Analysis of the TBI Data 5
Multiple logistical regression (revision 2)

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1 Multiple logistic regression

1.1 Coding method 1

Coding instruction:

- `GOS1` = 1 if `Mon1GOS`= {1, 2}, otherwise `GOS1` = 0 (similar for `GOS3` and `GOS6`)
- `eyereactivity`: 0 == both -; 1 == only one +; 2 == both + (same below)
- `newCT`: D1 if CT.Code={D1, D2}; D2 if CT.Code={D3, D4}; M if CT.Code={M1, M2};

Cross tables of GOS and CT.Code/eyereactivity

GOS1

	D1	D2	M
0	136	45	158
1	49	82	198

eye reactivity

	0	1	2
0	81	21	237
1	198	27	104

GOS3

	D1	D2	M
0	150	61	177
1	32	66	173

	0	1	2
0	106	26	256
1	173	21	77

GOS6

	D1	D2	M
0	146	64	174
1	30	61	169

	0	1	2
0	106	26	256
1	173	21	77

1.1.1 Fitting logitsitcal regression for Mon1GOS

There are total 442 patients.

Table 1: 206 observations after removing missing

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-0.1172	3.8370	-0.03	0.9756
Age	0.0533	0.0141	3.78	0.0002
Gendermale	0.2514	0.6196	0.41	0.6849
AIS	0.0487	0.0385	1.27	0.2058
eyereactivity1	0.4157	1.0378	0.40	0.6888
eyereactivity2	-1.0725	0.4037	-2.66	0.0079
newCTD2	0.2872	0.6701	0.43	0.6682
newCTM	0.2603	0.5533	0.47	0.6381
mean_ICP	0.0226	0.0318	0.71	0.4765
mean_MAP	-0.0301	0.0222	-1.35	0.1755
mean_GCS.sum	-0.8119	0.1736	-4.68	0.0000
mean_SjvO2	0.0471	0.0380	1.24	0.2155
mean_CBF	-0.0031	0.0158	-0.20	0.8435
mean_CMRO2	0.1407	0.3577	0.39	0.6940

1.1.2 Fitting logitsitcal regression for Mon3GOS

Table 2: 200 observations after removing missing

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	0.9893	4.1193	0.24	0.8102
Age	0.0557	0.0149	3.73	0.0002
Gendermale	0.3626	0.6529	0.56	0.5787
AIS	0.0671	0.0399	1.68	0.0922
eyereactivity1	-0.2126	0.9409	-0.23	0.8213
eyereactivity2	-1.0801	0.4321	-2.50	0.0124
newCTD2	0.9005	0.8087	1.11	0.2655
newCTM	1.1277	0.7197	1.57	0.1172
mean_ICP	0.0572	0.0350	1.64	0.1018
mean_MAP	-0.0660	0.0244	-2.71	0.0068
mean_GCS.sum	-0.7006	0.1802	-3.89	0.0001
mean_SjvO2	0.0414	0.0416	1.00	0.3195
mean_CBF	-0.0131	0.0186	-0.71	0.4795
mean_CMRO2	0.1751	0.4120	0.42	0.6709

1.1.3 Fitting logitsitcal regression for Mon6GOS

Table 3: 190 observations after removing missing

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	1.3544	4.1292	0.33	0.7429
Age	0.0557	0.0151	3.69	0.0002
Gendermale	0.3185	0.6531	0.49	0.6258
AIS	0.0595	0.0396	1.50	0.1327
eyereactivity1	-0.1911	0.9242	-0.21	0.8362
eyereactivity2	-1.0087	0.4427	-2.28	0.0227
newCTD2	0.6205	0.8089	0.77	0.4430
newCTM	0.9891	0.7166	1.38	0.1675
mean_ICP	0.0460	0.0339	1.36	0.1746
mean_MAP	-0.0648	0.0246	-2.64	0.0084
mean_GCS.sum	-0.7435	0.1851	-4.02	0.0001
mean_SjvO2	0.0437	0.0419	1.04	0.2964
mean_CBF	-0.0087	0.0185	-0.47	0.6369
mean_CMRO2	0.1160	0.4168	0.28	0.7808

1.2 Coding method 2 (death vs others)

Coding instruction:

- `GOS1` = 1 if `Mon1GOS`= {1}, otherwise `GOS1` = 0 (similar for `GOS3` and `GOS6`)

GOS1

	D1	D2	M
0	166	78	230
1	19	49	126

	0	1	2
0	156	32	286
1	123	16	55

GOS3

	D1	D2	M
0	160	74	214
1	22	53	136

	0	1	2
0	145	28	275
1	134	19	58

GOS6

	D1	D2	M
0	150	70	196
1	26	55	147

	0	1	2
0	145	28	275
1	134	19	58

1.2.1 For Mon1GOS

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	0.5897	4.2682	0.14	0.8901
Age	0.0701	0.0161	4.35	0.0000
Gendermale	0.3185	0.7043	0.45	0.6511
AIS	0.0462	0.0362	1.28	0.2013
eyereactivity1	0.1550	0.9569	0.16	0.8713
eyereactivity2	-0.6683	0.4619	-1.45	0.1480
newCTD2	0.9806	0.9855	1.00	0.3197
newCTM	0.9984	0.9093	1.10	0.2722
mean_ICP	0.1131	0.0396	2.86	0.0042
mean_MAP	-0.0705	0.0250	-2.82	0.0048
mean_GCS.sum	-0.6174	0.1956	-3.16	0.0016
mean_SjvO2	0.0067	0.0441	0.15	0.8800
mean_CBF	0.0033	0.0209	0.16	0.8761
mean_CMRO2	0.1700	0.4642	0.37	0.7142

1.2.2 For Mon3GOS

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-1.4268	4.4129	-0.32	0.7464
Age	0.0784	0.0170	4.63	0.0000
Gendermale	0.2789	0.7036	0.40	0.6918
AIS	0.0807	0.0403	2.00	0.0453
eyereactivity1	0.6333	0.9977	0.63	0.5256
eyereactivity2	-0.5409	0.4743	-1.14	0.2541
newCTD2	0.7809	0.9767	0.80	0.4240
newCTM	0.8386	0.8869	0.95	0.3444
mean_ICP	0.1318	0.0437	3.02	0.0025
mean_MAP	-0.0780	0.0259	-3.01	0.0026
mean_GCS.sum	-0.6276	0.2022	-3.10	0.0019
mean_SjvO2	0.0294	0.0454	0.65	0.5162
mean_CBF	-0.0009	0.0204	-0.04	0.9665
mean_CMRO2	0.1520	0.4656	0.33	0.7440

1.2.3 For Mon6GOS

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-1.1902	4.6210	-0.26	0.7967
Age	0.0807	0.0176	4.58	0.0000
Gendermale	0.3301	0.7073	0.47	0.6408
AIS	0.0779	0.0436	1.78	0.0743
eyereactivity1	0.1926	1.0083	0.19	0.8485
eyereactivity2	-0.8033	0.4901	-1.64	0.1012
newCTD2	0.4829	0.9949	0.49	0.6274
newCTM	1.1309	0.9055	1.25	0.2117
mean_ICP	0.1013	0.0430	2.36	0.0185
mean_MAP	-0.0928	0.0279	-3.32	0.0009
mean_GCS.sum	-0.8080	0.2127	-3.80	0.0001
mean_SjvO2	0.0708	0.0473	1.50	0.1344
mean_CBF	-0.0103	0.0211	-0.49	0.6233
mean_CMRO2	0.3396	0.4749	0.71	0.4746

1.3 Coding method 3 (good vs bad)

Coding instruction:

- `GOS1` = {1} if `Mon1GOS`= {1, 2, 3}, otherwise `GOS1` = 0 (similar for `GOS3` and `GOS6`)

GOS1

	D1	D2	M
0	36	13	47
1	149	114	309

	0	1	2
0	20	6	70
1	259	42	271

GOS3

	D1	D2	M
0	72	28	79
1	110	99	271

	0	1	2
0	32	10	137
1	247	37	196

GOS6

	D1	D2	M
0	90	34	95
1	86	91	248

	0	1	2
0	32	10	137
1	247	37	196

1.3.1 For Mon1GOS

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-3.3226	3.8661	-0.86	0.3901
Age	0.0284	0.0158	1.80	0.0718
Gendermale	0.8935	0.6260	1.43	0.1535
AIS	0.0929	0.0516	1.80	0.0720
eyereactivity1	14.4828	1214.0781	0.01	0.9905
eyereactivity2	-0.4344	0.4716	-0.92	0.3569
newCTD2	-0.9217	0.6915	-1.33	0.1826
newCTM	0.1459	0.5246	0.28	0.7810
mean_ICP	0.0055	0.0352	0.16	0.8763
mean_MAP	0.0192	0.0260	0.74	0.4607
mean_GCS.sum	-0.4921	0.1497	-3.29	0.0010
mean_SjvO2	0.0251	0.0400	0.63	0.5300
mean_CBF	0.0210	0.0206	1.02	0.3094
mean_CMRO2	-0.4431	0.3945	-1.12	0.2614

1.3.2 For Mon3GOS

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-5.3350	3.6813	-1.45	0.1473
Age	0.0630	0.0158	3.98	0.0001
Gendermale	0.6805	0.6292	1.08	0.2794
AIS	0.0320	0.0395	0.81	0.4169
eyereactivity1	0.3247	1.3271	0.24	0.8067
eyereactivity2	-1.1163	0.4222	-2.64	0.0082
newCTD2	-0.0855	0.6273	-0.14	0.8915
newCTM	0.7150	0.4809	1.49	0.1371
mean_ICP	0.0433	0.0337	1.28	0.1990
mean_MAP	0.0186	0.0231	0.80	0.4211
mean_GCS.sum	-0.5554	0.1458	-3.81	0.0001
mean_SjvO2	0.0522	0.0369	1.42	0.1567
mean_CBF	-0.0000	0.0156	-0.00	0.9980
mean_CMRO2	-0.2186	0.3412	-0.64	0.5217

1.3.3 For Mon6GOS

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-3.2957	3.7984	-0.87	0.3856
Age	0.0704	0.0167	4.21	0.0000
Gendermale	1.0002	0.6567	1.52	0.1277
AIS	0.0393	0.0419	0.94	0.3481
eyereactivity1	0.8078	1.3653	0.59	0.5541
eyereactivity2	-0.9163	0.4415	-2.08	0.0380
newCTD2	-0.5512	0.6740	-0.82	0.4134
newCTM	0.4083	0.5150	0.79	0.4278
mean_ICP	0.0500	0.0359	1.39	0.1639
mean_MAP	-0.0075	0.0235	-0.32	0.7493
mean_GCS.sum	-0.6598	0.1594	-4.14	0.0000
mean_SjvO2	0.0510	0.0379	1.35	0.1784
mean_CBF	0.0013	0.0160	0.08	0.9336
mean_CMRO2	-0.2691	0.3568	-0.75	0.4508