



```

name: <unnamed>
log: C:\Users\LENOVO\OneDrive\Desktop\econometrics assignment\Question 2 Anumo
> y Modak.smcl
log type: smcl
opened on: 22 Mar 2023, 12:01:11

```

```
1 . use "dataset.dta" , clear
```

```
2 .
```

```
3 . des
```

Contains data from **dataset.dta**

obs: 101,651

vars: 11

size: 5,387,503

26 Apr 2022 09:44

variable name	storage type	display format	value label	variable label
HHID	str9	%-9s		Household identification
nos_Child18	double	%9.0g		(sum) nos_Child18
Religion	str1	%-1s		Religion Code
SCGRP	str1	%-1s		Social Group Code
State_code	str2	%-2s		State Code
Combined_Mult~r	double	%9.2f		Sampling Weights
noscm	double	%9.0g		number of currently married couples in the household
Age	float	%10.0g		mean age of the household
educ_female	float	%9.0g		Average Education of Female at Child Bearing age
educ_female_Old	float	%9.0g		Average Education of Female age 60 and above
fp	float	%9.0g		1 if households makes an expenditure on family planning 0 else

Sorted by: **HHID**

```
4 .
```

```
5 . reg nos_Child18 educ* Age fp noscm
```

Source	SS	df	MS	Number of obs	=	14,875
Model	21697.8723	5	4339.57445	F(5, 14869)	=	3857.50
Residual	16727.193	14,869	1.12497095	Prob > F	=	0.0000
				R-squared	=	0.5647
				Adj R-squared	=	0.5645
Total	38425.0653	14,874	2.58337134	Root MSE	=	1.0606

nos_Child18	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
educ_female	-.0946547	.0053775	-17.60	0.000	-.1051952 -.0841142
educ_female_Old	.041533	.0048913	8.49	0.000	.0319455 .0511205
Age	-.0721795	.0007097	-101.71	0.000	-.0735705 -.0707885
fp	-.1255784	.051287	-2.45	0.014	-.2261072 -.0250495
noscm	.2596229	.0055263	46.98	0.000	.2487907 .2704552
_cons	4.213023	.0420586	100.17	0.000	4.130583 4.295463

```
6 .
```

7 . estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of nos_Child18

chi2(1) = **3146.84**
Prob > chi2 = **0.0000**

8 . ***Test of Heteroskedasticity: H0 is rejected***

9 .

10. ***QUESTION 2: PART A [Explanations in doc file]***

11.

12.

13. ***QUESTION 2: PART B***

14.

15. reg nos_Child18 educ_female educ_female_Old Age fp noscm [aweight=Combined_Multiplier
> r]
(sum of wgt is 3.3710e+07)

Source	SS	df	MS	Number of obs	=	14,875
Model	21064.7749	5	4212.95497	F(5, 14869)	=	3999.22
Residual	15663.6523	14,869	1.05344356	Prob > F	=	0.0000
				R-squared	=	0.5735
				Adj R-squared	=	0.5734
Total	36728.4272	14,874	2.46930396	Root MSE	=	1.0264

nos_Child18	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
educ_female	-.0784838	.005373	-14.61	0.000	-.0890156	-.067952
educ_female_Old	.0314886	.0051892	6.07	0.000	.0213171	.0416602
Age	-.070354	.0006625	-106.19	0.000	-.0716525	-.0690554
fp	-.128237	.056214	-2.28	0.023	-.2384233	-.0180507
noscm	.2177873	.0056838	38.32	0.000	.2066463	.2289283
_cons	4.198221	.0400821	104.74	0.000	4.119655	4.276787

16.

17. ***QUESTION 2: PART C***

18.

19. destring Religion SCGRP State_code , replace
Religion: all characters numeric; **replaced as byte**
(6 missing values generated)
SCGRP: all characters numeric; **replaced as byte**
(15 missing values generated)
State_code: all characters numeric; **replaced as byte**

20.

21. *Now we can run regression

22. reg nos_Child18 educ_female educ_female_Old Age fp noscm i.Religion i.SCGRP i.State_
> code [aweight=Combined Multiplier]
(sum of wgt is 3.3705e+07)

Source	SS	df	MS	Number of obs	=	14,870
Model	21625.6246	49	441.339277	F(49, 14820)	=	434.22
Residual	15062.913	14,820	1.01639089	Prob > F	=	0.0000
				R-squared	=	0.5894
				Adj R-squared	=	0.5881
Total	36688.5376	14,869	2.46745158	Root MSE	=	1.0082

nos_Child18	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
educ_female	-.0568838	.0055672	-10.22	0.000	-.0677962	-.0459714
educ_female_Old	.0275122	.0051602	5.33	0.000	.0173976	.0376267
Age	-.0685949	.0006652	-103.11	0.000	-.0698988	-.0672909
fp	-.0755198	.0561013	-1.35	0.178	-.1854854	.0344458
noscm	.2022715	.0057047	35.46	0.000	.1910896	.2134534
Religion						
2	.2594621	.029981	8.65	0.000	.2006955	.3182287
3	.01055	.0531776	0.20	0.843	-.0936848	.1147847
4	-.1635617	.0794932	-2.06	0.040	-.3193783	-.0077451
5	-.1668795	.1141423	-1.46	0.144	-.3906125	.0568536
6	-.3812434	.1097179	-3.47	0.001	-.5963041	-.1661828
7	.2149467	.9263651	0.23	0.817	-1.600844	2.030737
9	.4361005	.2358131	1.85	0.064	-.0261224	.8983234
SCGRP						
2	-.1234337	.0400085	-3.09	0.002	-.2018554	-.0450121
3	-.0341307	.0369606	-0.92	0.356	-.1065782	.0383167
9	-.1250515	.0384989	-3.25	0.001	-.200514	-.0495889
State_code						
2	.4248781	.1307675	3.25	0.001	.1685576	.6811987
3	.2010526	.1157263	1.74	0.082	-.0257854	.4278906
4	.1260173	.372997	0.34	0.735	-.6051032	.8571377
5	.2558729	.1262743	2.03	0.043	.0083596	.5033861
6	.1882546	.1083209	1.74	0.082	-.0240679	.400577
7	.2293039	.1274172	1.80	0.072	-.0204497	.4790576
8	.3375039	.1003326	3.36	0.001	.1408395	.5341682
9	.5015172	.0955316	5.25	0.000	.3142634	.688771
10	.3759148	.1009846	3.72	0.000	.1779723	.5738572
11	-.2500034	.4253344	-0.59	0.557	-1.083712	.5837048
12	-.0928643	.4430582	-0.21	0.834	-.9613133	.7755846
13	-.1909927	.4295651	-0.44	0.657	-1.032994	.6510082
14	.1806348	.223801	0.81	0.420	-.2580429	.6193126
15	-.2557524	.3462169	-0.74	0.460	-.9343804	.4228757
16	-.0640011	.1700374	-0.38	0.707	-.3972955	.2692932
17	.1648701	.2892082	0.57	0.569	-.4020138	.7317539
18	-.1124332	.1122314	-1.00	0.316	-.3324206	.1075542
19	-.0375099	.0969704	-0.39	0.699	-.2275839	.1525641
20	.45374	.1136179	3.99	0.000	.2310349	.6764452
21	.0065887	.1027739	0.06	0.949	-.1948608	.2080383
22	.2032904	.1112856	1.83	0.068	-.0148431	.4214239
23	.2596667	.1013549	2.56	0.010	.0609984	.4583349
24	.183964	.0997347	1.84	0.065	-.0115283	.3794563
25	-.2380649	.8024541	-0.30	0.767	-1.810974	1.334845
26	-.1833962	.652642	-0.28	0.779	-1.462655	1.095863
27	.1535305	.0963812	1.59	0.111	-.0353885	.3424495
28	.0395377	.097716	0.40	0.686	-.1519977	.2310732
29	.0967657	.0997909	0.97	0.332	-.0988368	.2923683
30	.0588249	.2345475	0.25	0.802	-.4009174	.5185672
31	-.1005089	1.141889	-0.09	0.930	-2.338753	2.137736
32	.0865517	.1000099	0.87	0.387	-.1094802	.2825835
33	.1299752	.0988569	1.31	0.189	-.0637965	.323747
34	.2279418	.2240704	1.02	0.309	-.211264	.6671475
35	.0512062	.4710534	0.11	0.913	-.8721169	.9745293
_cons	3.946162	.1055276	37.39	0.000	3.739315	4.153009

```

23.
24. ***QUESTION 2: PART D [poisson Regression]***
25.
26.
27. poisson nos_Child18 educ_female educ_female_Old Age fp noscm [pweight=Combined_Multi
    > plier]

```

```
Iteration 0:    log pseudolikelihood = -35936153
Iteration 1:    log pseudolikelihood = -35537097
Iteration 2:    log pseudolikelihood = -35536636
Iteration 3:    log pseudolikelihood = -35536636
```

Poisson regression	Number of obs	=	14,875
	Wald chi2(5)	=	8045.38
Log pseudolikelihood = -35536636	Prob > chi2	=	0.0000

nos_Child18	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
educ_female	.0256562	.0054217	4.73	0.000	.0150298	.0362826
educ_female_Old	-.0150962	.0043346	-3.48	0.000	-.0235919	-.0066004
Age	-.098274	.0012241	-80.28	0.000	-.1006732	-.0958747
fp	-.0114436	.00395002	-0.29	0.772	-.0888626	.0659755
noscm	.120946	.0045564	26.54	0.000	.1120156	.1298763
_cons	3.456957	.043512	79.45	0.000	3.371675	3.542239

```

28.
29. ***QUESTION 2: PART E***
30.
31. *Now repeating with robust standard errors
32. * [A] *
33. reg nos Child18 educ female educ female Old Age fp noscm ,vce(robust)

```

Linear regression	Number of obs	=	14,875
	F(5, 14869)	=	2653.78
	Prob > F	=	0.0000
	R-squared	=	0.5647
	Root MSE	=	1.0606

nos_Child18	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
educ_female	-.0946547	.0053908	-17.56	0.000	-.1052214	-.084088
educ_female_Old	.041533	.0046988	8.84	0.000	.0323228	.0507432
Age	-.0721795	.0007364	-98.01	0.000	-.073623	-.070736
fp	-.1255784	.0529728	-2.37	0.018	-.2294116	-.0217451
noscm	.2596229	.0096036	27.03	0.000	.2407987	.2784472
_cons	4.213023	.0470845	89.48	0.000	4.120732	4.305315

```
34.
35.  * [B] *
36. reg nos_Child18 educ_female educ_female_Old Age fp noscm [aweight=Combined_Multiplie
    > r], vce(robust)
    (sum of wgt is 3.3710e+07)
```

Linear regression	Number of obs	=	14,875
	F(5, 14869)	=	1010.83
	Prob > F	=	0.0000
	R-squared	=	0.5735
	Root MSE	=	1.0264

nos_Child18	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
educ_female	-.0784838	.0093128	-8.43	0.000	-.0967381	-.0602294
educ_female_Old	.0314886	.0083039	3.79	0.000	.0152119	.0477654
Age	-.070354	.001277	-55.09	0.000	-.072857	-.0678509
fp	-.128237	.0768012	-1.67	0.095	-.2787769	.022303
noscm	.2177873	.0131621	16.55	0.000	.1919879	.2435866
_cons	4.198221	.0835209	50.27	0.000	4.03451	4.361933

37.

38. *[C]*

```
39. reg nos_Child18 educ_female educ_female_Old Age fp noscm i.Religion i.SCGRP i.State_
> code [aweight=Combined Multiplier], vce(robust)
(sum of wgt is 3.3705e+07)
```

Linear regression

```
Number of obs      =      14,870
F(48, 14820)       =          .
Prob > F            =          .
R-squared           =      0.5894
Root MSE           =      1.0082
```

nos_Child18	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
educ_female	-.0568838	.0092945	-6.12	0.000	-.0751021	-.0386654
educ_female_Old	.0275122	.0081479	3.38	0.001	.0115413	.0434831
Age	-.0685949	.0012255	-55.97	0.000	-.0709971	-.0661927
fp	-.0755198	.0734963	-1.03	0.304	-.2195816	.068542
noscm	.2022715	.0130969	15.44	0.000	.1765999	.2279431
Religion						
2	.2594621	.0635001	4.09	0.000	.1349941	.3839301
3	.01055	.0547803	0.19	0.847	-.0968263	.1179262
4	-.1635617	.0905304	-1.81	0.071	-.3410126	.0138892
5	-.1668795	.1282017	-1.30	0.193	-.4181708	.0844119
6	-.3812434	.1598047	-2.39	0.017	-.6944805	-.0680064
7	.2149467	.0712744	3.02	0.003	.07524	.3546534
9	.4361005	.2583384	1.69	0.091	-.0702749	.9424759
SCGRP						
2	-.1234337	.0846921	-1.46	0.145	-.2894407	.0425732
3	-.0341307	.0790844	-0.43	0.666	-.189146	.1208846
9	-.1250515	.0803485	-1.56	0.120	-.2825445	.0324416
State_code						
2	.4248781	.1089073	3.90	0.000	.2114064	.6383499
3	.2010526	.1009998	1.99	0.047	.0030803	.3990248
4	.1260173	.1541647	0.82	0.414	-.1761646	.4281991
5	.2558729	.1086301	2.36	0.019	.0429443	.4688014
6	.1882546	.1140584	1.65	0.099	-.0353141	.4118233
7	.2293039	.1177505	1.95	0.052	-.0015017	.4601096
8	.3375039	.096398	3.50	0.000	.1485519	.5264558
9	.5015172	.0930546	5.39	0.000	.3191187	.6839157
10	.3759148	.1237508	3.04	0.002	.1333477	.6184818
11	-.2500034	.1664795	-1.50	0.133	-.5763239	.0763171
12	-.0928643	.2072722	-0.45	0.654	-.4991436	.3134149
13	-.1909927	.2298329	-0.83	0.406	-.6414937	.2595082
14	.1806348	.1167324	1.55	0.122	-.0481752	.4094448
15	-.2557524	.1412461	-1.81	0.070	-.5326121	.0211074
16	-.0640011	.1289143	-0.50	0.620	-.3166892	.1886869
17	.1648701	.1848111	0.89	0.372	-.1973827	.5271229
18	-.1124332	.1014406	-1.11	0.268	-.3112693	.0864029
19	-.0375099	.0823404	-0.46	0.649	-.1989073	.1238875
20	.45374	.143273	3.17	0.002	.1729072	.7345729
21	.0065887	.0883139	0.07	0.941	-.1665174	.1796949
22	.2032904	.121823	1.67	0.095	-.0354978	.4420786
23	.2596667	.1084965	2.39	0.017	.0470001	.4723333
24	.183964	.110088	1.67	0.095	-.0318222	.3997502

25	-.2380649	.3748534	-0.64	0.525	-.972824	.4966943
26	-.1833962	.3523524	-0.52	0.603	-.8740506	.5072582
27	.1535305	.0798272	1.92	0.054	-.0029408	.3100017
28	.0395377	.0895582	0.44	0.659	-.1360074	.2150829
29	.0967657	.0911266	1.06	0.288	-.0818538	.2753853
30	.0588249	.1362028	0.43	0.666	-.2081495	.3257993
31	-.1005089	.2598933	-0.39	0.699	-.6099321	.4089144
32	.0865517	.077086	1.12	0.262	-.0645465	.2376498
33	.1299752	.0856053	1.52	0.129	-.0378217	.2977722
34	.2279418	.1326617	1.72	0.086	-.0320917	.4879753
35	.0512062	.1360553	0.38	0.707	-.215479	.3178915
_cons	3.946162	.1327865	29.72	0.000	3.685884	4.20644

```

40.
41. *[D]*
42. poisson nos_Child18 educ_female educ_female_Old Age fp noscm [pweight=Combined_Multi
    > plier], vce(robust)

```

```

Iteration 0:  log pseudolikelihood = -35936153
Iteration 1:  log pseudolikelihood = -35537097
Iteration 2:  log pseudolikelihood = -35536636
Iteration 3:  log pseudolikelihood = -35536636

```

```

Poisson regression                               Number of obs   =    14,875
                                                Wald chi2(5)       =    8045.38
Log pseudolikelihood = -35536636                Prob > chi2        =    0.0000

```

nos_Child18	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
educ_female	.0256562	.0054217	4.73	0.000	.0150298	.0362826
educ_female_Old	-.0150962	.0043346	-3.48	0.000	-.0235919	-.0066004
Age	-.098274	.0012241	-80.28	0.000	-.1006732	-.0958747
fp	-.0114436	.0395002	-0.29	0.772	-.0888626	.0659755
noscm	.120946	.0045564	26.54	0.000	.1120156	.1298763
_cons	3.456957	.043512	79.45	0.000	3.371675	3.542239

```

43.
44. log close
    name: <unnamed>
    log:  C:\Users\LENOVO\OneDrive\Desktop\econometrics assignment\Question 2 Anumo
> y Modak.smcl
    log type: smcl
    closed on: 22 Mar 2023, 12:01:19

```