -0.001 (0.0002) age 0.0002 (0.002) marriedsingle -0.027 (0.014) Num.Obs. 2229 R2 0.147 R2 Adj. 0.145 AIC 1091.2 BIC 1136.8 Log.Lik. -537.580 F 63.973		(0.026)
AIC 1091.2 BIC 1136.8 Log.Lik537.580 F 0.0001 -0.001 (0.0002) (0.002) (0.002) (0.014) -0.027 (0.014) -0.027 (0.014) -0.027 (0.014) -0.027 (0.014) -0.027 (0.014) -0.027 (0.014) -0.027 (0.014) -0.027 (0.014) -0.027 (0.014) -0.027 (0.014) -0.001 -0.0021 -0.0021 -0.001 -	tenure	
age (0.0002) age (0.0002) marriedsingle -0.027 (0.014) Num.Obs. 2229 R2 0.147 R2 Adj. 0.145 AIC 1091.2 BIC 1136.8 Log.Lik537.580 F 63.973		(0.004)
age 0.0002 (0.002) marriedsingle -0.027 (0.014) Num.Obs. 2229 R2 0.147 R2 Adj. 0.145 AIC 1091.2 BIC 1136.8 Log.Lik537.580 F 63.973		-0.001
marriedsingle (0.002) num.Obs. 2229 R2 0.147 R2 Adj. 0.145 AIC 1091.2 BIC 1136.8 Log.Lik. -537.580 F 63.973		(0.0002)
marriedsingle -0.027 (0.014) Num.Obs. 2229 R2 0.147 R2 Adj. 0.145 AIC 1091.2 BIC 1136.8 Log.Lik. -537.580 F 63.973	age	0.0002
Num.Obs. 2229 R2 0.147 R2 Adj. 0.145 AIC 1091.2 BIC 1136.8 Log.Lik. -537.580 F 63.973		(0.002)
Num.Obs. 2229 R2 0.147 R2 Adj. 0.145 AIC 1091.2 BIC 1136.8 Log.Lik. -537.580 F 63.973	marriedsingle	-0.027
R2 0.147 R2 Adj. 0.145 AIC 1091.2 BIC 1136.8 Log.Lik537.580 F 63.973		(0.014)
R2 Adj. 0.145 AIC 1091.2 BIC 1136.8 Log.Lik537.580 F 63.973	Num.Obs.	2229
AIC 1091.2 BIC 1136.8 Log.Lik537.580 F 63.973	R2	0.147
BIC 1136.8 Log.Lik537.580 F 63.973	R2 Adj.	0.145
Log.Lik537.580 F 63.973	AIC	1091.2
F 63.973	BIC	1136.8
1 00.010	Log.Lik.	-537.580
RMSE 0.31	F	63.973
	RMSE	0.31

Q7-c

Q7-d

the coefficient I get for hgc is 0.050, which is much lower than the true value. The coefficients I get for hgc across the models are the same, though I am skeptical about this.

$\mathbf{Q8}$

I have explored data from FEMA, this dataset includes 18 natural incidents on the county level, and it is a very nice panel data set. The model I will be using is an event study (ES) model, based on Adrien Bilal & Esteban Rossi-Hansberg (2023)

	Model 3
(Intercept)	0.708
('''	(0.116)
hgc	0.050
O	(0.004)
tenure	$0.038^{'}$
	(0.004)
	-0.001
	(0.0002)
collegenot college grad	0.168
	(0.026)
age	0.0002
	(0.002)
marriedsingle	-0.027
	(0.014)
Num.Obs.	2229
R2	0.147
R2 Adj.	0.145
AIC	1091.2
BIC	1136.8
Log.Lik.	-537.580
F	63.973
RMSE	0.31

	Model 4
(Intercept)	0.708
	(0.116)
hgc	0.050
	(0.004)
collegenot college grad	0.168
	(0.026)
tenure	0.038
	(0.004)
	-0.001
	(0.0002)
age	0.0002
	(0.002)
marriedsingle	-0.027
	(0.014)
Num.Obs.	2229
Num.Imp.	5
R2	0.147
R2 Adj.	0.145