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
- Depression / anxiety
- Diabetes with end organ damage
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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

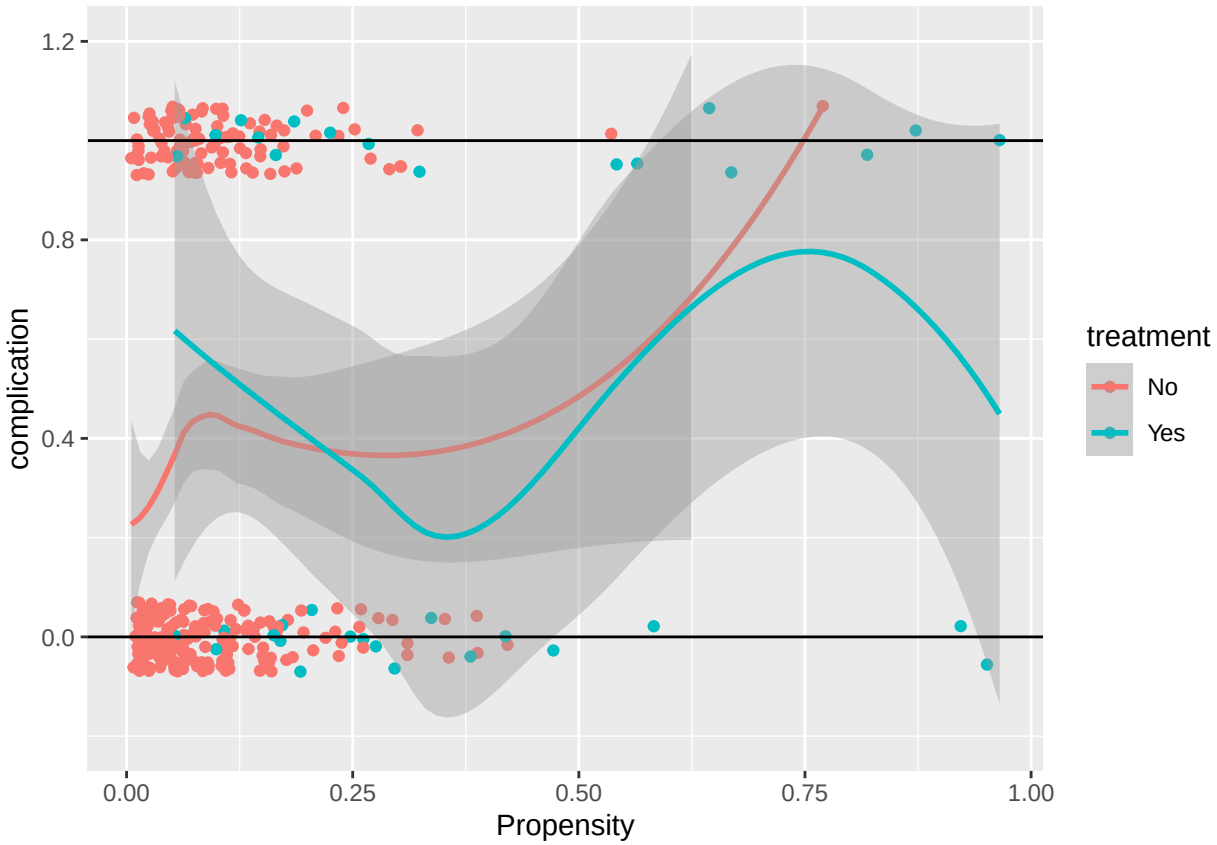
Propensity Scores Common Support

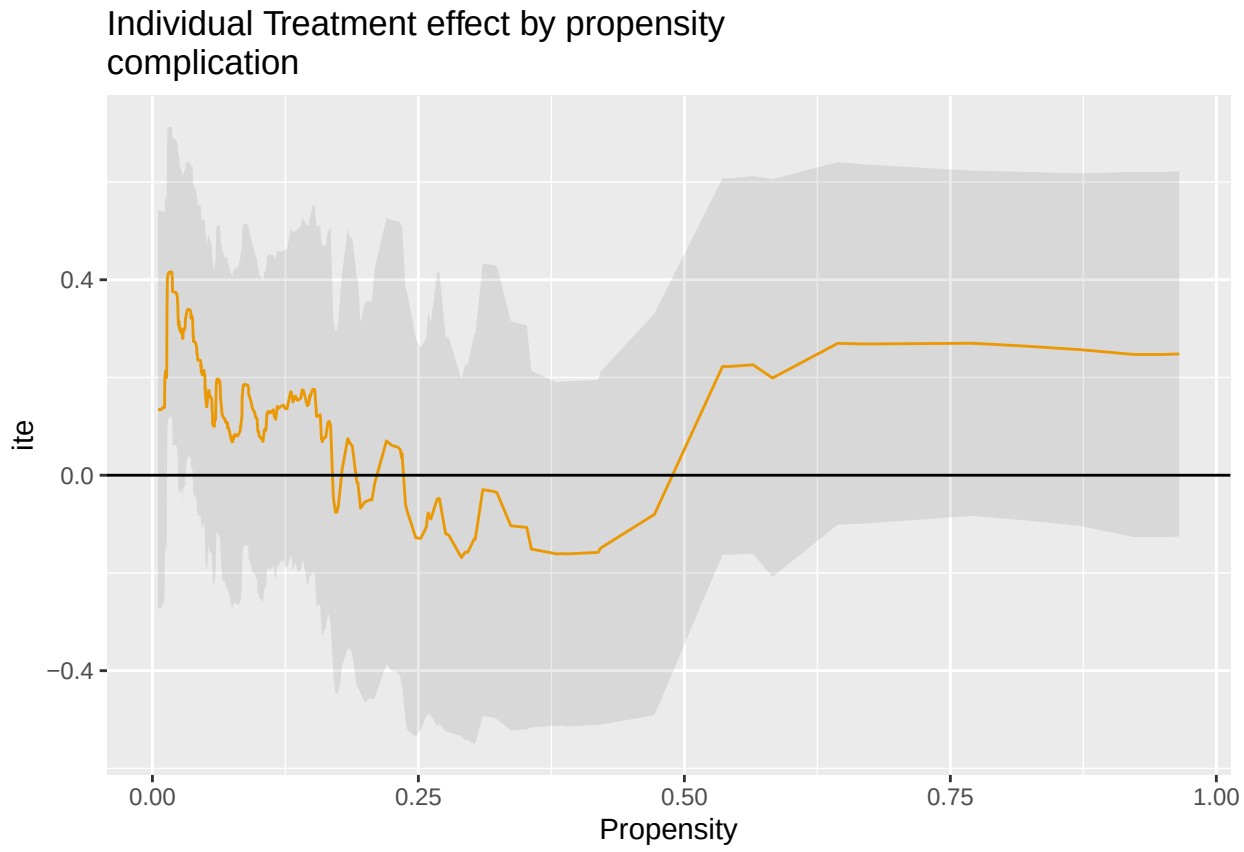
Model Stats

- Treatment proportion: 0.127
- Model Type: elastic_net
- Accuracy: 0.8966745
- Params: alpha: 0.6538462 lambda: 0.0090895

Average Treatment Effects - Complications

```
Outcome: complication
Distribution:
Proportion
 0.3711656
Model Type Y: boosting
Accuracy: 0.610714285714286
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
Accuracy: 0.61065653613871
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): 0.155 (Std.Error: 0.101)
Trimmed ATE (Yes-No): 0.152 (Std.Error: 0.107)
Upper ATE (Yes-No): 0.245 (Std.Error: 0.174)
Observational differences in treatment 0.114 (Yes-No)

   treatment   outcome
1:       Yes 0.4722222
2:        No 0.3586207

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


1.2
0.8
0.4
0.0
complication
0.00
0.25
0.50
0.75
1.00
Propensity
treatment
No
Yes

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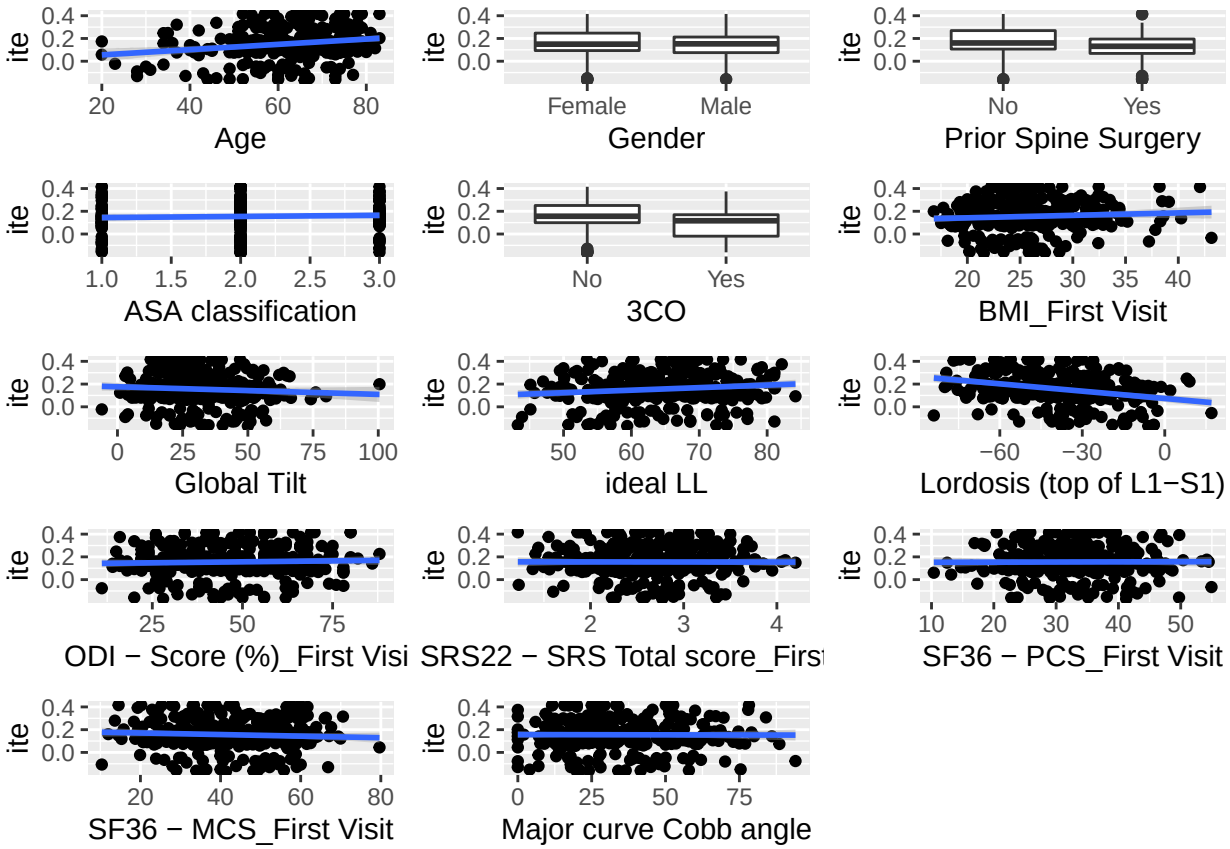
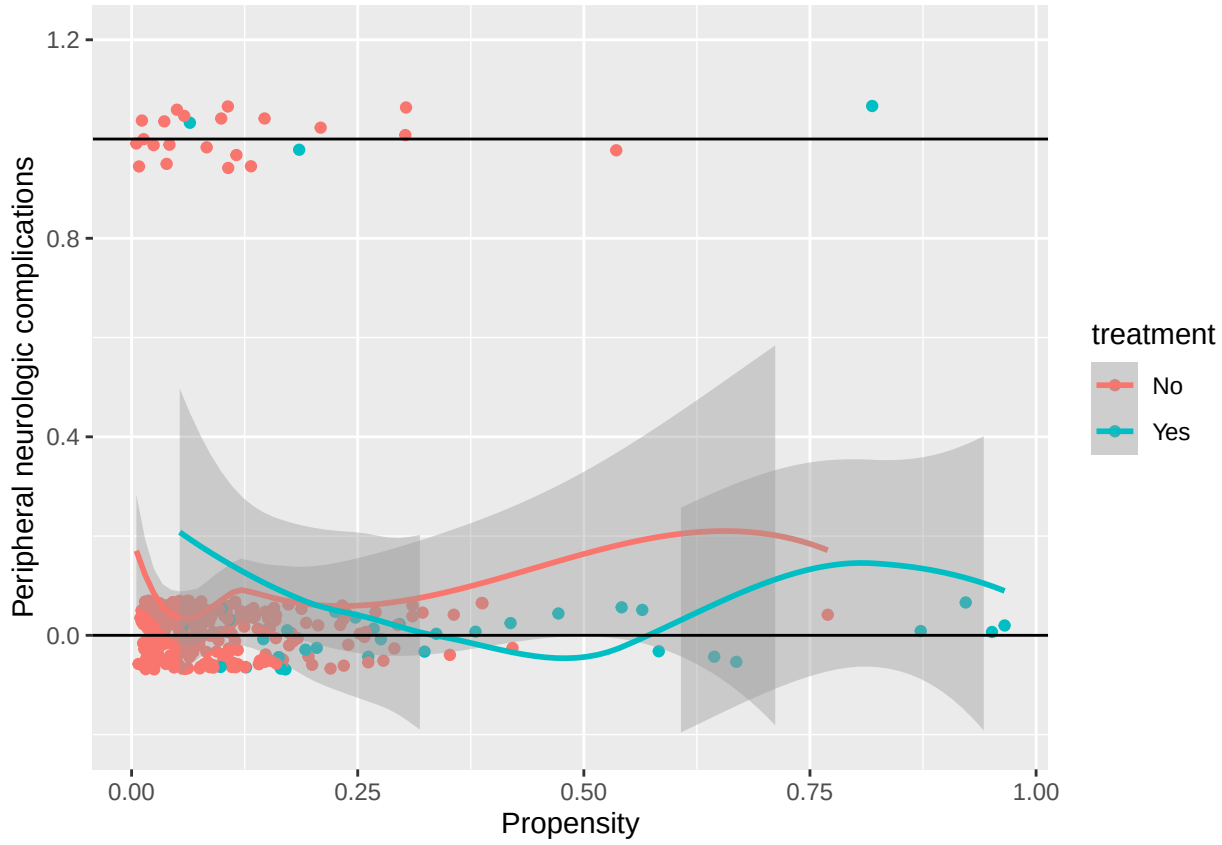
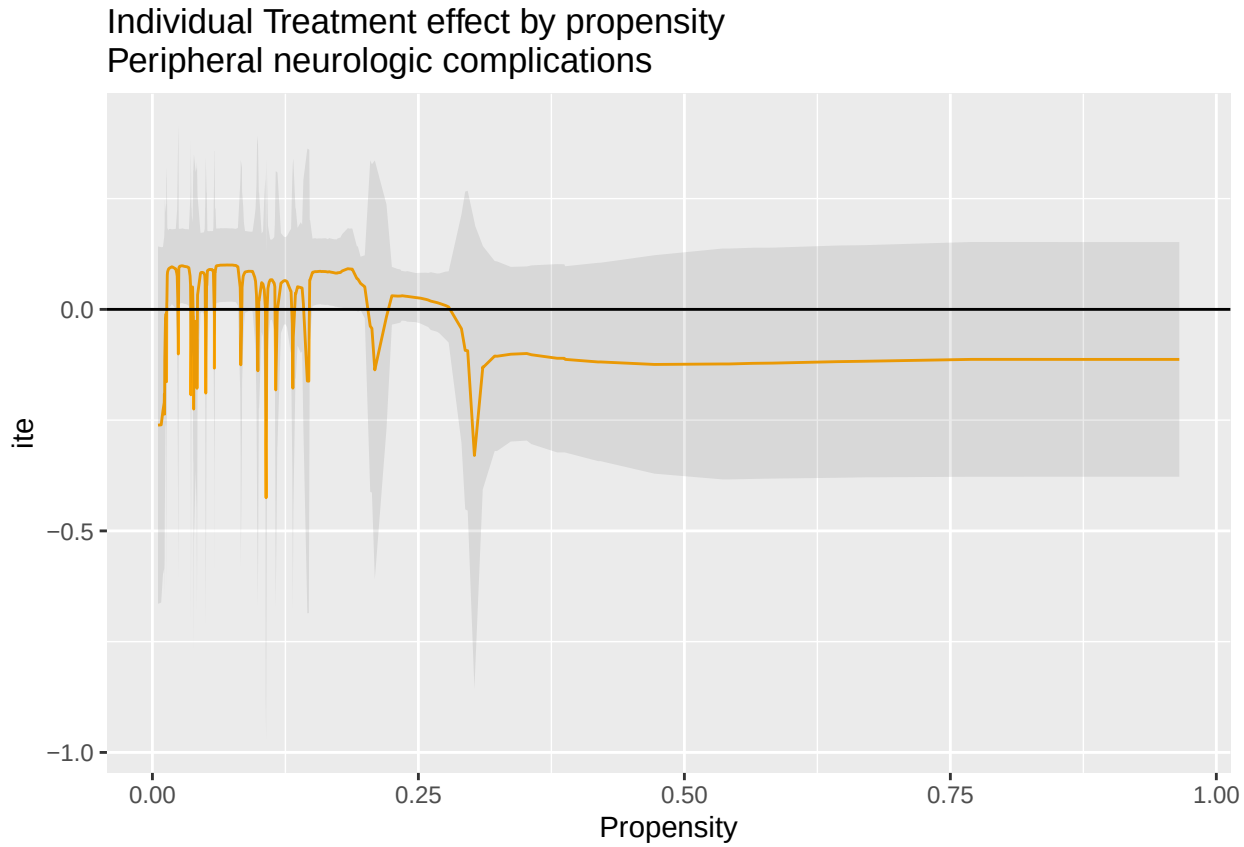



```
Outcome: Peripheral neurologic complications
Distribution:
Proportion
0.07361963
Model Type Y: boosting
Accuracy: 0.917857142857143
Params: nrounds: 50.0
max_depth: 1
eta: 0.3
gamma: 0.0
colsample_bytree: 0.6
min_child_weight: 1.0
subsample: 0.5

Model Type No: boosting
Accuracy: 0.93108472525557
Params: nrounds: 50.0
max_depth: 5
eta: 0.4
gamma: 0.0
colsample_bytree: 0.6
min_child_weight: 1.0
subsample: 0.5

ATE (Yes-No): 0.027 (Std.Error: 0.034)
Trimmed ATE (Yes-No): 0.033 (Std.Error: 0.035)
```

```
Upper ATE (Yes-No): -0.117 (Std.Error: 0.134)
Observational differences in treatment 0.011 (Yes-No)

   treatment    outcome
1:       Yes 0.08333333
2:        No 0.07241379

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



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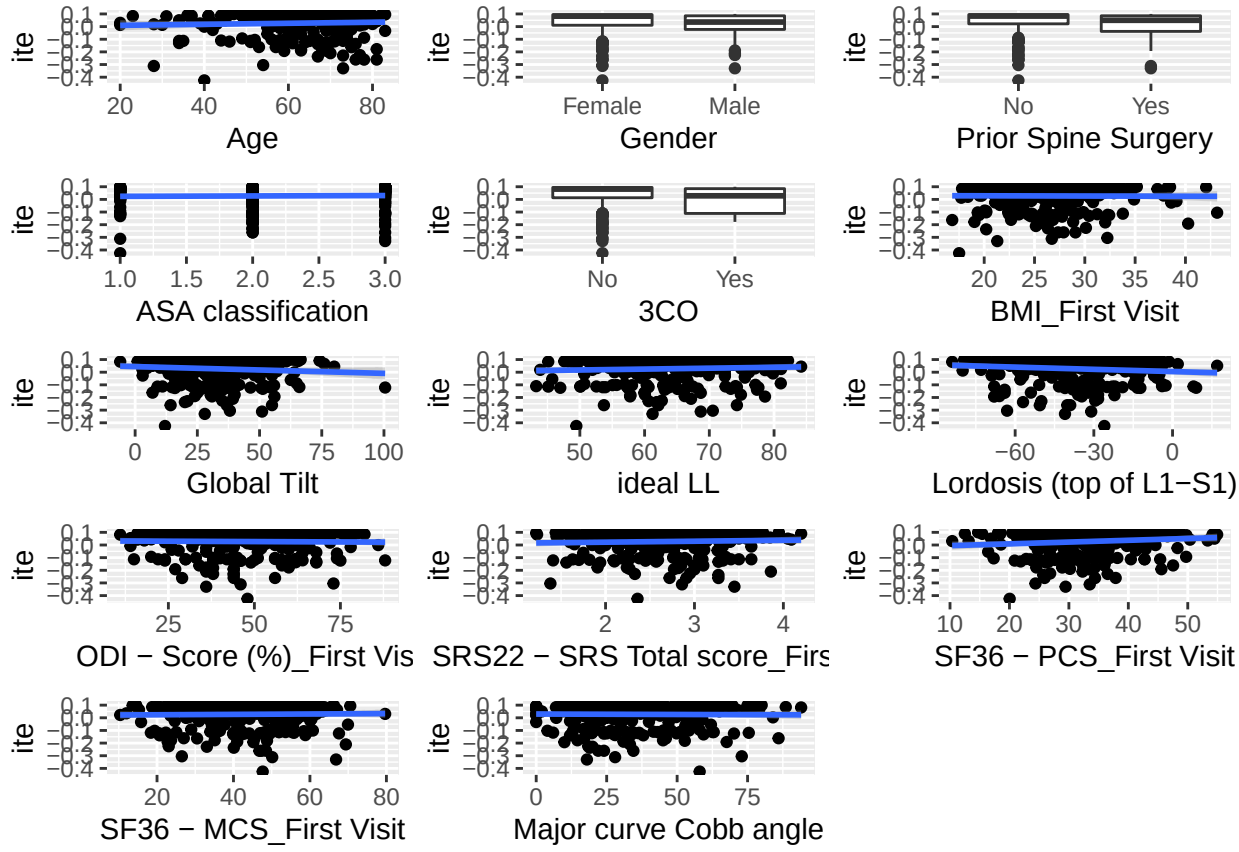
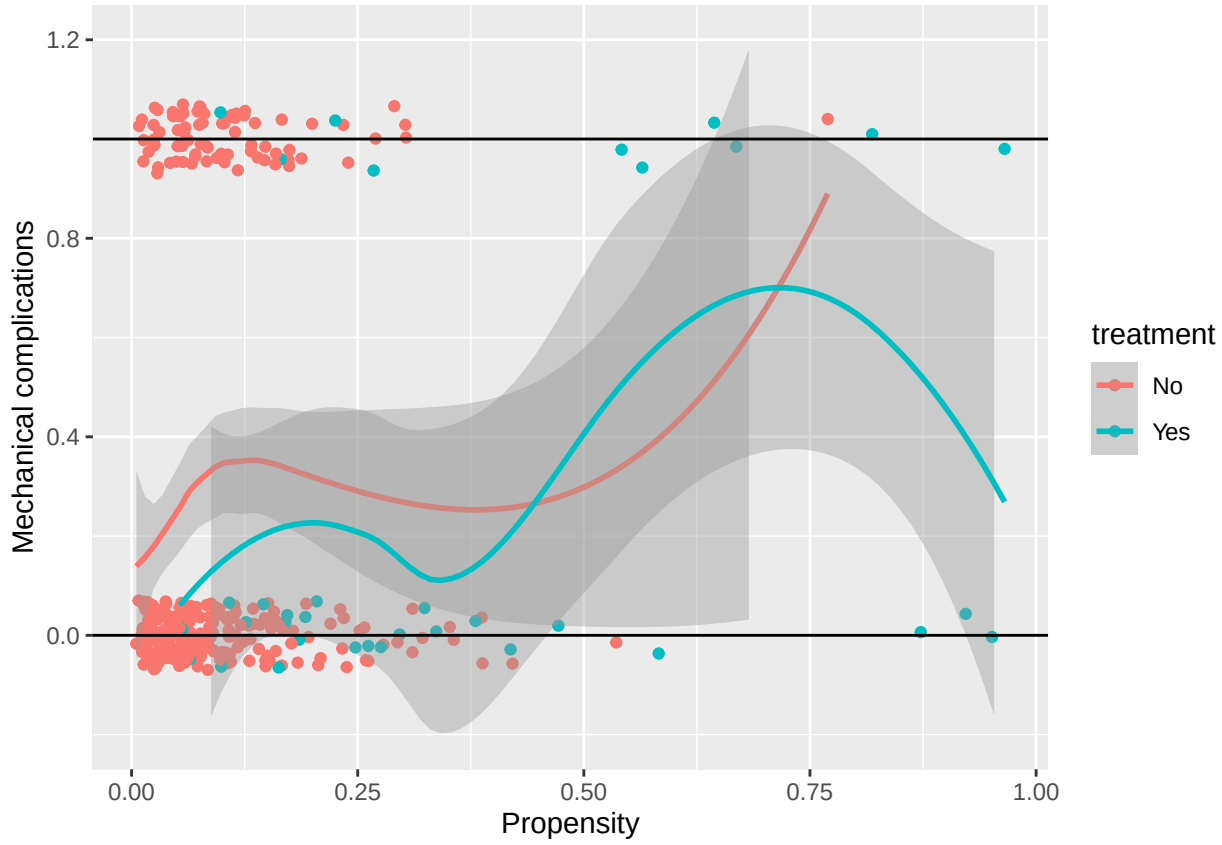
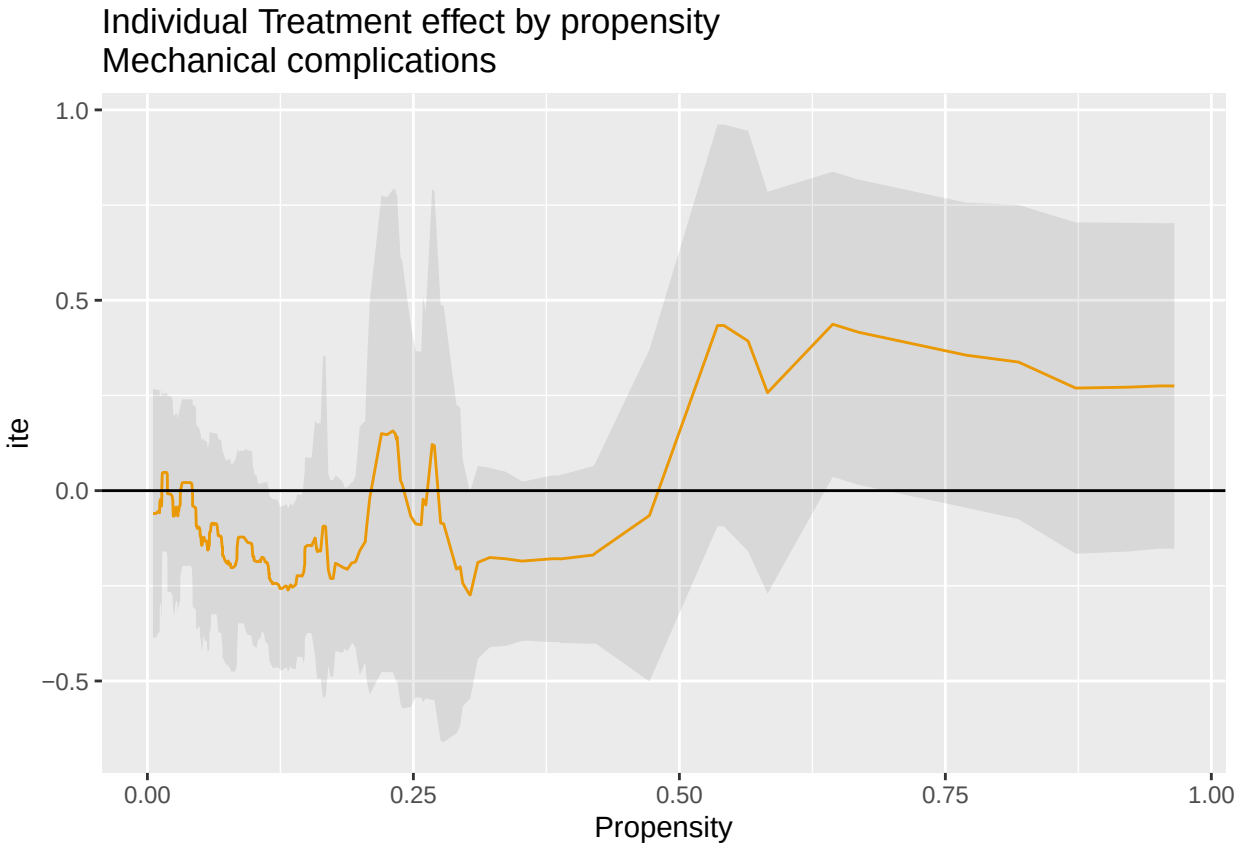



```
Outcome: Mechanical complications
Distribution:
Proportion
 0.2668712
Model Type Y: boosting
Accuracy: 0.775
Params: nrounds: 100.0
max_depth: 3
eta: 0.4
gamma: 0.0
colsample_bytree: 0.8
min_child_weight: 1.0
subsample: 0.5

Model Type No: boosting
Accuracy: 0.727758466886093
Params: nrounds: 50.0
max_depth: 1
eta: 0.3
gamma: 0.0
colsample_bytree: 0.6
min_child_weight: 1.0
subsample: 0.75

ATE (Yes-No): -0.089 (Std.Error: 0.075)
Trimmed ATE (Yes-No): -0.106 (Std.Error: 0.079)
```

```
Upper ATE (Yes-No): 0.346 (Std.Error: 0.171)
Observational differences in treatment 0.012 (Yes-No)

   treatment   outcome
1:       Yes 0.2777778
2:        No 0.2655172

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



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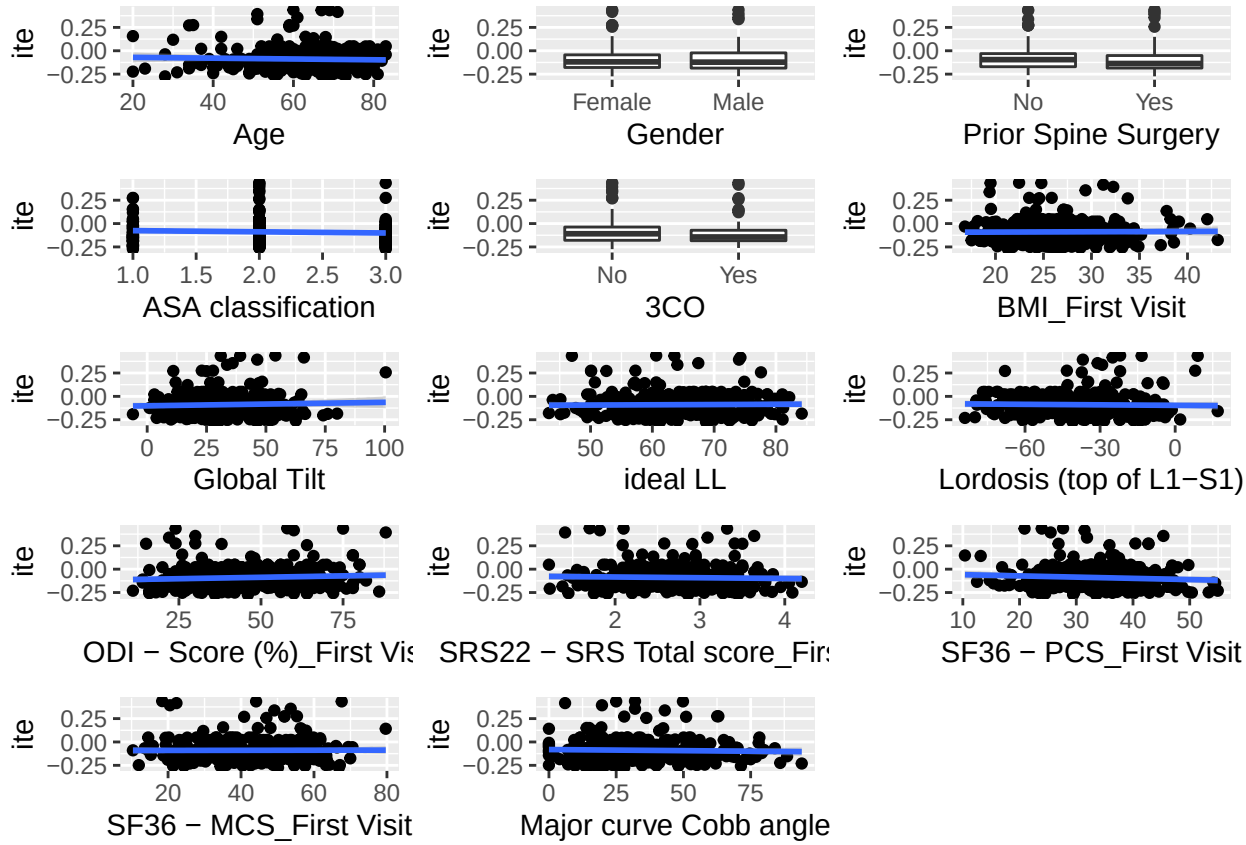
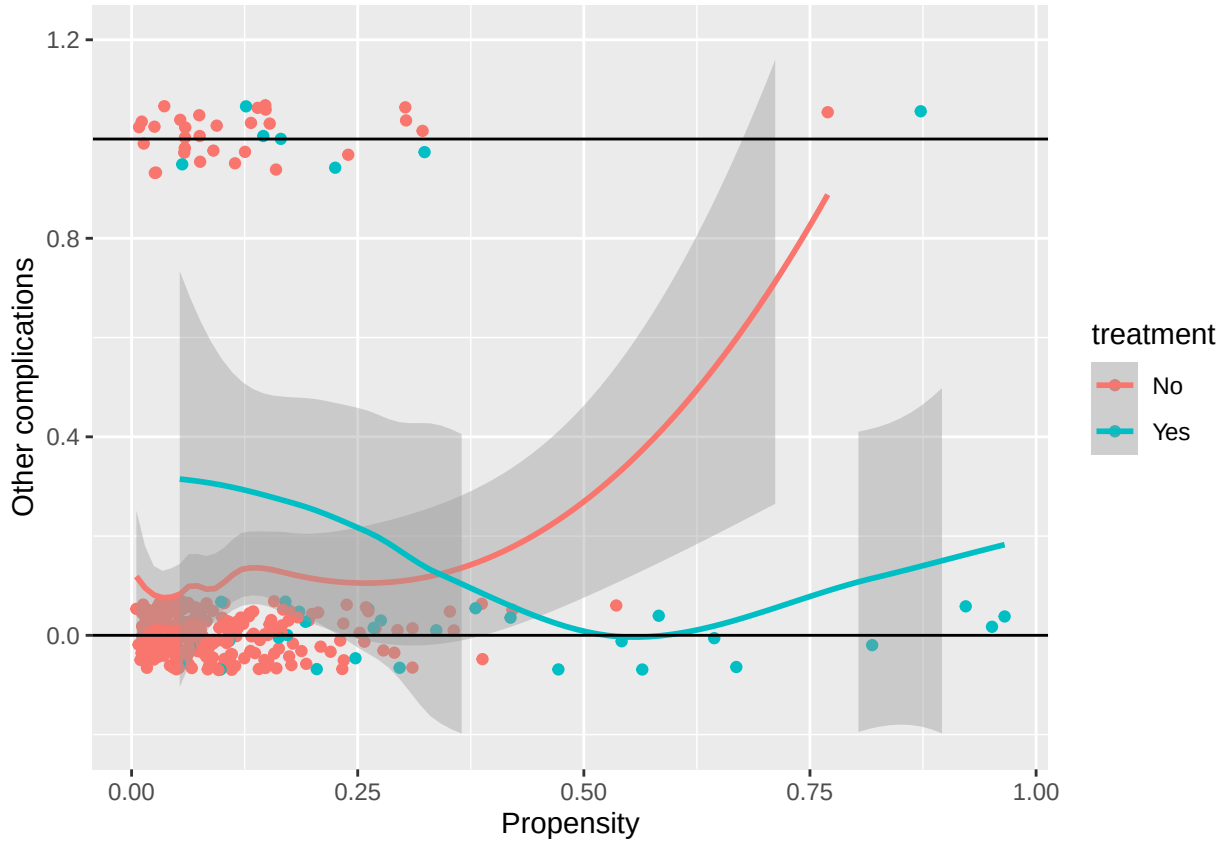
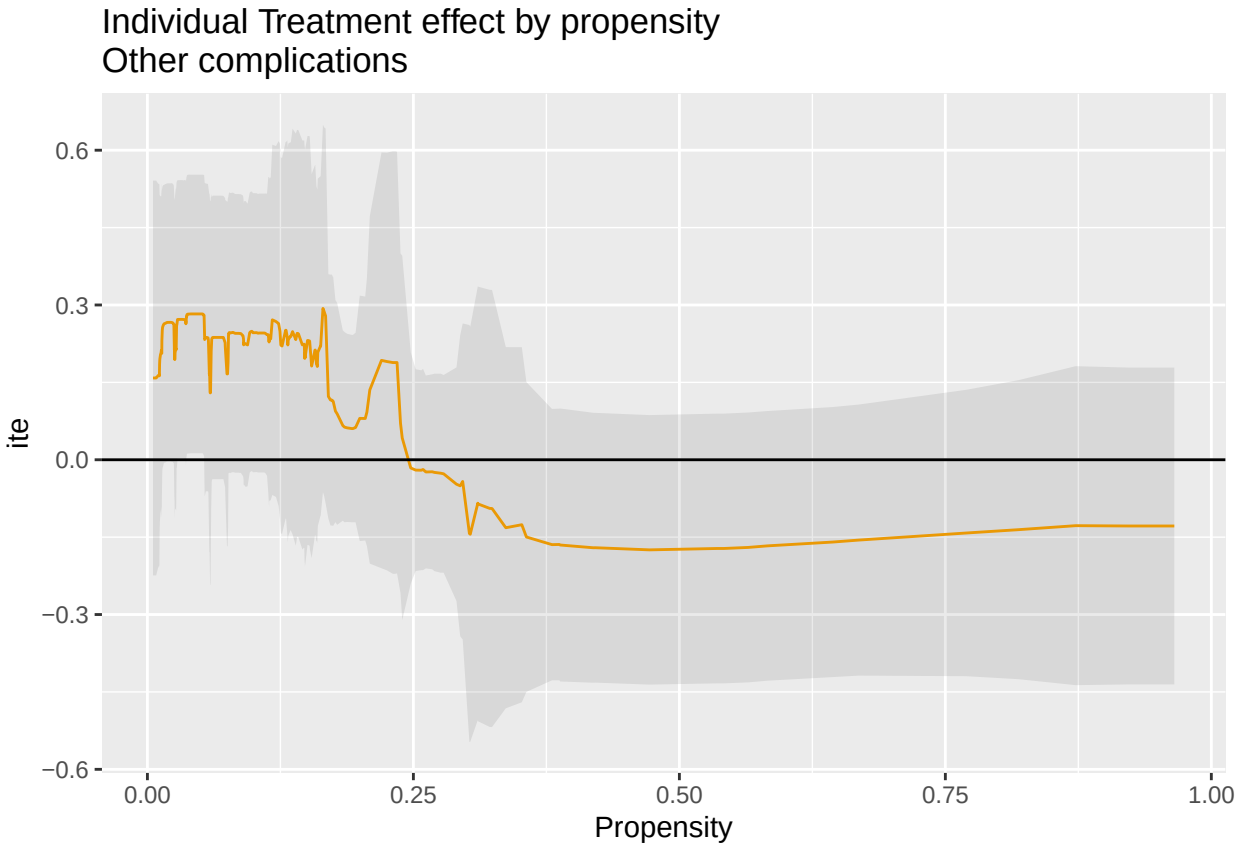



```
Outcome: Other complications
Distribution:
Proportion
 0.1134969
Model Type Y: boosting
Accuracy: 0.80952380952381
Params: nrounds: 50.0
max_depth: 1
eta: 0.3
gamma: 0.0
colsample_bytree: 0.6
min_child_weight: 1.0
subsample: 0.5

Model Type No: boosting
Accuracy: 0.896551724137931
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

ATE (Yes-No): 0.19 (Std.Error: 0.1)
Trimmed ATE (Yes-No): 0.203 (Std.Error: 0.105)
```

```
Upper ATE (Yes-No): -0.149 (Std.Error: 0.136)
Observational differences in treatment 0.091 (Yes-No)

   treatment   outcome
1:       Yes 0.1944444
2:        No 0.1034483

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



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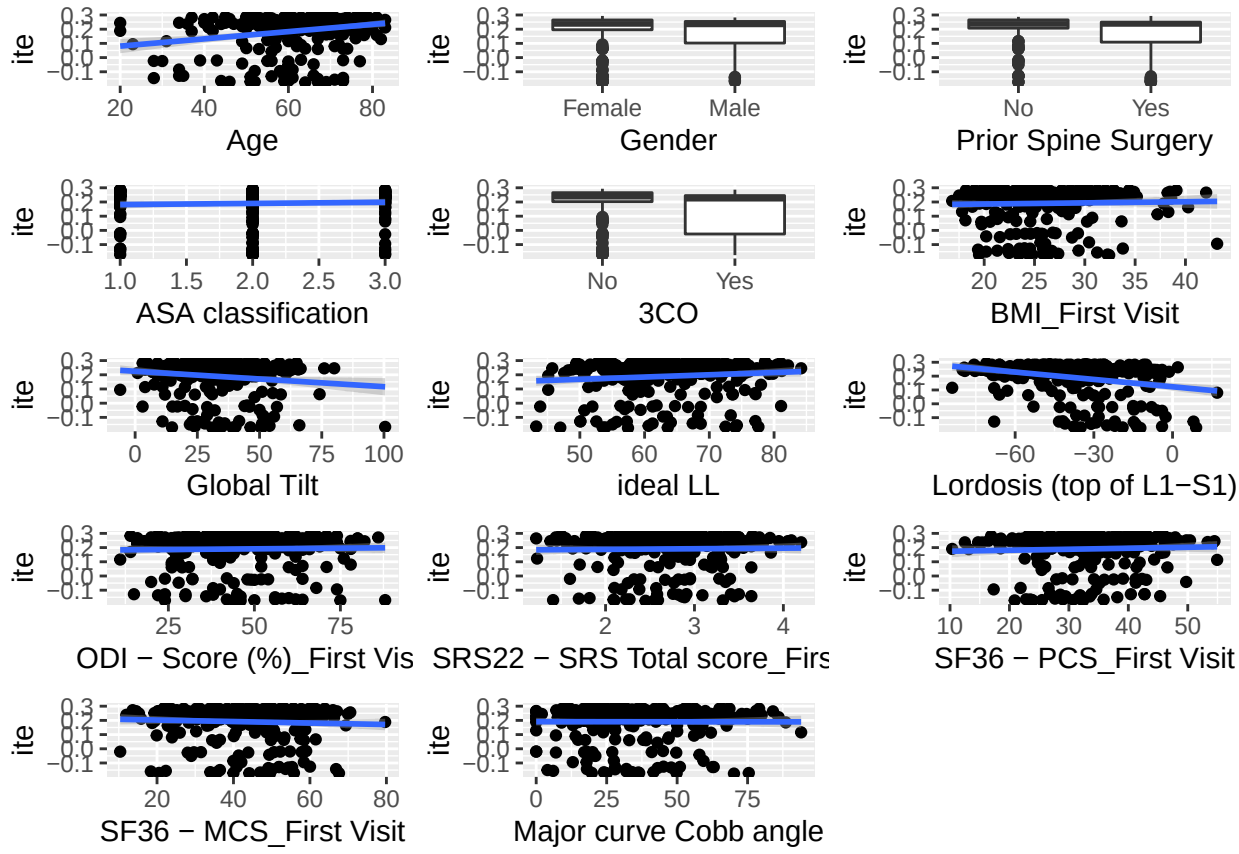
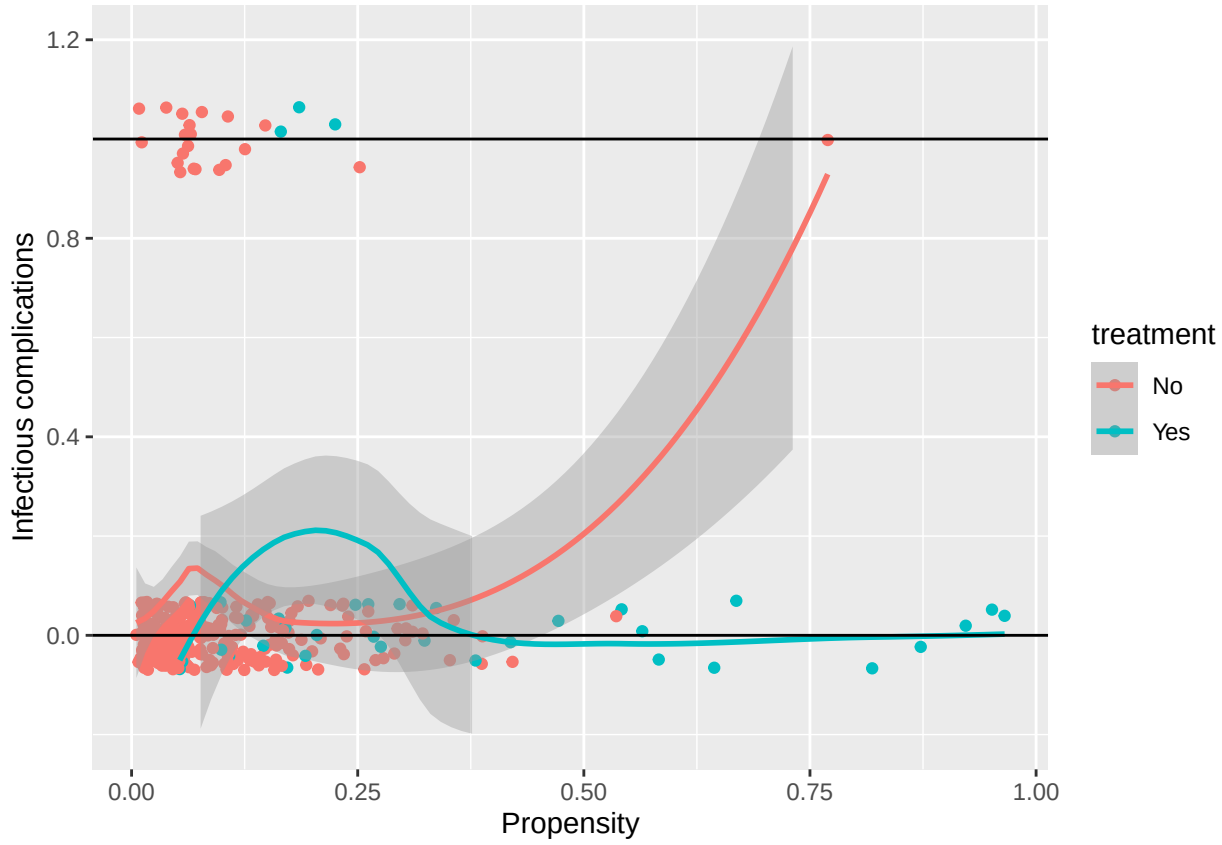
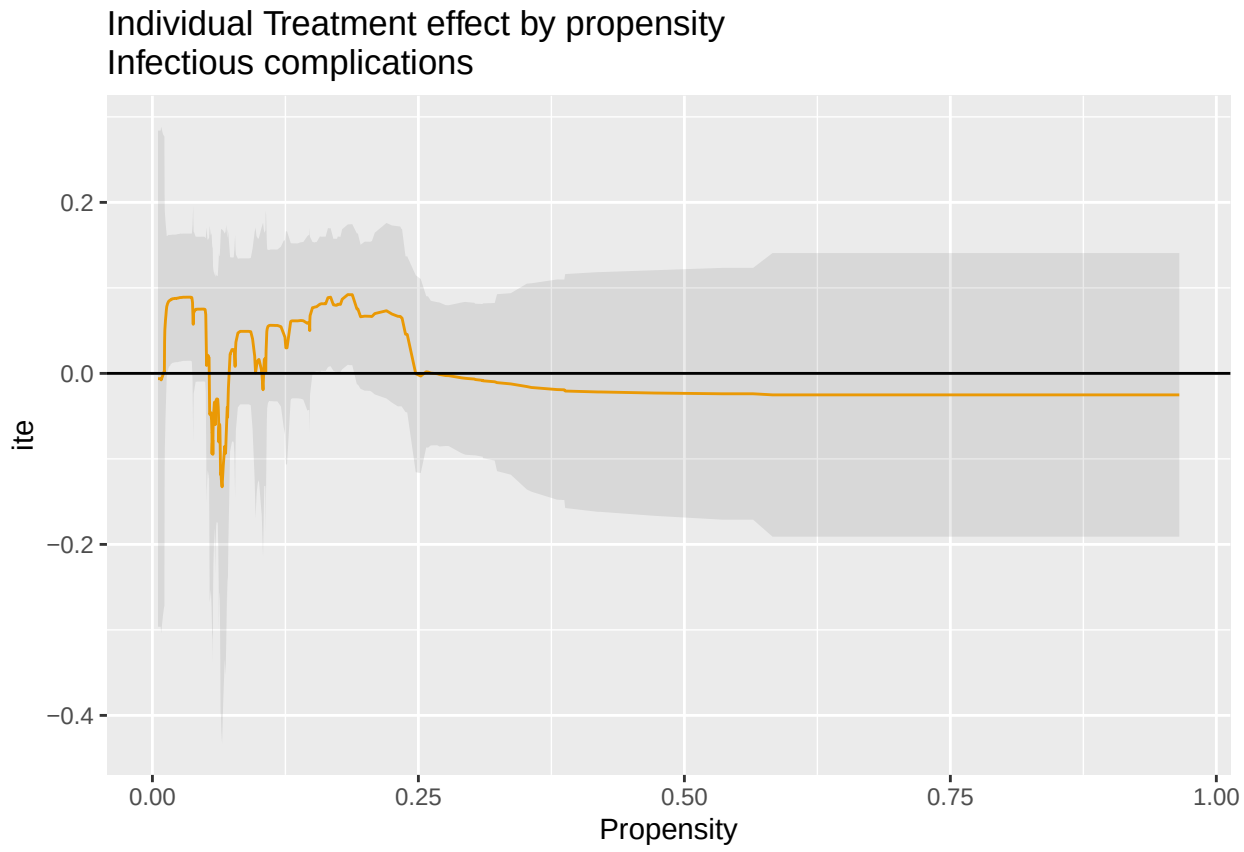



```
Outcome: Infectious complications
Distribution:
Proportion
0.07361963
Model Type Y: boosting
Accuracy: 0.921428571428571
Params: nrounds: 50.0
max_depth: 1
eta: 0.3
gamma: 0.0
colsample_bytree: 0.6
min_child_weight: 1.0
subsample: 0.5

Model Type No: boosting
Accuracy: 0.927636449393501
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

ATE (Yes-No): 0.036 (Std.Error: 0.03)
Trimmed ATE (Yes-No): 0.038 (Std.Error: 0.031)
```

```
Upper ATE (Yes-No): -0.025 (Std.Error: 0.082)
Observational differences in treatment 0.011 (Yes-No)

   treatment    outcome
1:       Yes 0.08333333
2:        No 0.07241379

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



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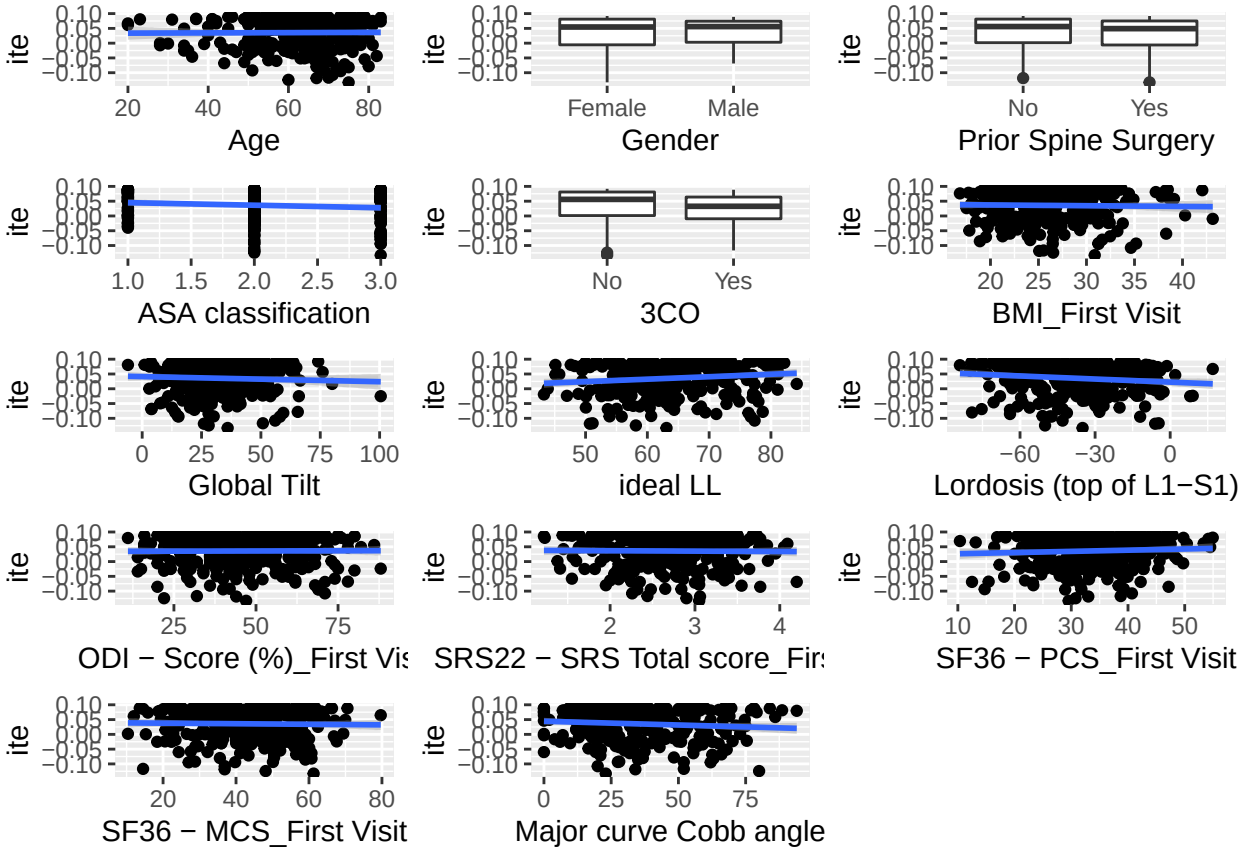
ite
0.10
0.05
0.00
−0.05
−0.10
20
40
60
80
Age
Female
Male
Gender
No
Yes
Prior Spine Surgery
1.0
1.5
2.0
2.5
3.0
ASA classification
3CO
20
25
30
35
40
BMI_First Visit
0
25
50
75
100
Global Tilt
50
60
70
80
ideal LL
−60
−30
0
Lordosis (top of L1−S1)
ODI − Score (%)_First Vis
2
3
4
SRS22 − SRS Total score_Firs
10
20
30
40
50
SF36 − PCS_First Visit
SF36 − MCS_First Visit
Major curve Cobb angle