

4 Class Model - Marijuana Use, Covariate (standardized)
Standardized Grades

Data and Model Summary and Fit Statistics (EM Algorithm with Logistic Regression)

Number of subjects in dataset: 2587
Number of subjects in analysis: 2587

Number of measurement items: 7
Response categories per item: 2 2 2 2 2 2 2
Number of groups in the data: 1
Number of latent classes: 4

Logistic model: multinomial
Number of covariates used: 1
Reference class: 1

NOTE: A data-derived prior was applied to the rho parameters to help
avoid parameter estimates on boundary values of zero and one.

Rho starting values were randomly generated (seed = 25752).

No parameter restrictions were specified (freely estimated).

The model converged in 89 iterations.

Maximum number of iterations: 5000
Convergence method: maximum absolute deviation (MAD)
Convergence criterion: 0.000001000

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Fit statistics:
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Log-likelihood: -6454.78

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Parameter Estimates

Class membership probabilities: Gamma estimates (standard errors)

Class:	1	2	3	4
	0.5135	0.0918	0.1492	0.2454
	(0.0107)	(0.0063)	(0.0096)	(0.0096)

Item response probabilities: Rho estimates (standard errors)

Response category 1:

Class:	1	2	3	4
LIFETIME :	0.1092	0.3014	0.9996	0.9998
	(0.0116)	(0.0321)	(0.0011)	(0.0006)
PREV_YR :	0.0001	0.0009	0.8558	0.9995
	(0.0003)	(0.0029)	(0.0358)	(0.0012)
PREV_MO :	0.0000	0.0002	0.2458	0.7336
	(0.0002)	(0.0010)	(0.0255)	(0.0206)
NEXT_MO :	0.0157	0.1990	0.2909	0.8754
	(0.0038)	(0.0280)	(0.0292)	(0.0178)
APRV_TRY :	0.1602	0.9804	0.6672	0.9997
	(0.0113)	(0.0133)	(0.0277)	(0.0007)
APRV_OCC :	0.0052	0.9915	0.1919	0.9961
	(0.0030)	(0.0197)	(0.0340)	(0.0045)
APRV_REG :	0.0020	0.4305	0.0203	0.6058
	(0.0014)	(0.0339)	(0.0085)	(0.0221)

Response category 2:

Class:	1	2	3	4
LIFETIME :	0.8908	0.6986	0.0004	0.0002
	(0.0116)	(0.0321)	(0.0011)	(0.0006)
PREV_YR :	0.9999	0.9991	0.1442	0.0005
	(0.0003)	(0.0029)	(0.0358)	(0.0012)
PREV_MO :	1.0000	0.9998	0.7542	0.2664
	(0.0002)	(0.0010)	(0.0255)	(0.0206)
NEXT_MO :	0.9843	0.8010	0.7091	0.1246
	(0.0038)	(0.0280)	(0.0292)	(0.0178)
APRV_TRY :	0.8398	0.0196	0.3328	0.0003
	(0.0113)	(0.0133)	(0.0277)	(0.0007)
APRV_OCC :	0.9948	0.0085	0.8081	0.0039
	(0.0030)	(0.0197)	(0.0340)	(0.0045)
APRV_REG :	0.9980	0.5695	0.9797	0.3942
	(0.0014)	(0.0339)	(0.0085)	(0.0221)

Beta estimates (standard errors)

Class:	1	2	3	4
Intercept	Reference	-1.6982	-1.2382	-0.7522
		(0.0776)	(0.0780)	(0.0553)
GRADE :		-0.2287	-0.4528	-0.4971
		(0.0770)	(0.0658)	(0.0518)

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Parameter Estimates

Odds Ratio estimates [95% Confidence Interval]

Class:	1	2	3	4
Intercept(odds):	Reference	0.1830	0.2899	0.4713
Lower bound		[0.1572]	[0.2488]	[0.4229]
Upper bound		[0.2131]	[0.3378]	[0.5253]
GRADE :		0.7956	0.6358	0.6083
Lower bound		[0.6842]	[0.5589]	[0.5496]
Upper bound		[0.9252]	[0.7233]	[0.6732]

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Significance Tests

Beta parameter test (Type III): (based on 2*log-likelihood)

Covariate	Exclusion LL	Change in 2*LL	deg freedom	p-Value
GRADE	-6513.06	116.55	3	0.0000

4 Class Model - Marijuana Use, Grouping Variable and Covariate (standardized)
Standardized Grades

Data and Model Summary and Fit Statistics (EM Algorithm with Logistic Regression)

Number of subjects in dataset: 2587
Number of subjects in analysis: 2587

Number of measurement items: 7
Response categories per item: 2 2 2 2 2 2 2
Number of groups in the data: 3
Number of latent classes: 4

Logistic model: multinomial
Number of covariates used: 1
Reference class: 1

NOTE: A data-derived prior was applied to the rho parameters to help
avoid parameter estimates on boundary values of zero and one.

Rho starting values were randomly generated (seed = 25752).

Rho (measurement) parameters were constrained to be equal across groups.

The model converged in 91 iterations.

Maximum number of iterations: 5000
Convergence method: maximum absolute deviation (MAD)
Convergence criterion: 0.000001000

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Fit statistics:
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Log-likelihood: -6446.61

4 Class Model - Marijuana Use, Grouping Variable and Covariate (standardized)
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Parameter Estimates

Class membership probabilities: Gamma estimates (standard errors)

Class:	1	2	3	4
Y1 :	0.4922 (0.0168)	0.0765 (0.0092)	0.1501 (0.0141)	0.2812 (0.0156)
Y2 :	0.5332 (0.0183)	0.1001 (0.0113)	0.1424 (0.0147)	0.2243 (0.0154)
Y3 :	0.5173 (0.0181)	0.1027 (0.0116)	0.1547 (0.0154)	0.2253 (0.0156)

Item response probabilities: Rho estimates (standard errors)
(All groups)

Response category 1:

Class:	1	2	3	4
LIFETIME :	0.1092 (0.0117)	0.3023 (0.0323)	0.9996 (0.0011)	0.9998 (0.0006)
PREV_YR :	0.0001 (0.0003)	0.0009 (0.0029)	0.8569 (0.0368)	0.9995 (0.0013)
PREV_MO :	0.0000 (0.0002)	0.0002 (0.0010)	0.2458 (0.0258)	0.7339 (0.0205)
NEXT_MO :	0.0154 (0.0039)	0.2002 (0.0281)	0.2904 (0.0295)	0.8759 (0.0177)
APRV_TRY :	0.1596 (0.0114)	0.9800 (0.0136)	0.6677 (0.0278)	0.9998 (0.0007)
APRV_OCC :	0.0053 (0.0030)	0.9855 (0.0258)	0.1936 (0.0339)	0.9955 (0.0048)
APRV_REG :	0.0020 (0.0014)	0.4285 (0.0343)	0.0194 (0.0085)	0.6065 (0.0221)

Response category 2:

Class:	1	2	3	4
LIFETIME :	0.8908 (0.0117)	0.6977 (0.0323)	0.0004 (0.0011)	0.0002 (0.0006)
PREV_YR :	0.9999 (0.0003)	0.9991 (0.0029)	0.1431 (0.0368)	0.0005 (0.0013)
PREV_MO :	1.0000 (0.0002)	0.9998 (0.0010)	0.7542 (0.0258)	0.2661 (0.0205)
NEXT_MO :	0.9846 (0.0039)	0.7998 (0.0281)	0.7096 (0.0295)	0.1241 (0.0177)
APRV_TRY :	0.8404 (0.0114)	0.0200 (0.0136)	0.3323 (0.0278)	0.0002 (0.0007)
APRV_OCC :	0.9947 (0.0030)	0.0145 (0.0258)	0.8064 (0.0339)	0.0045 (0.0048)
APRV_REG :	0.9980 (0.0014)	0.5715 (0.0343)	0.9806 (0.0085)	0.3935 (0.0221)

Beta estimates (standard errors)

Y1	:				
Class:		1	2	3	4
Intercept	Reference		-1.8433	-1.2252	-0.5942
			(0.1346)	(0.1179)	(0.0845)
GRADE	:		-0.1614	-0.5536	-0.5434
			(0.1482)	(0.1112)	(0.0854)
Y2	:				
Class:		1	2	3	4
Intercept	Reference		-1.6493	-1.3122	-0.8501
			(0.1293)	(0.1256)	(0.0932)
GRADE	:		-0.2181	-0.3995	-0.3500
			(0.1266)	(0.1145)	(0.0916)
Y3	:				
Class:		1	2	3	4
Intercept	Reference		-1.5903	-1.1897	-0.8632
			(0.1296)	(0.1213)	(0.0985)
GRADE	:		-0.2997	-0.3916	-0.5829
			(0.1309)	(0.1178)	(0.0941)

Odds Ratio estimates [95% Confidence Interval]

Y1	:				
Class:		1	2	3	4
Intercept(odds):	Reference		0.1583	0.2937	0.5520
Lower bound			[0.1216]	[0.2331]	[0.4678]
Upper bound			[0.2061]	[0.3701]	[0.6514]
GRADE	:		0.8510	0.5749	0.5807
Lower bound			[0.6365]	[0.4623]	[0.4912]
Upper bound			[1.1378]	[0.7149]	[0.6866]
Y2	:				
Class:		1	2	3	4
Intercept(odds):	Reference		0.1922	0.2692	0.4274
Lower bound			[0.1492]	[0.2105]	[0.3560]
Upper bound			[0.2476]	[0.3444]	[0.5130]
GRADE	:		0.8041	0.6707	0.7047
Lower bound			[0.6274]	[0.5358]	[0.5889]
Upper bound			[1.0305]	[0.8394]	[0.8432]
Y3	:				
Class:		1	2	3	4
Intercept(odds):	Reference		0.2039	0.3043	0.4218
Lower bound			[0.1581]	[0.2399]	[0.3478]
Upper bound			[0.2628]	[0.3860]	[0.5117]
GRADE	:		0.7410	0.6760	0.5583
Lower bound			[0.5733]	[0.5366]	[0.4643]
Upper bound			[0.9578]	[0.8516]	[0.6713]

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Significance Tests

Beta parameter test (Type III): (based on 2*log-likelihood)

Covariate	Exclusion LL	Change in 2*LL	deg freedom	p-Value
GRADE	-6506.55	119.89	9	0.0000