



(R)

14.1

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MP - Parallel Edition

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 TU

Notes:

1. Unicode is supported; see [help unicode advice](#).
2. More than 2 billion observations are allowed; see [help obs advice](#).
3. Maximum number of variables is set to 5000; see [help set_maxvar](#).

```
1 . use "/Users/mien/Downloads/assign09.dta"
2 . log using "/Users/mien/Desktop/ee426/Assignment426_09.smcl"
```

```
name: <unnamed>
log: /Users/mien/Desktop/ee426/Assignment426_09.smcl
log type: smcl
opened on: 1 Apr 2021, 09:10:12
```

```
3 . mlogit y x1 x2 x3, nolog
```

```
Multinomial logistic regression      Number of obs      =      225
LR chi2(15)                          =      53.93
Prob > chi2                            =      0.0000
Log likelihood = -339.71529           Pseudo R2          =      0.0735
```

	y	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
0							
	x1	-2.521035	.6925668	-3.64	0.000	-3.878441	-1.163628
	x2	.2986589	.4689663	0.64	0.524	-.6204982	1.217816
	x3	-.6233847	.5124602	-1.22	0.224	-1.627788	.3810188
	_cons	-.1162069	.3993817	-0.29	0.771	-.8989807	.6665669
1							
	x1	-1.370765	.6714785	-2.04	0.041	-2.686838	-.0546909
	x2	.9174175	.6463233	1.42	0.156	-.3493528	2.184188
	x3	.1452166	.653322	0.22	0.824	-1.135271	1.425704
	_cons	-1.813507	.638413	-2.84	0.005	-3.064774	-.5622409

2							
	x1	-0.9887152	.5404239	-1.83	0.067	-2.047927	.0704961
	x2	.3082113	.4737129	0.65	0.515	-.6202489	1.236671
	x3	-1.16812	.532788	-2.19	0.028	-2.212366	-.1238748
	_cons	-.3176681	.4110659	-0.77	0.440	-1.123342	.4880062
3							
	x1	-2.057203	.5299681	-3.88	0.000	-3.095922	-1.018485
	x2	.6423018	.4500861	1.43	0.154	-.2398507	1.524454
	x3	.1397803	.4716749	0.30	0.767	-.7846854	1.064246
	_cons	-.5744234	.4241969	-1.35	0.176	-1.405834	.2569873
4							
	x1	-.3180876	.4648705	-0.68	0.494	-1.229217	.5930418
	x2	.4847541	.4279983	1.13	0.257	-.3541071	1.323615
	x3	-.6547966	.4591011	-1.43	0.154	-1.554618	.2450251
	_cons	-.6369968	.4141475	-1.54	0.124	-1.448711	.1747174
5		(base outcome)					

4 . est store ml

5 . fitstat

Measures of Fit for **mlogit** of **y**

Log-Lik Intercept Only:	-366.681	Log-Lik Full Model:	-339.715
D(201):	679.431	LR(15):	53.931
		Prob > LR:	0.000
McFadden's R2:	0.074	McFadden's Adj R2:	0.008
Maximum Likelihood R2:	0.213	Cragg & Uhler's R2:	0.222
Count R2:	0.138	Adj Count R2:	0.010
AIC:	3.233	AIC*n:	727.431
BIC:	-409.206	BIC':	27.311

6 . mlogit y x1 x2 x3 x4 if y!=4 , nolog

Multinomial logistic regression	Number of obs	=	127
	LR chi2(16)	=	43.84
	Prob > chi2	=	0.0002
Log likelihood = -138.77638	Pseudo R2	=	0.1364

	y	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
0						
	x1	-1.917478	.8656523	-2.22	0.027	-3.614125 - .2208305
	x2	2.399049	1.184989	2.02	0.043	.0765135 4.721585
	x3	-.0750429	.8626823	-0.09	0.931	-1.765869 1.615783
	x4	-.4760917	.3418197	-1.39	0.164	-1.146046 .1938626
	_cons	4.002073	4.712976	0.85	0.396	-5.235191 13.23934

1							
	x1	-1.887951	.8108206	-2.33	0.020	-3.47713	-.2987722
	x2	.4256484	.7803751	0.55	0.585	-1.103859	1.955155
	x3	1.13251	1.04128	1.09	0.277	-.9083626	3.173382
	x4	.7670503	.4586998	1.67	0.094	-.1319848	1.666086
	_cons	-13.20158	6.968	-1.89	0.058	-26.85861	.455447
2							
	x1	-.902955	.6677474	-1.35	0.176	-2.211716	.4058058
	x2	.746173	.6920624	1.08	0.281	-.6102444	2.10259
	x3	-1.134476	.6573489	-1.73	0.084	-2.422856	.1539042
	x4	-.2704256	.2800586	-0.97	0.334	-.8193303	.2784791
	_cons	3.098155	3.947385	0.78	0.433	-4.638579	10.83489
3							
	x1	-2.273025	.6227095	-3.65	0.000	-3.493514	-1.052537
	x2	1.445561	.6553098	2.21	0.027	.1611778	2.729945
	x3	-.2614692	.6184131	-0.42	0.672	-1.473537	.9505983
	x4	-.277248	.2489175	-1.11	0.265	-.7651174	.2106213
	_cons	3.19799	3.521038	0.91	0.364	-3.703118	10.0991
5		(base outcome)					

7 . est store m2

8 . hausman m2 ml, alleqs constant

		Coefficients			
		(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
		m2	ml	Difference	S.E.
0					
	x1	-1.917478	-2.521035	.6035567	.5193313
	x2	2.399049	.2986589	2.100391	1.088242
	x3	-.0750429	-.6233847	.5483418	.6939779
	_cons	4.002073	-.1162069	4.118279	4.696023
1					
	x1	-1.887951	-1.370765	-.5171867	.454474
	x2	.4256484	.9174175	-.4917691	.4373231
	x3	1.13251	.1452166	.987293	.8108238
	_cons	-13.20158	-1.813507	-11.38807	6.938692
2					
	x1	-.902955	-.9887152	.0857603	.3922099
	x2	.746173	.3082113	.4379617	.5045259
	x3	-1.134476	-1.16812	.0336441	.3850253
	_cons	3.098155	-.3176681	3.415823	3.925924
3					

r(199);

```

16 . do "/var/folders/gd/lj8knfw94978yk_mksbpsmvr0000gn/T//SD00551.000000"
17 . g y_15=(y>0)
18 . g y_25=(y>1)
19 . g y_35=(y>2)
20 . g y_45=(y>3)
21 . g y_55=(y>4)
22 . qui logit y_15 x1 x2 x3 x4,nolog
23 . est store m15
24 . qui logit y_25 x1 x2 x3 x4,nolog
25 . est store m25
26 . qui logit y_35 x1 x2 x3 x4,nolog
27 . est store m35
28 . qui logit y_45 x1 x2 x3 x4,nolog
29 . est store m45
30 . qui logit y_55 x1 x2 x3 x4,nolog
31 . est store m55
32 . suest m15 m25 m35 m45 m55

```

Simultaneous results for m15, m25, m35, m45, m55

Number of obs = 152

	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
m15_y_15						
x1	1.097122	.9033857	1.21	0.225	-.6734812	2.867725
x2	-1.82336	1.135405	-1.61	0.108	-4.048713	.4019928
x3	-.3069072	.803698	-0.38	0.703	-1.882126	1.268312
x4	.3527502	.3544918	1.00	0.320	-.3420409	1.047541
_cons	-1.099312	4.856106	-0.23	0.821	-10.6171	8.418481
m25_y_25						

x1	1.264527	.5825003	2.17	0.030	.1228478	2.406207
x2	-.7792338	.604258	-1.29	0.197	-1.963558	.4050901
x3	-.8053988	.6052151	-1.33	0.183	-1.991599	.380801
x4	-.2074297	.3082284	-0.67	0.501	-.8115462	.3966868
_cons	5.389609	4.422033	1.22	0.223	-3.277416	14.05663
<hr/>						
m35_y_35						
x1	.864886	.4721274	1.83	0.067	-.0604667	1.790239
x2	-.6170464	.4658079	-1.32	0.185	-1.530013	.2959203
x3	-.0281734	.4629933	-0.06	0.951	-.9356237	.8792769
x4	-.0449685	.2176813	-0.21	0.836	-.4716161	.3816791
_cons	1.899683	3.086536	0.62	0.538	-4.149816	7.949182
<hr/>						
m45_y_45						
x1	1.679889	.4359289	3.85	0.000	.8254838	2.534294
x2	-1.051402	.4339843	-2.42	0.015	-1.901996	-.2008088
x3	-.1154448	.4385046	-0.26	0.792	-.974898	.7440085
x4	.0623465	.1817055	0.34	0.732	-.2937897	.4184826
_cons	-.4960081	2.567482	-0.19	0.847	-5.52818	4.536164
<hr/>						
m55_y_55						
x1	1.213482	.3980963	3.05	0.002	.4332271	1.993736
x2	-.8226954	.3994092	-2.06	0.039	-1.605523	-.0398677
x3	.672316	.4147506	1.62	0.105	-.1405801	1.485212
x4	.2113165	.1907187	1.11	0.268	-.1624853	.5851183
_cons	-3.847181	2.713683	-1.42	0.156	-9.165902	1.471539

```

33 .
    end of do-file

34 . do "/var/folders/gd/lj8knfw94978yk_mkspbmsvr0000gn/T//SD00551.000000"

35 . test [m15_y_15]x1=[m25_y_25]x1=[m35_y_35]x1=[m45_y_45]x1=[m55_y_55]x1
too few ')
r(132).;

    end of do-file

r(132).;

36 . do "/var/folders/gd/lj8knfw94978yk_mkspbmsvr0000gn/T//SD00551.000000"

37 . test [m15_y_15]x1=[m25_y_25]x1=[m35_y_35]x1=[m45_y_45]x1=[m55_y_55]x1 too few ')
r(132).;

    end of do-file

r(132).;

38 . test [m15_y_15]x1=[m25_y_25]x1=[m35_y_35]x1=[m45_y_45]x1=[m55_y_55]x1

```

```
( 1) [m15_y_15]x1 - [m25_y_25]x1 = 0
( 2) [m15_y_15]x1 - [m35_y_35]x1 = 0
( 3) [m15_y_15]x1 - [m45_y_45]x1 = 0
( 4) [m15_y_15]x1 - [m55_y_55]x1 = 0
```

```
chi2( 4) = 6.95
Prob > chi2 = 0.1384
```

```
39 . test [m15_y_15]x2=[m25_y_25]x2=[m35_y_35]x2=[m45_y_45]x2=[m55_y_55]x2
```

```
( 1) [m15_y_15]x2 - [m25_y_25]x2 = 0
( 2) [m15_y_15]x2 - [m35_y_35]x2 = 0
( 3) [m15_y_15]x2 - [m45_y_45]x2 = 0
( 4) [m15_y_15]x2 - [m55_y_55]x2 = 0
```

```
chi2( 4) = 3.24
Prob > chi2 = 0.5186
```

```
40 . test [m15_y_15]x3=[m25_y_25]x3=[m35_y_35]x3=[m45_y_45]x3=[m55_y_55]x3
```

```
( 1) [m15_y_15]x3 - [m25_y_25]x3 = 0
( 2) [m15_y_15]x3 - [m35_y_35]x3 = 0
( 3) [m15_y_15]x3 - [m45_y_45]x3 = 0
( 4) [m15_y_15]x3 - [m55_y_55]x3 = 0
```

```
chi2( 4) = 8.55
Prob > chi2 = 0.0734
```

```
41 . test [m15_y_15]x4=[m25_y_25]x4=[m35_y_35]x4=[m45_y_45]x4=[m55_y_55]x4
```

```
( 1) [m15_y_15]x4 - [m25_y_25]x4 = 0
( 2) [m15_y_15]x4 - [m35_y_35]x4 = 0
( 3) [m15_y_15]x4 - [m45_y_45]x4 = 0
( 4) [m15_y_15]x4 - [m55_y_55]x4 = 0
```

```
chi2( 4) = 7.47
Prob > chi2 = 0.1130
```

```
42 . margins, dydx(*) predict(outcome(0))
```

```
equation 0 not found
```

```
r(303);
```

```
43 . margins, dydx(*) predict(outcome(0)) at((median))
```

```
equation 0 not found
```

```
r(303);
```

```
44 . gologit2 y x1 x2 x3 x4, pl sto(ologit) link(p)
```

```
command gologit2 is unrecognized
```

```
r(199);
```

```
45 . help gologit2
```


	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
4					
_cons	-.8395408	1.218495	-0.69	0.491	-3.227746 1.548665
x1	.7194818	.2020884	3.56	0.000	.3233959 1.115568
x2	-.5041496	.2049628	-2.46	0.014	-.9058693 -.1024299
x3	.1109476	.2041695	0.54	0.587	-.2892173 .5111125
x4	.0732426	.0867141	0.84	0.398	-.0967139 .2431991
_cons	-1.315206	1.220947	-1.08	0.281	-3.708217 1.077805

47 . gologit2 y x1 x2 x3 x4, npl sto(gologit) link(p)

Generalized Ordered Probit Estimates Number of obs = 152
 LR chi2(20) = 62.94
 Prob > chi2 = 0.0000
 Log likelihood = -197.17374 Pseudo R2 = 0.1376

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
0					
x1	.3572168	.4029218	0.89	0.375	-.4324953 1.146929
x2	-.8430554	.5215851	-1.62	0.106	-1.865344 .1792327
x3	.2174726	.4699002	0.46	0.644	-.7035149 1.13846
x4	.6301649	.2667108	2.36	0.018	.1074213 1.152909
_cons	-7.270173	3.882206	-1.87	0.061	-14.87916 .3388114
1					
x1	.3815073	.3018235	1.26	0.206	-.210056 .9730705
x2	-.0159532	.3528003	-0.05	0.964	-.7074291 .6755227
x3	-.4463186	.318717	-1.40	0.161	-1.070992 .1783554
x4	-.3245584	.1577207	-2.06	0.040	-.6336852 -.0154316
_cons	5.945013	2.271297	2.62	0.009	1.493353 10.39667
2					
x1	.3404404	.2758877	1.23	0.217	-.2002895 .8811702
x2	.0353617	.3074022	0.12	0.908	-.5671356 .637859
x3	-.0702493	.2585965	-0.27	0.786	-.577089 .4365905
x4	-.1951006	.1263031	-1.54	0.122	-.4426502 .0524489
_cons	3.376936	1.791931	1.88	0.059	-.1351848 6.889057
3					
x1	1.140714	.2586096	4.41	0.000	.6338481 1.647579
x2	-.6973459	.2627334	-2.65	0.008	-1.212294 -.1823979
x3	-.0515296	.2426607	-0.21	0.832	-.5271359 .4240766
x4	-.0319761	.1198625	-0.27	0.790	-.2669022 .20295
_cons	.6640111	1.677911	0.40	0.692	-2.624635 3.952657
4					
x1	.7732183	.2551915	3.03	0.002	.2730522 1.273384
x2	-.6291826	.243014	-2.59	0.010	-1.105481 -.1528838

x4	.1212267	.1142629	1.06	0.289	-.1027244	.3451778
_cons	-2.159693	1.595193	-1.35	0.176	-5.286213	.9668279

WARNING! 86 in-sample cases have an outcome with a predicted probability that is less than 0. See the `gologit2 help` section on Warning Messages for more information.

48 . lrtest ologit gologit, stats

Likelihood-ratio test
 (Assumption: `ologit` nested in `gologit`)

LR chi2(16) = 39.44
 Prob > chi2 = 0.0009

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
<code>ologit</code>	152	-228.6436	-216.8951	9	451.7902	479.0051
<code>gologit</code>	152	-228.6436	-197.1737	25	444.3475	519.9445

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

49 . mlogit y x1 x2 x3 x4

Iteration 0: log likelihood = -228.64363
 Iteration 1: log likelihood = -204.50752
 Iteration 2: log likelihood = -203.29728
 Iteration 3: log likelihood = -203.28338
 Iteration 4: log likelihood = -203.28337

Multinomial logistic regression

Number of obs = 152
 LR chi2(20) = 50.72
 Prob > chi2 = 0.0002
 Pseudo R2 = 0.1109

Log likelihood = -203.28337

y	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
0						
x1	-1.832363	.8632903	-2.12	0.034	-3.524381	-.1403452
x2	2.368735	1.168139	2.03	0.043	.079224	4.658246
x3	-.0976971	.8455682	-0.12	0.908	-1.75498	1.559586
x4	-.4905651	.3468626	-1.41	0.157	-1.170403	.189273
_cons	4.204706	4.763082	0.88	0.377	-5.130762	13.54017
1						
x1	-1.954381	.814615	-2.40	0.016	-3.550997	-.3577647
x2	.3523473	.782471	0.45	0.652	-1.181268	1.885962
x3	1.155726	1.030763	1.12	0.262	-.864533	3.175985

