L5/Iliac ATEs

data\_ %>%   
 .[followup\_2y ==TRUE] %>%   
 .[Study=='Op'] %>%   
 .[Site != 'ANK Op'] %>%   
 .[Age < 100] %>%   
 .[`Vital status` == 'Alive'] ->  
 data\_

Initial Patients: 985

data\_ %<>% .[`Posterior Instrumented Fusion` == 'Yes']  
   
data\_[, `Posterior Instrumented Fusion: Upper / Lower Levels`] %>%   
 sapply(. %>% strsplit('-') %>% .[[1]] %>% .[2]) ->  
 post\_intr\_fusion  
  
data\_[post\_intr\_fusion == 'Iliac', type := 'Iliac']  
data\_[post\_intr\_fusion == 'L5', type := 'L5']  
data\_ %<>% .[!is.na(type)]

# Comparability constraints

data\_ %<>%   
 .[`Surgical Approach`=='Posterior'] %>%   
 .[`Pelvic Tilt` < 45] %>%   
 .[`Number of Posterior Instrumented Levels` < 17] %>%   
 .[`Global Tilt` < 60] %>%   
 .[`ASA classification` != '4'] %>%   
 .[`Thoracolumbar L2-T10` > -30 ] %>%   
 .[`Thoracolumbar L2-T10` < 70 ] %>%   
 .[`RLL` > -60]

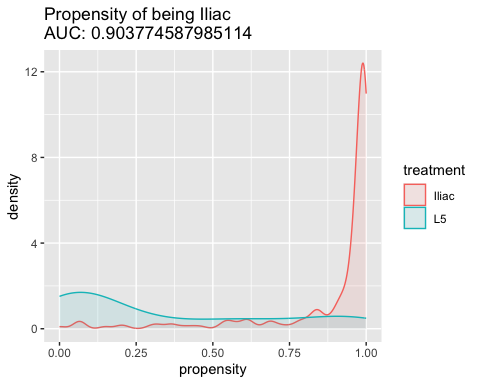
type N  
1: Iliac 241  
2: L5 104

### Confounding Variables

- Age  
- BMI\_First Visit  
- ASA classification  
- Prior Spine Surgery  
- Pelvic Tilt  
- Interbody Fusion  
- essg\_category  
- Number of Posterior Instrumented Levels  
- Decompression  
- Osteotomy  
- 3CO  
- Global Tilt  
- ODI - Score (%)  
- Site  
- RLL  
- Thoracolumbar L2-T10

# Propensity Score

## Boosting



Propensity threshold 0.5

type N  
1: Iliac 212  
2: L5 33

# Average Treatment Effects

Change Outcome: 2Y. ODI - Score (%)  
RMSE: 1.28334990168254  
Relative RMSE: 6.5 %  
ATE (Iliac - L5): -16.1365188076456  
ATE (std Error) 2.10220169335383  
t.test p-value 4.48539755105325e-13  
  
  
Change Outcome: 2Y. SRS22 - SRS Subtotal score  
RMSE: 0.0496172359358971  
Relative RMSE: 6.7 %  
ATE (Iliac - L5): 0.34311403516391  
ATE (std Error) 0.0753703873955777  
t.test p-value 8.5804351161085e-06  
  
  
Change Outcome: 2Y. SF36 - MCS  
RMSE: 0.921524865846229  
Relative RMSE: 6.9 %  
ATE (Iliac - L5): 2.26994734421509  
ATE (std Error) 1.39468296162098  
t.test p-value 0.10506668174153  
  
  
Change Outcome: 2Y. SF36 - PCS  
RMSE: 0.687963380931906  
Relative RMSE: 6.9 %  
ATE (Iliac - L5): 2.14762327448388  
ATE (std Error) 0.915057772556829  
t.test p-value 0.0198268411792487  
  
  
Change Outcome: 2Y. Static Major curve Cobb angle  
RMSE: 0.948168631179813  
Relative RMSE: 7.1 %  
ATE (Iliac - L5): 5.62648077043875  
ATE (std Error) 1.30188872269435  
t.test p-value 2.49367936907336e-05  
  
  
Change Outcome: 2Y. Lordosis (top of L1-S1)  
RMSE: 0.993565744058253  
Relative RMSE: 6.6 %  
ATE (Iliac - L5): -12.4993589979063  
ATE (std Error) 1.36692141569106  
t.test p-value 6.04654532023075e-17  
  
  
Change Outcome: 2Y. Global Tilt  
RMSE: 0.809600969888845  
Relative RMSE: 6.7 %  
ATE (Iliac - L5): -4.38181741604383  
ATE (std Error) 0.981683715587786  
t.test p-value 1.32939404124439e-05  
  
  
Change Outcome: 2Y. Pelvic Tilt  
RMSE: 0.516143140398065  
Relative RMSE: 6.8 %  
ATE (Iliac - L5): -6.18024526655819  
ATE (std Error) 0.673428239232875  
t.test p-value 4.86332058567113e-17  
  
  
Change Outcome: 5Y. ODI - Score (%)  
RMSE: 1.8197025327346  
Relative RMSE: 9.3 %  
ATE (Iliac - L5): -7.89334786328743  
ATE (std Error) 2.4389377580172  
t.test p-value 0.00153576424255002  
  
  
Change Outcome: 5Y. SRS22 - SRS Subtotal score  
RMSE: 0.0628884296564663  
Relative RMSE: 9.4 %  
ATE (Iliac - L5): 0.402657401499251  
ATE (std Error) 0.0909661466963377  
t.test p-value 1.98815306633458e-05  
  
  
Change Outcome: 5Y. SF36 - MCS  
RMSE: 1.25494633830744  
Relative RMSE: 10.5 %  
ATE (Iliac - L5): 0.0758848932554137  
ATE (std Error) 1.48003676226863  
t.test p-value 0.959205951480094  
  
  
Change Outcome: 5Y. SF36 - PCS  
RMSE: 1.01842460650276  
Relative RMSE: 9.7 %  
ATE (Iliac - L5): 6.79162351801282  
ATE (std Error) 1.52768847821847  
t.test p-value 2.19852860708941e-05  
  
  
Change Outcome: 5Y. Static Major curve Cobb angle  
RMSE: 1.79869789791756  
Relative RMSE: 12 %  
ATE (Iliac - L5): 1.36120424144072  
ATE (std Error) 2.59555543537289  
t.test p-value 0.601585831112326  
  
  
Change Outcome: 5Y. Lordosis (top of L1-S1)  
RMSE: 1.45160128286071  
Relative RMSE: 8.7 %  
ATE (Iliac - L5): -16.5605428547526  
ATE (std Error) 3.07733495763547  
t.test p-value 7.34977426935426e-07  
  
  
Change Outcome: 5Y. Global Tilt  
RMSE: 1.29708108820066  
Relative RMSE: 9.5 %  
ATE (Iliac - L5): -10.7647492313059  
ATE (std Error) 1.86014171124417  
t.test p-value 1.38120516377023e-07  
  
  
Change Outcome: 5Y. Pelvic Tilt  
RMSE: 0.886209787228635  
Relative RMSE: 9.9 %  
ATE (Iliac - L5): -9.60237645478919  
ATE (std Error) 1.43439001345413  
t.test p-value 2.85208970707464e-09  
  
  
Outcome: major\_complications  
RMSE: 0.107910290138152  
Relative RMSE: 8.1 %  
ATE (Iliac - L5): -1.45206610735063  
ATE (std Error) 0.198484494823775  
t.test p-value 1.37382027732465e-11  
  
  
Outcome: reiqs  
RMSE: 0.0965491788454896  
Relative RMSE: 8 %  
ATE (Iliac - L5): -0.830158036269531  
ATE (std Error) 0.16208309029752  
t.test p-value 9.04408601298232e-07