

# Impact of Reinterventions solution

## Controlling Variables

```
cat(controlling_vars %>% as.yaml())
```

- Age
- Gender
- Site
- Prior Spine Surgery
- ASA classification
- 3CO
- Pelvic Fixation
- Number of Posterior Instrumented Levels
- SPOs
- BMI\_First Visit
- Osteoporosis / osteopenia
- LGap
- Global Tilt
- ideal LL
- Lordosis (top of L1-S1)
- RLL
- ODI - Score (%)\_First Visit
- SRS22 - SRS Total score\_First Visit
- SF36 - PCS\_First Visit
- SF36 - MCS\_First Visit
- Major curve Cobb angle

Definition of final\_status

```
get_surgery_status <- function(status){  
  final_status <- 'Resolved without sequelae'  
  if( 'Not resolved' %in% status){  
    final_status <- 'Not resolved or with sequelae'  
  }else if('Resolved with sequelae' %in% status){  
    final_status <- 'Not resolved or with sequelae'  
  }  
  final_status  
}
```

## Impact of final status and number of reinterventions associated to a surgery in 5Y HRQL Gain (odi neg / others pos)

```
index_dates <- clinical_data[, .(`Code of the patient`, `st1. Date of Stage 1`)]

complications_0 %>%
  merge(index_dates, by='Code of the patient') %>%
  .[, diff_years:=difftime(`Date of Reoperation`, `st1. Date of Stage 1`, units = "days")/365] %>%
  .[diff_years < y_] %>%
  .[`Code of the patient` %in% valid_patients] %>%
  .[`Reoperation Due to Complication` == 'Yes'] %>%
  .[!is.na(`Date of Reoperation`)] %>%
  .[, .(
    final_status = get_surgery_status(`Status of the complication`),
    reinterventions = `Date of Reoperation` %>% uniqueN(),
    .(`Complication associated to surgery`, `Code of the patient` )] ->
  complicated_surgeries

complicated_surgeries_n <- complicated_surgeries[, `Complication associated to surgery`] %>% uniqueN
index_surgeries <- complicated_surgeries[, `Code of the patient` %>% uniqueN]
```

- Surgeries that followed with complications before 5y with valid patients: 96
- Index surgeries that followed with complications before 5y with valid patients: 73
- Valid patients: 258

```
      final_status  N
1:      Resolved without sequelae 89
2: Not resolved or with sequelae  7
```

Patients with final status 'unsolved' or 'with sequelae' in any re-intervention 6

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5Y. ODI - Score (%) Gain (odi neg / others pos)

	Estimate	Pr(> t )
(Intercept)	21.35874	0.29897
Age	-0.18472	0.09184
GenderMale	-4.79718	0.12126
SiteBOR Op	4.42970	0.26086
SiteIST Op	-5.96152	0.31798
SiteMAD Op	4.28100	0.29034
SiteZUR Op	0.98490	0.81511
'Prior Spine Surgery'Yes	-0.11328	0.96746
'ASA classification'	1.24214	0.60490
'3CD'Yes	-4.44351	0.22890
'Pelvic Fixation'Yes	2.29677	0.48972
'Number of Posterior Instrumented Levels'	-0.40622	0.23701
SPOs	-0.67432	0.38930
'BMI_First Visit'	0.32663	0.26957

'Osteoporosis / osteopenia'Yes	1.48059	0.64331
LGap	-0.15685	0.11537
'Global Tilt'	0.31959	0.02547
'ideal LL'	-0.06774	0.73213
'ODI - Score (%)_First Visit'	-0.49879	0.00009
'SRS22 - SRS Total score_First Visit'	-3.36986	0.40645
'SF36 - PCS_First Visit'	0.04780	0.83080
'SF36 - MCS_First Visit'	-0.08765	0.54621
'Major curve Cobb angle'	-0.01379	0.83968
'Not resolved or with sequelae'	9.06272	0.06755
'Resolved without sequelae'	4.11937	0.00469

	Variable	Estimate	Pr(> t )	2.5 %	97.5 %
1	'Not resolved or with sequelae'	9.06272	0.06755	-0.6612699	18.786707
2	'Resolved without sequelae'	4.11937	0.00469	1.2811932	6.957553
	Relative Impact				
1		-0.967820			
2		-0.439913			

5Y. SRS22 - SRS Subtotal score Gain (odi neg / others pos)

	Estimate	Pr(> t )
(Intercept)	3.00479	0.00097
Age	0.00520	0.27962
GenderMale	0.13756	0.31132
SiteBOR Op	0.07057	0.68109
SiteIST Op	0.46228	0.07737
SiteMAD Op	-0.21113	0.23058
SiteZUR Op	-0.15199	0.41175
'Prior Spine Surgery'Yes	0.13350	0.26919
'ASA classification'	-0.09546	0.36301
'3CO'Yes	-0.08235	0.60936
'Pelvic Fixation'Yes	-0.01331	0.92737
'Number of Posterior Instrumented Levels'	0.00938	0.53128
SPOs	0.03510	0.30698
'BMI_First Visit'	-0.02356	0.06825
'Osteoporosis / osteopenia'Yes	-0.01943	0.88981
LGap	-0.00079	0.85547
'Global Tilt'	-0.00803	0.19872
'ideal LL'	-0.00170	0.84494
'ODI - Score (%)_First Visit'	-0.00747	0.17405
'SRS22 - SRS Total score_First Visit'	-0.65467	0.00027
'SF36 - PCS_First Visit'	0.00139	0.88604
'SF36 - MCS_First Visit'	0.00949	0.13545
'Major curve Cobb angle'	-0.00004	0.98959
'Not resolved or with sequelae'	-0.50954	0.00668
'Resolved without sequelae'	-0.14097	0.02663

	Variable	Estimate	Pr(> t )	2.5 %	97.5 %
1	'Not resolved or with sequelae'	-0.50954	0.00668	-0.8759088	-0.14317451
2	'Resolved without sequelae'	-0.14097	0.02663	-0.2654051	-0.01652714
	Relative Impact				
1		-0.8235584			
2		-0.2278467			

5Y. SF36 - MCS Gain (odi neg / others pos)

	Estimate	Pr(> t )
(Intercept)	17.76914	0.18383
Age	0.01187	0.86512
GenderMale	-1.48144	0.44922
SiteBOR Op	1.16955	0.64360
SiteIST Op	4.81414	0.21879
SiteMAD Op	-1.04095	0.68860
SiteZUR Op	-2.96357	0.27478
'Prior Spine Surgery'Yes	0.74361	0.67028
'ASA classification'	0.59752	0.69764
'3CO'Yes	-0.09986	0.96592
'Pelvic Fixation'Yes	-2.88941	0.17526
'Number of Posterior Instrumented Levels'	0.33240	0.12612
SPOs	0.26765	0.59011
'BMI_First Visit'	-0.02657	0.88783
'Osteoporosis / osteopenia'Yes	-0.59379	0.77165
LGap	0.01286	0.83663
'Global Tilt'	-0.05771	0.51910
'ideal LL'	0.06844	0.59028
'ODI - Score (%)_First Visit'	0.01205	0.87834
'SRS22 - SRS Total score_First Visit'	4.92665	0.05554
'SF36 - PCS_First Visit'	-0.08763	0.53411
'SF36 - MCS_First Visit'	-0.65050	0.00000
'Major curve Cobb angle'	-0.04175	0.33753
'Not resolved or with sequelae'	-3.94828	0.13973
'Resolved without sequelae'	-2.19259	0.01708

	Variable	Estimate	Pr(> t )	2.5 %	97.5 %
1	'Not resolved or with sequelae'	-3.94828	0.13973	-9.200984	1.3044255
2	'Resolved without sequelae'	-2.19259	0.01708	-3.989565	-0.3956078
	Relative Impact				
1		-1.0604864			
2		-0.5889177			

5Y. SF36 - PCS Gain (odi neg / others pos)

	Estimate	Pr(> t )
(Intercept)	42.81519	0.00026
Age	0.02961	0.62425
GenderMale	0.99455	0.55593
SiteBOR Op	0.62099	0.77613
SiteIST Op	3.47033	0.30352
SiteMAD Op	-1.59769	0.47568
SiteZUR Op	1.15835	0.62068
'Prior Spine Surgery'Yes	0.72586	0.63016
'ASA classification'	-1.98116	0.13779
'3CO'Yes	1.42904	0.47828
'Pelvic Fixation'Yes	-0.73835	0.68715
'Number of Posterior Instrumented Levels'	-0.01809	0.92302
SPOs	0.14753	0.73078
'BMI_First Visit'	-0.20418	0.20950

'Osteoporosis / osteopenia'Yes	1.46353	0.41139
LGap	0.01412	0.79272
'Global Tilt'	-0.06734	0.38273
'ideal LL'	-0.00789	0.94266
'ODI - Score (%)_First Visit'	-0.14139	0.03863
'SRS22 - SRS Total score_First Visit'	-0.06183	0.97770
'SF36 - PCS_First Visit'	-0.68349	0.00000
'SF36 - MCS_First Visit'	0.05817	0.46253
'Major curve Cobb angle'	-0.03027	0.42062
'Not resolved or with sequelae'	-4.06482	0.07798
'Resolved without sequelae'	-1.25350	0.11179

	Variable	Estimate	Pr(> t )	2.5 %	97.5 %
1	'Not resolved or with sequelae'	-4.06482	0.07798	-8.589852	0.4602199
2	'Resolved without sequelae'	-1.25350	0.11179	-2.801451	0.2944421
	Relative Impact				
1		-0.7852552			
2		-0.2421552			