

Supplemental Table: Multilevel Logistic Regression models of Readmission using only the covariates as predictor with Hospital Level random intercept

| <b>Model Info</b>                                  | <b>Model 1</b> | <b>Model 2</b>     | <b>Model 3</b> |                    |          |
|--|----------------|--------------------|----------------|--------------------|----------|
| N  |                | 1,659,576          |                | 1,658,372          |          |
| LL   |                | -761,221.6         |                | -755,666.8         |          |
| df   |                | 20                 |                | 39                 |          |
| AIC  |                | 1,522,483.1        |                | 1,511,411.5        |          |
| BIC  |                | 1,522,729.5        |                | 1,511,892.1        |          |
| <b>Predictors</b>                                  |                | <b>OR (95% CI)</b> | <b>P</b>       | <b>OR (95% CI)</b> | <b>P</b> |
| <b>Year (ref=2010)</b>                             |                |                    |                |                    |          |
| 2011   |                | 1.00 (0.99, 1.02)  | 0.893          | 1.00 (0.99, 1.02)  | 0.933    |
| 2012   |                | 0.98 (0.96, 0.99)  | 0.002          | 0.97 (0.96, 0.99)  | <.001    |
| 2013   |                | 0.95 (0.94, 0.97)  | <.001          | 0.94 (0.93, 0.96)  | <.001    |
| 2014   |                | 0.94 (0.92, 0.95)  | <.001          | 0.95 (0.93, 0.96)  | <.001    |
| 2015   |                | 0.93 (0.91, 0.94)  | <.001          | 0.92 (0.90, 0.93)  | <.001    |
| 2016   |                | 0.93 (0.92, 0.95)  | <.001          | 0.92 (0.90, 0.93)  | <.001    |
| <b>Quarter (ref=1<sup>st</sup>)</b>                |                |                    |                |                    |          |
| 2 <sup>nd</sup> Quarter                            |                | 0.98 (0.97, 0.99)  | <.001          | 0.98 (0.97, 0.99)  | <.001    |
| 3 <sup>rd</sup> Quarter                            |                | 1.03 (1.02, 1.04)  | <.001          | 1.03 (1.02, 1.04)  | <.001    |
| 4 <sup>th</sup> Quarter                            |                | 1.00 (0.99, 1.01)  | 0.847          | 1.01 (0.99, 1.02)  | 0.296    |
| <b>Sex (ref=male)</b>                              |                |                    |                |                    |          |
| Female   |                | 0.91 (0.91, 0.92)  | <.001          | 0.89 (0.89, 0.90)  | <.001    |
| <b>Age (per 10 year)</b>                           |                |                    |                |                    |          |
|  |                | 1.02 (1.02, 1.03)  | <.001          | 0.99 (0.98, 0.99)  | <.001    |
| <b>Income Quartile (ref=1<sup>st</sup>)</b>        |                |                    |                |                    |          |
| 2 <sup>nd</sup> Quartile                           |                | 0.98 (0.97, 0.99)  | <.001          | 0.97 (0.96, 0.98)  | <.001    |
| 3 <sup>rd</sup> Quartile                           |                | 0.98 (0.96, 0.99)  | <.001          | 0.95 (0.94, 0.96)  | <.001    |
| 4 <sup>th</sup> Quartile                           |                | 0.99 (0.98, 1.01)  | 0.28           | 0.94 (0.93, 0.95)  | <.001    |
| Missing  |                | 0.93 (0.90, 0.97)  | <.001          | 0.94 (0.91, 0.97)  | <.001    |
| <b>Payer (ref=Medicare)</b>                        |                |                    |                |                    |          |
| Medicaid   |                | 1.07 (1.06, 1.09)  | <.001          | 1.07 (1.06, 1.09)  | <.001    |
| Private  |                | 0.65 (0.64, 0.66)  | <.001          | 0.68 (0.67, 0.69)  | <.001    |
| Self-Pay   |                | 0.57 (0.55, 0.58)  | <.001          | 0.60 (0.59, 0.62)  | <.001    |
| Other/No Charge                                    |                | 0.75 (0.73, 0.77)  | <.001          | 0.78 (0.76, 0.80)  | <.001    |
| <b>Disposition (ref=Routine to home)</b>           |                |                    |                |                    |          |
| Post-acute care                                    |                |                    |                | 1.32 (1.31, 1.34)  | <.001    |
| Other  |                |                    |                | 1.18 (1.13, 1.24)  | <.001    |
| Home Health  |                |                    |                | 1.37 (1.36, 1.38)  | <.001    |
| <b>Length of Stay (per day)</b>                    |                |                    |                |                    |          |
|  |                |                    |                | 1.02 (1.02, 1.02)  | <.001    |
| <b>Care intensity (ref=No)</b>                     |                |                    |                |                    |          |
| Non-invasive ventilation                           |                |                    |                | 1.17 (1.15, 1.19)  | <.001    |
| Mechanical ventilation                             |                |                    |                | 0.97 (0.95, 0.99)  | <.001    |
| Tracheostomy                                       |                |                    |                | 1.00 (0.95, 1.04)  | 0.867    |
| Cardiac arrest                                     |                |                    |                | 0.84 (0.77, 0.92)  | <.001    |
| CPR  |                |                    |                | 1.03 (0.93, 1.15)  | 0.581    |
| <b>Hospital ownership (ref=government)</b>         |                |                    |                |                    |          |
| Private, non-profit                                |                |                    |                | 1.00 (0.99, 1.01)  | 0.784    |
| Private, for-profit                                |                |                    |                | 1.03 (1.01, 1.04)  | 0.001    |
| <b>Hospital teaching status (ref=Non-teaching)</b> |                |                    |                |                    |          |
| Teaching Hospital                                  |                |                    |                | 1.01 (1.00, 1.02)  | 0.192    |
| <b>Hospital location (ref=Large metro area)</b>    |                |                    |                |                    |          |
| Small metro area                                   |                |                    |                | 0.94 (0.93, 0.94)  | <.001    |
| Micropolitan area                                  |                |                    |                | 0.90 (0.88, 0.91)  | <.001    |

|                                       |                   |       |
|---------------------------------------|-------------------|-------|
| <i>Rural</i>                          | 0.87 (0.85, 0.89) | <.001 |
| <b>Hospital Bed Size (ref=Small)</b>  |                   |       |
| <i>Medium</i>                         | 1.01 (1.00, 1.03) | 0.038 |
| <i>Large</i>                          | 1.02 (1.01, 1.04) | 0.002 |
| <b>Annual Discharge (per 10k)</b>     | 1.01 (1.00, 1.02) | <.001 |
| <b>Proportion of Medicaid per 10%</b> | 1.00 (1.00, 1.00) | 0.861 |