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]

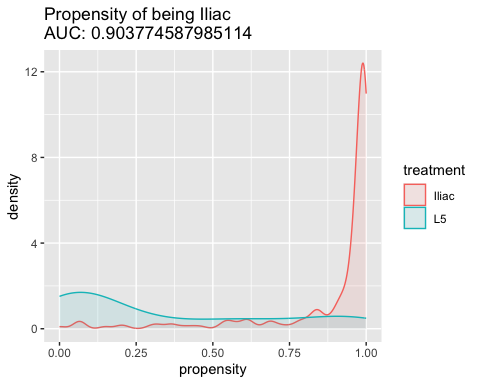
type N  
1: Iliac 241  
2: L5 104

### 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

type N  
1: Iliac 228  
2: L5 99

# Average Treatment Effects

Change Outcome: 2Y. ODI - Score (%)  
RMSE: 1.09020201582293  
Relative RMSE: 5.7 %  
ATE (Iliac - L5): -8.57701223319276  
ATE (std Error) 1.77372477437085  
t.test p-value 2.09678249363863e-06  
  
  
Change Outcome: 2Y. SRS22 - SRS Subtotal score  
RMSE: 0.040793428575739  
Relative RMSE: 5.7 %  
ATE (Iliac - L5): 0.242849301093854  
ATE (std Error) 0.0646961193069249  
t.test p-value 0.000208485129252983  
  
  
Change Outcome: 2Y. SF36 - MCS  
RMSE: 0.769716685672068  
Relative RMSE: 6 %  
ATE (Iliac - L5): 1.34822482327065  
ATE (std Error) 1.04822839532429  
t.test p-value 0.199434200531352  
  
  
Change Outcome: 2Y. SF36 - PCS  
RMSE: 0.590506858207416  
Relative RMSE: 6 %  
ATE (Iliac - L5): 2.08445742698584  
ATE (std Error) 0.813664315193677  
t.test p-value 0.0109345826590732  
  
  
Change Outcome: 2Y. Static Major curve Cobb angle  
RMSE: 0.871115550681057  
Relative RMSE: 6.3 %  
ATE (Iliac - L5): 5.05658852687625  
ATE (std Error) 1.37797571828417  
t.test p-value 0.00029860683431384  
  
  
Change Outcome: 2Y. Lordosis (top of L1-S1)  
RMSE: 0.797949956284694  
Relative RMSE: 5.3 %  
ATE (Iliac - L5): -10.0704634583866  
ATE (std Error) 1.16591563499927  
t.test p-value 5.65304536730144e-16  
  
  
Change Outcome: 2Y. Global Tilt  
RMSE: 0.652188189056733  
Relative RMSE: 5.7 %  
ATE (Iliac - L5): -5.48445512360195  
ATE (std Error) 0.852191702899351  
t.test p-value 5.78912182185652e-10  
  
  
Change Outcome: 2Y. Pelvic Tilt  
RMSE: 0.432403625742865  
Relative RMSE: 6 %  
ATE (Iliac - L5): -4.61068676247982  
ATE (std Error) 0.601513382532926  
t.test p-value 3.42118511726738e-13  
  
  
Change Outcome: 5Y. ODI - Score (%)  
RMSE: 1.57586208359069  
Relative RMSE: 8.3 %  
ATE (Iliac - L5): -7.77484393253458  
ATE (std Error) 1.98174888130437  
t.test p-value 0.000128833412026922  
  
  
Change Outcome: 5Y. SRS22 - SRS Subtotal score  
RMSE: 0.0533230267556842  
Relative RMSE: 8.1 %  
ATE (Iliac - L5): 0.282083083532543  
ATE (std Error) 0.0710793993248109  
t.test p-value 0.000107664048789514  
  
  
Change Outcome: 5Y. SF36 - MCS  
RMSE: 1.0659032841965  
Relative RMSE: 9.3 %  
ATE (Iliac - L5): -0.043516599722491  
ATE (std Error) 1.09989431037949  
t.test p-value 0.968501148149917  
  
  
Change Outcome: 5Y. SF36 - PCS  
RMSE: 0.958265752868769  
Relative RMSE: 9.1 %  
ATE (Iliac - L5): 4.09456548862732  
ATE (std Error) 1.31448301835824  
t.test p-value 0.00226736465547072  
  
  
Change Outcome: 5Y. Static Major curve Cobb angle  
RMSE: 1.43350723204048  
Relative RMSE: 9.9 %  
ATE (Iliac - L5): 4.92306526795357  
ATE (std Error) 1.80326324295568  
t.test p-value 0.00761697618427398  
  
  
Change Outcome: 5Y. Lordosis (top of L1-S1)  
RMSE: 1.19791506336722  
Relative RMSE: 7.4 %  
ATE (Iliac - L5): -17.1224842425189  
ATE (std Error) 2.16943984922436  
t.test p-value 4.53559821914404e-12  
  
  
Change Outcome: 5Y. Global Tilt  
RMSE: 1.17874690366218  
Relative RMSE: 8.5 %  
ATE (Iliac - L5): -11.1964530330626  
ATE (std Error) 1.66135868963967  
t.test p-value 1.14056355185339e-09  
  
  
Change Outcome: 5Y. Pelvic Tilt  
RMSE: 0.798554384419338  
Relative RMSE: 8.8 %  
ATE (Iliac - L5): -8.40987907836632  
ATE (std Error) 1.2608143777797  
t.test p-value 1.57604827093095e-09  
  
  
Outcome: major\_complications  
RMSE: 0.104365460221011  
Relative RMSE: 7.1 %  
ATE (Iliac - L5): -0.789441059350347  
ATE (std Error) 0.207794667378483  
t.test p-value 0.000195072436035613  
  
  
Outcome: reiqs  
RMSE: 0.0922844940392926  
Relative RMSE: 7.1 %  
ATE (Iliac - L5): -0.00194954312214198  
ATE (std Error) 0.155503856187935  
t.test p-value 0.990010313428562