

KANSAS NURSING FACILITY PROJECT EVALUATION YEAR 3

For the Kansas Department on Aging

**Sarah Thompson, PhD, RN
University of Kansas School of Nursing
Principal Investigator**

**Nancy Dunton, PhD
University of Kansas School of Nursing
And Department of Health Policy & Management
Co-Principal Investigator**

**Byron Gajewski, PhD
University of Kansas School of Nursing
& School of Allied Health**

**Robert Lee, PhD
University of Kansas School of Medicine
Department of Health Policy & Management**

**Marcia Wrona, BSW
University of Kansas School of Allied Health
Department of Biometry**

**Annette Becker, MA
University of Kansas School of Nursing
Project Director**

**Valorie Coffland, MA
University of Kansas School of Nursing
Project Manager**

**Rosemary Chapin, PhD
University of Kansas School of Social Welfare**

**Roxanne Rachlin, MHSA
University of Kansas School of Social Welfare**

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Preface

This report was prepared under contract for the Kansas Department on Aging. The investigators want to thank the Department on Aging for the substantial assistance provided to the study by many state staff. In particular, Mr. Bob Parker, our contract manager, gave us access to several data sets maintained by the state and coordinated comments and advice from state program managers and policy staff. We would also like to thank Bill McDaniel and George Dugger for their assistance in providing data, documentation, and background information on state data sets.

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We also thank the nursing homes that participated in our on-site data collection and in the falls consortium.

Under subcontract, Myers & Stauffer, provided the project with extracts from the Minimum Data Set, including quality indicator and case mix adjustment files.

For any questions or comments concerning this report, please contact the Principal Investigator, Sarah Thompson, at (913) 588-1624 or at **sthompson2@kumc.edu**.

The Relationship Between Staff Turnover And Nursing Home Deficiencies

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Executive Summary

Objectives: This study examined the relationship between nursing home characteristics and state survey deficiencies with the goal of identifying priorities for change to improve survey results.

Methods: Data for Kansas nursing homes (n=288) were drawn from three primary sources: On-Line Survey, Certification, and Reporting System; Medicaid Cost Reports; and Minimum Data Set. Data from the survey that the Kansas Nursing Facility Project mailed to nursing home administrators in 2004 and data from the 2000 U.S. Census also are incorporated. Regression tree models were estimated to assess the importance of nursing home characteristics on the number, type, and scope and severity of deficiencies cited by state surveyors.

Results: Turnover rates were the most important factor in predicting nursing home deficiency scores.

- Homes with total staff turnover rates equal to or greater than 81% had approximately twice as many deficiencies on average (11.1 deficiencies) as homes with turnover rates lower than 81% (5.7 deficiencies).
- Turnover rates were influenced by LPN wage rates and ownership, with for-profit homes having higher turnover.
- Nursing home administrators believe that the primary causes of voluntary turnover are personal, family and transportation problems, low pay, no career ladders, heavy workload, working with difficult residents and family, and the stress of being around elderly and dying residents.

Discussion: This study will assist nursing home administrators in establishing goals for reducing staff turnover rates, which not only would reduce administrative expenses, but also would improve the quality of care, as reflected in reduced deficiency citations in state surveys. Organizational changes designed to increase staff satisfaction and reduce voluntary turnover may be limited by nursing home budgets. However, there is evidence that the job satisfaction of certified nursing assistants (CNAs) is closely related to factors that are not budget-contingent, such as organizational policies and processes that make staff feel like valued employees. As nursing homes undertake organizational change initiatives, it will be important to systematically understand the efficacy of those changes so that the entire industry can benefit from successful interventions.

Implications

- Nursing home administrators now have a target (below 81%) for reducing turnover to a level that will result in improvement in the number of deficiencies they are apt to receive.

- KDOA now has a target for use in refining its incentive system for homes that reduce turnover.
- KDOA may want to conduct a formal evaluation of the effectiveness of a limited number of strategies for reducing turnover. In particular, it would be beneficial to undertake additional research to evaluate the effects of culture change on staff turnover, retention, and pivotal elements of staff satisfaction.
- Nursing home administrators would be more likely to undertake staff retention initiatives if they had information on the relative cost benefit of alternative strategies. KDOA and/or Kansas nursing home provider associations may want to prepare, or have prepared, models of cost saving resulting from common retention initiatives, such as culture change, merit raises, career ladders, or training programs.
- Kansas stakeholders can incorporate these findings into educational materials and programs, including workforce retention and human resources training, as they continue their efforts to improve long term care.

Introduction

Providers of residential long term care to frail elders and persons with disabilities are challenged to provide high quality care due to an environment of a rapidly aging population, growing costs, increasing resident acuity, and a nursing shortage. Thus, measuring, understanding, and improving nursing home quality is an important focus for consumers, payers, regulators, and researchers (U.S. Centers for Medicare and Medicaid Services [CMS], 2001; Institute of Medicine [IOM], 2000). Quality is a multidimensional concept, encompassing compliance with federal and state regulations, support of resident physical and psychological health status, and resident and family satisfaction with care. To assist consumers in choosing nursing homes, in 1999 the Centers for Medicare and Medicaid (CMS) established a public website, www.medicare.gov/NHCompare/home.asp that provides information on two of these concepts, regulatory deficiencies, and measures of resident health status, as well as measures of nurse staffing levels.

The quality of care in nursing homes is a complex concept, encompassing three inter-related domains: compliance with regulations; the physiological and psychological health of residents; and resident and family satisfaction with care. This study focuses on the aspect of quality represented by compliance with regulations, as measured by the number of deficiencies nursing homes receive from a state survey.

While monitoring indicators of nursing home quality is an important part of any quality improvement program, providers, payers, and regulators need information about the nursing home characteristics that are most influential in producing specific levels of quality. Successful quality improvement programs are based on a clear delineation of the root causes of organizational problems.

Studies generally have shown a need for improvement in the quality of nursing home care (IOM, 2000). Many factors have been associated with nursing home quality, which can be subsumed into three broad categories: physical features of facility structures, organizational characteristics, and nursing and administrative processes. Most research has focused on the relationship between staffing and either deficiencies or measures of resident health status, known as quality indicators or quality measures (see for example, Gajewski et al, in press; Harrington, et al, 2000; Harrington et al, 2003; Harvard School of Public Health, et al, 2001; and Weech-Maldonado et al, 2004). The 2004 and 2005 reports prepared for the Kansas Department on Aging by the Kansas Nursing Facility Project identified five nursing home characteristics that were related to quality: number of beds, profit status, rural/urban location, being part of a multiple-facility chain, and staff turnover.

A policy research study conducted by Abt Associates for CMS (2001) identified minimum staffing levels, below which a long stay nursing home was significantly more likely to be in the lowest decile of quality measures. The minimum staffing levels for a weighted average of the quality measures were 2.78 hours per resident day (hprd) for CNAs, 0.55 hprd for LPNs, and 0.75 hprd for RNs. On average, Kansas nursing homes provide fewer care hours than the Abt minimums, providing 2.35 CNA hprd, 0.56 LPN hprd, and 0.48 RN hprd (see Table 1). The Abt study provides concrete guidance for nursing home administrators seeking to improve the quality of care in their facilities.

The effect of staff turnover on quality of care in nursing homes has not been studied as extensively as other staffing measures, due to a paucity of data. The Abt Associates study for CMS found that CNA turnover and retention were related to quality measures derived from the Minimum Data Set (MDS). The relationship between CNA retention and five selected quality measures for three states was continuous, meaning that the lower the turnover rate the better the quality measures, no matter how much a facility raises its retention rate. Facilities having CNA retention below 40% (approximately) were at increased likelihood of being in the poorest decile of quality measures. Using data from California, the relationship with CNA turnover was curvilinear, with quality measures improving up to the third decile as homes reduced turnover, but reductions after that point had no increased effect. The threshold above which homes were at increased likelihood for being in the worst decile for pressure ulcer rates was a CNA turnover rate of 45%. Few Kansas nursing homes (15%) have turnover rates that low.

CNA turnover is problematic because it may lead to higher provider costs (recruitment, selection, training, overtime, temporary staff, and reduction in staff efficiency and productivity) problems in quality of care (new CNAs may lack experience and knowledge of individual residents) and lead to low staffing levels, diluting time per resident (Government Accounting Office [GAO], 2001).

There is a need for policy research to identify critical factors, or the most efficient lever points, on which to base organizational improvement initiatives. The aims of this study are to extend what is known about nursing home characteristics that have been shown to be related to deficiencies by prioritizing the most influential characteristics and defining the typical levels at which change in characteristics are likely to result in improved survey results.

Data and Methods

Data Sources. The analysis was based on data for licensed, free-standing Kansas nursing homes (n=288). The analysis file was prepared by matching several secondary data sets on the basis of each facility's federal identification number, their state identification number, name, and location. There were three primary data sources: KDOA survey deficiency data, Medicaid Cost Reports from CMS, and the Minimum Data Set. Data from each of the sources was from 2003. Data were also obtained from two secondary sources: population data from the decennial U.S. Census (2000) and data from a survey of Kansas nursing home administrators, collected in 2004 by the Kansas Nursing Facility Project on behalf of the Kansas Department on Aging. Appendix Table 1 lists types of variables and the datasets from which they were drawn.

Deficiencies. To participate in Medicare and Medicaid programs, nursing homes must comply with 190 federal regulations issued by the Health Care Financing Administration, now CMS. State surveyors assess the homes for compliance with regulations and issue deficiencies if a home is found not to be in compliance. Each deficiency is given a grade reflecting the scope and severity of the lack of compliance. Nursing homes are subject to fines and other penalties for lack of compliance and are given a month to bring the home into compliance. Deficiency data were obtained from KDOA. Although the deficiency data are reliable as to the results of the survey process, they may under-represent lack of compliance with the federal regulations. Surveyors have a limited

amount of time in each home and they must have substantial evidence to issue a deficiency.

Independent Variables. Fourteen independent variables were included in the analytic models. Each represents a facility characteristic that, based on the literature, could be expected to influence the number of deficiencies they received on their last regular survey. The variables included:

- Six staffing measures: RN care hours per resident day, other (LPN plus CNA) care hours per resident day, total staff turnover rate, and separate turnover rates for RNs, LPNs, and CNAs
 - Turnover data come from the Medicaid Cost Reports. The rate is calculated as the total of voluntary and involuntary turnover (exits) divided by the average of the number of employees at the beginning of the year and the number of employees at the end of the year. Part time employees are included in the calculation.
 - **Note:** Because CNAs represent the large majority of care hours provided in nursing homes and have the highest turnover rate, CNA turnover has a dominant influence on the total turnover rate.
- Three average wage rates: for RNs, LPNs, and CNAs
 - Wage rates are calculated by dividing the amount paid in wages for a job category, including provider and state adjustments, by annual paid hours. This variable was entered into the regression trees as an average and was trimmed for outliers before inclusion.
- Two measures of facility ownership: whether the home was part of a multiple-home chain, and whether the home was for-profit or not-for profit
- Facility size (number of licensed beds)
- Acuity level of the residents (case mix index)
- Per capita income in the county

Statistical Methods. The statistical method employed in this report is regression tree analysis using the JMP procedure in SAS. Regression trees identify, in order, the most influential variables predicting a dependent variable. For each independent variable it also identifies the optimal cut point in a non-linear distribution for maximizing the prediction of the dependent variable. The models look for a change in the mean of the distribution and establish the cut point at the optimal R^2 . Regression tree models were estimated to assess the importance of nursing home characteristics on the number of deficiencies cited by state surveyors.

Results

In 2003, the average number of total deficiencies per Kansas nursing home was 7.45 (see Table 1). The average number of deficiencies was nearly 50% higher for high turnover homes (8.95) than for low turnover homes (6.00). A high turnover home is one whose turnover rate was above the state median (71%). This same general pattern was found for both total deficiencies of D-level or above scope and severity and for Quality of Care deficiencies.

Average turnover rates were at least twice as high in high turnover homes than in low turnover homes. For example, total turnover was 105% among high turnover homes and 47% among low turnover homes.

Twice as many high turnover homes had for-profit ownership (73%) than low turnover homes (36%). A larger proportion of high turnover homes were part of a multi-facility chain (63%) than low turnover homes (43%).

There were only small differences between high and low turnover homes in number of beds, wage rates, nursing hours per resident day, casemix index, and county per capita income.

Table 1
Means of Variables Included in Regression Tree Models

	Low Turnover Facilities*	High Turnover Facilities*	Total
Dependent Variables			
Total Deficiencies	6.00	8.95	7.45
Total D+ Deficiencies	5.68	8.48	7.06
Total Quality of Care Deficiencies	2.50	3.50	3.00
Independent Variables			
RN Turnover	47%	90%	68%
LPN Turnover	40%	94%	67%
CNA Turnover	59%	132%	95%
Total Turnover	47%	105%	76%
Size (Number of Beds)	81	79	80
For Profit Ownership	36%	73%	54%
Member of 2+ Facility Chain	43%	63%	53%
RN Wage Rate	\$21.57	\$21.02	\$21.30
LPN Wage Rate	\$15.46	\$15.70	\$15.58
CNA Wage Rate	\$9.68	\$9.47	\$9.58
RN Hours per Resident Day	0.49	0.47	0.48
LPN+ CNA Hours per Resident Day	2.89	2.93	2.91
LPN Hours per Resident Day	0.56	0.57	.056
CNA Hours per Resident Day	2.34	2.35	2.35
Casemix Index	0.95	0.98	0.96

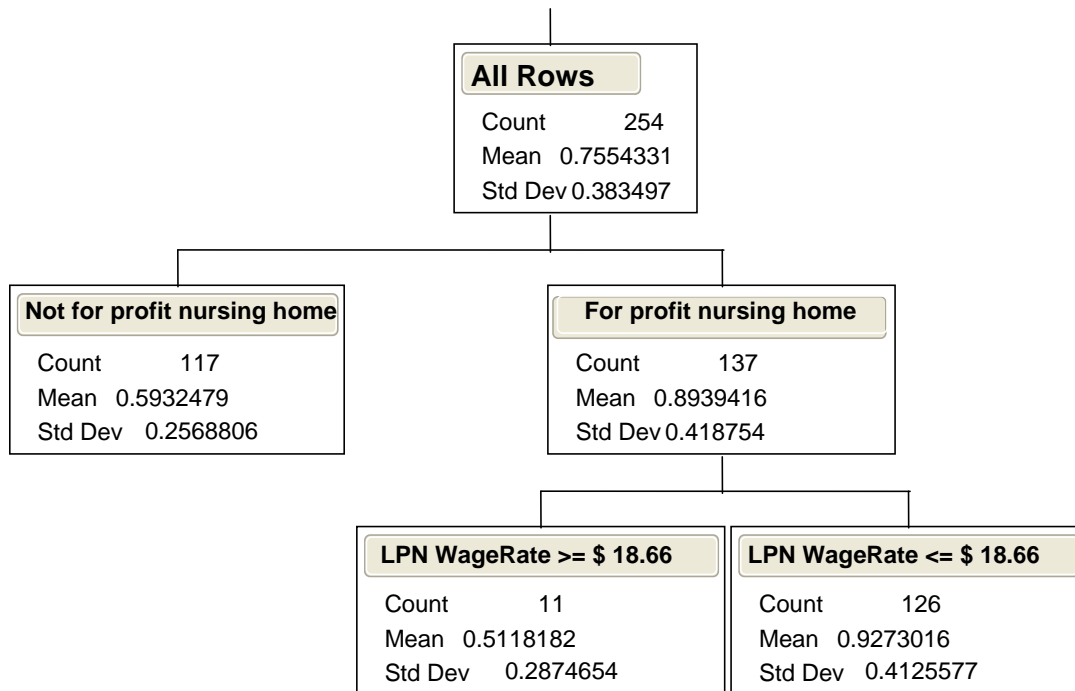
Turnover rates were the single most important predictor of nursing home deficiencies (Table 2). This finding held for the total number of deficiencies, the number of D+ deficiencies, and the Quality of Care deficiencies. Homes with a total turnover rate above approximately 80% had about double the number of deficiencies than homes with turnover rates below that cut point. The regression tree figures for these results are located in the Appendix.

Table 2
Influence of Turnover on Deficiencies

	Turnover Cut Point	Mean for Homes Above Cut Point	Mean for Homes Below Cut Point	R²
Total Deficiencies	81%	5.74	11.1	0.298
D+ Deficiencies	81%	5.39	10.5	0.278
Quality of Care Deficiencies	79%	2.3	4.2	0.235

Because turnover is such an influential factor in relationship to survey deficiencies, reducing turnover could become a key goal for homes and the target for organizational change initiatives. Hence, it is important to understand more about the factors or situations that result in turnover. The regression tree presented in Figure 1 shows that ownership status is the single most important predictor of turnover, with for-profit homes having turnover rates (89%) that are 50% higher than not-for-profit and government homes (59%). Obviously, ownership is not a factor that can be manipulated to reduce turnover. However, the regression tree also shows that the most important factor related to total turnover rates within for-profit homes is the LPN wage rate. For-profit homes that pay their LPN more than \$18.66 per hour have turnover rates (51%) that are not only approximately half the size of homes that pay LPNs less than \$18.66 per hour (93%), but are also lower than the turnover rates for not-for-profit homes. An LPN wage rate of \$18.66 per hour is \$3.08/hour more than the state average. This raises the hypothesis that LPNs who are more highly paid may have the experience and leadership skills to increase the job satisfaction and retention of CNAs who make up the vast majority of the turnover population. No data are currently available to explore this result. As there were only 11 homes that were both for-profit and paid their LPNs at the higher wage right, it would be beneficial to explore the circumstances at those homes further. Is it the case that those LPNs have above average leadership skills, including clinical skills, or experience, or is some unmeasured factor leading to this result, e.g. those 11 homes are engaged in culture change?

Figure1
Regression Tree for Turnover Rates
(R2=.200)

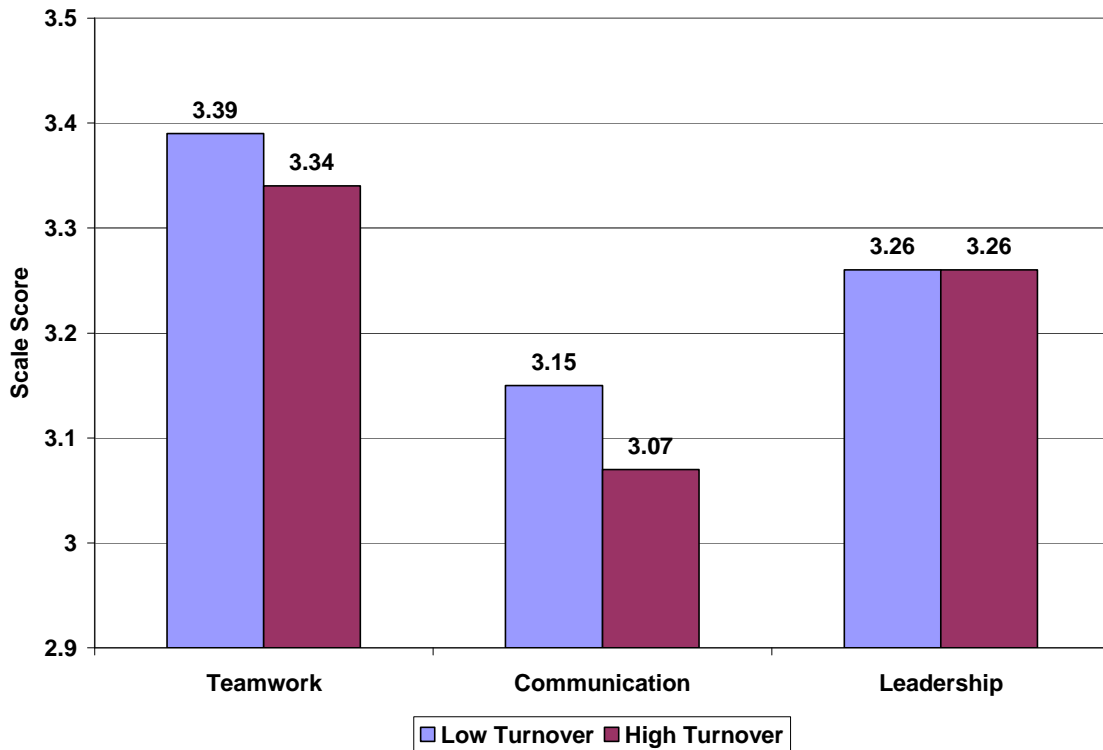


In 2004, we collected data on the organizational environment in a random sample of 101 Kansas nursing homes. Data were collected from all staff on their opinions about teamwork, communication, and leadership within their facility. Figure 2 below presents data from 88 of the facilities that could be matched to the administrative data, and whose turnover rate could be categorized as below the state median and those whose rate was above the median.¹

Low turnover homes scored more highly on teamwork and communication than high turnover homes, although these differences were small and not statistically significant. There was no difference between high and low turnover homes in leadership.

¹ Some the homes not included in the analysis could have had turnover rates at the state median.

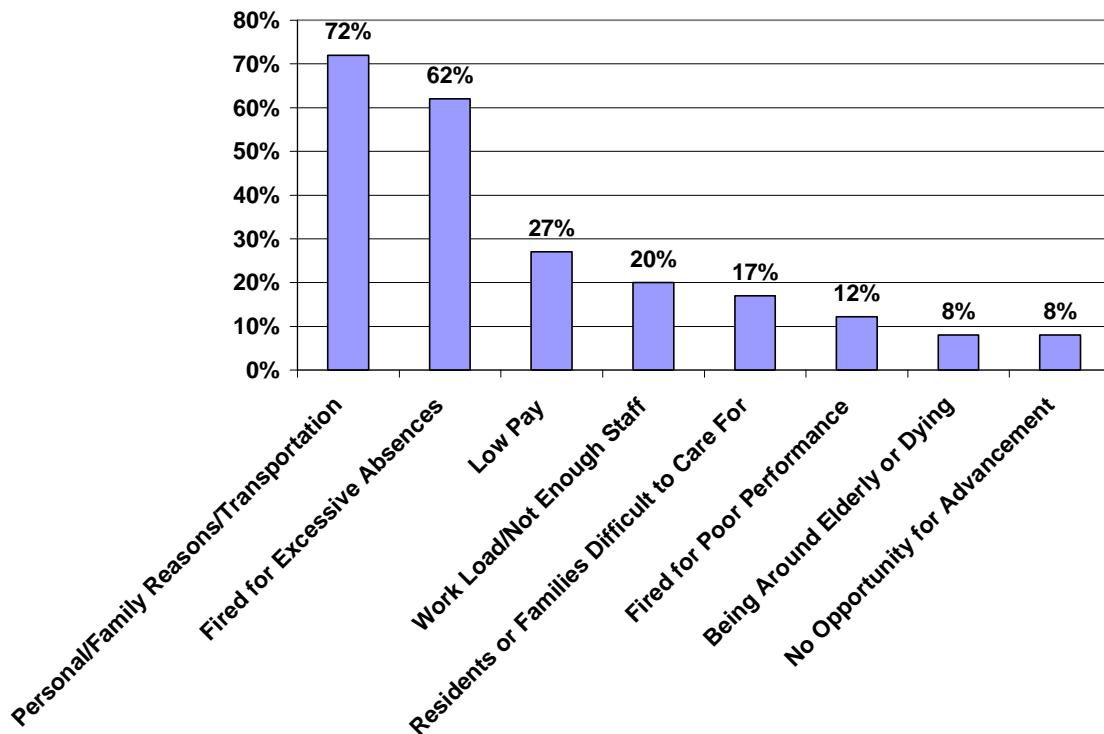
Figure 2
Teamwork, Communication and Leadership Among
High and Low Turnover Kansas Nursing Homes
Average Scale Score (Range 0-4)



Source: KU SON survey of Organizational Teamwork, Communication and Leadership in Kansas Nursing Facilities. Conducted for the Kansas Department on Aging in 2004

In 2004, we conducted a mailed survey of nursing home administrators. The survey contained a question asking administrators to identify the top three reasons for turnover in their facilities. Figure 3 presents the most commonly cited reasons. It shows that involuntary separations may be as common as voluntary separations as a source of turnover. The single most commonly cited reason was personal, family, or transportation problems (72%). The second most common reason was fired for excessive absences (62%). Other reasons were low pay, excessive work load, residents and family difficult to care for, fired for poor performance, being around elderly and dying patients, and no opportunity for advancement.

Figure 3
Administrators Opinion's about Main Reasons for Staff Turnover



Source: KU-SON's Nursing Facility Administrator Survey, 2004

Discussion

The findings from our analysis confirm the results from previous research—that turnover has an important influence on nursing home deficiencies. Importantly, we have extended this work by demonstrating that nursing homes with turnover rates below 80% have many fewer deficiencies than homes with turnover rates above 80%, and in particular, fewer quality of care deficiencies. Administrators, using the 80% threshold as a goal for organizational change, will need to understand more about the causes of voluntary turnover. There is a substantial literature in this area that identifies limits of the nursing home environment, as regulated and reimbursed through Medicare and Medicaid that point towards elements of the culture of change as providing CNAs, the predominant nursing home workforce, some of what they look for in a service sector job.

A 2001 report by the Government Accounting Office (GAO) examined the growing problem of the recruitment and retention of nurses and CNAs. With the increasing longevity of the population, accompanied by significant care needs, the demand for nurses and CNAs is increasing. However, the supply of nurses and CNAs is forecast to be level. Recruitment and retention of CNAs, in particular, is complicated by competition for workers with other service industries. Annual turnover among CNAs in nursing homes (40-100%) was higher than in the service industry in general (20%) and in the total labor force (13-18%). The GAO report found that factors influencing retention

of CNAs in nursing homes included low wages, few benefits, the physical demands of the job, and the workplace environment. Nursing homes have one of highest rates of workplace injury: 13/100 workers compared with 8/100 in construction.

The results of the KU SON 2004 survey of Kansas nursing home administrator opinions confirmed the GAO findings. While administrators cited the most common reason for turnover as personal, family, or transportation problems, other reasons reflected endemic stressors in the nursing home settings, such as work load, the physically demanding nature of the job, and the emotional toll of caring for ill and dying residents.

The IOM study (2000) identified some of the same factors related to CNA turnover: lack of opportunities for career advancement, workloads and staffing levels. However, they also identified factors that are addressed in cultural change: training, respect from administrators, organizational recognition, clarity of roles, and participation in decision-making. Banaszak-Holl et al (1996) also found that degree of CNA involvement in resident care planning was the second most important factor in voluntary turnover, after condition of the local economy.

Bowers et al (2003) asked CNAs why they had left nursing home care. They found that CNAs had dissatisfaction with a range of nursing home policies and practices (e.g., absenteeism, assignments, training, low pay), and that CNAs interpreted these policies as not being appreciated or valued by the organization.

In summary, within the limits of nursing home funding, there are avenues for organizational change—in policies, procedures, work environment, communication, teamwork, and leadership—that can be pursued to reduce turnover and improve the quality of nursing home care.

Conclusion

The design of this study was guided by the need to produce actionable information for nursing home providers, regulators, and consumers. The quality of care in nursing homes is a national concern and the extremely high levels of voluntary turnover among nursing home staff are closely related to the quality problem. Improved knowledge of the components of job dissatisfaction, combined with intervention studies that examine the effects of organizational change targeted to areas of dissatisfaction, are vital components for an agenda to improve the quality of nursing home care.

The GAO (2001) report identifies three categories of initiatives for improving CNA retention: improved wages and benefits, additional training and opportunities for career advancement, and employee support (improved work environments, participation in care planning, empowering CNAs to act on their own special knowledge of clients, and social supports). Too often, policy makers and providers are placed in the position of making decisions on the basis of media reports or word of mouth recommendations. Because of the importance of long term care in America's future and the quality issues that are known today, a systematic approach to examine the efficacy of various organizational changes targeted at reducing turnover should be a part of new initiatives.

Implications

- Nursing home administrators now have a target (below 81%) for reducing turnover to a level that will result in improvement in the number of deficiencies they are apt to receive.
- KDOA now has a target for use in refining its incentive system for homes that reduce turnover.
- KDOA may want to conduct a formal evaluation of the effectiveness of a limited number of strategies for reducing turnover. In particular, it would be beneficial to undertake additional research to evaluate the effects of culture change on staff turnover, retention, and pivotal elements of staff satisfaction.
- Nursing home administrators would be more likely to undertake staff retention initiatives if they had information on the relative cost benefit of alternative strategies. KDOA and/or Kansas nursing home provider associations may want to prepare, or have prepared, models of cost savings resulting from common retention initiatives, such as culture change, raises, career ladders, or training programs.
- Kansas stakeholders can incorporate these findings into educational materials and programs, including workforce retention and human resources training, as they continue their efforts to improve long term care.

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Appendix Tables and Figures

Table A1 Variables Included in the Data Analysis

Figure A1 Regression Tree for Total Deficiencies

Figure A2 Regression Tree for D+ Deficiencies

Figure A3 Regression Tree for Quality of Care Deficiencies

Appendix Table A1
Variables Included in the Analysis and Data
Sources

Variable	Source	Year
Deficiencies	KDOA Deficiency Data	2003
Case Mix Index	MDS	2003
Wage Rates	Medicaid Cost Reports	2003
Nursing Care Hours	Medicaid Cost Reports	2003
Turnover	Medicaid Cost Reports	2003
Ownership	Medicaid Cost Reports	2003
Multi-Facility Chain	Medicaid Cost Reports	2003
County Per Capita Income	2000 U.S. Census	
Administrator Opinions on Turnover	Mailed Survey Conducted by Kansas Nursing Facility Project for KDOA	2004

Figure A1
Regression Tree for Total Deficiencies
(R²=.298)

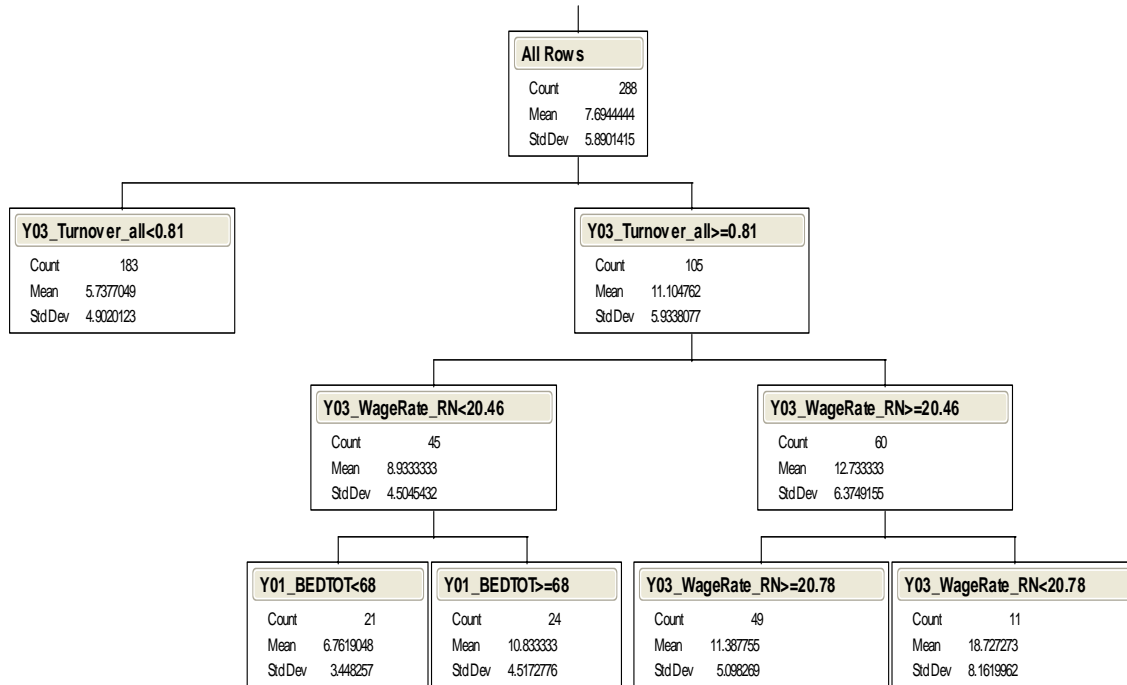


Figure A2
Regression Tree for Total D+ Deficiencies
(R²=.278)

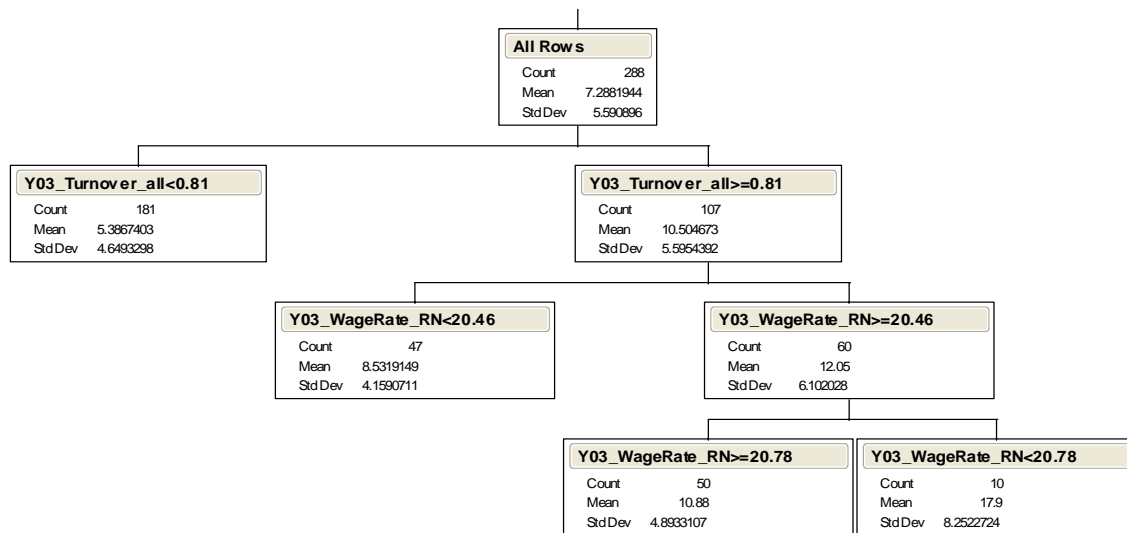


Figure A3
Regression Tree for Quality of Care Deficiencies
(R²=.253)

