

多分类 logistic 回归

Logistic 回归要求应变变量 Y 是 0/1 两分类变量。如果 Y 是多分类变量，如疾病结局可有恶化、好转、痊愈三种结局，就应该使用该模块多分类(multinomial logistic)逻辑回归。该模块不仅输出 Multinomial logistic 回归结果，而且给出按序合并生成 0/1 两分类变量后的 ordinary logistics 回归结果。如 Y 为 0、1、2 三分组变量，将有两种合并方法：1 和 2 合并然后与 0 比，或合并 0 和 1 然后与 2 比。该模块同时给出每个自变量对 Y 的分布的预测值，并用图形显示。

例：DEMO 数据分析对 SBP 的三分组进行回归分析，输入界面如下图所示

多分类Logistic回归分析 ?

标题:

选择分析对象:

分类结果变量: 分层变量:

自变量

变量

- Body mass index, kg/m2
- Age, years
- Occupation
- Education

输出结果:

Multinomial Logistic Regression

Outcome: Systolic BP, mmhg 三分组

SEX : Male

Multinomial Logistic Regression: Odd.ratio (95% CI) P.value

	SBP.T3 = 0	SBP.T3 = 1	SBP.T3 = 2

(Intercept)	1.0 (ref.)	17.3557 (0.8369, 359.9301) 0.0651	0.3025 (0.0156, 5.8780) 0.4296
BMI	1.0 (ref.)	0.9100 (0.7993, 1.0360) 0.1539	0.9973 (0.8808, 1.1292) 0.9658
AGE	1.0 (ref.)	0.9837 (0.9613, 1.0065) 0.1593	1.0381 (1.0164, 1.0603) 0.0005
factor(OCCU.NEW) 2	1.0 (ref.)	1.0226 (0.5852, 1.7870) 0.9375	0.9584 (0.5525, 1.6624) 0.8798
factor(EDU.NEW) 2	1.0 (ref.)	0.6797 (0.2983, 1.5489) 0.3582	1.1612 (0.5524, 2.4411) 0.6933
factor(EDU.NEW) 3	1.0 (ref.)	1.2542 (0.5313, 2.9607) 0.6052	1.1300 (0.4953, 2.5781) 0.7714

Predicted probability for each sub-group (with other Xs = mean or the first level)

Sub-group	P(SBP.T3=0)	P(SBP.T3=1)	P(SBP.T3=2)
OCCU.NEW = 1	0.28714	0.36714	0.34572
OCCU.NEW = 2	0.28890	0.37773	0.33337
EDU.NEW = 1	0.28714	0.36714	0.34572
EDU.NEW = 2	0.30608	0.26599	0.42793
EDU.NEW = 3	0.25226	0.40453	0.34321

Ordinary logistic regression

	OR	95%CI Low	95%CI Upp	P-value
BMI	0.9879	0.9005	1.0838	0.7962
AGE	1.0343	1.0182	1.0507	<0.0001
factor(OCCU.NEW) 2	0.9476	0.6349	1.4142	0.7921
factor(EDU.NEW) 2	1.1955	0.6706	2.1312	0.5449
factor(EDU.NEW) 3	1.1689	0.6310	2.1652	0.6197
0 1	1.0602	0.1241	9.0574	0.9574
1 2	5.1634	0.6011	44.3544	0.1346

SEX : Female

Multinomial Logistic Regression: Odd.ratio (95% CI) P.value

	SBP.T3 = 0	SBP.T3 = 1	SBP.T3 = 2
(Intercept)	1.0 (ref.)	0.0294 (0.0021, 0.4057) 0.0085	3e-040 (0.0000, 0.0060) <0.0001
BMI	1.0 (ref.)	1.0944 (0.9858, 1.2150) 0.0908	1.2288 (1.0915, 1.3833) 0.0007
AGE	1.0 (ref.)	1.0419 (1.0142, 1.0703) 0.0028	1.1138 (1.0810, 1.1475) <0.0001
factor(OCCU.NEW) 2	1.0 (ref.)	0.9164 (0.5460, 1.5381) 0.7411	0.3478 (0.1865, 0.6487) 0.0009

factor(EDU.NEW) 2	1.0 (ref.)	0.9895 (0.5246, 1.8666) 0.9741	0.7482 (0.3356, 1.6680) 0.4782
factor(EDU.NEW) 3	1.0 (ref.)	2.4945 (1.1156, 5.5776) 0.0260	0.7209 (0.1957, 2.6558) 0.6228

Predicted probability for each sub-group (with other Xs = mean or the first level)

Sub-group	P (SBP.T3=0)	P (SBP.T3=1)	P (SBP.T3=2)
OCCU.NEW = 1	0.31769	0.29879	0.38352
OCCU.NEW = 2	0.43825	0.37772	0.18403
EDU.NEW = 1	0.31769	0.29879	0.38352
EDU.NEW = 2	0.35287	0.32841	0.31872
EDU.NEW = 3	0.23717	0.55643	0.20640

Ordinary logistic regression

	OR	95%CI Low	95%CI Upp	P-value
BMI	1.1539	1.0650	1.2502	0.0005
AGE	1.0840	1.0627	1.1057	<0.0001
factor(OCCU.NEW) 2	0.4568	0.3009	0.6935	0.0002
factor(EDU.NEW) 2	0.7835	0.4588	1.3379	0.3714
factor(EDU.NEW) 3	1.2110	0.6255	2.3444	0.5700
0 1	141.1441	17.8402	1116.671	<0.0001
1 2	823.2729	98.5182	6879.7254	<0.0001



