5y complications analysis

Filters

```
discarded_patients <- readLines('code/five_years/discarded_patients')

data_set %<>%
    .[, followup_2y :=
        !is.na('2 YEAR VISIT - Date of visit') |
        !is.na('3 YEAR VISIT - Date of visit')] %>%
    .[, followup_5y :=
        !is.na('5 YEAR VISIT - Date of visit') |
        !is.na('6 YEAR VISIT - Date of visit')]

data_set %<>%
    .[followup_2y==TRUE] %>%
    .[Site != 'ANK Op'] %>%
    .[Study=='Op'] %>%
    .['Vital status' == 'Alive'] %>%
    .['('Code of the patient' %in% discarded_patients)] %>%
    .['st1. Date of Stage 1' %>% as.Date() < as.Date('2015-3-15')]</pre>
```

Only Major Complications

All complications

Major Complications

Demographics

	Estimate Std	. Error	t value	Pr(> t)
(Intercept)	0.008	0.135	0.058	0.954
Age	0.006	0.002	3.887	0.000
GenderMale	-0.048	0.054	-0.881	0.379
Prior_Spine_SurgeryYes	0.114	0.051	2.247	0.025
ASA_classification	0.011	0.044	0.250	0.803
BMI_First_Visit	-0.001	0.005	-0.156	0.876
SiteBOR Op	-0.154	0.064	-2.395	0.017
SiteIST Op	0.013	0.084	0.161	0.872
SiteMAD Op	-0.144	0.073	-1.990	0.047
SiteZUR Op	-0.171	0.073	-2.346	0.019
'5y_vs_2y_effect'	-0.062	0.208	-0.296	0.767
Age: '5y_vs_2y_effect'	-0.004	0.002	-1.776	0.076
<pre>GenderMale: '5y_vs_2y_effect'</pre>	0.027	0.084	0.323	0.747
Prior Spine SurgeryYes: '5y vs 2y effect'	-0.141	0.077	-1.828	0.068

ASA_classification:'5y_vs_2y_effect'	0.019	0.067	0.277	0.782
BMI_First_Visit:'5y_vs_2y_effect'	0.004	0.008	0.479	0.632
SiteBOR Op: '5y_vs_2y_effect'	0.141	0.098	1.440	0.151
SiteIST Op: '5y_vs_2y_effect'	-0.033	0.131	-0.249	0.803
SiteMAD Op: '5y_vs_2y_effect'	0.094	0.112	0.841	0.401
SiteZUR Op: '5y_vs_2y_effect'	0.110	0.109	1.011	0.313

Radiology

	Estimate	Std.	Error	t value	Pr(> t)
(Intercept)	-0.096		0.135	-0.708	0.479
Age	0.004		0.001	2.898	0.004
GenderMale	-0.034		0.045	-0.761	0.447
Prior_Spine_SurgeryYes	0.053		0.041	1.276	0.203
ASA_classification	0.006		0.035	0.177	0.860
BMI_First_Visit	0.001		0.004	0.284	0.776
SiteBOR Op	-0.090		0.053	-1.702	0.089
SiteIST Op	0.024		0.069	0.344	0.731
SiteMAD Op	-0.097		0.058	-1.675	0.095
SiteZUR Op	-0.088		0.059	-1.492	0.136
LGap	0.000		0.002	-0.245	0.807
Global_Tilt	0.004		0.002	1.704	0.089
Major_curve_Cobb_angle	0.001		0.001	1.353	0.177
'5y_vs_2y_effect'	-0.017		0.103	-0.167	0.868
LGap: '5y_vs_2y_effect'	0.000		0.003	0.073	0.942
<pre>Global_Tilt:'5y_vs_2y_effect'</pre>	-0.004		0.003	-1.233	0.218
<pre>Major_curve_Cobb_angle:'5y_vs_2y_effect'</pre>	-0.001		0.002	-0.328	0.743

Impact of complications on followup

Only considering those with 2 FU $\,$

Call:

glm(formula = followup_5y ~ ., data = .)

Deviance Residuals:

Min 1Q Median 3Q Max -0.93677 0.03578 0.17437 0.25545 0.51814

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	0.1440292	0.4121352	0.349	0.7270	
Age	0.0012018	0.0021647	0.555	0.5792	
GenderMale	-0.0831838	0.0667245	-1.247	0.2136	
'Prior Spine Surgery'Yes	-0.0051147	0.0600129	-0.085	0.9321	
'ASA classification'	-0.0254085	0.0512333	-0.496	0.6204	
'BMI_First Visit'	0.0048083	0.0061408	0.783	0.4343	
SiteBOR Op	0.0552007	0.0772075	0.715	0.4753	
SiteIST Op	0.1535272	0.1120515	1.370	0.1718	
SiteMAD Op	0.0216802	0.0833253	0.260	0.7949	
SiteZUR Op	0.1892838	0.0875970	2.161	0.0316 *	

```
LGap
                              -0.0002289 0.0019935 -0.115
                                                            0.9087
'Global Tilt'
                              -0.0012177 0.0024807 -0.491
                                                            0.6239
'Major curve Cobb angle'
                              0.0008585 0.0012582 0.682
                                                            0.4956
'2Y. ODI - Score (%)'
                               0.0016896 0.0030334 0.557
                                                            0.5780
'2Y. SRS22 - SRS Subtotal score' -0.0580337 0.0953525 -0.609
                                                            0.5433
'2Y. SF36 - MCS'
                              0.0080787 0.0037301 2.166
                                                            0.0312 *
'2Y. SF36 - PCS'
                               0.0050538 0.0051560 0.980
                                                            0.3279
                        0.0742701 0.0621944 1.194
complication_before_2yYes
                                                            0.2335
Signif. codes: 0 '*** 0.001 '** 0.01 '* 0.05 '.' 0.1 ' 1
```

(Dispersion parameter for gaussian family taken to be 0.1750203)

Null deviance: 48.875 on 280 degrees of freedom Residual deviance: 46.030 on 263 degrees of freedom (35 observations deleted due to missingness)

AIC: 327.1

Number of Fisher Scoring iterations: 2

Complication Types

Infectious complications

Demographics

	${\tt Estimate}$	Std.	Error	t value	Pr(> t)
(Intercept)	-0.185		0.068	-2.742	0.006
Age	0.002		0.001	2.359	0.019
GenderMale	-0.005		0.027	-0.167	0.868
Prior_Spine_SurgeryYes	0.063		0.025	2.510	0.012
ASA_classification	0.021		0.022	0.981	0.327
BMI_First_Visit	0.006		0.003	2.203	0.028
SiteBOR Op	-0.096		0.032	-2.988	0.003
SiteIST Op	0.002		0.042	0.052	0.959
SiteMAD Op	-0.028		0.036	-0.762	0.446
SiteZUR Op	-0.104		0.036	-2.856	0.004
'5y_vs_2y_effect'	0.235		0.104	2.259	0.024
Age: '5y_vs_2y_effect'	-0.002		0.001	-1.827	0.068
<pre>GenderMale: '5y_vs_2y_effect'</pre>	-0.014		0.042	-0.337	0.736
<pre>Prior_Spine_SurgeryYes:'5y_vs_2y_effect'</pre>	-0.088		0.038	-2.282	0.023
ASA_classification:'5y_vs_2y_effect'	-0.020		0.034	-0.606	0.545
BMI_First_Visit:'5y_vs_2y_effect'	-0.005		0.004	-1.338	0.181
SiteBOR Op: '5y_vs_2y_effect'	0.079		0.049	1.616	0.107
SiteIST Op: '5y_vs_2y_effect'	-0.037		0.065	-0.568	0.570
SiteMAD Op: '5y_vs_2y_effect'	-0.015		0.056	-0.271	0.786
SiteZUR Op:'5y_vs_2y_effect'	0.077		0.054	1.415	0.158

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-0.081	0.069	-1.161	0.246
Age	0.001	0.001	1.443	0.150

GenderMale	-0.006	0.023	-0.278	0.781
Prior_Spine_SurgeryYes	0.024	0.021	1.144	0.253
ASA_classification	0.013	0.018	0.711	0.478
BMI_First_Visit	0.003	0.002	1.537	0.125
SiteBOR Op	-0.065	0.027	-2.379	0.018
SiteIST Op	-0.015	0.035	-0.420	0.674
SiteMAD Op	-0.042	0.030	-1.422	0.156
SiteZUR Op	-0.073	0.030	-2.408	0.016
LGap	-0.002	0.001	-2.057	0.040
Global_Tilt	0.002	0.001	2.145	0.032
Major_curve_Cobb_angle	0.000	0.001	-0.216	0.829
'5y_vs_2y_effect'	-0.060	0.053	-1.137	0.256
LGap: '5y_vs_2y_effect'	0.002	0.001	1.254	0.211
<pre>Global_Tilt:'5y_vs_2y_effect'</pre>	-0.003	0.002	-1.749	0.081
<pre>Major_curve_Cobb_angle:'5y_vs_2y_effect'</pre>	0.001	0.001	1.197	0.232

Mechanical complications

Demographics

	Estimate	Std.	Error	t value	Pr(> t)
(Intercept)	0.005		0.121	0.038	0.970
Age	0.004		0.001	3.093	0.002
GenderMale	-0.034		0.048	-0.691	0.490
Prior_Spine_SurgeryYes	0.036		0.045	0.790	0.430
ASA_classification	-0.007		0.039	-0.188	0.851
BMI_First_Visit	0.000		0.005	0.017	0.986
SiteBOR Op	-0.068		0.058	-1.177	0.240
SiteIST Op	-0.024		0.075	-0.326	0.744
SiteMAD Op	-0.057		0.065	-0.877	0.381
SiteZUR Op	-0.150		0.065	-2.309	0.021
'5y_vs_2y_effect'	-0.111		0.186	-0.600	0.549
Age: '5y_vs_2y_effect'	-0.003		0.002	-1.238	0.216
<pre>GenderMale: '5y_vs_2y_effect'</pre>	-0.006		0.075	-0.078	0.937
<pre>Prior_Spine_SurgeryYes:'5y_vs_2y_effect'</pre>	-0.055		0.069	-0.806	0.421
ASA_classification:'5y_vs_2y_effect'	0.022		0.060	0.365	0.716
BMI_First_Visit:'5y_vs_2y_effect'	0.005		0.007	0.650	0.516
SiteBOR Op: '5y_vs_2y_effect'	0.072		0.088	0.819	0.413
SiteIST Op: '5y_vs_2y_effect'	0.046		0.117	0.392	0.695
SiteMAD Op: '5y_vs_2y_effect'	0.056		0.100	0.559	0.577
SiteZUR Op: '5y_vs_2y_effect'	0.126		0.097	1.297	0.195

	Estimate	Std.	Error	t value	Pr(> t)
(Intercept)	-0.094		0.121	-0.778	0.437
Age	0.003		0.001	2.147	0.032
GenderMale	-0.032		0.040	-0.780	0.436
Prior_Spine_SurgeryYes	0.001		0.037	0.029	0.977
ASA_classification	0.005		0.031	0.174	0.862
BMI_First_Visit	0.002		0.004	0.555	0.579
SiteBOR Op	-0.035		0.048	-0.728	0.467
SiteIST Op	0.012		0.061	0.191	0.848
SiteMAD Op	-0.033		0.052	-0.645	0.519

SiteZUR Op	-0.074	0.053	-1.406	0.160
LGap	-0.001	0.002	-0.718	0.473
Global_Tilt	0.003	0.002	1.685	0.093
Major_curve_Cobb_angle	0.001	0.001	0.764	0.445
'5y_vs_2y_effect'	-0.018	0.092	-0.199	0.842
LGap: '5y_vs_2y_effect'	0.000	0.002	0.055	0.956
<pre>Global_Tilt:'5y_vs_2y_effect'</pre>	-0.002	0.003	-0.621	0.535
<pre>Major_curve_Cobb_angle:'5y_vs_2y_effect'</pre>	0.000	0.001	0.025	0.980

Other complications

Demographics

Estimate	Std.	Error	t value	Pr(> t)
-0.084		0.087	-0.975	0.330
0.001		0.001	1.334	0.183
-0.016		0.035	-0.469	0.639
0.107		0.032	3.301	0.001
0.033		0.028	1.181	0.238
0.002		0.003	0.509	0.611
-0.017		0.041	-0.423	0.673
0.051		0.054	0.959	0.338
-0.094		0.046	-2.017	0.044
0.006		0.047	0.131	0.896
0.072		0.133	0.542	0.588
-0.001		0.002	-0.616	0.538
0.055		0.053	1.031	0.303
-0.094		0.049	-1.903	0.058
-0.031		0.043	-0.718	0.473
-0.002		0.005	-0.311	0.756
0.018		0.063	0.282	0.778
-0.074		0.084	-0.887	0.375
0.076		0.071	1.066	0.287
-0.003		0.070	-0.037	0.971
	-0.084 0.001 -0.016 0.107 0.033 0.002 -0.017 0.051 -0.094 0.006 0.072 -0.001 0.055 -0.094 -0.031 -0.002 0.018 -0.074 0.076	-0.084 0.001 -0.016 0.107 0.033 0.002 -0.017 0.051 -0.094 0.006 0.072 -0.001 0.055 -0.094 -0.031 -0.002 0.018 -0.074 0.076	-0.084 0.087 0.001 0.001 -0.016 0.035 0.107 0.032 0.033 0.028 0.002 0.003 -0.017 0.041 0.051 0.054 -0.094 0.046 0.006 0.047 0.072 0.133 -0.001 0.002 0.055 0.053 -0.094 0.049 -0.031 0.043 -0.002 0.005 0.018 0.063 -0.074 0.084 0.076 0.071	0.001 0.001 1.334 -0.016 0.035 -0.469 0.107 0.032 3.301 0.033 0.028 1.181 0.002 0.003 0.509 -0.017 0.041 -0.423 0.051 0.054 0.959 -0.094 0.046 -2.017 0.006 0.047 0.131 0.072 0.133 0.542 -0.001 0.002 -0.616 0.055 0.053 1.031 -0.094 0.049 -1.903 -0.031 0.043 -0.718 -0.002 0.005 -0.311 0.018 0.063 0.282 -0.074 0.084 -0.887 0.076 0.071 1.066

	Estimate	Std.	Error	t value	Pr(> t)
(Intercept)	-0.084		0.086	-0.980	0.327
Age	0.001		0.001	1.027	0.305
GenderMale	0.002		0.029	0.058	0.954
Prior_Spine_SurgeryYes	0.073		0.026	2.784	0.006
ASA_classification	0.000		0.022	-0.016	0.987
BMI_First_Visit	0.001		0.003	0.460	0.646
SiteBOR Op	-0.008		0.034	-0.230	0.818
SiteIST Op	0.031		0.044	0.716	0.474
SiteMAD Op	-0.049		0.037	-1.324	0.186
SiteZUR Op	0.032		0.037	0.866	0.387
LGap	-0.001		0.001	-0.640	0.522
Global_Tilt	0.003		0.001	2.291	0.022
Major_curve_Cobb_angle	0.001		0.001	0.896	0.371
'5y_vs_2y_effect'	0.011		0.065	0.163	0.871
LGap: '5y_vs_2y_effect'	0.001		0.002	0.653	0.514
<pre>Global_Tilt:'5y_vs_2y_effect'</pre>	-0.004		0.002	-2.288	0.023
<pre>Major_curve_Cobb_angle:'5y_vs_2y_effect'</pre>	0.000		0.001	-0.225	0.822

Peripheral neurologic complications

Demographics

	Estimate Std.	Error	t value	Pr(> t)
(Intercept)	0.006	0.052	0.121	0.903
Age	0.001	0.001	1.485	0.138
GenderMale	-0.037	0.021	-1.791	0.074
Prior_Spine_SurgeryYes	0.034	0.019	1.763	0.079
ASA_classification	-0.011	0.017	-0.667	0.505
BMI_First_Visit	0.001	0.002	0.388	0.698
SiteBOR Op	-0.044	0.025	-1.772	0.077
SiteIST Op	-0.042	0.032	-1.324	0.186
SiteMAD Op	-0.025	0.028	-0.884	0.377
SiteZUR Op	0.020	0.028	0.723	0.470
'5y_vs_2y_effect'	0.019	0.080	0.240	0.810
Age: '5y_vs_2y_effect'	-0.001	0.001	-0.769	0.442
<pre>GenderMale: '5y_vs_2y_effect'</pre>	0.029	0.032	0.904	0.367
<pre>Prior_Spine_SurgeryYes:'5y_vs_2y_effect'</pre>	-0.039	0.029	-1.325	0.186
ASA_classification:'5y_vs_2y_effect'	0.009	0.026	0.337	0.737
BMI_First_Visit:'5y_vs_2y_effect'	-0.002	0.003	-0.574	0.566
SiteBOR Op: '5y_vs_2y_effect'	0.038	0.038	1.017	0.310
SiteIST Op: '5y_vs_2y_effect'	0.041	0.050	0.812	0.417
SiteMAD Op: '5y_vs_2y_effect'	0.020	0.043	0.460	0.646
SiteZUR Op: '5y_vs_2y_effect'	-0.002	0.042	-0.043	0.966

Radiology

	${\tt Estimate}$	Std.	Error	t value	Pr(> t)
(Intercept)	0.110		0.052	2.124	0.034
Age	0.000		0.001	-0.285	0.776
GenderMale	-0.039		0.017	-2.232	0.026
Prior_Spine_SurgeryYes	0.003		0.016	0.169	0.866
ASA_classification	-0.012		0.013	-0.865	0.387
BMI_First_Visit	-0.001		0.002	-0.309	0.758
SiteBOR Op	-0.051		0.020	-2.503	0.013
SiteIST Op	-0.037		0.026	-1.381	0.168
SiteMAD Op	-0.015		0.022	-0.695	0.488
SiteZUR Op	0.021		0.023	0.932	0.352
LGap	0.000		0.001	-0.162	0.871
Global_Tilt	0.002		0.001	2.285	0.023
Major_curve_Cobb_angle	-0.001		0.000	-2.763	0.006
'5y_vs_2y_effect'	-0.030		0.040	-0.754	0.451
LGap: '5y_vs_2y_effect'	0.001		0.001	0.968	0.333
<pre>Global_Tilt:'5y_vs_2y_effect'</pre>	-0.002		0.001	-1.901	0.058
<pre>Major_curve_Cobb_angle:'5y_vs_2y_effect'</pre>	0.001		0.001	1.219	0.224

Reinterventions

Number of reinterventions

Demographics

	Estimate	Std.	Error	t value	Pr(> t)
(Intercept)	0.151		0.495	0.304	0.761
Age	0.017		0.006	2.716	0.007
GenderMale	-0.261		0.178	-1.466	0.144
Prior_Spine_SurgeryYes	-0.097		0.161	-0.605	0.546
ASA_classification	-0.248		0.145	-1.708	0.089
BMI_First_Visit	0.036		0.015	2.406	0.017
SiteBOR Op	-0.303		0.183	-1.654	0.099
SiteIST Op	-0.124		0.339	-0.367	0.714
SiteMAD Op	-0.101		0.271	-0.375	0.708
SiteZUR Op	-0.131		0.230	-0.570	0.569
<pre>'5y_vs_2y_effect'</pre>	-0.274		0.528	-0.519	0.604
Age: '5y_vs_2y_effect'	-0.015		0.007	-2.232	0.026
<pre>GenderMale:'5y_vs_2y_effect'</pre>	0.195		0.193	1.010	0.313
<pre>Prior_Spine_SurgeryYes:'5y_vs_2y_effect'</pre>	0.154		0.175	0.879	0.380
ASA_classification:'5y_vs_2y_effect'	0.251		0.157	1.601	0.110
BMI_First_Visit:'5y_vs_2y_effect'	-0.031		0.017	-1.836	0.067
SiteBOR Op: '5y_vs_2y_effect'	0.347		0.203	1.707	0.089
SiteIST Op: '5y_vs_2y_effect'	0.129		0.358	0.359	0.720
SiteMAD Op: '5y_vs_2y_effect'	0.144		0.288	0.501	0.617
SiteZUR Op: '5y_vs_2y_effect'	0.180		0.250	0.719	0.473

	Estimate	Std.	Error	t value	Pr(> t)
(Intercept)	1.175		0.322	3.651	0.000
Age	0.005		0.003	1.958	0.051
GenderMale	-0.091		0.075	-1.207	0.228
Prior_Spine_SurgeryYes	0.024		0.069	0.345	0.730
ASA_classification	-0.053		0.059	-0.898	0.370
BMI_First_Visit	0.011		0.007	1.637	0.103
SiteBOR Op	-0.030		0.087	-0.345	0.731
SiteIST Op	-0.006		0.116	-0.051	0.959
SiteMAD Op	0.000		0.097	-0.002	0.998
SiteZUR Op	0.050		0.098	0.512	0.609
LGap	-0.014		0.005	-2.780	0.006
Global_Tilt	0.007		0.005	1.268	0.206
Major_curve_Cobb_angle	-0.003		0.003	-0.998	0.319
'5y_vs_2y_effect'	-1.520		0.243	-6.259	0.000
LGap: '5y_vs_2y_effect'	0.008		0.006	1.399	0.163
<pre>Global_Tilt:'5y_vs_2y_effect'</pre>	-0.001		0.006	-0.130	0.896
<pre>Major_curve_Cobb_angle:'5y_vs_2y_effect'</pre>	0.005		0.004	1.344	0.180