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Predictor of Hospital Closure in the United States

Haniyeh Shariatmadari

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PREDICTOR OF HOSPITAL CLOSURE IN THE UNITED STATES

By

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Bachelor of Science – Healthcare administration
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2018

A thesis submitted in partial fulfillment
of the requirements for the

Master of Healthcare Administration

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ABSTRACT

Hospital closures have recently been more common and a crucial concern in the United States since they can influence many aspects of patients' health conditions. This situation has led many scholars to investigate the adverse effect of hospitals closure. Previous research has well documented the effects of a hospital closure. However, there is a lack of studies on the predictor of a hospital closure. To fill this gap, the objective of this longitudinal study is to explore organizational and market factors associated with hospital closure. We used Data from the American Hospital Association (AHA), the Centers for Medicare and Medicaid Services (CMS) Cost Reports, and the Area Health Resource Files (AHRF) for this analysis. This study includes all medical/surgical acute care hospitals operating in the United States between 2005 and 2019. We used an unbalanced panel design with logistic regression and marginal effects to explore the probability of our predictor variables on hospital closure. SAS version 9.4 and STATA version 13 were utilized. Our multivariate logistic regression indicated that hospitals located in more affluent counties had a lower probability of closing (0.04%, $p \leq 0.05$). Compared to smaller hospitals; larger hospitals had a (marginally significant) lower probability of closing (1.99%, $p \leq 0.1$). Hospitals with higher financial performance had a lower probability of closing with respectively (0.02%, $p \leq 0.0001$) for operating and (0.03%, $p \leq 0.0001$) for total margin. Compared to for-profit hospitals, not-for-profit hospitals and non-federal government hospitals had a lower probability of closure (2.54%, $p \leq 0.0001$ and 3.35%, $p \leq 0.0001$ respectively). After the full implementation of the ACA, hospitals had a lower probability (0.87%, $p \leq 0.0001$) of closing. Finally, hospitals with higher occupancy rates had a lower probability of closing (0.03%,

$p \leq 0.001$). Our study findings will give policymakers and hospital leadership teams tools to design effective policies and strategies to help prevent hospital closure.

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CHAPTER 1: INTRODUCTION

1. Introduction

The rates of business failure and bankruptcy among United States organizations have dramatically increased in recent years (Eilrich, Doeksen & St Clair, 2015). The fact that failures have been reported throughout all significant industries and across the nation is particularly noteworthy (Jena, Mann, Wedlund & Olenski, 2017). Also, business failures in health services, particularly among hospitals, have been notable (Duncan, 1991). The phenomenon of hospital closure has accelerated recently and increased concern in the healthcare industry. Hospital closures, which have recently been more common, are nevertheless a crucial concern in the healthcare industry, as more than 100 hospitals in the United States have closed since 2010 (Evans, 2015).

Hospital closures are a significant issue since they can affect many aspects of patients' health. This situation has led many scholars to investigate the adverse effect of a hospital closure. Particularly of interest, it has been noted that most of the closed hospitals have unsatisfactory financial accomplishments compared to those that remained open. Moreover, some hospitals in financial turbulence that continue to operate might opt for a reduction in some services or merge with other hospitals, which may negatively affect access to needed services (Kaufman, Thomas, Randolph, Perry, Thompson, Holmes, & Pink, 2016). Based on previous studies, hospital closures have increased average transportation time to Emergency Medical Services (EMS) and overall activation time (Miller, James, Holmes, & Van Houtven, 2020). Overall activation time is the time between the patient calling a medical emergency and the EMS responders completing their encounter and returning to service (Abir, Taymour, Goldstick, Malsberger, Forman, Hammond & Wahl, 2021). Increasing the overall time of activation of EMS can lead to poor

health outcomes for patients who might face impeded or restricted access to needed and even lifesaving health care services (Pham, Puckett, & Dissanaik, 2017).

Hospital closure has been found to amplify concerns about prolonged travel times or overcrowding at nearby hospitals, be more likely to have more negative consequences for patients in time-sensitive circumstances, and increase the probability of mortality among these patients (Carroll, 2019). Additionally, hospital closure is supposed to have a negative economic influence on a rural community (Hart, Pirani, & Rosenblatt, 1991). Closing hospitals could have a short-term destructive influence on a county on several levels, including decreased budgets that could cause hospital employees to work harder to make a case for sustained financing of rural hospitals (Manlove & Whitacre, 2017). A study by Holmes and colleagues revealed that closing the only hospitals in the community will decrease per capita income and raise the community's unemployment rate. However, to our knowledge, there are few studies on the predictors of hospital closure which is significant to both policy and healthcare decision-makers. A study by Wertheim & Lynn (1993) investigating the link between financial accounting information and hospital closure found leverage area ratios, liquidity, the efficiency of capital, and availability of assets to be significant predictors of hospital closure one or two years before closure. Furthermore, other studies indicate that the rural hospitals that were less profit-making and productive, for-profit hospitals, and those hospitals that not being capable of paying off their existing debts were more likely to merge or close (Williams Jr, 2019). Based on study findings, the variables in the final discriminant models reflect four key financial health elements: liquidity, debt, profit, and effectiveness, as well as indicators of competitiveness and length of stay (Gardiner, Oswald, & Jahera, 1996).

Hospital closure can influence many aspects of patients' health and access, leading scholars to investigate the adverse effects of hospital closure. Still, there is a scarcity of studies on the predictors of a hospital closure. We found 14 studies that have examined hospital closure for both urban and rural locations on a national scale. Of these studies, eight (8) included only rural hospitals, while six (6) included rural and urban hospitals. Three (3) of these studies were longitudinal, the most recent covering the period between 2011 and 2014. The other two studies were dated 1983-1987 and 1986-1989. The sample size ranged between 71 and 200 hospitals included in the study. To fill this gap, we propose exploring organizational and market factors associated with hospital closure for urban and rural hospitals nationwide among 2005 to 2019. We also intend to investigate the effect of the Affordable Care Act (a significant piece of health care legislation in the last three (3) decades) on hospital closure. This crucial information will help policymakers design and implement policies that can help hospitals at higher risk of closure to have a chance of survival. For operational stakeholders in the hospital industry, this knowledge will help those craft strategies to help prevent closure.

2. Research Questions:

A. What are the organizational predictors of hospital closure?

B. What are the market predictors of hospital closure?

CHAPTER 2: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

1. Literature Review:

In the last decade, there have been a significant number of closed hospitals in the United States. Various states have experienced such closures which impact many people (Gujral & Basu, 2019). Since hospitals experience increasing challenges and difficulties prior to closure, understanding the organizational and market characteristics that the hospitals face prior to closure could help prevent the closure of hospitals. Moreover, hospital closure can cause the potential need for particular services to the population in the location of the closed hospital and have negative effects on individuals and society. The review of existing literature presented below conceptualizes the effect of hospital closure on care access, mortality rate, transport time, efficiency quality, individual health, and economics.

A. Hospital Closure and Access to care

According to the reports of the Medicare payment program to the legislature (2018), one of the major public health concerns is to have access to healthcare. In the last decade in the United States, 106 rural hospitals have shut down, with no new hospitals opening to replace this number of closed hospitals which leads to a net loss. Furthermore, the risk of closure has been identified for several more hospitals. Closure of rural hospitals will increase the concerns about the alternate sources of emergency care and inpatient availability and ease of access (General Accounting Office, 1991).

Recent closures of United States rural hospitals have influenced access to care for people. Some regions validate increased and potentially more concern about population coverage losses probably due to the superior hospital closures number, like the Southern and Southeastern United

States (McCarthy, Moore, Smedley, Crowley, Stephens, Griffin & Jansen, 2021). According to scholars, hospital closures would lead to rising in the likelihood of standard reporting of care sources among the high or low-income samples. However, the largest effect was found among the low-income. Increasing the distance to the nearby hospital by 1 mile can lead to a nearly 4% increase in the possibility of reporting a request for a specific location to provide healthcare services. The description of this situation is that county or city officers may need to persuade inhabitants who had trust in the closed hospital's outpatient clinic or its emergency room to find an alternative hospital. Also, based on evidence increased distance to the nearby hospitals, cause increases the number of accidental injuries deaths by 11 to 20% and it will increase the numbers of death from emergent situations, such as heart attacks (Buchmueller, Jacobson, & Wold, 2006). Moreover, there is a significant decline in yearly admissions and discharges in the areas where the hospital closed, specifically compared to the no-hospital areas (Rosenbach & Dayhoff, 1995).

B. Hospital Closure and Mortality Rate

Healthcare quality and safety mostly occur in the contextual framework and comprehensive aspects that improve the safety culture. Hospital Insecurity, and eventually closure of the hospital, create an atmosphere in which dormant variables, including fast alteration inside the organization, challenges of management, and uncertainty of employees, increase the risk of medical errors for patients. At the forefront, physicians and nurses must deliver care for the patients while having little leadership over broader system variables. These service providers are responsible for ensuring that no one is harmed (Donaldson, Corrigan & Kohn, 2000). Another adverse impact of hospital closure is the concerns surrounding the extended time of travel or overpopulation experienced by surrounding hospitals that remained open. These

situations are expected to cause greater unfavorable outcomes for patients that have timesensitive health concerns which can lead to increased mortality among (Carroll, 2019).

Based on the result of a study by Gujral & Basu, (2019), that examined the effects of the closure of urban and rural hospitals differentially, rural hospital closures cause increasing of inpatient mortality rate by 0.78%, and however, urban hospital closures do not have a vital influence on the mortality rate. A 4.4% increase in inpatient mortality was found to be linked to hospital closure for patients with stroke and Acute Myocardial infarction (AMI). Comparatively, the adverse outcome of rural hospitals closure was even greater among Medicaid patients and minorities group for 11.3% and 12.6% respectively. According to some scholars, when all hospital closures are considered equal and no differentiation is made in hospital closures between rural and urban organizations, there is no quantifiable hospital closures influence. Examining the effect of hospital closure shows that, inpatient mortality will increase by 8.7 percent due to the rural hospital closure, whereas urban closures have no significant effect on inpatient mortality (Gujral & Basu, 2019)

Closure of for-profit hospitals doesn't impact the quarterly neonatal mortality rate and outcomes of neonatal, and the transfer frequency did not grow in comparison to the period before hospital closure. Moreover, the closure of Hahnemann University Hospital (HUH) hospital didn't alter the hospital-based consequence specifically quarterly neonatal mortality, containing deaths at an early age, any post-infection, necrotizing enterocolitis, chronic lung disease (CLD), gestation for infants, and pneumothorax. However, the total delivery number was reduced over 2019, since obstetrical leadership made this decision because their care ability for patients declined, as adult services and supplies decreased all over the hospital (Fleishman, Anday & Bhandari, 2021).

C. Hospital Closure & Transport Time

Health systems all over the world attempt to ensure that people can get care when they need it as quickly as possible. Self-reported delays in care are one indicator utilized by Healthy People 2010 to evaluate care access (2000). Closure of rural hospitals can lead to increased intervals to nearby hospitals and emergency departments (ED) for rural inhabitants. (Carson, Peterson, Humphrey, & Helfand, 2016). Increases in the times of emergency medical service (EMS) are correlated to poor outcomes for patients. Therefore, Patients might face impeded or restricted access to emergency medical services (EMS), aggravating existing important inequality in times of responding and increasing the probability of poor outcomes. (Pham, Puckett, & Dissanaik, 2017).

Moreover, emergency Patients who are in an ambulance for treatment must be transported to another hospital, and this could imply for several patients, further time to access medical care. The extra time spent in an ambulance for certain health issues may affect the patient's health outcomes (Wilde, 2013). Another significant result that has been found by previous research is that patients with heart attacks and trauma who travel a greater distance and time to the emergency room have a higher mortality risk (Jena, Mann, Wedlund, & Olenski, 2017). These results illustrate possible obstacles to accessing transportation services conveniently, which are caused by hospital closures. Per some scholars, although hospital closures increased average transportation time to EMS and overall times of activation by 2.6 and 7.2 minutes respectively, this delay did not influence average times of response to patients. Moreover, hospital closures had a diverse impact depending on the EMS times distribution, by shorter times of response, longer transport duration, and average overall time of activation experiencing great influences (Miller, James, Holmes, & Van Houtven, 2020). Rural patients

who need ambulance services are also disproportionately impacted when hospitals close. Furthermore, rural patients spend more time than patients in urban areas who are facing closures and it means that time of ambulance transportation for rural patients that reside in the closed hospital zip code are influenced more than those for urban patients (Troske, & Davis, 2019). Moreover, according to research, hospital closure is connected to a considerable but nonpermanent rise in ambulances rerouting to the next emergency department.

The increasing impacts of the closest diversion of facility hours throughout time, as well as the temporal trend toward higher diversion hours, indicates that future hospital closures will put a strain on the system's ability to absorb them. Based on the result of multivariate analysis of this scholar, closure of hospitals enhanced ambulance monthly diversion hours at the next ED by an average of 56 hours over four months. The hours of diversion at a designated facility were significantly associated with the diversion hours at the next Emergency Department. Also, over the research period, the nearby facility's diversion hour's impacts have been increased as evidenced by a significant and beneficial interconnection between hours of diversion of the nearby Emergency Department and time (Sun, Mohanty, Weiss, Tadeo, Hasbrouck, Koenig, & Asch, 2006).

In addition, after the Martin Luther King, Jr. safety net hospital closed, Walker, et al found that it affects care access and considerably greater postponements in care. They discovered significant delays in care after adjustment for age, gender, economic status, ethnicity, the status of insurance, and the prevalence of chronic diseases, factors that were both expected to increase healthcare access and were distributed unequally in their investigation populations (Walker, Leng, Liang, Forge, Morales, Jones, & Brown, 2011).

D. Individual Health

Hospitals are one of the primary sources of medical care and employment for the entire society. Hospital closures have an impact on community health since they are the primary location of healthcare in their situated zone. After a hospital in their area closes, family members' health conditions worsen, and infections may spread among the community. Patients can pursue medical treatment in other hospitals but moving to such locations makes their diseases worse, due to increasing time of traveling for patients to obtain treatment, worsening of health at the time that access is not feasible, and raised costs of services that are for remote places (Hall, Lemak, Steingraber, & Schaffer, 2008). According to Kashima, Matsumoto, Ogawa, Eboshida, and Takeuchi (2012), throughout the emergency cases, hospitals have a significant role; consequently, hospital closure in a location may cause individuals to lose their lives due to impeded medical care access (Matsumoto, Ogawa, Kashima, & Takeuchi, 2012). Furthermore, the effect of hospital closures in rural areas is of special trouble since inhabitants of rural areas are usually senior and impoverished, more reliant on public plans of insurance, and have lessened health in comparison to urban residents (Rosko, & Broyles, 1984). Also, the study by Mike, (2020) revealed that closure of Stewart and Webster County hospital lead to loss of instant treatment access of emergency medical circumstances to a closed hospital and affected 65 years and older African Americans residents of Stewart and Webster County and have been preserved for a former emergency. According to Dickerson (2017), job losses as a consequence of hospital closure led to a revenue loss and a reduction in community members' access to affordable treatment. In closed hospitals, profits, cash flow, equity, the volume of patients, and staffing all declined. Hospitals serving areas with a larger proportion of the senior citizens or disadvantaged

are more likely to have an adverse operating profit. Following their closure, these employees are expected to have a difficult time recruiting providers.

According to previous research, locations, where a hospital has been shut down, have trouble enrolling and maintaining physicians and providers of healthcare. Increasing the amount of payments that have value-based techniques and maintaining market share despite a restricted variety of services might be additional challenges. Finally, in the post-ACA environment, it might be advantageous to reconsider the policy of rural hospitals and reimbursement, for instance, by enhancing telehealth payment techniques (Kaufman, Thomas, Randolph, Perry, Thompson, Holmes, & Pink, 2016). Moreover, these statements supported numerous essential informants' worries that the cost and inconvenience of locating a recent provider would result in a gap in treatment for numerous people. Various subgroups of the literature's respondents had considerably more negative experiences as a consequence of the closure of hospitals. Individuals with a health problem were more probable than those with no health condition either physically or mentally to have visited an ER after St. Vincent's closed, and they must now travel longer and spend extra time to see their health care provider. Additionally, people who were not visiting the identical doctor before the closure of the hospital had the same healthcare difficulties (Romero, Kwan, Swearingen, Nestler, & Cohen, 2012). It has been difficult to close any of the minor hospitals. Despite the accessibility of more complicated treatments and superior technology at huge hospitals and upgraded roads, local resistance has always been immense. Local people preferred to maintain the local hospital as an employer and a consumer of products and facilities from the community while also preserving convenient access to basic medical treatment. Moreover, the Closure of hospitals results in the loss of a major employer and job losses, as well as a reduction in the workforce as employees leave the community. Although the labor force loss

cannot be assigned to hospital closures, it is essential to note that closed hospitals employed a value similar to the predicted drop percentage of those areas on average (Lepnurm & Lepnurm, 2001).

E. Economics

Hospitals are frequently seen as critical to local economies since they bring in outside funds through third-party payers, increase employment, promote local shopping, and assist in attracting business and retirees. As a consequence, a hospital closure would be detrimental to a rural community (Doeksen, Johnson, & Willoughby, 1997). Besides Closure of the hospital influences the president's health and families as well as the community's economy. Hospitals are employment sources and provide work for many people in a community, and its closure has an impact on families' finances and income (Henry, 2015). As hospitals close throughout the country and towns consider the economic consequences, many communities will look for new funding sources to keep their hospitals operational. To acquire the funds required to keep hospitals running, several towns have raised taxes. Deciding between allowing a hospital to close and boosting taxes and additional financing sources to allow the hospitals to remain open must be established on factual knowledge of short-term, and long-term consequences of a hospital closure. Hospitals might be more assertive in their fundraising efforts in the community if they have a clear understanding of the consequences of closures (Nemes, 1990).

According to a comparative study, closure counties had lower earned income than comparable counties, and labor force growth was also impacted (Probst, Samuels, Hussey, Berry, & Ricketts, 1999). Holmes, Slifkin, et al study results specify that the closing of sole hospitals in the community decreases 4 percent of per-capita income and raises the rate of unemployed people by 1.6 percent. Hospital closures in locations with alternative care in

hospitals showed no prolonged economic consequences, however, income declined after the closure for two years.

When rules affecting hospitals', financial well-being are created or altered, the local financial and economic consequences of a closed hospital ought to be addressed. The hospital closure economic influence should be assessed when guidelines that influence the financial safety of hospitals are considered or altered (Holmes, Slifkin, Randolph, & Poley, 2006). When the mean figures for all hospitals both closed and unclosed are compared, the closed hospitals have considerably lower beds and occupancy rates compared to their non-closed counterparts. Also, the findings reveal that closures of hospitals have had a significant administrative influence, with low-income hospitals with high mortality rates among infants, more likely to have the greatest failure rates. Most volunteer hospital closures happened in underserved areas, but urban and private hospital closures had no discernible local effect (McLafferty, 1982).

The results revealed that basic and high-tech distinctions had negative, linear impacts on rural hospital closure. Rural hospitals offering more essential services than the market average is less likely to close than those positioned below and around the market average. Findings also specified that rural hospitals' contribution to more basic services than the average market were considerably less probable to close than those rural hospitals situated around the average market. According to the findings, rural hospitals that provide more basic services than the market average are less likely to close than those that are less and near the market average (Succi, Lee, & Alexander, 1997). When assessed over the long term, the detrimental hospital closure effects on levels of poverty and increasing rate of unemployment are some of the most significant longterm effects of a hospital closure. Furthermore, median rent values have decreased, and the number of individuals working from home has increased significantly. The construction,

information, economics, and professional industries all suffered major losses. In general, the study indicates that a closing of the hospital has a destructive influence on a county on several levels in the short term. As budgets decrease, hospital employees have to work harder to make the case for continued financing of hospitals in rural areas, thus documenting this impact will be critical. Making comments about the causation of the relationship, in particular, will aid in the development of strong cases for ongoing or expanded financing (Manlove, & Whitacre, 2017). The McDermott, Cornia, & Parsons (1991) study has revealed that rural hospitals do make important financial contributions to their served communities and has established a model that leaders of the community can utilize to evaluate the influence of a local hospital closure. According to the findings of the Capps, Dranove, and Lindrooth study, bailouts of urban hospitals diminish the collection of social well-being: saving the cost of the closures more than outweighing the fall in the welfare of patients. Nevertheless, part of the savings cost is shared across the country, some of the hospital closures resulted in a drop in overall local community surplus. Based on the conclusion of the study, exceptional conditions, struggle with the bailout enforcement that generally accompanies the statement of closure should be prevented by policymaker (Capps, Dranove, & Lindrooth, 2010). Furthermore, the scholar reveals that the hospital closures in the rural communities can lead to prospective total loss of an average of 99 local jobs in both full- and part-time. Also, the regular probability of income loss, salary, and profits were \$5.3 million. Rural hospitals are facing significant financial problems due to rising expenses and declining volumes, as well as government reimbursement and sequester cuts. According to the National Rural Health Association, since 2010, 55 hospitals have closed in rural areas, with another 283 in financial difficulties (Eilrich, Doeksen & St Clair, 2015).

F. Prediction of Hospital closure

With the growing number of United States closed hospitals, healthcare decision-makers need methods and tools to detect problematic institutions and hospitals. Discriminant analysis is a statistical approach for anticipating closure in other businesses that have shown to be beneficial (Altman, Avery, Sinkey, & Eisenbeis, 1981). Several types of research in finance and accounting have attempted to discover financial characteristics linked to business failure. The study by Beaver (1967), illustrates that financial data can be utilized to predict when a company is about to fail. Also, the scholars by Altman (1968) established a framework for future failure studies and utilized discriminant analysis based on five financial ratios to forecast bankruptcy, with a 95% success rate one year before failure. Moreover, they expanded their study and adjusted models, which resulted in more than 90% right predictions utilizing information from the bankruptcy year prior, and 70% correct predictions utilizing data from five years before filing for bankruptcy (Altman, 1968). The study by Wertheim, & Lynn, (1993) looks at the link among information on financial accounting and closing of the hospitals. In a univariate logit model, the leverage area ratios, liquidity, efficiency of capital, and availability of assets can give useful considerable data in forecasting the hospital closure, one or two years before closure, according to the current study (Wertheim, & Lynn, 1993).

Furthermore, other studies indicate that rural hospitals in 2005 and 2006 were associated with one merger at minimum. The hospitals which experienced mergers in rural areas throughout the study period were differing from rural hospitals that did not merge. Rural hospitals that were less profit-making and productive, for-profit hospitals, and the hospitals that not being capable of paying off existing debts were more likely to merge or close. Plant age, lack of obstetrics, accessibility to the next big hospital, and not existing in the West area were all accompanied

with a higher possibility of merging. Based on the scholarly findings, it is feasible to establish rural merger leading indicators by measuring the risk of certain attributes being correlated to whether or not rural hospitals merged. Moreover, total revenue and NPR declined as a result of the merger, while total discharges and ADC remained unchanged. Reduced complexity in inpatient services delivered following the merger might be one cause for declines in inpatient costs and income with no change in inpatient admissions and volume (Williams Jr, 2019). According to another scholar, precise prediction of hospital closure in the post-PPS period is possible by utilizing discriminant analysis. Variables representing four broadly recognized financial health categories, as well as measures of competition and size of the bed, are identified as good predictors in the study. However, when compared to comparable research by Wertheim and Lynn (1993), the addition of nonfinancial factors tends to improve the prediction performance. Moreover, it is not claimed that the subsets of factors used in this study are uniquely good predictors. Other predictors, such as those that are significantly associated with these, may also help to produce reliable prediction models. Also, the research demonstrates that discriminant functions of simply a few factors may accurately predict failure. The variables in the final discriminant models reflect four key financial health elements containing liquidity, debt, profit, and effectiveness, as well as indicators of competitiveness and length of stay (Gardiner, Oswald, & Jahera Jr, 1996). Also, according to scholar's findings, closed hospitals differ from open hospitals in terms of internal characteristics, as well as geographical service areas. The ownership (profit) state of the hospital (for-profit, non-for-profit), occupancy rate, competitive beds in the county, scope of services, and change in county population over the last ten years are some of the most important variables for predicting hospital closure (Mayer, Kohlenberg,

Sieferman, & Rosenblatt, 1987). Findings from the study by Lindrooth, Sasso, & Bazzoli, (2003), suggests that hospital closure has resulted in increase in urban marketplaces efficiency. Also, closed hospitals were less productive, and their costs were higher on average two years before they closed. Furthermore, the study revealed that, efficiency and payment are strong predictors of hospital closure. Less efficient hospitals that provide services at lower prices are more probable to close (Ciliberto, & Lindrooth, 2007).

G. Other Consequences of Hospital Closure

There is more research that has investigated the effect of hospital closure that does not fit into the mentioned theme. According to the result of the research by Lindrooth, Perrailon, Hardy, & Tung, (2018), the expansion of ACA's Medicaid leads to enhance the hospital's performance in financial, and decreases the probability of hospital closure, particularly for rural areas that have huge numbers of adults without any insurance coverage prior to expansion of Medicaid. Prospective congressional attempts to improve the policy of Medicaid should consider the strong connection between levels of Medicaid coverage and hospital financial feasibility. The consequences recommend that returning to levels of pre-ACA authorization would result in increased closure of rural hospitals, declined care access, and elimination of highskilled professions, all of which may have negative consequences for the economy. Moreover, another study reveals that the states that have a federal exchange but do not expand the Medicaid insurance coverage have seen the most state-specific closures. The Georgia state and the counties that have recently closed reveal that they have smaller residents, a strong minority existence, poorer education level and levels of income, and a larger percentage of uninsured people (Bastain, Garner, Barron, Akowuah, & Mase, 2016).

H. General Finding from Literatures

Overall, the literature findings reveal that hospital closure has had effects on different aspects such as access to care, mortality rate, transportation time, efficiency and quality, individual health, and economics. Also, there are fewer researches that investigate the factors that cause hospitals to be closed and prediction of hospital closure, but it can be seen that there are many elements and factors that can cause the closure of hospitals. Financial problems and difficulties are the most significant factors that may lead to hospital closure.

As mentioned in the prediction of closures of hospital literature reviews, the authors realize that the financial data can be utilized to predict when a company is about to fail. Also, more than one study's results reveal that liquidity, the efficiency of capital, availability of assets, and having trouble paying previous debts are the significant elements for the hospital closure prediction.

2. Conceptual Framework

We utilize resource dependence theory (RDT) to explore which specified organizational and market characteristics might be linked to hospital closure. Much of the primary work of social exchange theorists and political researchers was based on the study on the sources of power inside organizations, which started with Weber (1947). The conceptual framework used to explore the association between organizational and market characteristics and hospital closure has previously been used in the health care literature.

RDT describes the relations between organizations as a series of power interactions based on trade resources (Pfeffer, 1981). RDT was created to address connections between organizations, but it may also interact between units inside companies. Organizations are considered permanent systems of the order under ongoing reinterpretation and negotiation, dealing with an unspecified environment of turbulence and a plurality of conflicting interests,

according to ecological and institutional theories of organizations (Ulrich, Barney, 1984). According to RDT, organizations with poor financial performance to improve their access to key resources, engage in strategic repositioning (Ramamonjiarivelo, Weech-Maldonado, Hearld, Menachemi, Epané & O'Connor, 2015). Also, there are social interactions from which organizations' exterior and interior alliances emerge (Epané, Weech-Maldonado, Hearld, Menachemi, Sen, O'Connor & Ramamonjiarivelo, 2019). These social interactions are developed to manage and affect the organization's performance, and the environment is a repository for rare and expensive resources that are critical to the existence of the organization. As a result, the environment becomes a challenge for businesses that are unable to get these resources (Pfeffer & Salancik, 2003). Organizations can attempt to attain two objectives, which will have an impact on their power containing: acquire resources control that will reduce their dependency upon other organizations and also acquire control of resources that will increase the other organization's dependency on them (Ulrich, Barney, 1984).

Hospitals with higher levels of patient flow may have a high level of competition due to their greater range of services (Mayer, Kohlenberg, Sieferman, & Rosenblatt, 1987). Hospitals in more competitive marketplaces are expected to post a restricted set of resources. As a result, their capacity to address the requirements of their constituents will determine their existence and capability to sustain a competitive advantage. Hospitals that are situated in more competitive marketplaces are more probable to closed (Carroll, 1985). Two market structural characteristics, market concentration, and market structure are commonly used to approximate competition. A hospital placed above the average marketplaces will face fewer competitive pressures than an equivalent hospital located below the average marketplaces and hospitals that distinguish

themselves from competitors in the market by geographical distance, essential services, and state-of-the-art technology (Succi, Lee & Alexander, 1997). Therefore, we hypothesize that:

H₁: Hospitals located in more competitive markets have a higher probability of closure.

Increasing the coverage of the population through Medicaid for people who were formerly uninsured while decreasing the uncompensated care revenues that hospitals enjoyed also provides hospitals an additional revenue stream through Medicaid payments and potentially disproportionate share payment depending on the volume of Medicaid that receives care through the hospital. The result of this new stream of revenues could help boost the financial position of hospitals (Lindrooth, Perrailon, Hardy & Tung, 2018). Also, the results of the study by Lindrooth and colleagues shows that during the 1990s, the proportion of Medicare and Medicaid patients contributed to hospital closures. Higher proportions of Medicare and Medicaid patients in the early 1990s raised the likelihood of hospital closure (Ciliberto, & Lindrooth, 2007). Based on the finding of the study by Blavin, (2016) hospitals located in a state that with Medicaid expansion enjoy better financial performance compared to hospitals in states with no expansions. Also, insurance expansion can improve hospitals' net patient revenue. So, we hypothesize that:

H₂: Hospitals in markets with a greater percentage of uninsured people have a higher probability to close.

Geographic location and size are two characteristics of a hospital's market position in a specific market area that might influence patients' and admitting physicians' hospital choices, as well as the possible overlap of hospital markets. Hospitals with comparable characteristics, such as Market Position and Rural Hospital, tend to attract the same patients and physicians and compete for the same resources. Hospitals located in a market with larger resource-based, provide services for populations who request higher-quality treatment and are more willing to

pay more for better quality service if required (Hikmet, Bhattacharjee, Menachemi, Kayhan & Brooks, 2008). Furthermore, larger resource-based markets hospitals will have more influence that allows them to invest in state-of-the-art strategies and technology. Hospitals located in urban counties and those that have a greater income per capita are believed to have larger resource based markets (Kazley & Ozcan, 2007). Based on previous study findings, hospitals that were around a quarter of the size of their competitors were more likely to close. Also, strong economies can make the smaller hospitals close first (Lindrooth, Sasso, & Bazzoli, 2003). In other words, size matters as it pertains to closure. As such we hypothesize that:

H₃: Hospitals located in urban markets have a lower probability of closure compared to hospitals in rural markets.

H₄: Hospitals located in counties with higher per capita income are associated with a lower probability of hospital closure.

H₅: Larger and medium hospitals, compared to smaller size hospitals have a lower probability of closure.

Organizations attempt to protect the resources that are essential and can maximize their power and help them gain a competitive advantage. Strong financial performance, size, and system affiliation are some hospital characteristics that can help ensure resource availability and allow companies to garner more power, and therefore increase the dependency of other organizations while decreasing their dependence from other organizations. Larger, system affiliated organizations that are financially sound are capable of adopting ventures that are challenging as their size, financial standing, and being part of a system serve as a protection to failure (Kaluzny, McLaughlin & Jaeger, 1993). Moreover, financial performance, size, and system affiliation have been found to influence innovation adoption (Epané, Weech-Maldonado,

Hearld, Menachemi, Sen, O'Connor & Ramamonjiarivelo, 2019). Also, the study by Ciliberto & Lindrooth, (2007) demonstrates that, hospitals that are less efficient and offer services that are reimbursed at a lower rate are more likely to close. They found that a 10% increase in efficiency reduces the likelihood of a hospital closure by around 19.25%, while a 10% increase in revenue premium reduces the likelihood of a hospital closure by about 30.99%. So, one would expect that organizations that have enough resources might have access to more resources which may lower their probability to closed. As such, we hypothesize that:

H₆: Hospitals with lower financial performance have a higher probability of closing.

H_{6a}: Hospitals with lower operating margin have a higher probability of closing.

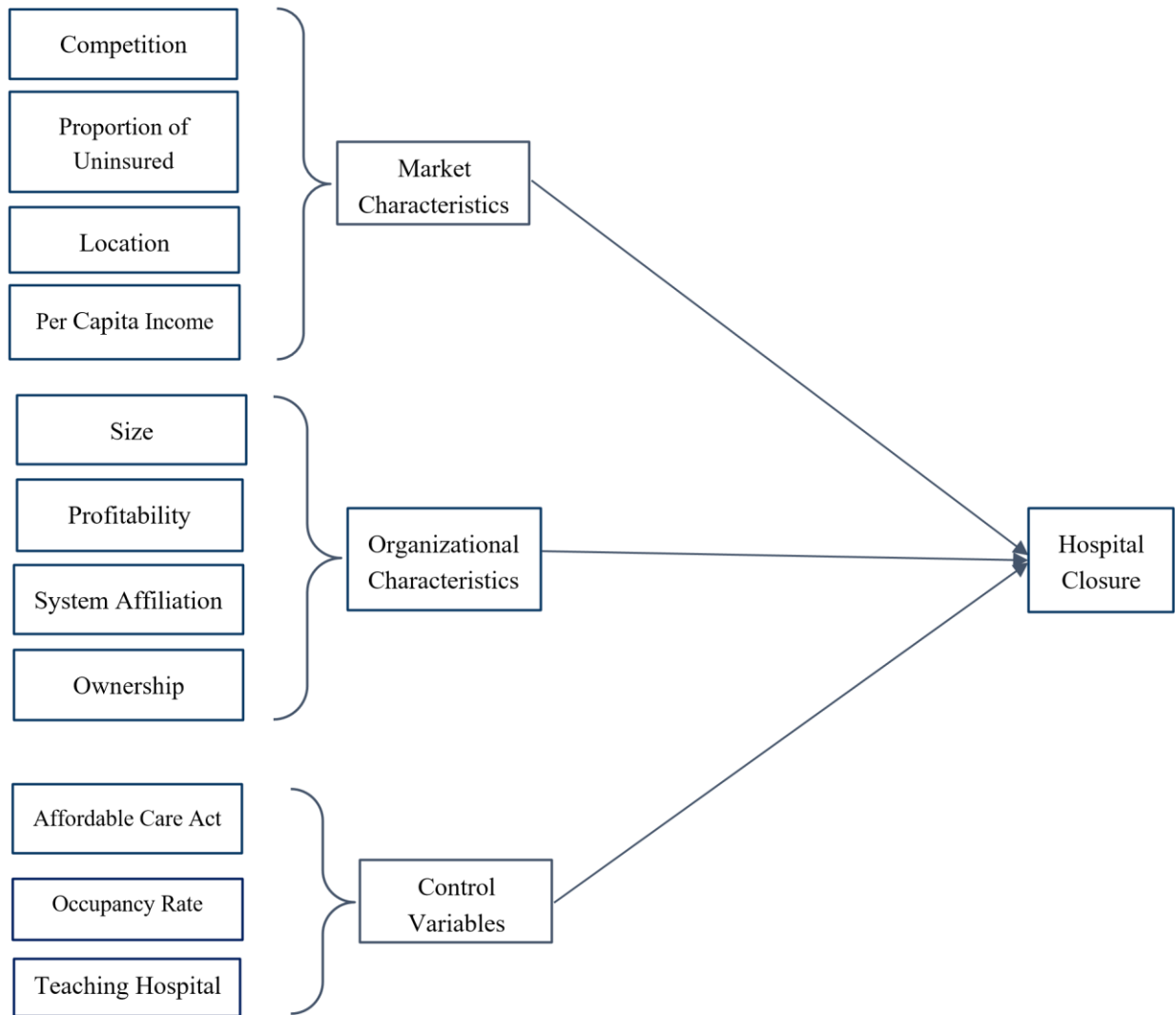
H_{6b}: Hospitals with lower total margin have a higher probability of closing.

H₇: System-affiliated hospitals have a lower probability of closing compared to their counterparts that are not affiliated with a hospital system.

As, it has reported in previous literature, the ownership status of hospitals is a significant predictor of hospital closure, and for-profit hospitals being more probable to close than community-owned, and not-for-profit hospitals (Mayer, Kohlenberg, Sieferman, & Rosenblatt, 1987). The profitability enjoyed by for-profit hospital is/may be because these hospitals are focused son efficiency and share holders' profit maximization. As such when these hospitals foresee a significant chance of failure they anticipate and engage in merger, acquisition, or even closure. Additionally, these hospitals are more agile in their operations and managerial decision making. Consequently, for profit hospitals can much faster make a strategic shift compared to their not-for-profit, and government counterpart that are more bureaucratic and less agile. We therefore hypothesize that:

H8: For-profit hospitals have a higher probability of closing compared to their not-for-profit and non-federal government counterparts.

A. Figure 1: Graphical Representation of Conceptual Framework



CHAPTER 3: METHODOLOGY

1. Data Collection

This longitudinal study includes all for-profit, not-for-profit, and nonfederal government general medical/surgical acute care hospitals in rural and urban settings operating in the United States between 2005 and 2019. For this investigation, we used an unbalanced panel design. There were 67,997 hospital-year observations in our sample, with an average of 4,533 hospitals per year. Our sample consisted of 302 closed hospitals (2005 to 2019) over the study period. On average, 22 closed hospitals per year, with a range of (10 in 2011 and 2016) and 47 in 2019. The sample size of our unbalanced panel data is reduced due to the attrition of specialty hospitals and observations with missing data. ACA is binary data that consider the year of full implementation which is 2014 write in the method. Post ACA (2014 and beyond), the annual number of hospital closures has grown from 17 closures per year pre-ACA to an average of 28 hospital closures post-ACA.

A. Data Source

We used data from the American Hospital Association (AHA), the Medicaid Cost Reports, and the Area Health Resource Files (AHRF). The AHA data asks questions about organizational characteristics such as hospitals' demographics, organizational structure, utilization, physician arrangements, managed-care relationships, staffing, and hospital closures. The CMS cost reports provided hospitals' financial performance data, and the AHRF data set provided county-level market characteristics associated with hospital closure.

B. Variables

The dependent variable for this analysis is a binary variable reporting hospital closure (1 for closed and 0 for open hospitals). The independent variables for our analysis will include both

organizational and market characteristics. The market characteristics used as independent variables are competition measured by the Herfindahl–Hirschman Index, location (urban/rural), per capita income, and the proportion of uninsured. Organizational characteristics used as independent variables for this analysis included measures of financial performance, profitability (operating and total margins), ownership (not for profit, for-profit, nonfederal government hospitals), system affiliation, and size (small (fewer than 100 staffed beds, medium (100 to 299 staffed beds), and large (300 or more staffed beds). We controlled for the Implementation of the Affordable Care Act (ACA) as measured by a binary variable (indicating the period pre-ACA (years before the full implementation (2014)) represented by a 0 and thereafter (2014 and beyond) represented by 1, hospitals occupancy rate, and teaching status.

2. Statistical Analysis

We conducted descriptive statistics on our sample of hospitals to analyze the data, investigating both univariate and bivariate. Given the binary nature of our dependent variable, we ran a logistic regression with marginal effect to determine the probability of our predictor variables on hospital closure. All analyses were conducted using SAS version 9.4 and STATA version 13, and statistical significance was determined at the $p \leq 0.05$ level.

CHAPTER 4: RESULTS

1. Descriptive Statistics

As can be seen in Table (1), the univariate statistics revealed that our sample consisted of 3.18% closed hospitals. The average competition level, which was measured by the Herfindahl Hirschman Index (HHI), was 0.7. The average percentage of uninsured individuals was 12.18%. They were 81.96% of hospitals in urban areas. The average per capita income in our sample was \$41,070.46. There were 49.27% small hospitals, 33.74% medium hospitals, and 16.99% large hospitals. Our sample's average operating margin (OM) and total margin (TM) were respectively -4.03% and 3.27%. Our sample of hospitals consisted of 58.77% system-affiliated hospitals, 60.52% not-for-profit, 16.69% for-profit, and 22.79% non-federal government. There were 38.97% of total hospitals post ACA in our sample. The average occupancy rate of hospitals in our sample was 53.24%. The proportion of teaching hospitals in our sample was 5.60%.

Our bivariate analysis (t-test and chi-square), as shown in Table (2), illustrates that the average level of competition as measured by the Herfindahl-Hirschman Index (HHI) was significantly higher (0.66) among closed hospitals compared to 0.71 among those that did not close. Closed hospitals in our sample were located in counties with a higher proportion of the uninsured population (15.17%) than hospitals that remained open (12.13%). There were 3.22% closed urban hospitals in our sample, compared to 96.78% that did not close. Hospitals that remained open were situated in more affluent markets with a more extensive resource base as measured by per capita income, which was \$41,240 compared to \$35,790 for closed hospitals. Based on the result of our study, the proportion of small, medium, and large hospitals that were closed in our sample were respectively 4.28%, 2.79%, and 0.74%, compared to 95.72%, 97.21%, and 99.26% for hospitals that did not close. This finding highlights the fact that the percentage of

small hospitals that closed in our sample of hospitals is higher than medium and large closed hospitals combined. Also, closed hospitals experienced worse financial performance compared to hospitals that remained open, as measured by OM (-13.43% vs. -3.73%) and TM (-6.54% vs. 3.58%). Additionally, 97.07% of system-affiliated hospitals remained open, while 2.93% of system-affiliated hospitals in our sample closed. Moreover, the result of our study shows that the percentage of closed for-profit hospitals in our sample was higher (8.60% vs. 2.12% and 2.03%) than both the not-for-profit hospitals and nonfederal governmental hospitals combined. Our sample consisted of 4.29% closed vs. 95.71% open hospitals before the ACA, in contrast to 1.43% closed vs. 98.57% open hospitals post ACA. Closed hospitals had lower occupancy rates compared to hospitals that remained open (43.73% vs. 53.54%). Finally, our sample comprised 1.10% of closed teaching hospitals compared to 98.90% of teaching hospitals that remained open.

2. Multivariate Analysis

The multivariate logistic regression analysis findings support four of our eight hypotheses. As shown in Table (3), thousand per capita income (H₄), hospital size (H₅), financial performance (H₆), and hospital ownership (H₈) were significant predictors of hospitals' closure. However, competition (H₁), percent of uninsured (H₂), location (H₃), and system affiliation (H₇) were not significant predictors of hospital closure. Based on our results, a \$1,000 increase in per capita income decreased the probability of hospital closure by 0.04% ($p \leq 0.05$), thus providing support for H₄. Large hospitals had a 1.99% ($p \leq 0.1$) marginally significant lower probability of closure compared to small hospitals, thus supporting H₅. The probability of hospital closure decreased for each 1% increase in profitability by 0.02% ($p \leq 0.0001$) and 0.03% ($p \leq 0.0001$) respectively for OM and TM, thus providing support for H₆. Also, both not-for profit and

nonfederal government hospitals were found to respectively have a -2.54% ($p \leq 0.0001$) and a 3.35%, ($p \leq 0.0001$) lower probability of closure compared to for-profit hospitals thus providing support for H8. Hospitals post ACA experienced a 0.87% ($p \leq 0.001$) lower probability of closure compared to hospitals pre-ACA period. A 1% increase in occupancy rate was associated with a 0.03% lower probability of hospital closure ($p \leq 0.01$). We conducted a sensitivity analysis using the linear probability model and found the results to be quite similar, except for significance level.

CHAPTER 5: DISCUSSION

Hospital closures have accelerated recently and are a significant cause for concern in the healthcare industry (Evans, 2015). Hospital closures are a significant issue since they can impact various aspects of patients' health (Kaufman et al., 2016). Utilizing resource dependence theory (RDT), this study intended to explore which specific organizational and market characteristics are associated with hospital closure. As predicted by RDT, our findings suggest that environmental and organizational factors are significant predictors of hospital closure, and even more so organizational than market factors. Only one market characteristic explored in this study (per capita income) was significant predictor of hospital closure of the four market characteristics hypothesized. On the flip side, among the five organizational characteristics assessed as predictors of hospital closure, four organizational characteristics were significant predictors of closure (financial performance, ownership, and occupancy) and one was marginally significant (size) predictor of closure.

As hypothesized, organizational characteristics (size, financial performance, hospital ownership) and market characteristics (per capita income) variables are associated with a lower probability of hospital closure. Organizational variables have a more significant effect on hospital closure than market characteristics, (Epané, Weech-Maldonado, Hearld, Menachemi, Sen, O'Connor, & Ramamonjiarivelo, 2019). However, the findings contrary to what we hypothesized are competition, location, uninsured population, and system affiliation, which did not pan out to be significant predictors of hospital closure.

Our study found that large hospitals have a 1.99% marginally significant lower probability of closing compared to small hospitals. Our study is in line with McLafferty (1982) study that found hospital size to be a significant predictor of hospital closure. Also, the study by

Succi & Alexander (1997) shows that due to the specific facilities associated with hospitals of various sizes, the relative size of a hospital influences the choice of the hospital made by patients and doctors. Also, we found that a \$1000 increase in per capita income will decrease the probability of hospital closure by 0.04% ($p \leq 0.01$). Hospitals that remained open among our sample were located in more affluent markets with a more considerable per capita income, in line with a prior study by Holmes and colleagues (2006). They revealed that closing the only hospitals in the community will decrease per capita income and raise the community's rate of unemployment. Hence, according to Holmes et al. (2006), counties with more closed hospitals have had a lower average per capita income than no closure counties in pre- and post-hospital closures.

Moreover, the result of our study showed that hospitals that were closed experienced worse financial performance than the hospitals that remained open. Open hospitals' operating margin was greater than that of closed hospitals. Our findings are also supported by previous studies that found financial distress to be among the most significant factors that lead to hospital closure. These studies indicate that financial performance information can predict when a company is about to fail (Altman, 1968; Williams, Hadley, Pettengill. 1992).

Consistent with previous study by William and colleagues (1992), our study found for-profit hospitals to have a higher probability of closure. This is due to their goal of share holders' wealth maximization. As such for-profit management are more agile and can much easily make the decision to close if they cannot meet one of their major missions (share holders' wealth maximization). Similarly, given that not-for-profit and non-federal government hospitals have different constituencies (the community) it is harder for these hospitals to close. There were some limitations associated with our study. Our study relies on available secondary data sources.

Which includes limitations pertaining to self-reported data, which prompt reliability and accuracy constraints. Additionally, many closed hospitals stop reporting data to the agencies in charge of collecting this data. As such many closed hospitals for lack of data are missing from the study. However, even with these limitations, the data used in this study are widely used and accepted for studies in health services research.

1. Implication and Recommendation

We believe that the findings of this investigation have significant policy implications for healthcare policymakers and hospitals leadership teams. Also, our study predictor's estimations might assist health care planners in getting prepared for anticipated closures. The analysis may also provide the healthcare system with a model for understanding what organizational and market factors impact hospital closures. Moreover, our results indicate that small hospitals will be more at risk of getting close. These findings suggest that increasing the emergency department's capacity will be needed as compensation for the closure of comparatively small-sized hospitals (McLafferty, 1982). The findings indicate the importance of financial performance on hospital closure. Thus, providing a noticeable call for attention to hospitals' boards, leaders, and administrators regarding the importance of hospitals' financial performance.

The implication for hospital leadership teams is to detect and anticipate crucial financial issues. Which, if detected early should prompt and early development of tactical financial strategies to improve the organization's financial performance. These findings also imply that leaders in the healthcare industry should communicate comprehensively on the organization's financial condition with their stakeholders and develop a dashboard with Key Performance Indicators (KPI) that will include the significant predictors of hospital closure found in this and other similar studies. Also, the study findings may have a practical implication for potential

buyers who have used the findings of this paper and other similar studies to assess better the viability of potential hospital takeover (acquisition) or mergers.

2. Conclusion

Based on our study findings, it is significant for policymakers to know which types of hospitals are more likely to have a higher probability of closing. Also, policymakers can design a policy to prevent hospital closure, and if the hospital administrator knows that the hospital is more likely to close, they could take the strategies to avoid closure.

APPENDIX

Tables:

Table 1: Univariate Statistics of Hospitals Sample

Variables	Mean/Freq ¹	SD ²	Minimum	Maximum
Dependent Variable				
Closed Hospitals	3.18%	0.32	0	1
Independent Variables				
Market Characteristics				
Competition (HHI)	0.70	0.35	0.04	1
Proportion of Uninsured	12.18%	5.49%	2.10%	38.00%
Location (Urban)	81.96%	0.82	0	1
Per Capita Income	\$41,070.46	\$13,697.95	\$11,937.00	\$251,728.00
Organizational Characteristics				
<i>Size</i>				
Small	49.27%	0.49	0	1
Medium	33.74%	0.34	0	1
Large	16.99%	0.17	0	1
Financial Performance				
Operating Margin	-4.03%	19.32%	-199.84%	196.56%
Total Margin	3.27%	12.72%	-196.37%	194.56%
System Affiliated	58.77%	0.59	0	1
Ownership				
Not-For-Profit (Ref)	60.52%	0.60	0	1
For-Profit	16.69%	0.17	0	1
Non-Federal Government	22.79%	0.23	0	1
Control Variables				
ACA (0: Prior to 2014, 1: 2014+)	38.97%	0.39	0	1
Occupancy	53.24%	20.98%	0.01%	1.20%
Teaching Hospitals	5.60%	0.06	0	1

¹ Freq: Frequencies

² SD: Standard Deviation

Table2: Bivariate Statistics of Hospitals by Closure Status

Variable	Closed Hospitals (N=2,146)	Hospitals did not close (N=65,674)	P-value
Dependent Variable			
Hospital closure	3.18%	96.82%	<.0001
Independent Variables			
Market Characteristics			
Competition (HHI)	0.66	0.71	<.0001
Uninsured	15.17%	12.13%	<.0001
Urban	3.22%	96.78%	0.0659
Per Capita Income	\$35,790.60	\$41,242.60	<.0001
Organizational Characteristics			
Size	<.0001		
Small	4.28%	95.72%	
Medium	2.79%	97.21%	
Large	0.74%	99.26%	
Financial Performance			
Operating Margin	-13.43%	-3.73%	<.0001
Total Margin	-6.54%	3.58%	<.0001
System Affiliated	2.93%	97.07%	<.0001
Ownership	<.0001		
Not-For-Profit	2.12%	97.88%	
For-Profit	8.60%	91.40%	
Non-Federal Government	2.03%	97.97%	
Control Variables			
ACA			
<.0001			
Pre ACA (2005-2013)	4.29%	95.71%	
Post ACA (2014+)	1.43%	98.57%	
Occupancy	43.73%	53.55%	<.0001
Teaching Hospitals	1.10%	98.90%	<.0001

Table 3: Logistic Regression Results of Characteristics of Hospital Closure

	Logistic Regression				Linear Probability Model	
	OR	SE	Marginal Effect (%)	SE	Probability	SE
Independent Variables						
<i>Market Characteristics</i>						
Competition (HHI)	0.69	0.227	-0.58%	0.0053	-0.69%*	0.0029
Uninsured (%)	1.00	0.019	0.00%	0.0003	0.02%	0.0002
Location (Urban)	1.37	0.426	0.50%	0.0050	0.80%**	0.0024
Thousand Per Capita Income	0.98*	0.010	-0.04%*	0.0002	-0.02%**	0.0001
<i>Organizational Characteristics</i>						
<i>Size</i>						
Small (Ref)						
Medium	0.93	0.245	-0.11%	0.0042	-0.43%*	0.0022
Large	0.29 ⁺	0.195	-1.99% ⁺	0.0109	-0.99%***	0.0031
Operating Margin	0.99***	0.003	-0.02%***	0.0001	-0.03%***	0.0001
Total Margin	0.98***	0.005	-0.03%***	0.0001	-0.10%***	0.0001
System Affiliated	0.82	0.183	-0.32%	0.0036	-0.32% ⁺	0.0019
<i>Ownership</i>						
For-Profit (Ref)						
Not-For-Profit	0.20***	0.050	-2.54%***	0.0046	-4.47%***	0.0025
Non-Federal Government	0.12***	0.043	-3.35%***	0.0063	-5.57%***	0.0031
Control Variables						
ACA (0: Prior to 2014, 1: 2014+)	0.58***	0.061	-0.87%***	0.0018	-1.02%***	0.0024
Occupancy (%)	0.98***	0.006	-0.03%***	0.0001	-0.03%***	0.0001
Teaching Hospitals	3.05	2.716	1.77%	0.0142	1.02%*	0.0042
Observations	24,492				24,492	
Prob > chi2	0.000					
Pseudo R2	0.172					
R-squared					0.435	
F					79.56	
+p≤0.1 * p≤0.05 ** p≤0.01 ***p≤0.001						

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CURRICULUM VITAE

Haniyeh Shariatmadari

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Summary

Effective at improving revenue, team productivity and policies to keep the facility operating at a sustainable and profitable level. Well-versed in motivating and retaining employees, building relationships with residents and families and achieving the requirements for continued accreditation.

Skills

- | | |
|---------------------------------------------------|----------------------------------------------------|
| <input type="checkbox"/> Training and development | <input type="checkbox"/> SAS |
| <input type="checkbox"/> Financial oversight | <input type="checkbox"/> Google Docs |
| <input type="checkbox"/> Personnel management | <input type="checkbox"/> Workday |
| <input type="checkbox"/> Hospital coordination | <input type="checkbox"/> Qualtrics |
| <input type="checkbox"/> Schedule management | <input type="checkbox"/> Internet Marketing |
| <input type="checkbox"/> Microsoft Office | <input type="checkbox"/> Machine learning |
| <input type="checkbox"/> SPSS | <input type="checkbox"/> QuickBooks |
| <input type="checkbox"/> R-Studio | <input type="checkbox"/> Bilingual (English/Farsi) |

Experience

January 2021 to Current **UNLV Academic Enrichment and Outreach**, Las Vegas, NV

Research Assistant

- Developed reports and recommendations regarding research outcomes.
- Conducted experiments and maintained detailed records of experiments and outcomes.
- Organized and maintained records, inventory and materials.
- Advanced research by organizing data, generating spreadsheets and drafting reports.
- Categorized and cataloged each piece of data into business database.
- Help students develop the skills and acquire the knowledge necessary to achieve educational success by offering services such as tutoring, one-on-one academic counseling, and mentoring.
- Providing students opportunities to experience college firsthand.

August 2020 to December 2020 **Southern Nevada Health District (SNHD)**, Las Vegas, NV

Contact Tracer.

December 2020

- Followed set protocol for contacting assigned newly diagnosed COVID-19 case patients and documented contact attempts and timeframes.

- Completed data entry to facilitate case interview and elicited close contacts.
- Explained importance of contact tracing to prevent disease transmission and keep communities healthy.
- Furnished case patients with contact information to support contact tracing. Delivered healthy living and disease management information to specific population groups.

February 2017 to November 2019 **Nourieh Neuropsychological Hospital, Kerman, Kerman**
Clinical Director

- Developed administrative processes to achieve organizational objectives and improve efficiency.
- Provided onboarding and coaching to new hires and prepared to handle various responsibilities.
- Directed customer communication to appropriate department personnel.
- Tracked and submitted employee timesheets to prepare for payroll processing.
- Managed scheduling for staff and monitored resource allocation to provide coverage and service.
- Manages and plan for underserved and minority patients' payments to ensure a prompt discharge and also provide convenient connection with post-discharge providers.
- Ensure equity and social justice in workplace.
- Supervise the budget allocated for the company's cultural competency plans.

Education and Training

- 2019-2022 **University of Nevada Las Vegas (UNLV)**
 United State
 Healthcare Administration Master of Science
- **Healthcare management internship** (Working within the financial of business in Cano health in Las Vegas)
 - Thesis: Predictor of hospital closure in the United State
- 2014-2018 **Shiraz University of Medical Sciences (SUMS)**
 Shiraz, Iran
 Healthcare Management Bachelor of Science
- **Rural association internship**
 - **Healthcare administration internship**
 - **Clinical internship**
 - **Healthcare management internship**

Certificates And Training

- **Certificate in Hospital Accreditation** (Resalat Razi Company)
- **Training for COVID-19 contract** (National coalition of STD Directors)
- **Introduction to public health surveillance** (University of Washington)
- **HIV, Viral Hepatitis, sexually transmitted disease, and Tuberculosis program**
(Nevada data and security and confidentiality training)
- **Online general workplace safety training**
(A centralized safety training management program)