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## Does Mandating Nursing Home Participation In Quality Reporting Make A Difference? Evidence from Massachusetts

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### Abstract

**Background**—Quality report cards have been shown to be effective in influencing patients' referrals and promoting quality improvement in some instances and not others. In this study we investigate one of the mechanisms that may detract from their effectiveness: voluntary versus mandatory participation of nursing homes in public quality reporting.

**Objectives**—To answer two questions: 1) Were the nursing homes choosing not to participate low quality performers relative to those who chose to participate? 2) Once participation became mandatory, did those that did not voluntarily participate initially, improve more than those that participated voluntarily?

**Research Design**—Massachusetts published the Massachusetts Satisfaction Survey report card for nursing homes for the years 2005, 2007, and 2009. Nursing homes' participation was voluntary in 2005 and mandatory in 2007 and 2009. We performed a retrospective statistical analysis of the relationship between nursing homes' decision to participate in quality reporting and 12 quality outcomes: deficiency citations, staffing, and 8 survey domains.

**Subjects**—424 Massachusetts nursing homes.

**Results**—67% of nursing homes participated in reporting voluntarily. Volunteer nursing homes had better quality for all measures (significant at the 0.05 level or trending towards significance at the 0.10 level for all but 2). Once reporting became mandatory, non-volunteers improved more than volunteers in all but 2 staffing measures (trending towards significance at the 0.10 level in 5).

**Conclusions**—Report cards are more effective if nursing homes' participation is mandated. Non-mandatory reporting systems, as those implemented by some states and professional associations, lead to missed opportunities for quality improvements.

### Keywords

Quality report cards; quality improvement; policy; nursing homes

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### Introduction

Quality report cards have become a staple of the American health care system. These publicly published reports include information about the quality of care of individual providers, allowing patients to compare providers when they need to make a referral choice. There is evidence that both patient referral and provider behavior are influenced by report cards.<sup>1</sup> Report cards often include quality measures (QMs) based on outcomes, process, and sometimes structural dimensions of quality.<sup>2</sup> Current estimates indicate that there are well over 150 quality report cards.<sup>3-5</sup> Report cards are published by the Federal Government (The Centers for Medicare & Medicaid Services – CMS), by states, employer founded or sponsored organizations (e.g. the National Committee for Quality Assurance – NCQA) and professional organizations (e.g. the Society of Thoracic Surgeons - STS). While these reports typically overlap in terms of the entities included (e.g. hospitals are included in the CMS and the STS reports) they often do not include the same information, but rather report on different types of care offered by the same provider (e.g. mortality for different conditions) or different outcomes for the same care (e.g. clinical outcomes vs. patient surveys). Report cards have been developed for most settings. Nursing Home Compare<sup>6</sup> was the first report card published by CMS in late 2002, followed by Hospital and Home Health Compare.<sup>7</sup> The Affordable Care Act (ACA)<sup>8</sup> mandates report cards for additional providers.<sup>9,10,11</sup>

These efforts are motivated by both economic theory and an ever increasing evidence base,<sup>1,12</sup> suggesting that report cards, when properly designed, can influence patient referrals, managed care contracting decisions, and ultimately, the quality of care offered to patients.

Over the last three decades substantial efforts have been made to improve quality report cards and their effectiveness. Studies focused in particular on issues related to measurement of quality<sup>13-20</sup> and salient presentation of the information to consumers.<sup>21-26</sup> Despite these efforts, reports cards are not always effective,<sup>27-30</sup> suggesting there is room for further improvement.

One of the areas that has not been investigated is the impact of providers' self-selection. While some report cards, such as the CMS's Nursing Home Compare, mandate participation by all providers, many do not. They either leave it completely up to the provider or offer financial incentives to entice providers to participate. An example of the former is the Leapfrog Group Hospital report card<sup>31</sup> and the Society of Thoracic Surgeons (STS) web-based report cards.<sup>32</sup> Participation in both is voluntary. As a result, in New York State, the 2011-2012 STS report includes only 15 medical groups out of the 40 hospitals and the 200

physicians offering cardiac surgery in the State.<sup>33</sup> An example of the latter is the CMS Physician Quality Reporting System that in 2010 paid physicians an incentive equal to 2.0% of their estimated total Medicare Part B Physician Fee Schedule (PFS) allowed charges for covered professional services if they submitted QMs' data.<sup>34</sup> In 2010 only 21% of physicians submitted data to the program.<sup>35</sup>

Does it matter if participation in quality reporting is mandatory or not? It matters if it limits competition on quality and the incentives for providers to improve quality. To examine this issue empirically we took advantage of a unique natural experiment. Starting in 2005, the Massachusetts Department of Public Health administered satisfaction surveys to families of nursing home residents and published the results in the "Nursing Home Satisfaction Survey".<sup>36</sup> Nursing home participation in the first survey, in 2005, was voluntary. The following two surveys, in 2007 and 2009, were mandatory. This allowed us to examine two questions: 1) Were the nursing homes choosing not to participate in 2005 low quality performers relative to those who chose to participate? 2) Once participation became mandatory, did those nursing homes who did not participate voluntarily improve more than those who participated voluntarily?

## Methods

### The Massachusetts Nursing Home Satisfaction Survey

The Massachusetts survey includes six domains: administrative and patient care staff, physical environment, activities available, personal care services, food and meals, and residents' personal rights. It also includes global questions about overall satisfaction and quality. The methodology has remained the same over time. For more details see Li et al.<sup>37</sup> and Mass.gov.<sup>36</sup>

Initially, nursing homes' participation in the survey was voluntary. In December 2006, the enabling legislation was amended to mandate participation. Thus, the 2007 report card, unlike the 2005 report, included information about all nursing homes. However, because it was based on data collected shortly after the legislative change making participation mandatory (February 2007), it reflects quality of care during 2006 when nursing homes viewed participation as optional. This timeline offers a unique opportunity to observe the same QMs for nursing homes that did and did not choose to participate in the report card during its early period.

### Sample

In 2005, 297 of the 449 eligible nursing homes (66.1%) chose to participate in the survey and 152 (33.9%) did not. We labeled those choosing to participate in 2005 as "volunteers" and those that did not as "non-volunteers." These labels were retained for 2007 and 2009. In 2007, 439 nursing homes were included in the report and in 2009, 430. The decline in number of nursing homes is due to both closures and nursing homes changing status to short-stay care only, which excluded them from the Massachusetts report.

We included in the study only nursing homes that were observed for all 3 years. This resulted in a cohort of 424 nursing homes, with 285 (67.2%) volunteers and 139 (32.8%) non-volunteer.

### Data and variables

We obtained three types of quality measures: nursing home scores reported on the satisfaction surveys, health deficiencies, and staffing levels. The survey scores are direct measures of quality based on perceptions of family members of the residents. These were developed and validated by the Massachusetts Department of Public Health.<sup>38</sup> Health deficiencies are issued by state surveyors when they inspect nursing homes' compliance with federal or state standards.<sup>39</sup> For example, facilities may be cited if patients are found to have untreated pressure sores. While deficiencies reflect the quality of care provided by nursing homes, they also depend on enforcement policies. These policies are known to be highly variable across states and licensing region within the state. However, for a study within one state that has only one licensing region, as is the case in Massachusetts, we can interpret the number of deficiencies that a facility receives as an indicator of quality. Staffing levels are structural measures of quality, which have been **shown in many previous studies to be positively related to quality** (see for example Bostick et al.<sup>40</sup> or Collier et al.<sup>41</sup>).

**Survey Measures**—We obtained for each nursing home the scores on the global questions and the composite scores for the six domains of family satisfaction. Responses to survey questions are on a five-point Likert scale ranging from very dissatisfied (1) to very satisfied (5).<sup>36</sup> The state calculates the composites as the averages of the scores across all questions within each domain.

The survey included one more question of a different type: “Would you recommend this nursing home to a friend or family member?”. Unlike all other questions which were on a 5 point Likert scale, this was a dichotomous question and was reported on the web as percent of positive responses. Because it was measured on a different scale we do not include it in the reported findings we present. We note, however, that similar to all other measures it also showed better satisfaction among families of patients in volunteer homes but unlike all other measures, improvement was weaker among the non-volunteers.

**Staffing and health deficiencies data**—We used the Online Survey, Certification, and Reporting (OSCAR) files, maintained by CMS, to obtain staffing and health deficiencies' data.<sup>39</sup> We obtained staffing levels of registered nurses (RNs), licensed practical nurses (LPNs), and certified nursing assistants (CNAs). Staffing data are self-reported by the facility and reflect staffing levels two weeks prior to the state inspection. For ease of interpretation, the number of deficiencies was multiplied by -1, because for all other variables larger values indicate better quality and the opposite is true for deficiencies.

### Missing data and imputation

Thirty nursing homes were excluded from the Massachusetts report card because of low survey response rates. They were excluded from the study. Six nursing homes were excluded because their report card data could not be matched to the OSCAR data. Among

the remaining 388 nursing homes, 28 did not have data on staffing or deficiencies in OSCAR. For these facilities we imputed missing values on staffing levels using the facility's reported values in the most recent survey, either prior to or following the date for the missing data. When a most recent value was not available until one year prior to the survey, we took the average between the latest prior value and the next available value, to approximate the **facility-reported** staffing levels in that interval. For deficiencies, because some nursing homes did not receive an inspection in the year in which we extracted the data, we imputed the missing value with the records that was closest to the satisfaction survey date. Employing this algorithm, we were able to impute data for 27 of the 28 nursing homes with missing values.

To assess the effect of imputation, we performed sensitivity analysis using complete case analysis, deleting observations with missing data. The results did not change in any significant way and are not reported here.

The final analysis included 387 nursing homes (91%). Of those, 265 (68.5%) volunteered for the 2005 survey (volunteers) and 122 (31.5%) did not (non-volunteers).

## Analyses

We performed two types of analyses designed to answer the two questions posited in the introduction. To determine if the non-volunteers had lower quality we compared all the quality measures (QMs) for the volunteers and non-volunteers in 2007 and 2009. We estimated separate linear regression models in which the nursing home was the unit of observation, the dependent variable was the QM, and the independent variable was a dichotomous variable with values 1 if the facility volunteered for the survey and zero if it did not.

To determine if the non-volunteers improved more once participation became mandatory, we compared the change in the QMs observed for each facility by subtracting the 2007 QMs from the 2009 QMs (i.e. positive change indicates an improvement). We estimated linear regression models where the unit of observation was again each facility, but the dependent variable was the change in quality and the independent variable was again the dichotomous variable indicating whether the facility was a volunteer or not. Inference was based on one tailed tests because the hypotheses we tested were unidirectional. All analyses were performed in STATA/SE/12.1 and the regression analyses were performed using the mvreg procedure. A sensitivity analysis allowing for inference based on Huber-White standard errors led to same findings.

## Results

Table 1 provides descriptive statistics for the nursing homes included in the analysis and compares them to nursing homes nationally. Most QMs improved over time, although the improvement was small. RN hours/resident-day were higher in Massachusetts in both years while CNA hours/resident-day were lower than national estimates in 2009. Massachusetts nursing homes also had significantly fewer deficiencies.

Table 2 presents the improvement between 2007 and 2009, separately for the volunteers and the non-volunteers. Positive values indicate an improvement in 2009. The volunteers had significant improvement ( $p < 0.05$ ) in 7 measures and the non-volunteers in 8. All other measures, except one, have also exhibited improvement although they did not reach significance.

Table 3 compares the volunteer and non-volunteer nursing homes in 2007 and 2009. The volunteers had significantly better scores on most of the survey based QMs and significantly more CNA hours/resident-day in both years. They had significantly fewer deficiencies in 2007.

Figures 1 and 2 present the results of the regression models. Figure 1 shows the results for the **facility-reported** staffing and deficiencies. Figure 2 presents the results for the report card satisfaction scores. For each QM and each year we show the difference between the volunteer and the non-volunteer nursing homes (e.g.  $\Delta_{2007} = QM_{2007}^{Vol} - QM_{2007}^{Non-Vol}$ ). When the bar is positive it indicates that the quality of volunteers for that QM in that year is higher than that of non-volunteers by an amount equal to the height of the bar.

### Were the non-volunteer nursing homes low quality performers compared to the volunteer nursing homes?

The answer to this question is yes for all QMs for both years, as indicated by the positive bars in Figures 1 and 2.

Figure 1 shows that **facility-reported** staffing levels were higher at the volunteer facilities in both years, but the differences between **facility-reported** staffing in volunteer and non-volunteer facilities was significant ( $p < 0.05$ ) only for CNAs (significance denoted in the graph by the # sign). Quality was also significantly better among volunteers when measured by deficiencies, but only in 2007.

Figure 2 shows the results for the satisfaction QMs. All the bars are positive, indicating that volunteers had better scores for all QMs in both years. In 2007, the first year for which we have satisfaction scores for both groups, all the differences between volunteers and non-volunteers for all QMs were significant at the 0.05 level (see # sign in figure 2). In 2009, most differences continued to be positive and significant at the 0.05 level, indicating that volunteers continued to have better scores, but for two of the measures – **facility-reported** staffing and food – the differences only trended towards significance ( $p < 0.10$ ).

### Once participation became mandatory, did the non-volunteer nursing homes improve more than the volunteer nursing homes?

The answer to this question is also yes for most but not all QMs. Figure 1 shows that the differences in 2009 in **facility-reported** staffing levels between volunteers and non-volunteers (the checkered bars) were not significantly different from those in 2007 (the solid bars). This indicates that the change in **facility-reported** staffing levels over the two years did not differ significantly between volunteers and non-volunteers. However, the results were different for deficiencies. While both groups improved, the non-volunteers improved



by more than 200% compared with the volunteers, substantially closing the gap in deficiencies and trending towards significance ( $p < 0.10$ ) (see \* sign in figure 1).

Figure 2 shows that for all satisfaction scores the non-volunteers improved more than the volunteers – the difference in the scores in 2009 between volunteers and non-volunteers (the checkered bars) is smaller compared to the difference in 2007 (the solid bars). The magnitude of improvement among non-volunteers exceeded that of volunteers by anywhere from 11% to 89%, with 5 of the domains reaching over 40% of incremental improvement and four showing a trend towards significance ( $p < 0.10$ ) (see \* sign in figure 2).

## Discussion

This study examined empirically an issue that has not been studied before: the impact of voluntary versus mandatory participation of providers in quality reporting. It took advantage of a unique natural experiment created by the schedule of publication of the Massachusetts “Nursing Home Satisfaction Survey” and found that about a third of nursing homes, when given the choice, preferred not to participate. It also found that these initial non-participating nursing homes had on average lower quality than those who chose to participate, and that once participation became mandatory, they exhibited a trend towards faster improvement than their volunteer counterparts.

These findings should be considered in light of several study limitations. First, some of our findings are not very strong statistically. Not all the relationships we found are significant at the 0.05 level; some are only trending towards significance at the 0.10. Furthermore, the magnitude of some changes we found are relatively small compared to the scale of the QMs themselves. This may be due to a ceiling effect. On the other hand, our findings are consistent: all QMs exhibited the same behavior with changes in the same direction, lending more plausibility to the evidence. Furthermore, the relative improvement of the non-volunteers in several of the survey domains is quite substantial.

Second, as in any natural experiment, using a pre and post design, in which an intervention shows improved performance in low-performing outliers, one might be concerned that the observed improvement is due to regression-to-the-mean rather than the intervention.<sup>42</sup> This, however, is not a likely explanation here. We have shown that the volunteer and non-volunteer nursing home exhibited different quality in the pre-intervention (2007) period. Thus, even if there was regression-to-the-mean *within* each group in the post-intervention period (2009), under the null (of no impact by the intervention) we would expect that the “difference” in quality between these two cohorts would remain the same, because each cohort should be regressing to its own quality mean. There should not be regression-to-the-mean across the two nursing home cohorts. Thus, we do not believe that regression-to-the-mean can account for our findings.

Another potential limitation is related to the **facility-reported** staffing data. Staffing levels are documented at the time of the state inspection survey. Nursing homes typically know in advance when it will occur and some facilities tend to “up-staff” in preparation, resulting in an upward bias.<sup>43</sup> This may have affected our cross-sectional analysis – the comparison of



levels of quality between volunteers and non-volunteers. However, because the incentive to “up-staff” did not change over time, it is much less likely to have influenced the analysis comparing the improvements made between 2007 and 2009.

Similarly, information about the quality of the Massachusetts Survey composite quality scores is not readily available. The 2005 Massachusetts Report states that “Researchers developed and pilot tested survey questions in late 2003...based on what consumers said was important to them” and that they (Massachusetts) “fully tested and validated the survey culminating in 2005 when the survey was actually administrated.”<sup>38</sup> It does not provide, however, any psychometric properties for the survey.

Finally, the evidence we offer is drawn from one particular care setting in one particular state, and may not generalize to all providers or to other parts of the country. In particular, Massachusetts, as noted in the results section, seems to have better quality than the national average. It has fewer average deficiencies and **facility-reported** staffing levels are slanted towards RNs rather than CNAs. These statistics are, however, unadjusted for differences in state enforcement policies or patient severity, which may affect the interpretation of deficiencies and staffing levels as quality measures.

What are the implications of our findings? Report cards are intended to inform patients' choice of providers, encourage competition on quality, and incentivize providers to improve quality. When participation in quality reporting is voluntary and a large fraction of providers choose not to participate (over 30% in this study) all of these objectives are frustrated.

Prior studies have shown that patients and families turn to report cards to guide their choice of providers.<sup>1,44-46</sup> Report cards are particularly important for those seeking nursing home care.<sup>47,48</sup> These patients are often very vulnerable, of advanced age, have multiple comorbidities and cognitive impairments. Those with limited family support may find it very difficult to “shop” for quality providers on their own. Furthermore, those entering nursing homes for long-term, rather than post-acute care, are facing not only a choice of a medical care provider, but also a choice of a place to live.<sup>49</sup> Thus, providing nursing home residents with accurate and straightforward quality information, about both the clinical quality and the quality-of-life in the facility, is critically important.<sup>50</sup>

Studies have also shown that providers,<sup>12</sup> nursing homes in particular,<sup>29,51,52</sup> improve in response to publicly published performance measures. Furthermore, improvement is stronger in more competitive markets.<sup>53,54</sup> Allowing providers to stay out of public quality reporting is limiting competition on quality. The 30% of providers who stayed out of the quality competition in Massachusetts could ignore the incentives to improve, and the other 70% of providers who chose to participate in reporting faced less competition than they would otherwise, and hence their incentives were muted.

In summary, this study presents for the first time empirical evidence that: 1) in a voluntary quality public reporting system, the low quality providers choose to stay out of the report card, and in the case of Massachusetts, this accounted for a third of the nursing homes; and 2) mandating participation in public reporting is likely to lead to improved quality for all. Those publishing voluntary report cards should consider effective mechanisms to encourage

all providers to participate, short of mandatory participation, if mandating participation is not feasible.

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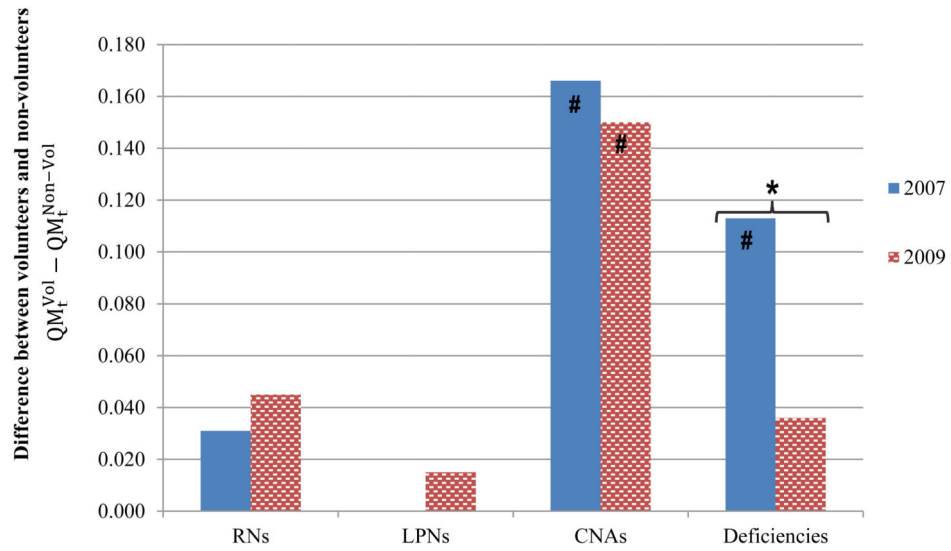
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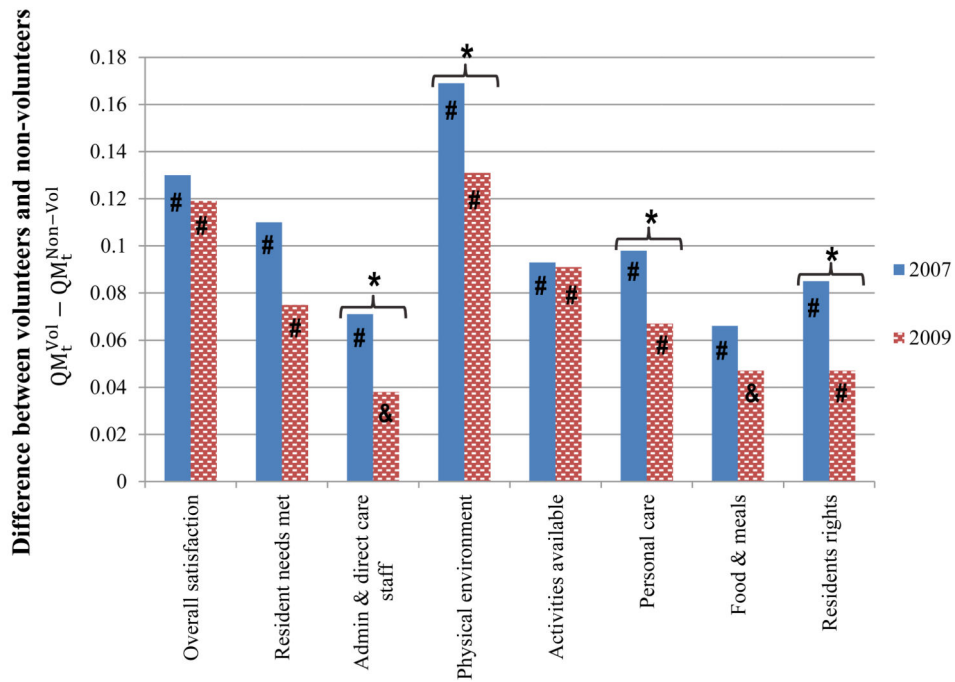


**Figure 1.**

Differences in facility-reported staffing level and deficiencies between volunteer and non-volunteer nursing homes: Positive values indicate better quality for volunteer nursing homes. Note: Each bar shows the difference between the QM for the volunteers and the QM for the non-volunteers, for each year ( $\Delta_t = QM_t^{Vol} - QM_t^{Non-Vol}$ ). A decrease in the height of the bar in 2009, 2009, compared with 2007, 2007, indicates that the non-volunteers have improved more than the volunteers by 2009.

# The difference in the QM between the volunteers and the non-volunteers,  $\Delta_t$ , was significant at the 0.05 level.

\* The gap between volunteers and non-volunteers, 2009–2007, decreased from 2007 to 2009, trending towards significance ( $p < 0.10$ ).



**Figure 2.**

Differences in satisfaction measures between volunteer and non-volunteer nursing homes: Positive values indicate better quality for volunteer nursing homes

Note: Each bar shows the difference between the QM for the volunteers and the QM for the non-volunteers, for each year. ( $\Delta_t = QM_t^{Vol} - QM_t^{Non-Vol}$ ) A decrease in the height of the bar in 2009, 2009, compared with 2007, 2007, indicates that the non-volunteers have improved more than the volunteers by 2009.

# The difference in the QM between the volunteers and the non-volunteers,  $\Delta_t$ , was significant at the 0.05 level.

& The difference in the QM between the volunteers and the non-volunteers,  $\Delta_t$ , trended towards significance ( $p < 0.10$ ).

\* The gap between volunteers and non-volunteers,  $\Delta_{2009} - \Delta_{2007}$  decreased from 2007 to 2009, trending towards significance ( $p < 0.10$ ).

**Table 1**  
**Nursing Home Characteristics (standard deviations in parentheses)**

Number	2007		2009	
	MA (N=387)	National (N=14,918)	MA (N=387)	National (N=15,204)
<b>Report Card Scores</b>				
Overall satisfaction	4.21 (0.32)	NA	4.24 (0.29) *	NA
Meets residents needs	4.08 (0.31)	NA	4.11 (0.29) *	NA
Administrative and personal care staff	4.18 (0.24)	NA	4.21 (0.22) *	NA
Physical environment	4.09 (0.29)	NA	4.12 (0.27) **	NA
Activities	3.84 (0.29)	NA	3.84 (0.28)	NA
Personal care services	4.08 (0.27)	NA	4.12 (0.26) **	NA
Food & meals	3.94 (0.28)	NA	3.97 (0.27) **	NA
Residents' personal rights	4.10 (0.24)	NA	4.12 (0.23) *	NA
<b>Staffing Levels</b>				
RNs hours per resident day	0.70 (0.27) ##	0.64 (0.60)	0.73 (0.25) *##	0.67 (0.58)
LPNs hours per resident day	0.77 (0.23)	0.79 (0.42)	0.85 (0.25) **	0.84 (0.41)
CNAs hours per resident day	2.32 (0.41)	2.33 (0.59)	2.35 (0.42) ##	2.42 (0.63)
<b>Health Deficiencies</b>				
Number of deficiencies in most recent survey	5.04 (4.73) ##	6.86 (5.88)	4.23 (4.17) *##	6.69 (5.49)

\* denotes the significance of the difference between the 2007 Massachusetts and 2009 Massachusetts values \* p<0.05;

\*\* p<0.01.

# denotes the significance of the difference between the Massachusetts and national values within the same year: # p<0.05;

## p<0.01.



**Table 2**  
**Improvement in Quality Between 2007 and 2009 by Volunteer Status: Values Shown are 2009 Minus 2007. (Standard errors in parenthesis)**

	Volunteers (N=265)	Non-Volunteers (N=122)
<b>Report Card Scores</b>		
Overall satisfaction	0.027 (0.014) **	0.038 (0.026) *
Meets residents needs	0.016 (0.013)	0.047 (0.024) **
Administrative and personal care staff	0.012 (0.011)	0.045 (0.019) ***
Physical environment	0.021 (0.011) **	0.059 (0.019) ***
Activities	-0.004 (0.013)	-0.002 (0.024)
Personal care services	0.022 (0.012) **	0.053 (0.020) ***
Food & meals	0.027 (0.013) **	0.046 (0.022) **
Residents' personal rights	0.014 (0.011) *	0.052 (0.021) ***
<b>Staffing Levels</b>		
RNs hours per resident day	0.033 (0.013) ***	0.019 (0.022)
LPNs hours per resident day	0.082 (0.015) ***	0.066 (0.019) ***
CNAs hours per resident day	0.024 (0.022)	0.041 (0.044)
<b>Health Deficiencies</b>		
Number of deficiencies in most recent survey	0.566 (0.332) **	1.336 (0.534) ***

Significance of the test of the unidirectional hypothesis that quality in 2009 was better than in 2007:

\* p 0.1;

\*\* p 0.05;

\*\*\* p 0.01.

**Table 3**  
**Comparison of Volunteer versus Non-Volunteer Nursing Homes (standard deviations in parentheses)**

Number	2007		2009	
	Volunteers (N=265)	Non-Volunteers (N=122)	Volunteers (N=265)	Non-Volunteers (N=122)
<b>Report Card Scores</b>				
Overall satisfaction	4.25 (0.30) ***	4.12 (0.35)	4.28 (0.28) ***	4.16 (0.30)
Meets residents needs	4.11 (0.30) ***	4.01 (0.33)	4.13 (0.28) **	4.06 (0.30)
Administrative and personal care staff	4.21 (0.23) ***	4.14 (0.26)	4.22 (0.22)	4.18 (0.23)
Physical environment	4.14 (0.27) ***	3.97 (0.30)	4.16 (0.26) ***	4.03 (0.28)
Activities	3.87 (0.28) ***	3.78 (0.30)	3.86 (0.26) ***	3.77 (0.30)
Personal care services	4.11 (0.26) ***	4.02 (0.27)	4.14 (0.26) **	4.07 (0.26)
Food & meals	3.96 (0.27) **	3.89 (0.30)	3.98 (0.27)	3.94 (0.27)
Residents' personal rights	4.12 (0.23) ***	4.04 (0.26)	4.14 (0.23) *	4.09 (0.24)
<b>Staffing Levels</b>				
RNs hours per resident day	0.71 (0.23)	0.68 (0.35)	0.74 (0.24)	0.70 (0.28)
LPNs hours per resident day	0.77 (0.23)	0.77 (0.24)	0.85 (0.25)	0.83 (0.25)
CNAs hours per resident day	2.38 (0.38) ***	2.21(0.44)	2.40 (0.43) ***	2.25 (0.40)
<b>Health Deficiencies</b>				
Number of deficiencies in most recent survey	4.69 (4.32) **	5.81 (5.46)	4.12 (4.18)	4.48 (4.17)

Significance of the difference between volunteers and non-volunteers within the same year:

\* p<0.1;

\*\* p<0.05;

\*\*\* p<0.01.