## Descriptive Stats

```
xls_path <- '../../data/ESSG Extraction_DEC_OP_ NON DePuy v7.xlsx'
```

#### **Filters**

```
discarded_patients <- readLines('five_years/discarded_patients')</pre>
clinical_data %<>%
  .[, 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`)]
# clinical_data %<>%
  .[Site != 'ANK Op'] %>%
  .[`Vital status` == 'Alive'] %>%
  .[!(`Code of the patient` %in% discarded_patients)] %>%
   .[`st1. Date of Stage` %>% as.Date() < as.Date('2015-3-15')]
total <- clinical_data[, `Code of the patient` %>% uniqueN]
patients_2y <- clinical_data[followup_2y==TRUE, `Code of the patient` %>% uniqueN]
patients_5y <- clinical_data[followup_5y==TRUE, `Code of the patient` %>% uniqueN]
```

- Number of Patients: 708
- Number of patients with visit in 2 years: 465
- Number of patients with visit in 5 years: 220

```
# clinical_data %<>%
# .[followup_2y==TRUE] %>%
# .[`st1. Date of Stage` %>% as.Date() < as.Date('2016-6-1')]
```

Total Patients for the analysis: 708

## Demographics

```
Age
[1] "mean"
[1] 57.83637
[1] "sd"
[1] 20.09462
```

```
Gender
[1] "table"
variable
Female Male
   548
         160
[1] "proportion"
variable
   Female
               Male
0.7740113 0.2259887
Prior Spine Surgery
[1] "table"
variable
No Yes
454 254
[1] "proportion"
variable
                Yes
      No
0.6412429 0.3587571
Height (cm)_First Visit
[1] "mean"
[1] 162.7347
[1] "sd"
[1] 10.34357
Weight (kgs)_First Visit
[1] "mean"
[1] 66.5313
[1] "sd"
[1] 14.00669
BMI_First Visit
[1] "mean"
[1] 25.1407
[1] "sd"
[1] 4.906453
ASA classification
[1] "table"
variable
 1 2
        3
238 373 94
[1] "proportion"
variable
                  2
0.3375887 0.5290780 0.1333333
```

Tobacco use\_First Visit [1] "table" variable Current User: Current User: 1 pack per day Current User: 2 packs per day Current User: Less than 1pk per day 78 Current User: N,A, Ex-User: 0-6 months Ex-User: 1 year or greater Ex-User: 2 yrs or greater Ex-User: 6-12 months Non-User 442 [1] "proportion" variable Current User: Current User: 1 pack per day 0.00295858 0.05325444 Current User: 2 packs per day Current User: Less than 1pk per day 0.00591716 0.11538462 Current User: N,A, Ex-User: 0-6 months 0.00147929 0.02810651 Ex-User: 1 year or greater Ex-User: 2 yrs or greater 0.00295858 0.13165680 Ex-User: 6-12 months Non-User 0.00443787 0.65384615 ESSG Diagnosis [1] "table" variable Congenital Degenerative 269 Degenerative, Failed-back Failed-back Idiopathic Idiopathic, Congenital Idiopathic, Degenerative Neuromuscular Other: Other: Isthmic Spondilolisthesis Other: degenerative spondilolisthesis Other: multiple Myelom, Multiple Myelom Other: Myelon compression at level C3 Other: Neglected Scoliosis Other: spondylolisthesis Post-infection Post-traumatic Scheuermann 29 Scheuermann, Failed-back Syndromic 6

Degenerative

Congenital

[1] "proportion"

variable

0.022759602 0.382645804 Degenerative, Failed-back Failed-back 0.001422475 0.058321479 Idiopathic Idiopathic, Congenital 0.423897582 0.001422475 Idiopathic, Degenerative Neuromuscular 0.004267425 0.007112376 Other: Other: Isthmic Spondilolisthesis 0.002844950 0.001422475 Other: degenerative spondilolisthesis Other: multiple Myelom, Multiple Myelom 0.002844950 0.001422475 Other: Myelon compression at level C3 Other: Neglected Scoliosis 0.001422475 0.001422475 Other: spondylolisthesis Post-infection 0.002844950 0.002844950 Post-traumatic Scheuermann 0.029871977 0.041251778 Scheuermann, Failed-back Syndromic 0.001422475 0.008534851

Surgical Approach
[1] "table"

[1] "proportion"
numeric(0)

#### Radiology

Static Major curve Cobb angle

- [1] "mean"
- [1] 44.36239
- [1] "sd"
- [1] 24.19432
- 6W. Static Major curve Cobb angle
- [1] "mean"
- [1] 21.68337
- [1] "sd"
- [1] 16.28217
- 2Y. Static Major curve Cobb angle
- [1] "mean"
- [1] 22.70755
- [1] "sd"
- [1] 16.91486
- 5Y. Static Major curve Cobb angle
- [1] "mean"
- [1] 24.075

- [1] "sd"
- [1] 16.95097

Static Major curve Cobb angle tests preop vs 6w p-value 1.092786e-71 6w vs 2y p-value 0.4011656

6w vs 5y p-value 0.1693949 2y vs 5y p-value 0.4615922

Coronal Balance (C7PL to CSVL)

- [1] "mean"
- [1] -2.110114
- [1] "sd"
- [1] 32.77221
- 6W. Coronal Balance (C7PL to CSVL)
- [1] "mean"
- [1] -2.839075
- [1] "sd"
- [1] 22.80934
- 2Y. Coronal Balance (C7PL to CSVL)
- [1] "mean"
- [1] 0.2077448
- [1] "sd"
- [1] 22.76688
- 5Y. Coronal Balance (C7PL to CSVL)
- [1] "mean"
- [1] 1.391628
- [1] "sd"
- [1] 25.80559

Coronal Balance (C7PL to CSVL) tests preop vs 6w p-value 0.6560712 6w vs 2y p-value 0.05264514

6w vs 5y p-value 0.08816196 2y vs 5y p-value 0.6478859

#### Sagittal Balance

- [1] "mean"
- [1] 45.935
- [1] "sd"
- [1] 65.20117
- 6W. Sagittal Balance
- [1] "mean"
- [1] 22.15484
- [1] "sd"
- [1] 43.65378
- 2Y. Sagittal Balance
- [1] "mean"
- [1] 26.85552
- [1] "sd"
- [1] 50.43987
- 5Y. Sagittal Balance
- [1] "mean"
- [1] 32.19
- [1] "sd"
- [1] 55.15074

Sagittal Balance tests preop vs 6w p-value 3.100924e-13 6w vs 2y p-value 0.1569179

6w vs 5y p-value 0.05527567 2y vs 5y p-value 0.340081

## Sagittal T2-T5

- [1] "mean"
- [1] 12.48101
- [1] "sd"
- [1] 9.404714
- 6W. Sagittal T2-T5
- [1] "mean"
- [1] 15.10976
- [1] "sd"
- [1] 9.258677
- 2Y. Sagittal T2-T5

- [1] "mean"
- [1] 15.60218
- [1] "sd"
- [1] 10.17398
- 5Y. Sagittal T2-T5
- [1] "mean"
- [1] 16.38511
- [1] "sd"
- [1] 11.74653

Sagittal T2-T5 tests preop vs 6w p-value 7.773417e-07 6w vs 2y p-value 0.4559

6w vs 5y p-value 0.2397029 2y vs 5y p-value 0.4948822

#### Sagittal T5-T12

- [1] "mean"
- [1] 33.2383
- [1] "sd"
- [1] 19.47755
- 6W. Sagittal T5-T12
- [1] "mean"
- [1] 34.41262
- [1] "sd"
- [1] 14.99174
- 2Y. Sagittal T5-T12
- [1] "mean"
- [1] 37.59075
- [1] "sd"
- [1] 15.21634
- 5Y. Sagittal T5-T12
- [1] "mean"
- [1] 39.84338
- [1] "sd"
- [1] 14.91906

Sagittal T5-T12 tests preop vs 6w p-value

0.228282 6w vs 2y p-value 0.001770316

6w vs 5y p-value 0.0001762867 2y vs 5y p-value 0.1369934

## Sagittal T2-T12

- [1] "mean"
- [1] 39.56366
- [1] "sd"
- [1] 20.66489
- 6W. Sagittal T2-T12
- [1] "mean"
- [1] 44.52691
- [1] "sd"
- [1] 16.56919
- 2Y. Sagittal T2-T12
- [1] "mean"
- [1] 47.552
- [1] "sd"
- [1] 16.86643
- 5Y. Sagittal T2-T12
- [1] "mean"
- [1] 49.61044
- [1] "sd"
- [1] 17.10857

Sagittal T2-T12 tests preop vs 6w p-value 2.590403e-06 6w vs 2y p-value 0.00711364

6w vs 5y p-value 0.0020019 2y vs 5y p-value 0.2325871

## Lordosis (top of L1-S1)

- [1] "mean"
- [1] -44.80025
- [1] "sd"
- [1] 21.42113

- 6W. Lordosis (top of L1-S1)
- [1] "mean"
- [1] -51.95593
- [1] "sd"
- [1] 13.40999
- 2Y. Lordosis (top of L1-S1)
- [1] "mean"
- [1] -52.63956
- [1] "sd"
- [1] 13.90211
- 5Y. Lordosis (top of L1-S1)
- [1] "mean"
- [1] -51.12699
- [1] "sd"
- [1] 13.94456

Lordosis (top of L1-S1) tests preop vs 6w p-value 7.393014e-13 6w vs 2y p-value 0.4527729

6w vs 5y p-value 0.5289217 2y vs 5y p-value 0.2811279

#### Pelvic Incidence

- [1] "mean"
- [1] 55.43425
- [1] "sd"
- [1] 13.61167
- 6W. Pelvic Incidence
- [1] "mean"
- [1] 54.78519
- [1] "sd"
- [1] 13.17158
- 2Y. Pelvic Incidence
- [1] "mean"
- [1] 55.11408
- [1] "sd"
- [1] 13.18623

- 5Y. Pelvic Incidence
- [1] "mean"
- [1] 54.99971
- [1] "sd"
- [1] 12.75214

Pelvic Incidence tests preop vs 6w p-value 0.3866803 6w vs 2y p-value 0.7068319

6w vs 5y p-value 0.8603682 2y vs 5y p-value 0.9295886

Pelvic Tilt

- [1] "mean"
- [1] 22.13464
- [1] "sd"
- [1] 12.32511
- 6W. Pelvic Tilt
- [1] "mean"
- [1] 19.38943
- [1] "sd"
- [1] 10.15526
- 2Y. Pelvic Tilt
- [1] "mean"
- [1] 19.9634
- [1] "sd"
- [1] 10.529
- 5Y. Pelvic Tilt
- [1] "mean"
- [1] 21.15772
- [1] "sd"
- [1] 10.70222

Pelvic Tilt tests preop vs 6w p-value 1.401475e-05 6w vs 2y p-value 0.4053867

6w vs 5y p-value 0.08062957

2y vs 5y p-value 0.2656751

## Sacral Slope

- [1] "mean"
- [1] 33.29675
- [1] "sd"
- [1] 12.17869
- 6W. Sacral Slope
- [1] "mean"
- [1] 35.43952
- [1] "sd"
- [1] 10.17779
- 2Y. Sacral Slope
- [1] "mean"
- [1] 35.15649
- [1] "sd"
- [1] 10.51373
- 5Y. Sacral Slope
- [1] "mean"
- [1] 33.84206
- [1] "sd"
- [1] 10.04241

Sacral Slope tests preop vs 6w p-value 0.000629346 6w vs 2y p-value 0.6812337

6w vs 5y p-value 0.09611061 2y vs 5y p-value 0.1995537

#### RLL

- [1] "mean"
- [1] -18.56555
- [1] "sd"
- [1] 21.68261
- 6W. RLL
- [1] "mean"
- [1] -10.95968
- [1] "sd"
- [1] 12.98841

- 2Y. RLL
- [1] "mean"
- [1] -10.5025
- [1] "sd"
- [1] 13.60781
- 5Y. RLL
- [1] "mean"
- [1] -7.607574
- [1] "sd"
- [1] 8.342136

RLL tests preop vs 6w p-value 2.93182e-14 6w vs 2y p-value 0.6067994

6w vs 5y p-value 0.0001978339 2y vs 5y p-value 0.004383124

- Global Tilt
- [1] "mean"
- [1] 26.79206
- [1] "sd"
- [1] 18.90093
- 6W. Global Tilt
- [1] "mean"
- [1] 20.38339
- [1] "sd"
- [1] 13.12953
- 2Y. Global Tilt
- [1] "mean"
- [1] 21.74148
- [1] "sd"
- [1] 14.82648
- 5Y. Global Tilt
- [1] "mean"
- [1] 24.06
- [1] "sd"
- [1] 16.42172

Global Tilt tests preop vs 6w p-value 2.624234e-12 6w vs 2y p-value 0.1511566

6w vs 5y p-value 0.01571372 2y vs 5y p-value 0.150839

T1 Sagittal Tilt

- [1] "mean"
- [1] -1.523356
- [1] "sd"
- [1] 6.274839
- 6W. T1 Sagittal Tilt
- [1] "mean"
- [1] -3.639741
- [1] "sd"
- [1] 4.43544
- 2Y. T1 Sagittal Tilt
- [1] "mean"
- [1] -3.516788
- [1] "sd"
- [1] 4.550348
- 5Y. T1 Sagittal Tilt
- [1] "mean"
- [1] -3.147464
- [1] "sd"
- [1] 6.883943

T1 Sagittal Tilt tests preop vs 6w p-value 5.213976e-12 6w vs 2y p-value 0.683202

6w vs 5y p-value 0.4267918 2y vs 5y p-value 0.5627957

Thoracolumbar L2-T10

- [1] "mean"
- [1] 8.748074

- [1] "sd"
- [1] 22.1559
- 6W. Thoracolumbar L2-T10
- [1] "mean"
- [1] 4.339323
- [1] "sd"
- [1] 14.33571
- 2Y. Thoracolumbar L2-T10
- [1] "mean"
- [1] 5.835331
- [1] "sd"
- [1] 14.02551
- 5Y. Thoracolumbar L2-T10
- [1] "mean"
- [1] 5.703088
- [1] "sd"
- [1] 13.78643

Thoracolumbar L2-T10 tests preop vs 6w p-value 2.285509e-05 6w vs 2y p-value 0.1134319

6w vs 5y p-value 0.3031312 2y vs 5y p-value 0.924454

#### RSA

- [1] "mean"
- [1] 15.1592
- [1] "sd"
- [1] 16.61581
- 6W. RSA
- [1] "mean"
- [1] 9.116544
- [1] "sd"
- [1] 10.36852
- 2Y. RSA
- [1] "mean"
- [1] 10.28005
- [1] "sd"

- [1] 12.0403
- 5Y. RSA
- [1] "mean"
- [1] -11.97301
- [1] "sd"
- [1] 14.38308

RSA tests preop vs 6w p-value 9.212544e-15 6w vs 2y p-value 0.1265919

6w vs 5y p-value 4.297158e-36 2y vs 5y p-value 2.224206e-38

#### RPV

- [1] "mean"
- [1] -8.40966
- [1] "sd"
- [1] 10.27753
- 6W. RPV
- [1] "mean"
- [1] -5.869851
- [1] "sd"
- [1] 7.861553
- 2Y. RPV
- [1] "mean"
- [1] -6.360767
- [1] "sd"
- [1] 8.293014
- 5Y. RPV
- [1] "mean"
- [1] 63.10044
- [1] "sd"
- [1] 7.906534

RPV tests preop vs 6w p-value 6.787049e-07 6w vs 2y p-value 0.3630298

```
6w vs 5y p-value
1.929115e-165
2y vs 5y p-value
1.899718e-189
```

## Quality of Life

- ODI Score (%)\_First Visit
- [1] "mean"
- [1] 39.52065
- [1] "sd"
- [1] 21.38889
- 6M. ODI Score (%)
- [1] "mean"
- [1] 28.10747
- [1] "sd"
- [1] 18.75586
- 2Y. ODI Score (%)
- [1] "mean"
- [1] 26.99296
- [1] "sd"
- [1] 20.38344
- 5Y. ODI Score (%)
- [1] "mean"
- [1] 28.65534
- [1] "sd"
- [1] 22.55946

ODI - Score (%)\_First Visit tests preop vs 6m p-value 1.758125e-22 6m vs 2y p-value 0.3808894

6m vs 5y p-value 0.7563053 2y vs 5y p-value 0.3710816

SRS22 - Function / Activity\_First Visit

- [1] "mean"
- [1] 3.150868
- [1] "sd"
- [1] 0.9756378

```
6M. SRS22 - Function / Activity
```

- [1] "mean"
- [1] 3.327644
- [1] "sd"
- [1] 0.8230335

## 2Y. SRS22 - Function / Activity

- [1] "mean"
- [1] 3.580117
- [1] "sd"
- [1] 0.940621

## 5Y. SRS22 - Function / Activity

- [1] "mean"
- [1] 3.516459
- [1] "sd"
- [1] 1.023764

SRS22 - Function / Activity\_First Visit tests preop vs 6m p-value 0.0005693102 6m vs 2y p-value 1.194561e-05

6m vs 5y p-value 0.01736347 2y vs 5y p-value 0.4498537

## SRS22 - Pain\_First Visit

- [1] "mean"
- [1] 2.670029
- [1] "sd"
- [1] 1.033856

#### 6M. SRS22 - Pain

- [1] "mean"
- [1] 3.357968
- [1] "sd"
- [1] 0.949744

#### 2Y. SRS22 - Pain

- [1] "mean"
- [1] 3.489089
- [1] "sd"
- [1] 1.075927

```
5Y. SRS22 - Pain
[1] "mean"
[1] 3.367129
[1] "sd"
[1] 1.13021
SRS22 - Pain_First Visit tests
preop vs 6m p-value
3.003178e-32
6m vs 2y p-value
0.04654335
6m vs 5y p-value
0.917095
2y vs 5y p-value
0.1947452
SRS22 - Self image / Appearance_First Visit
[1] "mean"
[1] 2.367044
[1] "sd"
[1] 0.8094368
6M. SRS22 - Self image / Appearance
[1] "mean"
[1] 3.480612
[1] "sd"
[1] 0.8259991
2Y. SRS22 - Self image / Appearance
[1] "mean"
[1] 3.533341
[1] "sd"
[1] 0.8819662
5Y. SRS22 - Self image / Appearance
[1] "mean"
[1] 3.378708
[1] "sd"
[1] 0.9939668
SRS22 - Self image / Appearance_First Visit tests
preop vs 6m p-value
1.831628e-102
```

6m vs 5y p-value 0.1875689

6m vs 2y p-value

0.3395162

# 2y vs 5y p-value 0.05671587

## SRS22 - Mental health\_First Visit

- [1] "mean"
- [1] 3.125662
- [1] "sd"
- [1] 0.8938093
- 6M. SRS22 Mental health
- [1] "mean"
- [1] 3.494424
- [1] "sd"
- [1] 0.7983911
- 2Y. SRS22 Mental health
- [1] "mean"
- [1] 3.513598
- [1] "sd"
- [1] 0.8577478
- 5Y. SRS22 Mental health
- [1] "mean"
- [1] 3.479187
- [1] "sd"
- [1] 0.947154

SRS22 - Mental health\_First Visit tests preop vs 6m p-value 3.936258e-14 6m vs 2y p-value 0.7202896

6m vs 5y p-value 0.836436 2y vs 5y p-value 0.6574181

SRS22 - SRS Subtotal score\_First Visit

- [1] "mean"
- [1] 2.829779
- [1] "sd"
- [1] 0.7580786
- 6M. SRS22 SRS Subtotal score
- [1] "mean"
- [1] 3.417374
- [1] "sd"
- [1] 0.7008023

```
2Y. SRS22 - SRS Subtotal score
```

- [1] "mean"
- [1] 3.530561
- [1] "sd"
- [1] 0.7990188

#### 5Y. SRS22 - SRS Subtotal score

- [1] "mean"
- [1] 3.435789
- [1] "sd"
- [1] 0.9051214

SRS22 - SRS Subtotal score\_First Visit tests preop vs 6m p-value 4.188615e-42 6m vs 2y p-value 0.02043788

6m vs 5y p-value 0.7906367 2y vs 5y p-value 0.1984447

#### SRS22 - Satisfaction with management\_First Visit

- [1] "mean"
- [1] 2.929012
- [1] "sd"
- [1] 1.102863

#### 6M. SRS22 - Satisfaction with management

- [1] "mean"
- [1] 4.142987
- [1] "sd"
- [1] 0.8786036

#### 2Y. SRS22 - Satisfaction with management

- [1] "mean"
- [1] 4.138955
- [1] "sd"
- [1] 0.9400116

## 5Y. SRS22 - Satisfaction with management

- [1] "mean"
- [1] 3.932039
- [1] "sd"
- [1] 1.085489

SRS22 - Satisfaction with management\_First Visit tests preop vs 6m p-value 3.880051e-52 6m vs 2y p-value 0.9457125

6m vs 5y p-value 0.01297185 2y vs 5y p-value 0.01982725

SF36 - PCS\_First Visit

- [1] "mean"
- [1] 37.05776
- [1] "sd"
- [1] 9.877397
- 6M. SF36 PCS
- [1] "mean"
- [1] 40.97673
- [1] "sd"
- [1] 9.392435
- 2Y. SF36 PCS
- [1] "mean"
- [1] 42.68176
- [1] "sd"
- [1] 10.55637
- 5Y. SF36 PCS
- [1] "mean"
- [1] 42.22908
- [1] "sd"
- [1] 11.2609

SF36 - PCS\_First Visit tests preop vs 6m p-value 2.858838e-11 6m vs 2y p-value 0.01161274

6m vs 5y p-value 0.2014414 2y vs 5y p-value 0.6596704

SF36 - MCS\_First Visit

- [1] "mean"
- [1] 42.24614

- [1] "sd"
- [1] 12.13481
- 6M. SF36 MCS
- [1] "mean"
- [1] 46.56333
- [1] "sd"
- [1] 10.91647
- 2Y. SF36 MCS
- [1] "mean"
- [1] 46.80261
- [1] "sd"
- [1] 11.2541
- 5Y. SF36 MCS
- [1] "mean"
- [1] 47.10227
- [1] "sd"
- [1] 11.97692

SF36 - MCS\_First Visit tests preop vs 6m p-value 7.878174e-10 6m vs 2y p-value 0.7480471

6m vs 5y p-value 0.6110606 2y vs 5y p-value 0.7841269

#### Surgery

Total Operative Blood Loss st1+st2+st3

- [1] "mean"
- [1] 1085.569
- [1] "sd"
- [1] 986.0179

Total surgical time

- [1] "mean"
- [1] 310.4316
- [1] "sd"
- [1] 192.3016

Number of Posterior Instrumented Levels

```
[1] "mean"
```

- [1] 9.826025
- [1] "sd"
- [1] 4.183402

#### Pelvic fixation

[1] "table"

variable

Yes

708

[1] "proportion"

variable

Yes

1

## Surgical Approach

- [1] "table"
- [1] "proportion"

numeric(0)

## Number of Interbody Fusions

- [1] "mean"
- [1] 1.614094
- [1] "sd"
- [1] 0.8094992

## ${\tt Decompression}$

[1] "table"

variable

No Yes

526 182

[1] "proportion"

variable

No Yes

0.7429379 0.2570621

## Interbody Fusion

[1] "table"

variable

No Yes

410 298

[1] "proportion"

variable

No Yes

0.579096 0.420904

Osteotomy

3CO
[1] "table"
variable
FALSE TRUE
393 312
[1] "proportion"
variable
FALSE TRUE
0.5574468 0.4425532