

The LOGISTIC Procedure

Model Information

Data Set	WORK.CCTRAN
Response Variable	degreefix
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	2127
Number of Observations Used	2127

Response Profile

Ordered Value	degreefix	Total Frequency
1	0	872
2	1	1255

Probability modeled is degreefix=1.

Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	2881.305	2571.425
SC	2886.968	2741.299
-2 Log L	2879.305	2511.425

Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	367.8800	29	<.0001
Score	338.6982	29	<.0001
Wald	295.2791	29	<.0001

Analysis of Maximum Likelihood Estimates

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-1.8085	0.4218	18.3819	<.0001
FGPAcat	1	0.5674	0.0463	150.1650	<.0001
FHOURLcat	1	0.2512	0.2487	1.0207	0.3124
TGPAcat	1	0.1758	0.0511	11.8320	0.0006
THOURLcat	1	0.0104	0.0494	0.0445	0.8329
ag	1	0.8336	0.2149	15.0447	0.0001
bus	1	0.5591	0.1805	9.5980	0.0019
ed	1	0.1485	0.2412	0.3791	0.5381
eng	1	0.9333	0.2419	14.8842	0.0001
libart	1	0.0912	0.1947	0.2195	0.6395
sci	1	0.2038	0.2082	0.9591	0.3274
socsci	1	0.0484	0.2011	0.0579	0.8098
profess	1	0.2910	0.2033	2.0489	0.1523
metro	1	0.0558	0.2086	0.0715	0.7891
suburban	1	-0.0773	0.1360	0.3229	0.5699
asdeg	1	-0.1915	0.7092	0.0729	0.7872
aadeg	1	0.4101	0.1537	7.1199	0.0076
aodeg	1	-0.2454	0.5167	0.2255	0.6349
female	1	-0.1775	0.1093	2.6393	0.1042
minor	1	-0.2613	0.3133	0.6956	0.4043

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Analysis of Maximum Likelihood Estimates

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
femmin	1	-0.1421	0.4756	0.0893	0.7651
Pell	1	0.3504	0.1127	9.6627	0.0019
tradage	1	0.6270	0.2252	7.7513	0.0054
co93	1	-0.2671	0.2032	1.7278	0.1887
co94	1	-0.0252	0.2008	0.0157	0.9003
co95	1	-0.3154	0.1898	2.7635	0.0964
co96	1	-0.2294	0.2014	1.2985	0.2545
co97	1	-0.1475	0.1961	0.5657	0.4520
co98	1	-0.0873	0.1946	0.2013	0.6536
co99	1	-0.4248	0.1950	4.7438	0.0294

Odds Ratio Estimates

Effect	Point Estimate	95% Wald Confidence Limits	
FGPAcat	1.764	1.611	1.931
FHOURcat	1.286	0.790	2.093
TGPAcat	1.192	1.079	1.318
THOURcat	1.010	0.917	1.113
ag	2.302	1.510	3.507
bus	1.749	1.228	2.491
ed	1.160	0.723	1.861
eng	2.543	1.583	4.085
libart	1.095	0.748	1.604
sci	1.226	0.815	1.844
socsci	1.050	0.708	1.557
profess	1.338	0.898	1.993
metro	1.057	0.702	1.592
suburban	0.926	0.709	1.208
asdeg	0.826	0.206	3.315
aadeg	1.507	1.115	2.037
aodeg	0.782	0.284	2.154
female	0.837	0.676	1.037
minor	0.770	0.417	1.423
femmin	0.868	0.342	2.204
Pell	1.420	1.138	1.771
tradage	1.872	1.204	2.911
co93	0.766	0.514	1.140
co94	0.975	0.658	1.445
co95	0.729	0.503	1.058
co96	0.795	0.536	1.180
co97	0.863	0.588	1.267
co98	0.916	0.626	1.342
co99	0.654	0.446	0.958

Association of Predicted Probabilities and Observed Responses

Percent Concordant	73.7	Somers' D	0.475
Percent Discordant	26.1	Gamma	0.476
Percent Tied	0.2	Tau-a	0.230
Pairs	1094360	c	0.738

Profile Likelihood Confidence Interval for Parameters

Parameter	Estimate	95% Confidence Limits	
Intercept	-1.8085	-2.6388	-0.9839
FGPAcat	0.5674	0.4776	0.6592
FHOURcat	0.2512	-0.2379	0.7392
TGPAcat	0.1758	0.0757	0.2762
THOURcat	0.0104	-0.0864	0.1073
ag	0.8336	0.4152	1.2583
bus	0.5591	0.2065	0.9143
ed	0.1485	-0.3228	0.6238

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Profile Likelihood Confidence
Interval for Parameters

Parameter	Estimate	95% Confidence Limits	
eng	0.9333	0.4638	1.4131
libart	0.0912	-0.2901	0.4735
sci	0.2038	-0.2035	0.6130
socsci	0.0484	-0.3456	0.4432
profess	0.2910	-0.1066	0.6910
metro	0.0558	-0.3518	0.4667
suburban	-0.0773	-0.3449	0.1886
asdeg	-0.1915	-1.5788	1.2722
aadeg	0.4101	0.1101	0.7129
aodeg	-0.2454	-1.2497	0.7984
female	-0.1775	-0.3921	0.0364
minor	-0.2613	-0.8803	0.3534
femmin	-0.1421	-1.0766	0.7927
Pell	0.3504	0.1303	0.5723
tradage	0.6270	0.1837	1.0682
co93	-0.2671	-0.6663	0.1308
co94	-0.0252	-0.4191	0.3685
co95	-0.3154	-0.6887	0.0556
co96	-0.2294	-0.6249	0.1649
co97	-0.1475	-0.5327	0.2366
co98	-0.0873	-0.4694	0.2940
co99	-0.4248	-0.8086	-0.0435

Partition for the Hosmer and Lemeshow Test

Group	Total	degreefix = 1		degreefix = 0	
		Observed	Expected	Observed	Expected
1	214	53	56.53	161	157.47
2	213	68	74.73	145	138.27
3	213	87	90.74	126	122.26
4	213	117	105.77	96	107.23
5	213	134	120.62	79	92.38
6	213	134	133.76	79	79.24
7	213	140	148.96	73	64.04
8	213	159	162.24	54	50.76
9	213	183	174.89	30	38.11
10	209	180	186.75	29	22.25

Hosmer and Lemeshow Goodness-of-Fit Test

Chi-Square	DF	Pr > ChiSq
13.7489	8	0.0886

	A	B	C	D	E	F	G	H	I	J
1		*Use CC means for all								
2		Transfer GPA Category								
3		Coeff.	Means	CC Transfer	< = 2.00	2.01-2.50	2.51-3.00	3.01-3.50	3.51-4.00	
4	*	Intercept	-1.8085	1	-1.8085	-1.8085	-1.8085	-1.8085	-1.8085	-1.8085
5	*	FGPAcat	0.5674	1.41937	0.805350538	0.805351	0.805351	0.805351	0.805351	0.8053505
6		FHRScat	0.2512	0.959568	0.241043356	0.241043	0.241043	0.241043	0.241043	0.2410434
7	*	TGPAcat	0.1758		0	0.1758	0.3516	0.5274	0.7032	
8		THOURcat	0.0104	1.543959	0.016057169	0.016057	0.016057	0.016057	0.016057	0.0160572
9	*	ag	0.8336	0.103432	0.086220999	0.086221	0.086221	0.086221	0.086221	0.086221
10	*	bus	0.5591	0.174894	0.097783347	0.097783	0.097783	0.097783	0.097783	0.0977833
11		ed	0.1485	0.06394	0.00949506	0.009495	0.009495	0.009495	0.009495	0.0094951
12	*	eng	0.9333	0.073813	0.06888958	0.06889	0.06889	0.06889	0.06889	0.0688896
13		libart	0.0912	0.12976	0.01183413	0.011834	0.011834	0.011834	0.011834	0.0118341
14		sci	0.2038	0.100611	0.020504563	0.020505	0.020505	0.020505	0.020505	0.0205046
15		socsci	0.0484	0.114245	0.005529477	0.005529	0.005529	0.005529	0.005529	0.0055295
16		profess	0.291	0.12708	0.03698028	0.03698	0.03698	0.03698	0.03698	0.0369803
17		metro	0.0558	0.084156	0.00469591	0.004696	0.004696	0.004696	0.004696	0.0046959
18		suburban	-0.0773	0.721674	-0.05578538	-0.05579	-0.05579	-0.05579	-0.05579	-0.055785
19		asdeg	-0.1915	0.005172	-0.00099036	-0.00099	-0.00099	-0.00099	-0.00099	-0.00099
20	*	aadeg	0.4101	0.184767	0.07577307	0.075773	0.075773	0.075773	0.075773	0.0757731
21		aodeg	-0.2454	0.009403	-0.00230747	-0.00231	-0.00231	-0.00231	-0.00231	-0.002307
22		female	-0.1775	0.411848	-0.07310297	-0.0731	-0.0731	-0.0731	-0.0731	-0.073103
23		minor	-0.2613	0.042313	-0.01105641	-0.01106	-0.01106	-0.01106	-0.01106	-0.011056
24		femmin	-0.1421	0.018806	-0.0026723	-0.00267	-0.00267	-0.00267	-0.00267	-0.002672
25	*	Pell	0.3504	0.28867	0.101149793	0.10115	0.10115	0.10115	0.10115	0.1011498
26	*	tradage	0.627	0.949694	0.595458389	0.595458	0.595458	0.595458	0.595458	0.5954584
27		co93	-0.2671	0.111425	-0.02976148	-0.02976	-0.02976	-0.02976	-0.02976	-0.029761
28		co94	-0.0252	0.117536	-0.00296192	-0.00296	-0.00296	-0.00296	-0.00296	-0.002962
29		co95	-0.3154	0.146686	-0.04626461	-0.04626	-0.04626	-0.04626	-0.04626	-0.046265
30		co96	-0.2294	0.113305	-0.02599219	-0.02599	-0.02599	-0.02599	-0.02599	-0.025992
31		co97	-0.1475	0.125059	-0.01844617	-0.01845	-0.01845	-0.01845	-0.01845	-0.018446
32		co98	-0.0873	0.132581	-0.01157433	-0.01157	-0.01157	-0.01157	-0.01157	-0.011574
33	*	co99	-0.4248	0.12741	-0.05412356	-0.05412	-0.05412	-0.05412	-0.05412	-0.054124
34										
35		sum of column			0.03322651	0.033227	0.209027	0.384827	0.560627	0.7364265
36		=EXP(-E35)			0.967319427	0.967319	0.811374	0.680569	0.570851	0.4788219
37		=1/(1+E36)			0.508305863	0.508306	0.552067	0.595037	0.636597	0.6762139
38										
39										
40					CC Transfer	< = 2.00	2.01-2.50	2.51-3.00	3.01-3.50	3.51-4.00
41					Predicted	50.8%	55.2%	59.5%	63.7%	67.6%
42					difference		4.4%	4.3%	4.2%	4.0%
		Another example may be found at:								
		http://staff.washington.edu/glynn/predprob.pdf								

C	D	E	F	G	H	I	J	K
SS	var	Odds Ratio	=-OR/K+OR	=OR*K-OR	Coeff.	SE	1.96*SE	=exp(J)
*	Intercept	0.16	0.09	0.21	-1.8085	0.4218	0.826728	2.285827
*	FGPAcat *	1.76	0.15	0.17	0.5674	0.0463	0.090748	1.094993
	FT/PT	1.29	0.50	0.81	0.2512	0.2487	0.487452	1.628162
	Female	0.84	0.16	0.20	-0.1775	0.1093	0.214228	1.238905
	Minority	0.77	0.35	0.65	-0.2613	0.3133	0.614068	1.847934
	Interaction Fem	0.87	0.53	1.34	-0.1421	0.4756	0.932176	2.54003
*	Pell Grant *	1.42	0.28	0.35	0.3504	0.1127	0.220892	1.247189
*	Trad. Age *	1.87	0.67	1.04	0.627	0.2252	0.441392	1.55487
*	Agriculture *	2.30	0.79	1.21	0.8336	0.2149	0.421204	1.523795
*	Business *	1.75	0.52	0.74	0.5591	0.1805	0.35378	1.424442
	Education	1.16	0.44	0.70	0.1485	0.2412	0.472752	1.604403
*	Engineering *	2.54	0.96	1.54	0.9333	0.2419	0.474124	1.606606
	Liberal Arts	1.10	0.35	0.51	0.0912	0.1947	0.381612	1.464644
	Science	1.23	0.41	0.62	0.2038	0.2082	0.408072	1.503915
	Social Science	1.05	0.34	0.51	0.0484	0.2011	0.394156	1.483132
	Professional	1.34	0.44	0.65	0.291	0.2033	0.398468	1.489541
	93 Cohort	0.77	0.25	0.37	-0.2671	0.2032	0.398272	1.489249
	94 Cohort	0.98	0.32	0.47	-0.0252	0.2008	0.393568	1.48226
	95 Cohort	0.73	0.23	0.33	-0.3154	0.1898	0.372008	1.450645
	96 Cohort	0.80	0.26	0.38	-0.2294	0.2014	0.394744	1.484004
	97 Cohort	0.86	0.28	0.40	-0.1475	0.1961	0.384356	1.468668
	98 Cohort	0.92	0.29	0.43	-0.0873	0.1946	0.381416	1.464357
*	99 Cohort *	0.65	0.21	0.30	-0.4248	0.195	0.3822	1.465505
*	Transfer GPA *	1.19	0.11	0.13	0.1758	0.0511	0.100156	1.105343
	Transfer Hours	1.01	0.09	0.10	0.0104	0.0494	0.096824	1.101666
	Metropolitan	1.06	0.35	0.53	0.0558	0.2086	0.408856	1.505095
	Suburban	0.93	0.22	0.28	-0.0773	0.136	0.26656	1.305466
	AS Degree	0.83	0.62	2.49	-0.1915	0.7092	1.390032	4.014979
*	AA Degree *	1.51	0.39	0.53	0.4101	0.1537	0.301252	1.35155
	Other Degree	0.78	0.50	1.37	-0.2454	0.5167	1.012732	2.753112