ALIF EXPLORATION

Selected Variables

```
base: Code of the patient
covariates:
- Age
- Gender
- Prior Spine Surgery
- '1st surgeon: experience in ASD surgery'
- ASA classification
- Decompression
- Osteotomy
- 3CO
- SPOs
- BMI_First Visit
- Tobacco use_First Visit
- Osteoporosis / osteopenia
- Previous surgery - LEV
- LGap
- RLL
- Cobb LS curve (Degree)
- Number of Interbody Fusions
- 'Posterior Instrumented Fusion: Upper / Lower Levels'
- Alif
- LL-Lordosis Difference
outcomes_ql:
- 2Y. ODI - Score (%)
- 2Y. SRS22 - SRS Subtotal score
- 2Y. SF36 - MCS
- 2Y. SF36 - PCS
outcomes_radiology:
- 6W. Major curve Cobb angle
- 1Y. Major curve Cobb angle
- 2Y. Major curve Cobb angle
- 6W. T1 Sagittal Tilt
- 1Y. T1 Sagittal Tilt
- 2Y. T1 Sagittal Tilt
- 6W. Sagittal Balance
- 1Y. Sagittal Balance
- 2Y. Sagittal Balance
- 6W. Global Tilt
- 1Y. Global Tilt
- 2Y. Global Tilt
- 6W. Lordosis (top of L1-S1)
- 1Y. Lordosis (top of L1-S1)
- 2Y. Lordosis (top of L1-S1)
- 6W. LGap
```

- 1Y. LGap
- 2Y. LGap
- 6W. Pelvic Tilt
- 1Y. Pelvic Tilt
- 2Y. Pelvic Tilt

predictive:
- Weight (kgs)_First Visit
- Height (cm)_First Visit
- Total surgical time st1+st2+st3
- Osteotomy
- Alcohol/drug abuse
- Anemia or other blood disorders
- Osteoarthritis
- Mild vascular
- Depression / anxiety
- Diabetes with end organ damage
- Cardiac
- Hypertension
- Chronic pulmonary disease
- Nervous system disorders
- Renal
- Peripheral vascular disease
- Psychiatric / Behavioral
- Peptic ulcer
- Bladder incontinence
- Bowel incontinence
- Leg weakness
- Loss of balance
- NRS back - Leg pain - Average
- Tobacco use_First Visit
- Years with spine problems
- ODI - Score (%)_First Visit
- SRS22 - SRS Total score_First Visit
- SF36 - PCS_First Visit
- SF36 - MCS_First Visit
- Major curve Cobb angle

demographic:
- Age
- Gender
- Prior Spine Surgery
- ASA classification
- 3CO
- BMI_First Visit
- Global Tilt
- ideal LL
- Lordosis (top of L1-S1)
- ODI - Score (%)_First Visit
- SRS22 - SRS Total score_First Visit
- SF36 - PCS_First Visit
- SF36 - MCS_First Visit
- Major curve Cobb angle

expanded:
- Age
- Gender

- Prior Spine Surgery
- '1st surgeon: experience in ASD surgery'
- ASA classification
- Decompression
- Osteotomy
- 3CO
- SPOs
- BMI_First Visit
- Tobacco use_First Visit
- Osteoporosis / osteopenia
- Previous surgery - LEV
- LGap
- RLL
- Cobb LS curve (Degree)
- Number of Interbody Fusions
- 'Posterior Instrumented Fusion: Upper / Lower Levels'
- Alif
- LL-Lordosis Difference
- Weight (kgs)_First Visit
- Height (cm)_First Visit
- Total surgical time st1+st2+st3
- Alcohol/drug abuse
- Anemia or other blood disorders
- Osteoarthritis
- Mild vascular
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- Diabetes with end organ damage
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- Hypertension
- Chronic pulmonary disease
- Nervous system disorders
- Renal
- Peripheral vascular disease
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- Bladder incontinence
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- Leg weakness
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- NRS back - Leg pain - Average
- Years with spine problems
- ODI - Score (%)_First Visit
- SRS22 - SRS Total score_First Visit
- SF36 - PCS_First Visit
- SF36 - MCS_First Visit
- Major curve Cobb angle
- SRS22 - SRS Subtotal score_First Visit
- T1 Sagittal Tilt
- Sagittal Balance
- Global Tilt
- Lordosis (top of L1-S1)
- Pelvic Tilt

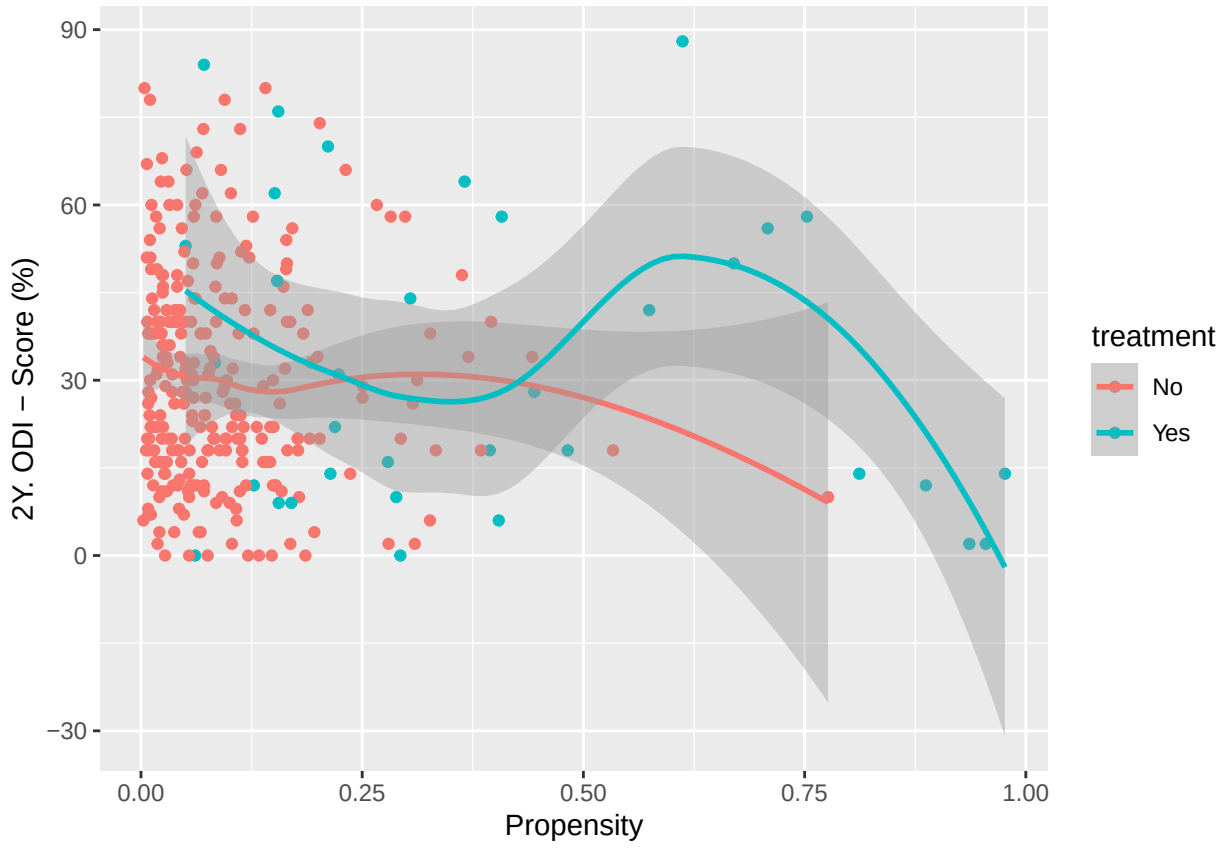
Propensity Scores Common Support

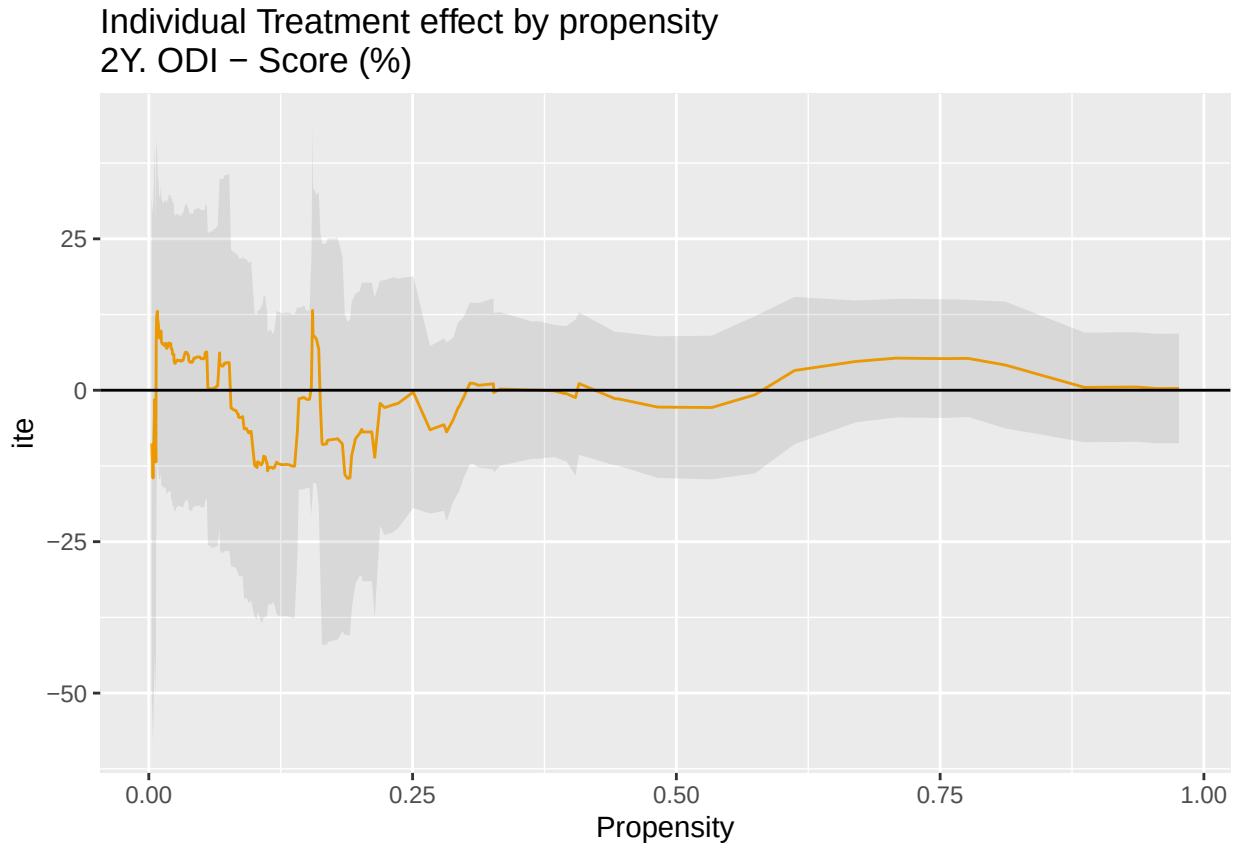
Model Stats

- Treatment proportion: 0.127
- Model Type: elastic_net
- Accuracy: 0.8911581
- Params: alpha: 0.2615385 lambda: 0.0072607

Average Treatment Effects - Quality Life

```
Outcome: 2Y. ODI - Score (%)
Distribution:
  0%  25%  50%  75% 100%
 -67  -28  -14   -4   40
Model Type Y: boosting
RMSE: 19.8571621039562
Params: nrounds: 50.0
max_depth: 1
eta: 0.3
gamma: 0.0
colsample_bytree: 0.6
min_child_weight: 1.0
subsample: 0.5

Model Type No: boosting
RMSE: 18.7411108055751
Params: nrounds: 50.0
max_depth: 1
eta: 0.3
gamma: 0.0
colsample_bytree: 0.6
min_child_weight: 1.0
subsample: 0.8571429

ATE (Yes-No): 0.169 (Std.Error: 8.048)
Trimmed ATE (Yes-No): 0.089 (Std.Error: 8.374)
Upper ATE (Yes-No): 2.161 (Std.Error: 4.321)
Observational differences in treatment 2.936 (Yes-No)

   treatment outcome
1:       Yes 33.4000
2:        No 30.4635

`geom_smooth()` using method = 'loess' and formula 'y ~ x'
```


90
60
30
0
−30
2Y. ODI − Score (%)
0.00
0.25
0.50
0.75
1.00
Propensity
treatment
No
Yes

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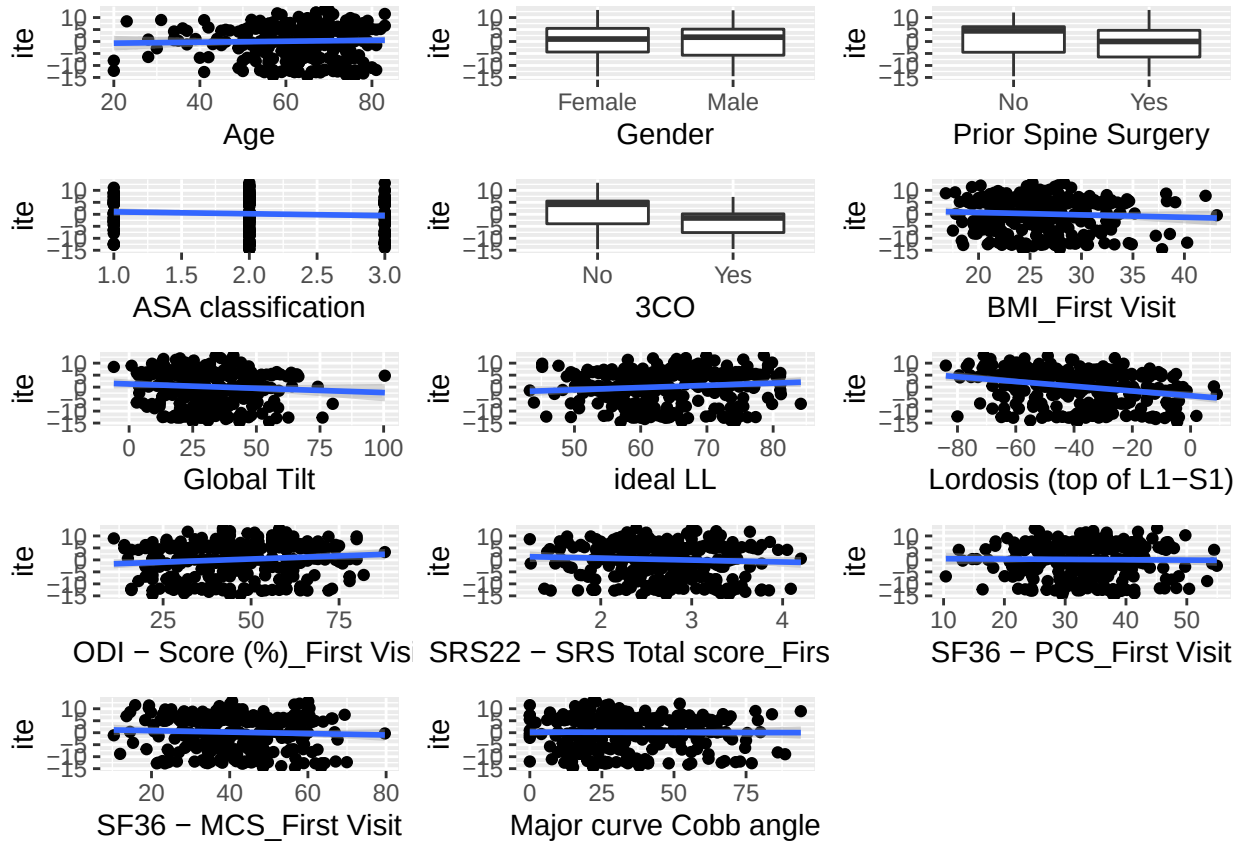
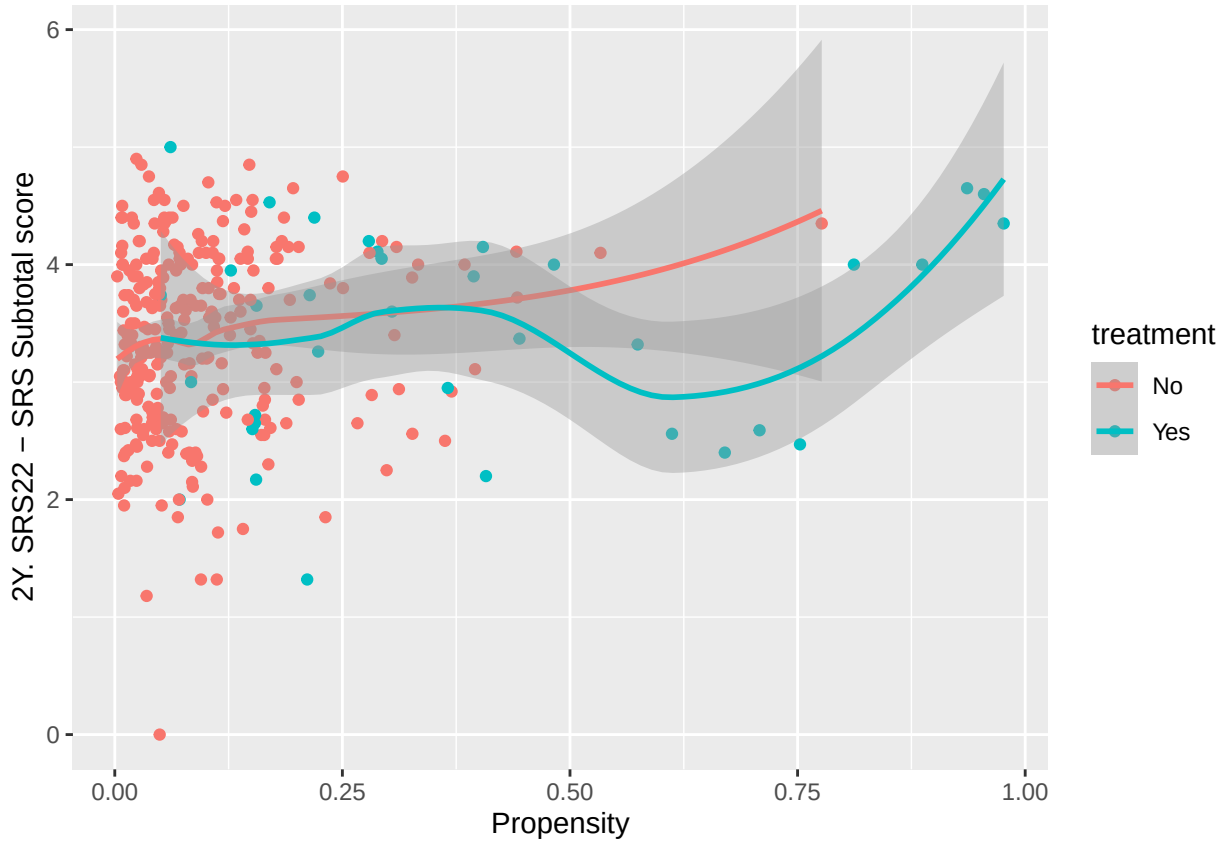
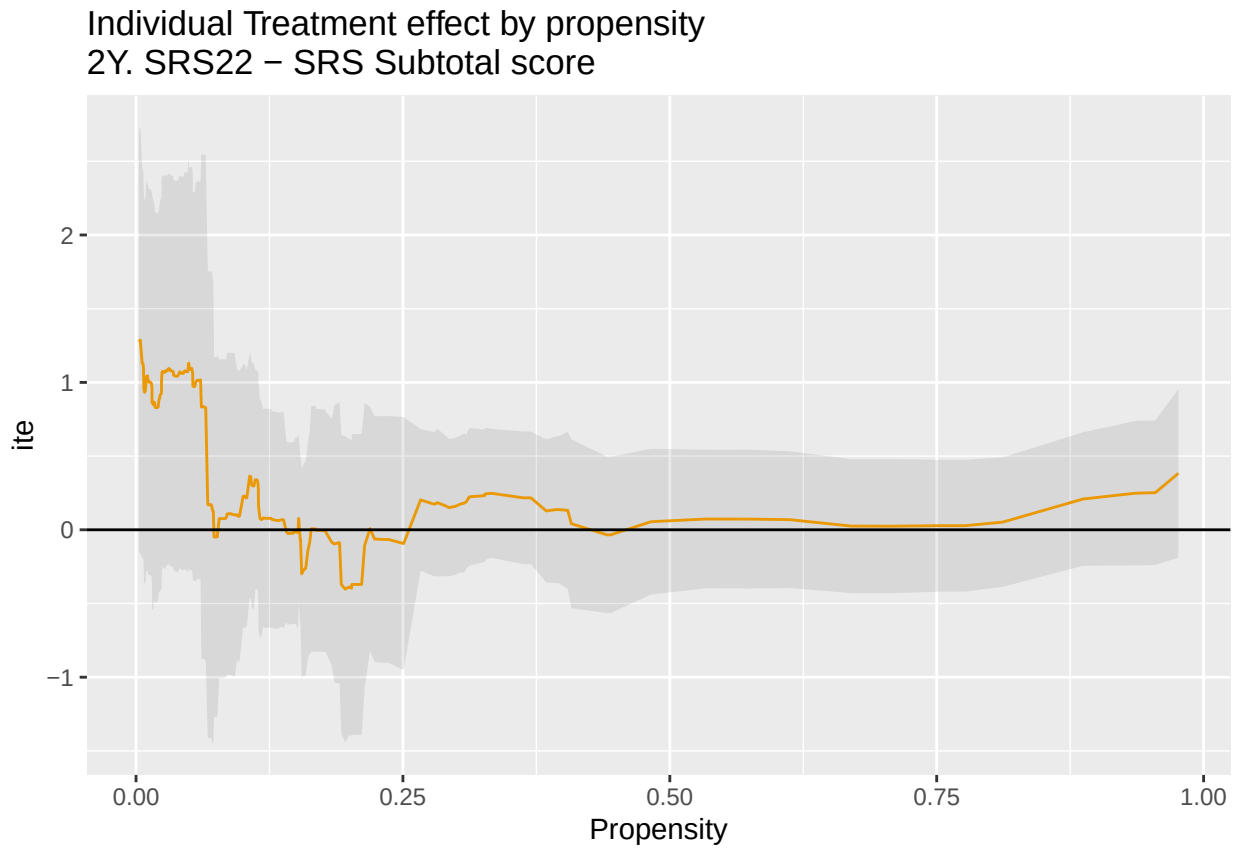



```
Outcome: 2Y. SRS22 - SRS Subtotal score
Distribution:
   0%   25%   50%   75%  100%
-3.30  0.25  0.73  1.17  3.05
Model Type Y: boosting
RMSE: 0.82839933298001
Params: nrounds: 50.0
max_depth: 1
eta: 0.3
gamma: 0.0
colsample_bytree: 0.6
min_child_weight: 1.0
subsample: 0.9285714

Model Type No: boosting
RMSE: 0.721024847786743
Params: nrounds: 50.0
max_depth: 1
eta: 0.3
gamma: 0.0
colsample_bytree: 0.6
min_child_weight: 1.0
subsample: 0.8571429

ATE (Yes-No): 0.51 (Std.Error: 0.369)
Trimmed ATE (Yes-No): 0.526 (Std.Error: 0.382)
```

```
Upper ATE (Yes-No): 0.122 (Std.Error: 0.223)
Observational differences in treatment 0.059 (Yes-No)

   treatment  outcome
1:       Yes 3.434286
2:        No 3.374964

`geom_smooth()` using method = 'loess' and formula 'y ~ x'
```



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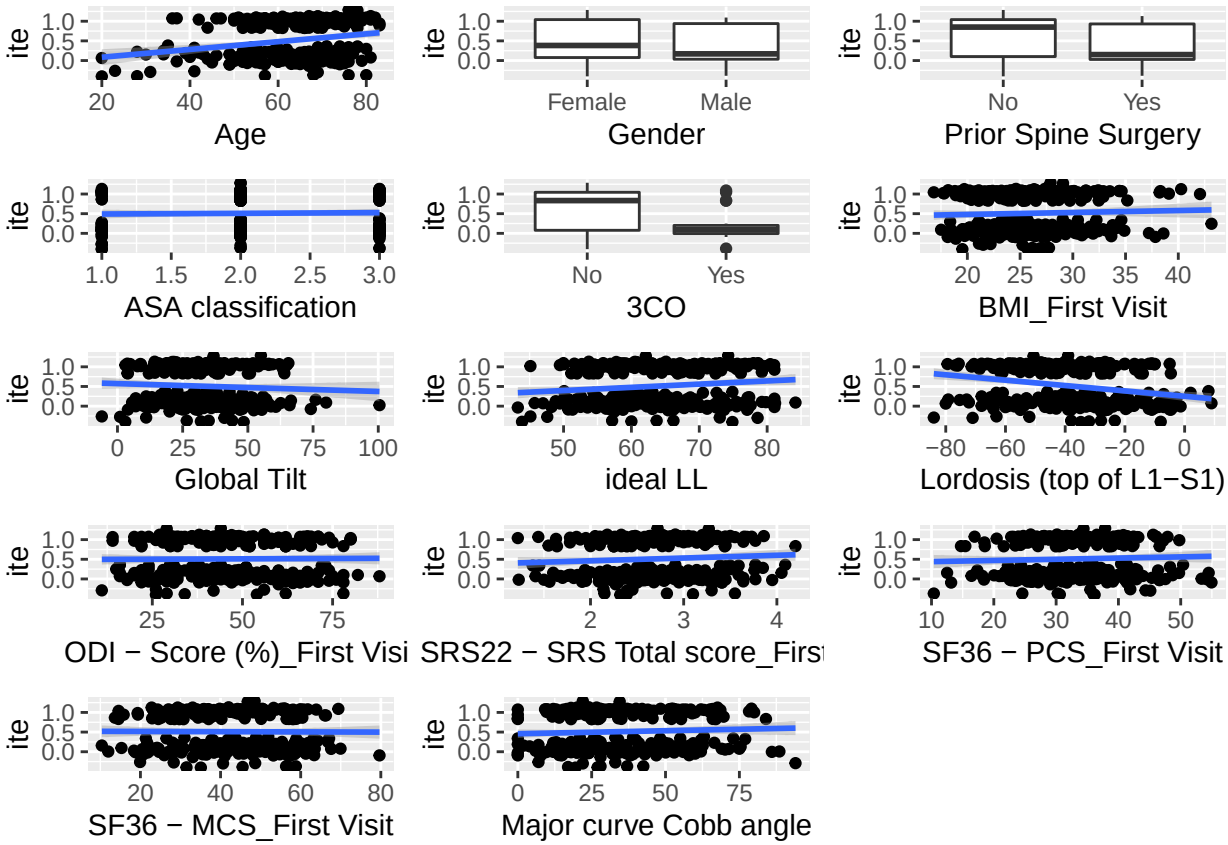
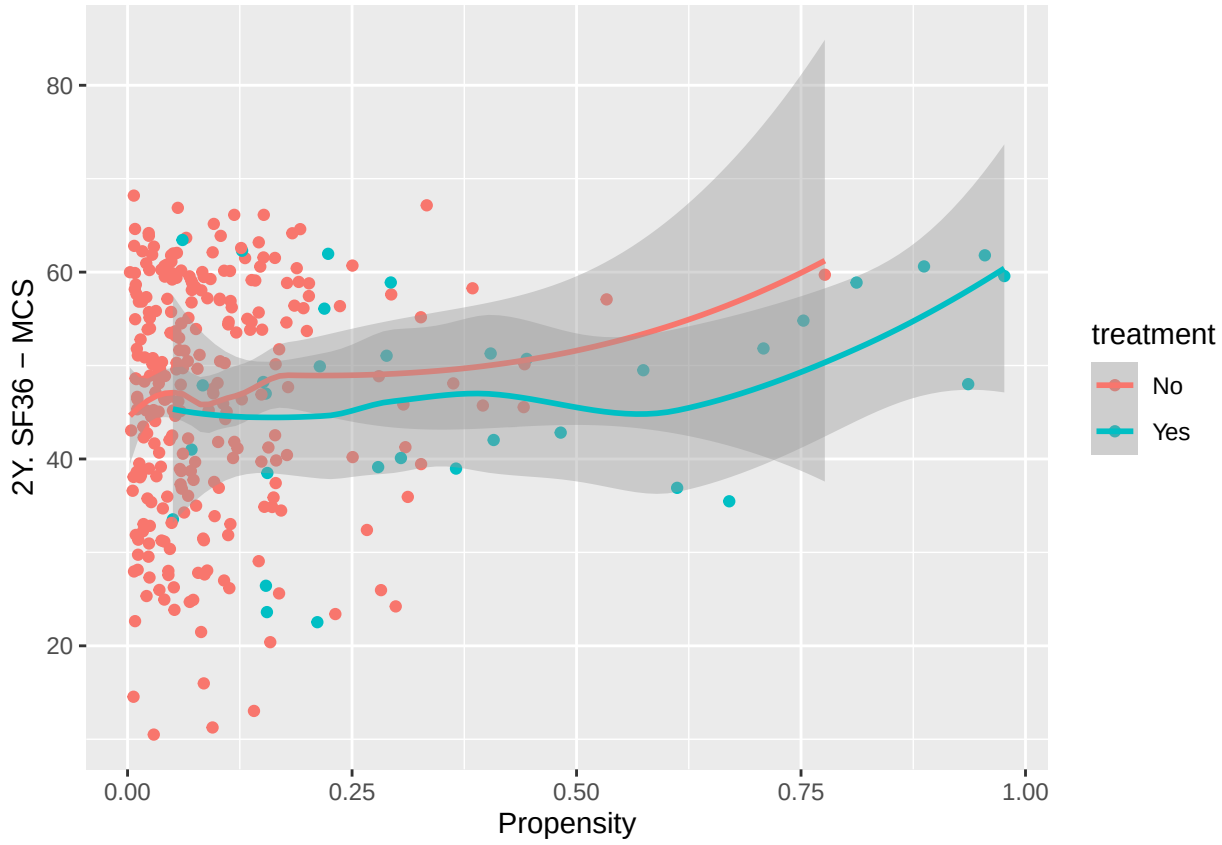
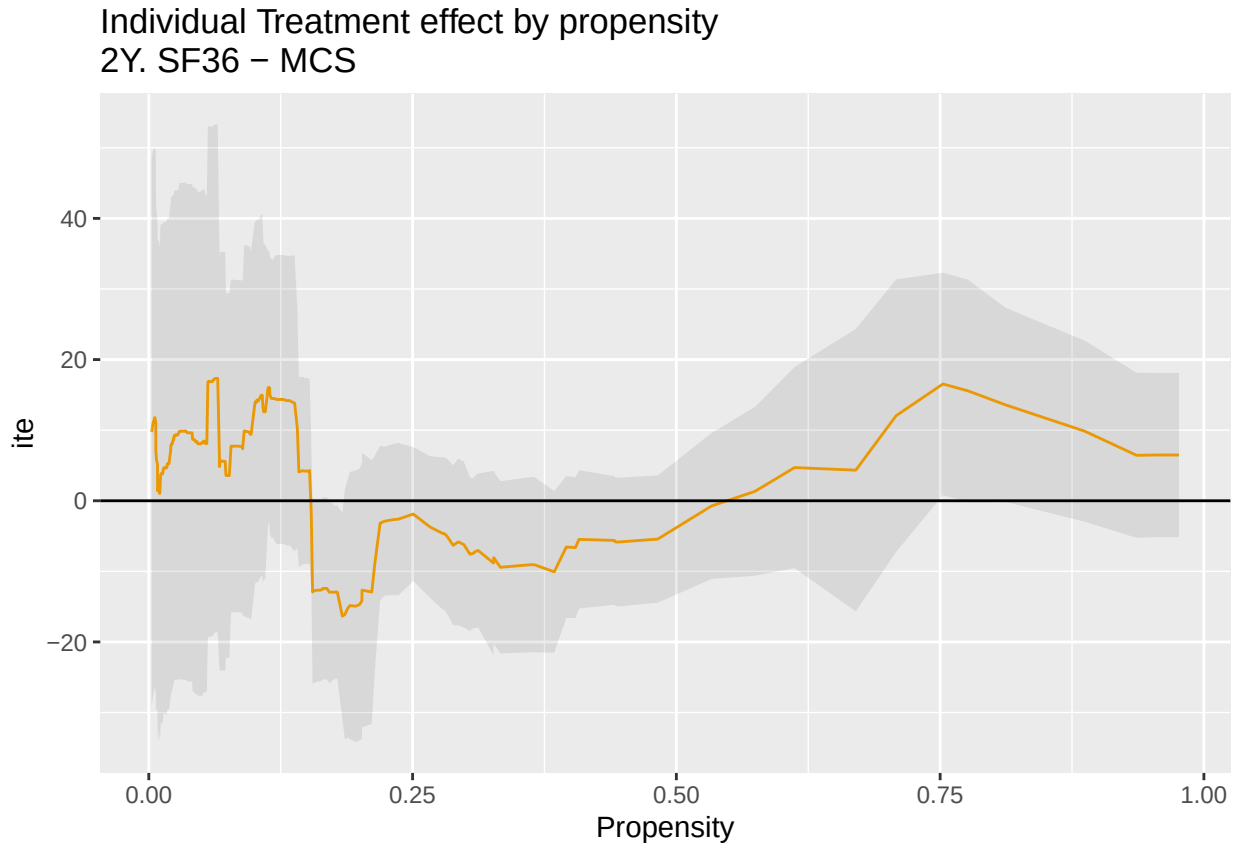



```
Outcome: 2Y. SF36 - MCS
Distribution:
    0%    25%    50%    75%   100%
-33.82  -4.02   3.43  12.71  48.92
Model Type Y: boosting
RMSE: 17.3689248374
Params: nrounds: 50.0
max_depth: 1
eta: 0.3
gamma: 0.0
colsample_bytree: 0.6
min_child_weight: 1.0
subsample: 0.5

Model Type No: boosting
RMSE: 12.6111935036239
Params: nrounds: 50.0
max_depth: 1
eta: 0.3
gamma: 0.0
colsample_bytree: 0.6
min_child_weight: 1.0
subsample: 1.0

ATE (Yes-No): 5.224 (Std.Error: 9.34)
Trimmed ATE (Yes-No): 5.108 (Std.Error: 9.722)
```

```
Upper ATE (Yes-No): 8.052 (Std.Error: 5.44)
Observational differences in treatment 0.324 (Yes-No)

   treatment  outcome
1:       Yes 47.11576
2:        No 46.79151

`geom_smooth()` using method = 'loess' and formula 'y ~ x'
```



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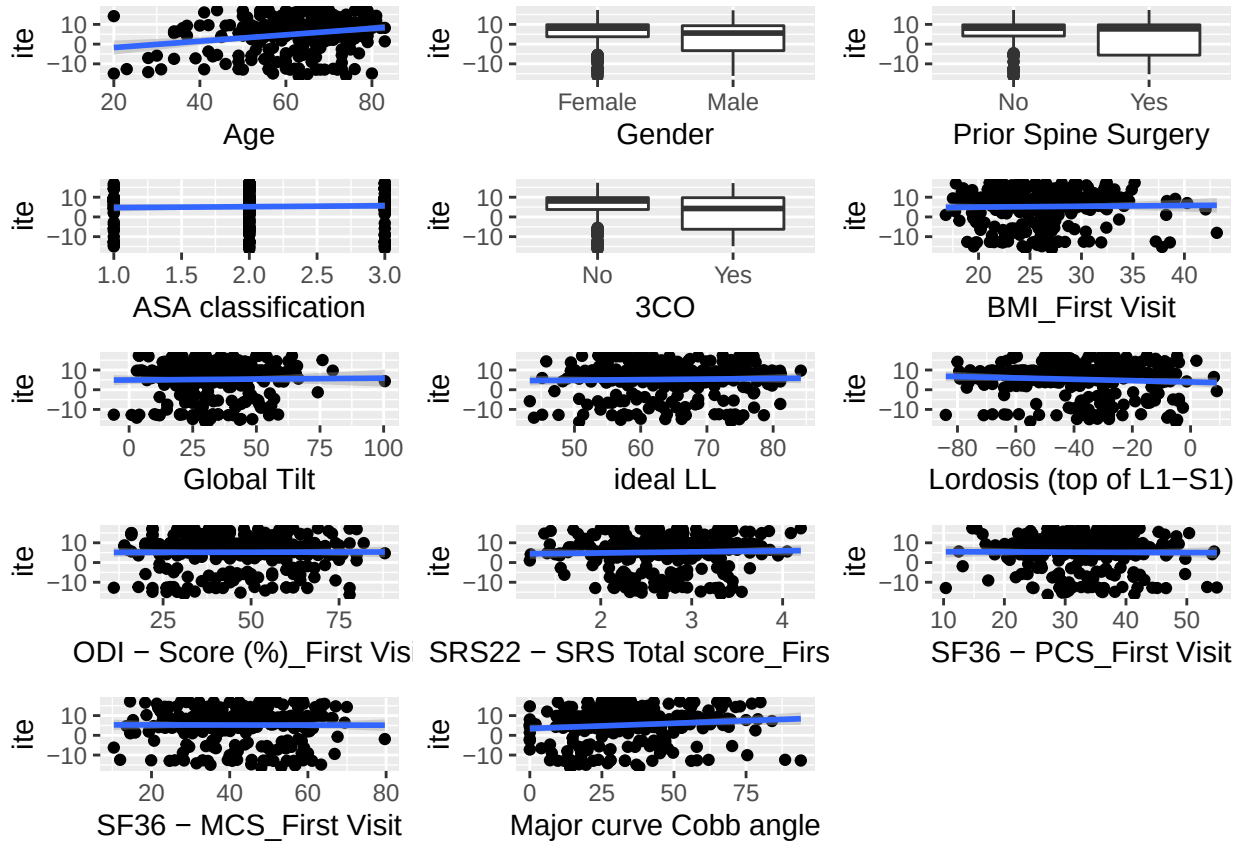
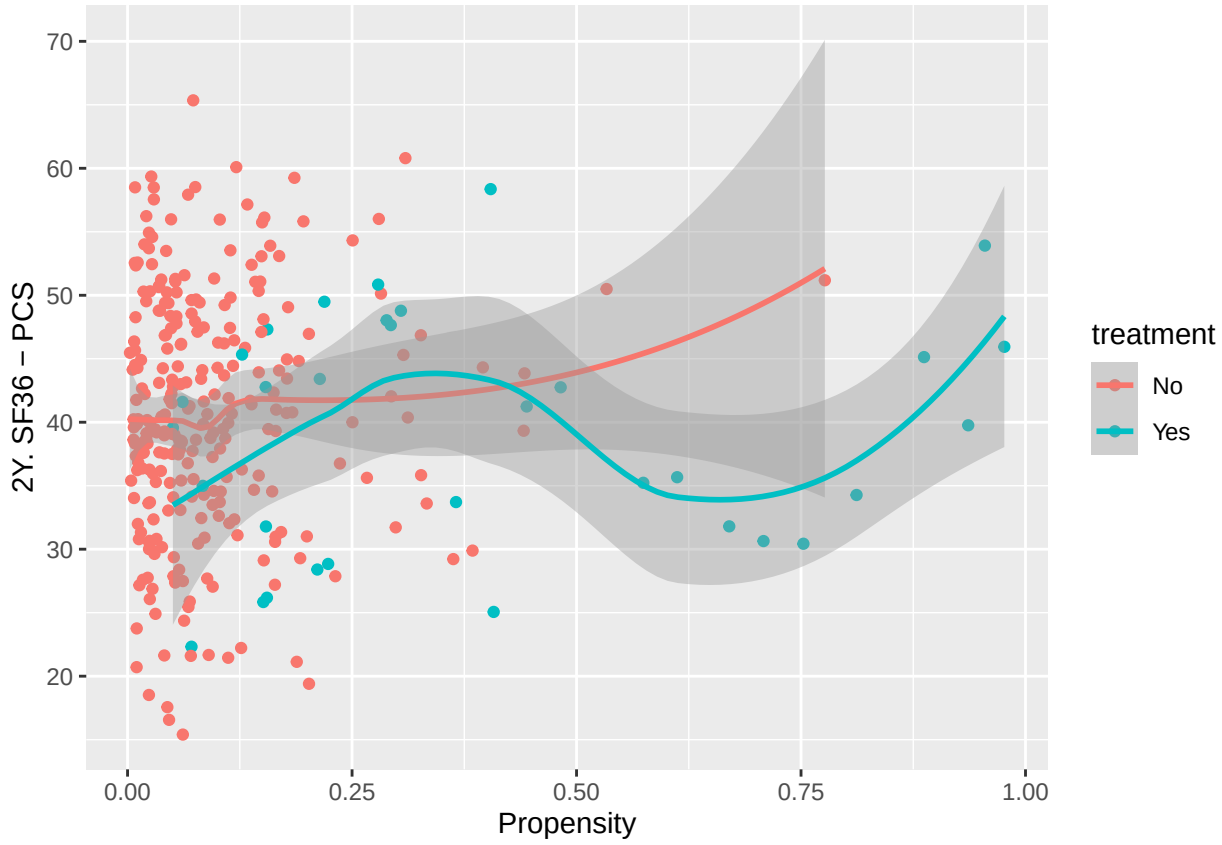
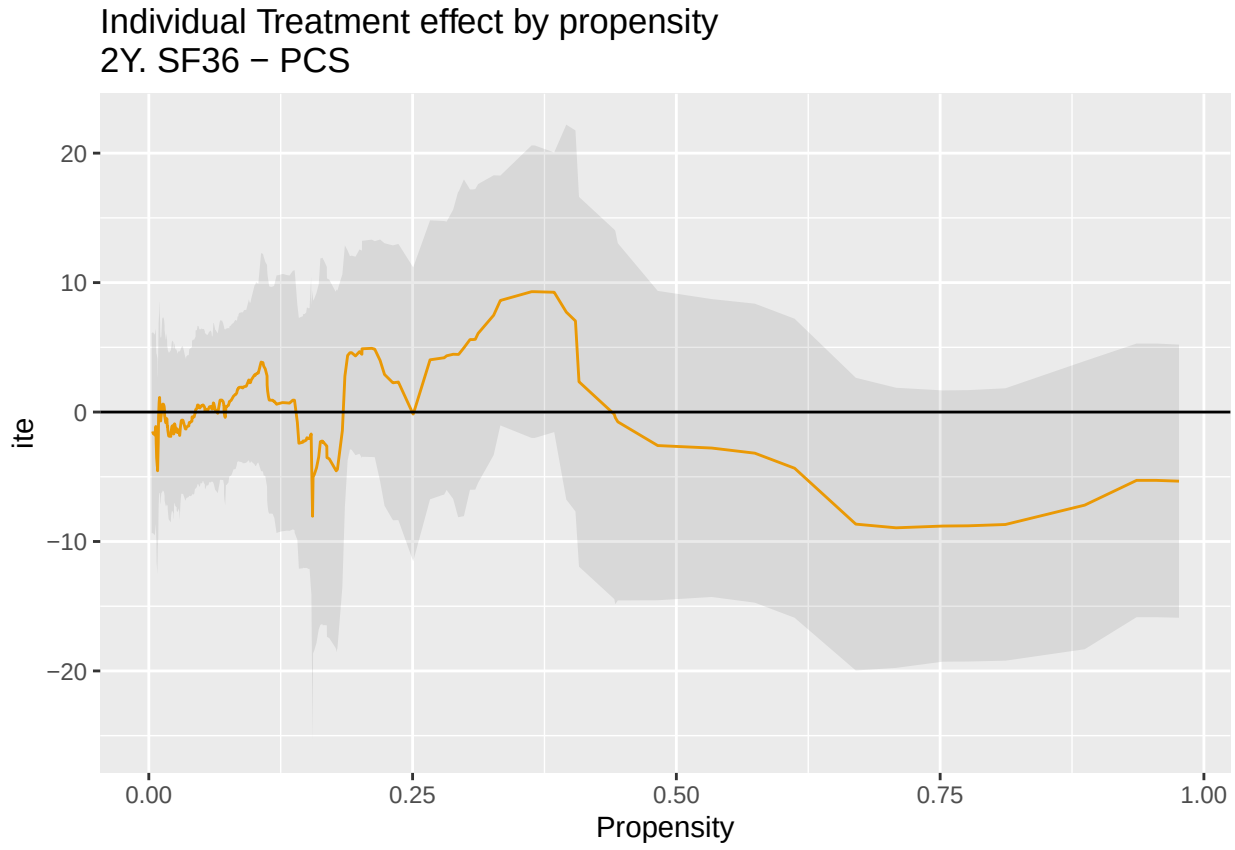



```
Outcome: 2Y. SF36 - PCS
Distribution:
    0%    25%    50%    75%   100%
-18.94   0.94   6.82  13.62  38.99
Model Type Y: boosting
RMSE: 10.0277037766467
Params: nrounds: 50.0
max_depth: 1
eta: 0.3
gamma: 0.0
colsample_bytree: 0.6
min_child_weight: 1.0
subsample: 0.7142857

Model Type No: boosting
RMSE: 9.41602294419242
Params: nrounds: 50.0
max_depth: 1
eta: 0.3
gamma: 0.0
colsample_bytree: 0.8
min_child_weight: 1.0
subsample: 0.5

ATE (Yes-No): 0.085 (Std.Error: 2.089)
Trimmed ATE (Yes-No): 0.353 (Std.Error: 2.152)
```

```
Upper ATE (Yes-No): -6.44 (Std.Error: 5.283)
Observational differences in treatment -1.592 (Yes-No)

   treatment  outcome
1:       Yes 39.00121
2:        No 40.59276

`geom_smooth()` using method = 'loess' and formula 'y ~ x'
```



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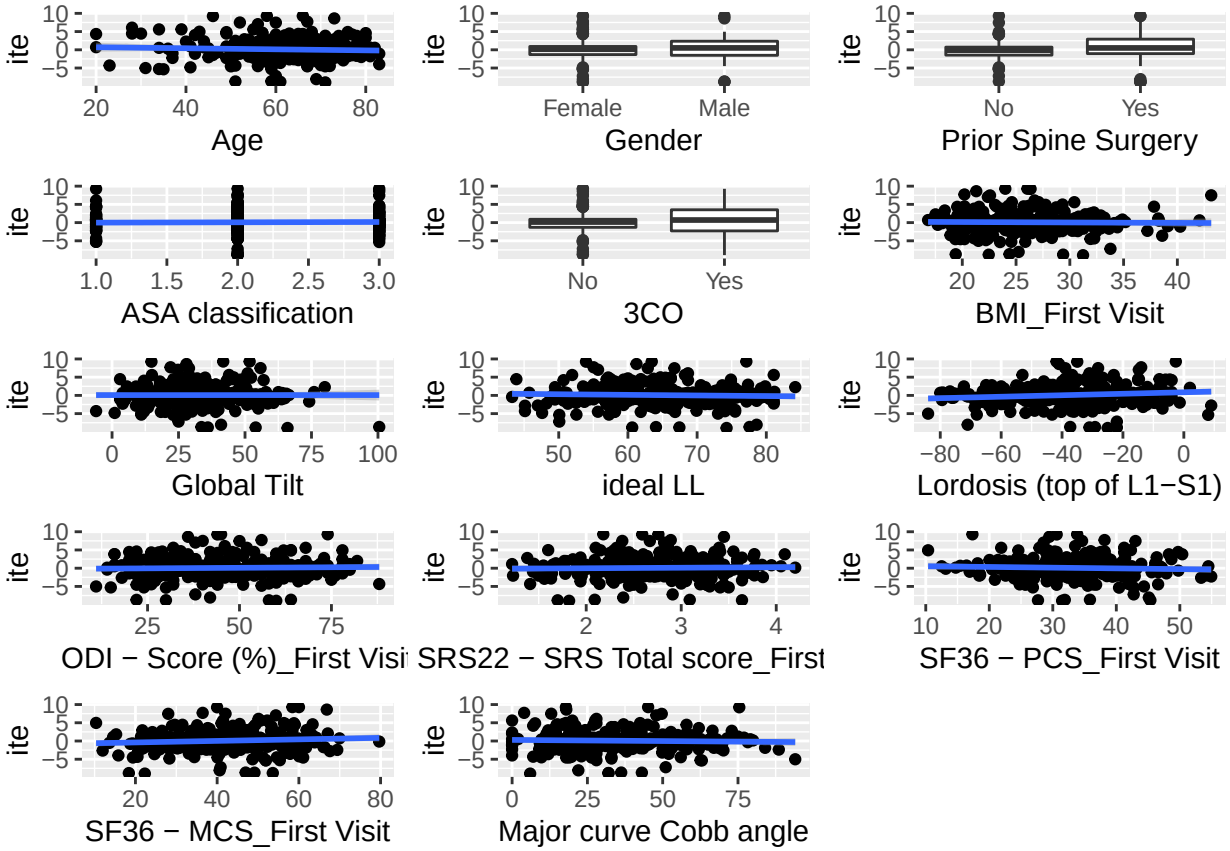
ite
Age
Gender
Female
Male
Prior Spine Surgery
No
Yes
ASA classification
3CO
BMI_First Visit
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ODI − Score (%)_First Visi
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