

**Online Appendix**

*Table A1: Details Regarding Weight Construction*

<b>State</b>	<b>Program and Weight Description</b>
Colorado	<p><i>General information:</i> 100 total points available.</p> <p><i>Clinical outcome weight calculation:</i>            -Add-ons distributed in FY 2009 were based on FY 2008 clinical outcomes. 27 points total allocated to clinical measures (9 points for high-risk pressure ulcers; 9 points for physical restraint use; 9 points for pain).            -Thus, 27% weight put on clinical outcomes in FY 2008.            -Add-ons distributed in FY 2010 were based on FY 2009 clinical outcomes. 25 points total allocated to clinical measures (5 points for high-risk pressure ulcers; 5 points for physical restraint use; 5 points for pain; 5 points for urinary tract infections; 5 points for falls).            -Thus, 25% weight put on clinical outcomes in FY 2009.</p> <p><i>Staffing ratio weight calculation:</i>            -No points allocated to staffing ratios.</p> <p><i>Inspection deficiency weight or qualifier calculation:</i>            -No facility with “substandard quality of care deficiencies” on a regular annual, complaint, or any other Colorado Department of Public Health and Environment survey is considered for the bonus.            -Thus, inspection deficiencies are used as a qualifier.</p>
Georgia	<p><i>General information:</i> Maximum of a 3% per diem add-on available.            -Composed of a staffing incentive that is a 1% add-on based on staffing ratios and a separate 2% add-on based on a 10 total point performance score.</p> <p><i>Clinical outcome weight calculation:</i>            -6 of the 10 points that are part of the 2% add-on are allocated to clinical measures (1 point for high-risk long-stay residents who have pressure ulcers; 1 point for long-stay physical restraint use; 1 point for long-stay residents with pain; 1 point for short-stay residents with pain; 1 point for residents who receive flu vaccine; 1 point for low-risk long-stay residents who have pressure ulcers).            -Thus, 60% of the 2% add-on incentive is based on clinical outcomes, which means 40% of the total 3% add-on is based on clinical outcomes.</p> <p><i>Staffing ratio weight calculation:</i>            -1% add-on requires staffing hours are at least 2.5 hours per resident day.            -Thus, 33% of the total 3% add-on is based on staffing ratios.</p>

	<p><i>Inspection deficiency weight or qualifier calculation:</i></p> <ul style="list-style-type: none"> <li>-Facility placed on the Special Focus List produced by CMS cannot earn the add-on until its next standard or compliant survey does not have a deficiency over Level E in scope and severity; and, the facility's second standard or compliant survey after being placed on the list does not have a deficiency over Level E in scope and severity.</li> <li>-Thus, inspection deficiencies are used as a qualifier.</li> </ul>
Iowa	<p><i>General information:</i> 11 total points available.</p> <p><i>Clinical outcome weight calculation:</i></p> <ul style="list-style-type: none"> <li>-No points allocated to clinical outcomes.</li> </ul> <p><i>Staffing ratio weight calculation:</i></p> <ul style="list-style-type: none"> <li>-Facility can earn up to 2 points if their CMI-adjusted nursing hours are at or above the 75<sup>th</sup> percentile (1 point if the hours fall between the 50<sup>th</sup> and 75<sup>th</sup> percentiles).</li> <li>-Thus, the weight put on staffing ratios is 18.2%.</li> </ul> <p><i>Inspection deficiency weight or qualifier calculation:</i></p> <ul style="list-style-type: none"> <li>-Facility with a deficiency-free survey receives 2 points (1 point for regulatory compliance with the survey but not deficiency free).</li> <li>-Thus, the weight put on inspection deficiencies is 18.2%.</li> </ul>
Kansas	<p><i>General information:</i> 9 total points available.</p> <p><i>Clinical outcome weight calculation:</i></p> <ul style="list-style-type: none"> <li>-No points allocated to clinical outcomes.</li> </ul> <p><i>Staffing ratio weight calculation:</i></p> <ul style="list-style-type: none"> <li>-Facility can earn up to 2 points if its CMI-adjusted nurse staffing ratio is greater than or equal to 120% of the state median (1 point if the ratio is between 110 and 120% of the state median).</li> <li>-Thus, the weight put on staffing ratios is 22.2%.</li> </ul> <p><i>Inspection deficiency weight or qualifier calculation:</i></p> <ul style="list-style-type: none"> <li>-No points allocated to inspection deficiencies and deficiencies are not used as a qualifier.</li> </ul>
Minnesota	<p><i>General information:</i> 100 total points available in both FY 2006 and FY 2007.</p> <p><i>Clinical outcome weight calculation:</i></p> <ul style="list-style-type: none"> <li>-In FY 2006, a facility could earn up to 40 points if its Quality Indicator (QI) score was above a certain threshold. (QI score ranged from 0-100 points and was based on 24 different quality indicators).</li> <li>-Thus, the weight put on clinical outcomes was 40% in FY 2006.</li> <li>-In FY 2007, a facility could earn up to 35 points if its QI score was above a certain threshold.</li> </ul>

	<p>-Thus, the weight put on clinical outcomes was 35% in FY 2007.</p> <p><i>Staffing ratio weight calculation:</i>          -No points allocated to staffing ratios in FY 2006.          -In FY 2007, 10 points allocated to CMI-adjusted staffing hours. Thresholds required to receive the points varied with facility type (standard, hospital-attached, and boarding care homes).          -Thus, the weight put on staffing ratios was 10% in FY 2007.</p> <p><i>Inspection deficiency weight or qualifier calculation:</i>          -In both FY 2006 and 2007, up to 10 points could be earned if a facility's deficiencies were all below Level F in scope and severity (5 points if highest deficiencies were at Level F or G).          -Thus, the weight put on inspection deficiencies was 10%.</p>
Ohio	<p><i>General information:</i> 9 total points available.</p> <p><i>Clinical outcome weight calculation:</i>          -No points allocated to clinical outcomes.</p> <p><i>Staffing ratio weight calculation:</i>          -Facility with nursing hours per resident day above the state average receives 1 point.          -Thus, the weight put on staffing ratios is 11.1%.</p> <p><i>Inspection deficiency weight or qualifier calculation:</i>          -1 point can be earned if there are no health deficiencies with scope and severity greater than Level E on the facility's most recent standard survey.          -An additional 1 point can be earned by a facility that is deficiency-free on its most recent standard survey.          -Thus, the weight put on inspection deficiencies is 22.2%</p>
Oklahoma	<p><i>General information:</i> 10 total points available.</p> <p><i>Clinical outcome weight calculation:</i>          -Facility can receive 1 point if it is above the 50<sup>th</sup> percentile on the following measures: falls, catheters, physical restraints, weight loss, and pressure ulcers.          -Each of the clinical measures is percentile-ranked within the state and then combined for a composite percentile score to determine if the facility meets the threshold to receive the 1 point.          -Thus, the weight put on clinical outcomes is 10%.</p> <p><i>Staffing ratio weight calculation:</i>          -Facility can receive 1 point if its nursing staff per resident day is above the 50<sup>th</sup> percentile.          -Thus, the weight put on staffing ratios is 10%.</p>

	<p><i>Inspection deficiency weight or qualifier calculation:</i></p> <ul style="list-style-type: none"> <li>-Facility can earn 1 point for either being deficiency free or for having no deficiencies worse than Level D in scope and severity in care-related areas and no deficiencies worse than Level E in scope and severity in non-care related areas on its state survey.</li> <li>-Thus, the weight put on inspection deficiencies is 10%.</li> </ul>
Utah	<p><i>General information:</i> Not a point-based program.</p> <p><i>Clinical outcome weight calculation:</i></p> <ul style="list-style-type: none"> <li>-Clinical outcomes do not factor into the bonus.</li> </ul> <p><i>Staffing ratio weight calculation:</i></p> <ul style="list-style-type: none"> <li>-Staffing ratios do not factor into the bonus.</li> </ul> <p><i>Inspection deficiency weight or qualifier calculation:</i></p> <ul style="list-style-type: none"> <li>-To qualify, a facility must not have deficiencies that reach an “immediate jeopardy” level at the most recent re-certification survey.</li> <li>-Thus, inspection deficiencies are used as a qualifier.</li> </ul>

Table A2: Results from Regressions Estimating the Effect of P4P on Clinical Quality Outcomes with Comprehensive Set of P4P Variables

Panel A: Coefficient Estimates						
	Physically Restrained	Pressure Sores	Pain	Weight Loss	Catheter Inserted	Falls
P4P	0.0276*** (0.00305)	-0.000784 (0.00347)	-0.0411*** (0.00546)	-0.00127 (0.00263)	0.00290 (0.00233)	0.00424** (0.00216)
P4PClinical	-0.0349*** (0.00590)	0.00702 (0.00612)	0.0400*** (0.00951)	0.0168*** (0.00423)	0.000266 (0.00383)	0.0101*** (0.00347)
P4PClinicalWeight	0.0529*** (0.0159)	-0.0171 (0.0171)	-0.0853*** (0.0249)	-0.0458*** (0.0119)	0.0112 (0.0108)	-0.0358*** (0.0100)
P4PDeficWeight	-0.0337** (0.0151)	0.00354 (0.0183)	0.186*** (0.0268)	0.00273 (0.0130)	-0.0130 (0.0129)	-0.0127 (0.0117)
P4PDeficQualifier	-0.00562* (0.00324)	-0.00686* (0.00354)	-0.0146** (0.00583)	-0.00711** (0.00282)	-0.00716*** (0.00234)	-0.00229 (0.00225)
P4PStaffing	0.00191 (0.00388)	-0.00468 (0.00508)	-0.0167*** (0.00608)	0.00237 (0.00362)	-0.00191 (0.00358)	-0.00195 (0.00389)
P4PStaffingWeight	-0.100*** (0.0212)	0.0202 (0.0245)	0.167*** (0.0348)	0.00292 (0.0177)	-0.00242 (0.0167)	0.0201 (0.0168)
Constant	0.0215** (0.0102)	0.220*** (0.0176)	0.383*** (0.0184)	0.0166 (0.0133)	0.109*** (0.0160)	0.0488*** (0.00757)
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes
Facility Covariates	Yes	Yes	Yes	Yes	Yes	Yes

<i>N</i>	518243	514433	518222	517984	515469	514795
R2	0.147	0.0364	0.0604	0.0274	0.0515	0.00427
Panel B: Range of Effects						
Effect given smallest clinical weight (0.10)	-0.02961*** (0.00447)	0.00531 (0.00460)	0.03151*** (0.00733)	0.01220*** (0.00321)	0.00139 (0.00288)	0.00648** (0.00260)
Effect given largest clinical weight (0.40)	-0.01373*** (0.00238)	0.00017 (0.00273)	0.00591 (0.00427)	-0.00153 (0.00216)	0.00475*** (0.00177)	-0.00427** (0.00173)
Effect given smallest deficiency weight (0.10)	-0.00337** (0.00151)	0.00035 (0.00183)	0.01862*** (0.00268)	0.00027 (0.00130)	-0.00130 (0.00129)	-0.00127 (0.00116)
Effect given largest deficiency weight (0.222)	-0.00748** (0.00335)	0.00078 (0.00405)	0.04133*** (0.00594)	0.00060 (0.00288)	-0.00288 (0.00286)	-0.00281 (0.00259)
Effect given smallest staffing weight (0.10)	-0.00810*** (0.00226)	-0.00266 (0.00306)	-0.00002 (0.00341)	0.00266 (0.00223)	-0.00215 (0.00215)	0.00006 (0.00243)
Effect given largest staffing weight (0.333)	-0.03141*** (0.00409)	0.00206 (0.00422)	0.03879*** (0.00684)	0.00334 (0.00319)	-0.00271 (0.00267)	0.00474* (0.00254)

*Notes:* Standard errors are clustered at the facility level and shown in parentheses. In Panel B, the effects are relative to having a P4P program that does not reward that particular metric.

\* p<.1, \*\* p<.05, \*\*\* p<.01

Table A3: Results from Regressions Estimating the Effect of P4P on the Probability of Having Inspection Deficiencies with Comprehensive Set of P4P Variables

Panel A: Coefficient Estimates		
	Any Deficiencies	Any Immediate Jeopardy Deficiencies
P4P	0.0659*** (0.0131)	-0.00806 (0.00867)
P4PDeficWeight	-0.228*** (0.0732)	-0.0137 (0.0459)
P4PDeficQualifier	-0.0501*** (0.0130)	-0.00356 (0.00883)
P4PClinical	-0.0305* (0.0184)	0.0443** (0.0216)
P4PClinicalWeight	0.0532 (0.0536)	-0.128** (0.0596)
P4PStaffing	0.0156 (0.0196)	0.00206 (0.0130)
P4PStaffingWeight	-0.248*** (0.0935)	0.0263 (0.0621)
Constant	0.763*** (0.0270)	0.0655*** (0.0161)
Time FEs	Yes	Yes
Facility Covariates	Yes	Yes
<i>N</i>	518249	518237
<i>R</i> <sup>2</sup>	0.00557	0.00122
Panel B: Range of Effects		
Effect given smallest deficiency weight (0.10)	-0.02277*** (0.00732)	-0.00137 (0.00459)
Effect given largest deficiency weight (0.222)	-0.05055*** (0.01625)	-0.00304 (0.01018)
Effect given smallest clinical weight (0.10)	-0.02519* (0.01397)	0.03155** (0.01603)
Effect given largest clinical weight (0.40)	-0.00923 (0.01034)	-0.00676 (0.00729)

Effect given smallest staffing weight (0.10)	-0.00915 (0.01164)	0.00468 (0.00782)
Effect given largest staffing weight (0.333)	-0.06690*** (0.01536)	0.01080 (0.01037)

*Notes:* Standard errors are clustered at the facility level and shown in parentheses.

In Panel B, the effects are relative to having a P4P program that does not reward that particular metric.

\* p<.1, \*\* p<.05, \*\*\* p<.01



Table A4: Results from Regressions Estimating the Effect of P4P on Staffing Ratios with Comprehensive Set of P4P Variables

Panel A: Coefficient Estimates		
	Total Staffing HPRD	RN+LPN HPRD
P4P	0.0861** (0.0406)	-0.0240 (0.0182)
P4PStaffing	-0.157*** (0.0496)	-0.0500** (0.0244)
P4PStaffingWeight	0.505* (0.268)	0.253** (0.127)
P4PClinical	0.133* (0.0701)	0.0821** (0.0402)
P4PClinicalWeight	-0.423** (0.187)	-0.194* (0.108)
P4PDeficWeight	-0.304 (0.198)	0.0925 (0.0887)
P4PDeficQualifier	-0.0992** (0.0435)	0.0124 (0.0198)
Constant	3.087*** (0.144)	1.324*** (0.0923)
Time FEs	Yes	Yes
Facility Covariates	Yes	Yes
<i>N</i>	518249	518249
<i>R</i> <sup>2</sup>	0.0250	0.0227
Panel B: Range of Effects		
Effect given smallest staffing weight (0.10)	-0.10697*** (0.02910)	-0.02477* (0.01492)
Effect given largest staffing weight (0.333)	0.01058 (0.05157)	0.03410 (0.02453)
Effect given smallest clinical weight (0.10)	0.09058* (0.05376)	0.06272** (0.03012)
Effect given largest clinical weight (0.40)	-0.03645 (0.03212)	0.00446 (0.01375)
Effect given smallest	-0.03043	0.00925

deficiency weight (0.10)	(0.01983)	(0.00887)
Effect given largest	-0.06755	0.02054
deficiency weight (0.222)	(0.04402)	(0.01970)

*Notes:* Standard errors are clustered at the facility level and shown in parentheses.

In Panel B, the effects are relative to having a P4P program that does not reward that particular metric.

\* p<.1, \*\* p<.05, \*\*\* p<.01