

## Appendix

We modeled improvement as a function of receipt of PT and patient characteristics:  $Improve_i = \beta_0 + \beta_1 PT_i + \beta_2 X_i + \varepsilon_i$ , where  $X_i$  is a vector of patient characteristics that include rural/urban, sex, race, age category, point of origin, geographic region, daily need for cognitive assist, social frailty, daily injurious behavior (self or others), daily pain that interferes w/movement, baseline function, aggressive or inappropriate behaviors, and comorbidity (depression, asthma/COPD, diabetes mellitus, neurological diseases).

We used inverse probability weighting in order to control for selection on observables. The inverse probability weights were constructed using propensity scores. The validity of the propensity score specification is reliant on the extent that the weighted data are balanced and that there is overlap between the treatment and comparison groups. The results of the diagnostic tests are reported below. Our specification performed excellent in both the overlap and balance diagnostics. This gives us confidence that we have adequately controlled for the relevant observable confounders.

To examine whether there was a significant difference between the groups that initiated home health from inpatient (IP) vs outpatient (OP) care, we compared their characteristics. We found that the groups differed ( $p < 0.05$ ) in only four variables: Female: 69% IP vs 75% OP; Northeast: 24% IP vs 19% OP; Rural: 16% IP vs 13% OP; Social frailty: 39% IP vs 44% OP.

In addition to ADL function, we derived mobility score from OASIS transfer and gait scores only, to determine whether a PWD improved in mobility score with PT intervention during the home health episode of care. Mobility outcomes by any PT utilization are as follows: without PT, the probability of improvement in mobility was 42.2% (95% CI 38.5-47.3,  $p < 0.001$ ). Receipt of PT was associated with a 16.8 percentage point greater (95% CI 11.3-22.3,  $p < 0.001$ ) probability of mobility improvement. This reflects a 39.8% greater probability of improving. Mobility outcomes by PT visit number are as follows: Patients who received 6-13 PT visits had 64.6% probability of mobility improvement (95% CI 58.0-71.6,  $p < 0.001$ ). The probability of mobility improvement was 54.5 percentage points for patients who received 1-5 PT visits (95% CI 49.6-69.6,  $p < 0.01$ ), reflecting a 6.4% lower probability of improving relative to receiving 6-13 visits. The probability of function improvement was 78.0 percentage points for patients who received 14+ PT visits (95% CI 70.9-86.7,  $p < 0.05$ ), reflecting a 9.3% greater probability of improving relative to receiving 6-13 visits.

The overlap between the treatment and control groups and the standardized mean differences in covariates for all groups (with and without inverse probability weighting) and are shown in Supplemental Figures 1S. The overlap graph reveals excellent overlap between Any-PT and No-PT groups after weighting. The absolute values of the weighted standardized differences between the two groups were all well below 0.10. The overlap and the covariate balance strongly support the specification of the propensity score.

Similarly, as shown in Supplemental Figure 2S, there was excellent overlap between all groups when examined by PT visit number. In addition, all covariates balanced to within 0.01 between

those who received 6-13 and 1-5 PT visits. All covariates balanced to below 0.10 between those who received 6-13 and 14+ PT visits. (Supplemental Figure 2S).

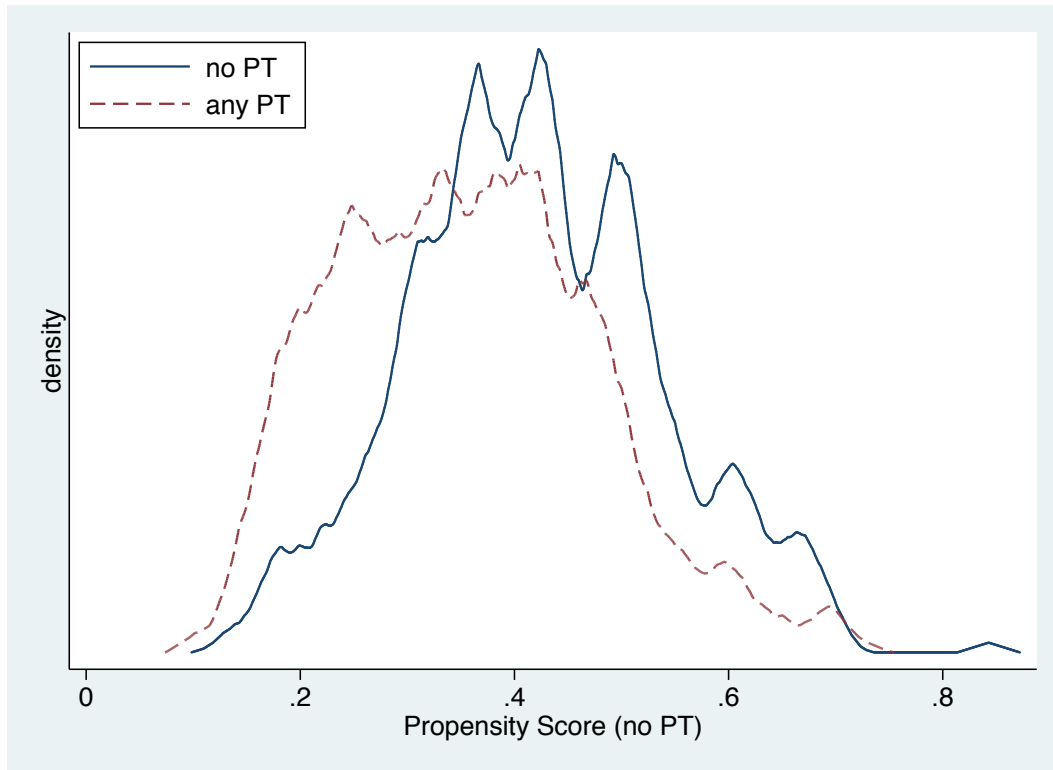
As an additional test of the propensity weighted analysis, the result of propensity weighting was compared against unweighted multiple linear regression for all outcomes; see Supplemental Table 1S below.

Supplemental Table 1S: Mean probability of improvement by PT utilization, standard errors in parentheses. MLR = multiple linear regression. AIPW = augmented inverse probability weighted regression.

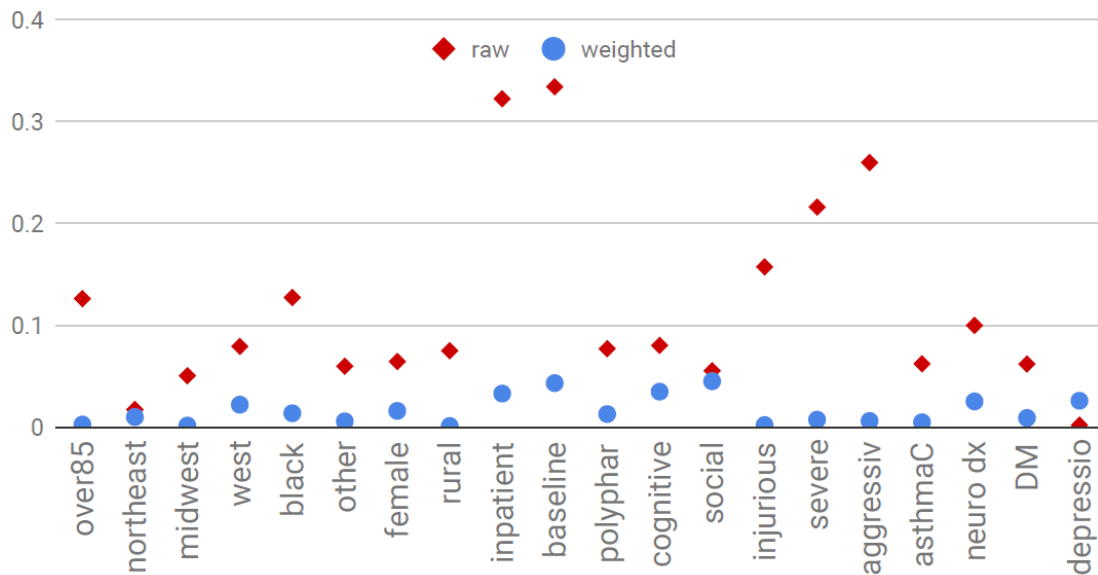
	No PT		Any PT		1-5 visits		6-13 visits		14+ visits	
	MLR	AIPW	MLR	AIPW	MLR	AIPW	MLR	AIPW	MLR	AIPW
Mobility	37.8*** (6.3)	42.2*** (2.2)	53.2*** (2.8)	59.0*** (2.8)	46.7*** (5.3)	54.5** (2.6)	56.8*** (8.8)	64.6*** (2.2)	66.8 (6.7)	78.0* (6.1)
ADL Function	67.4*** (5.8)	60.0*** (2.2)	80.8*** (2.5)	75.2*** (2.7)	67.1*** (3.0)	68.7*** (3.1)	78.7*** (7.6)	80.3*** (1.9)	87.9 (5.7)	88.9 (4.9)

\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001

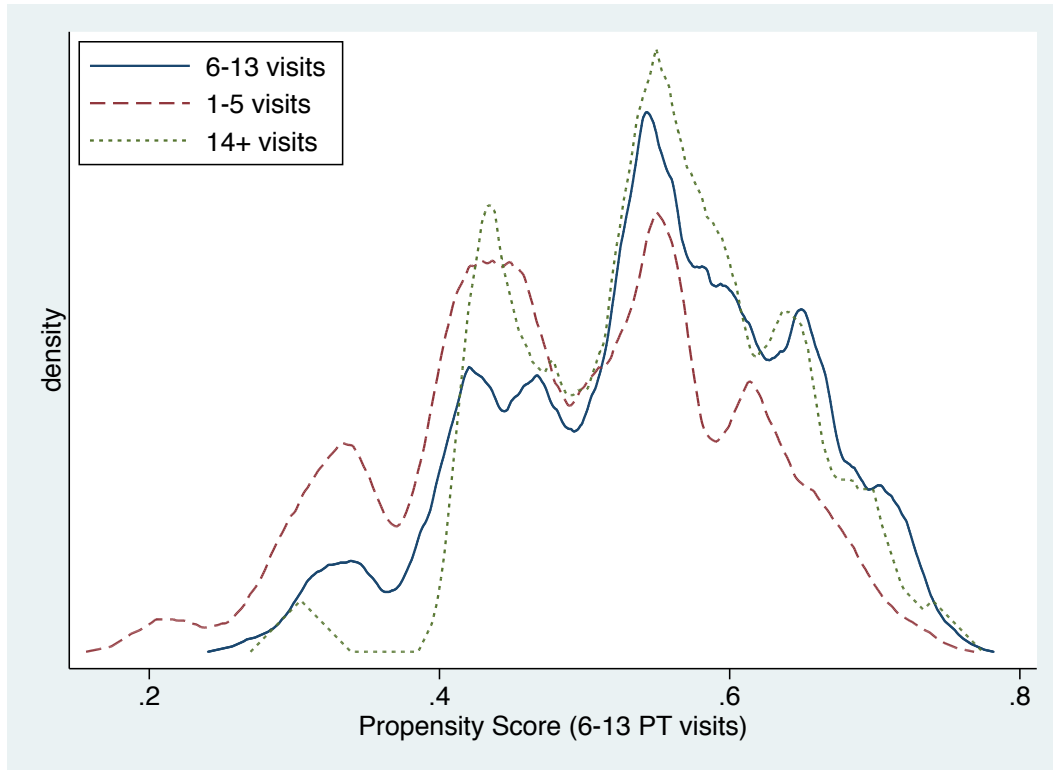
Supplemental Figure 1S. Overlap and Balance Diagnostics, Any PT vs. No PT. Top: Overlap Graph. Bottom: Absolute standardized differences in covariates before and after weighting



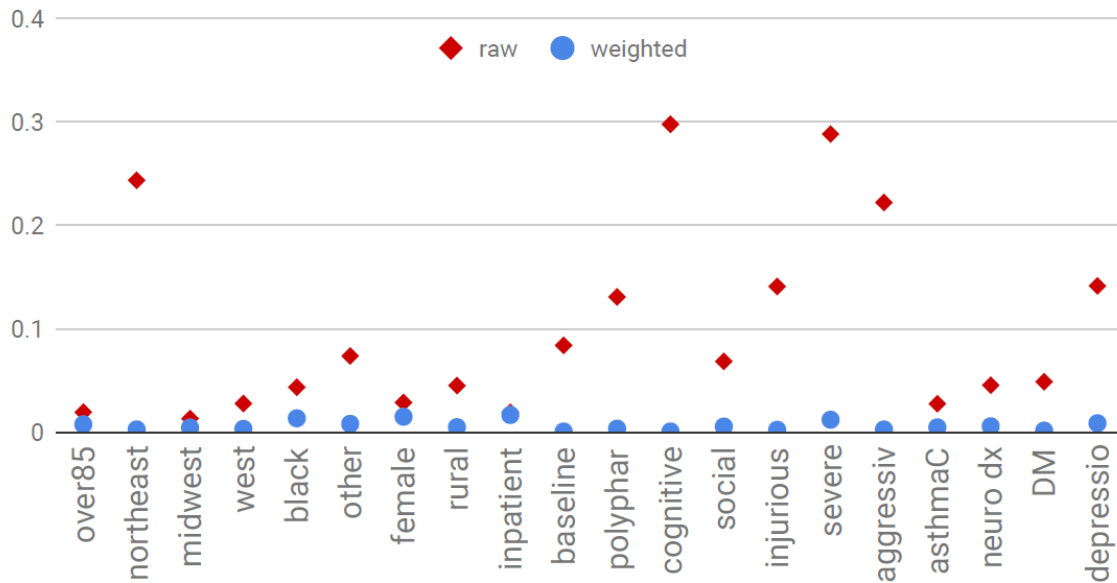
Covariate balance: no PT vs any PT



Supplemental Figure 2S. Overlap and Balance Diagnostics by number of visits. Top: overlap graph. Middle: Absolute standardized differences in covariates before and after weighting: 6-13 vs 1-5 visits. Bottom: Absolute standardized differences in covariates before and after weighting: 6-13 vs 14+ visits.



PT visits: 6-13 vs 1-5



# PT visits: 6-13 vs 14+

