



“Does the preparation and background of nursing home administrators correlate to selected quality indicators of a nursing home?”

**A Research Project of
St. Joseph College of Maine
For the Foundation of the NAB**

Steven E. Chies
Primary Researcher



Abstract:

Nursing home administrators hold the key leadership position in a nursing home, yet little research has been conducted that evaluates their preparatory background and how it might relate to certain quality metrics. This study reviewed the government's nursing home rating system results with certain demographic and preparatory background for the nursing home administrators in the State of Nebraska. No statistical correlation was found between the governmental rating scores and the variables examined by this study. However, certain trends were noted in high performing facilities that should be explored further.

Background of the Sponsors:

The Foundation of the National Association of Long Term Care Administrator Boards (NABF), an affiliated organization for the National Association of Long Term Care Administrator Boards (NAB), has been given access to a data set from the Nebraska Board of Examiners for Nursing Home Administrators (NBENHA). The NBENHA provided certain demographic information on the licensed administrators in the State of Nebraska. The FNAB is interested in evidenced based research on the performance of licensed nursing home administrators in relationship to their preparation and experience and funded this project to conduct a research project.

NAB, the parent organization of FNAB, is comprised of the state licensure boards for nursing home administrators. NAB develops and administers the nationally recognized nursing home administrator examination and works with the state licensure boards in making suggestions on changes to requirements for the state administered nursing home administrator licensure.

The state licensure boards, who are the members of NAB, are responsible for setting qualification standards for nursing home administrator candidates, adjudicating complaints of

nursing home administrators and setting standards for determining on-going nursing home administrator licensure. State licensure boards are typically composed of nursing home administrators, other health care professionals, and consumer representatives.

(For disclosure purposes, the author of this study is a licensed nursing home administrator in the State of Minnesota, is a past President of the NAB, and currently a member of the Board of the FNAB. He also teaches a distance learning class for the College. St. Joseph College of Maine has been accredited by NAB as having a nursing home administrator degree program that meets the standards set by NAB for college curriculums that are approved programs for licensure.)

Introductory Comments:

America is facing significant public policy challenges with an aging population. With the current population of those over age 65 at about 35 million, Medicare and Social Security are struggling to maintain fund balances. As 10,000 Baby Boomers are turning age 62 every day and will do so for the next twenty years until we double the over 65 population to 77 million, the care needs of that group will put additional stress on the financing and delivery models of care in the United States.

While the majority of care has been and continues to be provided by informal caregivers (friends, families, and volunteers), care in congregate care settings (ie. nursing homes, assisted living, small house, group homes, foster care, etc.) will still be required for those needing higher levels of care and services. High quality and affordable nursing homes, assisted living, home care, hospice care and personal care will be required well into the future.

The quality of nursing home care in America has been under scrutiny and review going back into the 1970's. (IOM 1986, 1991; GAO 2007, 2009) Nursing homes are currently caring for

1.7 million infirmed and elderly individuals in 17,000 long-term care facilities. There is a similar number of elderly being cared for in other congregate settings, such as assisted living and housing with services. Demand for services is expected to grow as Boomers age.

The solutions for improving quality in nursing facilities and other care settings have been debated by regulators, public policy makers, consumers and providers for many years, yet no consensus for a resolution has been attained. Some believe that more enforcement and penalties will force quality to improve. Others believe that the current system of oversight assures the same outcomes. (Walshe, 2001)

The current system of regulations carries harsh sanctions for non-compliance, including bans on admissions, monetary fines and exclusion from the program. Considerable resources are expended to enforce the regulations and provide oversight of the facilities by both the state and federal governments, yet there is scant evidence that this current model of oversight has significantly improved reported quality. (Werner, 2009)

Academic researchers have examined a number of the variables available for research purposes, including nursing facility quality indicators, federal regulatory compliance, facility staffing levels, and other items for research. However, the study results have been of limited scope and of minimal value in creating evidence based practices that might be translated into new in public policy initiatives or in improving the practice of long-term care administration.

The Institute of Medicine (IOM) conducted a study and made recommendations for improving the quality in nursing homes that resulted in the federal legislation OBRA 1987 nursing home reforms. The recommendations from the IOM included a standardized assessment tool, changes to regulatory oversight, enforcement of compliance with the enhanced use of

sanctions and a federal standard for the qualifications for nursing home administrators. (IOM 1986). This has been the most recent major legislative attempt to improve quality in nursing homes. (Pratt, 2009)

The federal agency responsible for quality and the regulations in certified nursing homes, the Department of Health and Human Services, Center for Medicare and Medicaid Services (CMS) has also enacted regulatory changes and strategies in an attempt to improve outcomes. The CMS nursing home survey process is sub-contracted to individual state agencies, with CMS providing regulations, interpretation guidance, training, funding and oversight. (GAO, 2007)

In 2004, CMS created a number of key quality indicators that are being monitored on a routine basis. CMS has reported improvements in many of the quality indicators, but still there are ongoing concerns with quality in nursing facilities. Consistent regulatory compliance also remains a troubling and unresolved issue. (GAO, 2007, 2009)

The CMS regulatory survey system uses a scope and severity scale (listed as A – K) to assess the complexity and prevalence of a deficient practice and apportions sanctions accordingly. (GAO 2007, 2009) Several researchers have stated that relying on the number of deficiencies may not appropriately determine the quality in a nursing facility, as there are inconsistencies in enforcing the regulatory compliance surveys by the states. (Werner, 2010) Most of the historic research studies have used the number of federal certification deficiencies as a de facto quality report. Deficiencies are determined at a single point in time when a federal survey is taking place and deficiencies are not necessarily a determination of a negative patient outcome. The failure to adequately document an event or occurrence may create a deficient practice, but not necessarily a negative outcome.

Most recently, CMS adopted a five star rating system, designed to provide the public with a summary of information on the performance of nursing homes certified to be participants in the Medicare and Medicaid funding programs. The results of the federal certification survey do not provide an adequate review of the quality of care in a nursing facility. The CMS five star rating was created to provide a more detailed and balanced examination of a nursing facility. The CMS five star system has several systems and data elements in order to understand the current and historic performance of a nursing facility. The details of the system are discussed further in the study paper.

Nursing home administrators are licensed by the state and are responsible for the overall management and leadership of nursing home that they are the administrator of record. The federal government has required nursing home administrators be licensed by a state board in 1972. However, no specific federal standards were mandated, except for passing a nationally recognized examination. OBRA 1987 federal legislation did mandate the creation of standardized administrator licensure requirements, but the federal government has not enacted any rules or regulations to change federal requirements. (Pratt, 2009)

Each individual state has the authority to create entry level and on-going licensure standards for nursing home administrators specific to their jurisdiction. The states have instituted a wide variation in nursing home administrator licensure standards. A number have created a “de facto” consensus standard and would accept reciprocity from another state with similar requirements.

A majority of state licensure boards do mandate a bachelor’s degree, special classes in aging services, plus an administrator in training or practicum in order to qualify for licensure. The lack of a nationally recognized licensure standard might be an opportunity to study the licensure

requirements between states. However, this limitation is a significant variable to be considered by state and federal regulators in their roles of monitoring and promoting quality improvements.

Numerous books, articles and studies have been published emphasizing the importance of leadership in improving the performance of an organization. One might conclude that the key leadership position in a nursing home (ie. the administrator) would play a significant role in improving quality of care and services, yet little research has been conducted to validate that theory. The intent of this study is to find evidence of how the background and preparation of a nursing home administrator might impact certain measures of quality.

This study used a quantitative method to assess the impact of certain variables in the demographic and preparatory background of nursing home administrators as compared to the results of a quality outcome tool developed by the federal government. Using the recently created CMS Five Star nursing facility-rating system, the study assessed the quality of nursing facilities participating in the Medicare and Medicaid program and then compared the facility results to specific demographic information on the administrator of record for a facility.

If it could be determined by quantitative research that the demographic, preparatory and backgrounds of nursing home administrators has an impact on quality outcomes in the nursing home, changes or modifications could be made to the licensure and qualification process for nursing home administrators. Further, an indication that certain competencies are valuable in the success for a nursing home administrator could suggest changes in educational curriculums.

Data Sources:

This study combined elements from five sources in the process of creating a database that provided some of comparative information and data. The data sets were as follows:

- Nebraska Nursing Home Administrator Licensure Board Information:

- Historical data for administrators from 1987 to 2007
- The current Nebraska Nursing Home Administrator roster
- NAB CDOM data set for Nebraska test candidates from 2002 – 2009
- CMS Five Star Rates: Overall and Regulatory Ranking
- Nebraska Department of Health Nursing Home Facility Information

Nebraska Nursing Home Administrator Licensure Board Information:

The nursing home administrator data elements are from the State of Nebraska Board of Examiners for Nursing Home Administrator and included demographic and preparatory information of the licensees, including (for those individuals making licensure application during the period of 1987 to 2007 – Information was missing for the years 2000 and 2001):

- Date of Birth
- Year of licensure
- Educational preparation
- Gender
- Year of original licensure
- Past employment positions, including any nursing home experience
- Participation in an administrator-in-training program or a mentor requirement
- Pass or failure of the national examination

The information in the data set is assumed to be accurate. Applications for licensure are attested to by the individual applicants and should provide confidence that the information is correct. Some of demographic information is considered to be in the public domain and

available for research purposes. However, the researcher found inconsistencies in some data elements and also missing or incomplete information.

For Nebraska nursing home administrators who were licensed in another state and were granted Nebraska licensure by reciprocity, no information on background or preparation was available. That category of licensure (by reciprocity) made up a significant number in the data set (n = 192).

NAB CDOM Data Set for Nebraska Test Candidates:

NAB provided the CDOM data for licensure test candidates from Nebraska for the period of 2002 to 2008. The information included limited demographic and preparatory information and both the raw score and the scale score on the national examination. The national nursing home administrator licensing examination uses an equating methodology on each examination to provide consistency in the degree of difficulty in each new form of the examination. This statistical methodology allows comparisons of score for each candidate over a number of years. (PES Annual Report to NAB, 2008) Both the raw scores and the scale scores were used for evaluation purposes, but only the scale score was ultimately used for correlation purposes.

CMS Five Star Rating Data Set:

The CMS web site provides a listing of all facilities participating in the Medicare and Medicaid programs. The listing includes:

- Facility name
- Address
- Medicare Provider Number

- Demographic information about the facility
- CMS Five Star Rating Information

The CMS Five Star rating system uses three data elements to determine an overall rating of one to five stars. One star is determined to be below average, three stars average, and five stars to be very above average. The stars are assigned to facilities in each state based on a statistical formula developed by a panel of experts that mandates a limited numbers of facilities in each star category. This information is available for public use on the CMS web site and was downloaded and sorted to retrieve the facilities from Nebraska that have provider numbers and participate in the Medicare or Medicaid programs. (*CMS site accessed January 2010*) (Not all nursing facilities participate in the Medicare and Medicaid program. In Nebraska, about six facilities out of 231 were not listed on the CMS database. These facilities were typically governmentally operated institutions. Participation in the Medicare and Medicaid programs is voluntary.)

The regulatory portion of the CMS rating system uses federal survey certification results for the past three survey cycles and then applies a scope and severity scale to create an algorithm that assesses a point score for each facility. This method provides a superior ranking system by using multiple time periods and a proportional rating for deficiencies based on a numerical scope or severity. While the use of deficiencies remains a limitation of determining quality, the application of scope and severity and the three survey period does mitigate some of the significant challenges in using regulatory information for quality purposes.

(<http://www.cms.gov/nursinghomecompare>)

The second element of the CMS Five Star system uses facility reported nursing hours during a two week pay period prior to the survey, then makes an adjustment to the hours based on the individual facility case mix or patient acuity score, as determined by information submitted on

the individual patient MDS assessment. This adjustment balances out the differences in patient care needs between facilities and provides better comparisons between nursing facilities. This element was not evaluated in this study, except as a part of the overall rating score. It does have the potential for further research, especially on the impact it might have on quality outcomes.

The third element for the CMS Star Rating is a composite of ten care quality indicators selected from the minimum data set (MDS), which are normally used to determine the patient level of care for payment and other purposes. This data is reported by the facility on a regular basis to CMS by using an electronic transmission of MDS information. While this self-reported information is a potential limitation of this study, the nursing hours and MDS information must be certified by a registered nurse that the information is complete and accurate. Intentional or fraudulent submissions are subjected to fraud or abuse prosecution and imposition of other sanctions, including but not limited to fines, jail or exclusion from governmental payment programs. These potential sanctions should limit significant intention errors or bias in the information provided to CMS. This element was also not used in this study, except as a portion of the overall rating score. This is another area of potential future research.

The CMS data set does not include information on the administrator of record for the facility. It only provides information to the public on the basic demographic information on the facility and the performance of the nursing facility in the areas mentioned above.

Nebraska Department of Health Nursing Home Facility Information:

The Nebraska Department of Health has a listing of the licensed nursing homes available for downloading. The data elements include:

- Name of the Facility

- Address
- Medicare Provider Number
- Administrator of Record
- Other facility characteristics

This database provides no information regarding the actual performance of the facility, such as regulatory compliance or complaints filed against the facility. Other information on the site could be used for further analysis of facility performance such as the demographic characteristics of facilities, urban vs. rural location and size of the facility.

Combined Dataset for Study Purposes:

Data elements from the Licensure Board database, the Nebraska Health Department database, the CMS database and the NAB CDOM database were used to create a merged set of data. The Medicare Provider Number was used along with the name of the facility to create a platform to add additional data elements. This included the Administrator of Record for the facility (from the Nebraska Health Department, scale scores of applicants (from NAB CDOM), demographic and preparatory information (from the Licensure Board 1897 – 2007 data set) and the Five Star ratings by facility provider number (from the CMS Web site). Using the Medicare Provider number along with the facility name and address allowed the study to verify that the information being merged was from the correct facility location. As there were significant missing data elements from the various data sources, the results of the research may not fully reflect the performance of the facility in the CMS five star rating as compared to the information on the administrator of record.

Research Problem:

The current regulatory oversight system is designed to determine regulatory compliance, but not necessarily the quality being provided or is quality is being improved. The system determines compliance with the regulations. The use of evidence based quality indicators are not necessarily used for regulatory purposes, but are a part of the Five Star Rating System. Limited research has been conducted to determine the impact the nursing home administrator might have on the regulatory compliance or quality indicators for their facility. Do the demographics and preparatory background of nursing home administrators correlate to the reported quality of care rating for the nursing home that they are the administrator-of-record?

Literature Review:

Numerous studies and articles are published that discuss the quality of care in nursing homes and there are some articles reviewing the nursing home administrator. However, this student could locate only one study that had a focus on the ability of the nursing home administrator to directly impact the reported quality of care.

In a doctoral dissertation completed by Dr. Douglas Singh in 1994 (and then published in a book in 1996), Dr. Singh conducted a study of nursing home administrators and their impact on quality. Singh uses a combination of a self-reported nursing home administrator survey and the deficiency results for the nursing home to conduct an analysis of variance and a multivariable regression analysis. While the results of the Singh study do provide some insight on this topic, there are a number of limitations to this study. (Singh, 1996)

First, the study was limited to a single state (South Carolina) and may not represent the practices in other states or regions of the county. Second, the sample size was limited to those willing to participate, which may impact the information collected. Finally, Dr. Singh used only

the variable of certification deficiencies as the assessment of quality outcomes, which again may limit the sample for the study.

Resnick (2009) looked at the relationship of certain characteristics of the nursing home leadership structure as they related to quality outcomes. One of the results of this study (using a variable of voluntary nursing home administrator certification) did not have the same findings as another study by Dr. Castle.

The Castle (2003) study focuses on the premise that the mere process of providing information about the performance of their nursing home will cause an improvement in outcomes. The results of his study support that theory. Unfortunately, this study has significant flaws including: the selection of the sample states; selection of the sample characteristics (including the size and type of facilities excluded); and the use of facility reported outcome data. While Castle concludes that providing outcome results from the facility and peer groups did statistically improve outcomes in two categories (physical and chemical restraints) his work did not determine how the information was used by the nursing home. Other factors, including regulatory action on the use of restraints may have impacted the results.

The importance of the administrator in the operations of a nursing home is another study topic of interest to some researchers. Frequency of administrator turnover has been considered in other studies as a variable that impacts quality. A project by Singh (2000) provides an assessment of the turnover and retention of nursing home administrators.

In still another study by Castle (2006), he used a survey instrument to measure job satisfaction of nursing home administrators. A conclusion in this study is that job satisfaction does influence organizational performance and quality of care. While potentially useful, the study protocols used administrator self-reported information and may be a limitation.

With the studies reviewed, with the exception of the Singh (1994, 1996) study, little has been researched to assess the impact of the nursing home administrator on the quality outcomes of the nursing home that they are the administrator-of-record. In another Singh study (1997), a limitation was that it failed to provide conclusions that might be used by nursing facility owners or public policy makers to significantly impact facility quality. Further, Singh's use of certification deficiencies in a limited time frame, data from a single state, and self-reported administrator attitudes restricts the value of the study.

The literature search results indicate that quality improvement in nursing homes is an important objective, but there has been limited research evidence to make policy changes. As many studies have only looked at regulatory compliance, the availability of other quality indicators needs to be explored further.

Researchers do suggest that the nursing home administrators may be important in improving quality outcomes. Both the Castle and Singh research provides some information, but neither author supplies details sufficient to make definitive public policy recommendations.

This researcher's hypothesis is that nursing home administrators who have higher education, more tenure as an administrator in their position, and prior experience in a health care leadership position, will achieve higher CMS Five Star rankings.

Methods and Procedures:

The research project used a combined dataset of nursing home administrators of record and using correlation analysis, compared the educational, longevity, and other preparatory experience to the score achieved by the most recent CMS Five Star Nursing Home Rankings.

In reviewing the Nebraska data set, it was noted that at about 192 individuals achieved licensure in another state and were granted a license by the State Licensure Board using a standard of reciprocity available in the Nebraska regulations. Any individual who achieved state licensure by reciprocity has only been included in certain demographic information and as a variable for the CMS Five Star rating.

The CMS Five Star ratings have been extracted from the CMS web public site, accessed in December of 2009 and January 2010. The information for the address of the facility in the CMS data was verified with the address of the facility provided by the information on the Nebraska Health Department.

The data from all of the sources has been downloaded and stored on a Microsoft Excel spreadsheet created for this project. The statistical package, DDXL, an add-on to Microsoft Excel, was used to conduct the variance and correlation analysis.

The data elements for the background and preparatory information included the following elements:

- Years at the current facility (In Number of Years)
- Prior health care experience (Nursing, Therapy, Medical, Other)
- Education (Less than BA/BS; Any BA/BS; Any degree beyond a BA/BS)
- Years of tenure as a nursing home administrator (Number of Years)
- Licensure from reciprocity (Yes or No)

The data elements from the CMS Five Star rating:

- Composite Score (Number of Stars)
- Survey Result Score (Number of Stars)

Once the baseline assessment data was collected, the project conducted and analyzed the variance in the demographic information of the nursing home administrators using the statistical package of Excel DDXL. Using the variables collected above, the project analyzed any positive or negative relationship between the variables, using the statistical package.

Discussion:

Nebraska Nursing Home Administrator Licensure Board Data Set:

The information provided by the Nebraska Licensure Board consisted of data on 371 individuals currently licensed and all of the individual applicants from 1987 to 2007 are a separate data set. The information for the current licensees is in the public domain and available from the Nebraska Licensure Board. The information on the data set is detailed in Table A.

The current licensee data set provides information about the licensee, including demographic and preparatory information. Information was not complete for all individuals in the dataset. The information does provide a means of determining current licensure status and state of residence.

The state of primary residence for those in this dataset is Nebraska with over 83%. The surrounding states of South Dakota, Iowa and Kansas providing another 9% and all other states at 8%. As the State of Nebraska has 231 licensed nursing facilities, this would mean that about 140 individuals hold Nebraska nursing home administrator licenses, but are not the administrator-of-record in a Nebraska nursing home. Those individuals might be employed in

other nursing facility positions, but that information was not available. Having a sufficient supply of licensed and qualified nursing home administrators is important to nursing facility boards and should be a policy issue for the Nebraska Nursing Home Administrator Licensure Board to consider in the future.

While this surplus may appear adequate, it is on the low side as compared to other states. Table D provides a summary of licensed nursing homes to the reported number of nursing home administrators licensed in the state. Nebraska (152%) falls below the average (245%) in the comparison, but slightly above its neighboring states of Iowa (146.8%), Kansas (137.2%), and below South Dakota (227.7%) and Colorado (213.3%).

It is not known, based on the information currently available for research, any of the details or current employment status of the individuals holding a license in the states. Individuals may be licensed in multiple states, but only practicing in a single state. The individuals might be retired, working in non-administrator position, be a corporate employee or simply working in another field. As the state licensure requirements vary from state to state, further research and analysis should be done to determine the variables that might impact the ratio of nursing homes to licensed administrators. This is beyond the scope of this current research project.

Using the current licensee data set, in Table E, we have detailed the years of tenure as a licensed nursing home administrator banded by five-year increments. The years of tenure as a licensed administrator were determined by subtracting the date of licensure from the current date. This may not accurately reflect if the individual has actually been working as an administrator of record, but it does provide some baseline context for this study.

While the average years of tenure is 10.6 years, 55.8% have less than ten years of experience and 31.81% have four or less years experience as a licensed nursing home administrator in Nebraska. This is not a normal bell curve distribution of data, but highly skewed to the right or more towards those licensees recently licensed. We did not have access to other state or national data for comparisons, so further analysis is difficult to provide. The licensure activities in other states may confirm or dispute the larger number of recently licensees. It is also possible that Nebraska has experienced a large number of individuals dropping their license. Other conclusions are also possible and further analysis is needed to determine any conclusions.

While licensure tenure is one variable, the data set does not indicate whether the individual is actually practicing as an administrator of record. The Nebraska Licensure Board data set does not indicate tenure at a specific facility. When combined with other specific demographic information, tenure in a specific facility position could be another variable to use when researching quality improvement protocols. Other researchers have indicated that turnover does have an impact on quality, but length of tenure has not been researched sufficiently to determine what influence it might have on quality.

A dataset was available for licensure applications in Nebraska from 1987 to 2007. While the total number of individuals currently licensed in Nebraska is smaller, this larger set of licensure applicants was the only dataset with detailed demographic information available in an electronic format. A limitation of this dataset is that detailed background information on licensure applicants that use reciprocity from another state to secure a Nebraska license was not available in this dataset. Those licensed in Nebraska using reciprocity was 192 or 51.8% of the

data available. Also, detailed information for those licensed in 2000 and 2001 was not available electronically, as it was explained that the information had been lost.

Dataset from the Centers for Medicare and Medicaid Services: Nursing Home Five Star Rating:

As discussed in the Background section of the study, the Centers for Medicare and Medicaid Services (CMS) added (in 2008) a summary rating system to their *Nursing Home Compare* public web site. The rating takes the form of a rating of one to five stars, with five being the highest. The rating system has three specific data elements, and one combined rating to provide guidance to the public in an easier to understand format. For this study, we only used the overall star rating and the regulatory star rating for Nebraska skilled nursing facilities. CMS collects and provides this data to nearly all of the skilled nursing facilities certified to participate in the Medicare/Medicaid programs or about 17,000 in all 51 jurisdictions.

The regulatory rating uses facility certification surveys as the data for determining a star score. CMS utilizes the three most recent surveys, but weighs the most recent survey higher in creating the score. Additionally, CMS uses a point system that scores the number of deficiencies noted and the scope and severity of the deficiency. Higher points are assigned to deficiencies that have a higher potential for harm. Lower points are assigned for deficiencies on minimal or no harm. In order to control variance between states, CMS applies the star rating on the following criteria:

- The top 10% of facilities that achieve the lowest number in deficiency scores in each State receives a five star rating for regulatory compliance.
- The middle 70% receive ratings of two, three, and four stars in equal numbers or about 23.33% in each category.

- The bottom 20% of facilities with the highest deficiency scores receive one star.

The star rating score is a combination of the three quality measures by using an algorithm created by CMS to make a composite overall star rating. The scoring system was reviewed by a panel of technical experts. As we indicated in the Background discussion, there are challenges and limitations in using any rating system and the CMS process has its own problems.

The major concern for this system is in the decision to use category ratings and overall ratings are based on a fixed number of facilities for each star rating. This by design limits the number of each category of star ratings. Essentially, a state could not have all one star or all five star facilities, as they are apportioned by the formula to a fixed number.

For the Nebraska skilled nursing facilities, their performance has been detailed in Table F of this study. As expected, the overall results for nursing facilities in Nebraska have similar characteristics as the algorithm developed by CMS, with 11.7% one star overall rating and 16% five star overall rating. The star rating for regulatory compliance indicated a larger percent for one star at 19.5% and 10% for five stars. This variance is due to the method CMS uses to adjust the rating system. Data is not available for all Nebraska facilities due to non-participation in the Medicaid or Medicare programs or other reasons not disclosed.

An opportunity for future research would be to study the characteristics of the nursing home administrators and the facility information who are able to sustain a five star rating over several years, as compared to those facilities that and administrators that have a one star rating over several years.

NAB CDOM Dataset:

This data set consisted of 106 Nebraska licensure applicants who sat for the national examination from 2002 to 2009. NAB began collecting the information in an electronic format starting in 2002 and they have an extensive dataset for the 51 state jurisdictions. The information available included the scores on the examination (both raw score and scale score), age of applicant, and other demographic information. The information on the performance of the applicants is detailed in Table G.

The results of the data show a similar pattern of demographics as the full Nebraska Licensure Database, with females being the largest number of applicants (67.3%) and the average age being 46.5. Average age for gender was nearly identical. The range of ages at licensure was also similar, with the minimum being close to the full dataset, but the maximum age was at 68. The average age should be compared to national results, as it appears to be higher than expected. It could be assumed that nursing home administration is a second or third career for the new applicants in Nebraska.

The performance on the national examination had an average scale score of 116.5 for the total count and 116.5 for females and 117.3 for males. In evaluating examination scores to a number of variables in the preparatory work, we found as follows:

Variable:	Average Score	Standard Deviation
Four Year Degree:	114.98	25.21
No Degree Coded:	111.54	18.74
AIT Coded:	116.33	9.73

No AIT Coded:	116.48	10.43
Prior Health Experience:	117.16	9.27
No Prior Experience:	116.10	10.50
Prior Nursing Experience:	116.09	9.90
No Prior Nursing:	116.51	10.22

An analysis of age to scale score did not indicate any correlation, but there was a slightly higher correlation on educational degree to scale score, but the coding in the original dataset was not complete, so verifying the results are difficult. The analysis on prior work experience was not done due to a smaller amount of data available for this study.

Out of the total applicants in the NAB CDOM dataset (n = 106), only 37 were found to be a current administrator of record in the 231 Nebraska nursing facilities or about 16% of the total AOR's. With this smaller data set, the average score was noted at 111.74 with a standard deviation of 13.52, considerably below the average for the full dataset. The small numbers made further analysis of limited value, as no statistical correlation was found between this dataset and the two CMS five star rating. Further inquiry and research could be conducted in this dataset to better understand the results.

Combined Nebraska Nursing Home Administrator of Record and CMS Rating Dataset:

The names of the individual administrator of record (AOR) were taken from the Nebraska Department of Health dataset and merged into the combined study database. The new

dataset includes the AOR for all of the Nebraska skilled nursing facilities that participate in the Medicare/Medicaid programs, the CMS five star rating for both the overall score and the regulatory score, preparatory information on the AOR (to the extent it was available) and demographic information on the AOR (to the extent it was available).

To begin the analysis, we compared the overall CMS score to the regulatory score and found a high correlation between the two scores at .941. This is not surprising, as the weight for the regulatory score is a significant factor in the facility overall star rating. As a result, we elected to use only the overall score in evaluating AOR and facility performance variables. Future research could use the regulatory rating, but we doubt it would provide any further conclusions.

The details of the analysis are located in Table H. The variables reviewed were as follows:

- Years of Tenure as a Licensed Administrator to Overall Score
- 10 Years or Less Tenure as Licensed Administrator to Overall Score
- Level of Education to Overall Score
- Prior Nursing Home Experience to Overall Score
- Licensed by Reciprocity to Overall Score

None of the variables reviewed indicated a correlation between the variable and the overall CMS rating score. Other variables could have been used, including gender, age, and

experience in the nursing profession, but there are limitations in the data available and little value in using some of those optional variables.

While the hypothesis was that one or more of the variables would correlate to the overall CMS score, it is not a surprising result that a correlation was not found by this research. The scoring system used by CMS does make good use of the data that they have collected, it does have limitations. The CMS algorithm used to calculate the score appears to be acceptable, but relies on the results of regulatory compliance. As has been reported by others, consistency in the regulatory process is not good. The states are sub-contracted to handle routine certification surveys and variance between states on regulatory interpretations does occur. There are documented variations even within a state, so regulatory compliance records are a challenge when conducting evidence-based research.

This study has provided a starting point in understanding the impact a nursing home administrator of record might have on the quality of care being reviewed. Tenure as a licensed administrator may have a significant impact as a variable in future studies, as could the impact of advanced degrees, prior nursing home experience, and prior nursing education. Scores on the national licensure examination do not seem to have an impact as to whether an individual becomes an AOR, but the data was too limited to find any clear patterns of correlation between the actual score on the examination and the impact on CMS overall rating.

While overall for the full AOR dataset, the years of tenure as a nursing home administrator showed no correlation to achieving a CMS star rating, the AOR's with tenure longer than 25 years achieved a larger number of overall five star ratings than expected (36%). While the number in the sample was extremely small (14), it did correlate at .717 level.

Unfortunately, no demographic or preparatory information was available for this sub-group. An assessment of these variables could provide interesting results for public policy makers.

The basic format for this research project should be expanded to include a number of states and a wider selection of AOR's. Understanding the impact that preparation might have on quality outcomes is an important public policy question to review, especially given the growth of the over 65 population in the next 20 years and the expected scarcity of governmental funding sources. Leadership performance in chronic care settings will be critical in assuring that quality outcomes are delivered. Preparing the future leaders for the challenges of the future will be critical in making those outcomes positive.

Limitations of the Study:

As with all research studies, there are limitations for this study, including the challenges reported by other researchers or minimal data availability. As this study uses historical information to review nursing facility performance, over time, changes in regulations, changes to the survey process, changes to the rating system, patients admitted or discharged, turnover of other nursing home leadership positions (Medical Director or Director of Nursing Services), change of facility ownership, and financial instability, all could impact the results or validity of this study.

Another limitation is that only a single state was used (Nebraska) for the analysis. While the census information about Nebraska is typical of a mid-western state, the age banding of the general population, the rural nature of the state with significant numbers of small towns, and the small number of minorities as a part of the population may not make the state a good model for this type of research.

The largest limitation of the study is not having complete demographic and preparatory information regarding the administrator of record (AOR) for all of the Nebraska licensed nursing facilities. As the format for the study is in place, any additional demographic and preparatory information that becomes available could be included. The author will continue to work with the funder (NBAF) and the Licensure Board for the State of Nebraska to see if additional information could be added to the dataset.

The variables used in this project are not the only quality indicators that could be researched to assess facility performance. Patient and family satisfaction, employee satisfaction and turnover, and facility financial performance all are elements that could be included. Unfortunately, little of this data is available to review for research purposes and is a limitation of this type of research.

The literature also suggests that other variables may influence the quality of the care provided, including size of the community where the facility is located, type of ownership of the facility, longevity of key staff and other employees, family visits to the facility and culture of the organization. Certainly a research study that could use all of these factors as an element of the study could provide additional information or recommendations, but that is beyond the scope of this project.

The determination of what is considered a quality outcome is also a highly debatable issue in the literature. The classic quality gurus (such as Deming or Juran) might consider the opinion of the customer to be the final determiner of quality. For long term care facilities, the customer may not be able to communicate a response to satisfaction levels. Also, who is the customer, (the patient, the family or the health department surveyors) is another challenge in determining the outcome measurement. Even medical conditions such as pressure ulcers can be

difficult to determine a root cause attributable to care system failure. The breakdown of the body's systems and defenses does occur when an individual is in the final stages of dying, which might cause the development of a pressure ulcer or other negative condition, which might not be the fault of a nursing facility care delivery system. This is also a limitation of this study and of the CMS survey process, as noted above.

Closing Comments:

Considering the data sources that are readily available and consistently collected, the CMS Five Star rating system is probably the most appropriate data element for this type of study. While the study does provide statistically significant results that education and/or background preparation of the nursing home administrator does impact quality, either positively or negatively, further research or study has the potential of changing the licensure requirements in the states or possibly stimulate CMS to create a national minimum standard for licensure.

The CMS Five Star Rating system has only been in place for less than two years, yet it has created a research source that has great potential for evaluating a number of variables of long term care organizations. NAB and state licensure boards should carefully evaluate the research opportunities for this dataset and how it might be used to evaluate nursing home administrator competency. While this research project did not demonstrate the impact of the nursing home administrator on the CMS Five Star ratings, we did find threads and elements of trends that might be confirmed with future research.

The findings of the study will be submitted to the FNAB for publication in their journals and newsletters. Specific findings that might result in recommendations for changes to state licensure requirements will be presented to the National Association of Long Term Care

Administrator Boards (NAB), as changes in licensure requirements are the current responsibility of the state licensure boards. The Nebraska Nursing Home Administrator Licensure Board will also receive a copy of the study and specific recommendations for changes to their data recording process and possible changes to their requirements for licensure.

This study is a starting point towards a better understanding of the education and background experience needed by successful nursing home administrators in improving the quality outcomes for their facility. Further studies might be considered, which could include a larger sampling of states or potentially all facilities participating in the Medicare and Medicaid certification programs. An expansion of variables to include patient satisfaction, employee turnover and employee satisfaction could also improve a future study of nursing home quality outcomes. An extension of this study could be to track and monitor changes to the CMS Five Star ratings over a longer period of time to determine changes and assess if any trends are occurring.

References:

- Castle NG, (2003) "Providing Outcomes Information to Nursing Homes: Can It Improve Quality of Care?" *The Gerontologist*, Volume 43, No 4 483 – 492
- Castle NG, (2006) "An instrument to measure job satisfaction of nursing home administrators" *BMC Medical Research Methodology* 6:47
- Castle NG, Fogel BS, (undated) "Skilled Nursing Facilities Led by Professional Administrators Show Evidence of Higher Quality of Care", *American College of Health Care Administration and LTCQ*
- Grabowski, DC, Angelelli, JJ (2004) "The Relationship of Medicaid Payment Rates, Bed Constraint Policies, and Risk-Adjusted Pressure Ulcers" *HSR: Health Services Research* 39:4, Part I (August 2004) 793 – 812
- Kelly, CM, Liebig, PS, Edwards, LJ (2008) "Nursing Home Deficiencies: An Exploratory Study of Interstate Variations in Regulatory Activity" *Journal of Aging and Social Policy* Vol. 20(4): 398 - 413
- Lindner R. (2002) "Shortfall in Long-term Care Administrators: A Research-Based Search for Solutions" *National Association of Board of Examiners of Long Term Care Administrators (NAB)* A research proposal submitted to The Commonwealth Fund in August 2002 (Not conducted)
- Murphy, B (2004) "Nursing Home Administrators' Level of Job Satisfaction" *Journal of Healthcare Management* 49:5 336 – 345
- National Association of Long Term Care Administrator Boards (NAB) (2009) 2008 Annual Report, www.nabweb.org
- National Association of Long Term Care Administrator Boards (NAB) (2009) Excel Spreadsheet of nursing home administrator candidates, provided by NAB January 2010
- Nebraska, State of, Department of Health and Human Services, Roster of Long Term Care Facilities, updated as of December 23, 2009
- Phillips, CD, Hawes, C, Lieberman, T, Koren, MJ (2007) "Where should Momma go? Current nursing home performance measurement strategies and a less ambitious approach" *BMC Health Services Research* 2007, 7:93 accessed via the web on December 30, 2009 <http://www.biomedcentral.com/1472-6963/7/93>
- Pratt, John (2009) *Long-Term Care: Managing Across the Continuum* Third Addition, Jones and Bartlett Publishers, Sudbury, MA

Resnick HE, Manard B, Stone RI, Castle, NG (2009) “Tenure, Certification, and Education of Nursing Home Administrators, Medical Directors, and Directors of Nursing in For-profit and Not-for-profit Nursing Homes: United States 2004” JAMDA – July 2009, DOI:10.1016/j.jamda.2009.03.009

Singh DA, Schwab RC (2000) “Predicting Turnover and Retention in Nursing Home Administrators: Management and Policy Implications” The Gerontologist, Vol. 40. No.3 310-319

Singh DA (1997) *Nursing Home Administrators: Their Influence on Quality of Care* Garland Publishing, Inc. New York and London,

United States Government, Center for Medicare and Medicaid Services, Nursing Home Compare, www.medicare.gov/NHCompare, accessed 12/28/09

United States Government, Government Accountability Office (GAO), (2007) “Nursing Home Reform: Continued Attention Is Needed to Improve Quality of Care in Small but Significant Share of Home” GAO-07-794T

United States Government, Government Accountability Office (GAO), (2009) “Nursing Homes: Addressing the Factors Underlying Understatement of Serious Care Problems Requires Sustained CMS and State Commitment” GAO-10-70

United States Government, Census Bureau, , www.factfinder.census.gov, accessed 2/11/10

Walshe, Kieran (2001) “Regulating U. S. Nursing Homes: Are We Learning From Experience?” Health Affairs, Vol. 20, Num 6, 128 - 144

Werner, RM, Konetzka, T, Stuart, EA, Norton, EC, Polsky, D, Park, J. (2009) “Impact of Public Reporting on Quality of Post acute Care” HSR: Health Services Research 44:4 1169 – 1187

Werner, RM, Konetzka, T, (2010) “Advancing Nursing Home Quality Through Quality Improvement Itself” Health Affairs 29:1 81 - 86

Thanks and Acknowledgments:

I wish to thank a number of organizations and individuals for their assistance in conducting this research project:

- Sharon Collings for the Nebraska Board of Examiners for Nursing Home Administrator.
- Randy Lindner, Executive Director for NAB
- John Pratt, Professor at St. Joseph College of Maine
- Twila Weisbord, Professor at St. Joseph College of Maine
- Dr. Doug Olson, Professor, University of Wisconsin – Eau Claire
- Dr. Nick Castle, Professor, University of Pittsburgh
- Sharon Chies, Spouse and Excellent Proof Reader
- Nebraska Board of Examiners for Nursing Home Administrators
- Foundation NAB
- Benedictine Health System

Table A – Nebraska Administrator Data Set Current Licensure Roster:

Count (n)	371	
Address of Record:	Number	Percentage
Nebraska	310	83.6%
Iowa	17	
South Dakota	9	
Kansas	7	
All other states	28	
Tenure of Licensure	In Years	
Average	10.6	
Standard Deviation	9.57	
Range	.07 – 39.53	

Source: State of Nebraska Nursing Home Administrator Licensure Board

**Table B – Nebraska Administrator Applicants
Data Set Applications from 1987 - 2007:**

Count:	571	Percentage
Gender:		
Males: (n)	226	39.5%
Females: (n)	345	60.5%
Age at Licensure for All:	Years	
Average:	39.9	
Standard Deviation:	9.9	
Range:	20 - 64	
Changes in Age – 1987 to 2007		
1987:		
Count: (n)	39	
Males: (n)	17	43.6%
Females: (n)	22	56.4%
Average Age of All:	37	
Standard Deviation for Age:	6	
Range of Ages:	25 - 44	

1997:		
Count: (n)	22	
Male: (n)	8	36.4%
Females: (n)	14	63.6%
Average Age of All:	38	
Standard Deviation for Age:	9	
Range of Ages:	24 - 55	
2007:		
Count: (n)	34	
Males: (n)	14	41.2%
Females: (n)	20	58.8%
Average Age of All:	43	
Standard Deviation for Age:	12	
Range of Ages:	24 - 64	

Source: State of Nebraska Nursing Home Administrator Licensure Board

Table C – NAB Demographic Characteristics of Nursing Home Administrator National Candidates – January to December 2008:

<i>Category:</i>	<i>N =</i>	<i>Percent</i>	<i>Scale Score</i>
Males:	350	33%	116.29
Females:	703	67%	115.70
<i>Age:</i>	<i>N =</i>	<i>Percent</i>	<i>Scale Score</i>
21 – 30	256	24.4%	114.13
31 – 40	307	29.3%	116.22
41 – 50	299	28.5%	116.14
51 – 60	165	15.7%	117.53
+ 60	21	2.0%	119.38
	1048		
<i>Education:</i>	<i>N =</i>	<i>Percent</i>	<i>Scale Score</i>
High School	58	5.5%	109.12
Associate Degree	125	11.9%	116.73
BA/BS Degree	558	53.2%	115.06
MA or Similar	291	27.8%	118.65
PhD	16	1.5%	117.88

Source: NAB Annual Report for 2008

Note: NAB tested a count of 2,365 candidates during this period. However, only about 45% of the candidates provided the detailed demographic information for this Table.

Table D – United States Nursing Homes Compared to Licensed Administrators

State	# Nursing Homes	# Licensed Admin	Ratio
AK	15	45	300.0%
AL	240	550	229.2%
AR	280	677	241.8%
AZ	135	346	256.3%
CA	1400	2655	189.6%
CO	210	448	213.3%
CT	240	837	348.8%
DC	19	68	357.9%
DE	46	176	382.6%
FL	678	1433	211.4%
GA	359	1081	301.1%
HI	41	129	314.6%
IA	496	728	146.8%
ID	79	171	216.5%
IL	791	2156	272.6%
IN	504	1257	249.4%
KS	497	682	137.2%
KY	293	801	273.4%
LA	282	674	239.0%
MA	428	1160	271.0%
MD	240	545	227.1%

ME	109	331	303.7%
MI	428	1145	267.5%
MN	390	825	211.5%
MO	901	1574	174.7%
MS	209	425	203.3%
MT	90	234	260.0%
NC	432	830	192.1%
ND	83	154	185.5%
NE	233	355	152.4%
NH	80	186	232.5%
NJ	355	985	277.5%
NM	74	201	271.6%
NV	47	123	261.7%
NY	665	5386	809.9%
OH	961	2070	215.4%
OK	350	722	206.3%
OR	142	370	260.6%
PA	724	1853	255.9%
RI	86	246	286.0%
SC	195	288	147.7%
SD	112	255	227.7%
TN	330	767	232.4%
TX	1147	2068	180.3%
UT	96	310	322.9%
VA	281	770	274.0%
VT	42	80	190.5%
WA	233	450	193.1%

WI	391	838	214.3%
WV	134	215	160.4%
WY	38	70	184.2%
TIs	16,631	40,745	245.0%

New York
- Max 809.9%

Kansas –
Min 137.2%

Mean 248.70%

Standard
Deviation 98.10%

Median 232.50%

25th
Percentile 193.10%

75th
Percentile 272.60%

Source: NAB Web Site, Calls to Individual State Licensure Board, CMS Web Site

Table E – Licensure Tenure for Currently Licensed Nebraska Nursing Home Administrators:

N = 371

Years Licensed	Count	Percentage
35 – 40 years	14	3.77%
30 – 34 years	11	2.96%
25 – 29 years	12	3.23%
20 – 24 years	32	8.63%
15 – 19 years	35	9.43%
10 – 14 years	60	16.17%
5 – 9 years	89	23.99%
0 – 4 years	118	31.81%

Source: State of Nebraska Licensure Board for Nursing Home Administrators –
January 2010

Table F - Distribution of CMS Overall Five Star Rating for Nebraska Facilities

<i>Nebraska Nursing Home CMS Five Star – Overall Scores</i>	<i>Count</i>	<i>Percentage</i>
Overall – One Star	27	11.7%
Overall – Two Star	39	16.9%
Overall – Three Star	42	18.2%
Overall – Four Star	77	33.3%
Overall – Five Star	37	16.0%
Not available or not rated	9	3.9%
Total	231	

Source: CMS Web Site – Accessed December 31, 2009

<i>Nebraska Nursing Home CMS Five Star Regulatory Scores</i>	<i>Count</i>	<i>Percentage</i>
Overall – One Star	45	19.5%
Overall – Two Star	46	19.9%
Overall – Three Star	53	22.94%
Overall – Four Star	58	25.1%
Overall – Five Star	23	10%
Not available or not rated	6	2.6%
Total	231	

Table G – NAB CDOM Examination Applicants Data Set from 2002 to 2008:

Source: NAB –

January 2010

Count	106	
Average Age	46.5	
Number of males	34	32.7%
Number of females	70	67.3%
Range of Ages	25 - 68	
Average Scale Score	116.5	
Standard Deviation	10.23	
Range	90 - 137	
Average Male Score	117.3	
Male Standard Deviation	9.5	
Range of Male Score	94 - 135	
Average Female Score	116.2	
Female Standard Deviation	10.6	
Range of Female Scores	90 - 137	
Scores below 100	5	4.95%
Scores at 101 – 105	11	10.89%
Scores at 106 – 110	12	11.88%
Scores at 111 – 115	15	14.85%
Scores at 116 – 120	19	18.81%
Scores at 121 – 125	19	18.81%
Scores at 126 – 130	14	13.86%
Scores at 131 or higher	6	5.94%

Table H – Combined AOR and CMS Quality Scores: Correlation of Variables

Variables	Count	Correlation
Years Tenure to Overall Score	N = 182	.174 – No correlation
Years Tenure (10 or Less) to Score	N = 113	.0725 –No correlation
Level of Education to Score	N = 79	.098 – No correlation
AA Degree	N = 30	38% of total
BA/BS Degree	N= 40	51% of total
Post BA/BS Degree	N= 9	11% of total
Prior Nursing Home Experience to Score	N = 104	.198 – No correlation
Licensed by Reciprocity to Score	N = 104	.175 = No correlation

Source: CMS, NAB, State of Nebraska Nursing Home Administrator Licensure Board

Accessed January, February, March 2010