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Relationship Between Nurse-to-Patient Ratios, Patient Satisfaction Scores, and Hospital Profitability

Patrick Ross Bumstead
Walden University

Walden University

College of Management and Technology

This is to certify that the doctoral study by

Patrick Ross Bumstead

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Review Committee
Dr. Lisa Cave, Committee Chairperson, Doctor of Business Administration Faculty

Dr. Natalie Casale, Committee Member, Doctor of Business Administration Faculty

Dr. Gregory Uche, University Reviewer, Doctor of Business Administration Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

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Abstract

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MBA, Brandman University, 2017

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Doctoral Study Submitted in Partial Fulfillment

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Doctor of Business Administration

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Abstract

In 2019, hospital profitability margins were at their lowest levels since the great recession due to a declining volume of patients. Hospital executives who fail to improve profitability are at risk of sustainability. Grounded in the service-profit chain theory, the purpose of this quantitative correlational study was to examine whether nurse-to-patient ratios and patient satisfaction scores significantly predict hospital profitability. Data were collected from 74 hospitals in Southern California from the Centers for Medicare & Medicaid Services government database and publicly available financial statements. Results from multiple regression analysis were not statistically significant. A key recommendation is for hospital executives to invest in software to monitor the number of nurses on staff, the number of hospital beds filled, and the patient satisfaction scores they are receiving. The implications for positive social change include the opportunity for hospital executives to understand nurse-to-patient ratios and patient satisfaction in hospitals to improve the health of the individuals in local communities.

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Dedication

I would like to dedicate this doctoral research project to Keshia Lamons. This has been a long and arduous journey. Without your love and support and ability to refocus me when I tried to stray, I would not have been able to complete this. To my family (living and nonliving), although you may not have all completely understood why I was on this journey, your support was encouraging and helpful. Lastly, to my father, who passed away shortly before I began this journey. I know you knew I was going to do this, and I know I have made you proud. You are greatly missed and forever in my heart.

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Table of Contents

List of Tables

List of Figures

Section 1: Foundation of the Study

Increases in health care costs prompted federal changes to hospital funding. The federal changes in funding coupled with the passage of the Affordable Care Act incentivized hospitals and physicians to focus on patient quality (Elliott et al., 2015). Hospital funding is based partially on the patient's well-being score from the Centers for Medicare & Medicaid Services (CMS) who administer the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey (CMS, 2019c).

Background of the Problem

Traditionally hospital leaders have focused on patients' clinical outcomes to measure hospital quality (Pross et al., 2017). The standard service model in health care has been a fee-for-service model (Guo et al., 2019). However, many health care leaders have refrained from switching from fee-for-service to quality-based payment models (Damberg et al., 2015). In January 2015, Medicare and numerous private payers set date-specific goals for making that change (Guo et al., 2019). Sylvia Mathews Burwell, Secretary for the U.S. Department of Health and Human Services, announced that half of Medicare's provider payments would come through alternative payment models by 2019 (ITUP, 2015). Hospital funding is based in part on how well the hospital scores on the HCAHPS (Rozario, 2019). CMS (2019c) started administering the HCAHPS survey in 2008 to compare hospitals locally, regionally, and nationally. The patient-reported outcomes focus on patient's well-being and the patient's satisfaction with the care they received (Rozario, 2019).

Now that hospitals receive a significant amount of their funding based on patient satisfaction scores from the HCAHPS surveys, it is essential for hospital executives to be patient centered and focused (CMS, 2020a). Some hospital executives do not understand the relationship between patient satisfaction, nurse-to-patient ratios, and hospital profitability. Hospital executives need to focus on the quality-of-care measures that help them improve issues that affect their funding (CMS, 2020b). If hospital executives receive less funding, they will have less money to reinvest in continued research or to improve patient care. There is a growing need for continued research on how patient satisfaction and nurse-to-patient ratios affect hospital profitability.

Problem Statement

Decreases in hospital profitability have been directly related to patient satisfaction scores and nurse-to-patient ratios (Cho & Hong, 2018). According to a 2017 National Healthcare Retention and RN Staffing Report (as cited in Blouin & Podjasek, 2019), hospitals can lose between 5.1 and 7.86 million dollars annually from replacing nurses who left their job due to extended periods of increased workloads. The general business problem was that hospital leaders were observing lower profits. The specific business problem was that some hospital executives do not understand the relationship between nurse-to-patient ratios, patient satisfaction scores, and hospital profitability.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between nurse-to-patient ratios, patient satisfaction scores, and hospital profitability. The targeted population for this study was hospitals located in Southern

California. The independent variables were nurse-to-patient ratios and patient satisfaction scores. The dependent variable was hospital profitability. The implications for social change included the potential to show hospital executives that better patient care is a leading contributing factor to hospital profitability. Hospitals that increase nurse staff to improve nurse-to-patient ratios have significantly better patient outcomes, which lead to higher patient loyalty (Driscoll et al., 2018). Better patient care and outcomes are essential to social change because people with better health care tend to live a better quality of life (Driscoll et al., 2018).

Nature of the Study

There are three types of research: qualitative, quantitative, and mixed methods (Saunders et al., 2015). I used a quantitative method to analyze information from multiple hospitals in Southern California. Quantitative methodology is appropriate when researchers document results to confirm a hypothesis, use numerical data, use structured theoretical frameworks, or use closed-ended questionnaires (Saunders et al., 2015). Qualitative studies are the most appropriate method when the researcher wants to explore and understand the meaning for individual or group attributes to a specific business problem (Yin, 2018). Mixed-methods research encompasses quantitative and qualitative methods and must meet all requirements from both (Yin, 2018). I did not explore the understandings or meanings of a group of individuals, so the qualitative and mixed-methods approaches were not appropriate for this study.

In quantitative research, there are three types of designs: (a) experimental, (b) correlational, and (c) descriptive survey. Experimental research refers to a group of

methods in which the researcher creates different conditions and evaluates the effects on the participants (Yin, 2018). Correlational research involves discovering and measuring the relationship between two or more variables (Yin, 2018). Survey research involves describing characteristics of a group or population (Yin, 2018). In the current study, I did not create different conditions for participants or describe the characteristics of a group or population; therefore, the correlational design was appropriate for my quantitative research project.

Research Question

Does a linear combination of nurse-to-patient ratios and patient satisfaction scores significantly predict hospital profitability?

Hypotheses

H_o: The linear combination of nurse-to-patient ratios and patient satisfaction scores does not significantly predict hospital profitability.

H_a: The linear combination of nurse-to-patient ratios and patient satisfaction scores significantly predicts hospital profitability.

Theoretical Framework

The theoretical framework I chose to ground my quantitative correlational study was the service-profit chain (S-PC) framework created by Heskett et al. (1994). In the S-PC framework, researchers focus on how internal service quality helps improve employee satisfaction, customer (patient) satisfaction that can lead to loyalty, and revenue growth and increased profitability. The factors that make up the S-PC are profit and growth, customer (patient) loyalty, customer (patient) satisfaction, and value of service (Heskett

et al., 1994). The value of service patients receive primarily impacts their satisfaction; patient satisfaction directly contributes to patient loyalty, and patient loyalty contributes to profit and growth directly (Heskett et al., 1994).

Using nurse-to-patient ratios, I examined whether having adequate staff helps hospital executives provide a higher quality of care, resulting in higher patient satisfaction scores and patients' likelihood of developing hospital loyalty. Loyal patients are repeat patients and provide positive word of mouth for referrals (Chang et al., 2017). A business needs to have more revenue than expenses to be profitable. Returning loyal patients help to increase revenues and having appropriate nurse-to-patient ratios reduces the chance of injury to patients, which helps reduce expenses (Leigh et al., 2015).

Operational Definitions

Fee-for-service reimbursement: Fee-for-service reimbursement is a form of payment that occurs when a health care provider performs a service for a patient not already covered as part of the health care provider's contract (Chung et al., 2015).

Hospital consumer assessment of health care providers and suppliers (HCAHPS): HCAHPS is a general survey given to patients by the CMS to determine the patients' experience using a rating system (Elliott et al., 2015).

Pay-for-performance programs: Pay-for-performance programs are designed to pay health care providers based on measurements of cost and quality of care (Damberg et al., 2015).

Assumptions, Limitations, and Delimitations

Assumptions

Researchers use assumptions to provide a foundation to explain things the researcher assumes to be true (Leedy & Ormrod, 2016). There were two main assumptions in the current study. The first assumption was that all hospital leaders reported their revenue in compliance with generally accepted accounting principles. The second assumption was that all hospital statistics were reported and recorded accurately on government data sites.

Limitations

Researchers use the limitations section to clarify the challenges they faced while conducting their study, which helps the reader to understand the scope of the research more fully (Leedy & Ormrod, 2016). There was only one limitation to the current study. I was a novice researcher.

Delimitations

Researchers use the delimitations section to discuss the restrictions of the study or what was not a part of the study (Leedy & Ormrod, 2016). There were four delimitations in the current study. The first delimitation was that I used correlation rather than causation to examine the relationship between patient satisfaction score, nurse-to-patient ratios, and hospital profitability. The purpose of this study was to examine the relationship between nurse-to-patient ratios, patient satisfaction scores, and hospital profitability, not to determine whether there was a causal relationship between the independent and dependent variables. The second delimitation was that I focused only on

hospitals located in Southern California. The third delimitation was that I did not consider other drivers of profitability. The fourth delimitation was that I focused only on hospitals in Southern California.

Significance of the Study

Contribution to Business Practice

The results of this study showed the estimated relationship between nurse-to-patient ratios, patient satisfaction scores, and hospital profitability. Hospital executives could use this information to understand how nurse-to-patient ratios and patient satisfaction relate to hospital profitability. Executives could use this information to develop strategies to provide better nurse-to-patient ratios and receive higher patient satisfaction scores that could result in higher hospital profits.

Implications for Social Change

The results of this study could improve nurse-to-patient ratios, patient satisfaction scores, and hospital profitability. Better nurse-to-patient ratios and increased patient satisfaction scores could contribute to the social well-being of the hospital's patients and the community, and provide positive social change (Driscoll et al., 2018). Better nurse-to-patient ratios and improved patient satisfaction in hospitals could improve the health of the population. If the population has improved health, individuals may be likely to live a better quality of life. Focusing on improving nurse-to-patient ratios and patient satisfaction could improve conditions for individuals in the community and produce a positive social impact.

Review of the Professional and Academic Literature

This was a correlational study of patient satisfaction scores, nurse-to-patient ratios, and the profitability of hospitals. Traditionally, health care quality has been measured using clinical outcomes and not the patient's view of the quality of care (Shafei et al., 2019). Starting in 2012, CMS began withholding Medicare reimbursement from hospitals based on their quality-of-care performance (CMS, 2020a). Whether to withhold payment was based 30% on how well the hospital scored on the HCAHPS (Sherman, 2014).

In this literature review, I provide a comprehensive and critical analysis and synthesis of literature related to patient satisfaction scores, nurse-to-patient ratios, and hospital profitability. Using the S-PC framework developed by Heskett et al. (1994), I examined literature that pertained to each independent and dependent variable and literature in which the relationship of the independent and dependent variables was discussed and evaluated. The following subsections make up the literature review: S-PC framework, alternative theory, the relationship between nurse-to-patient ratio and patient satisfaction, nurse-to-patient ratio, patient-centered care, and patient satisfaction.

I searched for peer-reviewed articles using the Walden University library and Google Scholar. I searched the following databases: Health & Medical, Healthcare Administration, Nursing & Allied Health, ProQuest Central, ProQuest Health & Medical Complete, and ScienceDirect. The most common search terms used were *patient satisfaction*, *nurse-to-patient ratio*, *hospital profitability*, *patient care*, and *HCAHPS*. While conducting my searches, I did not restrict the articles returned regarding

publication date or location, although I did focus on articles published in 2015 or later (see Table 1). During the literature review process, I discovered additional sources from the reference sections of articles reviewed.

Table 1

Type and Age of Sources Used for the Literature Review

Source type	Before 2017	2017 or later
Books	4	5
Articles/journals	36	105
Websites	4	7
Total	44	117

The purpose of this quantitative correlational study was to examine the relationship between patient satisfaction scores, nurse-to-patient ratios, and hospital profitability. The population targeted in this study was hospitals in Southern California. Driscoll et al. (2018) discussed how hospitals that increase nursing staff to improve nurse-to-patient ratios have significantly better patient outcomes, which leads to higher patient loyalty. Driscoll et al. also noted the importance of patient care and outcomes as contributing factors to social change, stating that people with better healthcare tend to live a better quality of life. This study's null hypothesis was the following: The linear combination of nurse-to-patient ratios and patient satisfaction scores does not significantly predict hospital profitability. The alternative hypothesis was the following: The linear combination of nurse-to-patient ratios and patient satisfaction scores significantly predicts hospital profitability.

S-PC Framework

In this study, I used the S-PC framework developed by Heskett et al. (1994) as the theoretical framework. In the S-PC, Heskett et al. suggested that operations contribute to profits through the following means: (a) quality support services and policies that enable employees to deliver results to customers contribute to employee satisfaction; (b) satisfied, loyal, and productive employees create greater value; (c) more significant value of service increases customer satisfaction; (d) customers who are more highly satisfied become loyal customers; and (e) profits are motivated by loyal customers. Following these S-PC principles described by Heskett et al., I examined the possible correlation between nurse-to-patient ratios, patient satisfaction scores, and the profitability of hospitals in Southern California.

The rationale for choosing the S-PC framework was that the chain of events directly relates to hospitals' events. Cleary et al. (2014) stated that hospitals had moved away from having nurses only provide medications to patients to allowing nurses to communicate openly with patients. Person-centered care and the nursing staff's caring factor have been leading contributors to the culture change in human caring (Brewer & Watson, 2015). Allowing nurses to communicate openly with patients helps patients feel more involved in their care and more highly satisfied with the quality of care, leading to them becoming loyal patients (Heskett et al., 1994).

The S-PC has three primary components: (a) employee satisfaction, (b) customer satisfaction, and (c) business performance (Heskett et al., 1994). Oakley (2012) showed that increased levels of customer satisfaction led to repeat business and improved

margins. The link between customer satisfaction and improved business performance has been the most widely studied aspect of the S-PC framework. Many researchers have found that customers are the most satisfied after positive interactions with happy, loyal, and productive employees (Pantouvakis & Bouranta, 2013). Nurses provide a higher quality of care for their patients when they feel they have the right tools to succeed, which leads to repeat customers/patients and improved margins.

Simmons (2016) used the S-PC framework to show a correlation between customer resource management (CRM) system use, customer satisfaction, and gross revenue for North American industrial service companies. Simmons found that both CRM use and customer satisfaction were statistically significant and accounted for 30% of the gross revenue variation. Briggs et al. (2020) examined the impact of service orientation on retailer profitability using the S-PC framework. They concluded that for brick-and-mortar businesses to maintain a competitive advantage against online retailers, they must consistently deliver higher levels of service because high levels of customer service lead to profitability. Although Simmons and Briggs et al. had different goals in their studies, they both showed the impact of customer service on the profitability of an organization by using the S-PC framework.

Some researchers have argued that the existing data on the S-PC framework are ambiguous, leaving them with an uncertainty of its effectiveness. Hogreve et al. (2017) conducted a meta-analytic test on the S-PC framework seeking to provide the first comprehensive test of the S-PC framework. In addition to examining the traditional chain of the framework, they also examined the following relationships and impacts: internal

service quality on employee retention, internal service quality on employee productivity, internal service quality on external service quality, employee satisfaction on customer satisfaction, employee productivity on customer loyalty, external service quality on profitability, and external service quality on customer loyalty. Hogreve et al. concluded their findings were in line with the conventual S-PC framework, although they highlighted a specific significant contributor to S-PC by stating "employee satisfaction needs to translate into employee productivity to affect customer loyalty positively" (p. 57). Many researchers use a modified version of the S-PC framework, such as Steinke (2009) who focused on service design in the emergency room. Steinke concluded a significant positive relationship between the elements of the S-PC framework.

Researchers have asserted that although the S-PC framework succeeds in aiding executives with prognoses, there are several omitted factors that could have an impact on outcomes (Pasupathy & Triantis, 2007). Strydom et al. (2019) agreed with Pasupathy and Triantis (2007) and pointed out the fact that patients focus more heavily on negative performance than positive performance. Pasupathy and Triantis also evaluated service operations using the S-PC framework to build a dynamic S-PC model that included uncontrollable factors such as market size and competition because each of the S-PC attributes occurs at different times with different outside factors. Researchers have studied the S-PC framework in a variety of ways and across multiple sectors; however, researchers had not used the framework to examine the relationship between patient satisfaction, nurse-to-patient ratio, and profitability of hospitals. In the current study, I

examined whether a correlation exists between patient satisfaction, nurse-to-patient ratio, and profitability of hospitals.

Employee Satisfaction

Factors that influence employee satisfaction have changed over time. It is still common for managers to utilize an older understanding of employee satisfaction, including working conditions, compensation, and interpersonal relationships (Frey et al., 2013). Evanschitzky et al. (2011) offered a more straightforward definition of employee satisfaction as the overall assessment of the job by the employee. In more recent years, employees have considered a multitude of factors impacting their overall assessment of their jobs. Within hospitals, when nurses experience increased patient loads for prolonged periods of time, this may lower their overall assessment of the job (i.e., lower satisfaction) (Pantouvakis & Bouranta, 2013). Satisfied employees demonstrate positive behaviors that lead to higher quality customer service (Pantouvakis & Bouranta, 2013). When nurses have more manageable patient loads, this not only helps them feel more satisfied with their job, but it also allows the patients to receive a higher quality of care.

Patients may feel more comfortable in hospitals that take care of their employees because they experience a higher quality of care from those employees (Pantouvakis & Bouranta, 2013). Evanschitzky et al. (2011) discovered that employee satisfaction not only leads to improved customer satisfaction, but it also leads to a higher probability of the customer becoming a repeat customer. Increased repeat customers should also positively impact financial performance. Raharjo et al. (2016) also investigated the relationship between satisfied employees and satisfied patients by using a partial least

squares equation and concluded that there is strong evidence for patient experience (quality of service the patient experienced) affecting their overall satisfaction. Satisfied nurses tend to provide better quality health care resulting in higher levels of patient satisfaction, which may lead to a higher level of loyalty as well.

Satisfied nurses (i.e., employees) contribute to hospitals in a multitude of ways. There is a statistically significant relationship (p = .008) between nurse workload, teamwork, and service quality (Muskananfola & Nasution, 2019). Both independent variables in this study were strongly related to one another and were collectively shown to have an impact on the profitability of the hospital. As Hogreve et al. (2017) pointed out in their meta-analytic test on the S-PC framework, each segment of the S-PC framework affects additional segments of the framework and profitability. Lu et al. (2019) conducted a literature review focusing on job satisfaction among nurses, using 59 articles and papers published between 2012 and 2017. They concluded that increasing nurses' job satisfaction is vital to the success of hospitals. Improving nurses' job satisfaction may improve patients' perceptions of the quality of care and may also aid in maintaining adequate nursing staff, which has been at a shortfall for many years (Lu et al., 2019). Keeping nurses on staff longer can improve patient satisfaction and reduce the costs related to constantly retraining nurses, which may increase profitability (Lu et al., 2019).

Customer Satisfaction

If customers/patients are not satisfied with a business/hospital, it is unlikely they will become repeat customers/patients. Customer satisfaction is a customer's sense of happiness derived from their experience with a company or individual compared with

their expectations prior to the interaction (Chougule et al., 2013). Chougule et al. (2013) described two separate conceptualizations of customer interactions concerning customer satisfaction: (a) transaction-specific customer satisfaction, which refers to a single customer interaction, and (b) cumulative satisfaction, which is a summation of the customer's experiences with a company over time. The quality of health care patients receive impacts their satisfaction reported on the HCAHPS survey (Chougule et al., 2013). Chandrasekar and Thangaraj (2021) agreed with Chougule et al. that service quality is one of the most important factors of success for hospitals. Ensuring all staff buy into improved patient care becomes essential to improving patient satisfaction scores.

A patient can have multiple individual encounters within 1 day and arrive at a cumulative satisfaction decision quickly (Keiningham et al., 2014). Oakley (2012) found that increased levels of customer service resulted in customer retention, more repeat business, increased gross margins, reduced patient acquisition costs, and improved long-term revenues. Additionally, satisfied customers/patients are willing to pay a premium for a product or service (Baumann et al., 2012). As Baumann et al. (2012) stated, patients are willing to pay more for a higher quality of service and will likely return to the hospital that makes them feel like more than just a number. Similarly, Arsita and Idris (2019) did not find a significant relationship between hospital costs and the level of patient satisfaction. Hospitals that increase the levels of customer service create revenue by increasing gross margins and market share in addition to revenue from the increased patient satisfaction scores (Fatima et al., 2017).

Satisfied customers (or patients) impact multiple factors, resulting in a gain or loss of profitability. Lim et al. (2018) conducted a study on the role of hospital service quality in developing the satisfaction of the patients and hospital performance. Using a model that included service quality, patient satisfaction, hospital utilization, and financial performance, Lim et al. concluded that patient satisfaction and hospital utilization have a significant positive relationship with hospital financial performance. Similar to Lim et al., Fatima et al. (2017) concluded that patient satisfaction has a significant positive relationship with financial performance. Fatima et al. showed how improved patient satisfaction scores improved patient loyalty, repeat customers, and positive word of mouth, resulting in increased market share. Focusing on improving patient satisfaction may result in better financial performance for hospitals.

Business Financial Performance

Business financial performance is a direct result of employee and customer satisfaction, although there is a multitude of factors that contribute to financial performance. Although financial measures such as revenue, net income, earnings per share, and profitability are still the most widely accepted measure of business performance, some scholars have suggested that using only financial measures is an inadequate way of explaining broader organizational performance (Williams & Naumann, 2011). Verhoef et al. (2010) discussed the value of the customer lifetime value model for businesses. The customer lifetime value model is the sum of revenue derived from a customer/patient over their life with a firm or hospital minus the total cost of selling or servicing the customer or patient (Fan & Ku, 2010). Additionally, Nguyen and

Mutum (2012) pointed out that the customer lifetime value model supports the concept that acquiring new customers or patients is more costly than retaining existing ones. Increased financial performance results from increased repeat and loyal customers or patients, and increased repeat and loyal customers or patients result from increased employee satisfaction.

The quality of patient care may be a direct indicator of a hospital's financial position. Conducting a cross-sectional study focused on the correlation between hospital finances and quality and safety of patient care, Akinleye et al. (2019) found a definitive relationship between hospital financial performance and hospital quality performance scores (standardized correlation coefficient = .34, $p < .001$). Ensuring patients are appropriately cared for should be a leading factor for hospital executives concerned with financial performance. Similar to Akinleye et al., Upadhyay et al. (2019) conducted a longitudinal study that focused on the impact of readmission on the financial performance of hospitals and concluded that increasing readmissions reduces hospital financial performance. Upadhyay et al. seemed to continue where Akinleye et al. finished, finding that when hospitals provide inferior quality service to patients, not only are patients less satisfied, resulting in lower profitability (Akinleye et al.), but the lower quality of service may also result in higher rates of readmissions, resulting in lower profitability (Upadhyay et al., 2019).

Although Akinleye et al. (2019) and Upadhyay et al. (2019) agreed that the quality of care had the most significant impact on financial performance, some researchers believe other aspects may have a greater contribution to financial

performance. Looking at CMS data from 2016–2018, Welsh (2019) focused on cost areas and cost per admission for hospitals and discovered that the five hospital cost areas that contributed to more than 63% of total cost year over year are: (a) private room costs, (b) semiprivate room costs, (c) ICU costs, (d) pharmacy costs, and (e) medical supply costs. Jennings et al. (2017) focused on the impact of community orientation on hospital performance and found that community orientation is positively associated with the total operating margin. The results of these studies show that a multitude of factors can contribute to the financial performance of hospitals.

Within hospitals, there are multiple strategies that may increase business financial performance and improve patient satisfaction scores. Roghani and Chenari (2017) examined the relationship between strategic human capital and financial performance within hospitals. Their study included staff training, staff competence, being valuable, staff experience, being unique, and being inimitable. They concluded that staff training ranked first regarding its impact on financial performance (Roghani & Chenari, 2017). Ly and Cutler (2018) conducted a study focused on ways for U.S. hospitals to improve profit margins and discovered that when hospitals are not able to make significant price increases, they need to become efficient to maintain profitability. Combining these findings with those of Lu et al. (2019) that keeping nurses on staff longer reduces the costs associated with training new staff. Rogahni and Chenari and Lu et al., generate the following recommendations to hospitals for having better trained and longer-tenured staff: (a) provide a better quality of care, (b) help minimize any risk of patients worsening

while in the hospital due to complications, and (c) reduce costs associated with training new nurses.

Related and Contrasting Theoretical Framework

I considered a few different frameworks, including supply chain management (SCM), transformational leadership, Health Belief Model (HBM), and resource dependence theory (RTD). Initially, I thought RTD might work for my study, so I looked most closely at that theoretical framework in comparison to the S-PC framework. Thompson was the first to describe RTD in 1967, although Pfeffer and Salancik later refined it in 1978 (Salancik, 1978; Thompson, 1967). The chief constructs of RTD in a health care environment includes the strategic focus of resources, external environment, reliance on internal resources, management as resource facilitators, and environmental based restrictions (Salancik, 1978; Thompson, 1967). I considered using RTD since the authors focused heavily on resources, and hospital profitability provides resources for the hospital to use.

AlRamadin (2019) used the RTD theory to examine supply chain disruptions in the mining industry. They concluded that supply chain managers could reduce the number of disruptions through better collaboration with their partners. Roczen (2017) conducted a study that evaluated organizational and environmental factors associated with the likelihood of providing palliative care services among urban, non-federal, short-term, and acute care hospitals and concluded that hospitals that provide palliative care are more efficient at doing so and as such incurred less cost associated with providing said care. In addition to these two studies focused on RTD, I also reviewed a study focused on

teaching hospitals in Ireland that used the lens of RTD (Doyle et al., 2016), and a study that used a resource dependence perspective on the presence of hospital-based palliative care programs (Chisholm et al., 2015).

Another theory I considered using was the resource-based view theory (RBV), as this theory relates to the S-PC framework. Internal resources of an organization deliver a competitive advantage is the idea used for RBV (Kash et al., 2014). The resources that can offer a competitive advantage include the organization's procedures, internal technology, external relationships, or anything that offers an advantage (Lin & Wu, 2014). Wetering and Versendaal (2020) applied RBV to the health care industry and discovered that RBV empowers hospital executives to better understand internal performance and resources that improve patient outcomes.

After reviewing these studies using RTD and RBV, I determined that researchers using these theoretical frameworks focus on recourses to obtain profitability. In contrast, in this study, I focused on improving the quality of care (patient satisfaction) and staff (nurse-to-patient ratio) to increase profitability. Therefore, I felt the S-PC framework was most appropriate.

Nurse-to-Patient Ratio and Patient Satisfaction

The quality-of-care patients receive is related to nurse scheduling. When nurses are not able to spend adequate time with patients, patient safety and satisfaction are impacted (Zolot, 2017). In 2017, nurses spent on average 173,337 hours with their patients over one year; however, nurse related hours spent on patients per day were 1.48 hours; a decrease of 3% from previous years (Li et al., 2017). Further, nurses working

long hours may negatively affect patient care (Rogers et al., 2004). Additionally, researchers have found that mortality rates significantly increase with fewer nurses scheduled (Falk & Wallin, 2016). When nurse's patient loads are large, they are not able to spend quality time with their patients within the hours of a regular shift, leading to lower levels of satisfaction, and greater chance of in hospital infection (Carlisle et al., 2020).

Scheduling nurses is a challenge hospital managers face. When hospital managers use advanced scheduling technology, they have a better understanding of their staffing needs, and as a result, nurses can spend more time with patients (Brennan, 2014). Managers can devote more time to patient care when hospitals utilize scheduling technology (Brennan, 2014). Better staffing, measured by total hours per patient day (HPPD), was associated with fewer hospital-acquired pressure injuries (HAPI's), and a stronger probability that patients will recommend the hospital (Halm, 2019). With more time spent on patient care initiatives, patients may realize better overall care and experience higher levels of satisfaction from that care (Brennan, 2014). Patients recommending a hospital may lead to higher patient loads for nurses and increased profitability.

Altogether, having sufficient staff influences the patient quality of care and the employees' job satisfaction. In 2013 less than 30% of all hospitals in the United States reported having a pharmacist consistently scheduled for hospital rounds (Soric et al., 2016). Having a pharmacist included in scheduled rounds to communicate with patients can significantly increase patient satisfaction (Soric et al., 2016). Nurses show higher

levels of motivation when appropriate staffing are scheduled (Brennan, 2014). Halm (2019) also stated that appropriate staffing leads to a higher quality of care and less job dissatisfaction and burnout. Patients who receive higher levels of attention may experience higher levels of satisfaction and ultimately feel safer.

Scheduling nurses appropriately and informing patients of HCAHPS scores is essential to improving patient satisfaction scores. Although there are 15 states that have policies related to nurse staffing, California is the only state with a mandated minimum nurse-to-patient ratio (Leigh et al., 2015). The California government understands the importance of appropriate nurse staffing and the impact it has on the quality of patient care, and as previously indicated, patients that receive a higher quality of care positively impact hospital profit margins (Leigh et al., 2015). Researchers showed that hospital nurses are more highly satisfied with their working environment in California than in New Jersey and Pennsylvania in the years following the passage of this law (Leigh et al., 2015). Chen et al. (2019) also found that increased PNR may increase workload, which could further contribute to nurses' decisions to leave their jobs, in addition to an increased risk of burnout and job dissatisfaction. Sometimes individuals who run hospitals can become preoccupied with the financial aspects; therefore, having the government set laws has positively impacted nurse job satisfaction and helped increase the quality of care for patients.

The satisfaction nurses feel with their jobs and their working environments goes a long way to impact patient satisfaction. Previously researchers have shown that a leading indicator for nursing job satisfaction is their workloads (nurse-to-patient ratios).

Researchers have shown that nurse staffing levels are directly related to patient satisfaction levels (Cho et al., 2017; McNicholas et al., 2017). Therefore, nurses who are more satisfied with their jobs tend to have more satisfied patients (McNicholas et al., 2017). Nurse-to-patient ratios and patient satisfaction are related to one another.

Nurse-to-Patient Ratio

Nurses are the largest source of employment within hospitals and the employees who interacts most frequently with patients. In a 2002 study, researchers at the University of Pennsylvania concluded that nurse-to-patient ratios of 1:6, as opposed to 1:4, would result in 2.3 additional deaths per 1,000 patients and 8.7 additional deaths per 1,000 patients with complications (as cited by Kowalski et al., 2017). Although 2.3 additional deaths may not seem significant, considering that there are 38 million hospital admissions in the United States each year, in the aggregate, that number becomes much more substantial (Rothberg et al., 2005). Additionally, Carlisle et al. (2020) found an association between increasing nursing staff by one additional full-time nurse and a 9% decrease in hospital related ICU mortality. Carlisle et al. also found that increasing the nurse-to-patient ratio by one per patient day was associated with decreased hospital-acquired pneumonia, unplanned self-device removal, respiratory failure, cardiac arrest in ICUs, and decreased of length of stay by 24%. If hospitals allowed for adequate nursing staff, patients may feel safer and additionally cared for, which leads to better funding and return patients.

Mandated nurse-to-patient ratios are far less common. In 2004, California became the first state to implement mandated nurse-to-patient ratios in hospitals (Leigh et al.,

2015). Over the next nine years, 15 other states implemented policies related to nurse staffing; however, no other states have created laws for nurse-to-patient ratios (Leigh et al.). California ultimately arrived at mandated ratios of 1:5, while some hospitals across the country still operate at ratios of 1:10 (Kowalski et al., 2017). Typically, hospital executives claim their highest priority is to improve patient care and stay within their short-term budgets; staffing expenses account for 50-70% of hospital operating budgets (Kowalski et al., 2017). Hospital executives compare the cost of adding more staff to the savings from reduced complications with patients to understand the financial impact better.

The discussion of nurse staffing levels, patient safety, and the hospital's costs requires a multitude of calculations. Having lower nurse-to-patient ratios results in patients having shorter lengths of stay and fewer complications (Carlisle et al., 2020). Registered nurse hours are inversely related to developing pneumonia; that complication alone adds between $4,225 to $5,279 additional cost to hospitals per extra day the patient stays (Rothberg et al., 2005). Hospital executives who employ more nurses and reduce the overall responsibilities of nurses could effectively lower the wages for nurses to reduce the cost impact of employing more nurses (Rothberg et al., 2005). In 2017, California had 353,051 nurses that live in California, with a population of 39,358,497. This is almost equal to 9 (8.97) nurses per 1,000 people or a nurse-to-person ratio of one nurse per 111 persons (Census, 2017; Spetz, 2017). A nursing shortage increases the difficulty for hospitals attempting to lower wages to reduce employment costs, as lowering wages has an adverse effect on increasing the nursing population.

Demanding workloads for an increased length of time can cause nurses to become dissatisfied with their jobs. When nurses experience emotional exhaustion from their work, they may cultivate cynical detachment and begin seeing patients as objects as opposed to people (Bakhamis et al., 2019). Factors that contribute to nurses feeling burnt out are excessive workload, staff shortages, and high nurse-to-patient ratios (Bakhamis et al., 2019). Liu and Aungsuroch (2017) also found that the work environment through the path of job satisfaction is a significant cause of nurses feeling burnout. Patients have reported higher levels of confidence in nurses when there are more nurses on staff. Additionally, having more nurses on staff allows them to spend more time with each patient, directly contributing to patient satisfaction (Carlisle et al., 2020). Although employing more nurses may increase hospital costs, the consequences associated with having too few nurses appears to be much more severe.

The most impactful way to improve patient experience and satisfaction is through nurses. Margrave and Salinas (2020) conducted a study on impacting patient satisfaction through strategic nursing initiatives and concluded that the level of happiness nurses have with their work environment is positively linked to patient satisfaction. Additionally, McNicholas et al. (2017) conducted a study on improving the patient experience through nursing satisfaction specifically and concluded that focusing on nurse's job satisfaction will improve patient experience. McNicholas et al. were also able to determine that patient satisfaction is directly related to a nurse's work environment and satisfaction, effective team communication in the hospital, and presence of patient-centered care.

Improving nursing work environments (lowering nurse-to-patient ratios) is very impactful to improving patient satisfaction.

Increases in a nurse's workload can also impact patient safety. Millions of patients have experienced injury and or death because of increased nursing workloads (Liu et al., 2018). Researchers have determined there is a direct relationship between nurses' workload and patient safety (Liu et al., 2018). Ample research has indicated that when nurses feel burnt out, this leads to increases in medical errors, infection rates, and patient mortality, resulting in patients' dissatisfaction with the quality of care (Bakhamis et al., 2019). Working conditions that cause nurses to feel burnt out lead to a multitude of negative results for hospitals and their patients.

Patient Satisfaction

Patient satisfaction is the degree to which a patient is satisfied with the health care they received from their doctor and all hospital staff (Al-Harajin et al., 2019). Patient satisfaction may be the most critical aspect to the profitability of hospitals, as, without any patients, hospitals would not earn profits (Oakley, 2012). With patients having increased access to health care choices, quality of care and experience significantly impact the patient's choice of where they go for care (Hultman, 2020). Patients who feel they have received a higher quality of care are not only more likely to return (loyal) to the same hospital but are also more likely to pay their bills once they receive them (Hultman, 2020). Loyal patients are repeat patients and provide positive word-of-mouth referrals (Kim et al., 2017). Improving patient satisfaction creates word of mouth and return customers leading to higher bottom lines.

The amount of access and profit designation (nonprofit or for-profit) of hospitals could have a significant impact on patient satisfaction and/or profitability. Critical access hospitals have higher net incomes compared to acute hospitals (Richter & Muhlestein, 2017). Nonprofit and government hospitals have lower net incomes and operating margins than for-profit hospitals despite having higher patient revenue (Richter & Muhlestein). For-profit hospitals are also associated with lower patient satisfaction scores as measured by HCAHPS (Mazurenko et al., 2017). Critical access hospitals (CAH) are eligible to receive increased Medicare payments as they are cost-based, whereas other hospitals are on the prospective payment system (Casey et al., 2015).To be considered a CAH, the CMS has eight specific criteria that must be met; a few of those requirements are, (a) located in a rural area or an area treated as rural, (b) located either more than 35 miles from the closest hospital or CAH or 15 miles in areas with mountainous terrain or only secondary roads, and (c) furnish 24-hour emergency care services 7 days a week (CMS, 2019a). One reason for the differences in net income for CAH is the payments made by Medicare.

The location of hospitals may impact the volume of patients, however ultimately, increased quality of care has the most significant impact on profitability (Cho & Hong, 2018). CAH must be located an area considered as rural and a minimum distance from any other hospital or CAH (CMS, 2019a). With a possible lower patient volume in CAH, there is a necessity to ensure the highest quality of staff. Patients who underwent procedures at low-volume hospitals had shorter operation times with less blood loss, spent less time in the intensive care unit, and shortened their overall length of stay

(Toomey et al., 2016). Although Santos et al. (2015) concluded having surgical procedures at high volume hospitals (HVH) with high volume surgeons was associated with the overall survival rate; however, the authors did not specify if the increase was due to the hospital or the surgeon. While fewer patients may negatively impact profitability, hospitals with lower volumes tend to be more efficient in their procedures and increase the quality of care to their patients; both of which may allow them to recover the lost profits due to lower volumes (Toomey et al., 2016).

Patients tend to feel safer and experience higher satisfaction when they trust the individuals taking care of them. The cultural competence of nurses had a positive effect on patient satisfaction through several different behaviors (Tang et al., 2019). Nurses who engaged in trust-building and communication-positive behaviors increased patient satisfaction scores (Berhane & Enquselassie, 2016; Tang et al., 2019). Patient trust for the individuals delivering the information can mitigate possible negative impacts from the consultations (Berhane & Enquselassie, 2016). Nurses who exhibited shared decision-making behaviors significantly improved patient satisfaction (Christina et al., 2020; Tang et al., 2019). Patients feel more satisfied when they can be involved in their care and trust the individuals caring for them; this may lead to repeat patients and positive word of mouth.

Building trust and teaching patients may result in higher patient satisfaction scores. There is an increasing emphasis on teaching patients about their health care. Researchers have shown that using a layered learning model (LLM) in a small community hospital not only reduces medication costs but also improves patient

satisfaction scores measured by HCAHPS (Soric et al., 2016). Chargualaf et al. (2019) also discovered a positive relationship between LLM and patient care and satisfaction. Teaching patients about their health care improves patient satisfaction scores and reduces cost. Patient satisfaction centers around how much a patient trusts their care provider (Shan et al., 2016). Teaching patients about their care and building trust will increase patient satisfaction scores and reduce operating expenses related to medications.

Hospital Profitability

Hospital profitability is the dependent variable in this study. As previously discussed, patient satisfaction may be the most important factor relating to hospital profitability (Oakley, 2012). Hultman (2020) elaborated on Oakley, pointing out that patients who feel satisfied with their experience at a hospital are more likely to become loyal patients and more likely to pay their bills. Margrave and Salinas (2020), and McNicholas et al. (2017) concluded that higher nurse-to-patient ratios resulted in happier nurses, which was directly related to increased patient satisfaction. Through this study, I showed there is not a direct positive relationship between patient satisfaction, nurse-to-patient ratio, and hospital profitability; likely because there are a multitude of additional variables involved in hospital profitability.

Hospital profitability is vital to the success of hospitals continuing to operate. Lim et al. (2018) evaluated hospital financial performance as impacted by patient satisfaction and market share, and they found that higher patient satisfaction scores positively influence hospital's financial performance (hospital profitability). While Lim et al. looked at how market share and patient satisfaction affected financial performance,

Creixans-Tenas and Arimany-Serrat (2018) conducted a study to examine what variables affected profitability most significantly, and they found that management of assets may be most vital to the financial performance of a hospital. The nursing staff is an asset to hospitals, and managing them, and their workload helps retain and improve this asset. Conversely, Bichescu et al. (2018) examined the effectiveness and efficiency of hospitals' ability to provide care and how that related to hospital profitability. They concluded that the average cost per discharge (CPD) was most closely related to profitability over the average length of stay (ALOS) and conformance quality (ConfQual). There are many ways to affect hospital profitability, however many researchers agree that hospital profitability is the most crucial metric to understand fully.

Measure of Variables

Using information reported by the CMS, I measured both independent variables (patient satisfaction and nurse-to-patient ratio). The HCAHPS, initially implemented in 2006, evaluated 32 different areas related to patient satisfaction and experience (Tefera et al., 2016). Focusing on patient satisfaction, Jie et al. (2014) discussed the vital elements of the HCAHPS survey, which include: the responsiveness of the hospital staff to patients' pain and needs, the peacefulness of the hospital, cleanliness of the hospital, and if the patient would recommend this hospital to others. Tefera et al. pointed out that the CMS publishes the results of all HCAHPS surveys with the public on their site along with additional information related to hospitals, including nurse-to-patient ratios.

The HCAHPS survey used by over 31,000 patients and 4,100 hospitals per day has become the benchmark for comparison evaluations among hospitals (Tefera et al.,

2016). Jie et al. (2014) pointed out that it is essential for hospitals to participate in the HCAHPS surveys, because the scores from the survey heavily impact the Medicare reimbursement value-based program purchasing of pay for performance (Jie et al., 2014). Hospitals have become more value-based since 2010 when the Affordable Care Act was implemented (Piper & Tallman, 2016). HCAHPS scores are a leading contributor to hospital financial resources.

Many researchers have used HCAHPS data to measure variables. From the multitude of studies, I reviewed using HCAHPS data, the three studies most similar to this study are O'Barr (2017), Patton (2018), and Hendrickson (2018). O'Barr used variables from HCAHPS to predict inpatient satisfaction scores based on hospital characteristics. Patton also used HCAHPS data to measure variables and examine the relationship between patient satisfaction scores of Northern California hospitals and the communication effectiveness of nurses and organizational performance ratings. Lastly, Hendrickson concentrated on patient satisfaction and hospital reimbursement based on HCAHPS survey results posted on the CMS website. These studies have used HCAHPS data to measure variables for their studies in much the same way I used HCAHPS data to measure variable data for my study.

I measured the dependent variable (hospital profitability) by looking at the hospital's public financial income statement to determine their net income. Subtracting costs and expenses from total revenue equals net income. Net income is disseminated among common stockholders as a dividend or held onto as retained earnings (Benton, 2013). Being that net income can be retained by hospitals and used in several ways to

benefit the hospital and its patients, I decided that net income was the most appropriate way to determine the success of each hospital in this study.

Patient-Centered Care

Patient centered care (PCC), sometimes referred to as patient and family centered care (PFCC), has become an increasingly prominent metric in health care. The fundamental principles of PCC are (a) respect for patients' preferences, (b) integration of care, (c) education, (d) physical comfort, (e) emotional support, (f) family and friend involvement, (g) continuity and transition, and (h) access of care (Ratner & Pignone, 2019). These principles are essential to ensuring patients receive and are satisfied with the quality of care they receive.

PCC is becoming more critical with patients wanting more control over their health care. With aging populations, the occurrence of multi-morbidity is growing tremendously, and many experts expect this trend to continue (Kuipers et al., 2019). As the frequency of patients with multi-morbidity and chronic conditions continues to increase, the need for care centered around individual patients will also grow (Kuipers et al., 2019). Patients involved in their care are essential to better management of chronic health care (Lipovetski & Cojocaru, 2019). PCC, and co-creating care plans with patients specific to their needs, may contribute to better patient outcomes and higher levels of satisfaction related to the quality of care.

PCC focuses on care specific to each patient, and quality health care is always vital to each patient (Ratner & Pignone, 2019). Kowang et al. (2018) discussed service quality attributes and identified ten attributes instrumental to service quality:

- Tangibles: Physical aspects of the service received.
- Credibility: Trustworthiness, believability, and honesty of those providing the service.
- Access: Approachability and ease of contact. (Regarding hospitals, this may also pertain to the distance one is from the closest hospital.)
- Courtesy: Politeness, respect, consideration, and friendliness of the staff.
- Reliability: Consistency of performance and dependability of staff to do what is right.
- Responsiveness: Willingness or readiness of employees to provide service.
- Understanding the customer: Making the effort to understand the customer's needs.
- Communication: Keeping customers/patients informed and listening to them.
- Competence: Possession of the required skills and knowledge to perform the service.
- Security: the feeling of freedom from danger, risk, or doubt regarding services.

All these attributes impact patient satisfaction in much the same way PCC contributes to patient satisfaction.

Another aspect of PCC is making sure to offer culturally competent empathic care to patients. As the world becomes more diverse, cross-culture competency holds greater importance. This importance is further underscored as ethnic minority patients are more often patients with multi-morbidity, thus requiring higher PCC levels (Hopman et al.,

2016). When nurses focus on cultural competence, patients not only trust the primary nurse more, but they are also more trustful of the hospital (Tang et al., 2019). Conversely, clinicians are more verbally dominant, less likely to build rapport, friendly, or concerned when interacting with ethnic minority patients compared to white patients (Lorié et al., 2017). PCC includes tailoring the care to the culture of the individual patient to ensure the patient feels they received the highest level of care.

Determining the best and more appropriate way to provide PCC for each patient can be difficult. There has been significant debate over whether patient satisfaction surveys are adequately able to fulfill the purpose of assessing aspects of quality to aid in improving the quality of care (Kowalski et al., 2017). Clinicians use a substantial amount of nonverbal communication, which is significantly necessary, particularly when interacting with cross-culture patients (Lorié et al., 2017). Nonverbal language is the only global universal language, and with California, and the United Stated becoming more culturally diverse, utilizing appropriate nonverbal language can be beneficial to improving PCC (Lorié et al., 2017). Providing high levels of PCC continues to be instrumental in increasing patient satisfaction scores.

PCC may help patients build trust with their providers more easily and experience higher satisfaction. Patients feel more accepted, less vulnerable, and are more open when nurses create a family like atmosphere (Laird et al., 2015). Creating a family like atmosphere within a nursing ward requires nurses to provide cross cultural care (Laird et al., 2015). In addition to nurses, doctors also play a significant role in developing trust with patients and building PCC. Similarly, to Laird et al. (2017), Dang et al. (2017)

discovered that if doctors are open, honest, and include the patient in the care plan when patients are new, they can build trust more quickly. Patients may feel more satisfied with and trust their care providers more when they receive PCC, and patients who receive PCC recover at higher rates.

PCC also includes understanding the patient's current life situation. Empathy and responsiveness significantly influence the level of satisfaction patients experience (Ye et al., 2017). Doctors and nurses should consider and empathize with patient preferences and financial burdens when considering the most appropriate health care to incorporate into their treatment (Coulter et al., 2019). These actions can significantly reduce added stressors leading to improved patient outcomes (Coulter et al., 2019). When care providers are empathetic in their responsive care, patients may exhibit better recovery outcomes and experience higher levels of satisfaction.

Transition

In Section 1, I outlined the foundation of this study, the background of the problem, the problem and purpose statements, the main research question and associated hypothesis, a discussion of the S-PC theoretical framework, assumptions, limitations, and delimitations, the significance of this study, and the review of the academic and professional literature pertinent to this study. In Section 2, I present the research design for this quantitative correlation study. Section 2 includes a discussion about the purpose statement, the role of the researcher, study participants, research method, research design, population and sampling, ethical research, instrumentation, data collection technique, data analysis, and reliability and validity. In Section 3, I present the findings, application

to professional practice, implications for social change, further recommendations, and conclusions.

Section 2: The Project

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between nurse-to-patient ratios, patient satisfaction scores, and hospital profitability. The targeted population for this study was hospitals located in Southern California. The independent variables were nurse-to-patient ratios and patient satisfaction scores. The dependent variable was hospital profitability. The implications for social change included the potential to show hospital executives that better patient care is a leading contributing factor to hospital profitability. Hospitals that increase nurse staff to improve nurse-to-patient ratios have significantly better patient outcomes, which lead to higher patient loyalty (Driscoll et al., 2018). Better patient care and outcomes are important to social change because people who have better health care tend to live a better quality of life (Driscoll et al., 2018).

Role of the Researcher

The primary function of a quantitative researcher is to collect, analyze, and present research data that their reader can understand and use in the business world (Marshall & Rossman, 2013). In a quantitative study, the goal of the researcher is to generalize information from the population by using a statistically significant sample size from the population (Wester et al., 2013). The focus of a quantitative researcher is to statistically measure independent variables to determine whether the null hypothesis is supported or rejected and whether a correlation is supported (Landrum & Garza, 2015). In the current study, I used secondary data from HCAHPS surveys administered by

hospitals and reported on the cms.gov website that pertained to the independent variables to examine the statistical relationship between the independent and dependent variables. The outcomes from the statistical measurements supported my null hypothesis and refuted my alternative hypothesis.

As Snowden (2014) discussed, a research study must be ethical to be relevant. Researcher's prior experiences could aid them in their research efforts (Leedy & Ormrod, 2016). My professional experience included 9 years of accounting in the health care industry, which provided me with inside knowledge of what correlations may exist. I had no direct contact with the participants during this study, as I relied on secondary data.

Finally, *The Belmont Report* covers three main ethical principles, which include respect for persons, beneficence, and justice (National Commission for the Protection of Human Subjects and Biomedical and Behavioral Research, 1979). Protecting human participants in research from maltreatment or abuse from the researcher is the objective of the Belmont Report (Friesen et al., 2017). I adhered to the protocols outlined in The Belmont Report by commencing data collection only after Walden University Institutional Review Board (IRB) approved my study (06-01-21-0753083).

Participants

I did not use human participants. The use of secondary data affords accessibility and offers convenience to researchers (Hennebel et al., 2015). Pollanen et al. (2016) also stated that secondary data provides researchers a substitute to collecting and evaluating large data sets. I used secondary data, and for that reason there were no primary data collected from participants. Hospital staff send surveys to patients discharged from their

hospitals; when surveys are returned to the hospital, the survey data are submitted to CMS (Dor et al., 2015). The secondary data used for the current study came from an archival government database that publishes hospital data for the public, which I accessed via their websites. Access to the websites (www.CMS.gov, data.medicare.gov) is not restricted because the information is available to the public.

Research Method

Academic scholarly researchers have clustered research methods into three categories: qualitative, quantitative, and mixed methods (Saunders et al., 2015). Hannes et al. (2015) explained how researchers use the quantitative method to assess existing relationships among numeric variables. McCusker and Gunavdin (2015) also described quantitative research as a tool researchers use to gain an understanding of underlying reasons and motivations. In the current study, I examined the relationship between variables; therefore, the quantitative method was appropriate.

When interaction with human participants is needed, qualitative methodology is appropriate (H. P. O. Santos et al., 2014). When looking to discover participants' point of view, qualitative methodology is appropriate (Wilson et al., 2016). Rennie (2012) discussed how qualitative research encompasses collection and analysis of documented data through observation or interaction with participants. In the current study, there was no interaction with human participants to obtain data; therefore, qualitative methodology was not appropriate.

In addition to qualitative and quantitative methods, researchers can also choose the mixed-methods approach (Yin, 2018). The mixed-methods approach encompasses

both quantitative and qualitative methods while meeting all requirements from both methods (Yin, 2018). McCusker and Gunavdin (2015) discussed that researchers use mixed methods to examine a phenomenon while collecting supporting data to provide a more complete understanding of the phenomenon. Using mixed methods may provide a greater benefit but was outside the scope of the current study, which involved examination of secondary quantitative data. Therefore, the qualitative and mixed-methods approaches were not appropriate for this study.

Research Design

I used the correlational design because it best supported the analysis of the relationship between the two independent variables and one dependent variable. There are three quantitative research designs: (a) experimental, (b) correlational, and (c) descriptive survey (Vannest & Ninci, 2015). Simons et al. (2014) explained that researchers use an experimental design to measure the effect of a change in a variable through a process of manipulation. I did not manipulate data in the current study, and therefore the experimental design was not appropriate.

Humphreys and Jacobs (2015) stated that researchers use descriptive techniques to define characteristics of a population or a set of variables. Ploutz-Snyder et al. (2014) showed that the descriptive research method is appropriate when a researcher is attempting to find the mean, median, and mode. Descriptive measurements were not part of my hypothesis testing. Therefore, a descriptive research design was not appropriate. Correlational designs are appropriate when examining issues not addressed during experimental research (Humphreys & Jacobs, 2015). Zuo and Xing (2014) also stated that

correlational research is appropriate when researchers examine relationships between two or more variables. My research question addressed the relationship between independent and dependent variables; therefore, a correlational design was appropriate for this study.

Population and Sampling

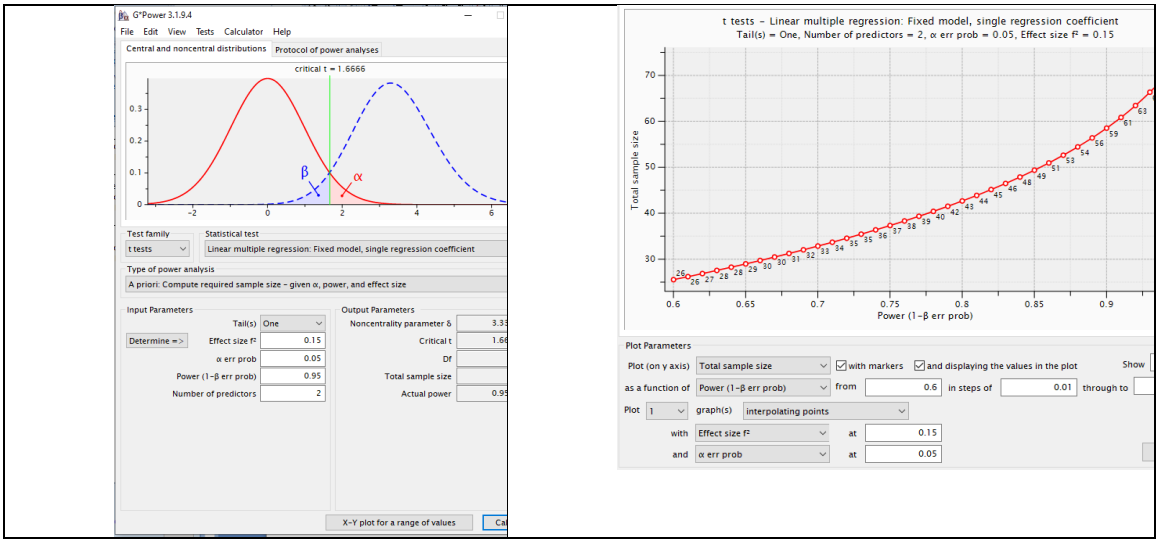
The sample size for this study was 74 hospitals located in Southern California. The sample was a convenience sample rather than a random sample. A convenience sample is a nonprobabilistic sample that involves the researcher using the most convenient participants accessible for gathering data for the study (Gray, 2018). There is an ease and cost effectiveness to convenience sampling; however, convenience sampling can add a level of difficulty to generalizing sample results to the larger population (Babbie, 2013). I used the data.medicare.gov website to extract data for for-profit hospitals in Southern California. The data.medicare.gov website provides data for all Medicare hospitals in the United States and allows the user to set filters to narrow their search by state, hospital type, and ownership. The filters I used were California, for-profit, and all ownership types. From the hospitals within my population, I used an appropriate sample size to obtain a 95% confidence rate with two independent variables.

Faul et al. (2007) discussed the usefulness of the G*Power software in helping to analyze data for research. I used the free G*Power 3.1.9.4 software to determine that the appropriate sample size for a linear multiple regression with a confidence of 95% was 74. The purpose of focusing on Southern California was because of my geographical location as well to strengthen the quality of the study and increase the likelihood that the hospital executives would be able to use the findings from this study. Spielman et al. (2014)

discussed the importance of geographic location for studies to increase the quality of the results due to different economic patterns for different geographic locations. Figure 1 provides the information used to calculate the appropriate sample size using the G*Power statistical software.

Figure 1

*A Priori Sample Size (*N*=74) Generated Using G*Power Software*



Ethical Research

A research study must meet an acceptable code of conduct, social adaptability, and legal requirements (Yin, 2018). A research study must also be ethical to be considered relevant (Snowden, 2014). Prior to collecting any data for this study, I completed CITI human subject protection training and received IRB approval 06-01-21-0753083 to collect data. In this study, I obtained all data from public government sites and databases. Understanding that privacy is important, I assigned a unique number for each hospital (H1, H2, H3) rather than their name to maintain confidentiality. I used a

password-protected Excel file to store the cross-referenced information used to identify the hospitals. The Excel file included the unique number used in the study with the demographics from each hospital. All data used in this study were publicly available; therefore, there was no need to acquire consent. I met all integrity of data requirements by using a government-sponsored website to obtain the data.

During the data selection process, it is possible to create bias (Beslin & Tasic, 2012). Prior to acquiring the number of hospitals needed to meet my sample size, I first obtained data for all hospitals meeting my criteria. Once I gathered all needed data for all hospitals, I used a separate Excel file to list the unique numbers for each hospital. In this separate Excel file, I used a random sampling function to further minimize any chance of bias and meet requirements for sample size. I will store all research data in a password-protected file for 5 years. I will destroy all data at the end of the 5 years by deleting all files associated with the study and making sure to empty the recycling bin on the computer.

Instrumentation

For this study, I extracted data from the CMS website. The specific information I used for this study was hospital compare (HC) and health care cost report information (HCRIS) data files (see Appendix). The independent variables for this study were patient satisfaction scores and nurse-to-patient ratios. The patient satisfaction score was an ordinal variable, and the nurse-to-patient ratio was a ratio variable. The patient satisfaction scores included the results from the HCAHPS surveys by CMS, and the nurse-to-patient ratios were the ratios of nurses to patients provided by each hospital

based on their average staffing and the number of patients in their hospital. The HC and HCRIS data files allowed me to see the financial impact of patient satisfaction because the HC files focused on quality-of-care metrics and the HCRIS files included a portion of the annual cost reports, including hospital characteristics and financial statement data (CMS, 2019c, 2019b).

Researchers have used the CMS data to answer different quantitative questions. Cline (2018) found a positive but insignificant relationship between hospital surgical volume, surgical case mix, and profitability using the CMS data. Glover (2019) found a significant positive relationship between nursing resource, uncompensated care, hospital profitability, and quality of care. I pulled data for all 202 hospitals in Southern California and cross-checked the data files for HC and HCRIS to identify which hospitals had complete files. Because I used secondary data, I subjected the secondary data to rigorous statistical computation to minimize the threat to validity. From the number of hospitals that had complete files for both data sets, I pulled a random sample of hospitals needed to reach my appropriate sample size.

Data Collection Technique

The data collection technique for my study consisted of pulling previously reported data from databases on government websites. The information listed on data.medicare.gov becomes available after 2 years due to the time it takes for the data to be organized and uploaded. CMS collects the information that is posted publicly on their website for their own purposes; therefore, the information I used was secondary data. Secondary data are acceptable for research (Taber, 2017).

Because the process of collecting data occurred over time and required searches for different criteria, I created a login for the data.medicare.gov website; this allowed me to save my search criteria to ensure I was always performing the same search to retrieve data. The independent variables for my research were patient satisfaction scores and nurse-to-patient ratio, so I first pulled data on both patient satisfaction scores and nurse-to-patient ratios for all hospitals in California. From the original Excel file, I created a copy Excel file and filtered down the data to include only the 202 for-profit hospitals in Southern California. The third and final Excel file started as a copy of the second Excel file. Then I removed any hospitals that did not have data for both independent variables for the year of financial data I covered in this study. Finally, I obtained the financial data for the hospitals that were selected from the random sample formula I used in Excel to obtain the necessary hospitals needed for the sample size. Public for-profit hospitals file a Form 10-K annually to inform investors of their financial position. I used the Net Income number listed on the consolidated statement of operations within the Form 10-K to obtain the hospitals' financial data.

Data Analysis

Research Question

Does a linear combination of nurse-to-patient ratios and patient satisfaction scores significantly predict hospital profitability?

Hypotheses

H_o: The linear combination of nurse-to-patient ratios and patient satisfaction scores does not significantly predict hospital profitability.

H_a: The linear combination of nurse-to-patient ratios and patient satisfaction scores significantly predicts hospital profitability.

The data came from government databases that are populated every year with current and accurate information. Pulling the data from a government database aided in the data cleaning process. The secondary data I used were the standard in the health care industry for decision making. To guard against threats to validity, I subjected the secondary data to rigorous statistical computations and data cleaning. First, I ensured that only hospitals that met my criteria were included in the population I pulled the random sample from. Next, I listed all hospitals in alphabetical order in Excel and used Excel formula "=INDEX($A$2:$A$10,RANDBETWEEN(1,COUNTA($A$2:$A$10)),1)" to pull random names from the list of hospitals. Once I pulled enough names needed for a substantial sample size (a 95% confidence interval was used to calculate my sample size), I searched for any duplicates. I removed any duplicates found and repeated the process of pulling random names. I also ensured that all hospitals selected had complete sets of data by removing the few hospitals that were chosen that had incomplete data and selecting new random hospitals to replace them. Finally, I used the IBM SPSS Version 24 software to perform data analysis, as recommended by Tabachnick and Fidell (2019). To ensure replicability, I used an alpha of .05 (see Cronbach, 1951). Having an alpha of 0.05 means there is a 5% chance that no statistically significant relationship exists between the variables (Cronbach, 1951).

Multiple regression analysis is a set of statistical calculations used to evaluate the relationship between one dependent variable and multiple independent variables

(Tabachnick & Fidell, 2019). I also considered using an analysis of variance (ANOVA) and chi-square statistical tests. ANOVA and chi-square statistical tests are most appropriately used to determine if observed data from a sample is different from what is expected by chance alone. While multiple regression analysis is most appropriately used to explain the relationship between one dependent variable and multiple independent variables (Tabachnick & Fidell, 2019). Both ANOVA and chi-square use interval level measurements, which was not applicable for this study, and thus less appropriate.

The statistical test I used for this study is a multiple linear regression analysis. Multiple linear regression analysis is a predictive analysis used to examine the relationship between one dependent variable and two or more independent variables (Yin, 2018). I planned to use the bootstrapping method if assumptions were violated to provide an empirical sampling distribution and allow for statistical inferences, however, fortunately assumptions were not violated, and bootstrapping was not needed.

There are four key assumptions required for multiple linear regression analysis. The four assumptions are (a) normality, (b) linearity, (c) multicollinearity, and (d) homoscedascity (Ernst & Albers, 2017). Researchers need to check the scatter plot of data points and establish the correlation coefficient for the data set to determine if a linear relationship exists between the independent and dependent variables (Tabachnick & Fidell, 2019). Once I compiled all the data, I examined the scatter plot of the data points and the correlation coefficients and found that the independent variables did not correlate to the dependent variable. A perfect correlation equals one, a correlation coefficient of .50 to .99 is a strong relationship, a correlation coefficient of .30 to .49 is a medium

relationship, and a correlation coefficient of .01 to .30 is a weak relationship (Tabachnick & Fidell, 2019). Using the same scale on the negative side, and the correlation coefficient must be close to a negative one to support the null hypothesis (Tabachnick & Fidell, 2019).

A typical issue while performing multiple regression analyses can be collinearity. Although there is no precise definition of collinearity, most researchers agree that collinearity exists if there is an approximate linear relationship among some of the predicter variables in the data (Morrissey & Ruxton, 2018). Homoscedasticity occurs when all random variables have the same determinate variance (Yang et al., 2019). I calculated the residual value for each data point observed to ensure that the scatter plot is homoscedastic. Although I used the ANOVA test to look for normality, I also used the F-test to search for homoscedasticity. Multicollinearity can be detected by examining the tolerance ($1\text{-}R^2$) for each independent variable and can be resolved if encountered by combining the highly correlated variables through principal component analysis (Daoud, 2017).

In addition to correlation coefficients and other inferential statistics, I calculated the effect size (ES). Ainur et al. (2017) described ES as the difference between two means divided by the standard deviation of either group. Both independent variables, patient satisfaction scores and nurse/patient ratio, are measured as a ratio I did not use the odds ratio. I reviewed a scatter plot of the data points and confirmed that the data was normally distributed.

The first step is to graph a straight line for the cumulative normal density function. Then plot the data on the graph after normalizing it using the mean and standard deviation. Once I plotted all data points, I interpreted how closely the data points fell on the cumulative normal density function line. Ainur et al. (2017) pointed out that if the data does not fit closely to the line, then the data may be a non-normal distribution and the use of a tool similar to the Johnson translation system would help to normalize the data set. However, in this study, each independent variable was able to fit into a normal distribution.

Study Validity

Study validity is an imperative aspect of all research as it reflects the usefulness and strength of the study and the findings (Li et al., 2017). Researchers need to ensure their research is valid to ensure it proves useful in the business world (Tabachnick & Fidell, 2019). Internal and external validity are the two types of validity that must be met (Rubin & Babbie, 2016). The goal of this study was to provide hospital executives with useful information that can improve the hospital's quality of care and profitability.

External validity referrers to the ability to generalize the findings of one study to other study populations (Quaife et al., 2018). External validity cannot be assumed, and to establish generalizability (external validity), the researcher must ask three key questions, (a) what is the operational measure, (b) is the sample representative of other populations, and (c) are the participants similar (Quaife et al., 2018). An appropriate sample size is needed to ensure generalizability for the research findings to transfer to a larger population (Tabachnick & Fidell, 2019). In this study, the only factor that posed a threat

to external validity was the geographical boundary. I only pulled an appropriate sample from the population of hospitals in Southern California, so there may be an ecological threat to this study but as with any study, I sacrificed this small chance of external validity to increase the internal validity. Additionally, if other studies focusing on other geographical areas pull the sample size percentage as this study, that would help to reduce geological threat to external validity for this study. Using G*Power 3.1.9.4, I calculated that a sample size of 74 is necessary to obtain a 95% confidence.

Internal validity focuses on the credibility and causal relationship (cause and effect) of a study (Suzanne et al., 2019). Losh (2017) discussed that threats to internal validity are threats to causal control and that confounded variables, variables that measure more than one entity, pose the largest threat to internal validity. The goal of this study was to show association and correlation, not causation. For that reason, no significant threats to internal validity exist for this study. I used Excel to perform a simple random sample, which also enhanced external validity. A simple random sample is a form of probability sampling, which offers greater confidence in the representativeness of the population (Landreneau, 2019).

It is crucial as a researcher to ensure there are not any type I errors. Type I errors are also known as false positives. Type I errors occur if an alternative hypothesis (see a difference) is accepted, although the result is explained by chance (no statistically significant difference) (Norman et al., 2017). To ensure the minimization of type I errors, researchers maintain statistical conclusion validity (Norman et al., 2017). Statistical conclusion validity is the implication of the correlation between the independent and

dependent variables (Tabachnick & Fidell, 2019). Risks to statistical conclusion validity could comprise of low dependability of measures, random diversity of cases, and low statistical power (Tabachnick & Fidell, 2019).

The best way to alleviate concerns regarding statistical conclusion validity is to use multiple statistical analysis tools (Tabachnick & Fidell, 2019). In this study, I used a 95% confidence probability. A confidence probability of 95% will increase the sample size and improve validity (Varoquaux, 2018). The focus of the study is a defined sample population of hospitals in Southern California, which should reduce the risk of outliers. Lastly, the actual data came from a reliable source of U.S. government databases, improving the accuracy of the data used in the quantitative analysis.

Transition

In Section 2, I provided an outline for the possible relationship between nurse-to-patient ratio, patient satisfaction scores, and the profitability of hospitals by covering my research methods, research design, discussing the population and sampling for the study, data collection instruments and techniques, data analysis, and the study validity. In Section 3, I present my findings from the analytics I performed, discuss the application for professional practice, implications for social change, and discuss recommendations for action and further research.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this quantitative correlational study was to examine the relationship between nurse-to-patient ratios, patient satisfaction scores, and hospital profitability. The targeted population for this study was hospitals located in Southern California. The independent variables were nurse-to-patient ratios and patient satisfaction scores. The dependent variable was hospital profitability. This study included 74 hospitals in the Southern California region. In this study, the null hypothesis was accepted, and the alternative hypothesis was rejected. Patient satisfaction scores and nurse-to-patient ratios do not correlate to hospital profitability.

Presentation of Findings

In this subsection, I discuss testing assumptions, present descriptive statistics, present inferential statistics results, discuss the findings, and conclude with a summary. The research question for this study was the following: Does a linear combination of nurse-to-patient ratios and patient satisfaction scores significantly predict hospital profitability?" My alternative hypothesis was that a linear combination of nurse-to-patient ratios and patient satisfaction scores would significantly predict hospital profitability. My null hypothesis was that a linear combination of nurse-to-patient ratios and patient satisfaction scores would not significantly predict hospital profitability. The results from this analysis did not support rejecting the null hypothesis.

There are several possible reasons why I did not find a significant relationship between hospital quality and financial performance: (a) the small sample size and

geographical limitations of the data, (b) data collection occurring during the COVID-19 pandemic, and (c) additional explanatory variables needed to isolate the variation and relationship between the variables. A key area this study did not include was expenses. Welsh (2019) focused on hospital expenses and encountered five cost areas (private room costs, semiprivate room costs, intensive care unit costs, pharmacy costs, and medical supply costs) that accounted for 63% of hospital total cost. Hospitals can increase their profitability by increasing their efficiency; keeping nurses on staff longer reduces cost associated with training and helps nurses become more efficient in their job (Lu et al., 2019; Ly & Cutler, 2018; Roghani & Chenari, 2017).

Descriptive Statistics

I ran descriptive statistics for 74 hospitals. Table 2 contains descriptive statistics of the study variables.

Table 2

Descriptive Statistics of the Independent and Dependent Variables

Variable	*M*	*SD*	Min.	Max	*N*
Patient satisfaction scores	2.19	.917	1	5	74
Nurse-to-patient ratio	3.1276	1.2269	0.87	7.13	74
Profitability (1–5)	2.53	1.397	1	5	74

Tests of Assumptions

In this study, I evaluated the assumptions of multicollinearity, outliers, normality, linearity, homoscedasticity, and independence of residuals.

Multicollinearity

I evaluated multicollinearity by viewing the correlation coefficients among the predictor variables. All bivariate correlations were small to medium (see Table 2); therefore, the violation of the assumption of multicollinearity was not evident. Table 3 contains the correlation coefficients.

Table 3

Correlation Coefficient of the Variables

Variable	Profitability	Patient satisfaction scores	Nurse-to-patient ratio
Income	1.00	0.082	0.031
Patient satisfaction scores	0.082	1.00	0.378
Nurse-to-patient ratio	0.031	0.378	1.00

Note. $N = 74$

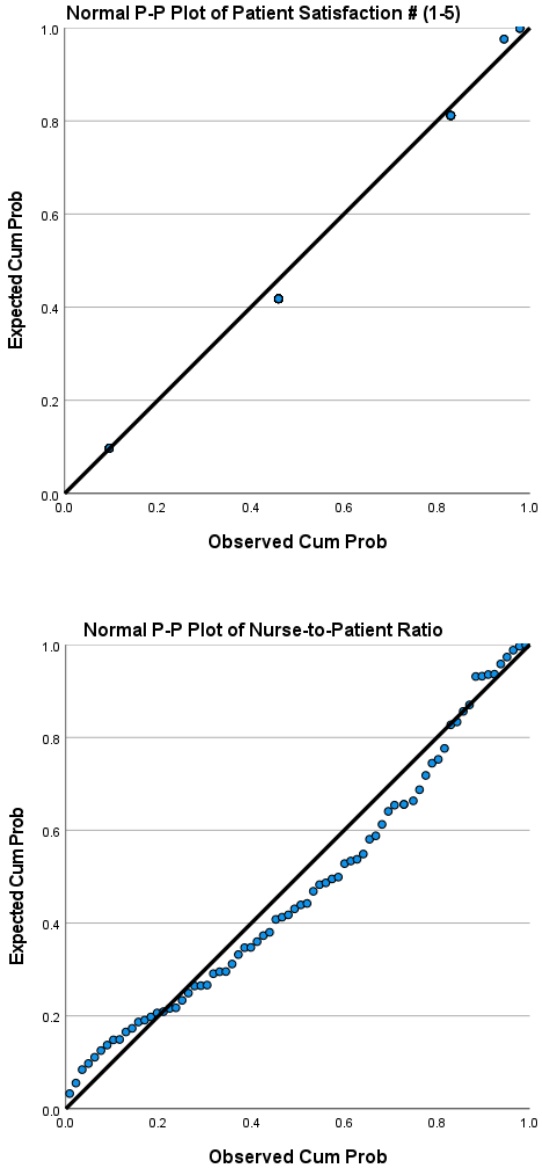
Outliers, Normality, Linearity, and Homoscedasticity

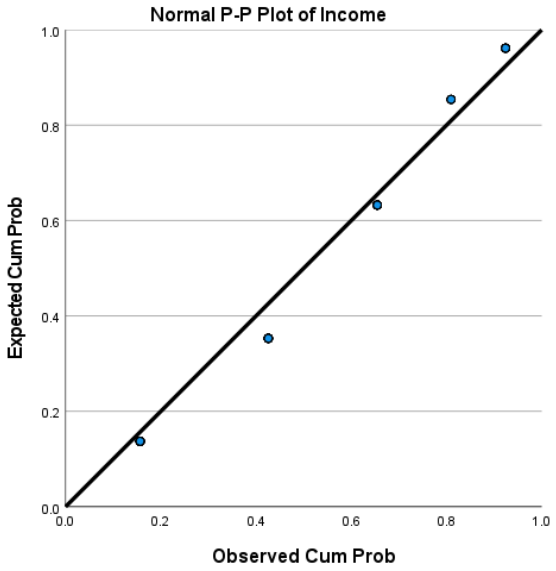
I reviewed outliers and the assumptions of normality, linearity, and homoscedasticity by examining the normal probability plot (P-P) of the regression standardized residual (see Figure 2) and the scatterplot of the standardized residuals (see Figure 3). Analyzing the figures revealed no significant violations of multicollinearity, outliers, normality, linearity, homoscedasticity, and independence of residuals. The propensity of the points to lie in a relatively straight line (see Figure 2), diagonal from the

bottom left to the top right, presented supporting evidence that the assumption of normality had not been violated. The lack of a transparent or systematic pattern in the scatterplot of the standardized residuals (see Figure 3) indicated there was no correlation between the independent and dependent variables.

Figure 2

Normal Probability Plot (P-P) of the Regression Standardized Residuals




Normal P-P Plot of Income
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

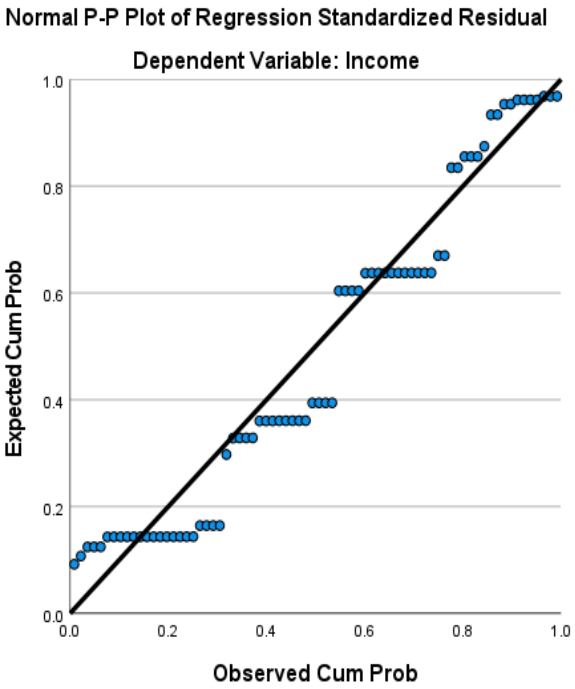
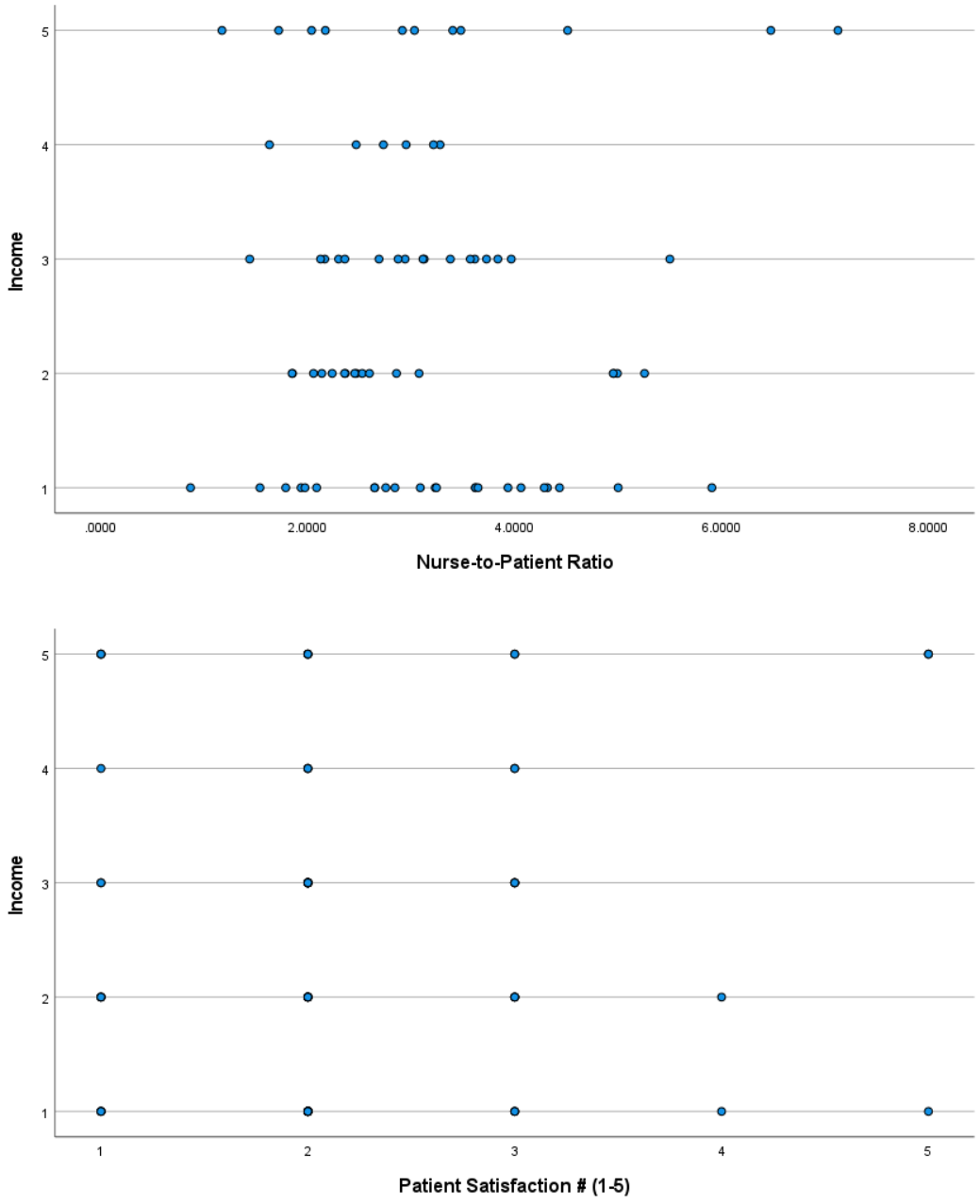

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Income
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

Figure 3

Scatterplot of the Standardized Residuals



Inferential Results

Standard multiple linear regression, $\alpha = .05$ (two-tailed), was used to examine the relationship between the effectiveness of patient satisfaction scores and nurse-to-patient ratio and hospital profitability. The independent variables were patient satisfaction scores and nurse-to-patient ratios. The dependent variable was hospital profitability. The null hypothesis was that patient satisfaction scores and nurse-to-patient ratio would not significantly predict hospital profitability. The alternative hypothesis was that patient satisfaction scores and nurse-to-patient ratio would significantly predict hospital profitability.

Preliminary analyses were conducted to assess whether the assumptions of multicollinearity, outliers, normality, linearity, and homoscedasticity were met; no serious violations were noted. The model was not able to significantly predict hospital profitability. The R^2 (0.013) value indicated that roughly 1% of variation in hospital profitability was accounted for by the linear combination of the predictor variables (patient satisfaction scores and nurse-to-patient ratios). As shown in Tables 4–6, the impact of each independent variable on the dependent variable, holding everything else constant, was essentially zero.

Table 4

Summary of the Regression Results

Model	Sum of Square	*df*	Mean Square	*F*	Sig.
Regression	1.335	2	6.675	.146	.864[b]
Residual	3.242	71	4.566		
Total	3.255	73			

a. Dependent variable: Profitability
b. Predictors: Nurse-to-patient ratio, Patient Satisfaction

Table 5

Model Summary of the Regression

Model	*R*	*R* Squared	Adjusted *R* Squared	Std. Error of Estimate	*R* Square Change	*F* Change	*df*1	*df*2	Sig. F Change
1	.064[a]	.013	-.024	21368141.437	.004	.146	2	71	.864

Table 6

Coefficient Estimates from the Regression

	Unstandardized Coefficients		standardized coefficients			Correlations		
Model	B	Std. error	beta	*t*	Sig.	Zero-order	Partial	Part
Constant	15372610.968	7849711.626		1.958	.054			
Patient satisfaction # (1-5)	1145331.983	2946722.641	.050	.389	.699	.026	.046	.046
Nurse-to-patient ratio	-1089695.365	2201743.207	-.063	-.495	.622	-.045	-.059	-.059

Analysis Summary

I examined the relationship between nurse-to-patient ratios, patient satisfaction scores, and hospital profitability. I used standard multiple linear regression to examine the possible correlation between patient satisfaction scores, nurse-to-patient ratio, and hospital profitability. Assumptions of multiple regression analyses were assessed, with no serious violations noted. The model was not able to significantly predict hospital profitability, $R^2 = .013$. Both patient satisfaction scores and nurse-to-patient ratios did not significantly correlate to hospital profitability. The conclusion from this analysis is that patient satisfaction scores and nurse-to-patient ratios are not significantly associated with hospital profitability. This study included only two of the many factors included in profitability; without any way to hold all other factors consistent among hospitals, there was not enough information to significantly predict profitability.

Simmons (2016) used the S-PC framework to show a correlation between CRM system use, customer satisfaction, and gross revenue for North American industrial service companies. CRM systems could be used in hospitals to better manage nurse-to-patient ratios because customer satisfaction is the same as patient satisfaction in industries other than health care, and gross revenue is one way to evaluate profitability. Simmons's findings indicated a correlation between patient satisfaction, nurse-to-patient ratio, and hospital profitability. Similar to Simmons's study, Akinleye et al. (2019) discovered a decisive relationship between hospital financial performance and hospital quality performance scores. Hospital financial performance is equivalent to hospital profitability, and hospital quality performance could be a result of combining high nurse-

to-patient ratios and high patient satisfaction scores. Akinleye et al.'s findings also suggest that there is a correlation between patient satisfaction scores and hospital profitability.

Application to Professional Practice

The results of this study may prove valuable to health care leaders. Although this study did not show a correlation between patient satisfaction scores, nurse-to-patient ratio, and hospital profitability, the results of this study in conjunction with future research, may prove valuable to hospital leaders with information about how to improve the profitability of their hospitals. Hospital leaders typically focus on the profitability and success of the hospital they work for, improving nurse-to-patient ratios reduces the number of deaths in hospitals by 2.3 per every 1,000 patients (Kowalski et al., 2017). Similar to Kowalski et al., Carlisle et al. (2020) discovered that adding one full time nurse would reduce ICU mortality by 9%. Also, increasing nursing staff also helps nurses enjoy their jobs more and quit less (Bakhamis et al., 2019), which would make those hospitals more desirable.

With information readily available, patients can investigate information like patient satisfaction scores of their surrounding hospitals. Hospital leaders need to fully understand the relationship patients directly have to hospital profitability (Hultman, 2020; Oakley, 2012). The more a patient feels they were treated with dignity and respect, the more likely they are to spread positive word of mouth, be returning customers (loyal), as well as pay their bills once they receive them (Hultman, 2020). It is imperative for hospital leaders to understand that patients are more likely to feel safer and experience

higher satisfaction when they trust the individuals taking care of them, thus hospital leaders should invest in cultural competence for nurses (Tang et al., 2019). The additional literature reviewed in this study showed that there is at a minimum a correlation between patients, staff, and profitability, although additional research is likely needed in the areas of nurse-to-patient ratios and patient satisfaction. Hospital leaders should encourage and aid in future research to gain a more thorough understanding of this relationship.

Implications for Social Change

Although this study did not show a correlation between patient satisfaction scores, nurse-to-patient ratios, and hospital profitability, better nurse-to-patient ratios and higher patient satisfaction scores could contribute to the social well-being of hospital patients and surrounding communities (Driscoll et al., 2018). Continued research concerning the impact patient satisfaction scores and nurse-to-patient ratios have on hospital profitability while holding other factors constant, could help hospital leaders better understand the importance of the relationship between patient satisfaction scores, nurse-to-patient ratios, and hospital profitability. Focusing on improving nurse-to-patient ratios and patient satisfaction would improve the health of the individuals in the community and produce a positive social impact.

Recommendations for Action

I recommend that additional research on patient satisfaction scores, nurse-to-patient ratio, and hospital profitability before any implementations are done. The results of this study as well as results from additional studies concerning the profitability of hospitals are essential to hospital leaders. Hospital leaders should encourage additional

research in this area to better understand the relationship between patient satisfaction scores, nurse-to-patient ratios, and hospital profitability. As previously discussed, Lu et al. (2019) concluded that keeping nurses on staff longer reduces the costs associated with training new staff and increased the quality of care. Hospital leaders need to invest to software to monitor the number of nurses on staff more closely, number of hospital beds filled, and the patient satisfaction scores they are receiving. Focusing on quality of care for patients and working conditions for nurses will financially benefit hospitals. The results of this study will be published publicly through Walden University, additionally, I will share with family, friends, and prospective future employers who could benefit from this study.

Recommendations for Further Research

This study was limited because it only focused on hospitals in Southern California, I am a novice researcher, and only patient satisfaction scores and nurse-to-patient ratio were considered regarding hospital profitability. Future research could include other factors concerning hospital profitability to strengthen the study and researchers may also want to include a larger geographical area. Future studies could include additional expenses into their research that closely relate to patient satisfaction scores as well as nurse-to-patient ratio. Additionally, future researchers could try to standardize many other factors influencing profitability, allowing patient satisfaction and nurse-to-patient ratios to hold more influence on profitability. I believe aligning multiple variables that encompass revenue and expenses would result in a more substantial study that may prove more useful to hospital leaders and the business community.

Reflections

In this study, I examined the relationship between patient satisfaction scores, nurse-to-patient ratios, and hospital profitability. I learned a considerable amount regarding the research process as well as all that is needed to provide quality information to the public. Before conducting this research, I felt strongly that patient satisfaction scores and nurse-to-patient ratios would strongly correlate to hospital profitability. I believe that preconception came from my firm belief in customer service within healthcare. Now that I have completed this research study, my eyes are more open to the fact that although some things may be necessary, multiple factors are needed to reach a whole conclusion.

Conclusion

This quantitative correlational study used S-PC as the theoretical framework to guide the research. Numerous additional studies were reviewed that showed associated relationships between nursing staff, patient satisfaction, and hospital performance/profitability. While this study did not find any significant correlation between patient satisfaction, nurse-to-patient ratio, and hospital profitability, through the extensive literature reviewed, it is clear patient satisfaction and nursing staff are important factors. Patients deserve superior care and an excellent experience while in hospitals. Thus, hospital leaders owe it to their future patients to continue searching for evidence that aids the change that is necessary.

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Appendix: Secondary Data Nature and Source

The secondary data used in this study will come from a government database. HCAHPS scores are publicly reported every quarter on the hospital compare website: www.medicare.gov/hospitalcompare, Centers for Medicare & Medicaid Services. (2019). each quarter when the newest scores are added, the oldest scores are removed. In April 2015, 4,167 hospitals publicly reported HCAHPS scores recorded from over 3 million surveys. Typically, more than 8000 HCAHPS surveys are completed by patients every day.