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Implications of the ACA on Critical Access Hospitals and Patients' Responsibility of Account Balances

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This is to certify that the doctoral study by

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Walden University
2025

Abstract

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MBA, University of Phoenix, 2007

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Doctoral Study Submitted in Partial Fulfillment

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Doctor of Healthcare Administration

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Abstract

Critical access hospitals (CAHs) have a history of closing due to a lack of financial viability, causing U.S. communities to lose support provided from jobs and taxes paid by the hospital, and patients to lose health care access. With the implementation of the Affordable Care Act and Patient Protection Act of 2010 (ACA), the expectation was that more people would become insured, but plan copays and deductibles owed by patients increased. The purpose of this study, which was undergirded by von Bertalanffy's general systems theory, was to explore (a) whether there was a significant correlation between the implementation of the ACA and an increase in patient-responsible balances as a percentage of gross charges and (b) whether the amount of patient-responsible balances written off as a percentage of gross charges increased. The data analyzed in this quantitative, correlational study were from a rural Alabama CAH and encompassed the years 2009 and 2019, amounting to 45,011 patient accounts. Using SPSS software, *t*-tests were performed to evaluate correlations, if any, between patient-responsible balances, balances written off, and gross charges. The analysis concluded that the patient-responsible balances and patient-responsible balance write-offs were significantly lower in 2019 when compared to 2009; $t(45{,}009)=8.64$, $p=<.001$, and $t(45{,}009)=9.525$, $p=<.001$ respectively. A recommendation for further research includes reviewing data by payor for negative trends. The finding that the ACA works at the focal CAH as intended may allow organizational leaders to concentrate on the revenue cycle process, contracts, and other expenses so they can remain financially viable to continue to promote community health.

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Dedication

I want to dedicate this doctoral study to my loving and supportive husband. His cheerleading through my education has been a blessing and the rock I have needed to lean on. I am so proud to be able to complete my doctorate and make him proud. I know how much he sacrifices so that I can pursue my dreams of being more than just a small-town girl who no one, other than my family, thought would succeed. My Andrew, you are my rock and my everything. Thank you for pushing me when I did not want to keep going. I would be nothing without your love and support. I love you forever.

I would also like to dedicate this work to my dad, who pushed me to work hard and be independent so I would never have to rely on anyone else; to my mom, who has always been my cheerleader; and to my sister and her family, as they keep me laughing when work, life, and education get too stressful for words. And to my husband's family as well for always being my advocate and loving me like their own.

Acknowledgments

First and foremost, I would like to thank God for all his blessings now and forever. I thank Him for everything he has provided and continues to provide. I trust that He has guided me through this doctoral study so that it will be helpful to its readers. As my husband reminds me, "To whom much is given, much is expected." I wish always to use my education in a manner pleasing to Him.

To my husband, I cannot thank you enough. You are my rock, and I love you into eternity! This journey has been more than challenging, and I am glad to see it through with you by my side.

I would also like to thank my chair, Dr. Sally Willis, who kept me on track when the world turned upside down with work and all of life's events. Through the stresses of working in health care during COVID-19, having a tornado hit my home and neighborhood, and experiencing car accidents and surgeries, life threw many things at me! Sometimes, a chair has to wear a motivational hat and have a listening ear, and she has done an excellent job.

To everyone who has prayed for me and motivated me through this process, I thank you from the bottom of my heart. Those prayers have been deeply felt and truly appreciated.

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Section 1: Foundation of the Study and Literature Review

Introduction

The Affordable Care Act and Patient Protection Act (ACA), signed into law in 2010, has had many effects on the health care system in the United States (U.S. Department of Health and Human Services, 2022). More people in the United States now have coverage, especially in states where Medicaid has been expanded (Glied et al., 2020). One of the effects of having more patients insured is that hospitals, including Critical Access Hospitals, receive payments on their services from insurance payers instead of depending on patients to pay their own bills. Critical Access Hospitals (CAHs) are smaller in size and often found in rural areas (Medicare Learning Network, 2023). Smaller hospitals tend to have smaller net revenues, and any negative impacts on payment collections can negatively affect the organization's net revenues. This reduction in net revenue impacts cash flow and the ability of leaders to invest in their infrastructure and capital equipment purchases. These purchases are essential to continue to serve their communities' health care needs.

When patient-responsibility balances increase, the potential for account write-offs for lack of payment also increases. This increase in bad debt expense can negatively affect the profits and cash flows of CAHs. If the increase in bad debt expense becomes too high and profitability becomes a loss, CAH leaders face the hard decision to close service lines or the entire hospital. Closing services or the entire hospital could affect patient health outcomes for the communities in which they operate because health care will not be as easily accessible within the community (Akinleye et al., 2019).

I begin Section 1 of this doctoral study with a discussion of how closures of CAHs affects U.S. communities. I also discuss patient-responsible account balances related to a hospital's financial viability. In addition, I provide an overview of the study I conducted, which includes the problem statement, purpose of study, nature of study, research questions (RQs) and hypotheses, and theoretical framework. The independent and dependent variables will also be discussed, such as patient bad debt expense, the percentage of patient balances written off to bad debt expense, and the ACA's implementation. Definitions of key terms are provided, and assumptions, scope and delimitations, limitations, and threats to validity are considered. In the conclusion of this section, I will discuss the significance of this study and summarize key points.

Problem Statement

The problem is that CAHs in the United States have been closing due to financial nonviability related to low profitability and rising health care costs. These hospitals are often found in rural communities where citizens have lower incomes, making the collection of patient-responsible account balances difficult. Further, although the ACA has enabled more people to access insurance, many insurance plan deductibles have increased, leaving more of the balance the patient's responsibility (Popescu, 2019). Although this may not be the entire reason for CAHs closing, it could be a contributing factor.

The social problem is that if CAHs close due to loss of financial viability, then communities could lose local health care providers. If a CAH closes, the population in the community could be at risk for decreased health outcomes because they may not be able

to travel long distances to get to health care, or the long distances could make an emergent case impossible for timely treatment, resulting in further injury or death. The CAH is usually also one of the largest employers in the rural community. If the CAH were to close, these jobs would also leave and could impact the community's economic well-being (Frakt, 2019).

The specific research problem addressed in this study was whether the ACA increased patient-responsible account balances in the focal CAH in the U.S. state of Alabama and thus increased bad debt expense to the hospital, leading to potential financial viability concerns for the CAH. The loss of financial viability has many reasons, such as rising costs of supplies, inefficiencies in providing care, and payer reimbursements. If a CAH is closing due to insolvency issues, finding correlations between ACA and bad debt write-offs could give the hospital a chance to review its current collections policies for the opportunity to improve or push the CAH to find other ways of becoming more profitable, such as renegotiating payer contracts or performing cost-saving improvements through better efficiencies and supply substitutions, or reviewing service line specific profitability. If the CAH were to close, patient health outcomes could be affected due to a lack of health care accessibility. CAHs are one of the largest employers in the community, and closing services can have significant economic impacts on the community (Frakt, 2019; Popescu, 2019).

Purpose of the Study

The purpose of this quantitative study was to determine if there is a correlation between the ACA and an increase in patient-responsible account balances due in the focal

CAH in Alabama. An increase in patient-responsible balances can lead to an increase in bad debt expense if these balances are not collected from the patients and are deemed uncollectible. An increase in bad debt expense will reduce operating margins and cash flow, which could contribute to financial distress in a CAH. Knowing if there is a correlation between increased patient-owed balances and the enactment of the ACA could allow hospital leaders to focus their attention on refining their patient-balance collection policies, engaging in better contract negotiations with their insurance payers, or finding other ways of reducing costs while maintaining or improving their level of care provided. The dependent variables in the study were the increase in patient-responsible balances and the increase in bad debt expense, and the independent variable was the implementation of the ACA.

Research Questions and Hypotheses

RQ1: Has this study's CAH in Alabama seen an increase in patient-responsibility balances since the enactment of the ACA that could affect their financial viability?

$H_0$1: There is no statistically significant relationship between the number of patient-responsibility balances and the enactment of the ACA that could affect the CAH's financial viability.

H_a1: There is a statistically significant relationship between the number of patient-responsibility balances and the enactment of the ACA that could affect the CAH's financial viability.

RQ2: Is there a correlation between an increase in patient-responsible account balances and bad debt expense percentage of total operating expenses after the implementation of the ACA in this study's CAH in Alabama?

$H_0$2: There is no statistically significant relationship between the number of patient-responsibility balances written off to bad debt expense and the enactment of the ACA.

H_a2: There is a statistically significant relationship between the number of patient-responsibility balances written off to bad debt expense and the enactment of the ACA.

Theoretical Foundation

Ludwig von Bertalanffy developed the general systems theory in 1928. Von Bertalanffy (1928), whose work served as the theoretical framework for this study, states that unrelated or independent elements do not constitute a system. The theory is also goal-seeking in that systemic interaction will result in a goal or equilibrium point, and all systems transform inputs into outputs and are cyclical. The theory also describes systems as having a hierarchy. Because systems are generally complex, they usually comprise smaller subsystems. These subsystems may perform specialized functions and are called a division of labor (Skyttner, 2005). According to von Bertalanffy (1977), characteristics of part of something can only be explained by considering the entire system. Caws (2015) wrote that systems thinking reinforces the belief that every part of the universe is accessible from every part and that interactions of these parts can be predictable.

The general systems theory relates to problems of the whole system, meaning more minor problems of interrelations are part of the entire system (von Bertalanffy, 1972). The general systems theory, as described by von Bertalanffy, relates to this study in that bad debt expense incurred when patients do not pay their patient balances due is part of the system of the financial viability of the CAHs. All system parts must be evaluated to maintain financial viability, including bad debt expenses. Because legal actions also have a cause and effect for CAHs, the ACA could affect how bad debt expense impacts the financial viability of CAHs.

Nature of the Study

The nature of this study was quantitative. I performed an independent-sample *t*-Test to answer the RQs. The independent *t* test is a statistical model that is used to determine statistical differences between the means of two different groups within the study (Kent State University Libraries, 2024). Patient accounting data were requested from a CAH in rural Alabama. Data points that were examined included dates of service, insurance payer, total account charges, total patient liability, total amount of patient liability collected, and total amount of patient liability written off to bad debt expense. The examination included one year of data before the ACA was implemented (January to December 2009) and one year of data post-implementation (January to December 2019). The reason for selecting a year before the ACA was implemented (2009) and a year of data after (2019) is that the data would allow for statistical analysis to be done to test whether there was a relationship between the enactment of the ACA and bad debt expenses. Using 2019 data allowed accounts to be fully closed, whether paid in full or

written off to bad debt. The independent variable for this study was the data year (2009 and 2019), and the dependent variable was bad debt expense.

Literature Search Strategy

To find literature for the study, I searched databases and search engines, including Google Scholar, Walden University's Thoreau multi-database search tool, PubMed, and EBSCO. The main keywords searched included *ACA*, *CAHs*, *bad debt expense*, *financials*, *reimbursement*, *finance*, *profitability*, *rural hospitals*, and *quantitative study*. Results included scholarly peer-reviewed journal articles from 2019 to 2023. When I could not find enough studies, I used textbooks, government websites, and journal articles. The articles' reference lists were also reviewed to identify any additional relevant studies that fit within the 2019 to 2023 date range.

Literature Review Related to Key Variables and/or Concepts

CAHs are small in size (fewer than 25 beds) and often found in rural areas of the United States. These hospitals are at least 35 miles from the closest hospital and are one of the largest employers in the area. These hospitals are an integral part of the communities they serve (Frakt, 2019; Medicare Learning Network, 2023). The ACA's implementation led to changes in reimbursement as well as deductibles and copays with a person's medical insurance (Popescu, 2019). When a patient's financial responsibility increases, there is a greater chance that default on that payment will also increase. When a patient defaults on payment, the account is eventually written off to bad debt expense. When a CAH increases expenses, fewer profits are available for infrastructure and capital equipment needs. I focused on these changes in medical insurance and reimbursement

following the implementation of the ACA and how they affect CAHs' bad debt expenses (see Rex H., 2023).

Affordable Care Act

President Barack Obama signed the ACA on March 23, 2010 (U.S. Department of Health and Human Services, 2022). The law requires most United States citizens and legal residents to have some form of health insurance coverage. To accomplish the goal of more people having some form of health insurance coverage, the ACA created state-based American health benefit exchanges. These exchanges allow individuals to shop for coverage for themselves or their families. If an individual's income is 133%–400% of the federal poverty level, they have access to cost-sharing credits to help offset the cost of the plans. The law also required employers to pay penalties for employees who receive credits through the exchange. This penalty still exists today. Medicaid was to be expanded to 133% of the federal poverty level to drive the increase in the number of insured people (Campbell et al., 2020; HealthInsurance.org, 2023; KFF, 2013).

The ACA was expected to have full implementation by January 1, 2014. Once this date had been reached, the ACA was expected to result in 94% of the American population being insured, a reduction of 32,000,000 uninsured people, and an increase in Medicaid enrollments by 15,000,0000 (Nikpay et al., 2020; Rosenbaum, 2011). Despite these large numbers, 24,000,000 people were still expected to be uninsured. According to Takvorian et al. (2020), by 2020, 20,000,000 U.S. residents had gained insurance coverage who had previously been uninsured. The ACA was not just meant to decrease the number of uninsured. The law had quality factors, efficiencies, and accountability

encompassed within the chapters of the law. Medicaid program leaders tested new ways to deliver care and new reimbursement methods, such as bundled payments. The point was to push health care organizations into more systematic thinking on how to treat someone clinically integrated. Providers were required to report quality factors, and reimbursement became tied to quality scores.

The desired outcome was that readmission rates would decline and the health of communities would improve. The ACA also provided changes in the way hospitals conduct their business regarding reporting obligations, undertaking community health needs assessments, altering billing and collection practices, and maintaining written financial assistance policies that are widely recognized. It was also meant to reduce the nation's health spending growth rate by about 10% and reduce national health spending by $590,000,000,000 over 10 years (Nikpay et al., 2020; Rosenbaum, 2011; Zhao et al., 2020).

The U.S. uninsured rate decreased from 15.1% to 8.9% between 2009 and 2018. However, that decrease fell short of the expectations of the ACA. A contributing factor was that some states chose not to expand Medicaid coverage. Another contributing factor was the elimination of the individual mandate by Congress. The cost of standard plans also increased from $273 in 2014 to $476 in 2019. Out-of-pocket expenses for Americans who gained coverage decreased due to increases in office-based primary care visits, prescription use, and high-value medical screenings. However, Americans who already had coverage saw an overall increase of $3,041 between 2009 and 2018, partly due to an increase in high-deductible health insurance plans from 8% to 29% and deductible

increases on average of $748. Although health spending decreased slightly for Medicare from 6.8% to 6.4% and decreased for Medicaid from 8.8% to 3.0% from 2009 to 2018, private health care spending increased from 3.5% to 5.8%. For states that chose not to expand Medicaid, the increase in consolidation between hospitals and physician groups may have hastened hospital closures among poorly performing hospitals in rural areas (Nikpay et al., 2020; Rosenbaum, 2011).

Critical Access Hospitals

As part of the Balanced Budget Act of 1997, the U.S. Centers for Medicare and Medicaid Services created the CAH designation. This was done in response to the closure of 400 rural hospitals during the 1980s and 1990s. This designation was intended to improve health care access for the communities in which these facilities serve by reducing financial vulnerability (RHIhub, 2021). As of July 16, 2021, there were 1,343 CAHs in the United States. Several eligibility factors must be present for a hospital to receive the CAH designation. These include having 25 or fewer acute care inpatient beds, being located at least 35 miles from another hospital, maintaining an average length of stay of less than 96 hr for acute care patients, and providing 24/7 emergency care services. There are several benefits to being a CAH, including cost-based reimbursement from Medicare set at allowable cost plus 1% and capital improvement costs included in allowable costs when determining the Medicare reimbursement. Flex Program educational resources, technical assistance, and grants are also benefits (Gaston et al., 2018; RHIhub, 2021).

CAHs benefit their communities in many ways. First, they are often one of the largest employers within the community. They provide jobs and livelihoods for many of the residents within the community. The CAH also provides access for the residents to have access to local, high-quality health care. The hospital also provides tax dollars to aid local governments with their agendas to enrich the lives of their residents. Most CAHs are located in rural areas, and some factors are found there. The factors include large numbers of uninsured patients, higher rates of health behaviors such as smoking or excessive alcohol intake, more poverty, and higher levels of obesity. Lower literacy rates are also a factor for these rural areas that CAHs often serve (Cronin et al., 2022; Gaston et al., 2018).

Medicaid Expansion

Part of the ACA originally was that Medicaid would be expanded to assist more individuals with having insurance coverage. Lindrooth et al. (2018) studied whether states that expanded Medicaid had fewer rural hospitals and CAHs closures. The researchers found that the states that expanded their Medicaid coverage did have fewer rural hospital closures. As of writing, officials in the state of Alabama had not chosen to expand the state's Medicaid program. Since expanding the Medicaid program would translate into more persons being eligible for health insurance coverage, this could mean higher reimbursement percentages for CAHs and fewer patient-responsibility account balances, which lead to bad debt if the account is not paid and found to be uncollectible. Lindrooth's study supports that the state of Alabama would be at a greater risk of rural hospital closures because Medicaid coverage had not been expanded.

Popescu et al. (2019) noted that the ACA has resulted in more high-deductible health plans aimed at those previously uninsured. Uncompensated care costs stem mainly from patients who cannot pay high deductibles and copays. Popescu found that these uncompensated care values tended to be higher in rural areas and hospitals with the lowest profit margins. The uncompensated care and unreimbursed costs tend to be a higher percentage of operating expenses in these facilities. This finding makes these rural hospitals appear more financially vulnerable and could interfere with their ability to keep existing services or expand services to suit the population's needs (Popescu, 2019).

Patient Default on Account Balances

Rural hospitals tend to be in areas with a high dependence on Medicare and Medicaid. This is often due to low-income populations or large populations of aging individuals. To financially aid CAHs, Medicare reimburses 101% of allowable costs (Medicare Learning Network, 2023). According to the Community Impact and Benefit Activities of Critical Access, Other Rural, and Urban Hospitals (2020), uncompensated care and charity rates for CAHs and other rural hospitals were higher than those of urban hospitals. The report authors also concluded that CAHs have the highest rates of unreimbursed costs of Medicaid, Children’s Health Insurance Program, and state and local indigent care programs compared to other rural and urban hospitals (Croll et al., 2022).

A CAH located in rural Alabama was chosen for this study. According to the U.S. Census Small Area Income and Poverty Estimates Study, 2009–2021, the poverty percentage for the state of Alabama's non-metro areas was 19.6%. The poverty

percentage for the CAH's county was 23% in 2021 (RHIHub, n.d.). For Alabama non-metro areas, the average percentage of the population with a personal income under $25k was 28.5%, and the CAH's county was 37.9%. The fact that this area holds such a high poverty percentage and a high percentage of personal income under $25k means that the population supporting the CAH in the study has limited income to pay for any health care services performed. If services were emergent and unplanned, these services could go unpaid by the patient for their patient-owed responsibility.

Uncompensated Care/Bad Debt Expenses

One of the revenue deduction lines on a hospital profit and loss statement is bad debt expense. According to the American Hospital Association (2010), bad debt "consists of services for which hospitals anticipated but did not receive payment" (Balasubramanian, 2017). In hospitals, there is another category, charity care, that is used when the charges for a patient's services are written off because a determination has been made that the patient is financially unable to pay for the services. Charity care has been defined by the IRS as "free or discounted health services provided to persons who meet the organization's eligibility criteria for financial assistance and are unable to pay for all or a portion of the services" (Levinson et al., 2022, "What is hospital charity care?" section). The cost of bad debt expense and charity care is known as uncompensated care. It is the services that have been provided that will not be reimbursed, often due to a lack of insurance or finances to pay for these health care services (HealthCare.gov, n.d.).

Medicare and Medicaid both offer subsidies to hospitals to help them with the cost of bad debt and charity care expenses. These are known as disproportional share

hospital payments. These payments are "limited to the cost of inpatient and outpatient services to Medicaid and uninsured patients minus payments received from Medicaid (including supplemental payments) and from uninsured individuals" (MACPAC, 2023). With regard specifically to Medicare, these payments are based on a hospital's Medicaid and Supplemental Security Income populations. Medicaid also has an uncompensated care pool payment program, but this was active in only eight states as of 2020 (Levinson et al., 2022).

Uncompensated care is still active, even after the implementation of the ACA. Medical bills tend to be incurred involuntarily, unexpectedly, and unpredictably. Even though more U.S. citizens have health insurance coverage after the implementation of the ACA, increasing deductibles and copays, along with out-of-pocket expenses, have had an effect on uncompensated care. Billing and processing errors can also lead to accounts becoming patient-responsibility, adding to the amount of uncompensated care (Kurani, 2017). In addition, the enactment of the ACA was expected to have positive implications for hospitals regarding uncompensated care costs. Although some studies have shown that the cost of uncompensated care may have decreased in states where Medicaid was expanded, studies have also shown that the savings have been offset by somewhat increased Medicaid payment shortfalls (Young et al., 2019). In this study, I reviewed data from a CAH found in the state of Alabama. Alabama is one of the states that opted not to expand Medicaid with the enactment of the ACA (KFF.org, 2023).

Financial Viability

Choosing to become a CAH does not guarantee that the hospital will perform with a positive operating margin. A report by the Flex Monitoring Team that was released in April 2021 indicates that there were four CAHs in the state of Alabama. The authors showed the average operating margin for the United States to be 0.72%, while the state of Alabama shows a negative operating margin of (3.97%). Another alarming statistic is days cash on hand. For the United States, this figure was 71.23. However, Alabama was much lower at 26.05. Patient deductions are another indicator showing a large gap. For the United States, this figure was 46.23%, whereas Alabama's was 61.31% (Flex Monitoring Team, 2021). These deductions negatively impact the operating margin and the cash on hand for Alabama CAHs (CFI Team, 2022). If patient accounts are not fully collected, that means cash is not collected, and this cash is used to fund operations (DeVries, 2019).

If patient account balances are written off, which increases patient deductions and bad debt expenses, operating margins shrink because these write-offs become expenses to the hospitals through operating expenses (Rex H., 2023). Because CAHs operate on lower patient volumes, they also have lower total profits than larger, mainstream hospitals, even if operating margins were to be the same. Having a reduction in operating margin is an indicator that the hospital is not creating value for shareholders and the community (Schmidt, 2023), and a small calculation value for days cash on hand can mean services could become unavailable to the community if those services are unable to be paid for through the cash of the hospital.

Patient Outcomes

CAHs are an essential part of the community because of the benefits of having health care close to home for people in rural areas. Between January 2010 and November 2020, there were 134 rural hospital closures. Of these 134, six were located in the state of Alabama (Ellison, 2020). Of the 16 rural hospitals that closed in 2016 across the United States, 15 were in rural areas. The most prominent effect of hospital closure in a rural area is that patients lose their health care access close to home. In fact, Medicare data shows that about one third of the hospital closures since 2013 were more than 20 miles away from the next closest hospital.

Distance could compromise patient care, as well as the finances of the patients, leading to poorer patient health outcomes (Frakt., 2019). As such, the closure of CAHs is not the only effect of being in financial distress. Cutting services is also an issue that impacts the health of the community in which the hospital is located. These services could include labor and delivery, surgery, or many other services that community members use for their health care needs. When hospitals do close, access to specialties also tends to move because they are usually clustered around hospitals. The closure of hospitals could also trigger competitors to enact higher-priced health care because the competition is no longer there (Frakt, 2019).

Definitions

Affordable Care Act (ACA): U.S. legislation—formally called the Patient Protection and Affordable Care Act—that was signed into law on March 23, 2010. In enacting the ACA, lawmakers had primary goals of improving health insurance coverage,

improving patient outcomes and quality of care, and maintaining or lowering the cost of health care by driving changes within the way care is delivered (Zhao et al., 2020). The ACA was the independent variable in this study.

Bad debt expense: A portion of patient revenues that is estimated to be uncollectible and written off to an expense account in the net revenue section of the profit and loss statement (Beck et al., 2021). Bad debt expense was the dependent variable in this study.

Critical access hospital (CAH): A hospital with up to 25 beds that has an average length of stay of up to 96 hr, offers 24-hr emergency services, and is paid with cost-based reimbursement from Medicare (Dougan et al., 2018).

Financial viability: "The ability to generate adequate income to meet operating payments and debt commitments, allow growth while maintaining high-quality levels of service. The aim of financial viability and sustainability is to make the most efficient, effective, and focused use of current financial resources whilst continuing to build funds and make the case for enhanced investment in high-quality education and training" (International Institute of Business and Technology, 2019, para. 1).

Insurance payer: The insurance entity responsible for payment towards medical services on behalf of a patient who is enrolled in an insurance plan with that insurance company.

Medicaid expansion: A provision of the ACA for states to voluntarily expand Medicaid coverage for adults who are under 65 years old and have an income less than

138% of the federal poverty level (healthinsurance.org, 2023). Prior to the ACA, Medicaid was mostly restricted to children and disabled adults.

Patient outcomes: "The results from care and treatments patients have received whilst in hospital, other clinical or care settings. They focus on meeting the physical, social, and emotional needs of patients from their own perspective to highlight what is important to them" (Wardle, 2022, para. 1).

Patient-responsible balance: The amount due to a provider from a patient after insurance companies have paid and deductions have been taken off the account (Chawla, 2023).

Uncompensated care: Care or services for which payment is not collected. Uncompensated care is often a result of someone being uninsured or underinsured (HealthCare.gov, n.d.).

Assumptions

Quantitative research statistical testing includes assumptions that provide validity and reliability to the study. Checking and reporting statistical analyses can be considered a sign of quality and transparency (Hu et al., 2021). For this study, three assumptions were present. The first assumption was that all data would be accurate and reliable. Accurate and reliable data were required for the analytics to yield the correct measures. The second assumption was that the data acquired would have all the needed variables to me to correctly analyze the data. An essential step in the doctoral study process was to ensure the integrity of the data, which also includes completeness. The last variable is that the data must be relevant to the study.

I acquired the data for this study from a CAH from rural Alabama. The data included elements such as insurance payer, gross charges, insurance balance due obligations, and patient balance due obligations, as well as patient balance payments and patient balance amounts written off to bad debt. The three assumptions referenced above were pertinent to this study because human interpretation when posting payments from patients and insurance companies can lead to different interpretations if more than one person posts payments across the 2 years for the study.

Scope and Delimitations

The research problem that was addressed in this study was whether the ACA increased patient-responsible account balances in this study's CAH in Alabama and whether those increases correlate to an increase in the percentage of accounts being written off to bad debt. The reason this topic was chosen was because bad debt expense can contribute to financial viability concerns for this CAH. Financial viability concerns can be the reason that CAHs and rural hospitals close, so the social impact includes the potential for worsening patient outcomes within the community where the hospital resides. Equipping administrators with the knowledge that CAHs have been affected negatively by bad debt expense could affect financial viability of their organizations. The reason is that leaders can focus their efforts on finding other ways to increase their financial viability through better contracts, more robust policies, and other methods for cost savings.

The populations picked for this study include all patients with accounts in calendar years 2009 and 2019 from a CAH located in rural Alabama. Leaders of the CAH

asked for their organization to remain anonymous. This population of patients was picked so that a comparison could be made from before the enactment of the ACA and then a few years after the enactment of the ACA. These years were picked to ensure the accounts were closed entirely out with no account balance remaining or in question.

Limitations

A potential limitation of this study was that the data may be formatted differently or have all the fields needed and data available for the study. A second limitation was that the hospital could have different patient account write-off policies for 2009 and 2019, and these policies could be interpreted differently between staff.

Significance

The social problem of this study is that CAHs have been closing due to financial viability issues. The closure of these hospitals affects not only the health needs of the community but also the financial well-being of the community, as the CAH is often one of the largest employers in the area. With the location of CAHs being mostly rural, travel time for health care needs would be increased, and some people would no longer have a way to get to doctor appointments or potentially get life-saving emergency care if there was not a hospital close by (Saghafian et al., 2022; Edmiston, 2019).

This study's quantitative results could provide insight into an increase in bad debt expense related to patient account balance write-offs and if a correlation exists between this increase and the ACA provisions. With the increase in costs in the current economy and a decrease in reimbursements received, hospitals are tasked with finding ways to cut costs to remain financially viable. Pending the results, if a correlation is found between

the implementation of the ACA and an increase in patient account bad debt write-offs, administrators can then focus their attention on updating collection policies, renegotiating payer contracts for an increase in payment received from the insurance payers and reviewing other areas of expense where optimizations could yield more profitability. For the CAHs, remaining financially viable ensures that the patients within the community have somewhere locally to go for their health care needs.

This is the social problem of the study, which is that without somewhere local, the patients may not receive their treatments timely, and this could lead to a decline in patient outcomes in the community. Further, CAHs could be one of the largest employers in the area, and if the CAH were to close, there could be financial implications to government programs in the area due to the decline in tax revenues attributed to having the CAH in the community (Frakt, 2019; Saghafian et al., 2022). This study would allow the reader to have a better understanding of how ACA and patient-responsible account balances written off to bad debt expense impact the profitability and cash flow of the organization and can potentially steer them to review collection policies or other ways to become more financially viable.

Summary and Conclusions

The foundation of this study was built on the closure of CAHs and the effects that they have on the communities for which they serve. Since CAHs are found mainly in rural areas, closures can influence patient health outcomes as well as the economies of those communities. Since CAHs must be located at least 35 miles from the next closest hospital, residents of the community of the CAH will be required to travel further for

care. If the individual is unable to do so, potential health outcomes could be reduced. Since the CAH is potentially the largest employer in the area, the residents will see a decrease in their family incomes or could move out of the area in search of new employment. With the reduction in tax revenues, social programs could be reduced or cut due to funding not being available to run the program or resources not being available to make the program successful (Saghafian et al., 2022; Edmiston, 2019; Alexander et al., 2023).

Current research suggests that in states where Medicaid has not been expanded with the implementation of the ACA, patients without insurance coverage are a higher percentage of the population than in states where Medicaid was expanded (Young et al., 2019; Lindrooth et al., 2018). Current research also shows that deductibles and out-of-pocket maximums have increased since the implementation of the ACA. Studies show that if a patient leaves a facility without paying the patient portion of the bill, the odds of collecting that payment diminish. When these payments are not collected, the balance is written off to bad debt. Given that patient-responsible balances have increased due to higher deductibles and out-of-pocket maximums, bad debt write-offs of these balances have also increased (Popescu, 2019).

Given that bad debt write-offs could decrease profitability and cash flow for a facility, CAHs that have a small operating margin could be at risk of decreasing or losing their operating margin completely. With decreased cash collections, cash availability could also become compromised and create solvency issues. If bad debt write-offs lead to solvency issues and lower operating margins, CAHs will be able to use the data from this

study to find ways to increase their operating margins through improved collection policies, better payer negotiations, or other cost-cutting strategies and revenue enhancements.

Section 1 of this study has given the background, problems, and RQs. Within this section, the history of the ACA and the CAH was discussed. Also discussed were social problems that would be generated if a CAH were to close in one of these rural areas. Section 2 of this study goes into the descriptions and methods of the analytical work that went into this study. The research design and rationale will be discussed, along with points about the data that was used in the study. This will give the reader a better understanding of how the data were analyzed so that when the outcomes are presented, there will be a clear picture provided.

Section 2: Research Design and Data Collection

Introduction

The purpose of this quantitative study is to determine if the ACA has had a financial impact on this study's CAH in Alabama in the amounts of patient balances being written off to bad debt. With the increase in patient responsibility being seen with higher deductibles and copays, there is potential for health care organizations and providers to see a higher rate of bad debt write-offs due to nonpayment of the patient-owed balances (DeVries, 2019). There have been 134 rural hospital closures between January 2010 and December 2020. Of these 134, 33% of these hospitals were CAHs. A survey was conducted of chief executive officers of CAHs to find the most significant challenges for their hospitals.

The number one response was uncompensated care and affordability of health insurance within states where Medicaid had not been expanded, with 65.9% of the responses belonging to uncompensated care and 63.9% belonging to the affordability of health insurance as a high priority. This includes the state of Alabama, which is where the subject CAH is located. Since the implementation of the ACA, the number of private health plans with lower monthly premiums but higher deductible amounts have increased. While this was meant to lower the out-of-pocket cost of overall health care, the increased deductibles and copays led to deferred care and poorer outcomes, in addition to more uncompensated care for the hospitals (Thomas et al., 2021).

Section 1 discussed the ACA and defined/described the CAH. Section 1 also discussed the fact that when CAHs close, there are also adverse health and economic

impacts on the community. Variables include a lack of health care close to home, potentially causing the community members to have poorer health outcomes, and the loss of one of the larger employers in the community, having a negative impact financially on the community. In Section 1, I also discussed the purpose of the study, which was to determine if there is a correlation between the ACA and an increase in responsible account balances due in this study's CAH in Alabama. RQs were posed, and the theoretical foundation for the study, von Bertalanffy's general systems theory, was discussed.

Section 1 contained the nature of the study, a linear regression design, and a summary of the literature review that was conducted as part of the prework of the study. Definitions of key terms were provided, as well as assumptions, scope and delimitations, and the significance of the study, which is to add to the body of knowledge about bad debt expense in this study's CAH in Alabama and whether there is a correlation with the provisions from the ACA. Section 2 of this study explains the research and design rationale and details of the methodology of the study. This will include a definition of the target population, sampling procedures used with a description of time frames for the data, plans to provide evidence of reliability and validity, and an entire data analysis plan. Threats to validity and ethical procedures will also be discussed in this section.

Research Design and Rationale

This quantitative study will use the linear regression model to evaluate if there is a correlation between the implementation of the ACA and the potential increase in patient-responsible account balances being written off to bad debt. Each study requires that there

be both an independent variable and a dependent variable. The independent variable is considered the cause of something happening. The time frame of the data for this study is twofold: The first set of data is from 2009, 1 year before the enactment of the ACA. The second set of data is from 2019, a more recent year that is after the enactment of the ACA. The data being used for this study was obtained from a CAH in rural Alabama who wishes to remain anonymous. The population within the data includes all patient accounts within calendar years 2009 and 2019.

In this study, the independent variables are the ACA and the percentage of an account that is defined as the patient's responsibility for payment. This could be in the form of a copay or a deductible. This could also affect those uninsured, where the entire balance is considered self-pay. The dependent variable is known as the effect because the value of this variable depends on changes in the independent variable. The dependent variable in this study is the amount of these patient-responsible balances that have been written off to bad debt expense because they have been deemed uncollectible from the patient (Bhandari, 2022). This study will review data from a CAH in Alabama. The study's goal is to determine if there is a correlation between the implementation of the ACA and the amount of bad debt expense related to patient-responsibility amounts for this Alabama CAH.

The design of this study is a quantitative independent samples *t* test. The analysis performed answers the two RQs. The first RQ was, Has this study’s CAH in Alabama seen an increase in patient-responsibility balances since the enactment of the ACA that could affect their financial viability? The second RQ was, Is there a correlation between

an increase of patient responsible account balances and the ACA in this study's CAH in Alabama creating an increase in bad debt expense to the hospital? The results of this study will add to the body of knowledge about bad debt expense in CAHs in Alabama and whether there is a correlation with the enactment of the provisions of the ACA.

If a correlation is found, the study could be used to make decisions on whether to become a CAH or decide to further the study by creating better methods of collection of patient balances due to hospitals to increase profitability. CAHs could also be prompted to review payer contracts for opportunities to renegotiate those contracts for more favorable reimbursements. Since CAHs are usually found in rural areas, community members rely on these hospitals for their health care needs. These CAHs are often the largest employers in the area, as well. Losing a CAH due to closure from unprofitability could have a negative impact on a person's future health outcomes, as well as an economic impact within the community.

As with any study, there are time and resource constraints. The ACA was signed into existence in 2010. To properly analyze data before and after, data from the calendar year 2009 will need to be compared to data from the calendar year 2019, thus giving this study a potential resource constraint. The time it takes to receive the data from the CAH being studied could be a potential time constraint on the study.

Methodology

Population

The targeted hospital for information is a CAH in rural Alabama. This CAH has asked to remain anonymous for the reporting of this study's results. This CAH is located

in Alabama in a rural area where farming is one of the most significant sources of income for the community. The target population for this study included all patient accounts where there was a patient-responsible balance owed. One year of patient data was taken before the implementation of the ACA (calendar year 2009), and 1 year of patient data was taken after the implementation of the ACA (calendar year 2019). All patient financial classes, such as Medicare, Medicaid, Commercial, and Self-Pay, were used in the analysis.

Sampling and Sampling Procedures

The data for this study was collected from an anonymous CAH found in rural Alabama. This organization furnished me with Excel documents containing blinded patient accounting information, including a unique number in place of an account number, date of service, payer, total account charges, total patient liability, total amount of patient liability collected, and any amount of this patient balance due written off to bad debt. There were two sets of data received from the CAH. The first was from the calendar year 2009, before the implementation of the ACA, and the second was from the calendar year 2019, after the implementation of the ACA. The data contained a combined count of 45,011 records for 2009 and 2019. These data were used to evaluate the RQs of the study to determine if the Alabama CAH has seen an increase in patient-responsibility balances since the enactment of the ACA that could have an effect on their financial viability and if there is a correlation between the increase of patient responsible account balances and the ACA. Only I had access to the data. At the end of the study, this data will be permanently deleted and destroyed.

The data analyzed for this study was based on the focal populations. I obtained the data for the CAH from its data extractor via the chief operating officer. To gain access to the data, the facility was contacted, and approval for the data was granted. The facility furnished the data requested after institutional review board (IRB) approval was obtained for the study to continue. As a courtesy, the final study will be sent to the facility for their review and benefit.

The data points included dates of service, insurance payer, total account charges, total patient liability, total amount of patient liability collected, and total amount of patient liability written off to bad debt. Because all patient accounts included every targeted data point, a simple random sampling was used. The data's characteristics were examined and defined, and simple random sampling should be an appropriate sampling methodology. A random sampling methodology presents well when each member within the data has an equal chance of being chosen. This method also lends to an unbiased selection method (Simkus, 2022). The data included descriptive statistics that use categorical and numerical data that can be used to measure and compare utilizing an independent samples *t* test.

The data yielded 45,011 patient accounts for combined years of 2009 and 2019. To calculate this study's effective size, a sample size calculator on ClinCalc.com was used to define the appropriate, effective sample size. A power analysis was performed with assumptions of an alpha of 0.05, a power of 0.95, and a small effect size (f2 = 0.058). Based on these assumptions, the sample size was 7,727.

Instrumentation and Operationalization of Constructs

The data for this study comes from calendar years 2009 and 2019 from an undisclosed CAH in rural Alabama. Using actual data from a CAH in Alabama allowed me to determine if there is a correlation between the implementation of the ACA and an increase in bad debt expense coming from patient account balances. Verbal permission to have the data was granted from the hospital, and a formal letter was also sent with the data points needed for the CAH to gather the data for the study. Before the data for this study could be collected, it was submitted to the Walden University IRB for its approval. This study posed minimal risk, as the data would be masked from having any patient-identifiable information and present no concern for confidentiality breaches.

Operationalization

This study contained both an independent variable and a dependent variable. The independent variables are variables that predict the changes that happen with the dependent variable. For this study, the independent variable was the enactment of the ACA. The ACA was defined in this study as a point in time before which the law was implemented. As far as data is concerned, the data from the calendar year 2009 was this study's pre-ACA implementation benchmark period of time. The dependent variable was the variable that has been defined by the addition of the independent variable (Frost, 2023). For this study, the dependent variable was bad debt expense. The dependent variable was a calculation of the percentage of amounts written off to bad debt as a percentage of the total amounts owed originally by patients. The year 2019 data was the post-ACA implementation time period for the purposes of this study.

Data Analysis Plan

This was a quantitative study and used an independent samples *t* test for the analysis. To perform the analyses needed to answer the RQs, the IBM SPSS software was used. This software was used to perform the independent samples *t* test and assisted in presenting any possible correlations found between the dependent and independent variables. The targeted data were used, and an alpha level of .05 was applied for the evaluations. Using an alpha level of .05, or 5%, denotes the significance level and the probability of making the wrong decision when the null hypothesis is true (Glen, 2023). To ensure the data is clean from errors, only complete patient account records was used for the analyses. Complete patient account records were defined as accounts that have no balances remaining and do not have any missing fields of data that are required for this analysis. If any of the data has missing values, those rows of data were excluded before beginning the analyses.

The primary analysis of data was done to review for any correlations between the implementation of the ACA and the percentage of patient-responsible balances written off to bad debt expense. These questions include the following: Has this study's Alabama CAH seen an increase in patient-responsibility balances since the enactment of the ACA that could potentially affect their financial viability, and is there a correlation between an increase of patient-responsible account balances and the ACA in this study's Alabama CAH?

As with any study, the results will need to be interpreted to determine if there is a correlation between the implementation of the ACA and an increase in the percentage of

patient-responsible account balances written off to bad debt as a percentage of total patient-responsible balances. Suppose the results find that the calculated percentage of patient-responsible account balances written off to bad debt as a percentage of total patient-responsible account balances shows an increase between the 2 years of 2009 and 2019. In that case, the interpretation of the results will show a positive correlation between the ACA being implemented and an increase in bad debt expense related to patient-responsible balances.

Threats to Validity

In order for this study to be credible, threats to validity must be identified, and ways to overcome the threats must be mitigated. Threats can be both external threats or internal threats. Mitigating strategies can help to overcome those threats.

External Validity

External validity means that the findings of a study could be generalized to other situations or measures. The most significant threat to the external validity of this study could be history. The history threat is where an unrelated event could influence the outcome of the study. In this case, history could mean that there could have been another event that led to the increase in self-pay balances and a higher percentage of those balances being written off to bad debt. That history could be in the form of a significant employer closing and those patients losing health care or weather-related event creating instances where patients become unable to pay their portion of the account. This threat will be addressed in this study by looking for account outliers that will be excluded and

also asking the facility if there are any known external factors that could affect their patient account data in any way.

Internal Validity

The most significant threat to internal validity is maturation, which is known as the outcomes of a study varying due to a natural result of time. For this study, maturation could be the passing of time or the experience in the business office increasing in skill. This could lead to a smaller percentage of accounts being written off because the business office has adapted and learned how to increase collections through maturation. This threat will be addressed in this study by asking the hospital if they have had changes in patient account policies or any significant changes within their business office structure.

Ethical Procedures

The data used for this study was masked to exclude any patient-identifiable information. The hospital providing the data was asked to exclude patient names, addresses, or medical record numbers. Instead, another sequential number was issued to each account so that each account will have an identifier for the study. Because of these safety measures, there will be no concern for confidentiality violations. Upon receipt of the data, the file was stored in a secure and password-protected computer. Within 3 years of the completion of this study, all data files used in this study will be removed and rendered irretrievable by the physical destruction of the flash drive where the data had been previously stored. All IRB protocols will be followed in the retrieval and study of this data and disposal of the data after the study is completed and approved. The IRB approval number for this study was 11-06-23-1015822.

Summary

The purpose of this quantitative study was to examine the relationship between the ACA and whether there has been an increase in patient-responsible account balances due to CAHs in Alabama and whether this increase has contributed to a decrease in financial viability for the hospital. The data to be examined will come from a facility in Alabama and include patient account data from pre-ACA (2009) and post-ACA implementation (2019). Descriptive analyses of the data will be performed using linear regression analysis techniques through IBM SPSS software.

Data will be collected and scrubbed for completeness. The data will then be analyzed through IBM SPSS software to answer the two RQs. An independent samples *t* test will be performed on the data using an alpha level of 5% when determining significance. Threats to validity, including history and threats to maturation, as well as ethical procedures, were discussed. The first two sections have both described the study to be done. Section 3 will be the presentation of the study results and findings. In Section 3, I will explain the study results in the context of the RQs. I will also discuss the social change that might emerge from this study and any other research gaps that could be analyzed in future studies.

Section 3: Presentation of the Results and Findings

Introduction

The purpose of this quantitative study was to determine if there is a correlation between the ACA and an increase in patient-responsible account balances due in this study's CAH in Alabama. The study also sought to see if this increase in patient responsible account balances led to a higher percentage of bad debt write-offs, thus creating the potential for a loss of financial viability. The following RQs were addressed through various statistical analyses:

RQ1: Have CAHs in Alabama seen an increase in patient-responsibility balances since the enactment of the ACA that could affect their financial viability?

$H_0$1: There is no statistically significant relationship between the number of patient-responsibility balances and the enactment of the ACA that could affect this CAH's financial viability.

H_a1: There is a statistically significant relationship between the number of patient-responsibility balances and the enactment of the ACA that could affect this CAH's financial viability.

RQ2: Is there a correlation between an increase in patient-responsible account balances and bad debt expense percentage of total operating expenses after the implementation of the ACA in this study's CAH in Alabama?

$H_0$2: There is no statistically significant relationship between the number of patient-responsibility balances written off to bad debt expense and the enactment of the ACA.

H_a1*:* There is a statistically significant relationship between the number of patient-responsibility balances written off to bad debt expense and the enactment of the ACA.

In this section, the details of the secondary data set and the different analyses used to answer the RQs are explained in more detail. The results of the quantitative statistical and hypothesis tests are presented in tabular format along with explanations. Finally, the results of statistical significance and null hypotheses outcomes will be discussed.

Data Collection of Secondary Data Set

I collected the deidentified secondary data for this study from the focus CAH found in rural Alabama. There was no discrepancy in the date or the use of the data from the plan presented in Section 2. This data included all zero-balance patient accounts for the year 2009, preceding the implementation of the ACA, and 2019, which was one of the years following the implementation of the ACA. To attain the data, contact was made with the chief operating officer of the company verbally. The study was discussed as well as data points required for the study. A follow up email was sent so the hospital could start pulling the data needed. Before physically obtaining the data, I followed the IRB approval process, which entailed signing a data user agreement with the hospital. Once IRB approval was received, the hospital provided the researcher with data in Microsoft Excel format electronically. The patient accounts were issued new patient account numbers to ensure the data could no longer be identified with actual patients. The data file included all required variables for the analyses of the study.

The first step taken after receiving the data for this study was to evaluate the data set and ensure all accounts had a zero-balance remaining on the patient's account. This is known as a closed patient account. There were accounts that needed to be excluded for this reason, and they were removed from the data set. The second process I performed in scrubbing the data was to look for data entry errors that appear obvious. There were a limited number of accounts where the patient payments and patient write-offs appeared to have been recorded incorrectly. These accounts were also removed from the data set. This totaled approximately 500 of the total number of accounts in my data set. This left a total of 45,011 accounts that could be used in the study.

The baseline descriptive and demographic statistics within the data included a deidentified patient account number, whether the charges were for outpatient or inpatient services, total account charges, patient admission date, insurance payor or patient responsible tag, transaction description such as write-off or payment, transaction date, and transaction amount. There were additional calculation fields added to the date to assist with the analysis of the RQs. These included a calculation for patient responsible balance as a percentage of total account charges and patient responsible write-offs as a percentage of gross charges.

For the analysis, the entire data set was used instead of using a sample population. The reason for this was because using the entire data set ensured the sample did not skew the results either way. There were also only 45,011 accounts. If there had been a few accounts with heavy write-offs or no write-offs, it could have affected the results of the calculations and the significance of the study.

IBM-SPSS Statistics was used to perform the statistical analysis. Once the data were uploaded to SPSS, variables were defined within the data. This included defining the measurements and the role of the variable, as well as the type of variable. Once SPSS had been properly defined, the analysis work began. The first data analysis performed in SPSS was running the frequency tables of the independent and dependent variables. The second procedure performed was creating a copy of the codebook, which defined the variables within the data. Third, a report was generated to compare the means of the different variables. Last, an independent sample *t* test was run on the data to determine if there was a significant difference between the means of the dependent and independent variables. The results and their interpretations are presented later in this section.

Results

I generated frequency tables for each independent and dependent variable to see if there were any missing data and to help understand each variable. Table 1 shows the frequencies of the general statistics used in the data for this study. The covariates describe the three variables used in the analysis. The first variable was the year of the data, either 2009 or 2019. The second variable was the amount of patient responsible balances as a percentage of total gross patient charges. The third variable was the amount of patient responsible balances written off as a percentage of total gross patient charges. To answer RQs 1 and 2, I used the years of 2009 and 2019 as the independent variable. The dependent variables were the percentage calculations of (a) patient responsible balances compared to gross charges and (b) patient responsible balances written off compared to gross charges.

Table 1

General Statistics for Study Variables

Statistic	2009 (Pre-ACA), 2019 (Post-ACA)	% patient responsible balance as % of gross account charges	% patient responsible balance written off as % of gross account charges
N (valid)	45,011		
Missing	0	0	0
Mode	2019	0	0
Range	10	100	100
Minimum	2009	0	0
Maximum	2019	100	100

Note. Column 1 shows the independent variable of the study and Columns 2 and 3 the dependent variables. ACA = Patient Protection and Affordable Care Act of 2010.

As shown in Table 2, the data chosen for the study consisted of two specific years. I chose 2009 because it was the last year before the implementation of the ACA and 2019 because it was a more recent year post-ACA implementation. The purpose of RQ1 was to evaluate the correlation between the percentage of patient account balances and the percentage of gross charges before the implementation of the ACA. The purpose of RQ2 was to evaluate the correlation of years before and after the implementation of the ACA to the percentage of patient-responsible write-offs as a percentage of gross charges.

Table 2

Frequency Results for Data Year

Year	*f*	%	Valid %	Cumulative %
2009	19,258	43	43	43
2019	25,753	57	57	100
Total	45,011	100	100	

As shown in Table 3, this study's second variable was the amount of patient responsible balances as a percentage of total gross charges. RQ1 asked if there had been an increase in patient-responsible balances post-ACA implementation. I used a percentage of gross charges to ensure that there was a fair comparison just in case total gross revenues had been much different between the 2 years. The assessment made was that this eliminated any validity issues due to increased charges and inflation.

Table 3

Frequency Results for Patient Responsible Balance as a Percentage of Total Gross Charges

% range	*f*	%	Valid %	Cumulative %
0–10	41,302	91.8	91.8	91.8
10.01–20	1,632	3.6	3.6	95.4
20.01–30	379	0.8	0.8	96.2
30.01–40	167	0.4	0.4	96.6
40.01–50	127	0.3	0.3	96.9
50.01–60	26	0.1	0.1	96.9
60.01–70	18	0.0	0.0	97.0
70.01–80	29	0.1	0.1	97.0
80.01–90	22	0.0	0.0	97.1
90.01–100	1,309	2.9	2.9	100.0
Total	45,011			

Note. The percentages were placed into intervals to decrease the reported rows for the table.

As shown in Table 4, the third variable in this study was the patient responsible balance written off as a percentage of total gross charges. This is also known as the bad

debt expense percentage. The purpose of RQ2 was to evaluate if there was a correlation between an increase in patient responsible balances and bad debt write-offs. An increasing number of bad debt write-offs can become a factor in financial solvency issues for the CAH.

Table 4

Frequency Results for Patient Responsible Balance Write-Off as a Percentage of Total Gross Charges

% range	*f*	%	Valid %	Cumulative %
0–10	43,233	96.0	96.0	96.0
10.01–20	370	0.8	0.8	96.8
20.01–30	80	0.2	0.2	97.0
30.01–40	25	0.1	0.1	97.1
40.01–50	257	0.6	0.6	97.7
50.01–60	21	0.0	0.0	97.7
60.01–70	3	0.0	0.0	97.7
70.01–80	14	0.0	0.0	97.7
80.01–90	8	0.0	0.0	97.8
90.01–100	1,000	2.2	2.2	100.0
Total	45,011			

Note. The percentages were placed into intervals to decrease the reported rows for the table.

As shown in Table 5, I conducted a *t* test with an assumption of equal variances to compare the percentage of patient-responsible balances as a percentage of gross patient charges between years 2009 and 2019. The findings of this analysis answer RQ1, which was, Has this study's CAH in Alabama seen an increase in patient-responsibility balances since the enactment of the ACA that could affect their financial viability? Findings indicated that there was a difference in the percentage of patient-responsible balances as a

percentage of gross patient charges between years 2009 and 2019, $t(45{,}009) = 8.064$, $p = <.001$, Cohen's d = .058, 95% CI [.058, .096]. The percentages for year 2009 were higher ($M = 5.53$, $SD = 19.22$) compared to year 2019 ($M = 4.19$, $SD = 16.06$).

Table 5

t-*Test Results for Patient-Responsible Balance as a Percentage of Gross Charges*

Logistic parameter	2009		2019		*t*(45,009)	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
Patient-responsible balance as a % of gross charges	5.53%	19.22%	4.19%	16.06%	8.064	<.001	0.058

Note. The *t*-test results were undergirded by the assumption of equal variances.

As shown in Table 6, I also conducted a two-sample *t* test with an assumption of equal variances. The results offer a comparison of the percentage of the patient-responsible balance write-offs as a percentage of gross patient charges between years 2009 and 2019, $t(45{,}009) = 9.525$, $p = <.001$, Cohen's d = .072, 95% CI [.072, .109]. The findings of this analysis answer RQ2, which was, Is there a correlation between an increase in patient-responsible account balances and bad debt expense percentage of total operating expenses after the implementation of the ACA in this study's CAH in Alabama? Findings indicated that there was a difference in these percentages as well. The percentages for year 2009 were higher ($M = 3.92$, $SD = 17.27$) compared to year 2019 ($M = 2.53$, $SD = 13.73$).

Table 6

t-*Test Results for Patient-Responsible Balance Write -Off as a Percentage of Gross Charges*

Logistic parameter	2009		2019		*t*(45,009)	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
Patient-responsible balance written off as a % of gross charges	3.92%	17.27%	2.53%	13.73%	9.525	<.001	0.072

Note. The *t*-test results were undergirded by the assumption of equal variances.

Summary

Performing the independent samples *t* test gave the results needed to answer the study's RQs. RQ1 was as follows: Has this study's CAH in Alabama seen an increase in patient-responsibility balances since the enactment of the ACA that could affect their financial viability? For this RQ, there was statistical significance between the enactment of the ACA and a decrease in the patient-responsible balance as a percentage of gross patient charges. This can be seen through the means of 2009 and 2019 respectively (5.53% and 4.19%). The significance level of <.001 was below the recommended significance level of 0.05. The null hypothesis ($H_0$1) was accepted. The data concluded that there was not an increase in patient-responsible balances as a percentage of gross patient charges that could affect financial viability.

RQ2 was as follows: Is there a correlation between an increase in patient-responsible account balances and bad debt expense percentage of total operating expenses after the implementation of the ACA in this study's CAH in Alabama? For this RQ, there was statistical significance between the enactment of the ACA and a decrease in the patient-responsible balance write-offs as a percentage of gross patient charges. This can be seen through the means of 2009 and 2019 respectively (3.92% and 2.53%). The significance level of <.001 was below the recommended significance level of 0.05. The null hypothesis ($H_0$2) was accepted. The data concluded that there was not an increase in patient-responsible balance write-offs as a percentage of gross patient charges that could affect financial viability.

Section 4 of this study brings together the research on the topic and the analysis in an interpretation of the findings. The interpretation discusses findings as compared to what was found in the peer-reviewed literature described in Section 1. The findings are also analyzed and interpreted in the context of the conceptual framework. Any limitations to the study are discussed in Section 4 as well as recommendations for further research and implications for professional practice and social change.

Section 4: Application to Professional Practice and Implications for Social Change

Introduction

A quantitative approach was applied to this study using *t* tests to determine if there was a correlation between the independent variable of the implementation of the ACA, and the dependent variables of patient responsible balances and bad debt expense. The purpose of this quantitative study was to determine if there is a correlation between the ACA and an increase in patient-responsible account balances due in CAHs in Alabama, and a correlation between the ACA and an increase in the write-offs of those patient-responsible account balances due. This section will reflect on an interpretation of the key findings from the study, the study's limitations, and the recommendations for further research, professional practice, and positive social change.

The purpose of this quantitative study was to determine if there was a correlation between the ACA and an increase in patient-responsible account balances due in the study's CAH found in Alabama. An increase of patient-responsible account balances due could lead to an increase in account balances being written off to bad debt expense. The RQs for this study were

RQ1: Has this study's CAH in Alabama seen an increase in patient-responsibility balances since the enactment of the ACA that could affect their financial viability?

$H_0$1: There is no statistically significant relationship between the number of patient-responsibility balances and the enactment of the ACA that could affect the CAH's financial viability.

H_a1: There is a statistically significant relationship between the number of patient-responsibility balances and the enactment of the ACA that could affect the CAH's financial viability.

RQ2: Is there a correlation between an increase in patient-responsible account balances and bad debt expense percentage of total operating expenses after the implementation of the ACA in this study's CAH in Alabama?

$H_0 2$: There is no statistically significant relationship between the number of patient-responsibility balances written off to bad debt expense and the enactment of the ACA.

$H_a 2$: There is a statistically significant relationship between the number of patient-responsibility balances written off to bad debt expense and the enactment of the ACA.

I conducted this study to determine if there were significant correlations between the implementation of the ACA and an increase in patient-responsible account balances, and thus account-balance write-offs leading to higher bad debt expense. A quantitative approach using independent samples *t* tests were used to see if there were correlations between the data from 2009, which predated the implementation of the ACA, and the data from 2019, which was post-ACA implementation.

Interpretation of the Findings

As discussed in Section 2, CAHs are small in size and often found in rural areas at least 35 miles from the next closest hospital. These CAHs are often one of the largest employers in the area and important in many facets to the communities in which they

reside (Frakt, 2019; Medicare Learning Network, 2023). The goals of the implementation of the ACA expected to show an increase in the American population becoming insured but would still leave 24,000,000 people estimated to be uninsured (Nikpay et al., 2020; Rosenbaum, 2011). Along with Americans having better access to insurance, the ACA added quality factors, efficiencies, and accountability. Medicare programs began new reimbursement methods, such as bundled payments. This was to encourage providers to have a more systematic thinking on how to treat their patients. Another part of the ACA provided changes for providers to alter their billing and collection practices and maintain written financial assistance policies (Nikpay et al., 2020; Rosenbaum, 2011; Zhao et al., 2020).

Part of ACA was to have states expand their Medicaid programs to cover more individuals. Alabama chose not to expand Medicaid programs. Popescu in his study from 2019 discussed that the ACA had resulted in more high-deductible health plans aimed at those who were previously uninsured. Since CAHs are found mostly in rural areas, it makes them more financially vulnerable, affecting the ability to keep existing services or expand for additional needed services. His study also discussed that with higher patient-responsible balances that have potentially increased with higher-deductibles and out-of-pocket maximums, bad debt write-offs of these balances would also increase (Popescu, 2019).

Research Question 1

This study's first RQ asks if this study's CAH in Alabama has seen an increase in patient-responsibility balances since the enactment of the ACA that could affect their

financial viability. The independent samples *t* test was performed on the data. That analysis findings indicated that there was a difference in the percentage of patient-responsible balances as a percentage of gross patient charges between years 2009 and 2019. What was found was that the mean of year 2009 was 5.53%, as compared to year 2019 at 4.19%. When performing the literature review, sources had indicated that deductibles and out-of-pocket maximums have increased since the implementation of the ACA. Given this the increase in patient-responsible balances, their study found that bad debt write-offs of the patient responsible balances had also increased (Popescu, 2019).

Given this information, it would be fair to assume that patient-responsible balances as a percentage of gross charges in this study would also show an increase. In fact, the opposite was found to be true. The average percentage of patient-responsible balances as a percentage of gross charges actually decreased from 5.53% to 4.19% between 2009 and 2019, thus the null hypothesis was rejected. Popescu (2019) found that higher deductibles and out-of-pocket maximums would lead to higher patient-responsible balances. The findings of this study were to the contrary: The patient-responsible portion of their gross charges actually decreased between 2009 and 2019.

Research Question 2

This study's second RQ asks if there a correlation between an increase in patient-responsible account balances and bad debt expense percentage of total operating expenses after the implementation of the ACA in this study's CAH in Alabama. Popescu's (2019) research supports the finding of a higher write-off percentage because of the increase in the patient-responsible balances from increased deductibles and copays.

When the *t* test was performed assuming equal variances, the results showed a mean in 2009 of 3.92%, and in 2019 a mean of 2.53%. Just like RQ1, the data analysis found that there was a decrease in the mean write-off percentage between the pre-ACA year of 2009 and the post-ACA year of 2019, therefore the null hypothesis for RQ2 was rejected. Popescu wrote that the higher deductibles and out-of-pocket maximums would increase the bad debt write-offs where patients did not pay all of their patient-responsible balances. I found the contrary in that both the patient-responsible portions and the write-off portions as a percentage of gross charges both decreased between 2009 and 2019.

Theoretical Foundation

When reflecting back on the conceptual framework of this study, the general systems theory by Ludwig von Bertalanffy was used. This theory states that subsystems make up parts of the whole system (Skyttner, 2005). The general systems theory relates problems to the entire system, and not to the parts themselves (von Bertalanffy, 1972). For this study, bad debt expense incurred as a result of patients not paying their portion of the patient-responsible balance is only a part of the whole system. This system includes the patient having services, receiving charges for those services, insurance billing/payments, patient billing/payments/write-offs. The ACA set out to instill a more systems approach to health care and included pieces of billing and financials within the framework of the ACA. The ACA also set out to decrease the cost of health care to insurance and to the insured. For this study, the RQs sought to answer if the study's CAH found in Alabama had seen an increase in patient-responsible balances as a percentage of gross charges, and also if the study's CAH in Alabama had seen an increase in patient-

responsible account balance write-offs as a percentage of gross charges. The questions sought to see if a previous study's finding of an increase in patient responsibility and patient-balance write-offs would follow to this CAH found in Alabama.

I concluded that the ACA system, when analyzing patient-responsible balances as a percentage of gross charges, and patient-responsible write-off amounts as a percentage of gross charges, appears to be working as it was originally intended. There had been a decrease in the patient-responsible portion of the gross charges, which follows along with the ACA's goal of decreasing health care costs to consumers. There had also been a decrease in the patient-responsible write-off as a percentage of gross charges. This was contrary to the findings from the Popescu study. When looking at the patient payment system as a whole, this study would lead the reader to believe that the system was functioning appropriately.

Limitations of the Study

There were several limitations to this study. First, the data sets were limited to 2009 and 2019, limiting the generalizability of the study's findings. Second, there could other factors outside of the 2 years that could have affected the data, such as insurance payor contracts with the hospital. Further analysis of the data is encouraged to determine if other factors contribute to the changes in patient responsibility amounts and amounts of patient responsibility written off due to nonpayment.

Additionally, a review of the different insurance payors was not done with this study. This, however, could provide more insight as to why the study results show a decrease in patient responsible balances as a percentage of gross charges, and a decrease

in patient responsible balance write-offs as a percentage of gross charges. Further examination should be done to find trends in the payors and their use by insureds as it relates to patient-responsible account balance write-offs. Further examination of this aspect could potentially require more years of data to be analyzed.

Recommendations

The study findings yielded a significant relationship between the years. The study revealed a positive trend showing less patient-responsible balances owed as a percentage of gross charges, and also a positive trend showing less patient-responsible balances written off as a percentage of gross charges. This research could be extended to trend percentages by payor of total gross charges as well as trend percentages by payor of total patient responsible balances. This could provide information as to whether any payors have increased the patient-responsible portion of gross charges, and whether these charges have been written off to bad debt expense. Further examination of payor contracts by using trended data is recommended.

A more in-depth study of demographics of the patient data is also recommended. Knowing patient income levels and sources of income could be contributors to higher patient-responsible balances, as well as higher patient-responsible balance write-offs. This current study found that patient-responsible balances and patient-responsible balance write-offs have both decreased as a percentage of gross charges between years 2009 and 2019. Further investigation may help determine other factors that could contribute to this decrease.

Implications for Professional Practice and Social Change

This study's findings are contrary to what had been found in literature review. However, the design of this study can be used in professional practice to design an analysis of current operations at another facility. If the same results are found, the researcher will then know that to find financial viability issues, a deeper study will need to be conducted of the actual billing and collection process to ensure the entire system is working properly. The researcher could also use the results to decide next steps on reviewing payor contracts and collection policies within the facility to ensure they are maximizing reimbursements from all sources.

This study has potential for real positive change. CAHs face many issues that can lead to financial viability issues. If these CAHs were to fail and need to close, patients and communities could have many negative impacts from health care outcomes to loss of sources of income from working at the hospital. Because this study found that the ACA seemed to be functioning as intended at this Alabama CAH, now the CAH can focus more on other areas that could cause the financial system to fail, including the revenue cycle as well as the expense cycle. However, this study was limited in nature and may restrict the impact. The study problem and research done was narrow and should be expanded to gain the full potential of its intentions. For instance, adding an analysis by payor would help the researcher to visualize if a particular payor was showing negative reimbursement trends for the facility.

Conclusion

This study aimed to promote to positive social change by giving this Alabama CAH an understanding of whether they had been affected in bad debt expense post-implementation of the ACA. Since bad debt has an impact on financial viability, understanding the drivers of bad debt can give the facility the right starting point to review their revenue cycle and seek opportunities for improvement. The data for this study was gleamed from a CAH found in Alabama. The data used was for the entire year of 2009, preceding the implementation of the ACA, and also the entire year of 2019, which was post-implementation of the ACA. The RQs sought to find if the ACA had impacted the patient-responsible balances, and then the write-off of these patient-responsible balances.

Strictly using a *t* test, it was determined that the ACA did not negatively impact this Alabama CAH as the literature review may have inferred. In fact, an inference could be made that the ACA positively impacted this CAH in Alabama. The answers to this study's RQs have shown the ACA system appears to be operating as expected. Because of the narrow scope of this study, suggestions have been made to analyze the data of each insurance payor to see if there are any payment trends that could affect the CAH negatively.

The results of this additional research could then be used to review payor contracts and collection policies, as well as all aspects of the revenue cycle to find potential threats to the overall system. This study and future studies pertaining to this topic could impact the CAH's financial viability, as well as the community for which it

serves. Keeping a CAH financially viable fosters better patient health outcomes as well as sustains the income streams for those who work at the CAH, creating social change by improving lives through sustained health care accessibility and retained economic impacts.

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