

Examining Perceptual and Archival Measures of Performance  
in the Context of Nursing Home Care

Anna A. Amirkhanyan  
American University  
[amirkhan@american.edu](mailto:amirkhan@american.edu)

Kenneth J. Meier  
Texas A&M University  
[kenneth-j-meier@pols.tamu.edu](mailto:kenneth-j-meier@pols.tamu.edu)

Laurence J. O'Toole, Jr.  
University of Georgia  
[cmsotool@uga.edu](mailto:cmsotool@uga.edu)

Mueen A. Dakhwe  
Texas A&M University  
[dr.mueendakhwe@gmail.com](mailto:dr.mueendakhwe@gmail.com)

Shawn Janzen  
American University  
[shawn.janzen@american.edu](mailto:shawn.janzen@american.edu)

Paper presented at the 2014 APPAM Fall Research Conference, November 8,  
Albuquerque, NM.

Please do not cite or circulate without the permission of the authors.

Fall 2014

## INTRODUCTION

Organizational performance is an increasingly global concern for public administration scholars and practitioners (Boyne, Meier, O'Toole & Walker, 2006; O'Toole & Meier, 2011; Radin, 1998, 2007). Across and within service areas, mounting accountability pressures motivate the creation of complex performance measurement regimes to help evaluate and improve public or publicly-funded services (Andrews, Boyne & Walker, 2006; Heinrich, 2012). Despite these efforts, governments' performance management capacity appears to be limited (Julnes & Holzer, 2001). Furthermore, with the abundance of generated data on different aspects of organizational activities, some researchers suggest that the use of such information has been neglected (Moynihan, 2008). Among the many factors hindering the use of performance data are the tradeoffs posed by numerous dimensions of performance, the difficulty of interpreting these, and a lack of consensus on which managerial, organizational, and environmental factors can help improve these results.

This research seeks to contribute to our discipline's century-long quest for the administrative means that influence the achievement of public goals. The objective of this study is to understand the effect of management and other organizational and environmental factors on numerous dimensions and measures of performance in public, nonprofit, and for-profit organizations – with U.S. nursing homes as the empirical settings. We use a combination of primary and secondary data to examine the effect of managerial, organizational, and environmental determinants on the perceptual and archival measures of service quality and access. Nursing home care presents an interesting case for the study of organizational performance. In addition to being an increasingly salient public policy area due to the rapid

growth of elderly population in the U.S. and other developed countries, this field is a good example of a policy-specific “performance measurement regime,” with its intergovernmental and cross-sectional relationships, unique complexities, biases, and perverse incentives.

We begin with a preview of key findings. Our analysis of service quality and access tells a different story for these two dimensions of performance, archival and perceptual.

Organizational ownership appears to play a prominent role in each. Consistent with past research utilizing archival data on nursing homes, we find that public and nonprofit homes, on average, provide better services: they have fewer health deficiencies and higher overall star-ratings. In addition, smaller homes with higher occupancy and also those admitting fewer Medicaid-funded clients tend to perform better. The perceptual models focusing on service quality are consistent with these findings with some notable exceptions. For instance, the effect of management, which is modest at best in the “archival” models, is very pronounced here, suggesting that these results may be subject to common source bias. The limited explanatory power of management strategies in the “archival” models may be indicative of different managerial roles in nursing facilities, where managers may be focused more on coping and putting out fires in the day-to-day operations, rather than on long-term strategies.

In terms of access to services for the uninsured clients or those on Medicaid, archival data suggest that older nursing homes, those with family/resident-led advisory councils, operating in less affluent areas tend to have a higher proportion of clients on Medicaid. Perceptual data produce somewhat different findings. When focusing on a survey question asking administrators to report specific data on Medicaid-funded clients, our results are consistent with the “archival” findings. Meanwhile, the more generic perceptual assessments of overall service accessibility suggest that nonprofit and public homes perceive their access to be higher than that in the for-

profit homes (contrary to our archival-data models), and no other factors appear to be consistently significant. These findings support the recommendation of using more specific survey questions to help avoid the biases associated with perceptual data (Meier & O’Toole, 2013b).

This paper makes a number of contributions to the public management and health policy literature. First, our findings improve our understanding of the complex relationship between perceptual and archival measures of performance using a unique hybrid data set – one that combines archival government data on two alternative dimensions of performance collected by the Centers for Medicaid and Medicaid Services (CMS) with a recent survey that adds management and other variables into the mix. Such data are particularly valuable and rare in the public management literature (Boyne, Meier, O’Toole & Walker, 2006; Meier & O’Toole, 2013a). Second, our findings illuminate the role of management and other determinants of performance in a market with low service measurability, a high degree of asset specificity and technological sophistication, dependent clientele, and extensive third-party financing and regulation. Thus, our results may be more generalizable to other health and human services, such as home health care, mental health, substance abuse, child care or incarceration. Similarly, our research may be relevant to the fields of long-term care in developed countries, where higher employment rates, job-related mobility, substantial retirement benefits, and higher prevalence of nuclear families create demand for institutional long-term care. Finally, this study contributes to the health policy and health care administration literature, by combining a widely used data set created and publicized by the Centers for Medicare and Medicaid Services (CMS) with a recent nursing home administrators’ survey, and by incorporating data on a range of management strategies in the analysis of organizational outcomes.

## LITERATURE REVIEW

In this literature review, we first focus on two different sources of performance data – archival and perceptual – and examine the empirical evidence on their strengths, weaknesses, and correlation. Next, we proceed to the topic of performance antecedents and specifically highlight the role of management, as well as numerous other organizational and environmental factors. Finally, we turn to the context of nursing home care and examine some preliminary evidence on the measures and antecedents of performance used in this specific policy domain.

**Organizational Performance and the Sources of Performance Data.** Defined broadly as “the character and consequences of service provision by public agencies,” public sector performance is a socially constructed and multi-dimensional phenomenon (Brewer & Selden, 2000; Forbes, Hill & Lynn, 2006, p. 255). Researchers and practitioners alike seek to understand the variation in performance levels, determine what accounts for performance improvements, and identify the management strategies that can be used to make a difference (Boyne, 2002; Lynn, Heinrich & Hill, 2000). Comprehensively answering these questions is, clearly, a gargantuan task for a number of reasons. First, government agencies have multiple and often conflicting values and objectives, and the degree of their attainment may vary and involve certain tradeoffs (Andrews, Boyne & Walker, 2006; Brewer, 2006; Radin, 2007). Second, numerous stakeholders are typically involved in the design, collection, use, and interpretation of performance data, which makes it difficult to accurately verify the levels of performance improvement (Andrews, Boyne & Walker, 2006; Radin, 2007). Finally, the process of performance management often goes beyond the “rational” considerations, and involves political, institutional, organizational, and other considerations (Behn, 2003; Brewer, 2006; Radin, 2007). Understanding and accounting for this complexity in public administration

research requires a combination of innovative theory-building and rigorous research methodology – both applied to a rich set of relevant data.

The many objectives of government agencies are generally reflected in a range of specific *dimensions* (or levels) of performance. Some of these dimensions relate to organizational *inputs* and *processes* (e.g., structures, internal and external management, costs, transparency, accountability, external and internal efficiency, equity, fairness, public engagement or client-centeredness), while others relate to *outputs* (e.g., scope, quality and timeliness of services) and *outcomes* (e.g., client or community-level impacts, “effectiveness,” or “responsiveness”) (Addicott & Ferlie, 2006; Andrews, Boyne & Walker, 2006; Boyne, 2002; Forbes, Hill & Lynn, 2006, p.255; Brewer & Selden 2000; Julnes & Holzer, 2001). Each dimension reflects a single and limited aspect of public agencies’ operations, while in combination they help conceptualize organizational performance more comprehensively.

When the reality is extremely complex, the measurement can hardly be simple. Identifying a good set of performance measures in the public sector is critical. When these measures lack validity and reliability, they will generate misleading results that are of no use to practitioners (Meier & O’Toole, 2013b). In addition, even the more comprehensive, valid, and reliable performance measurement approaches will have a potential for misunderstanding, politicization, and misuse (Boyne, Meier, O’Toole & Walker, 2006; Radin 2006). While agreeing that there is no such thing as an unbiased and perfect measure of performance (Boyne, Meier, O’Toole & Walker, 2006), we also suggest that identifying the limitations of each type of performance data will improve our ability to understand organizational performance and its antecedents.

The data reflecting organizational performance are diverse. One distinction that has received a lot of attention has to do with the “quantitative-qualitative” dichotomy. As more comprehensive and large data sets become available and new statistical techniques are identified to study performance, such as the multi-level models to study complex, hierarchical relationships in the government, *quantitative* analysis becomes a key tool to help precisely determine the levels of explained variation and to produce more generalizable results (Heinrich & Lynn, 2000; Smith, 2006). At the same time, studies based on *qualitative* (descriptive) data have emerged as an alternative to help analyze performance inspections, satisfaction surveys, interviews, document analysis, and observations – techniques that capture the users’ experiences and help inductively conceptualize the dimensions and ascribed meanings of impact (Addicott & Ferlie, 2006).

Another important typology and the associated debate on the types and source of performance data pertains to the distinction between *perceptual* and *archival* data. *Perceptual* data reflect individual understandings and perceptions and are closely tied to the respondents who provide these data. At times, these respondents represent *internal* organizational constituencies: the managers, board members, or staff. Brewer (2006) argues that such perceptual data are useful because they come from organizational employees, who arguably know their organizations better than any other stakeholders (Brewer, 2006). At other times these perceptual data can also come from organizational clients, who experience the impact of services. Client surveys are an analogue to private sector market surveys and the notions of consumer sovereignty in determining organizational performance. In both cases perceptual performance data allow comparability of performance information across different service areas, organizations, and even countries, by focusing on more generic reactions or satisfaction levels

related to various public services or programs (Meier & O'Toole, 2013b). Currently, perceptual measures are used widely in public administration research,<sup>1</sup> and client surveys are often considered meaningful, valid, and relevant for public management (Favero and Meier, 2013; Schachter, 2010; Shingler et al., 2008; Van Ryzin, Immerwahr & Altman, 2008).

Perceptual performance measures can also be problematic. While including the true value of the measured concept, perceptual measures also tend to include a non-random measurement error and are likely to produce biased results (Boyne, Meier, O'Toole & Walker, 2006). The bias may result from social desirability or positivity (Meier & O'Toole, 2013b). Meier and O'Toole find that managers tend to systematically overestimate or report favorably on their practices and organizational successes, even after accounting for the difficulty of their tasks or resource constraints (Andrews, Boyne, Moon, & Walker 2010; Meier & O'Toole, 2013a). The use of perceptual measures can also entail common source bias: the instances when systematic error variance is shared among several variables that come from the same source, such as the variables on management strategies and organizational outcomes (Andrews, Boyne & Walker, 2006; Brewer, 2006; Meier & O'Toole, 2013b). In such cases, relationships between variables can be inflated and deflated (i.e., suppressed or falsely identified) (Meier & O'Toole, 2013b). While there is no good way to correct for common source bias, there are better and worse ways of addressing the issue (Favero & Bullock, forthcoming). One recommendation is to use very specific perceptual measures pertaining to the more narrowly defined dimensions of performance, rather than generic quality or satisfaction assessments (Meier & O'Toole, 2013b).

As an alternative to the perceptual measures, data on organizational performance can also come from so-called archival sources. Being often developed by professionals and implemented

---

<sup>1</sup> See, for example, Amirkhanyan, 2011; Amirkhanyan, Kim & Lambright, 2012; Brewer, 2006; Moynihan & Pandey 2005.



in a standard and formal fashion, these measures are expected to minimize discretion, be more “objective” and separate from the organization and its internal stakeholders. Archival measures are very diverse, ranging from standardized performance tests, to agency-wide scores, and various broader community-wide or societal well-being indicators, such as life expectancy, cancer rates, or literacy (O’Mahony & Stevens, 2006).

While archival data are widely regarded as the “gold standard” of performance measurement, some researchers suggested that our field’s intrinsic need to reaffirm its scientific methods explains the current preference for objectifying performance and elevating the views of researchers and professionals over those of the citizens (Schachter, 2010). Meanwhile, the validity of archival measures can be influenced by a number of factors. First, these measures may fail to capture the full extent of organizational outcomes, emphasizing some dimensions but not others (Boyne, Meier, O’Toole & Walker, 2006). Second, they may be associated with organizational dysfunctions, such as cheating, creaming, or goal displacement (Boyne, Meier, O’Toole & Walker, 2006; Bohte & Meier 2000). Third, they are likely to be influenced by “politically and historically contingent judgments on what is important and desirable” (Andrews, Boyne & Walker, 2006, p. 32; Schachter, 2010). As a result, archival data are rarely neutral or “objective” but reflect judgments by politicians or other stakeholders on which elements of performance are important and which are not (Brewer, 2006; Radin, 2006).

It seems that both perceptual and archival measures play a key role in understanding organizational successes, and yet their use may be problematic and their relationship not well understood (Boyne, Meier, O’Toole & Walker, 2006). A limited but growing number of empirical studies conducted across various service areas suggest that perceptual measures (e.g., satisfaction levels) are not strongly correlated with various archival measures of service quality,

quantity or equity (Andrews, Boyne & Walker, 2006; Bommer et al., 1995; Brown & Coulter, 1983; Kelly & Swindell, 2002; Meier & O'Toole, 2013a; Van Ryzin, Immerwahr & Altman, 2008). Literature reviews also suggest that the correlation coefficient typically ranges between 0.2 and 0.6 (Meier & O'Toole, 2013a). Since the shared variance is the square of the correlation, this range suggests rather sizable differences between the two types of measures. Furthermore, when examining the effect of various determinants on both the perceptual and archival measures, the findings are not consistent, indicating that the antecedents of performance captured by archival measures may be different from those of perceptions reported by organizational leadership, clients and staff (Amirkhanyan, Kim & Lambright, 2014; Shingler et al., 2008). An important recommendation in the studies that combine the perceptual and archival data is to compare measures that are specific, conceptually similar, and that focus on the same dimensions of performance (Andrews, Boyne & Walker, 2006; Bommer et al., 1995; Meier & O'Toole, 2013b; Parks, 1984).

Our study seeks to contribute to this literature by focusing on perceptual and archival measures of two alternative dimensions of organizational performance in the context of nursing home care. We explore how administrators' subjective assessments of their nursing homes' quality compare to archival measures reflecting nursing homes' compliance with over 180 federal regulations pertaining to care, administration, and physical environment. Addressing this question will improve our understanding of the validity of perceptual measures in the field of nursing home care. It will also provide important evidence on the propensity of subjective measures to suppress or falsely identify relationships with various independent variables commonly included in organizational performance models. A related goal of this study is to investigate how performance is influenced by management, as well as various organizational

factors (such as size or staffing), as well as environmental factors (such as market competition or demand). Our literature review below focuses on the topic of performance antecedents.

*Determinants of Organizational Performance.* Public managers and policy makers are rarely able to improve the outcomes of public programs directly. To improve performance, one needs to understand and be able to manipulate its antecedents (Boyne, Meier, O'Toole & Walker, 2006). Yet there is a paucity of conclusive research on the determinants of organizational performance (Boyne, 2003; Forbes, Hill & Lynn 2006, p. 255). Clearly, the sources of organizational performance improvement are numerous: financial resources, human resources capacity and the associated levels of motivation, organizational structure (e.g., size, technology, centralization, formalization, and red tape), organizational ownership, support by external stakeholders (e.g., elected officials and the media), market conditions (competition, stability or turbulence), organizational culture, client characteristics, and many others (Amirkhanyan, Kim, & Lambright, 2008; Andersen & Mortensen, 2009; Boyne, 2003; Boyne & Meier, 2009; Brewer & Selden, 2000; Lynn, Heinrich & Hill, 2000; Pandey & Moynihan, 2006). Accounting for these factors in an analytical framework of organizational performance in a given field is crucial in understanding the main drivers of service improvements.

In addition to these external and internal factors determining performance, organizational management has emerged as “the most obviously important variable – and potential point of leverage” in determining performance (Boyne, Meier, O'Toole & Walker, 2006). The questions of how to conceptualize management and what are its impacts on performance have been viewed as fundamentally important in the public administration literature (Boyne, Meier, O'Toole & Walker, 2006; Forbes, Hill & Lynn 2006, p. 255; Lynn, Heinrich & Hill, 2000; O'Toole & Meier, 2011). Public management has been approached as a set of *internal* strategies that deal

with setting up stable administrative structures, levels of supervision, and technology; utilizing various tools within those structures; motivating/incentivizing the employees; shaping organizational values and cultures; and managing and planning for organizational priorities and strategic goals (Boyne, 2003; Forbes, Hill & Lynn 2006, p. 255; Kenis, 2006; Lynn, Heinrich, & Hill, 2000; Meier, O'Toole & Lu, 2006; O'Toole & Meier, 2011; Rainey & Steinbauer, 1999). Recently, the more explicit *external* orientation of public management strategies has been acknowledged. Researchers have suggested that managers often exploit their external environments, collaborate and coordinate their actions with other organizations in their networks, develop joint rules and structures, make joint discoveries, and overcome joint obstacles (Agranoff & McGuire, 2003, p. 20; Bazzoli, et al., 1997, p. 540; McGuire, 2006, p. 37; Meier & O'Toole, 1999; Meier & O'Toole, 2003; O'Toole & Meier, 2011; Selden, Sowa, & Sandfort, 2006; Thomson & Perry, 2006). In terms of the impact of management on performance, a number of studies confirm that capable and skillful management is not a mere luxury. Management practices (conceptualized differently) have been found to make a significant positive impact on various dimensions of performance. These findings have been supported at the federal and local levels, as well as across numerous policy subfields, including human services, public education and law enforcement (Andrews, Boyne & Walker, 2006; Boyne, 2003; Brewer, 2006; Meier & O'Toole, 2002; Meier & O'Toole, 2003; Moynihan & Pandey, 2005; Nicholson-Crotty & O'Toole, 2004). Motivated by this body of research, our study includes a number of measures reflecting both internal and external management strategies to examine and compare its impact on the archival and perceptual measures of nursing home performance.

***The Context of Nursing Home Care.*** As a result of increasing longevity and decreasing fertility in the U.S., the quality of long-term care is becoming a salient issue in the academic

literature, as well as in the media and public discourse (Kinsella & Velkoff 2001; Thomas, 2014). The present study focuses on nursing homes, which represent an important element of the contemporary long-term care systems in most developed nations. Nursing homes are residencies that provide room, meals and assistance with activities of daily living to individuals with the most complex chronic care needs (Medicare.gov, n.d.). Currently, most nursing homes in the U.S. are for-profit (approximately 65% of the national market), followed by nonprofit and publicly-owned nursing homes (28% and 7%, respectively) (Amirkhanyan, Kim, & Lambright, 2008).

While the national nursing home care market is divided across public, nonprofit and for-profit providers, overall, the industry can be characterized by a high degree of publicness. Some federal, state and local governments are involved in *direct service provision*. Originating from their prototypes – public almshouses – nursing homes were historically created to serve the veterans, elderly, and disabled indigent individuals. With the advent of the Medicaid and Medicare programs, designed to cover the cost of health and personal care, private providers became incentivized to enter the nursing home market. To date, while some governments privatized their nursing homes by selling, terminating or converting them to private facilities, numerous state and local jurisdictions continue to deliver and invest in direct provision of nursing home care (Amirkhanyan, 2007; Amirkhanyan 2008; Amirkhanyan 2009).

In addition, federal, state and local governments are involved in *financing* and *regulation* of nursing homes. Being labor intensive and requiring extensive technology and physical facilities, nursing home care is more costly than other types of long term care, such as informal caregiving or home health care (CBO, 1999; Levit et al., 2000). The Medicaid program is the primary source of payment in nursing homes. According on the Nursing Home Compare dataset

used in this study, in 2012, care received by 60% of nursing home residents was reimbursed by the Medicaid Program, while 16% of residents were reimbursed by the Medicare program, and the remaining 25 percent of residents had a private long-term care insurance or paid out-of-pocket.<sup>2</sup> Nursing homes' eligibility for the Medicaid and Medicare reimbursement depends on their compliance with the federal and state mandates set forth by the Social Security Act, and reinforced by the Nursing Home Reform Act of 1987 (Kane 1998). The Centers for Medicare and Medicaid Services (CMS) establish and maintain the federal guidelines, while the states enforce these mandates through licensure and quality surveys, conducted by state government inspectors in each home, approximately once a year. As a result, the CMS produces publicly available data on nursing home characteristics, such as size, staffing and occupancy, as well as on the prevalence of over 180 regulatory violations in each Medicare or Medicaid certified facility in the country. Aside from these mechanisms of quality assessment and assurance, other actions by providers, such as their choice of clients, are *not* regulated. Thus, due process as a mechanism of oversight does not exist as a response to private denials of care in for-profit and nonprofit nursing homes (Freeman, 2000). The latter motivates our focus to examine access to care, as one dimension of nursing home performance.

Theories of nursing home markets suggest important differences across ownership types (Scanlon 1980, Grabowski 2001, Spector, Selden & Cohen 1998, Davis 1993, Harrington et al. 2000). The key argument in many of these studies is that the traditional assumptions of supply and demand in nursing home care do not work due to consumer ignorance, minimal movement across providers, care arranged by the client families, and third party payments. These factors

---

<sup>2</sup> The Veteran's Administration nursing home operations account for a small portion of the 25% of residents not covered by Medicaid and Medicare (Thomas, n.d.), however we were not able to find any sources specifying the exact share for this market.

cause informational asymmetries and limit the effect of reputation. As a result, for-profit providers, so-called “Medicaid mills” serving poorer, sicker and less informed clients, are likely to divert resources away from services and client welfare (Castle & Shea 1998; Harrington et al. 2001; Lemke & Moos 1989; Steffen & Nystrom, 1997). Meanwhile, nonprofit providers tend to cultivate quality of care, which in turn “signals honesty” to help attract more educated, informed and affluent clients. In empirical studies, nonprofit homes have been found to have better physical environment, equipment, and resident control; they evoke fewer complaints, and have had lower levels of care deficiencies (Harrington et al. 2000; Riportella-Muller and Slesinger 1982; Harrington et al. 2001; O’Neill et al. 2003; Santerre and Vernon 2005; Schlesinger and Gray n.d.). In summary, in the private sector, attainment of quality and access seems to be a zero-sum game. Meanwhile, a small and decreasing number of public facilities have been found to serve the traditional safety-net role and provide high quality care comparable to that of their nonprofit counterparts (Amirkhanyan, Kim, & Lambright, 2008).

Performance assessment efforts in nursing homes include data on over 180 regulatory violations (i.e., deficiencies), as well as the data on client complaints, staffing, and other facility characteristics collected by state government inspectors. While raw data on health violations and staffing levels have been publicly available for decades, more recently, in an effort to simplify these indicators and encourage their use among the general public, five-star ratings of health care quality have been created (CMS, n.d.). They are based on a complex formula incorporating data on staffing, regulatory violations, and other factors, adjusted for state averages (Thomas, 2014). Thus, similar to other government inspections, nursing home star-ratings are an example of performance evaluations that combine both archival (regulatory) and subjective (perceptual, observation-based and self-reported) data (Andrews, Boyne, Walker, 2006).

The neutrality and the unbiased nature of nursing home performance ratings created by the CMS may be undermined by a number of factors. First, reporting on nursing home performance has high financial stakes for at least two reasons: this marketplace is fairly litigious, and insurers often consider facility ratings in making referrals. These pressures have been argued to produce perverse incentives for cheating and goal displacement (Thomas, 2014).<sup>3</sup> Second, the field is highly turbulent and politicized, being influenced by consumer demands to improve care and the industry's attempt to minimize state and federal regulation (Edelman 1997-1998). Finally, the striking differences across public, nonprofit and for-profit nursing homes raise the possibility that performance data collected by government employees are biased against nongovernmental (e.g., for-profit) providers.

This study will examine the influence of management and other organizational factors on a combination of objective and perceptual measures of care quality and access for Medicaid-funded clients. While advancing the research on organizational performance, our findings also contribute to the growing body of research on nursing home quality. The findings of this literature are based predominantly on archival data on nursing home quality with no management controls. They suggest that staffing and nonprofit ownership have a positive impact on regulatory violations, while rural location, chain affiliation, size, market competition, payment constraints, and percentage of clients reimbursed by the Medicaid program have a negative effect (Amirkhanyan 2008; Townsley, Bech & Pepper, 2013; Harrington et al. 2000; Harrington et al. 2001; Zhang et al., 2006; Zhang & Wan, 2007). Studies incorporating primary and perceptual

---

<sup>3</sup> Thomas (2014) also describes the instances of organizational dysfunction: manipulation of performance indicators, preparing for inspections, reporting different staffing measures to different regulators, hiring more staffing during the period of inspection, and the industry-wide trends of rating appreciation (Thomas, 2014).



data are limited. For instance, a Canadian study based on a survey of nursing home administrators found that human resource practices and workplace climate had a positive impact on perceived performance (Rondeau & Wagar, 2001). Research on “best practices” in nursing care provides additional limited evidence on the central role of management. In their literature review, Campas, Hopkins & Townsley (2008) found that multidisciplinary involvement, mission orientation, and the process of feedback and outcome measurement generally have a positive effect on performance. The contribution of our study is to compare the effect of management and other determinants of performance on care quality and access, while using a combination of archival and perceptual data based on different data sources. Our data and methods are described in the next section.

## METHODOLOGY

*Data.* We used a “hybrid”<sup>4</sup> dataset that combines data from three sources. We acquired Nursing Home Compare, the official and publicly available dataset generated by the Centers for Medicare and Medicaid Services (CMS, n.d.b). This is a national administrative database created as a part of the quality assessment and certification process of all Medicaid and/or Medicare certified institutional providers in the United States. Following an agreement between the CMS and the state governments to enforce quality standards set forth by the U.S. Congress, a team of trained inspectors (including a registered nurse) conducts site visits of all nursing homes in each state. Inspections are conducted every nine to fifteen months, or more frequently if problems are identified and more follow-up is needed. During a visit, the team evaluates a nursing home’s compliance with over 180 specific federal and state regulatory standards pertaining to eight categories: quality of care, resident behavior and facility practices, resident assessment, resident

---

<sup>4</sup> Boyne, Meier, O’Toole, & Walker 2006 explicitly recommend using hybrid data sets in studying organizational performance.

rights, physical environment, dietary services, pharmacy services, and administration and regulation. The standards are very specific, e.g., “right to be fully informed in advance about care treatment,” “use of assistive devices while eating,” or “hand washing/infection control.” To verify compliance, state inspectors review residents’ clinical records and staffing records; they also interview some residents, family members, caregivers and administrative staff. Some site visits are triggered by resident complaints and the team would conduct an inspection to verify the problem. A violation identified during a health inspection is recorded as a “health deficiency” and reported to the public in the Nursing Home Compare database.<sup>5</sup>

Nursing Home Compare is a good example of “archival” data because (1) the teams of inspectors are external and are, to the extent possible, “detached” from the nursing facilities they monitor, (2) the inspections are based on a formal and fairly comprehensive tool applied to each nursing home in a standard fashion. Furthermore, these data are subject to extensive review and appeal, and are considered to be an accurate and reliable indicator in the academic literature (Harrington et al., 2000). On the other hand, inspection-based data also have a perceptual component that might result in biasing these measures. First, inspectors may have ties with their colleagues in state and county-owned nursing homes and may administer their assessments differently in those facilities. Second, client and family interview information, used to help verify facility’s regulatory compliance, is perceptual by nature. Third, some data examined by inspectors is self-reported by the nursing home administration, which may also have a strong “subjective” component.

Nursing Home Compare is an unbalanced facility-inspection level panel data. Thus, we have several observations pertaining to each nursing facility, with the most recent observation

---

<sup>5</sup> Each facility is also responsible for providing it to its current and prospective clients upon request.

related to the latest inspection conducted in each nursing home as of January 1, 2014 (i.e., 9-15 month prior to 01/01/2014). The dataset includes information on each provider's name, address, federal provider number, capacity, occupancy, hospital affiliation, staffing and other characteristics. The panel that we used (N=15,695) contained all Medicare and Medicaid certified nursing homes in the U.S. operating as of January 1, 2014. For-profit nursing homes represent 68.8% of all nursing homes in the U.S., while public and nonprofit homes represent 5.7% and 25.5%, respectively. These numbers suggest a 4% decline in the total number of nursing homes, but a fairly constant distribution of ownership, as reported in Amirkhanyan (2007): out of 16,347 Medicare and Medicaid certified nursing homes operating as of December 2003, 65.5% were for-profit, 6.2% were public, and 28.3% were nonprofit. The Nursing Home Compare dataset was merged with the Texas A&M University (TAMU) Nursing Home Administrator Survey, the second source of data used in this study.

The Nursing Home Administrator Survey, funded by the Project for Equity, Representation & Governance, was implemented between January 2013 and May 2013 (Compton-Vuillaume, Calderon & Meier, 2013). These dates match well with the latest survey dates reported in the 01/01/2014 Nursing Home Compare dataset. The survey was administered to all presently operating governmental nursing homes (n=903), and a random sample of 1000 for-profit and 1000 nonprofit nursing homes from the Nursing Home Compare dataset. A total of 725 nursing home administrators responded to the survey in three waves between January and May of 2013, with a response rate of 24.97%.<sup>6</sup> After removing six duplicate records,<sup>7</sup> the number of surveys was 717.

---

<sup>6</sup> Respondents were allowed to complete the survey either online or on paper.

<sup>7</sup> Six duplicate records occurred as a result of respondents' filling out both the online and hard copy of the survey. The earlier of these two records was selected, to maximize the number of non-missing items.

The Area Health Resource Files was the third data source merged with Nursing Home Compare and the TAMU Nursing Home Administrator survey. Produced by the U.S. Bureau of Health Professionals, this dataset includes county-level demographic and socio-economic information. It also includes data on the prevalence of health care professionals and organizations.

***Dependent Variables: Quality and Access.*** We use two alternative archival measures of nursing home quality. The first measure, *total number of health deficiencies*, reflects the number of health deficiencies identified during a single inspection. This number includes both the deficiencies identified during a standard inspection process (standard deficiencies), as well as the deficiencies associated with a formal complaint, submitted by a client *and* verified by state surveyors (complaint deficiencies).<sup>8</sup> Note that a higher score for this measure reflects a higher number of deficiencies, while a lower score indicate better quality. While theoretically this measure can range between 0 and 188, the actual number of violations in our sample varied between 0 and 31, with the mean of 5.9. Most nursing homes in our sample have relatively few violations: 10 percent of inspection records had 0 violations, 50 percent of records had 5 and fewer violations, and 90 percent of all records had fewer than 12 violations. A large body of health care administration and health policy literature used and validated health deficiencies as a measure of nursing home quality (Harrington, Swan, Wellin, Clemena, & Carrillo, 1998; O'Neill, Harrington, Kitchener, & Saliba, 2003; Mullan & Harrington, 2001).

---

<sup>8</sup> The Nursing Home Compare dataset includes information on the number of deficiencies identified during the standard inspection process, as well as the number of deficiencies that were triggered by complaints. We plan on conducting additional sensitivity analysis to explore the differential effect of independent variables on these two types of deficiency scores. In this version of our paper, we use the total number of deficiencies combining the two sources.

Our second archival measure of quality is the *overall 5-star rating*. This rating is calculated by the CMS using a complex formula that incorporates three components: (a) 5-star health inspection rating, reflecting health deficiencies during the past three years, where most recent surveys are weighted more heavily; (b) 5-star staffing rating, reflecting registered nurse and total staffing per resident per day adjusted for the residents' needs; and (c) 5-star quality rating, reflecting quality measures derived from the patients' clinical data. While the *overall 5-star rating* has been used in the academic literature, it has received a lot of criticism related to the providers' ability to manipulate self-reported data in order to get higher ratings (Thomas, 2014).

Nursing Home Compare present a unique opportunity of examining, comparing and contrasting the findings pertaining to two different fairly objective measures of nursing home quality - a simple raw indicator reflecting the total number of health deficiencies and a 5-star rating, intended to simplify quality information for the consumers, but based on a complex formula. In our sample, the correlation coefficient between the *total number of health deficiencies* and the *overall 5-star rating* is -0.52. This coefficient is negative because the 5-star rating is a measure of "good" quality, whereas deficiencies reflect the lack of quality.

As a perceptual measure of nursing home quality – *perceived nursing home quality* – we used the following nine items from the TAMU Nursing Home Administrator Survey:

To what extent do you agree or disagree with the following statements? (Response categories: strongly agree (4), agree (3), disagree (2) and strongly disagree (1)).

1. Our nursing provides outstanding quality of care.
2. Our facility ensures excellent quality of life for our residents, including various activities programs and social services.
3. Our facility ensures a clean, safe, home-like and comfortable physical environment.
4. Our procedures are performed in compliance with the best practices and regulatory requirements in our field.
5. Our nursing staff is properly licensed, well trained and generally competent.
6. Our nursing home is known for ensuring that the residents' rights are always respected.

7. Our nursing home is known for providing choices to the residents and satisfying their preferences.
8. My nursing home meets the needs of the community it serves.
9. This nursing home is considered to be one of the best of its type in the state.

Factor analysis was used to examine any underlying factors and suggested that using all nine items in a single scale was appropriate.<sup>9</sup> In the regression, we used the Factor 1 score rather than the sum of 9 items listed above.

In addition to these three measures of service quality, we used several measures of access. These measures reflect a nursing home's propensity to serve financially disadvantaged clients. *Percent residents on Medicaid* was obtained by the authors directly from the CMS. This variable reflects the percentage of nursing home residents who were Medicaid program recipients (as opposed to Medicare, private long-term care insurance or private-pay). The so-called "Medicaid mills" – nursing homes with a higher percentage of residents on Medicaid – are argued to be resource poor, because of the lower **reimbursement-to-cost ratios claimed by the private industry** (Castle 2006, 64; The Lewin Group, 2002). This measure has been previously used in the academic literature (see Amirkhanyan 2008; Amirkhanyan, Kim & Lambright, 2008). It is also similar to the one used by Harrington Meyer (2001), who used Medicaid to private pay ratio in the facility as a measure of access.

In addition to this archival measure of access, we use four items from the TAMU Nursing Home Administrator Survey to create four perceptual measures of access. First, variable *self-*

---

<sup>9</sup> The correlation matrix of these nine items does not allow one to clearly identify clusters of variables that are highly inter-correlated. The Chronbach's alpha is 0.84. Factor analysis of the nine items listed above suggested that only Factor 1 had an eigenvalue greater than 1 (4.12420), and all factor loadings for Factor 1 were greater than 0.6. As a sensitivity analysis, a predicted score was generated based on factor loadings, and regressions were obtained with Factor one replacing the sum of nine original items. The findings remained unchanged.

*reported percent residents on Medicaid* was created using a question that asked all respondents to report the percentage of individuals on Medicaid residing in the facility:

“Please, specify the percentage of all residents in your nursing home whose care is currently funded by the Medicaid program, Medicare program, or other sources of payment (e.g., out-of-pocket pay or private insurance).  
% residents on Medicaid: \_\_\_\_\_.”

While responses provided to this question may be expected to be strongly correlated with the “archival” measure from the Nursing Home Compare dataset, the correlation coefficient between them is in fact 0.8. This may suggest problems with recall. The discrepancy may also be due to the fact that the number of Medicaid-funded clients fluctuates frequently with new patient admissions or departures, and hence it may not be identical to the number shown in the most recent state survey, even if the latter has been conducted during the same calendar year.

We used three additional perceptual measures (with response categories of strongly agree (4), agree (3), disagree (2) and strongly disagree (1)):

1. *Some cannot afford staying here* (Survey item: “Some of our residents have to look for another nursing home because they cannot afford staying here”);
2. *Difficulty serving the uninsured* (Survey item: “Our nursing home has difficulty admitting or serving uninsured clients”);
3. *Difficulty serving clients on Medicaid* (Survey item: “Our nursing home has difficulty admitting and serving residents funded by the Medicaid program”).

***Independent Variables: Organizational Management.*** Using the TAMU Nursing Home Administrator Survey, we created four measures reflecting nursing home administrators’ management strategies. First, *external management* is an interval-ratio variable derived from the following question from the TAMU survey:

“As a Nursing Home Administrator, what percentage of your time do you usually spend interacting with **external** rather than internal stakeholders? (specify % external):  
\_\_\_\_\_”

Second, variable *sharing power* reflects a nursing home administrator's propensity to involve other organizational and external stakeholders in the decision-making process. This measure is the average of the following seven items:

To what extent do you agree or disagree with the following statements? (Response categories are as follows: strongly agree (4), agree (3), disagree (2) and strongly disagree (1)).

1. I often reconcile disagreements within our nursing home.
2. I involve nursing and other non-managerial staff in my nursing home's decision-making process.
3. Residents' and families' feedback and outcomes are taken into consideration when revising policies.
4. Non-manager feedback is taken into consideration when revising policies.
5. The information I receive from others regarding operations and performance matches my own perceptions.
6. I give my senior staff a great deal of discretion in making decisions.
7. The opinion of the local governing board of this nursing home is always considered in executive decisions.

Third, the variable *innovation* reflects a nursing home administrator's propensity to look for and adopt new technology or practices, and to change with its environment. It is the average of four items:

To what extent do you agree or disagree with the following statements? (Response categories are as follows: strongly agree (4), agree (3), disagree (2) and strongly disagree (1)).

1. Our nursing home is always among the first to adopt new technology and practices.
2. We continually search for new opportunities to provide services to our community.
3. Our nursing home is always among the first to adopt new ideas and practices.
4. Our nursing home frequently undergoes change.

Fourth, variable *managing external influences* reflects an administrator's strategies focusing on external influences. We use the average of the following four items:

To what extent do you agree or disagree with the following statements? (Response categories are as follows: strongly agree (4), agree (3), disagree (2) and strongly disagree (1)).

1. My role is to respond to various events and disturbances in the external environment of our nursing home.
2. I always try to limit the influence of external events on the staff and nurses.
3. I strive to control those factors outside the nursing home that could have an effect on my organization.



4. Our nursing home emphasizes the importance of learning from the experience of others. Factor analysis of these three scales was performed and suggested a single underlying factor in each, as well as Chronbach's alpha of 0.6 and higher.<sup>10</sup>

***Other Independent Variables.*** Recognizing the importance of multivariate analysis that controls for location and adjusts for various environmental risks (Smith 2006), we include a variety of other independent variables to measure organizational and environmental factors. We created two nominal variables indicating a nursing home's legal ownership status: *nonprofit nursing home* and *public nursing home* (source: NHC). For-profit ownership is used as the omitted category in all regressions. The variable *number of certified beds* reflects nursing home's size (source: NHC). *Number of residents* reflects the number of clients occupying beds in a nursing home which, upon controlling for the number of certified beds, reflects organizational occupancy (source: NHC). To measure staffing, we use *total nursing hours per resident per day* which reflects the total registered nurse, vocational nurse and nurse aide hours per resident per day, reported during the latest state inspection (source: NHC). *Hospital affiliated home* is a nominal variable reflecting a nursing home's affiliation with a hospital, as opposed to being a freestanding facility (1=yes, 0=no) (source: NHC). *Change of owner during past 12 month* is also a nominal variable indicating whether a nursing facility changed its owner within 12 month of the survey record (yes = 1, no= 0) (source: NHC). While we have no information on when each facility originally opened, we use a proxy variable *years since certification* indicating the year of nursing home's certification (source: NHC). This is an imperfect proxy, as some

---

<sup>10</sup> We also created variable "*centralization*" reflecting the extent of centralization in management, and being the average of the following three items: (1) Directors of administration, medical services and nursing services report directly to me; (2) I mostly collaborate with a small number of senior staff in our nursing home; (3) Other managers inform me of issues concerning line (non-management) staff. However, low Chronbach's alpha and unsatisfactory results of factor analysis lead us to decide against the use of this scale.

facilities undergo organizational changes associated with a loss and/or more recent reacquisition of Medicare and/or Medicaid certification. Variable *family or resident council* is a nominal variable indicating whether a nursing home has an advisory council led by residents, families or both (source: NHC). To control for the level of competition in the local market, we follow Angelelli et al. (2003), Castle (2005), and Grabowski (2001) in using the *Herfindahl index of competition* reflecting the sum of squared market shares (measured in #beds) for all Medicare and Medicaid certified nursing homes in each county (source: NHC). This index varies between zero and one. Finally, seven additional measures describing the external environment were created from the Area Health Resource File data. Variable *population density* measures population per square mile, reflecting the urban/suburban/rural context, previously identified as important in nursing home care. *Percent in poverty* reflects the percentage of county population below the poverty line. Variable *percent elderly* reflects the percentage of county population who are older than 65. Three variables help to account for alternative medical and long term care providers in the counties where nursing homes operate. *Number of home health agencies* is a numeric variable reflecting the number of home health agencies in the county. These agencies provide nursing and long-term care in the homes of disabled persons. *Number of hospices* reflects the county-wide number of hospices - institutional facilities providing palliative care to chronically or terminally ill clients. *Number of hospitals* reflects the number of hospitals in the county. Finally, *percent White* reflects the percentage of White population in the county.

***Regression Analysis.*** We use multiple regression analysis to estimate several “quality” and “access” models. In each regression, we include variables measuring management strategies, two ownership dummies (nonprofit and public), and other independent variables listed above. In addition, a measure of quality (*total number of health deficiencies*) is included as a

control variable in the “access” model, and a measure of access (*percent residents on Medicaid*) is controlled for in the “quality” model. In the general form, the models are as follows:

### **Quality Model**

$$Q_{2013-2012} = \beta_0 + \beta_1 M_{2013-2012} + \beta_2 N_{2011-2010} + \beta_3 P_{2011-2010} + \beta_4 A_{2011-2010} + \beta_5 X_{2011-2010} + e_1$$

### **Access Model**

$$A_{2013-2012} = \delta_0 + \delta_1 M_{2013-2012} + \delta_2 N_{2011-2010} + \delta_3 P_{2011-2010} + \delta_4 Q_{2011-2010} + \delta_5 X_{2011-2010} + e_2$$

where Q = quality measure, A = access measure, N = nonprofit ownership dummy, P = public ownership dummy, X = set of control variables.

The dependent variable in each model pertains to the most recent survey record as of January 1, 2014, i.e., surveys conducted in 2013 and 2012. The independent variables in both models pertain to one of the previous survey’s records for these nursing homes – those conducted 1-2 years earlier, between 2011 and 2010. Since the TAMU Survey was administered between 2012 and 2013, all management related independent variables pertain to the same time period as the dependent variables. In addition, due to data availability limitations in the Area Health Resource Files, *percent elderly*, *percent in poverty*, *number of home health agencies* and *number of hospices* in all models pertained to the year 2011, while *population density*, *number of hospitals* and *percent white* pertained to 2010.

**Quality Models.** In the “archival” quality models, focusing on the *total number of health deficiencies*, we report results for two alternative regression models. First we use OLS with robust standard errors (to address heteroscedasticity), as well as state fixed effects. The latter is used to alleviate the problem of interdependent observations at the state level that may produce inefficient estimates in OLS (Gujarati, 1995). Second, we use a Negative Binomial model with

state fixed effects. The dependent variable – *total number of health deficiencies* – is an all-positive count with a positively skewed (“poisson”) distribution. Being based on the assumption of symmetric distribution of errors, the OLS would incorrectly predict negative values for this dependent variable. Thus, we used a Negative Binomial model.<sup>11</sup> In the second “archival” quality model, one focusing on the *overall 5-star rating*, the dependent variable is measured ordinally, and therefore we used ordered logit with state fixed effects.

In the perceptual quality model, the dependent variable *perceived nursing home quality* is a factor score generated based on the analysis of 9 TAMU survey items. We present results for OLS with robust standard errors and state fixed effects.

**Access Models.** In the archival access model, we use OLS (with robust standard errors and state fixed effects) to examine the effect of management and other independent variables on *percent residents on Medicaid*. We also ran four alternative perceptual access models. OLS is used to examine *self-reported percent residents on Medicaid*. For the remaining three perceptual measures of access (*some cannot afford staying here, difficulty serving the uninsured and difficulty serving clients on Medicaid*), we use ordered logit.

## FINDINGS

**Descriptive Statistics.** Summary statistics for all dependent variables are presented in Table 1. An average nursing home in the sample has 5.9 deficiencies, and the mean *overall 5-star rating* is 3.65. While in the regression we use Factor 1 score for *perceived nursing home*

---

<sup>11</sup> We first ran the Poisson regression and examined the goodness of fit statistics. The Pearson chi-square and deviance were found to be greater than one. This indicated overdispersion which violates the assumption of equality of the mean and the variance of the dependent variable imposed by the Poisson model. In these cases, a Negative Binomial model is recommended. It accommodates overdispersion by including a random term reflecting unexplained between-subject differences (Gardner, Mulvey, & Shaw 1995).

*quality*, which is based on the analysis of nine 4-point TAMU Survey items, in Table 1 we report the more intuitively clear average for these items: 3.62. The average *percent residents on Medicaid* – our archival measure of access – is 57.9 %. The average *self-reported percent residents on Medicaid*, based on the TAMU Survey, is 58.76%. The mean scores for the questions reflecting perceived access – *some cannot afford staying here*, *difficulty service the uninsured*, and *difficulty serving clients on Medicaid* – are 1.83, 1.65, and 2.67, respectively.

Table 2 provides descriptive statistics for all independent variables. 35% of nursing homes in our sample are nonprofit, and 34% – publicly owned. *External Management* variable reflecting the percentage of time spent managing external tasks, ranges from 0 to 90%, with the mean of 24%. The average scores for *sharing power*, *innovation*, and *managing external influences* (measured on a scale ranging from 1 to 4), are 3.3, 2.8 and 3, respectively. An average nursing home in our data has 103 certified beds and 89 residents occupying those beds. Mean *total nursing hours per resident per day* is 4.2. Hospital-affiliated homes comprise 11% of the sample. In addition, only 3% of nursing homes experienced change of ownership during the past 12 months. An average nursing home was certified 21 years ago, and 97% of facilities in our sample have a family or resident-led advocacy council. Average population density in the local counties is 771 persons per square mile. Also, 15% of residents in these counties are elderly, 16% are in poverty, and 82% are White. A typical county in the sample has 19 home health agencies, 4 hospices, and 6 hospitals. Herfindahl index, describing the sum of squared market shares, measured in nursing home beds, ranges from 0 to 1, with the mean of 0.29.

**Regression Analysis.** Regression results pertaining to the archival and perceptual quality models are presented in Table 3. We first examine and discuss the findings pertaining to the *total number of health deficiencies* and the *overall 5-star rating*. Consistent with past research, these

findings suggest that public and nonprofit nursing homes perform significantly better than their for-profit counterparts. They have fewer regulatory violations and their *overall 5-star rating* is significantly higher. Innovation in Management – adoption of new technologies, ideas, and practices, search for new opportunities, and change management – is the only management variable associated with a significant reduction in the number of deficiencies. None of the measures of management strategies are significantly associated with the *overall 5-star rating*. Consistent with the past research, larger nursing homes tend to have more deficiencies and lower 5-star ratings. Meanwhile, after controlling for size, the number of residents in the facility (essentially, reflecting facility occupancy) is associated with fewer deficiencies and higher 5-star rating. In addition, as the percentage of clients on Medicaid increases, the number of deficiencies increases as well, while the *overall 5-star rating* significantly decreases. Finally, changing the owner during the past 12 months is associated with a significant reduction in deficiencies, meanwhile population density has a positive effect on the 5 star-rating (although the magnitude of this effect is close to zero).

The perceptual model of nursing home quality is partly consistent with these findings. Public nursing homes are perceived by their administrators to perform better than for-profit nursing homes, and yet no difference in perceived quality is found between nonprofit and for-profit nursing homes. All management strategies – *innovation, external management, sharing power, and managing external influences* – are statistically significant in these perceptual models: these strategies are associated with higher perceived quality. Our findings related to size, occupancy, and percent residents on Medicaid mirror those in the archival models: larger nursing homes and those with a higher percentage of residents on Medicaid are perceived to have lower quality, meanwhile nursing homes with more residents tend to have administrators who

perceive and report on care quality more favorably. Four variables are significant only in the perceptual quality model. Staffing, previously found to be a significant predictor of quality in the past studies, has a negative and significant effect in this model. As the number of years since certification goes up, perceived quality declines. Also, population density appears to be significant; however, its magnitude is negligible. Finally, while keeping the share of Medicaid residents constant, the percentage of county population in poverty appears to have a significant and positive effect on perceived care quality.

The findings pertaining to the archival and perceptual measures of access and their determinants are presented in Table 4. In the archival model, we find that nonprofit nursing homes have a significantly lower proportion of residents on Medicaid (with a sizeable ten percentage-point magnitude), compared to for-profit nursing homes. Meanwhile, as the years since certification increase, the share of residents on Medicaid goes up as well. Similarly, nursing homes with resident/family led advisory councils (comprising over 90% of our sample) tend to serve a significantly higher proportion of residents on Medicaid. Finally, the local poverty rate has a significant and positive association with *percent residents on Medicaid*. Importantly, we found no significant effect of past deficiencies on nursing homes' current propensity to serve Medicaid clients in the archival model.

As detailed in the Methodology section, our first perceptual measure of access is similar to the archival measure. Respondents in the TAMU Survey were asked to report the current percentage of facility residents whose care is reimbursed by the Medicaid program. As a result, the findings pertaining to this model are almost identical to those in the archival model. Nonprofit nursing homes have a lower percentage of Medicaid-funded clients. Meanwhile, older facilities, those with resident/family-led councils, and those operating in less affluent areas are

more likely to admit and serve clients on Medicaid. The only difference from the archival model here is that higher staffing hours per resident per day appear to be associated with a reduction in the percentage of residents on Medicaid.

The remaining perceptual models of access are considerably less informative.<sup>12</sup> The only notable exception is the positive and significant impact of public and nonprofit ownership on perceived access. Nursing home administrators in public and nonprofit nursing homes are in fact significantly less likely to report that some of their clients cannot afford staying in their facilities. They are also less likely to agree that their nursing homes have difficulty serving the uninsured and Medicaid-funded clients. In addition, nursing homes operating in less affluent counties with a higher share of elderly individuals are significantly less likely to report that some of their clients have to look for another nursing home as a result of not being able to afford staying in their facilities. Similarly, nursing homes with a resident council are less likely to report that their clients are not able to afford care in their facilities.

## DISCUSSION

The objective of this study is to explain the variation in nursing home performance while using both the archival measures, collected and reported by a federal agency, and the perceptual measures, reported by the nursing home administrators in a survey conducted by Texas A&M University. Among the many possible antecedents of performance, we are particularly interested in the effect of ownership, as well as the impact of organizational management strategies, such as innovativeness, shared decision-making, and management of external influences.

---

<sup>12</sup> To improve the fit of these models, we ran simple ordered logit, without controlling for state fixed effects.



Our findings on ownership are particularly interesting. In the archival models, nonprofit and public ownership are associated with fewer regulatory violations and improved star ratings. Meanwhile, nonprofit nursing homes serve a significantly lower proportion of Medicaid-funded clients. These findings are consistent with the theories of nursing home ownership and performance. Informational asymmetries and limited Medicaid reimbursement rates determine what appears to be a zero-sum game between quality and access in the private sector (Amirkhanyan, Kim & Lambright, 2008). These findings are also consistent with the evidence in the broader organizational management literature suggesting that organizations across many service fields pursue a range of different and often conflicting goals (Boschken, 1992; Campbell, 1977; Poister, 2003; Rainey, 1997). The more prevalent for-profit nursing homes are incentivized to divert their revenues away from the quality of care, while serving older and more disabled (impoverished) Medicaid-funded seniors. Meanwhile, the nonprofit homes – representing about a quarter of the nursing home industry – are able to cultivate quality by targeting, marketing to and admitting the more affluent private-pay, privately-insured, or Medicare-funded clients. The latter reflects nonprofits’ tendency towards philanthropic *individualism* and *particularism* – their propensity to narrowly define missions, focus on specific target groups rather than the general population and seek to satisfy their needs irrespective of efficiency considerations (Lohman, 1992; Salamon, 2002; Steinberg, 2006). Finally, government owned providers, whose share has been historically limited and continues to decline with the recent privatization reforms (Amirkhanyan, 2007), appear to effectively maximize both dimensions of performance.

Importantly, past service to the Medicaid clients appears to influence the future prevalence of health deficiencies as well as the star ratings in the quality models. Yet in the

access model, past regulatory violations are not consistently significant in predicting current Medicaid admissions. This might suggest that the relationship between quality and access is somewhat more complex, and that other factors may moderate the cycle of serving the poor and delivering lower quality of care, such as facility age and others. For instance, it is possible that in accordance with the Competing Values Framework, organizations balance and manage alternative performance models stressing either external or internal goals, and even shifting their emphasis among these models over time (Quinn & Rohrbaugh, 1983).

Furthermore, adding the evidence on the perceptual measures to our analysis necessitates an even more nuanced interpretation of the effect of ownership on performance. Theoretically, perceptual measures should be influenced by the archival indicators that managers are asked to track and report on to the government agencies (Andrews, Boyne, and Walker, 2006). Information on health deficiencies and star-ratings has been publicly available for several decades and known to every provider. Yet the perceptual measures reported in the TAMU survey suggest that the nonprofits' subjective assessments of quality are not significantly different from those in the for-profit sector. Meanwhile, in the public sector, nursing home administrators are in fact reporting higher quality of services than those in the for-profit facilities. Similar "cognitive dissonance" is present in the case of access to care. Public and nonprofit nursing home administrators are clearly aware of the extent of their service provided to the Medicaid population, as evidenced by the first perceptual model that is entirely consistent with the archival regression. Nonetheless, administrators' responses to the more general questions about access diverge from these findings. Perhaps, reflective of their socially conscious missions, nonprofit nursing homes report providing better access to the uninsured and Medicaid-funded clients in comparison to their for-profit counterparts. These data, clearly, diverge with the

archival findings. Public nursing home administrators also seem to perceive their homes as a “safety net” in comparison to their for-profit counterparts, despite the fact that their Medicaid admissions are not significantly different from those in the for-profit sector.

Thus, we observe discrepancies in terms of the impact of ownership on the archival and perceptual measures of performance. This is especially notable, as our perceptual measures of quality and access appear to be fairly specific and meet the general conditions for comparability with the archival measures (Andrews, Boyne, and Walker, 2006). While our analysis is conducted in a policy area where the formal indicators are widely available, they do not directly inform the managers’ perceptions of quality and access, especially in the nonprofit sector.

While identifying notable differences across the archival and perceptual models, we certainly do not conclude that the perceptual measures are “wrong.” Following Andrews, Boyne, and Walker (2006), these findings indicate that along with the more formal, consistent and externally administered archival measures, the perceptual measures may contribute to solving the performance “jigsaw puzzle.” However, this study suggests that relying exclusively on the *internal* stakeholders’ assessments of performance may be insufficient in order to comprehensively and adequately understand the scope and the sources of public sector improvements.

The second central theme of this study is related to the influence of organizational management on the two dimensions of nursing home performance. Here, our findings are two-fold. In the objective quality models, the effect of management is quite modest. Decentralized decision-making and external management strategies do not appear to be associated with service quality. Meanwhile, innovative management practices appear to reduce the number of regulatory violations. These findings might reflect the nature and the environment of the nursing home

industry. Adopting new facility designs, care practices, and technologies may be an important strategy in improving cost-effectiveness and attracting the more affluent clients in competitive and demographically dynamic markets. Yet taking the time to inform and involve the internal and external stakeholders in decision-making may be viewed as time-consuming and interfering with the management culture of “putting out fires” in the ever-changing and turbulent environment.

In the perceptual quality models, on the other hand, all measures of organizational management are statistically significant and positive. In addition to the possibility of recall problems or tendency to round or approximate numbers reported in non-mandatory surveys, these findings are likely to be affected by common source bias – the administrators’ propensity to favorably report on their management practices as well as their organizational successes. A number of counter-intuitive findings in the perceptual models, such as the negative effect of more staffing or higher care quality in less affluent areas, support the idea that these models may be falsely identifying associations between variables.

Our findings related to organizational management suggest that the policy context is key in understanding what specific management strategies may contribute to improvements in performance. Our study is conducted in a market with high asset specificity, dependent clientele, extensive government subsidies and regulation, and relatively low service measurability. The use of formal long-term care tends to be higher in the countries and communities with a higher employment rate, higher job-related mobility, better retirement benefits, and, therefore, higher prevalence of nuclear families. Thus, our findings on management may be more generalizable to similar markets. These may include such as substance abuse, mental health or developmental

disabilities services, family-centered social services, child care, home health care or, perhaps, incarceration. Nonetheless, important differences across these fields should not be disregarded.<sup>13</sup>

Some additional findings merit attention to help understand the sources of improvement in organizational performance. Consistent with the argument that resources are the most likely sources of performance improvements, having more clients (and hence, higher revenues) is associated with fewer regulatory violations and higher star ratings. Note that this relationship may be recursive, as better quality will most certainly result in higher occupancy. Additionally, consistent with the past nursing home care literature, larger nursing homes have more regulatory violations and lower star ratings. Smaller nursing homes may be more effective at creating unique environments and personalizing care for their residents (Amirkhanyan, 2008). They can also be less bureaucratic and have less red tape, which has been shown to stifle innovation (Moynihan and Pandey 2005). The latter, based on our findings, appears to matter for nursing home quality. Another interesting finding in the quality model has to do with the change of the owner. Its positive effect on the number of regulatory violations merits further examination using qualitative methodology to help understand the causes and the process of these changes and how they impact service quality.

As a final note, we point out two important directions for this project. Our current models fail to account for what Boyne (2003) finds to be an important source of public sector improvement, particularly relevant to the European context – government regulation. The latter is extremely important in the “over-regulated” context of nursing home care in the United States. Understanding, how government regulation is perceived across public, nonprofit and for-profit

---

<sup>13</sup> None of these services require the level of technological and scientific sophistication prevalent in nursing homes. Their financing and regulation, mostly done through state and local government contracts and contract monitoring, is also quite different from the formal state inspection, licensure and reimbursement processes in the context of nursing home care.

nursing homes and exploring the influence of these perceptions on the perceived and archival measures of quality may be informative in understanding the role of government quality assurance and assessment strategies in improving service quality.

Furthermore, our perceptual measures of quality come from a single source – the nursing home administrators. Meanwhile, as we mentioned earlier, subjective assessments of organizational performance can come from numerous external and internal constituencies. These constituencies are likely to have different needs and different perspectives of the impact of public services and programs on these needs (Connolly, Conlon, & Deutsch's, 1980). Thus, a more comprehensive analysis of performance would incorporate additional assessments, for instance those coming from the organizational clients. While we do not have data on client satisfaction, some Nursing Home Compare deficiencies are associated with client complaints. As a next step, we plan on exploring and incorporating complaint-based violations and comparing them with those based on the standard facility surveys conducted by a team of state inspectors.

## TABLES

Table 1. Dependent Variables. Descriptive Statistics

Dependent Variables	Mean	St.D.	Min	Max	Obs
<b>Archival Quality Measures</b>					
Total number of health deficiencies	5.87	5.04	0	31	713
Overall 5-star rating	3.65	1.24	1	5	682
<b>Perceptual Quality Measures</b>					
Perceived nursing home quality	3.62	0.35	19	36	616
<b>Archival Access Measures</b>					
Percent residents on Medicaid	57.90	22.65	0	100	715
<b>Perceptual Access Measures</b>					
Self-reported percent residents on Medicaid	58.65	23.97	0	100	594
Some cannot afford staying here	1.83	0.90	1	4	692
Difficulty serving the uninsured	1.65	0.79	1	4	699
Difficulty serving clients on Medicaid	2.67	0.95	1	4	693

Table 2. Independent Variables. Descriptive Statistics

Independent Variables	Mean	St. D.	Min	Max	Obs
Nonprofit nursing home	0.35	0.48	0.0	1.0	715
Public nursing home	0.34	0.47	0.0	1.0	715
Management: External management	24.28	16.94	0.0	90.0	556
Management: Sharing power	3.30	0.34	2.1	4.0	572
Management: Innovation	2.81	0.54	1.0	4.0	624
Management: Managing external influences	3.00	0.43	1.8	4.0	612
Number of certified beds	103.48	72.38	9.0	720.0	706
Number of residents	89.03	67.16	2.0	664.0	706
Total nursing hours per resident per day	4.17	1.81	1.5	27.7	706
Hospital affiliated home	0.11	0.31	0.0	1.0	706
Change of owner during past 12 month	0.03	0.16	0.0	1.0	706
Years since certification	21.34	11.90	0.0	44.0	706
Family or resident council	0.97	0.18	0.0	1.0	715
Population density	771.69	2665.61	0.4	35369.2	714
Percent elderly	15.32	4.11	6.6	35.1	714
Percent in poverty	15.59	5.31	4.0	41.8	714
Number of home health agencies	19.08	79.88	0.0	677.0	714
Number of hospices	3.70	9.20	0.0	113.0	714
Number of hospitals	5.69	10.76	0.0	111.0	714
Herfindahl index of competition	0.29	0.29	0.0	1.0	708
Percent White	81.89	15.73	17.4	98.9	714



Table 3. Archival and Perceptual Quality Models

Independent Variables	ARCHIVAL									PERCEPTUAL			
	Total number of health deficiencies							Overall 5-star rating		D.V.: Perceived nursing home quality			
	Fixed Effects Model			Negative Binomial Model				Ordered Logit with state dummies			Fixed Effects Model		
	b	S.E.	sig.	b	OR	S.E.	sig.	b	S.E.	sig.	b	S.E.	sig.
Nonprofit nursing home	-1.27	0.55	**	-0.22	0.80	0.10	**	0.82	0.26	***	0.17	0.16	
Public nursing home	-1.74	0.68	**	-0.30	0.74	0.11	***	0.72	0.27	***	0.39	0.16	**
Management: External management	-0.01	0.01		0.00	1.00	0.00		0.00	0.01		0.00	0.00	
Management: Sharing power	0.64	0.61		0.09	1.09	0.12		0.31	0.32		0.60	0.17	***
Management: Innovation	-1.05	0.33	***	-0.19	0.83	0.08	**	0.05	0.19		0.51	0.09	***
Management: Managing external influences	-1.19	0.73		-0.15	0.86	0.10		0.32	0.23		0.31	0.11	***
Number of certified beds	0.03	0.01	**	0.01	1.01	0.00	**	-0.02	0.01	**	-0.01	0.00	***
Number of residents	-0.03	0.01	*	0.00	1.00	0.00		0.01	0.01	**	0.01	0.00	***
Total nursing hours per resident per day	0.08	0.22		0.02	1.02	0.02		0.09	0.07		-0.06	0.04	*
Percent residents on Medicaid	0.02	0.01	**	0.00	1.00	0.00	**	-0.01	0.01	***	0.00	0.00	
Hospital affiliated home	-0.17	0.88		0.00	1.00	0.14		0.10	0.34		0.16	0.15	
Change of owner during past 12 month	-2.34	1.33	*	-0.26	0.77	0.26		0.23	0.63		-0.24	0.31	
Years since certification	0.01	0.03		0.01	1.01	0.00		-0.01	0.01		-0.01	0.00	**
Family or resident council	0.56	0.92		0.17	1.19	0.23		-0.12	0.61		-0.06	0.25	
Population density	0.00	0.00		0.00	1.00	0.00		0.00	0.00	*	0.00	0.00	***
Percent elderly	0.01	0.06		0.00	1.00	0.01		0.00	0.03		-0.01	0.01	
Percent in poverty	0.02	0.06		0.00	1.00	0.01		-0.02	0.02		0.02	0.01	**
Herdindahl index of competition	0.95	1.09		0.12	1.13	0.17		0.63	0.44		-0.08	0.15	
Intercept	7.56	3.02	**								-3.92	0.55	***
N	487			487				464			479		
R Square (or Pseudo R Square)	0.05			0.05				0.10			0.25		
Prob > F (or Chi Square)	0.00			0.00				0.00			0.00		

Note: \*\*\*=sig <0.01; \*\*=sig <0.05; \* sig <0.1

Table 4. Archival and perceptual Access Models

Independent Variables	ARCHIVAL			PERCEPTUAL											
	Percent residents on Medicaid			Self-reported % residents on			Some cannot afford staying here			Difficulty serving the uninsured			Difficulty serving clients on Medicaid		
	Fixed Effects Model			Fixed Effects Model			Ordered Logit			Ordered Logit			Ordered Logit		
	b	S.E.	sig.	b	S.E.	sig.	b	S.E.	sig.	b	S.E.	sig.	b	S.E.	sig.
Nonprofit nursing home	-10.21	2.03	***	-9.26	2.34	***	0.23	0.24		-0.57	0.24	**	-0.53	0.23	**
Public nursing home	-1.32	2.79		1.12	3.32		-0.50	0.25	**	-0.88	0.26	***	-0.88	0.24	***
Management: External management	0.07	0.07		0.08	0.07		0.00	0.01		0.01	0.01		0.00	0.01	
Management: Sharing power	5.69	3.66		1.50	4.13		-0.89	0.32	***	-0.30	0.32		-0.21	0.30	
Management: Innovation	-2.22	1.90		0.33	2.14		0.04	0.19		0.11	0.19		0.13	0.18	
Management: Managing external influences	-0.37	2.56		-0.04	3.21		-0.23	0.24		0.06	0.24		0.05	0.23	
Number of certified beds	0.04	0.06		0.07	0.06		0.00	0.01		0.00	0.01		0.00	0.01	
Number of residents	0.00	0.06		-0.03	0.06		-0.01	0.01		-0.01	0.01		0.00	0.01	
Total nursing hours per resident per day	-0.68	0.52		-1.97	0.54	***	-0.02	0.05		0.05	0.06		-0.04	0.06	
Total number of health deficiencies	0.18	0.16		0.26	0.15	*	-0.02	0.02		0.00	0.02		0.01	0.02	
Hospital affiliated home	1.91	3.53		1.62	4.63		-0.40	0.31		0.32	0.30		-0.20	0.29	
Change of owner during past 12 month	-1.38	2.79		-5.06	3.48		0.26	0.54		0.74	0.55		0.89	0.56	
Years since certification	0.33	0.11	***	0.26	0.12	**	0.00	0.01		0.01	0.01		0.00	0.01	
Family or resident council	25.10	7.68	***	19.81	7.98	**	-1.60	0.50	***	-0.46	0.51		0.34	0.47	
Population density	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Percent elderly	0.31	0.32		0.29	0.37		-0.05	0.03	*	-0.01	0.03		0.00	0.02	
Percent in poverty	0.98	0.21	***	1.26	0.23	***	-0.04	0.02	**	0.01	0.02		0.02	0.02	
Number of home health agencies	0.02	0.03		0.02	0.02		0.00	0.00		0.00	0.00		0.00	0.00	
Number of hospices	-0.16	0.27		-0.03	0.32		0.00	0.02		-0.01	0.02		0.03	0.02	
Number of hospitals	-0.15	0.35		-0.30	0.35		-0.02	0.03		0.02	0.03		-0.01	0.03	
Herfindahl index of competition	2.10	4.11		-0.28	5.63		0.07	0.37		0.12	0.37		0.07	0.36	
Percent White	0.10	0.12		0.08	0.14		0.01	0.01		0.01	0.01		0.00	0.01	
Intercept	-13.35	18.31		2.02	19.45										
N	472			454			468			472			469		
R Square (or Pseudo R Square)	0.26			0.25			0.06			0.04			0.03		
Prob > F (or Chi Square)	0.00			0.00			0.00			0.03			0.03		

Note 1: \*\*\*=sig <0.01; \*\*=sig <0.05; \* sig <0.1

Note 2: State dummies were not used in Ordered Logit models, as the fit of those models was questionable.

## BIBLIOGRAPHY

- Addicott, Rachael, and Ewan Ferlie. 2006. "A qualitative evaluation of public sector organizations: Assessing organizational performance in healthcare." In *Public Service Performance: Perspectives on Measurement and Management*, ed. George A. Boyne, Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard M. Walker, 55-73. Cambridge, MA: Cambridge University Press.
- Agranoff, Robert, and Michael McGuire. 2001. Big questions in public network management research. *Journal of Public Administration Research and Theory* 11:295-326.
- . 2003. *Collaborative public management: New strategies for local governments*. Washington, DC: Georgetown University Press.
- Amirkhanyan, A.A. 2007. The smart-seller challenge: The determinants of privatizing public nursing homes. *Journal of Public Administration Research and Theory*, 17 (3), 501-527.
- Amirkhanyan, A.A. 2008. Privatizing public nursing homes: Examining the effect on quality and access. *Public Administration Review*, 68(4), 665-680.
- Amirkhanyan, A., Kim, J., & Lambright, K. 2008. Does the public sector outperform the nonprofit and for-profit sectors? Evidence from a national panel study on nursing home quality and access. *Journal of Policy Analysis and Management*, 27(2), 326-353.
- Amirkhanyan, A.A. 2009. Rejecting privatization: Case study analysis of local government decision-making. *The Journal of Public Management and Social Policy*, 15(1), 163-192.
- Amirkhanyan, A. 2011. What is the Effect of Performance Measurement on Perceived Accountability Effectiveness in State and Local Government Contracts? *Public Performance & Management Review*, 35 (2), 303-339.
- Amirkhanyan, A., Kim, H.J., & Lambright, K. T. 2012. Closer than "Arm's Length": Understanding the Factors Influencing the Development of Collaborative Contracting Relationships. *The American Review of Public Administration*, 42 (3), 341-366.
- Amirkhanyan, A., Kim, H.J., & Lambright, K.T. 2014. The Performance Puzzle: Understanding the Factors Influencing Alternative Dimensions of Performance, *Journal of Public Administration Research and Theory*, 24 (1), 1-34.
- Andrews, Rhys, George A. Boyne, Jae Moon, and Richard M. Walker. 2010. Assessing Organizational Performance *International Public Management Journal*, 13(2), 105-129.
- Andrews, Rhys, George A. Boyne, and Richard M. Walker. 2006. "Subjective and objective measures of organizational performance: An empirical exploration." In *Public Service Performance: Perspectives on Measurement and Management*, ed. George A. Boyne, Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard M. Walker, 14-34. Cambridge, MA: Cambridge University Press.

- Andrews, Rhys, George A. Boyne, and Richard M. Walker. 2006. Strategy Content and Organizational Performance: An Empirical Analysis. *Public Administration Review*, January/February, 52-62.
- Angelelli, Joseph, Vincent Mor, Orna Intrator, Zhanlian Feng, and Jacqueline Zinn. 2003. Oversight of nursing homes: Pruning the tree or just spotting bad apples? *The Gerontologist* 43 (Special Issue II): 67-75.
- Bazzoli, Gloria J., Rebecca Stein, Jeffrey A. Alexander, Douglas A. Conrad, Soshanna Sofaer, and Stephen M. Shortell. 1997. Public-private collaboration in health and human service delivery: Evidence from community partnerships. *The Milbank Quarterly* 75:533-561.
- Bommer, William, H., Jonathan, L. Johnson, Gregory, Rich, Philip Podsakoff, and Scott Mackenzie. 1995. Personnel Psychoogy, 48, 587-605.
- Boschken, Herman L. 1992. Analyzing performance skewness in public agencies: The case of urban transit. *Journal of Public Administration Research and Theory* 2:265-88.
- Boyne, George A. 2002. Concepts and Indicators of Local Authority Performance: An Evaluation of the Statutory Frameworks in England and Wales. *Public Money and Management*, 22, 2, 17-24.
- Boyne, George A. 2003. Sources of Public Service Improvement: A Critical Review and Research Agenda. *Journal of Public Administration Research and Theory* 13 (3): 367-394.
- Boyne, George A., Kenneth J. Meier, Laurence, J. O'Toole Jr, and Richard M. Walker. 2006. Introduction. In *Public Service Performance: Perspectives on Measurement and Management*, ed. George A. Boyne, Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard M. Walker, 1-13. Cambridge, MA: Cambridge University Press.
- Boyne, George A., Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard M. Walker. 2006. *Public service performance: Perspectives on measurement and management*. Cambridge, MA: Cambridge University Press.
- Boyne, George A., and Kenneth J. Meier, 2009. Environmental Turbulence, Organizational Stability, and Public Service Performance, *Administration and Society*, 40: 799-824.
- Brewer, Gene A. and Sally Coleman Selden. 2000. Why Elephants Gallop: Assessing and predicting Organizational Performance in Federal Agencies. *The Journal of Public Administration Research and Theory*, 10 (4): 685-711.
- Brewer, Gene A. 2006. "All measures of performance are subjective: more evidence on US federal agencies." In *Public Service Performance: Perspectives on Measurement and Management*, ed. George A. Boyne, Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard M. Walker, 35-54. Cambridge, MA: Cambridge University Press.
- Brown, Karin, and Philip Coulter. 1983. Subjective and Objective Measures of Police Service Delivery. *Public Administration Review*, 43(!): 50-58.

- Calmar Andersen, Simon, and Peter B. Mortensen. 2009. Policy stability and organizational performance: Is there a relationship. *Journal of Public Administration Research and Theory*, 20, 1-22.
- Campbell, J. P. 1977. On the nature of organizational effectiveness. In *New perspectives on organizational effectiveness*, ed. P. S. Goodman, J. M. Pennings, and Associates. San Francisco, CA: Jossey-Bass.
- Castle, Nicholas G. 2005. Nursing home closures and quality of care. *Medical Care Research and Review* 62 (1): 111–32.
- Castle, N. G. 2006. Organizational characteristics associated with staff turnover in nursing homes. *The Gerontologist*, 46, 62–73.
- Castle, Nicholas S. and Dennis Shea. 1998. The Effects of For-profit and Not-for-profit Facility Status on the Quality of Care for Nursing Home Residents with Mental Illnesses. *Research on Aging* 20(2): 246-263.
- Centers for Medicare and Medicaid Services (n.d.a). *Five-Star Quality Rating System*. Retrieved 10/16/2014 from the web site: <http://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/CertificationandCompliance/FSQRS.html>
- Centers for Medicare and Medicaid Services (n.d.b). *Official Nursing Home Compare Data*. Retrieved 10/16/2014 from the web site: <https://data.medicare.gov/data/nursing-home-compare>
- Compas, C., K. Hopkins, and E. Townsley. 2008. Best Practices in Implementing and Sustaining Quality of Care. *Research in Gerontological Nursing*, 1,3, 209-216. .
- Compton-Vuillaume, Mallory, Polly Calderon and Kenneth J. Meier. “2013 National Nursing Home Survey.” Project for Equity, Representation and Governance, Texas A&M University.
- Congressional Budget Office Testimony 2004. Statement of Douglas Holtz-Eakin, Director, Health Care Spending and the Uninsured, before the Committee on Health, Education, Labor, and Pensions United States Senate, January 28, 2004. Retrieved April 25, 2004 from <http://www.cbo.gov/showdoc.cfm?index=4989&sequence=0>
- Connolly, T., E. M. Conlon, and S. J. Deutsch. 1980. Organizational effectiveness: A multiple constituency approach. *Academy of Management Review* 5:211–218.
- Davis, Mark A. 1993. Nursing Home ownership Revisited: Market, Costs, and Quality Relationships. *Medical Care* 31(11): 1062-1068.
- Donahue, A.K. Selden, S.C. & Ingraham P.W. 2000. Measuring government management capacity: A comparative analysis of city human resource management systems. *Journal of Public Administration Research and Theory*, 10, 381-411.
- De Lancer Jules, Patria, and Marc Holzer. 2001. Promoting the utilization of performance measures in public organizations: An empirical study of factors affecting adoption and implementation. *Public Administration Review*, 61 (6): 693-708.

- Edelman, T.S. 1997-1998. The Politics of Long-Term Care at the Federal Level and Implications for Quality. *Generations*, 21, 4, 37-41.
- Eggleston, K., & Zeckhauser, R. 2002. Government contracting for health care. In D. Donahue & J.S. Nye Jr. (Eds.), *Market-Based Governance* (pp. 29-65). Washington, DC: Brookings Institution Press.
- Favero, Nathan, and Justin B. Bullock. Forthcoming. How (Not) to Solve the Problem: An Evaluation of Scholarly Responses to Common Source Bias. *Journal of Public Administration Research and Theory*. First published online May 24, 2014 doi:10.1093/jopart/muu020.
- Freeman, J. (2000). The contracting state. *Florida State University Law Review*, 28, 155-214.
- Forbes, Melissa, Hill Carolyn, and Laurence Lynn. 2006. Public management and government performance: an international review. In *Public Service Performance: Perspectives on Measurement and Management*, ed. George A. Boyne, Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard M. Walker, 254-274. Cambridge, MA: Cambridge University Press.
- Gardner, W., Mulvey, E.P., & Shaw, E. 1995. Regression analysis of counts and rates: Poisson, overdispersed Poisson, and negative binomial models. *Psychological Bulletin*, 118(3), 392-404.
- Grabowski, David C. 2001. Medicaid Reimbursement and the Quality of Nursing Home Care. *Journal of Health Economics* 20(4): 549-569.
- Government Performance Project (GPP) n.d.. The Work of the Government Performance Project. The PEW Charitable Trusts. Retrieved 10/5/2014 from the web site: <http://www.pewtrusts.org/en/archived-projects/government-performance-project>
- Gujarati, D.N. 1995. *Basic econometrics*. New York: McGraw-Hill Inc.
- Harrington, Charlene, J.H. Swan, V. Welling, W. Clemena, and Helen Carrillo. 1998. *State Data book on Long Term Care Program and Market Characteristics*. San Francisco: University of California, Department of Social and Behavioral Sciences, 2000g.
- Harrington, Charlene, David Zimmerman, Sarita Karon, James Robinson, and Patricia Beutel. and others. 2000. Nursing Home Staffing and Its Relationships to Deficiencies. *The Journals of Gerontology*, 55B, 5, S 278-287.
- Harrington, Charlene, Steffie Woolhandler, Joseph Mullan, Helen Carrillo, David Himmelstein. 2001. Does Investor Ownership of Nursing Homes Compromise the Quality of Care? *American Journal of Public Health*, 91,1, 1452- 1455.
- Harrington Meyer, Madonna. 2001. Medicaid Reimbursement Rates and Access to Nursing Homes. Implications for Gender, Race, and Marital Status. *Research on Aging* 23(5): 532-551.
- Harrington, Charlene, Steffie Woolhandler, Joseph Mullan, Helen Carrillo, and David Himmelstein. 2001. Does Investor Ownership of Nursing Homes Compromise the Quality of Care? *American Journal of Public Health* 91(9): 1452-1455.

- Harrington, Charlene, David Zimmerman, Sarita Karon, James Robinson, and Patricia Beutel. 2000. Nursing Home Staffing and Its Relationship to Deficiencies. *Journal of Gerontology: Social Sciences* 55B(5): S278-S286.
- Heinrich, Carolyn, J. 2012. How credible is the evidence, and does it matter? An Analysis of the Program Assessment Rating Tool. *Public Administration Review*, 72(1) 123-134.
- Heinrich, C.J., and Laurence Lynn, 2000. Means and Ends: A comparative Study of Empirical Methods for Investigating Governance and Performance, *J-PART*, 11(1), 109-138.
- Hirth, Richard A. 1999. Consumer Information and Competition between Nonprofit and For-Profit Nursing Homes. *Journal of Health Economics* 18(2): 219-240.
- Kane, R.L. 1998. Assuring quality in nursing home care. *Journal of the American Geriatrics Society*, 46, 232-237.
- Kelly, J. M., & Swindell, D. 2002. A Multiple-Indicator Approach to Municipal Service Evaluation: Correlating Performance Measurement and Citizen Satisfaction across Jurisdictions. *Public Administration Review*, 62(5), 610-621.
- Kenis, P. 2006. Performance control and public organizations. In *Public Service Performance: Perspectives on Measurement and Management*, ed. George A. Boyne, Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard M. Walker, 113-129. Cambridge, MA: Cambridge University Press.
- Kinsella, Kevin and Victoria Velkoff. 2001. An Aging World: 2001. International Population Reports. Washington, D.C.: US Department of Health and Human Services, National Institutes of Health, National Institute on Aging, U.S. Department of Commerce, Economics and Statistics Administration, and U.S. Census Bureau. P95/01-1
- Lemke, Sonne and Rudolf H. Moos. 1989. Ownership and Quality of Care in Residential Facilities for The Elderly. *The Gerontologist* 29(2): 209-215.
- Levit, K., Cowan, C. Lazenby, H., Sensenig, A., McDonnell, P., Stiller, J., Martin, A., & The Health Accounts Team. 2000. Health spending in 1998: Signals of change. *Health Affairs*, 19, 124-132.
- Lynn, Laurence Jr., Hynrich, Carolyn, and Carolyn Hill. 2000. Studying Governance and Public Management: Challenges and Prospects. *Journal of Public Administration Research and Theory* 10 (2) 233-261.
- Lohman, R. (1992). The theory of the commons. In J.S. Ott. (ed). *The Nation of the nonprofit sector* (pp. 89-95). Boulder, CO: Westview Press. As cited in Grobman, G. (2007). *Introduction to the Nonprofit Sector: A Practical Approach for the 21st Century*. White Hat Communications.
- McGuire, Michael. 2006. Collaborative public management: Assessing what we know and how we know it. December Special Issue, *Public Administration Review* 33-43.

- Medicare.gov. 2005. Glossary. Nursing home and nursing facility. Retrieved September 03, 2004 from the web site: <http://www.medicare.gov/Glossary/search.asp?SelectAlphabet=N&Language=English#Content>
- Meier, Kenneth J. and Laurence J. O'Toole, Jr. 2002. Public Management and Organizational Performance: The Effect of Managerial Quality. *Journal of Policy Analysis and Management* 21(4), 629-643.
- Meier, Kenneth J. and Laurence J. O'Toole, Jr. 2003. Public Management and Educational Performance: The Impact of Managerial Networking. *Public Administration Review* 63(6), 689-699.
- Meier, Kenneth J., O'Toole, Laurence J., and Yi Lu. 2006. All that glitters is not gold: Disaggregating networks and the impact on performance. In *Public Service Performance: Perspectives on Measurement and Management*, ed. George A. Boyne, Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard M. Walker, 152-170. Cambridge, MA: Cambridge University Press.
- Meier, Kenneth J. and Laurence J. O'Toole, Jr. 2013a. I think (I am doing well), therefore I am: Assessing the validity of Administrators' Self-assessments of performance. *Journal of Public Administration Research and Theory* 23(2): 429-456.
- Meier, Kenneth J. and Laurence J. O'Toole, Jr. 2013b. Subjective organizational performance and measurement error: Common source bias and spurious relationships. *Journal of Public Administration Research and Theory* 23(2): 429-456.
- Moynihan, D., & Pandey, S. 2005. Testing how management matters in an era of government by performance management. *Journal of Public Administration Research and Theory*, 15(3), 421-439.
- Moynihan, Donald. 2008. *The dynamics of performance management: Constructing information and reform*. Washington, DC: Georgetown University Press.
- Mullan, J., & Harrington, C. 2001. Nursing home deficiencies in the United States. A confirmatory factor analysis. *Research of Aging*, 23, 503-531.
- New York Association of Homes and Services for the Aging. 2002. Sounding the alarm: New York's nursing homes in financial crisis. (December 2002), New York State Association of Homes and Services for the Aging Public Policy Series. Retrieved 05/01/05 from the web site: [http://www.nyahsa.org/documents/pdf\\_files/ alarm02.pdf](http://www.nyahsa.org/documents/pdf_files/ alarm02.pdf)
- Nicholson-Crotty, Sean, and Laurence J. O'Toole, Jr. 2004. "Public Management and Organizational Performance: The Case of Law Enforcement Agencies." *Journal of Public Administration Research and Theory* 14 (Number 1), 1-18.
- Nicholson-Crotty, Sean, Theobald, N.A., and Jill Nicholson-Crotty, Jr. 2006. Disparate Measures: Public Managers and Performance-Measurement Strategies. *Public Administration Review* January/February, 101-113.



- O'Toole, Laurence J., Jr., and Kenneth J. Meier. 1999. Modeling the Impact of Public Management: Implications of Structural Context. *Journal of Public Administration Research and Theory* 9(4), 505-526.
- O'Toole, Laurence J., Jr., and Kenneth J. Meier. 2011. *Public Management: Organizations, Governance, and Performance*. Cambridge: Cambridge University Press.
- O'Mahony, Mary and Philip Stevens. 2006. International comparisons of output and productivity in public service provision: A review. In *Public Service Performance: Perspectives on Measurement and Management*, ed. George A. Boyne, Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard M. Walker, 233-253. Cambridge, MA: Cambridge University Press.
- O'Neill, Ciaran, Charlene Harrington, Martin Kitchener, and Debra Saliba. 2003. Quality of Care in Nursing Homes: An Analysis Of Relationships Among Profit, Quality, and Ownership. *Medical Care* 41(12): 1315-1322.
- Pandey, S. and Donald Moynihan. 2006. Bureaucratic red tape and organizational performance: testing the moderating role of culture and political support. In *Public Service Performance: Perspectives on Measurement and Management*, ed. George A. Boyne, Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard M. Walker, 130-151. Cambridge, MA: Cambridge University Press.
- Parks, R.B. 1984. Linking Objective and Subjective Measures of Performance. *Public Administration Review*. March/April, 118-127.
- Poister, Theodore H. 2003. *Measuring performance in public and nonprofit organizations*. San Francisco, CA: Jossey-Bass.
- Quinn, R. E., & Rohrbaugh, J. (1981). A competing values approach to organizational effectiveness. *Public Productivity Review*, 5, 122-140.
- Quinn, R. E., & Rohrbaugh, J. (1983). A spatial model of effectiveness criteria. *Management Science*, 29, 363-377.
- Science, 29, 363-377. Radin, Beryl. 1998. The Government Performance and Results Act (GPRA): Hydra-Headed Monster of Flexible Management Tool? *Public Administration Review*, 58 (4) 307-316.
- Radin, Beryl. 2007. Performance Measurement and global Governance: The Experience of the World Bank. *Global Governance*, 13 (1): 25-33.
- Radin, Beryl. 2006. *Challenging the Performance Movement: Accountability, complexity and democratic values*. Washington, DC: Georgetown University Press.
- Rainey, Hal G. 1997. *Understanding and managing public organizations* (2nd ed.). San Francisco, CA: Jossey-Bass.
- Rainey, H.G., & Steinbauer, P. 1999. Galloping elephants: Developing elements of a theory of effective government organizations. *Journal of Public Administration Research and Theory*, 9(1), 1-32.

- Riportella-Muller, Roberta and Doris P. Slesinger. 1982. The Relationship of Ownership and Size to Quality of Care in Wisconsin Nursing Homes. *The Gerontologist* 22(4): 429-434.
- Rondeau, K.V. & T.H. Wagar. 2001. Impact of human resource management practices on nursing home performance. *Health Services Management Research*, 14, 3, 192-202.
- Salamon, L.M. (1987). Partners in public service: The scope and theory of government-nonprofit relations. In W.W. Powell (Ed.), *The nonprofit sector: A research handbook* (pp. 99-117). New Haven, CT: Yale University Press.
- Salamon, L. 2002. The Resilient Sector: the State of Nonprofit America. In Salamon, L. (ed.). *The State of Nonprofit America* (pp.3-64 ). Brookings Institution Press: Washington, DC.
- Santerre, Rexford E. and Vernon, John A. 2005. *Testing For Ownership Mix Efficiency: The Case of the Nursing Home Industry*. Cambridge: National Bureau of Economic Research. Working paper 11115. <http://www.nber.org/papers/w11115>.
- Scanlon, William J. 1980. A Theory of the Nursing Home Market. *Inquiry* 17(1): 25-41.
- Schlesinger, Mark and Bradford Gray. n.d.. Nonprofit Organizations and Health Care: The Paradox of Persistent Attention. In *The nonprofit sector: A research handbook*, edited by Walter W. Powell and Richard Steinberg. New Haven: Yale University Press, in press 2005.
- Schachter, H.L. 2010. Objective and Subjective Performance Measures. A note on terminology. *Administration and Society*, 42 (5), 550-567.
- Selden, Sally Coleman, Jessica E. Sowa, and Jodi Sandfort. 2006. The impact of nonprofit collaboration in early child care and education on management and program outcomes. *Public Administration Review* 66:412-425.
- Shingler, John, Van Loon, M.E., Alter, T.R., and J.C. Bridger. 2008. The Importance of Subjective Data for Public Agency Performance Evaluation. *Public Administration Review*, November/December, 1101-1111.
- Smith, Peter C. 2006. Quantitative approaches towards assessing organizational performance. In *Public Service Performance: Perspectives on Measurement and Management*, ed. George A. Boyne, Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard M. Walker, 75-91. Cambridge, MA: Cambridge University Press.
- Spector, William D., Thomas M. Selden, and Joel W. Cohen. 1998. The Impact of Ownership Type on Nursing Home Outcomes. *Health Economics* 7(7): 639-653.
- Steinberg, R. 2006. 'Economic theories of nonprofit organizations', in W. Powell and R. Steinberg (eds), *The Nonprofit Sector: A Research Handbook*, 2nd ed, New Havel, CT and London: Yale University Press (pp. 117-139).
- Steffen, Teresa M. and Paul C. Nystrom. 1997. Organizational Determinants of Service Quality in Nursing Homes. *Homes and Health Services Administration* 42(2): 179-191.

- The Lewin Group. (2002). Payer-specific financial analysis of nursing facilities. Falls Church, VA: Author.
- Thomas, Katie. 2014. Medicare Star Ratings Allow Nursing Homes to Game the System. The New York Times, August 24, 2014. Retrieved 9/12/2014 from the web site: <http://nyti.ms/1mFUPhZ>
- Thomas, Day. (n.d.). Guide to Long Term Care Planning. About Nursing Homes. *National Care Planning Council*. Retrieved 10/21/2014 from the web site: [http://www.longtermcarelink.net/eldercare/nursing\\_home.htm](http://www.longtermcarelink.net/eldercare/nursing_home.htm)
- Thomson, Ann Marie, and James L. Perry. 2006. Collaboration process: Inside the black box. December Special Issue, *Public Administration Review* 66: 20-32.
- Townsley, Gail, Susan Bech, and Ginette Pepper. 2013. Predictors of Quality in Rural Nursing Homes Using Standard and Novel Methods. *Research in Gerontological Nursing*, 6,2, 116-126.
- Van Ryzin, G. G., Immerwahr, S., & Altman, S. (2008). Measuring street cleanliness: A comparison of New York City's scorecard and results from a citizen survey. *Public Administration Review*, 68(2), 295-303.
- Wilson, Woodrow (1886). The Study of Administration. Retrieved 9/14/2014 from the web site: <http://teachingamericanhistory.org/library/document/the-study-of-administration/>
- Zhang, N.J., Unruh, L., Liu, R. and T. Wan. 2006. Minimum Nurse Staffing Ratios for Nursing Homes. *Nursing Economics*, 24, 2, 78-93
- Zhang, N.J., and Thomas Wan. 2007. Effects of Institutional Mechanisms on Nursing Home Quality. *The Journal of Health and Human Services Administration*. Spring, 380-408.