THE NEGATIVE IMPACT OF AMBULATORY ACQUISITIONS ON THE COST OF
BUSINESS HEALTH INSURANCE

by

Elizabeth Thomas Koss

Doctoral Study Submitted in Partial Fulfillment of the Requirements for the Degree of
Doctor of Business Administration

Liberty University, School of Business

May 2020
Abstract

This dissertation research study was designed to contribute to the growing body of academic knowledge regarding the increase in acquisition activity (Capps, Dranove, & Ody, 2018) and the annual increase in the cost of health insurance premiums for small to middle size businesses (Camilleri, 2018; Cowley, 2004; D’Arrigo, 2019; Guo & Tao, 2015). This research specifically addressed the HCPCS billing rates of procedures before and after acquisition. Further, it examined the annual increase in percentage of ambulatory physicians compared to the increase percentage in health insurance premiums. Finally, the increase in health insurance premiums was evaluated based on age, type of firm, and size of the firm. The results of this study indicated that there was a statistically significant difference in the billing rates of procedures before and after ambulatory acquisition. It further revealed that there was no statistically significant correlation between the percentage increase in hospital physicians and the percentage increase in health insurance rates. In addition, the percentage increase in health insurance rates did not have a statistically significant difference to the percentage increase based on age or type of firm. Finally, the percentage increase in health insurance rates did not have a statistically significant relationship to the decrease in health insurance coverage for firm that employ from 3 – 199 employees, however; there was a statistically signification relationship found in firms that employee between 200-999 employees.

Keywords: ambulatory physician, ambulatory acquisition, hospital physician, health insurance rate, HCPCS billing rates
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Dr. Gene Sullivan, Dissertation Chair

Dr. Edward Moore, Dissertation Committee Member

Dr. Edward Moore, DBA Director
Dedication

To my husband David, and daughter Julie, I love you. You have been my rock and continued source of inspiration and joy. Thank you for all of the sacrifices you made. You lived this process with me as my constant source of encouragement, support, and motivation. You believed in me and for me even when I lacked belief myself. You loved me unconditionally, even on those days when I was frustrated, tired, and not very lovable. I thank God for you and the joy that you bring to my life. You are truly my heart and I am blessed beyond measure having you as my husband and daughter.

To my mom and dad, thank you for teaching me the importance of a work ethic and for raising me in a loving and Christian home. Your love and support never wavered and it was your belief in me that created a solid foundation. No matter what obstacles I faced, you were always there to love, encourage, and support me. Thank you and I love you.

To those special individuals who helped me through this process, thank you. I appreciate all that you have done to help, encourage, and guide me through this journey. Thank you for your kindness and friendship.
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Section 1: Foundation of the Study

Ambulatory physician practices across the country are being acquired by hospital entities creating higher cost of care, no significant improvement in quality of care, and less choice for patients (Capps, Dranove, & Ody, 2018; Guerin-Calvert, 2014; Yang, 2014). The impetus for the acquisition activity is the increased governmental regulation adding to the financial burden for ambulatory practices, these regulations continued to increase creating substantial cost accounting increases for these practices (Camilleri, 2018; Cowley, 2004; D’Arrigo, 2019; Guo & Tao, 2015). During this period small and medium sized businesses saw health insurance premiums increase per annum adding to their fixed cost and decreasing profitability (Chernew, Cutler, & Keenan, 2005; Dauda, 2017). Scholars and those in the healthcare accounting industry hypothesize that the increased regulation led to the acquisition activity, and in turn, created increased costs for insurance carriers leading to increased annual premiums for businesses (Dauda, 2017; Depew & Bailey, 2015; Himmelstein & Woodhandler, 2016). This study examined the relationship between the regulatory cost increases, increased ambulatory acquisition activity, and the eventual negative increase in fixed cost for small to medium sized business entities.

Background of the Problem

Over the last 30 years there have been three distinct waves of acquisition activity within the healthcare industry (McCue, 2015). The cause of the first two waves was the direct result of hospital acquisitions of private (ambulatory) physician practices in an attempt to fill hospital beds decreasing fixed costs per unit (McCue, 2015). Physicians, many of whom are entrepreneurial minded, would fulfill their required contract time at the hospital and then migrate back to private practice to avoid the hospital protocols, mandated shift hours, and restrictions
placed on them as employees (McCue, Thompson, & Kim, 2015). The third wave of hospital acquisitions has been the direct result of governmental changes to the health care market; the adoption of the Patient Protection and Affordable Care Act (ACA) of 2010, also known as Obamacare, introduced a new set of cost drivers for ambulatory practices (Woodlock, 2014).

The uncertainty within the healthcare market, driven by the impact of Obamacare, has created a myriad of activity all driven by the need to manage cost due to the additional governmental requirements that were enacted (Woodlock, 2014). The ACA impact was far reaching, the law has tenets that apply to individuals, employers, state governmental agencies, health insurance providers, businesses, and healthcare entities. The push for passage of the ACA was the federal mandate for health insurance coverage for all citizens; the American public rallied behind this ideal without a clear understanding of the economic impact the adoption would create on small and medium size business entities (Dennis, 2016). In the face of the rising health insurance costs, studies show that over 41 percent of small businesses have chosen not to hire new employees and over 38 percent have chosen to reduce business growth plans in an effort to maintain health insurance coverage benefits (Lahm, 2014).

In a survey conducted by the National Foundation of Independent Business, the rising cost of health insurance has continued to rank as the number one problem for small businesses for thirty years and the impact of Obamacare has exacerbated the problem (Dennis, 2016). Described as a bill that would focus on the reduction of healthcare costs, research shows that it has create the opposite impact continuing to drive costs for businesses, health insurance carriers, and patients (Lahm, 2014).

Capps et al. (2018) provided evidence of increased acquisitions by hospitals. The study was conducted during the years of 2007 and 2013 and used multi-state claims data from multiple
insurance carriers. During this time, the percentage of hospital owned ambulatory practices grew to greater than 50 percent. Traditionally, hospitals acquisitions were a mechanism that supported the referral base leading to increased patient counts using their organization. Carlin, Feldman, and Dowd (2016) reviewed the referral patterns associated with the acquisition of ambulatory practices. The study looks at inpatient and outpatient diagnostic imaging patterns providing a longitudinal dataset to determine the changes, if any. In an article written by Cuellar and Gertler (2003), the rise of hospital acquisitions serve a role in the assignment of reimbursement rates from Medicare and subsequently from other insurance carriers. The study revealed that in 1995 less than half of hospitals had an affiliation with other healthcare entities, by 2000 less than 15 percent of hospitals were solo (Cuellar & Gartler, 2003).

The increase in acquisition activity gives rise to the concern of anti-trust issues. Greaney and Ross (2016) discussed the legal issues that surround these acquisitions, mergers, and consolidations. The diminished competition creates less patient choice, it reduces competition thereby increasing overall costs to both the insurance carriers and the patient (Greaney & Ross, 2016). The acquisition activity of hospitals has been of interest to the antitrust agencies for many years. Many times the targeted organizations were located in underserved markets as described by McCue (2015). Further the case mix was a significant reason for the target while the occupancy rate, historically the driver for acquisition, was not a consideration (McCue, 2015).

The impact of acquisition activity results in increased premiums due to the change in billing rates that is allowed for hospital entities, this increase in the cost of healthcare is passed on to small to medium sized businesses that are not allowed to participate in larger insurance group pools resulting in large premium increases annually (Baker, Baker, & Dworkin, 2018).
and on employee retention and recruitment leading to a business problem that is imposed by an outside entity (Capps et al., 2018).

**Problem Statement**

The general problem addressed was the increased cost of health insurance premiums as a result of acquisitions within the ambulatory healthcare industry resulting in negative premium increases impacting small to medium size business entities.

Capps et al. (2018) discussed the increased activity of healthcare acquisitions and its impact on fees charged for services provided, the increase in billing rates for acquired practices range from three to five times the rate before acquisition activity. This increase dramatically effects the reimbursement rates for insurance carriers; there are no additional services provided and the patient treatment is rendered at the ambulatory physician office, not the hospital (Camilleri, 2018). Due to the increased overhead associated with providing services in a hospital environment the rates allowable for billing of services is greater, likewise hospital systems are required to bill using Healthcare Common Procedure Coding System (HCPCS) codes (Baker et al., 2018; Cleverley & Cleverley, 2018).

Current billing rules allow for the ambulatory practice, now owed by the hospital, to bill at the higher rates even when the procedure is performed in the ambulatory practice setting (Howard, David, & Hockenberry, 2017). The hospital system has exploited this billing loophole by continuing to purchase ambulatory practices, billing at the hospital outpatient department (HOPD) rates, yet the same physician office with the lower cost structure is maintained (McCue, 2015). In cases of not-for-profit hospitals, costs drop when the practice is acquired as property and income taxes are no longer assessed; this drop in property tax impacts the community stakeholders creating a reduction in city, state, and federal taxes, yet the rates billed do not
follow the drop in costs rather they are increased to the determent of insurance rates and ultimately premiums paid by businesses and consumers (Reschovsky, 2015). The specific problem addressed was the continual rise of health insurance premiums as a result of acquisitions within the ambulatory healthcare industry within Virginia resulting in negative premium increases impacting small to medium size business entities.

**Purpose Statement**

The purpose of this correlational quantitative study was to analyze acquisitions within the healthcare industry to determine their impact on the cost of insurance premiums for small to mid-size businesses entities. The last 30 years provided a landscape of acquisition activity within the healthcare industry, there have been three significant waves of activity, much of the first two waves were a direct result of hospital acquisitions of private (ambulatory) physician practices in an attempt to fill beds to drive down fixed costs (Carlin et al., 2016). Physicians that are entrepreneurial minded would fulfill their required contract time at the hospital and then migrate back into private practice as the protocols, long hours, and restrictions placed on them as employees restrict their ability to practice medicine based on their education, acquired skills, and gut instincts forged from years of patient care experience (Capps et al., 2018).

The most recent wave of acquisitions extend beyond the ambulatory market taking aim at a multitude of healthcare organizations from pharmaceuticals to skilled care homes (Howard et al., 2017). This impact is compounded as a result of the multiple governmental and legal requirements that have been mandated as a result of the Affordable Care Act (ACA), Health Insurance Portability and Accountability Act (HIPAA), and the American Recovery and Reinvestment Act (ARRA) to name a few (Camilleri, 2018). The healthcare industry has rarely
undergone such a transformative period from a revenue and a cost perspective (Baker et al., 2018).

**Nature of the Study**

The theoretical framework provides the structure for the research design and serves as a project plan and will be supported through the research of hospital acquisition activity and the resulting negative increases in health care costs. Creswell (2014) described the quantitative research method as one that is used when studying the relationship among variables. This quantitative study studied the variables of cost increases in health insurance premiums as related to the billing rates variables that occur when an ambulatory health provider is acquired by a hospital. The study discussed how these changes impact small to medium size business premiums for its employees (Cleverley & Cleverley, 2018).

Linked to the results of the Healthcare Reform Act, many ambulatory physicians sought ways to improve their reduction of income by entering into agreements designed to increase their bottom line and their income prospects. The legislation brought changes to the ambulatory market through its increased reporting requirements requiring additional software and employee skills that are not traditionally found in the ambulatory practice (Howard et al., 2017). Additionally, the mandated healthcare insurance requirement brought an increased cost of care of these practices, complicating the billing through the introduction of healthcare exchanges as a result of the ACA (Reschovsky, 2015). In addition, the HITECH Act brought additional financial pressure for those who did not adopt technology as there was an increasing penalty placed on Medicare payments for all practices that did not meet the compliance requirements (Capps et al., 2018).
Discussion of Method

Quantitative, qualitative, and mixed methodology provide the researcher with three distinct methods of study. The method chosen will be determined through an understanding of the research paradigm (Creswell & Poth, 2018). As described by Aiello, Enea, and Muriana (2015), understanding of research comes from an active pursuit of knowledge that is used to gather information to gain knowledge or expand knowledge of a theory or subject. The choice of method used in a research study requires careful consideration as it should support assertions that are made while providing an unbiased approach to the data and the subject studied providing a basis for the study approach (Stake, 2010).

Quantitative. Quantitative research is driven by data and is methodical in its approach to the study of cause-and-effect to test theory or to create theory from the study subject; a scientific and systematic approach that does not interpret or include personal objectivity is the foundation for the fixed research design (Yin, 2018). Using data that have been gathered from multiple sources the quantitative research method seeks to find explanation for the research question(s) through its use of an objective approach (Creswell, 2014). The use of statistical testing is used for quantitative studies to provide analysis of the data sets used, the testing of the variables and use of hypotheses allows the research to remove subjectivity focusing on the creation or expansion of theory (Robson & McCartan, 2016). The quantitative method was appropriate for this research. The study was data driven and tested the relationship of variables posed in the problem statement. The use of statistical testing provides the ability to gain an explanation of the variables within the study through the use of objectivity as opposed to subjectivity as is used with a qualitative study.
**Qualitative.** The use of the qualitative study method provides a more flexible design allowing for subjectivity, the inclusion of social interaction is an important component of this method as it allows for personal knowledge inclusion (Stake, 2010). Using multiple dimensions, a research problem methodology is determined based on the characteristics of the problem, the use of multiple methods may be included to provide a more thorough understanding of the problem (Creswell & Poth, 2018). Research conducted under the qualitative method begins with a problem that needs to be explored to provide a deeper understanding or additional insight of the subject, data are collected and evaluated using a consistent set of criteria to establish reliability within the analysis (Fuller, Simmering, Atinc, Atinc, & Babin, 2016). This method was not appropriate for this study due to the use of subjectivity and inclusion of social interaction. The subject of the research study lends itself to a data driven approach making qualitative study inappropriate.

**Mixed method.** The use of a mixed methodology approach to research seeks to provide the benefit of quantitative and qualitative research methods, the flexibility to utilize the strength of each method allows for greater flexibility within the research design (Stockman, 2015). In addition, the mixed method creates an independent validation of similar results providing the ability to explain minor differences (Reio & Werner, 2017). When using a mixed methodology the research is afforded design freedom creating a study that examines the research from a holistic view. The ability to view the subject from an objective and subjective view allows for the scientific data driven cause-and-effect and allowing for the inclusion of the personal knowledge, experience, and events that are a component of industries that experience change on a continual basis (Tunarosa & Glynn, 2016). This method was not appropriate for this research study due to the subjective component. This study was data driven and sought to explain or
confirm a theory. Mixed methodology would be a more appropriate choice for a study that is focused on the personal experience or patient experience of ambulatory acquisitions. This study was not seeking to study this component of the subject matter.

**Discussion of Design**

The research design that was chosen was correlational, as it studies the relationship between variables of increased hospital acquisition and the increase of health insurance premiums. The variables of ambulatory practice acquisition and the associated change in CPT billing rates to HOPD rates serve as the cause for the second variable, health insurance premium increases.

**Correlational.** The use of a correlational design provides information about variable relationship through the use of sample data and correlational statistical testing (Bloomfield & Fisher, 2019). The inclusion of statistical control includes control variables to test hypotheses or to determine if there is a different explanation for the findings is useful when the control variable inclusion is appropriate and offers validity (Becker et al., 2016). The strength of this method provides the research study the type or degree of relationship between the variables and is therefore the appropriate method for the problem that was studied in this research.

**Causal-comparative.** Creswell (2014) described the causal-comparative as a research design method that compares the results of two or more variables against an independent variable or cause, the cause is historical. The goal of causal-comparative research design is to exam pre-existing variables to explore the similarities or differences between the variables or to examine the outcomes (Schenker & Rumrill, 2004). The use of nominal independent variables and dependent variables within mutually exclusive groups defined as billing codes for purposes of this study make the causal-comparative design effective for this research (Schenker & Rumrill,
The variables within this study could not be used to determine cause and effect only relationship and therefore the causal-comparative could not be used for this study.

**Descriptive design.** The descriptive design is used when the research subject is a phenomenon that occurs in an everyday setting such as a description of children that are taught in an algebra class within a specified time frame (Bloomfield & Fisher, 2019). This design method is characterized by large groups, individuals, or situations; the size of the study is large and does not involve variable manipulation (Creswell, 2014). This method was not chosen for this study as the interaction of variables comprises was the basis for the research study questions and a phenomenon was not the subject of the research excluding the use of the descriptive design.

**Experimental.** The use of an experimental research method is appropriate when the research is focused on the relationship between dependent and independent variables. The use of this method is effective when conducted in a controlled environment (Bloomfield & Fisher, 2019). Through the manipulation of the independent variable the experiment seeks to determine the impact of the variable on the research group maintaining the control group as the stabilizing factor (Bloomfield & Fisher, 2019). The challenge with experimental research methodology is the inclusion of observations of the subject matter. The ambiguity that is a part of observation makes this method challenging and inappropriate for this research study (Smith, 2010).

**Summary of the nature of the study.** The nature of the study was a quantitative method and correlational design that sought to determine the relationship between the increased acquisition activity within the ambulatory practice and increases in health insurance premiums. The analysis of statistical data supports the quantitative study design seeking to test the theory through the use of variables (Creswell, 2014). The correlational methodology was appropriate as the study examined the relationship between the independent and dependent variables to test the
theory of negative impact of ambulatory acquisitions on the cost of health insurance rates for small and medium size business entities.

**Research Questions**

Traditionally, ambulatory healthcare organizations have billed insurance carriers and patients for services based on Current Procedural Terminology (CPT) codes billed using HCPCS codes (Cleverley & Cleverly, 2018). These billing codes are three the four times less than the same procedures when billed under HOPD or OOPS rates used by a hospital, this additional billing rate is justified by Medicare due to the increased cost of overhead by the hospital (Capps et al., 2018). Acquisitions of ambulatory practices by hospital entities has created a situation that allows for the hospital to use HOPD rates for billing in spite of the fact that the procedures and providers are still located outside of the hospital setting, the only change in process is the organizational acquisition (Reschovsky, 2015). This increased billing rates increase costs to insurance carriers who pass these costs to small and medium sized business organizations resulting in premium increases that negatively impact businesses and employees. The quantitative research study focused on the relationship between the acquisition activity within the ambulatory healthcare market and its negative impact on health insurance premiums.

**RQ1.** What is the difference between billing rates for procedures before acquisitions of ambulatory practices and after acquisition in the state of Virginia?

**RQ2.** What is the relationship between acquisitions of ambulatory physicians and increased health insurance rates in Virginia?

**RQ3.** Is there a difference between the health insurance rate increases for business sponsored insurance plans and the age of the insurance pools for individual plans, type of business entity, or the size of the business entity?
The research questions were designed to guide the study by creating a statistical model to determine if the acquisition activity impacted the health insurance rates of small and medium business entities. As a result of the acquisition activity of the ambulatory practice, the billing codes that were used changed the rates for HCPCS adding an OPPS fee resulting in an increase in cost of three to four times their previous rate (Cleverley & Cleverley, 2018). The change of code did not occur due to a change in the procedure process, location of service, or change of provider. It is the result of entity ownership moving from an ambulatory practice ownership to hospital ownership. Simultaneously, the insurance carriers have increased cost to small and medium sized business entities to cover the cash outflow from lack of premiums (Baker et al., 2018).

**Hypotheses**

*H1a:* There is a statistically significant difference between the billing rates before acquisition of ambulatory physician practices in Virginia and the billing rates after acquisition.

*H1o:* There is no statistically significant difference between the billing rates before acquisition of ambulatory physician practices in Virginia and the billing rates after acquisition.

This hypothesis answered research question one by examining the difference between bill rates before and after acquisition activity of ambulatory practices. By examining the billing rates for the procedure using CPT coding in comparison to the rate that is billed based on solely on the change to HCPCS and HOPD billing codes a difference in cost comparison can be evaluated to determine if there is a significant statistical difference because of the acquisition activity. The procedures will continue to be performed in the same location, by the same providers, and using the same medical protocols. The only change is ownership of the entity.
$H2_a$: There is a statistically significant relationship between the percentage increase in physicians employed by the hospital and the percentage increase in health insurance rates for both single and family coverage.

$H2_o$: There is no statistically significant relationship between the percentage increase in physicians employed by the hospital and the percentage increase in health insurance rates for both single and family coverage.

The cost of insurance was examined to determine if there was an increase in premium rates billed by insurance carriers to small and medium business entities because of the acquisition activity. The increased cost to businesses has a negative impact on the financial performance of the business creating a reduction in employee benefits, a decrease in the ability to recruit and retain human capital, and the degrading of financial performance for these entities.

$H3_a$: There is a statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase based on the age of the insured.

$H3_o$: There is no statistically significant difference between the percentage increase in single insurance rates and the increase in insurance rates based on the type of firm.

$H3_b$: There is a statistically significant difference between the percentage increase in single insurance rates and the increase in insurance rates based on the type of firm.

$H3_o_b$: There is no statistically significant difference between the percentage increase in single insurance rates and the increase in insurance rates based on the type of firm.

$H3_c$: There is no statistically significant relationship between the increase in single insurance business rates and the decrease in the number of workers with insurance based on the size of the business.
H3oc: There is no statistically significant relationship between the increase in single insurance business rates and the decrease in the number of workers with insurance based on the size of the business.

Theoretical Framework

The theoretical framework for a research study provides a blueprint or roadmap that creates a project plan and allows the researcher to study a subject based on theory that is already in existence creating a foundation for the research study (Adom, Hussein, & Agyem, 2018). Grant and Osanloo (2014) purported that the theoretical framework is used to drive the study, the selection of the framework seeks to align components of research to provide a deeper understanding or adaptation of the theory. There are several key components of the study that need research to provide analysis necessary to draw interpretations of the data that are collected. Once the research has been conducted, the study should provide findings that answer the research question and seek to advance information surrounding the theory and inform the hypotheses (Creswell, 2014).

Market maturation. As business markets mature organizations employ different business strategy to sustain competitive advantage and remain viable within the industry (Thompson, Peteraf, Gamble, & Strickland, 2018). Business process management (BPM) is a concept that provides management with actionable methods designed to improve the effectiveness of the organization (Niehaves, Poppelbuss, Plattfaut, & Becker, 2014). As markets mature, competition increases creating an environment that requires business process management to sustain operational success (Bernardo, Galina, & de Pauda, 2017).

The strategic direction of an organization determines the prioritization of process improvements aligning strategic allocation of capital resources to provide maximization of
efficiency within a market that is constrained by competition and price sensitive consumers (David & David, 2017). There are two main process driven approaches to competitive positions; the size of the market in which the organization operates and the decision to differentiate or to compete based on price point, each organization must determine which direction their organization will choose (Gamble, Peteraf, & Thompson, 2019). Once the organization determines their process drivers there are five competitive strategies that can be adopted, these strategies range from broad to narrow and are designed to maximize the process drivers of market size, price point or differentiation (Thompson et al., 2018).

As markets mature an appropriate business strategy that allows for increased market share, often this is accomplished through mergers and acquisitions decreasing the number of consumer choices and stabilizing a reduction of prices that may be part of a low-cost strategy (Hunitie, 2018). A low-cost provider strategy seeks to provide a product or service to a broad market base at the lowest price, the organization could also choose to create differentiation in its products or service using this as its strategic choice (David & David, 2017). When the market segment is smaller the organization could still choose to compete on price, but the focus on its strategy will be narrow, likewise it may choose to create a strategy of differentiation for the narrow market and base its strategic decisions around providing a product or service that offers additional features or better quality for the smaller market size (Thompson et al., 2018). Finally, an organization could adopt a modified approach by offering products and services that provide the best price based on quality or value with a focus on products that are designed to meet the needs of the consumer by offering differing options or alternative choices (Gamble et al., 2019).

**Porter’s five forces.** The industry and competitive environment is located just outside of the company and has a direct impact on strategic business development best described by
Porter’s Five Forces model (Oneren, Arar, & Yurdakul, 2017). The bargaining power of buyers is strong when there is product similarity among organizations, product differentiation is small, product demand or customer base is limited, and buyers have the ability to acquire the organization through backwards integration (Gamble et al., 2019). Likewise, the bargaining power of suppliers imposes pressure on the organization in direct opposition to the buyer as is seen when a product is a commodity, surplus product vendors, shortage of parts needed for the product, and the ability for the supplier to acquire the organization through horizontal integration (David & David, 2017). Although these forces are in direct contrast to one another, they exert force against the industry and the organization and must be considered when creating business development strategies (Oneren et al., 2017).

Porter’s model also indicates that the organization must navigate the threat of new entrants and substitute products as these factors require continual monitoring and inclusion in business strategy decisions. If the product or service being provided by the organization is readily available on the market, there is little barrier for organizations to enter this market, and the substitute products are considered to be of equal value the organization must create a differentiator as part of its strategic planning (Thompson et al., 2018). When the cost of entering a new market is high is serves as a deterrent to new entrants and reduces the number of competitors entering the market, additionally when customer loyalty is high based on brand loyalty this also reduces the number of new entrants into the market (David & David, 2017).

**ABC costing.** Before a company determines its selling price, budget expenses, plan for expansion, create strategic objectives, or begin strategic formulation it must first understand its cost structure. In a merchandising and manufacturing companies the cost of the product being sold is an expense item that, when subtracted from sales, results in gross profit. All other
expenses of the company are then subtracted from the resulting gross profit resulting in net income or loss.

In merchandising organizations the cost of the product is the dollar amount that is paid to purchase the product. In manufacturing companies the product is created requiring costs associated with creating the product to be maintained until the product is finished and the cost is then assigned. There are two methods to account for these costs: job costing and process costing. For purposes of this discussion, process costing was the methodology of focus.

Some costs of manufacturing can be directly traced back to the product and are referred to as direct costs. Overhead costs are costs that must be incurred to create a product, but are not directly traceable back to the product (e.g., depreciation on a machine that is used to make multiple products). The allocation of overhead costs to a product being created is typically applied using one of three methods; plant-wide, departmental, or activity-based costing.

Unlike plant-wide and departmental costing of overhead, activity-based costing, known as ABC, is the most accurate method of overhead cost allocation. This method, while the most accurate, is costly to implement and maintain. Garrison, Noreen, and Brewer (2018) discussed three characteristics that must be present for ABC to be effective; top-level and management support, key performance indicators and reward systems should include ABC measures, and finally input from multiple areas of the organization should be included in the design and implementation of the system.

The use of activity based costing must be maintained in addition to the GAAP required plant-wide method creating additional costs such as software, implementation, training, and adherence standards on the organization. It is critical to weigh the cost-benefit of the use of ABC as it is expensive to implement and more importantly to maintain and use so the benefit must
outweigh its cost. While it may appear that the cost outweigh the benefit, it does not. Understanding the cost of each product is fundamental to good strategic allocation and management. “Many firms found ABC reduced the distortions that resulted from using a volume-based system” (Blocher, Stout, Juras, & Smith, 2019, p. 142) leading to increased profit and efficiency.

A benefit of using ABC is the ability to determine idle capacity, which creates an economic opportunity through the improvement of efficiencies. “Implementation of both ISO 9000 and ABC may result in better organizational performance...likely because both are oriented towards continuous performance improvement” (Vetchagool, Augustyn, & Tayles, 2018, p. 2). Another benefit can be found when using activity based management, improving the services and products offered by the company provides value building customer loyalty and quality of brand.

**Reduced competition.** Revenue generated from services provided should exceed the cost of those services in order for an organization to be profitable. As required by Generally Accepted Accounting Principles, the revenue that is generated should be accompanied by the cost that is incurred to generate or provide the service (Wild & Shaw, 2019). The importance of understanding the net result, or gross profit margin, is critical to operational performance and the attainment of organizational goals (Blocher et al., 2019). The overall value of healthcare and procedures must be analyzed from the perspective of the resources that were used and the cost of those resources (Mayer, Kiss, Laszewska, & Simon, 2017).

The impact of cost is an important consideration for every organization. It is a component of organizational profitability and indicates the ability of an organization to manage its resources in an efficient and effective manner. The calculation of break-even allows an organization to understand the point where revenue and expenses are equal. The ability to calculate this point
provides an organization with the ability to make meaningful financial decisions (Wild & Shaw, 2019). When fixed costs rise in a manner that is unpredictable or irregular, it creates large variances in budgets and projections leading to lower profit and earnings per share (Blocher et al., 2019).

The Healthcare Reform Act was created to provide cost containment for medical practices providing a link to the accounting theories listed, in addition, the ability to control cost would benefit society as a method of controlling the rising healthcare cost for businesses and patients (Baker et al., 2018). The acquisition activity has been linked to the fear and uncertainty that was initiated by the Healthcare Reform Act, changes to the ambulatory market increased the reporting requirements leading to increased cost of operation (Baker et al., 2018). Additionally, the mandated healthcare insurance requirement brought an increased cost of care of these practices, complicating the billing through the introduction of healthcare exchanges (Capps et al., 2018). These increased financial pressures have many ambulatory practices struggling to comply with compliance while maintaining quality care for their patients (Carlin et al., 2016). The HITECH Act brought additional financial pressure for those who did not adopt technology through its penalty imposed by Medicare for those who did not comply (Cleverley & Cleverley, 2018).

Cost containment is critical for operational success, understanding the factors that drive cost provide an organization with the ability to effectively budget and plan for operational performance (Garrison et al., 2018). Business risk is the risk that cannot be predicted or controlled due to fluctuations within the market of operation, the variability in revenue and expenses impacts an organizations operating income. The operating leverage within an organization is controlled by the level of variable to fixed costs and fluctuations within these cost
classifications create unpredictable leverage rates impacting decision making ability and cost containment (Blocher et al., 2019). For these reasons, the theory of break-even and fixed cost containment were examined by the researcher due to their impact on organizational profitability and predictability of earnings.

**Fixed cost and CVP analysis.** Understanding the cost incurred to make a product or provide a service allows an organization to set a selling price that covers expenses and provides net profit. Cost-Volume-Profit (CVP) analysis is used to predict the impact operational costs have on short-term profit by analyzing cost behavior (Wild & Shaw, 2019). Costs may be divided into five categories of cost behavior; fixed, variable, mixed, step-wise, and curvilinear, for purposes of this research study a focus on fixed and variable costs will be utilized (Garrison et al., 2018). Within a relevant range of activity, total fixed costs do not change with volume fluctuation yet total variable costs change with volume fluctuation (Wild & Shaw, 2019). Fixed costs are also known as committed or uncontrollable and increases in these costs are not the result of growth in sales or service and cannot be managed through production changes (Stoenoiu, 2018).

Cost classification is used to calculate contribution margin, revenue minus variable cost, fixed costs are subtracted from the contribution margin to calculate operating income (Wild & Shaw, 2019). Managerial accountants utilize the contribution margin income statement to provide information and create “what-if” analysis, used to analyze the changes in operating income created by a change(s) made to selling price, variable cost, or fixed cost (Garrison et al., 2018). The data provided by the CVP analysis are used by management to make operational and organizational improvements designed to maximize efficiencies increasing revenue or reducing cost.
Although CVP analysis is used to determine short-term profits, it is relevant to long-range planning decisions and capital budgeting (Blocher et al., 2019). Break-even point (BEP) is achieved when total revenue equals total cost; the organization incurs no profit or loss (Garrison et al., 2018). BEP is useful in organizational planning and provides management with data that can be helpful in strategic decision making (Chapman, Ferris, & Zachary, 2017). Capital expenditures, classified as fixed costs, increase the break-even point impacting long-term financial position (Thompson et al., 2018). The difference between the anticipated sales and break-even point quantifies the impact on net income when market changes occur, when the margin of safety is small capital resource expenditures are less likely.

Break-even and CVP analysis are relevant to the current study because it encourages organizations to understand the fixed and variable costs so that they can management operational performance in a more effective manner. Focusing on the costs of an organization, especially those that are committed and non-controllable, is essential to the planning, control, and decision making process that increases the profitability of an organization. A review of literature in this area shows that small to medium sized organizations are less likely to classify cost behavior making it more difficult when determining strategic actions that will provide the ability to control costs in the most effective and efficient manner.

Discussion of relationships between theories and variables. The independent variable in the study is acquisition activity within the ambulatory market, research of ambulatory practices before hospital acquisition and a comparison of the dependent variables within the same practices after acquisition will be evaluated to determine the impact of the change on rates billed to insurance carriers (Cleverley & Cleverley, 2018). Procedure codes are the instrument used to bill for services performed by physicians, ambulatory practices use Current Procedural
Terminology (CPT) codes to bill insurance carriers and patients for services that are provided (Baker et al., 2018). Healthcare Common Procedure Coding System (HCPCS) are the billing codes used by a hospital entity to bill for services provided for patient care, Medicare allows these billing codes to be as much as four times greater than the rate billed under a CPT code (Camilleri, 2018). The impetus for this increase is the additional overhead cost of a hospital entity, these additional costs are not present outside of the hospital location, yet services rendered in an ambulatory practice setting are billed using HCPCS with HOPD codes once the practice is acquired (Reschovsky, 2015).

The dependent variables, CPT billing rate, HCPCS and HOPD billing rates are dependent on the entity ownership allowing for a study of procedure billing rates before and after acquisition of ambulatory practices (Reschovsky, 2015). The study of these dependent variables allowed the researcher to test hypothesis one to determine how the change in ownership impacts the rates billed for medical services. The ambulatory practice continues to operate using the same tangible assets and human capital, the only change made is ownership and because of this change the charge for the procedures are billed under a different code system increasing the charges without any increased cost (Capps et al., 2018).

The negative impact on health insurance rates were studied by reviewing the cost of health insurance prior to the acquisition of ambulatory practices and increased billing rates (Cleverley & Cleverley, 2018). These dependent variables show cause-and-effect to determine if the acquisition activity has created an increase in health insurance costs for small and medium sized businesses as a result of the change from CPT procedure codes to HCPCS/HOPD procedure codes (Dauda, 2017). With health insurance costs rising steadily prior to the ratification of Obamacare exceeding GDP growth, inflation, and wage increases, the additional
cost that accompanies ambulatory acquisitions has created an even larger cost increase for small to medium size entities (Guo & Tao, 2015).

Figure 1. Relationships between theories and variables.

**Discussion of diagram.** The relationship between the concepts, theories, and variables provide the reader with relatability of the topic of study, as the healthcare market has matured there has been an increase in the acquisition activity within the market (Guerin-Calvert, 2014). The industry has consolidated healthcare delivery using both horizontal and vertical transactions to combat the amount of competitive forces. The increase in legislative and regulatory activity has also served as a catalyst for activity as organizations seek to lower the cost of business through consolidation (Mobley, 1997).
As consolidations and acquisitions occur, there is a change in the billing rates that are charged for healthcare procedures moving from CPT billing to HCPCS billing, as approved by Medicare (Dauda, 2017). The increase in billing rates has an adverse impact on health insurance cost as higher billed rates are passed to the consumer through higher healthcare premiums, driving up the cost for the consumer (Depew & Bailey, 2015). The diagram served as a visual representation of how the variables relate to the specific theories or concepts that were discussed as part of the research study.

**Summary of the theoretical framework.** The theoretical framework provides structure and form to the research study aligning the theory, research questions, and hypotheses to create an organization tool for the researcher (Creswell, 2014). The framework allowed the researcher to evaluate the theory to determine if the increase in ambulatory acquisitions has created additional increases in the cost of health insurance creating an increased fixed cost and reducing operational profitability for small and medium size entities (Capps et al., 2018). The independent and dependent variables will be tested through the use of statistical tools to validate the theory presented, the correlational qualitative study allows the researcher to use data to scientifically test the variables to determine if there is a statistical correlation (Creswell & Poth, 2018).

The concepts of market maturation, ABC costing, reduced competition, and the cost behavior of insurance relate to the accounting impact of operational performance and the proper planning and control function of managerial accounting principles. The rise in healthcare costs are a direct contradiction of the ACA as its enactment touted the control and reduction of healthcare costs. The acquisition of ambulatory practices have increased the revenue of hospital entities without a corresponding increase in cost of care for these organizations. The increased cost results in greater healthcare cost for insurance carriers and, as a direct result, greater
insurance premiums for small and medium size businesses creating great fixed costs and increasing break-even.

**Definition of Terms**

Several terms were used by the researcher throughout the study that have common meaning in the healthcare industry. For purposes of this study, all definitions were confined to the meaning given as they may not apply in the same way outside of the confines of the study.

*Ambulatory physician practice:* For purposes of this study, the term ambulatory physician practice refers to medical services that are performed in an outpatient physician or clinic setting to include solo physician practices, partnerships, and medical groups that are owned by physicians (Baker et al., 2018; Cleverley & Cleverley, 2018).

*Obamacare:* Patient Protection and Affordable Care Act (ACA) signed into law by President Barack Obama in 2010, the Act has far greater impact on healthcare than the attempt at providing universal coverage for all Americans (Kantarjian, 2016).

*CPT:* The Current Procedural Terminology code set is a uniform system used by physicians to identify medical, surgical, and diagnostic procedures and services when billing health insurance companies or reporting information to accreditation organizations (Baker et al., 2018; Cleverley & Cleverley, 2018). There are three types of codes and they are classified as category 1, category 2, and category 3 with category 1 used to identify a medical procedure or service (Baker et al., 2018). Category 2 codes indicate that a laboratory service was performed and is typically accompanied by a Category 1 medical service code. Finally, category 3 codes are reserved for procedures and services that are not widely performed and may not have FDA approval, these are typically emerging technologies and provide data for analysis of procedural effectiveness (Rouse, 2019).
**HCPCS:** Healthcare Common Procedure Coding System is the standardized system used to identify medical procedures performed by providers for healthcare claims submitted to Medicare ("What is HCPCS," 2019). The system is comprised of Level I, and Level II codes. The Level I codes are used by physicians and other healthcare professionals and Level II codes are used to submit claims for other non-physician services such as drugs, equipment, or medical supplies ("HCPCS," 2019).

**HIPAA:** The Health Insurance Portability and Accountability Act (HIPAA) was enacted in 1996 creating standards for healthcare organizations to provide ease of information exchange among healthcare providers, insurers, and business associates so that all parties were using the same set of codes and identifiers ("HIPAA Journal," 2019). Within this act the provision for the use of protected health information (PHI) was identified by creating stipulations on who and when information should be shared and requiring patient consent for disclosure (Cleverley & Cleverley, 2018).

**HITECH:** The Health Information Technology for Economic and Clinical Health Act was established as part of the American Recovery and Reinvestment Act (ARRA) of 2009. The goal of the HITECH act was to expand the usage of electronic health records in an effort to reduce the cost of information sharing between healthcare entities (Baker et al., 2018). The governmental monetary incentives for compliance and the penalties for non-compliance created an opportunity for medical software companies to capitalize on the influx of healthcare entities to adopt this technology ("EHR," 2012).

**HOPD:** Hospital Outpatient Department Payment System services are paid for by the outpatient prospective payment system (OPPS), the Centers for Medicare and Medicaid Services (CMS) is billed using the HCPCS coding system (Cleverley & Cleverley, 2018). CMS assigns a
weight to the ambulatory code by multiplying it by the outpatient prospective payment system conversion factor, in addition, the payment rate consists of a labor and non-labor portion. The labor portion is adjusted to account for the geographical wage difference allowing for a differential based on the specific area of service. There are also additional factors that may increase the rate such as a sole community health hospital, a cancer hospital, or other like circumstance ("Medicare payment differentials," 2016).

**Assumptions, Limitations, Delimitations**

The importance of researcher assumptions and biases are stated to provide clarity, likewise the limitations and delimitations are clearly identified to provide context and clarity for reader interpretation (Creswell, 2014).

**Assumptions.** The study utilized data that were collected from the Centers for Medicare procedural billing rates for CPT codes and HCPCS codes performed under HOPD for zip codes located in the state of Virginia. The cost of these procedures provide the researcher with data that can be utilized to determine the accounting cost of a change in billing methodology. An assumption was made that this change increases the revenue of hospital entities with no accompanying increase in expenses directly relating to the cost of the medical procedures and services that were performed prior to acquisition. This assumption is based on the procedure being performed by the same physician, at the same location, and with the same personnel that would have been used before the acquisition. To mitigate the risk that there were changes in location, physician, or personnel an analysis was conducted on practices that were acquired by a hospital entity within the central Virginia area to determine if the assumption was correct for extrapolation to the state of Virginia. The study analyzed third party data from state and regional insurance carriers to determine the annual cost of insurance claims for small and medium sized
entities over the last five years to determine if the percentage of cost increases for health insurance premiums have increased during the period of acquisition activity.

**Limitations.** One limitation of the study is the conclusions drawn based on the utilization of data from 2012 - 2016. Although this data provided a clear picture of the results during that period, it does not consider current legislative or regulatory considerations that may be currently under review. It is important to consider the impact of the governmental and legal changes, as part of an organizational PESTLE analysis, which may be considered based on the increases in financial cost to Medicare because of the change in medical billing rates (David & David, 2017). If there is current legislation under consideration to disallow medical procedures and services performed outside of a hospital setting to utilize the HOPD billing rates, the facts of this study would not specifically be negated.

Another limitation of the study is the geographic restriction focusing on the state of Virginia. The use of Medicare standard billing rates would make the study feasible for other states; however, based on the geographic changes the cost of medical procedures would vary. The study may not be generalizable as other states may change the location of services or other factors thereby changing the cost of services provided.

**Delimitations.** This study focused on the acquisition activity of hospital entities located in Virginia and the resulting impact on the cost of health insurance premiums for the small and medium sized businesses located within this state. Other cost increases were not included in this study as it was designed to examine the impact of changes solely due to the change in billing rates caused by acquisition. The conclusions from the study apply only to the acquisition activity and health insurance increases within the state of Virginia.
Significance of the Study

The increase of ambulatory physician practice acquisitions has created significant increases in billing rates for medical procedures, these increases impact insurance carriers, governmental programs such as Medicare and Medicaid (Camilleri, 2018), and patient out-of-pocket cost due to the change of billing code methodology (Capps et al., 2018). The impetus of Obamacare was cost reduction in healthcare spending; however, the increased cost of regulation created operational issues for ambulatory practices leading to a reduction in practice profitability and an opportunity for hospitals to aggressively pursue ambulatory acquisitions (Reschovsky, 2015). Additionally, the cost of medical procedures increased solely due to a change in the codification system used to bill for services provided creating a greater cost to insurance carriers and ultimately to businesses providing healthcare insurance to employees (Guo & Tao, 2015). The increase in health insurance rates for small to medium sized businesses continues to rise, often with a double digit annual increase, reducing the operating profit and creating a wider gap between the amounts of coverage benefit offered to employees (Lahm, 2014). Finally, the Bible instructs Christians to be good stewards of all resources, stewardship requires that businesses understand costs to plan for operational profitability.

Reduction of gaps. The researcher designed this study to provide information regarding the increasing cost of healthcare and its impact on smaller organizations that are unable to benefit from spreading the cost of insurance claims filed over a broader employee base. The impact of ambulatory practice acquisitions has created a greater increase cost of care for medical procedures. This increase cost in care is creating a significant fixed cost increase for the eighty percent of small to medium size business owners throughout the United Stated (Lahm, 2014).
Research has been conducted on the rising cost of health insurance premiums and Depew and Bailey (2015) concluded that there were three distinct possibilities that exist as a result of increases to the cost of insurance. The first conclusion states that a business entity may absorb the premium increase each year and pass none of the cost to the employee. The second conclusion considered the possibility that employees would share in the increase through an increased portion of the premium cost being borne by the employee. The final conclusion indicates that businesses pass the cost of the healthcare increases to the employee through a reduced increase in wages (Depew & Bailey, 2015). Additional studies point to insurance premium increases as a driving force behind the reduction in coverage for many employees. As employers pass the cost of higher premiums to employees the number of covered workers drops as many are unable to sustain a reduction in wages (Chernew et al., 2005).

Further research conducted by Kirkwood (2016) and Himmelstein and Woolhandler (2016) showed that the United States leads the world in cost of healthcare by approximately double that of other countries. The cost of this care is further amplified by the increased cost associated with ambulatory acquisitions, a report by a UC Berkeley health-policy expert indicates that the acquisition impact is adding additional costs to patient care in stark contrast to the anticipated coordination of care mandate that is part of the ACA (Yang, 2014). The anticipated benefit of accountable care organizations (ACO) has not created a system of improved care. In fact the study shows that smaller traditional fee-for-service practices were better able to manage the patient care offering a higher quality and a reduced cost with better patient care (McCue, 2015).

The relationship between healthcare providers, insurers, and hospitals continues to drive up the cost of care with little to no regard for quality of patient care as each entity battles to
achieve their individualistic objectives with little regard for cost containment (Camilleri, 2018). The increased acquisition activity by hospitals serves as an example of the battle for control as the billing of procedures increases through the use of a facility fee. Ironically, the ambulatory physician practice still operates in the same location, using the same equipment, and with the same staff yet the procedure cost skyrockets (Capps et al., 2018). Fifer (2016) cited an example of an electrocardiogram showing a rise in cost from $375 before acquisition to over $1,400 after acquisition, yet nothing about the patient care or service provided changes. This increase is simply passed to the insurance carrier and then to the employer or patient when health insurance contracts are renewed.

The study was designed to examine the impact of increased ambulatory acquisition activity to determine if the changes in reimbursement rates have an effect on the cost of care. Further, the study was designed to help determine whether the impact of the change in billing code and therefore reimbursement has created a significant impact on the cost of care resulting in a negative impact on the stated intent of the ACA. Finally, the study was designed to help determine if the increased activity serves as a driver in the continual increase in health insurance premiums that plague the small and medium sized business entities resulting in higher fixed costs, lower operational profit, and less economic resources for organizational growth.

**Implications for Biblical integration.** When God created the heavens and the earth he gave mankind the responsibility for all that was created. This responsibility extends to business resources and proper allocation of those resources. This study sought to examine the cost of those resources and the operational impact the cost increases create for small and medium sized businesses in Virginia. Further, the study examined if these cost increases are justified or the result of a change in business entity ownership that allow for hospitals to increase procedure
costs based solely on their billing rates as allowed by the government. Keller and Alsdorf (2012) discussed the importance that God has placed on stewardship; work is ordained by God and should be done to provide value to those that are served.

In Genesis God created the heavens and the earth and gave Adam and Eve dominion over all of creation. The day-to-day care for the Garden of Eden was delegated to mankind requiring continual investment and cultivation of creation so that it grows and prospers. In Genesis 2 God instructs man to take care of the Garden and to maintain, cultivate, and guard it to ensure its beauty. Proverbs 27:18 states that “Whoever tends a fig tree will eat its fruit, and he who guards his master will be honored.” The importance of proper utilization of resources is critical to operational performance, including controlling costs so that resources can be used to provide cultivation and growth for the organization.

The Bible discusses the importance of stewardship in Matthew 25:14-30 also known as the parable of the talents. Clear illustration is given of the importance of proper management of the resources that were given to an employee by a business. Resources are provided by stockholders or owners of a business and should be used to earn a return. The business must carefully consider the allocation of its resources and utilize them in the most efficient and effective manner to attain a return (Blocher et al., 2019). Keller and Alsdorf (2012) described stewardship as a biblical financial principle that can be used to benefit society, stakeholders, and shareholders by serving others well through operational performance and cultivation of resources.

The books of Galatians and I Peter speak to the importance of service as a biblically mandated principle. Serving others through work allows Christians to use their talents to benefit others and to serve our creator, work is therefore an act of worship glorifying the Creator. God
created mankind with the drive to work and serve others, “This revolutionary way of looking at work gives an exalted purpose: honor God by loving your neighbors and serving them through your work” (Keller & Alsdorf, 2012, p. 64). Echeverri and Akesson (2018) also discussed the internal drive that is part of mankind. God created man with this desire to work and serve enriching the joy within man when work is done as an act of service to benefit the organization and its customers.

The importance of understanding and controlling costs of an organization is critical to the operational profitability and sustainability and requires diligent attention to and understanding of the cost drivers throughout the operation. In Luke 14:28-29 the Bible speaks to the importance of understanding the cost of building before beginning to build, planning is a critical function and is biblically based. The proper allocation of financial resources requires an organization to understand, control, and plan for every cost so that operational profitability and sustainability can be maintained. The lack of understanding and planning in financial resources allocation is critical and failure to do so is not only unwise, it is irresponsible (Stoenoiu, 2018).

**Relationship to field of study.** The purpose of this quantitative study was to analyze acquisitions within the healthcare industry to determine their impact on the accounting cost of health insurance premiums. The increasing fixed cost creates an impact on operational profit and makes accounting and budgeting for these cost increases difficult due to the unpredictable nature of health insurance premium increases. The cost of employee benefits continue to rise creating a greater decrease in operational profit and impacting the financial stability for small and medium sized businesses. As greater mandated governmental regulations were introduced into the ambulatory practice market, the cost accounting impact continued to increase forcing practices to consider selling or face smaller margins and mounting regulatory requirements (Cleverley &
The budgetary process and cost containment efforts of small to medium sized business entities continue to face challenges in their efforts to control costs due to the increased health insurance premiums that have resulted from the changes within the industry. These additional costs have impacted the entities in a negative manner causing a loss of profit as a result of the increased costs.

The importance of this study on the outcome of the accounting cost changes for the health insurance provider and the patient that impact the accounting based revenue stream or the out-of-pocket cost by the patient. These changes in cost impact the financial stability of the small business and have cost accounting consequences within these business entities. Faced with rising fixed costs, many entities were forced to reduce employee benefit plans, reduce the amount of coverage paid by the entities on behalf of the employee, or eliminate health care benefits creating recruitment and employee engagement problems for the entities (Rees, Alfes, & Gatenby, 2013).

The importance of cost analysis, resource allocation, and human capital retention are all critical factors to operational performance of a business entity. The impact of rising health insurance premiums places an additional fixed cost on the small to medium sized business reducing financial profitability (Blocher et al., 2019). In addition, the possible reduction of benefits creates a barrier for employee recruitment as larger organizations are able to provide better benefit packages because of their ability to keep health insurance premiums stable due to their large employee base as the accounting cost of claims is spread over many rather than a few (Mihaylova, Dimitrov, Gradinarova, & Todorova, 2018). The loss of the most talented employees to larger firms places a greater disadvantage on smaller businesses that may lead to a reduction or loss of competitive advantage. This creates additional negative financial performance and may lead to fewer options for the consumer as businesses attempt to
consolidate creating greater accounting cost issues, as is evidenced by the acquisition of ambulatory practices (Greaney & Ross, 2016).

**Summary of the significance of the study.** The study examined the cost accounting significance of a change in medical procedure billing implications associated with the acquisition of ambulatory practices by hospital entities. Further it sought to determine if these cost accounting changes provide benefit to the insurance carriers, governmental insurance carriers, or to the patients that are responsible for paying for these services or is this change focused solely on an increase in revenue. Finally, the study examined if these cost accounting changes create a negative impact for small and medium size businesses through the increase of fixed costs thereby reducing operational profitability and decreasing the ability for these business entities to maintain and attract employees and resources needed for organizational sustainability.

**A Review of the Professional and Academic Literature**

An examination of the literature was completed by the researcher to provide a foundation for the theoretical framework and to review and gain an understanding of the issues that are most prevalent in this industry. In addition, the researcher sought to identify any gaps within the literature to determine if there were areas that could be expanded on or supplemented through the design of this study. Creswell (2014) stated that the literature review provides the reader with information revealed in studies that are similar to the research study topic. It may also provide information to add to the discussion of the study topic, and finally it may add additional or new information to the current data.

The literature review included the following topics as they were considered the most relevant to this study. The history of legislative changes within the healthcare industry was examined focusing on the accounting cost for healthcare entities. In addition, the literature
surrounding the concepts, and theories applicable to this managerial accounting topic were considered as foundational support for the theoretical framework. The concepts that surround a maturing market, including business strategic decision making was considered as part of the cause and effect of the acquisition activity. Further, the impact of acquisition on accounting review and cost for healthcare entities was reviewed. The cost of the acquisition was examined through the lens of medical procedure and service billing charges that are the determinant factor in health insurance premiums for small and medium size business entities due to their impact on the renewal rates. The increased cost of procedures and services impact businesses negatively as the health insurance premiums paid are insufficient to cover the increased cost of care leading to increases in organizational fixed cost and a reduction in operational profitability. Finally, a discussion of the variables within the study was discussed.

**History of Legislative Changes Impacting the Financial Cost to Ambulatory Practices**

The increase in hospital purchases of smaller ambulatory physician practices is hailed as a way to improve patient care and decrease costs (Capps et al., 2018). The acquisition of the small private practice allows the acquiring hospital entity to bill services at hospital rates, even if all services are performed in the physician office (Cleverley & Cleverley, 2018). The increased rates are allowed under Medicare, and other insurance carriers, as the overhead for a hospital organization requires a much higher reimbursement rate than a physician practice (Baker et al., 2018). While the patient receives the same test, same procedure, or other treatment at the physician office the amount that is billed for the same service is at least three times higher (Capps et al., 2018). This is costly to the patient who may be responsible for anything their insurance carrier does not pay if the provider is non-participating, if the patient does not have insurance the entire bill is now their responsibility (Cleverley & Cleverley, 2018).
The increase in reimbursement is costly for every party involved. Attention to the disparate rate simply because a practice is now owed by a hospital group has adverse effects for all individuals who are using the healthcare system (Dauda, 2017). The increased costs to the Medicare system, one that is already struggling, could be devastating to the national economy ("Medicare payment differentials," 2016; Himmelstein & Woodhandler, 2016). In addition, the physicians who are selling their private practice do so with the understanding that they will be allowed to continue to work their own schedules and use their own treatment methods all while earning a much larger guaranteed salary (Guerin-Calvert, 2014). For many small entrepreneurial physicians who have struggled under the weight of private practice this is quite appealing (Howard et al., 2017).

The anticipated results would likely show that many physicians are not allowed to continue to provide personalized care for their patients (Mobley, 1997). Rather hospital designed protocols are mandated, many of which are designed to reduce liability rather than to provide individualized care based on the patient and physician relationship (Reschovsky, 2015). In addition, physicians who do not meet the required quota or earning level per patient may find themselves no longer employed and under a no complete contract that prevents them from returning to their original patient base (Greaney & Ross, 2016).

**HIPAA.** The Health Insurance Portability and Accountability Act of 1996 was created to make the portability of health insurance a reality for anyone who changed jobs (Berwick & Gaines, 2018; Cleverley & Cleverley, 2018). In 2013 HIPAA Privacy Rules were updated to include clear restrictions on the disclosure of personal health information (PHI) without the express and written consent of the patient (Suleiman & Huston, 2009). In addition, the updated rules mandated that any patient may obtain copies of their records upon request; Health and
Human Services (HHS) may also obtain these records for use in enforcement (Annas, 2003; Baker et al., 2018).

The final HIPAA rule was enacted by the U.S. Department of Health and Human Services (HHS), on January 25, 2013 with a compliance date of September 23, 2013, known as the Final Regulations (Johnson, Parvis, Berman, Ferraioli, & Kuester, 2013). These regulations increase the federal government’s authority for enforcement of privacy and security rules for any company within the healthcare industry as well as for a company that is providing health insurance as part of an employee benefit plan vastly widening the scope of HIPAA (Dunlap & Frigy, 2013).

Regulatory requirements. HIPAA is described as “the single most significant Federal legislation affecting the healthcare industry since the creation of Medicare and Medicaid programs in 1965” (Simkin & Yamamura, 2003). Signed into law in 1996, Title II of the act, the Privacy Rule, became effective on April 14, 2003 (April 14, 2004 for small providers) designed to provide privacy and security of PHI of the patient medical record (Simkin & Yamamura, 2003). The rules establishing standardization for the electronic transmissions of protected medical information became effective on April 21, 2005 (April 21, 2006 for small plan). This date is often misinterpreted as many of the security standards were required in April, 2003 as part of the privacy rules (Cowley, 2004).

The provisions of the Public Law 104-191, known as HIPAA, extended far beyond the healthcare provider impacting all “covered entities” defined by the law as health plan administrators, health claim clearinghouses, and healthcare providers mandating that the business entities create business associate agreements defining the responsibilities and legal liability of each party should there be a breach of PHI (Anonymous, 2001; Cowley, 2004). The specifics of
the privacy rule requires all covered entities and business associates to implement the necessary protection of any PHI through these three specific actions: identification of PHI, creation of policies and procedures designed to ensure disclosure of information is for authorized purposes only, and an audit trail of all disclosures is created with a minimum of six years prior to disclosure date (Simkin & Yamamura, 2003).

Financial cost. Ambulatory medical practices seeking to comply with the mandated privacy and security rules of HIPAA for use in their practice management and electronic medical records (EMR) purchase HIPAA complaint software in an attempt to meet requirements (Suleiman & Huston, 2009). Technical compliance is more complex than a single software package. The transfer of PHI between the practice and other business entities requires greater security in the form of network protection and encryption protocols creating a larger financial cost for ambulatory practices. Survey results conducted by the Health Information and Management Systems Society (HIMMS) indicated that cost of compliance with HIPAA was shown as a top priority by more than 60 percent of practices (Annas, 2003). In addition to the out-of-pocket cost for technology and software, the cost of management required compliance increases training and implementation cost and mandates annual refresher training for all employees (Smith, 2001).

HIPAA was far reaching creating financial cost for every healthcare entity and any business that interacts with healthcare data, specifically protected health information (Annas, 2003). Software vendors and other ancillary business partners were also impacted. Covered entity and business associate agreements were mandated and the associated cost of compliance continued to increase (Simkin & Yamamura, 2003). As part of the privacy rule, covered entities were required to follow standardized formatting known as HL7. This required many
organizations to hire additional staff and change the structure of transmission to comply (Suleiman & Huston, 2009). Additionally, there was increased requirements for data security to maintain confidentiality and to prevent intrusion or data theft often requiring additional software or the cost of software certification to ensure compliance (Simkin & Yamamura, 2003).

The final rule of HIPAA set clear standards for determining a breach of PHI requiring any disclosure or unauthorized release of PHI be considered a breach unless it can be proven through risk assessment that there is minimal probability of compromise (Dunlap & Frigy, 2013). When a breach occurs notification to those that may be impacted is required. The notification process not only presents a financial obligation required by the notification process it may also involve additional financial expenditures such as monitoring of personal data for those impacted (Johnson et al., 2013). Updated business associate agreements (BAAs) are required by the final rule to include specific details related to a breach of PHI to include the responsible party and time frame concerns once the breach occurs (Dunlap & Frigy, 2013). The final rule also expanded the entities included in the business associate description to include any organization that has a gateway to PHI, provides data transmission services even if the data are not viewed by anyone with that organization, and cloud-computing companies or those that provide storage of data (HIPAA Journal, 2019).

One of the requirements of HIPAA is the appointment of a privacy officer and a security officer that serves as the responsible party to ensure that the healthcare entity establishes policies and procedures in support of the eleven rules of HIPAA (Kiel, 2010). These policies and procedures should be supportive of the workflow of the entity and the officer must include the workflow interaction of business associates. The monitoring and control of the policies should be tested to ensure compliance (Dunlap & Frigy, 2013). Annual workforce training must be part of
the policies and procedures and the definition of workforce extends beyond employees requiring compliance by other business associates, consultants, volunteers, or any person who provides services for the organization regardless of pay (Johnson et al., 2013; Kiel, 2010).

The financial cost of HIPAA extends far beyond the initial software investment. It requires management and operational changes that continue per annum adding to the fixed cost of every healthcare entity, covered entity, and business associate. If a PHI breach is discovered the final rule requires that the entity assume that there was disclosure unless it can be proven otherwise, the onus of proof is on the entity to prove that there was low risk of PHI disclosure (Kiel, 2010). Risk assessment requires careful consideration of all factors that may be relevant when considering PHI breach, although there are organizations that will provide an annual risk assessment for healthcare entities it creates another fixed cost for the organization.

The Department of Health and Human Services has estimated that the cost of implementation ranges from $114 million to $225 million in the first year and approximately $14.5 million each year thereafter. Many companies, however, maintain that the amount reported by the Department of Health and Human Services significantly underestimates the actual compliance costs. (Wang & Huang, 2013)

Financial penalties. As the enforcement agency, HHS announced new monetary penalties for HIPAA violations overriding the original $1.5 million cap for each tier by creating a distinct cap for the four tiers with a minimum of $100 penalty per violation and a $25,000 annual cap for no knowledge of the breach and a tier four willful neglect penalty of up to a $50,000 per violation with a $1.5 million annual limit (D'Arrigo, 2019). D’Arrigo (2019) advised that the original tiers may be revised again as HHS seeks alignment with HIPAA penalties and the regulations embedded in the HITECH Act. The legal chain of accountability ensures that every
partner, business associate, covered entity, subcontractor, or healthcare entity protects PHI as every organization holds responsibility for the data regardless of where the breach occurs. This creates a legal maze of contracts as each party attempts to mitigate liability and shift penalty risk increasing the fixed cost of legal services for each contract (Wang & Huang, 2013).

**HITECH.** As part of the American Recovery and Reinvestment Act (ARRA), the Health Information Technology for Economic and Clinical Health Act (HITECH) paid billions of dollars to the ambulatory physician or hospital entities that purchased and implemented an electronic health records (EHR) system and could show meaningful use (Mennemeyer, Menachemi, Rahurkar, & Ford, 2016). The goal of EHR adoption was to create a standardized system to impact patient care and reduce costs, the Center for Medicare and Medicaid stated that more than $28.1 billion was distributed by the end of 2014 as part of the EHR meaningful use program ("Medicare payment differentials," 2016). Research shows that the adoption of EHR software was dramatically influenced by the governmental incentives for the adoption of technology as the adoption rate rose after the incentives were approved (Adler-Milstein & Jha, 2017).

**Regulatory requirements.** The governmental incentive designed to modernize healthcare infrastructure was designed to provide stimulus funding provided that the physician could show meaningful use of the EHR (Mennemeyer et al., 2016). Meaningful use, defined as the use of a certified EHR software technology, was designed to illustrate information on the quality care of patients and provided a measurable method of data collection to assist in preventative healthcare (Adler-Milstein & Jha, 2017). The certification process for EHR software was created to provide physicians and hospitals with information to assist in the purchase of a technology that would be created in accordance with the standards as created by the regulatory body. This certification
required the software vendor to illustrate the standardized structure of data that allows for the transfer and use of patient health records to provide physicians with the information needed to treat and provide care ("EHR technology," 2019).

Adopted in three stages, stage one of meaningful use included the adoption of electronic clinical data capture that would provide the patient with health information that could be used to improve healthcare outcomes through the transferability of patient information and the ability to provide a patient with an electronic copy of the patient record ("EHR Meaningful Use," 2019). Stage two focused on the National Quality Strategy that was created by an agency on behalf of the U.S. Department of Health and Human Services seeking to improve health, provide better care, and decrease the cost of care to benefit patients and the community (Mennemeyer et al., 2016). The goal of stage two was to create a quality improvement program built on the ability to share and exchange information among healthcare providers when the patient presented for care, prior to this adoption there was no electronic data sharing leading to errors in diagnosis and treatment ("EHR technology," 2019). Stage three was adopted in 2017 focused on improved outcomes through the use of continuous quality improvement that was provided through the use of a certified electronic health record technology (CEHRT). This 2015 edition of CEHRT must be implemented no later than January 1, 2019 to avoid penalties in the form of reduced Medicare payments ("EHR technology," 2019).

The stimulus funding provided eligible providers, defined as physicians, nurses, physician assistants, and social workers, with a choice of $63,750 to be paid over a six year period if participating in the Medicare program or $44,000 to be paid over five years if participating in the Medicaid program (Mennemeyer et al., 2016). The eligibility for stimulus payments requires that the providers attest to Stage two meaningful use by 2016 to receive full
payment. Research conducted by Ford, Menachemi, Peterson, and Huerta (2009) provided quantifiable data based on historical trends of EHR adoption in ambulatory physician practices indicating that governmental 2014 full adoption rate for EHR technology would not be met. The study then integrated the adoption rate based on the potential passage of the HITECH Act and although the adoption rate was shown to increase it did so at a declining rate. This analysis did not include the consideration of stimulus payments for EHR adoption (Ford et al., 2009).

Research conducted in 2010 using a panel of Delphi technique experts estimated that 65 percent of primary care physicians in large group practices, 45 percent of primary care physician in small group practices, and 44 percent of all other specialists could achieve MU by 2015 with these same groups achieving 80 percent, 65 percent and 66 percent MU in 2019. (Blavin & Buntin, 2013)

Financial cost of compliance. The Health Information Technology for Economic and Clinical Health Act (HITECH) of 2009 created criminal and civil penalties for a breach security in patient data and privacy (Baker et al., 2018). A patient’s privacy must be protected and the funding of compliance audits was initiated with this act. In addition, it established federal guidelines and mandated reporting for any breach of data that may impact patient privacy (Hecker & Edwards, 2014). The cost to physicians for failure to comply with the HITECH Act varies among physician specialty and age demographic as the fines are enforced through a reduction in Medicare and Medicaid payments for medical procedures billed to these agencies; a one percent reduction will begin in 2015 increasing to three percent over the next three years until a five percent penalty is reached (Mennemeyer et al., 2016). Although this percentage may appear insignificant, if a practice is billing medical procedures that total $1 million to Medicare failure to comply will result in a $50,000 loss of profit per provider each year.
**Financial implementation cost.** In 2008 physicians report that an obstacle to EHR adoption is the capital cost or initial investment of implementation, studies conducted by HealthIT.gov indicate that the range of cost is $15,000 to $70,000 per provider ("Cost of EHR," 2014). This initial cost requires implementation, training, and other hardware costs that add to the overall software expenditure. The selection of a system that meets the workflow and specialty of the providers is another obstacle to selection (Jamoom, Patel, Furukawa, & King, 2014). Finally, many physicians are reluctant to implement an EHR system due to reluctance of change from a manual method of charting patient encounters and procedures, most physicians surveyed indicate that productivity levels drop when an EHR is used leading to a loss of revenue for the ambulatory physician practice (Brookstone, 2012).

Productivity is calculated as the number of patients seen and managed during the normal business hours of a practice. The implementation of an EHR results in an increase in workload to create, populate, and manage the clinical information through the software system resulting in a loss of productivity (Jamoom et al., 2014). In a survey conducted by the Medical Group Management Association of 4,588 practices and approximately 120,000 physicians, the loss of productivity was cited as the most significant obstacle of EHR, 53 percent indicated that the training and implementation process was longer than anticipated, further reducing productivity (Transcription Outsourcing, LLC, 2012). Many physicians also express problems with patient unhappiness as wait times increase and patients may not be able to schedule appointments when needed (Brookstone, 2012). Further, the number of experienced physicians that retired or left the practice increased as research indicates that 78.3 percent of those surveyed felt there was a significant reduction of patient care during the implementation of an EHR system (Transcription Outsourcing, LLC, 2012). Those physicians who remained with an ambulatory practice indicated
that the EHR was the main cause of longer working hours decreasing the work-life balance and increasing stress due to decreased revenue amid increased time spent on managing patient clinical data (Mennemeyer et al., 2016).

In a study conducted by Jamoom et al. (2013), physicians were surveyed regarding EHR adoption and the impact on their practice. The survey included adopters and non-adopters of EHR systems with variables based on age, number of physicians in the practice, ownership, region, and rural or metropolitan location. Based on the results, a statistical significance was shown based on analysis conducted using sample weights and standard error adjustments. The survey did not include any claims data or other clinical data as part of the result, rather it focused on the impact of EHR adoption within the ambulatory practice. The results of the survey illustrate that despite the cost associated with EHR adoption, 84 percent of physicians using an EHR report that there is a clinical benefit, 76 percent indicate that the practice is more efficient, and 61 percent state that the electronic chart has a financial benefit in relationship to paper charting (Jamoom et al., 2014). As expected, those who did not adopt an EHR showed a lower percentage in every category with only 52 percent stating that there was a financial benefit to adoption.

This section of the literature review has provided a discussion of the regulatory and legislative changes and their effect on ambulatory physician practices. The increased cost has created an impact on the fixed cost of managing an ambulatory practice creating an opportunity for an increase in the number of acquisitions taking place in the healthcare industry. The effect of acquisition activity has a direct relationship on the billing codes used to invoice these services allowing for the exploration of the relationship between the acquisition activity and the increase in billing rates for medical procedures. Next, it is important to examine the accounting theories
to evaluate research relating to the theories and the potential cause-and-effect created by acquisition activity.

**ACA.** The Patient Protection and Affordable Care Act (ACA) was enacted on March 23, 2010 and implemented in October of 2013 was created with three guiding principles: provide affordable health insurance, expand Medicaid to cover income below 138% of the federal poverty level, and to promote and support innovative methods of medical care that lower the cost of healthcare (Rosenbaum, 2011). This enactment of this law created one of “the most significant changes to the U.S. health care system since the passage of Medicare and Medicaid in 1965” (French, Homer, Gumus, & Hickling, 2016, p. 1735). The ACA was built on the premise that the current employer sponsored health insurance model could be strengthened through new requirements and it added requirements for individuals that were not covered under an employer plan as well as additional requirements for health insurance companies (Blumenthal, Abrams, & Nuzum, 2015).

**Regulatory requirements.** The enactment of ACA created several regulatory requirements that apply to various groups or individuals. Employers were required to offer health insurance coverage to all employees that work 30 hours per week or 130 hours per month as this is the definition of full-time employee. This is the employer mandate required by the ACA (Cleverley & Cleverley, 2018). For employers that do not provide this coverage, a penalty will be imposed; smaller employers that still meet the 50 employee minimum will weigh the cost of providing health insurance coverage against the cost of the imposed penalty with some electing to pay the penalty rather than the annually increasing health insurance premiums (French et al., 2016).
The second major provisions of the ACA requires that all insurance carriers allow children to remain on their parental private insurance plans until the age of 26. This has created a large expansion of coverage for the 19 to 25 age group, creating larger costs for insurance carriers (Depew & Bailey, 2015). In a study by Antwi, Moriya, and Simon (2013), the addition of this regulation indicated that up to two million additional insured were added to parental coverage as a result of this act. One of the driving reasons behind this component revolved around federal and state public policy regarding health insurance access for children, previously this coverage phases out at 19 years old, leaving young adults who may or may not have employment with little or no health coverage (Depew & Bailey, 2015). One of the less discussed but more significant reasons for the inclusion of this mandate was stated as providing this age group with greater job mobility as insurance coverage would not be tied to their employer, rather it would remain consistent through the parental provision (Antwi et al., 2013).

Another significant part of the ACA mandates the revocation of the preexisting conditions clause in health insurance policies and prohibits companies from charging higher premiums or denying coverage to those with these conditions (French et al., 2016). Research indicates that almost 54 million people under age 65 have a preexisting health condition. The ACA eliminated the lifetime limits cap on almost all health insurance benefits allowing for the continuation of care through current health insurance plans ("Lifetime & Annual Limits," 2017). This expansion of services creates additional cost for the insurance carrier and has a residual impact on health premiums on an already climbing rate scale adding to the annual increases that are passed to employers, employees, and individual patients (Chernew et al., 2005).

Although part of the ACA, Medicaid expansion must be enacted at the state level, there remain 20 states that have chosen not to participate in this expansion program (French et al.,
The impact of this change is reported for the 30 states that are participating with increases in Medicaid patients of over 50 percent at primary care practice locations (Kaiser Family Foundation and the Commonwealth Fund, 2015). Over 44 percent of physicians indicate that the cost of health care has increased as a result of the expansion with 35 percent reporting a negative impact on the ability to meet patient demand as a result of the ACA (Kaiser Family Foundation and the Commonwealth Fund, 2015).

The delivery of healthcare and its cost of delivery is the final major component of the ACA. This mandate stems from the high levels of waste and inefficiency that plague the U.S. healthcare system. In 2012 the Institute of Medicine reported that on average 30 percent of all health cost was billed for unnecessary service, fraud, and other excessive cost (Antos & Capretta, 2017). One of the driving forces behind this excessive waste is the lack of care coordination leading to redundancy of testing and a lack of physician coordination when treating patients despite the governmental EMR mandate that was designed to improve the sharing of patient care information (Blavin & Buntin, 2013). Research indicates that healthcare fragmentation remains high despite the increased use of EMR systems. One cause of this disparity is linked to the lack of standards for interoperability among technological systems (Adler-Milstein & Jha, 2017). This tenant of the ACA continues to receive views that are in disagreement with the current approach of governmental led administration as the means to accomplish greater efficiency and improve patient care (Antos & Capretta, 2017).

**Accounting Theory and Relationship to Study**

Accounting theory is used throughout every business organization, it provides the framework that presents the financial results of organizational performance in a manner that can be used for comparability of results among organizations (Wild & Shaw, 2019). Business
strategy creates the framework for long-term strategic planning and should be consistent with the vision and mission of the organization. The analysis of internal and external environments as well as the industry and markets in which business is conducted are part of the strategic planning process (Ghemawat, 2016). Successful strategic planning seeks to expand or accelerate its financial and operational position by increasing competitive advantage; cost or managerial accountants provide critical information useful in the planning process (Gamble et al., 2019). The ability to attain timely projections and forecasts allow management to make real-time business decisions that allow for the attainment of strategic goals. Without this information the analysis of decisions would be more difficult and operational performance will be impacted in a negative manner (Cagnin & Didenko, 2018).

**Market maturation.** Organizations that operate in a more mature market continually employ business strategies that are designed to help them sustain their competitive advantage and alternatively seek methods of creating a differentiation between their competitors (Thompson et al., 2018). As markets mature there are fewer strategic options afforded to organizations that create a separation of service or product offering. The longevity of operation provides opportunity for competitive surge as discussed in Porter's five forces model (David & David, 2017). In many industries the strategy that affords the biggest gain in competitive advantage is the use of mergers and acquisitions focusing on horizontal or vertical strategic choice in an effort to attain a greater market share driving out competitive forces (Gamble et al., 2019; Thompson et al., 2018).

In a study conducted by Goodburn (2015), “The average life span of today’s multinational, Fortune 500-size corporation is 40 to 50 years.” Further, the study revealed that over 50 percent of Fortune 500 companies had been removed from the list 10 years after
reaching the half century age (Goodburn, 2015). This lack of sustainability during organizational 
maturation is of significant concern, strategic planning must continually seek to drive 
sustainability through the use of organizational planning and business process reengineering to 
avoid becoming another corporate statistic (TenBrink & Gelb, 2017).

**Strategic choice within a mature market.** As markets mature there is a driving demand 
for transformation within the industry. This transformation is seen as a necessary component of 
organizational sustainability (Agarwal, Sarkar, & Echambadi, 2002). Despite this need for 
transformation, the reality remains that over 40 percent of organizations studied did not 
undertake a continual strategic planning process to combat the maturation of the market external 
influences; further, those that had begun a transformational process did not reach the 
implementation stage of their plan (TenBrink & Gelb, 2017). Although most organizations 
realized that the external environment was creating demand shifters within the industry, it did not 
create urgency within the organization to create a strategic plan designed to combat or take 
advantage of the shift (Agarwal et al., 2002).

As the market shifts the organization is faced with pressure from both competitors and its 
customers, maturation provides competitors with the ability to enter the market with products or 
services that are tailored to meet customer demands placing greater demand on the mature 
organization to adapt and evolve (Gamble et al., 2019). As described by Porter, this threat of new 
entrants and substitute products are introduced by organizations that are typically younger and 
therefore are more agile to react to market shift. The lack of years of organizational bureaucracy 
provides a competitive advantage (TenBrink & Gelb, 2017). The introduction of substitute 
products is greater creating an opportunity for the market to entice customers to a new supplier 
as product pricing may be lowered due to the ability for new firms to accept lower margins due
to lower overhead organizational cost or a low-cost product strategy as opposed to a
differentiation strategy (Hilton & Platt, 2014; Thompson et al., 2018).

Mergers and acquisitions (M&A) are after chosen as a strategic plan due to the saturation
of the market within the industry. The ability to increase market share becomes more difficult
without the use of M&A (Thompson et al., 2018). The ability to improve organizational
performance and gain synergy are cited as two of the driving factors behind M&A activity
providing organizations with the ability to increase market share or decrease the cost of products
or services allowing for competitive advantage sustainability (Chalencon & Mayrhofer, 2017).
Research studies indicate that M&A activities undertaken by mature markets are viewed more
favorably by both investors and the markets providing a temporary boost to valuation despite the
large percentage of M&A failures (David & David, 2017).

**Business process reengineering.** Maturing organizations often seek to improve
operational efficiency in an attempt to complete with organizations that are more agile and often
attempt to compete based on product differentiation or low price strategic initiatives (Bernardo et
al., 2017). The principles of lean have been used independently of business process management
or in conjunction with this process. The goal is to improve the organizational efficiency through
the reduction of costs and the delivery of quality products and services (Grant, 2015). The
complexity of organizations and the integration of the supply chain require the ability to analyze
and assess complex information quickly. Within the healthcare industry this analysis is used to
diagnose and treat patients on a routine basis (Ferreira, Costa, & Padua, 2018).

Mature healthcare organizations operate within an extremely complex system that
involves clinical and administrative processes designed to provide quality patient care despite the
volume of data that requires analysis in order to most effectively treat the underlying condition in
the most effective and efficient manner (Yarmohammadian, Ebrahimpour, & Doosty, 2014). The inclusion of multiple components of care ranging from equipment to providers require coordination of care designed to provide quality care. The industry struggles to balance the multiple components of care resulting in higher cost and an inefficient process leading to higher cost of care (Niehaves et al., 2014). Business process management (BPM) provides healthcare organizations with an organized approach to evaluate and analyze the specific tasks that are involved in patient care (Bitkowska, 2015).

When implementing business process improvement techniques a shift in focus from internal to external is important. Creating a value driven organization requires that the customer becomes the center of the process allowing for a shift in organizational priorities designed to drive operational efficiency (Ferreira et al., 2018). The use of BPM provides organizations with a tool designed to help during periods of change. Healthcare continues to be placed in a flux of change as governmental regulations change in patient care best practices, and improvements in medicine have been a component within the industry for decades (Grant, 2015). The analysis of current processes provide the organization with a starting point. Collection of data as it relates to patient care, interactions among personnel, handoffs, bottlenecks, and other technological components of care require careful consideration with customer value at the forefront of the management process (Ferreira et al., 2018).

Managerial accounting. The theory of cost accounting is important to the study being conducted. Managerial or cost accountants provide expertise in planning, control, and decision making providing information that is critical for leadership in strategic planning (Wild & Shaw, 2019). The ability to anticipate information is crucial in strategic decisions and assist in the advancement of competitive advantage. The cost accountant provides information needed to help
sustain or to achieve competitive advantage (David & David, 2017). The cost of resources within an organization require strategic allocation, the ability to effectively and efficiently use financial and non-financial resources to reach strategic goals requires proper planning and control. The ability to minimize cost is critical to operational performance and an in-depth understanding of the cost structure of the organization is critical to sustainability and shareholder wealth (David & David, 2017).

The importance of resource allocation in strategic decision making is further illustrated in business strategy textbooks and scholarly writing describing the importance of alignment of business strategy with the vision and mission of the organization (David & David, 2017). The achievement of strategic goals may be accomplished even if an organization does not properly allocate resources; however, the organization will not run efficiently and eventually it will lose competitive advantage and the confidence of its shareholders (Thompson et al., 2018). As described by Bower (2017), the improper allocation of resources becomes a hurdle for organizational performance that must be corrected in the future, while simultaneously executing current strategic decisions in an effort to minimize past performance deficiencies.

There are several operational tools used by a management accountant, break-even point, cost-volume-profit analysis, budgeting, activity-based-costing, and contribution margin that all provide information designed to inform strategic decision making and measure the effectiveness of past decisions (Wild & Shaw, 2019). Blocher et al. (2019) provided an advanced discussion of how these tools are used to inform and guide strategic allocation of resources leading to clear direction needed to achieve organizational success. An organization must understand its cost structure before it can accurately measure and quantify cost behavior. The use of cost accounting concepts and theories provide management with the tools needed to correctly identify, classify,
and manage these costs in the most efficient and effective manner to meet operational performance goals (Grant, 2015).

**Revenue allocation.** Healthcare entities, as with any business organization, generate revenue through its provision of medical procedures and services to patients and other entities. There is a wide array of service providers offering care in many settings ranging from an emergency room visit to surgical and hospice care. Each of these services may be accompanied by procedures that use facilities and capitalized equipment to treat and determine the best course of patient care (Cleverley & Cleverley, 2018). GAAP requires revenue and the expenses that are associated with generating that revenue be recorded in the same accounting period to provide information that illustrates both the revenue and cost simultaneously (Wild & Shaw, 2019).

Gross profit margin must be clearly identifiable and understood by the organization in order to meet operational performance goals and to create effective management objectives. As discussed by Mayer et al. (2017), decision makers cannot make effective decisions without the ability to understand the revenue and the accompanying resources that must be present in order to generate the associated revenue. The importance of cost management is critical to operational performance.

Healthcare organizations must be productive, and if a for profit entity, the operational performance is an important sustainability consideration; however, the welfare of society, the health needs of the community, and the impact on human life is a critical consideration that must be balanced with for profit considerations. The ability to balance the needs of the stakeholder and society is difficult. The inclusion of regulatory and legislative restrictions and requirements designed to protect individuals increases the complexity of the management process amidst the increasing demographic of the aging population that is driving the demand for services creates a
complex business landscape (Gonzalez, Nachtmann, & Pohl, 2017). Coupled with the increase in
demand of healthcare consumers is the increased pressure of the American Medical Association
lobby. The legal lobby, as well as the insurance lobby each seeking to apply increased pressure
to meet the objectives of their particular group interests creating a maelstrom of activity that
must be navigated by physicians and healthcare entities (Fifer, 2016). In effect, the revenue that
is generated is subject to capitation requirements. The restraints placed by third-party insurers,
and finally the demand of the patient to have access to greater services at a lower cost.

The revenue generated must support the cost that is necessary to generate the revenue. It
must cover the selling, general and administrative expenses and provide profits allowing
shareholders to realize a return and creating earnings to support organizational reinvestment in
societal endeavors (Hunitie, 2018). With the mandate, healthcare organizations seek to balance
revenue and costs simultaneously continuing to invest in value-based health initiatives that are
mandated by the Affordable Care Act (ACA) passed by President Obama on March 23, 2010.
One of the mandates of the ACA was the reduction of healthcare costs and the simultaneous
improvement of patient care. The inclusion of research and development to improve quality of
care options was also a part of this act (Camilleri, 2018). This mandate has created incentives
that are designed to analyze the service delivery areas of healthcare seeking to find efficiencies
in the delivery methods and provision of care models.

**Activity based costing.** Organizations seeking to meet these governmental mandates are
considering business strategic tools as well as cost accounting concepts in an effort to understand
and control costs (Garrison et al., 2018). Overhead remains as one of the largest costs in any
hospital organization as these costs are a necessary part of healthcare administration, but are not
typically traced directly to the individual patient receiving the care, and rather these costs are
considered indirect in compliance with the cost-benefit constraints of GAAP (Wild, 2019). “The success of a company, especially in a highly competitive environment, is closely related to the cost system used by that company” (Ozyapici & Tanis, 2017, p. 201). In a mature market competition is a constant threat, it invades markets that were once considered to be too costly to enter as demonstrated through Porters Five Forces (Gamble et al., 2019). The increased competition increases supply within the market and decreases the consumer demand despite the aging population. The additional costs associated with regulatory and legislative changes have created an environment of declining revenue amid increasing costs leading to financial constraints and sustainability issues (Woodlock, 2014).

**Unit of measure.** Unlike many other industries, healthcare organizations allocate revenue based on a specific unit of measure. This unit of measure may be defined as a procedure, allotment of time, or even a bundled group of services (Arjmand et al., 2018). The costs associated with each unit of measure must also be captured and allocated based on the costing system that is implemented (Garrison et al., 2018). The use of activity based costing provides the most accurate measurement of both production and non-production costs as it focuses on the activities that drive the cost, known as a cost driver (Haladu, 2016).

One of the most arduous tasks is the identification of activities that drive overhead costs, these activities range from indirect labor to terabytes on the server used for x-ray storage. When costs can be appropriately allocated a clear correlation between services provided and value can be attained. Further, services that do not provide value can be altered or eliminated to provide opportunities for more value-based operational offerings.

Electronic Health Records (EHR) offered a unit of measure methodology that was unavailable in the past (Arjmand et al., 2018). The mandated use of EHR systems provides a
documented method of unit of measure in the form of time spent with patients. While this is one component of the patient documented encounter, it provides a starting point for unit of measure. Once extrapolated to other areas of the hospital, the unit of time methodology begins to create a measurement tool for a more realistic allocation of costs based on the unit of time.

**Bundled services.** Another costing method that is used is the bundled service. This creates a set of procedures that are typically performed together, included are any supplies or procedures that are used to treat identified services (Baker et al., 2018). An example of a bundled service is commonly seen in the practice of obstetrics, the initial pregnancy, associated visits and services as well as the labor and delivery are billed as one service. Any associated follow-up visits or other episodes of care are covered under the initial billing code rather than on a procedural basis. This methodology is also used by hospitals, all costs for these services are bundled and associated with the fee charged for this billing code (Cleverley & Cleverley, 2018). While this is a more direct method of billing and costing, the allocation of overhead is still done based on the ABC method (Hilton & Platt, 2014).

**Time-drive activity-based costing.** Due to the value based perspective of healthcare, organizations continue to look for ways to improve their profitability while remaining an independent and viable provider of healthcare services in a market that boasts ever increasing acquisitions creating larger conglomerate providers (Gonzalez et al., 2017). One way to address these mounting costs is through the evaluation and implementation of time-driven activity-based costing (TDABC; Keel, Savage, Rafiq, & Mazzocato, 2017). Unlike a purely ABC driven costing system which is time consuming and more expensive to implement, a hybrid approach appears to offer many of the same benefits while delivering on a more cost effective budget.
The use of TDABC has provided many in the service industry, with a methodology that requires a better cost-benefit ratio while providing data that allowed for improved margins and more accurate cost allocations. This method focuses on “accuracy over precision” (Keel et al., 2017, p. 756). The lowering of resource requirements needed to implement and more importantly maintain TDABC has allowed organizations to focus the capacity cost rate (CCR) and service delivery (Keel et al., 2017). While this methodology is still new, it has provided benefit in reduced resource allocation to the traditional ABC costing method and allowed resources to be used in a more effective manner.

**Idle capacity.** Faced with the continual need to invest in improving technologies, a large challenge for healthcare entities is the allocation of resources for new equipment, facilities, and other technology that may remain idle for large periods of time producing revenue only when in use (Hilton & Platt, 2014). As described by Ozyapici and Tanis (2016), traditional costing methods do not provide information regarding the idle capacity of hospital resources creating a costing system that may lead to inconclusive outcomes. One of the reasons for the inconclusive outcomes rests in the allocation of costs to services that may not completely utilize the resource. In addition, some resources may remain idle during certain periods, but may become constrained resources during other times creating the need for improvement in schedule and utilization of resources (Blocher et al., 2019).

The allocation of financial resources is an important consideration for healthcare entities as equipment must be upgraded, replaced, or improved technologies acquired to provide quality care and best practice of care continuum. This resource allocation requires monitoring to reduce the amount of idle capacity and to improve revenue and profit margins (Vetchagool, Augustyn, & Tayles, 2018). The management of capacity is an important consideration when analyzing the
purchase of equipment, particularly in light of the need to allocate the overhead costs that are associated with this resource. The under-utilization of resources continues to be an issue in healthcare. Many healthcare organizations continue to be accused of running unnecessary tests or services in an attempt to utilize their equipment so that revenue is generated. This is of particular concern when patients have commercial insurance that will cover these services leading to greater scrutiny of the healthcare industry amid rising pressure for outcome based pay.

**Contribution margin and CVP analysis.** The contribution margin, revenue minus variable cost, is a method used for creating performance pay models and it has the ability to distinguish controllable and uncontrollable costs (Wild & Shaw, 2019). Responsibility accounting measures the performance of managers, with authority to control revenue and costs for a division, department, or strategic business unit of an organization. The contribution margin is the amount of revenue that remains after controllable costs have been subtracted (Garrison et al., 2018).

External financial reporting does not use contribution margin, it uses absorption costing, as required by Generally Accepted Accounting Principles (GAAP). Although this method is appropriate for financial reporting to external users, it is not used for performance pay models as it can be manipulated by managers by overproduction of product (Stoenoiu, 2018). Use of the contribution margin removes the allocation of fixed cost to ending inventory eliminating the ability for a manager to create profit margins by spreading fixed costs over a greater number of units, as is accomplished through absorption costing (Wild & Shaw, 2019). Employee performance pay is a capital resource allocation and a motivational tool used to reach organizational goals, the contribution margin provides an accountability measurement useful for performance pay calculation (Turner, 2018).
**Break-even point.** Break-even point is achieved when revenue minus expenses equals zero; it is the point where no profit or loss occurs (Blocher et al., 2019). When allocating financial resources, the products or services that provide an organization with the greatest return, are funded before other, less profitable products or services (Garrison et al., 2018). Capital expenditures, also known as fixed costs, increase the break-even point and impact long-term strategy of the organization. Financial resources are limited and careful consideration is given based on the commitment (David & David, 2017).

Although break-even point is an operational tool, it impacts the long-term allocation of financial resources and should be evaluated when considering additional capital purchases (Chapman et al., 2017). Break-even is also used by an organization when considering expansion, the market and product demand are included in the analysis to avoid solving short-term operational problem(s) through long-term solution(s) that result in idle capacity (Ho, 2018). Strategic allocation of financial resources is not achieved when an organization experiences idle capacity, instead the expenditure does not provide the desired return and may limit organizational growth through decreased profitability (Garrison et al., 2018).

**Master budget.** The master budget is a planning tool designed to provide the organization with an annual resource allocation plan to meet the short-term strategic objectives as part of the long-term organizational vision (Garrison et al., 2018). Creating a master budget provides an annual plan for revenue and expenses to promote unity of effort for organizational goals; it is a planning tool (Garrison et al., 2018). As discussed by Thompson et al. (2018) the budget is a short-term plan providing the ability to segment long-term vision into annual plans promoting efficiency of divisional performance and alignment of strategic goals.
**Functions of a budget.** The budget can be a motivational tool for the organization when participation is encouraged, known as a participatory budget (Garrison et al., 2018). Strategic alignment of organizational goals and the employee understanding of how their involvement aligns with the goals promotes unity and a strengthened sense of organizational ownership in strategic results (David & David, 2017). The budget allows an organization to plan, control, and make decisions based on their anticipated results providing guidance and alignment for the employees (Wild & Shaw, 2019). One of the challenges with budgeting is the reliance on assumptions that the data being used are accurate and that those responsible for gathering and compiling the data are impartial and unbiased (Ghasemi Bojd & Koosha, 2018). The use of historical cost estimates are often used in the creation of budgets and forecasts. Proper allocation of resources provide the organization with the capital necessary to attain operational performance goals (Bower, 2017). Budgeting, used by an organization as a planning tool, provides a unified method of communication aligning function and accountability measurement (Wild & Shaw, 2019). The budget is often used for multiple purposes; planning, performance management, communication, motivation, and other functions relating to forecasting (Arnold & Artz, 2018).

**Planning.** David and David (2017) described the importance of planning when devising strategies, the financial implications in the form of revenue and expenses are critical to this function. The budget is designed to drive the organizational activities and actions towards performance needed to accomplish strategic objectives and vision (Kannan, Jafarian, Khamene, & Olfat, 2013). To maintain competitive advantage, strategic financial resource allocation require a conscious decision to support short-term objectives, when executed, propel the organization towards strategic objectives (Dess, McNamara, Eisner, & Lee, 2019).
Arnold and Artz (2018) described the planning function as one of utmost importance for organizational planning and control. The planning process includes the ability for a budget to be modified or changed as market conditions, economic influencers, or internal changes impact the organizational environment (Hilton & Platt, 2014). Operational programs require strategic allocation of financial resources to exploit opportunities that provide an organization with a competitive position used to further long-term objectives and strategic vision (Arnold & Artz, 2018).

**Performance management.** Budgets, used for planning and control, are often used for performance management and may impact employee performance evaluation (Druzdel & Kalagnanam, 2018). Research conducted by Derfuss (2016) indicated a division in opinion relating to the benefits of performance management based on budgetary outcomes. Further, the inclusion of a participatory budget in the performance management discussion does not negate the divergence of opinion in relationship to performance management (Brink, Coats, & Rankin, 2018).

A participatory budget involves employees, actively engaged in the job function or division, in the planning function of budget creation, seeking to utilize job specific knowledge to more effectively manage organizational resources (Brunner & Ostermaier, 2017). Although active employee involvement has been shown to increase the adhesion of budgetary constraints, the correlation between personal employee gain and budgetary distortion continues to be an inherent problem with this budgeting methodology (De Baerdemaeker & Bruggeman, 2015).

**Communication and motivation.** In an article by Macinati and Rizzo (2014), there is clear correlation between resource management, effective performance, and budgetary accountability. Further, the discussion of accountability and the inclusion of managers in the
decision-making process of budgeting asserts a link between budgetary adherence and organizational performance (Druzdel & Kalagnanam, 2018). Research conducted shows that employee motivation is improved when budgets are created based on managerial input, active involvement in the budgetary process increases the motivational level of divisions and strategic business units providing a link to performance (Macinati & Rizzo, 2014).

**Forecasting.** Enterprise resource planning (ERP) provides an organization with data that can be used to create a budgetary forecast, and when an integrated business intelligence system is employed, the accuracy and predicative ability of organizational decision-making is improved (Ho, 2018). Forecasting and budgeting are separate planning tools used to monetize the operational plans of the organization; budgets are most commonly created annually as opposed to forecasting that may span multiple years (Huikku, Hyvonen, & Jarvinen, 2017).

Forecasting and performance budgeting provide a theoretical approach to planning and control for long-term and short-term performance creating a congruent strategic allocation of financial resources that provide an organization with a plan to achieve strategic vision (Ho, 2018). The function of both tools allow organizational alignment and create a plan that provides motivation, participation, and should serve as a method of performance management (Brink et al., 2018). The allocation of financial resources provide the operational support needed to carry out strategic vision and plans. The functional use of the budget provides the methodical approach to plan, control, and make decisions that seek to provide operational efficiency and achieve organizational vision providing results that create shareholder value and competitive advantage (Dess et al., 2019).

**Activity-based budgeting.** In alignment with activity-based costing, activity-based budgeting creates revenue targets and determines the activities that are needed to reach
organizational goals. The costs associated with each activity is determined and their associated expenses are budgeted (Wild & Shaw, 2019). One of the benefits of activity-based budgeting is the tie between the budget and capacity creating a link between financial and resource planning (Hansen, 2010). The ability to adapt and change budgetary models is simpler due to computer software used to perform this budgetary function allowing flexibility models to be created quickly aligning with the need for data driven decision making (Huikku et al., 2017).

Although the initial implementation of activity-based budgeting may be more expensive than the traditional budget, the improvement in forecasting and decision making as a result of improved data analytics provide resources that may remain undetected if traditional methods are employed (Ho, 2018). The ability to drive organizational decisions through the use of data analytics provide improved financial acumen creating alignment of organizational efficiencies and the ability to react to business opportunities more quickly adding to competitive advantage (Angelo, Ayers, & Stanfield, 2018).

In summary, the cost accounting theories and business concepts discussed provide an understanding of the cost incurred by those receiving medical procedures and services. The cost may be billed directly to the patient or, as is typical, billed directly to third party insurance carriers to be paid from health insurance premiums collected from businesses operating within the United States. Examining the changes from the perspective of cost accounting provides evidence of the impact that acquisition activity creates on the cost of healthcare and health insurance premiums.

**Examination of Financial Cost Increases in Health Insurance**

Health insurance premiums continue to increase per annum, these increases are creating disparity for employers and employees as employers seek to find a balance between full cost
absorption and the percentage of cost that is passed to its employees (Chernew et al., 2005). The average annual growth rate for health insurance premiums continue to rise with an increase in spending projected to grow at an annual rate of 5.8 percent per annum from 2014 - 2024 (French et al., 2016). Research conducted by the Census Bureau Medical Expenditure Panel Survey - Insurance Component shows that from 1997 - 2005 most employers did not take drastic action because of the continued rise in health insurance premiums with very few employers dropping insurance (Guo & Tao, 2015). As a first step in managing costs, many employers began to spread the cost by passing some of the increase through to its employees or by scaling back the health insurance plans that were being offered (Woodlock, 2014). “The growth of the premiums for employer provided health insurance has been much higher than the growth of GDP, workers’ earnings, and inflation in the last few decades” (Guo & Tao, 2015, p. 219).

Prior to the ACA there was no governmental requirement for employer offered health insurance plans regardless, most employers provided this benefit for employees as part of their benefit package. The ACA created standards for the insurance industry allowing for ease of comparison for companies and individuals allowing for easier and better informed decisions (Rudnicki et al., 2016). The standards apply to eligibility rules, health benefits that have been described as essential, and standardized pricing rates that can vary based on only four factors: age, gender, tobacco use, and zip code. The essential health benefits are described as those that fall in the following categories: “preventative and wellness, maternity and newborn care, behavioral health treatment, substance abuse treatment, prescription drugs, dental, and vision care” (Rudnicki et al., 2016, p. 353).

In response to the enactment of the ACA, the International Foundation of Employee Benefit Plans (IFEBP) collected data showing that 16 percent of small businesses have adjusted
or will adjust employee hours in response to the 30 hour full-time employee rule (Lahm, 2014). In addition, a Gallup poll indicated that more than 41 percent of small business owners have chosen to delay hiring additional workers and more than 38 percent have decided to slow down or hold on expansion plans (Jacobe, 2013). In a 2013 survey conducted by the U.S. Chamber of Commerce, the findings indicated that almost 50 percent of all small business have made the decision to reduce full time employees or to replace full time with part-time workers in an effort to avoid the onus placed on them by the ACA (Lahm, 2014).

**Study Variables**

The discussion below provides an overview of the independent, dependent, and mitigating variables that were selected for this dissertation study based on intentional design. The variables were chosen based on the research question and hypothesis that correlate with this research study. Section 2 will contain greater discussion of these variables, they are introduced to serve the purpose of assessing the academic literature in regards to this study.

**Defining the independent and dependent variables.** The independent variable in the study is acquisition activity within the ambulatory market, research of ambulatory practices before hospital acquisition and a comparison of the dependent variables within the same practices after acquisition will be evaluated to determine the impact of the change on rates billed to insurance carriers (Cleverley & Cleverley, 2018). Procedure codes are the instrument used to bill for services performed by physicians and ambulatory practices use Current Procedural Terminology (CPT) codes to bill insurance carriers and patients for services that are provided (Baker et al., 2018). Healthcare Common Procedure Coding System (HCPCS) are the billing codes used by a hospital entity to bill for services provided for patient care. Medicare allows these billing codes to be as much as four times greater than the rate billed under a CPT code.
(Camilleri, 2018). The impetus for this increase is the additional overhead cost of a hospital entity. These additional costs are not present outside of the hospital location, yet services rendered in an ambulatory practice setting are billed using HCPCS codes once the practice is acquired (Reschovsky, 2015).

**Variables used in the study.** The dependent variables, CPT billing rate, HCPCS, and HOPD billing rates are dependent on the entity ownership allowing for a study of procedure billing rates before and after acquisition of ambulatory practices (Reschovsky, 2015). The study of these dependent variables allowed the researcher to test hypothesis one to determine how the change in ownership impacts the rates billed for medical services. The ambulatory practice continues to operate using the same tangible assets and human capital. The only change made is ownership and because of this change the charge for the procedures are billed under a different code system increasing the charges without any increased cost (Capps et al., 2018).

The negative impact on health insurance rates will be studied by reviewing the cost of health insurance prior to the acquisition of ambulatory practices and increased billing rates (Cleverley & Cleverley, 2018). These dependent variables will show cause-and-effect to determine if the acquisition activity has created an increase in health insurance costs for small and medium sized businesses as a result of the change from CPT procedure codes to HCPCS/HOPD procedure codes (Dauda, 2017). With health insurance costs rising steadily prior to the ratification of Obamacare exceeding GDP growth, inflation, and wage increases, the additional cost that accompanies ambulatory acquisitions has created an even larger cost increase for small to medium size entities (Guo & Tao, 2015).
Conclusion

The literature review evaluated the topics considered the most relevant to this study evaluating them for additional areas of research or for any gaps in the current literature analysis. The historical discussion of legislative changes within the healthcare industry was included for foundational context and to examine the changes that have transpired since their original enactment. The theories surrounding maturing markets and Porter's Five Forces provide theoretical context relevant to the study. The accounting theories and cost accounting principles provide support for the theoretical framework and the cost accounting theories relevant to this study. In addition, these theories form the basis for strategic planning and decision making considered as part of the cause and effect of the acquisition activity. The impact of the acquisition activity within the healthcare industry was reviewed and the impact it places on health insurance premiums and the cost of patient care was included. The continued increase cost of health insurance premiums and its impact on organizational fixed cost and operational profitability as related to the acquisition activity was considered in the review. The literature review concluded with a discussion of the study variables and their relationship to the theories of discussion.

Transition and Summary of Section 1

The rise in ambulatory acquisition activity has been linked to the influx of governmental regulations over the last 10 years as the healthcare industry seeks new ways to improve their financial position and increased cost structure. The maturing healthcare market combined with inefficient processes continues to stymie the quality and cost of care for patients. In addition, the increase in cost of services impacts the health insurance carriers, health insurance rates, and patient cost of services.
As greater regulation emerged, the industry adapted to accommodate the shift in legislative requirements. The influx of change created opportunities for consolidation in an effort to decrease the cost of mandated changes. With the increased acquisition of ambulatory practices, the impact of billing rate changes require further research. A study of the billing rate changes and its impact on the cost of care for health insurance carriers and patients will be the objective of this study.

The question of whether health insurance costs have been impacted because of the increased ambulatory acquisition warrants further study of billing rates before and after the entity ownership change. The rising health insurance costs were examined to determine if there is a cause and effect relationship with the increased ambulatory practice activity. Further, does this activity simply increase the operational profits of the acquiring hospital or does it serve the public by improving the quality of care and simultaneously reducing the cost of care delivery as mandated by the ACA? The study examined the acquisition activity to determine if there is a negative impact on the cost of health insurance for small business entities. Section 2 of this study will examine the role of the researcher, the method and design of the study, data collection and analysis methods, and the reliability of the study. The discussion and analysis provided in the next section will provide a foundation for Section 3 findings and implications.
Section 2: The Project

Research has clearly shown that there is an increase in ambulatory acquisition activity within the healthcare industry resulting in larger hospital owned organizations that reduce the amount of competition and patient choice. One of the most concerning areas of this acquisition activity revolves around the increase in cost of care. The increased billing rates allowed by hospital billing codes has raised the rates billed for services provided by acquired ambulatory practices. The increase in billing is passed directly to the insurance carrier and then to the small business through premium increases or directly to the patient. This section provides a review of the project’s purpose, and addresses the role of the researcher, the data sampling procedures used in the study, the research method and design, data collection techniques and methodology, organization methods, analysis techniques, and the reliability and validity of the data collected.

Purpose Statement

The purpose of this correlational quantitative study is to analyze acquisitions within the healthcare industry to determine their impact on the cost of insurance premiums for small to mid-size businesses entities. The last 30 years has provided a landscape of acquisition activity within the healthcare industry, there have been three significant waves of activity, much of the first two waves were a direct result of hospital acquisitions of private (ambulatory) physician practices in an attempt to fill beds to drive down fixed costs (Carlin et al., 2016). Physicians that are entrepreneurial minded would fulfill their required contract time at the hospital and then migrate back into private practice as the protocols, long hours, and restrictions placed on them as employees restrict their ability to practice medicine based on their education, acquired skills, and gut instincts forged from years of patient care experience (Capps et al., 2018).
The most recent wave of acquisitions extend beyond the ambulatory market taking aim at a multitude of healthcare organizations from pharmaceuticals to skilled care homes (Howard et al., 2017). This impact is compounded as a result of the multiple governmental and legal requirements that have been mandated as a result of the Affordable Care Act (ACA), Health Insurance Portability and Accountability Act (HIPAA), and the American Recovery and Reinvestment Act (ARRA) to name a few (Camilleri, 2018). The healthcare industry has rarely undergone such a transformative period from a revenue and a cost perspective (Baker et al., 2018).

**Role of the Researcher**

The role of the researcher invoked the study of the relationship among variables as required when a quantitative study is chosen as the research method (Creswell, 2014). The quantitative research method seeks to study a cause-and-effect providing a testing method of theory or theory creation through the use of a scientific and systematic approach. The researcher will not interpret or include personal objectivity as required by the use of the fixed research design (Yin, 2018). The researcher will seek to find an explanation of the research question by using an objective approach based on the use of statistical testing of the variables included in the study (Robson & McCartan, 2016).

In a correlational design, the study measures the relationship of two or more variables without any researcher control of those variables (Creswell, 2014). The researcher began the study by reviewing the academic literature relating to ambulatory acquisitions and rising health insurance costs. A review of the research conducted in other studies provided a basis for the determination of appropriate variables for use within this dissertation research study. The use of this research design method provides the researcher with the data to examine the similarities or
differences between the variables to evaluate if a cause-and-effect relationship exists (Schenker & Rumrill, 2004). Nominal independent variables will be used to compare dependent variables within mutually exclusive groups providing data to support or reject the hypotheses that are presented (Robson & McCartan, 2016).

The researcher created research questions in accordance with the appropriate methodology standards, data collection, sampling, and analysis decisions were decided before the data collection began to avoid researcher bias (Robson & McCartan, 2016). Reliability and validity of the research data were considered in the evaluation of variable selection to provide objective data selection designed to minimize or mitigate potential risk (Creswell & Poth, 2018). The researcher seeks to provide a scientific correlational study designed to create reliability and trustworthiness for the reader (Robson & McCartan, 2016).

The researcher collected data from public third-party sources, and as outlined in the data analysis section, the data were analyzed. Statistical methods were used to determine the statistical significance of differences found in the data between the components outlined in the research questions and hypotheses. The researcher calculated the results and used this data to form conclusions based on the outlined research questions and corresponding hypotheses. An outline of the steps used by the researcher to determine the research study groupings, size of sample, techniques for data collection, analysis, reliability, and validity are described in the following sections.

Participants

The research study did not use source participants due to the research method and design chosen. The use of archival data and available public data sources of information provided the basis for examination of the research questions and the hypotheses. The American Medical
Association was a main source of public information providing the data for analysis of healthcare billing rates allowed under Medicare. Further, publicly available data provided by the SCC, the National Conference of State Legislators, and the National Association of Insurance Commissioners regarding increases in insurance rates for small and medium size business entities was also used to retrieve rate comparisons, background information, and other materials to validate data as needed. Finally, an analysis of acquisitions activity, to include number of acquisitions, was reviewed using Becker Hospital Review and other third-party sources such as Deloitte. The data used in this research study contains no personal, sensitive, classified, or confidential information as they were all obtained through the use of third-party public information.

**Research Method and Design**

The research method and design was chosen for this dissertation as it serves the purpose of addressing the research questions and hypotheses in the most scientific and objective manner. The archival data used in the study were obtained from publically available sources and provided the data needed to determine if statistical significance existed. A discussion of the research method and design is provided in the next paragraphs.

**Discussion of method.** A quantitative research method is appropriate when seeking to use a scientific and systematic approach to analyze data removing personal objectivity through the use of the fixed design (Yin, 2018). A quantitative research study provides for the use of data from multiple sources allowing for comparison in search of an explanation of the research question(s) through scientific analysis (Creswell, 2014). The quantitative approach will provide a method to study the independent and dependent variables of ambulatory acquisition activity and
its impact on the rates used to bill insurance companies and patients using statistics to predict or explain the cause-and-effect of the subjects’ activity (Robson & McCartan, 2016).

**Discussion of design.** A correlational research design was selected as appropriate as it provides a methodical and scientific approach in the study of the relationship between the variables (Yin, 2018). This applied doctoral research study seeks to examine if there is such a relationship between the acquisition of ambulatory healthcare practices and the continued rise in health insurance cost. The correlational research design examines variables seeking to determine the relationships, similarities and differences that impact the outcome or result (Schenker & Rumrill, 2004).

The archival data of acquisition of ambulatory physician practices by hospital entities within the state of Virginia were extracted from Becker, and other reputable sources used by the healthcare industry; further, the number of acquisitions by year was included in the data extraction to provide grouping analysis. The billing rates before and after acquisition activity were evaluated to determine if there was a statistically-significant difference between the billing rates for services provided. Health insurance rates were examined to determine the statistical difference between years. The data were then studied in comparison to the changes in billing rates to test for cause-and-effect between the studied variables.

**Summary of research method and design.** The correlational research design was chosen as the most appropriate for the quantitative research method chosen for this study. The use of statistical analysis tools to examine the relationship between dependent and independent variables provides the most effective method of analyzing the relationship between ambulatory acquisition activity and the increase in health insurance cost for small businesses. The use of
archival data allows for this scientific method use providing objective analysis of the data that is studied.

**Population and Sampling**

This correlational fixed design study is intended to provide a representative sample of the population of physicians in the United States. This meets the standard for research as described by Robson and McCartan (2016). A purposive sample method was used in the study, it allows for the judgement of the researcher to be used to achieve a particular purpose to satisfy the needs of the study (Robson & McCartan, 2016). This research study includes two population groups. Each group are described in the additional paragraphs.

The first population is the number of physicians in the U.S. This population was divided into two groups: percentage of physicians employed in ambulatory practice and percentage of physicians employed by a hospital. The second population in the study was the percent change in health insurance rates and the percent increase in physicians employed by the hospital during the years of 2012 – 2019.

**Discussion of population.** The first population group is made up of the entire population of physicians employed in Virginia. This population is divided into two groups, physicians employed in ambulatory practice and the number of physicians employed by a hospital. The change per annum of the population size of each group is calculated in percentage form to evaluate the difference between the years of 2012 – 2019.

The second population group included the percentage of increases in health insurance rates by year and the percentage of increases of hospital employed physicians. The population includes the entire table for each of these groups by year beginning in 2012 through 2019.
This correlational fixed design study described as a standard of research methodology by Robson and McCartan (2016). The intent of this sampling method provides the researcher the ability to use judgment to achieve a purpose as described in the purposive sampling method (Robson & McCartan, 2016). The sample is built to provide the researcher with data that will be used to satisfy the needs of this research study utilizing an objective and methodical approach to analysis (Robson & McCartan, 2016). The first population for this study was determined by reviewing the total population of physicians and then a sample based on state of residence, Virginia, was selected. The second population included the increases in insurance rates and the increase in physicians employed by the hospital. Further, the sample was taken per annum beginning in 2012 through 2019. The sample size for the two population groups are independent, scale variables and are used to evaluate the research questions for purposes of this study (Morgan et al., 2013).

**Discussion of sampling.** Based on a population of 1,005,295 physicians in the U.S., the sample size is reduced to include only active physicians working in the state of Virginia (Kaiser Family Foundation, 2020). The number of physicians working in Virginia is 23,307. The sample must be large enough to provide confidence that the sample is representative of the population (Robson & McCartan, 2016). Using a confidence interval of +5 with a 95 percent confidence level indicates that a sample size of n = 378 should be used for this correlational design (Robson & McCartan, 2016). For this research study the entire sample of 22,873 were included in the study exceeding the statistical requirements (Morgan et al., 2013). The second sample included the entire table, by year, of the increases in health insurance rates and the increases in number of physicians employed by the hospital also exceeding the statistical requirements of a sample size (Morgan et al., 2013).
Further, this study utilized a paired samples t-test to compare the billing rates charged by ambulatory physicians with those billed by hospital physicians. This comparison used the Medicare standard fee schedule based on HCPCS codes for each group studied as is recommended for a paired samples t-test. Using this test provides the researcher with the means for the two groups of physicians, further it provides a statistical measurement of the correlation (Morgan et al., 2013). The change in health insurance rates were compared to the change in the percentage of physicians employed by the hospital to determine if there is a correlation between the change that is impacting health insurance rates as described in the first research question.

The sample was selected from the 2012 - 2019 Medicare HCPCS billing codes and included both professional and technical component fees. The HCPCS codes used were the 1,054 codes that contained a dollar value rate for the OPPS charges, all other HCPCS codes have a standard dollar value added, and this exceeds the 384 records that are required by statistical methodology (Morgan et al., 2013). The associated Hospital Outpatient Prospective Payment System (OPPS) fee is added to the professional component fee to determine the billing rate for ambulatory practices that were acquired by the hospital. The relative value unit for all other HCPCS codes is multiplied by the conversion factor of $35.9335 to determine the additional dollars billed by hospital physicians. The ambulatory private practice rate will be used as a comparison to the rates allowed once acquired by a hospital system to determine the mean by physician type and the comparison of rate differential by year.

**Summary of population and sampling.** In the first population a total of 1,005,295 physicians are active in the U S., this study used the 23,307 physicians located in the state of Virginia as the sample for the first population in this study. There are approximately 9,100 HCPCS billing codes per annum of which 1,054 were chosen for the paired samples t-test
comparison. Of the 23,307 physicians, the total percentage of physicians working in ambulatory practice and the total percentage of physicians working for the hospital will be used exceeding the required sample size of 378. The second population included the entire table of change between the percentage of increase in health insurance rates and the percentage of increase in hospital employed physicians exceeding the 95% confidence level and providing greater than a \( \pm 5 \) interval as is the standard size for this research study (Morgan et al., 2013). The appropriate samples provide the comparisons for the two population groups providing the data used to address the research questions posed in this dissertation research study.

**Data Collection**

Data were collected as required to analyze the research questions and hypotheses following standard procedures of a quantitative dissertation study (Robson & McCartan, 2016). The discussion below identifies the data instruments, collection methods, and organization techniques that were used in the study. A summary of this process is provided to offer clarity of the collection methodology.

**Instruments.** No specific data gathering techniques or instruments were used in this dissertation study. The study examined historical data based on the number of physicians in Virginia grouped into physicians working for ambulatory private practice and those working for a hospital. The Medicare allowable billing rates, as defined by HCPCS and OPPS codes, were evaluated annually from 2012 - 2019 and were compiled using Microsoft Excel and collected from the publicly available Medicare website. The data are an independent variable and is scale by definition.

The percentage increase, per annum, in insurance rates for business located in Virginia is a dependent variable that is scale by definition. The percentage increase in the number of
physicians that were employed by the hospital is an independent variable also scale by definition. The variables are defined as scale because they are an annual percentage that has a normal distribution (Morgan et al., 2013). The average annual percentage increase in insurance rates for businesses located in Virginia were evaluated based on the size of the business and used as a mitigating variable for the research study. The gender of the insured, the age groups or age bands of the insurance policies, and/or the classification individual or family coverage were collected using third-party insurance statistics. All mitigating variables were scale and contained ordered levels with an approximately normal distribution as described by Morgan et al. (2013). The third-party archival sources included, but were not limited to, Medicare 2019 billing rates, Kaiser Family Foundation, Statistica, the National Foundation of Independent Business, and the National Association of Insurance Commissioners. Data gathered were stored in Microsoft Office Excel, Microsoft Word, and Adobe Acrobat.

**Data collection techniques.** Data included in this dissertation study were gathered from publicly available third-party sources thought the use of Microsoft Excel and were downloaded from archival data stored online from the Centers for Medicare Services, American Association of Professional Coders, National Foundation of Independent Business, Statistica, Becker Hospital Review, the National Association of Insurance Commissioners, and other publicly available sources. The number of physicians by group, historical billing rates for the physician groups, and health insurance rates by business entity size were studied for the period of 2012 - 2019 and are listed in the accompanying appendices. Microsoft Excel was used to store the data and cross references and filters were applied as needed for data validation. There were no survey or interview questions utilized in the data collection techniques for this study.
**Data organization techniques.** Microsoft Excel spreadsheet tables were used to collect the data used in this research study. Research notes were recorded in Adobe and Microsoft Word to maintain consistency and provide a progression throughout the study. The data were stored on the researcher’s laptop as well as on flash drives and One Drive that were kept by the researcher to prevent data loss.

**Population and sample organization.** Microsoft Excel spreadsheets were used as the primary organization tool for the detailed HCPCS billing rates, OPPS billable rates, and other associated data. A unfiltered list of HCPCS codes were downloaded into Excel from the Medicare 2012 - 2019 physician fee schedule for the state of Virginia. All billing modifiers were included in the raw data file including professional fees and technical components. The final sample of HCPCS codes with the associated OPPS fees included were stored in Excel with key descriptors included.

The number of active physicians in the U.S. were stored in an excel file, this file includes a listing of physicians located in each state. In addition, the percentage of physicians that were employed by an ambulatory practice and the percentage employed by the hospital were stored in an Excel file based on the years of 2012 - 2019. The percent increase in health insurance rates for business entities was stored in Excel for 2012 - 2019.

**Mitigating variables.** The percentage increase in health insurance rates and the percentage increase in physicians employed by the hospital were stored in Microsoft Excel. The annual increases for business entities were collected in a separate spreadsheet. A small business was defined as having 1 to 100 employees, a medium business had 101 - 500 employees, and a large business had more than 500 employees. The Small Business Administration (SBA) defines a small business based on employee counts that are industry specific (McIntyre, 2020). The
insurance rates were also evaluated based on individual rate or family rate, gender, and age bands to determine if there is a correlation when the mitigating variables are included in the analysis of the increasing insurance rates and increasing percentage of physicians employed by the hospital.

**Summary of data collection.** The data used for this quantitative study were obtained from third-party, historical sources. All raw data were collected from publicly archival sources including, but not limited to, Medicare, Statistica, Kaiser Family Foundation, Becker Hospital Review, National Foundation of Independent Business, and the National Association of Insurance Commissioners. The data were stored and organized using Microsoft Excel on a password protected computer owned by the researcher. The use of Microsoft One Drive and Dropbox were used to back up the data files to prevent the potential loss of data should a computer malfunction or data file corruption occur.

**Data Analysis**

This research study required data to be grouped by percentage of ambulatory physicians and percentage of hospital employed physicians; both groups are independent variables for purposes of this research study. The billing rates for services provided vary depending on the physician employment status (Cleverley & Cleverley, 2018). A paired samples t-test was used based on the billing rates used by each physician group, the billing rate used is a dependent variable of the study as defined by Morgan et al. (2013).

The percent increase in health insurance rates is a dependent, scale variable as the variable is a numeric measurement of change between the years of 2012 - 2019 (Morgan et al., 2013). The independent variable used in the t-test is the percent increase in physicians employed by the hospital. The research question sought to identify a relationship between the increase in
health insurance rates and the increase in hospital acquisitions. An increasing percentage of physicians that are employed by the hospital and a decreasing percentage of physicians in ambulatory practice indicate that the acquisition activity is increasing (Reschovsky, 2015). Health insurance rates increase based on the payments that are made for healthcare and the size of the health insurance pooled dollars and when the cost of care increases, it has a direct impact on the cost of health insurance rates (Dauda, 2017).

Descriptive statistics were run to evaluate the data for all variables. These statistics will be used to compute the mean, minimum, and maximum values and allow the researcher to check for errors within the data set and to look for any problems that may be present (Morgan et al., 2013). The descriptive statistics allow the researcher to determine if there are any missing data fields within each of the variables and the test provides a numerical value for the number of missing data to ensure that the integrity of the sample size is met (Morgan et al., 2013). When evaluating the variables the output of the statistics test will reveal any areas that are not relevant to the study, allowing the research to exclude descriptive statistics that are erroneous (Morgan et al., 2013).

The frequency distribution illustrates the number of times that the numeric value occurs, when scores are close to the middle of the range with a small number to either side, a normal distribution is said to occur (Morgan et al., 2013). Each variable requires a level of measurement so that the meaning of each variable is clearly understood. The variables in this study are scale, known by the traditional term of interval or ratio and allowing for at least five ordered levels that have an approximately normal frequency distribution (Morgan et al., 2013).

The research questions and hypotheses applicable to the study examined the changes in amounts billed for medical procedures and services based on two groups of physicians: those
working for ambulatory practices and those employed by the hospital. To test the hypotheses, the rates billed for procedures, professional fees, and services were examined before ambulatory practice acquisition and compared with billing rates after acquisition. The discussion below discusses the variables used in the study accompanied by a detailed description of the dependent variables and the statistical tests used to test and study the hypotheses.

**Variables used in the study.** The table listed below provides the variable classification and its relevance to this dissertation study.

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Classification</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of hospital physicians</td>
<td>Independent</td>
<td></td>
</tr>
<tr>
<td>Percentage of ambulatory physicians</td>
<td>Independent</td>
<td></td>
</tr>
<tr>
<td>HCPCS billing code</td>
<td>Independent</td>
<td></td>
</tr>
<tr>
<td>Percent change in health insurance rates</td>
<td>Dependent</td>
<td>Scale</td>
</tr>
<tr>
<td>OPPS fee</td>
<td>Dependent</td>
<td>Scale</td>
</tr>
<tr>
<td>Size of business entity</td>
<td>Moderating</td>
<td>Scale</td>
</tr>
<tr>
<td>Type of insurance coverage</td>
<td>Moderating</td>
<td>Scale</td>
</tr>
<tr>
<td>Ownership of Firm</td>
<td>Moderating</td>
<td>Scale</td>
</tr>
<tr>
<td>Age band for insurance</td>
<td>Moderating</td>
<td>Scale</td>
</tr>
</tbody>
</table>

**Hypotheses 1.** The first null hypothesis states that there is no statistically significant difference between the billing rates before acquisition of ambulatory medical practices in Virginia, an independent variable, and the rates after acquisition, a dependent variable. To test this hypothesis the independent variable, HCPCS billing rate for 2012 - 2019 Medicare Provider Fee Schedule, for physicians working in ambulatory practices were compared with the physicians employed by the hospital after acquisition. The independent variable HCPCS billing code is a constant for each physician group. The facility fee is used for ambulatory physician practice billing. The non-facility fee with the additional conversion factor or dollar value indicated by the dependent variable labeled OPPS was used for the hospital employed
physicians. For purposes of this research study, the independent HCPCS code variables that contain a dollar value in the OPPS, dependent variable, column of the table were used equating to approximately 1,000 HCPCS codes per year.

A paired samples t test were run on the comparison of independent HCPCS code variables prior to acquisition and the same HCPCS codes with the dependent OPPS variable after acquisition. The statistical test used was a one-way ANOVA if the dependent variable is normally distributed (Morgan et al., 2013). If the assumptions of the paired samples t test were violated, the non-parametric Wilcoxon test was utilized as it is the appropriate statistical test (Morgan et al., 2013).

**Hypotheses 2.** The second null hypotheses states that there is no statistically significant relationship between the percentage increase in physicians employed by the hospital, an independent variable, and the percentage increase in health insurance rates for single and family coverage, a dependent variable. To test this hypothesis, the percentage increase in physicians employed by the hospital was compared to the percentage increase in health insurance rates for single and family coverage for the years 2012 – 2018. The statistical test used was a bivariate correlation. If the means are within the acceptable range for a normally shaped distribution a Pearson correlation is the appropriate test, if the distribution of data are not normally shaped a nonparametric Spearman rho test will be conducted.

**Hypotheses 3A.** The third null hypothesis of this study proposes that there is no statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase based on the age of the insured. To test this hypothesis a related samples t test will be used if the data are normally distributed. A nonparametric Wilcoxon signed ranks test will be used if the data are not normally distributed.
Hypotheses 3B. Hypotheses 3B and the sub-hypotheses proposes that there is no statistically significant difference between the percentage increase in single insurance rates and the increase in insurance rates based on the type of firm.

The difference between the percentage increase of the dependent variable for type of insurance coverage, individual or family, and the mitigating variable of the insurance rates based on type of firm will be examined. The mitigating variable will be evaluated to determine if there is any difference based on the percentage increase in insurance rates.

Hypotheses 3C. The third null hypothesis and sub-hypotheses of this study propose that there is no statistically significant relationship between the increase in single insurance business rates and the decrease in the number of workers with insurance based on the size of the business.

The mitigating variable, size of the business, will be analyzed to determine if there is a decrease in the number of workers with health insurance based on an increase in the insurance rate premiums. The size of the business entity will be evaluated using a histogram. This graphical representation of the groups illustrates the shape and spread of the business entity size range (Morgan et al., 2013).

A correlation or regression statistical test will be used to test this hypotheses. If the variables are normally distributed then a Pearson correlation will be used, if the variables are not normally distributed then a nonparametric test like the Spearman Rho will be used (Morgan et al., 2013).

A hypothesized mean difference level of $a = .05$ was utilized for statistical testing purposes. This level is considered appropriate for the rejection of a null hypotheses and is the standard level for the statistical analysis that was used for this study (Morgan et al., 2013). The nonparametric Wilcoxon test was used if the paired samples $t$ test assumptions were violated as
is recommended for this statistical analysis (Morgan et al., 2013). The data collection and analysis was conducted from an impartial and neutral position by the researcher as is consistent with the quantitative research scientific method (Creswell & Poth, 2018).

**Summary of data analysis.** The percent change in health insurance rates (dependent variable) and the percent change in acquisition of physicians (independent variable) was compared for the years 2012 - 2019 as indicated in the hypotheses and sub-hypotheses. A paired sample t test was chosen as the statistical method to study the percentage increase of health insurance rates and the percentage increase in physicians that were acquired by the hospital. Correlation testing was performed using the mitigating variables of age, insurance coverage type, and size of the business entity. Results of the statistical analysis and their interpretations in relationship to the hypotheses are discussed in Section 3 of this research study. The results, conclusions drawn, and applications of the analysis and interpretations on the professional practice are outlined in Section 3.

**Reliability and Validity**

The reliability and validity methods used in a quantitative study are an important component of the scientific method and, as such, the analysis and generalization of the results obtained are evaluated based on the sample size used for the research study (Creswell, 2014). The larger the sample size the greater the ability to consider it a representative sample that can be generalized (Creswell & Poth, 2018). The objective nature of quantitative research is appropriate when the data can be quantified, the structured and scientific method used in quantitative studies provide a systematic process providing statistical data analysis (Queiros, Faria, & Almeida, 2017). This section addressed the risk to the reliability and validity of this research study to provide a perspective for the evaluation of the analysis.
Reliability. The ability to reproduce results or to reach the same result when performing the same testing offers a measure of reliability to a quantitative study (Robson & McCartan, 2016). Consistency is important to the reliability of the research study (Creswell, 2014). As indicated in its use of the scientific method, a quantitative study should create the same result on a consistent basis when a test is repeated (Creswell & Poth, 2018).

This dissertation research study was quantitative and was constructed using archival, third-party data that was publicly available. There were multiple sources used to retrieve the data, the primary data elements include the percent increase in health insurance rates by year, the percent increase in physicians acquired by hospital entities and the HCPCS billing rates for ambulatory and hospital physicians.

This research study focused on the results of these data elements within the state of Virginia. The data elements chosen are an industry specific data set for healthcare organizations (Cleverley & Cleverley, 2018). The health insurance rates are published by the Virginia Insurance Commissioner and provide a reliable measure of the average for this state.

Validity. The accuracy of the study results provide academic research with validity (Robson & McCartan, 2016). The consistency of data offers reliability but not data validity as the intent of the data are an important consideration when evaluating results (Robson & McCartan, 2016). Validity is improved when there are multiple tests performed on the data yielding the same result, evidence from multiple sources provide a much greater support for validity in research (Morgan et al., 2013).

Content evidence was used in this study to support the validity that the concept being measured is reasonably represented (Morgan et al., 2013). This dissertation study included the increase in insurance rates for the years 2012 - 2019 only. In addition, the study utilized the
billing fees as represented by the HCPCS code for only Medicare, as this is an industry standard. There is no accommodation in this study for billing rates used by other private insurance payers and the results should not be extrapolated on a dollar value basis. The other variables used in this study are industry standard terms and are commonly accepted, this provides a reasonable assurance of consistency and reduced the validity risk. This study also utilized face validity as the tests were examined on a surface level, this validity testing is more subjective and is based on industry experience (Queiros et al., 2017).

The risk of generalizability centers on incorrect conclusions being drawn from sample data (Robson & McCartan, 2016). This risk was addressed by expanding the sample size to provide a greater generalization of the group that is represented in the study (Robson & McCartan, 2016). The entire active population of physicians working in the state of Virginia were included in this study so that the results offered a more robust population to mitigate the concern of generalization.

**Summary of reliability and validity.** Reliability and validity risks were addressed for this quantitative research study allowing the study results and analysis to be evaluated in an informed manner. The data used in this study were obtained from publicly available sources and are archival providing consistency. This researcher utilized the entire population of physicians in the state of Virginia to provide a more reliable and generalizable study providing a complete representation of the group studied.

**Transition and Summary of Section 2**

The percentage of physicians that are employed by hospitals continues to increase annually. The cost of health insurance for employers has also continued to rise year over year. The continual increase in health insurance has created cost increases for employers, many are
over 10 percent per year (Dauda, 2017). The increasing health insurance premium is the result of an increase in fees billed creating an academic curiosity concerning the increase in ambulatory acquisitions and its impact on the cost of care. The governmental changes in the healthcare market have created unrest within the industry as physicians in private practice are faced with rising costs of compliance creating an opportunity for a maturing healthcare market (Cuellar & Gertler, 2003).

This section outlined the dissertation study and the role of the researcher. The population and sample selection was discussed along with the data collection and analysis strategies employed. The independent, dependent and mitigating variables were detailed and the testing used was outlined. Finally, the topics of reliability and validity as related to this correlational quantitative study were discussed.

Section 3 will present the results of the study to include the findings. Research questions were discussed along with the hypotheses that were tested. The outcomes were presented and conclusions were assessed. The implication and recommendations for action were included and discussed. Further research recommendations and actions were provided. The perspective of the researcher and insight developed through the research process was provided as a conclusion to this section.
Section 3: Application to Professional Practice and Implications for Change

The increase in hospital acquisition of ambulatory physician offices has changed the landscape of ownership within this subset of the healthcare industry (Capps et al., 2018; Yang, 2014). As the healthcare market has matured, the increase in governmental requirements have also risen increasing the cost of healthcare delivery (Camilleri, 2018; D’Arrigo, 2019; Guy & Tao, 2015). This increase in governmental restrictions and the mandate of EHR technology has created a disproportionally large increase in cost for the smaller ambulatory physician office (Blumenthal et al., 2015; Brookstone, 2012). In addition, the enactment of e-prescribing, HIPAA, HITECH, and Obamacare have further intensified the technological disparity among healthcare providers (French et al., 2016; Hecker & Edwards, 2014). This disparity has created a greater opportunity for hospitals to increase acquisition activity as physicians in small, privately owned, practices seek alternatives to the cost of legislation (Carlin et al., 2016).

The small business and, to a lesser extent, the large businesses within the U.S. continue to experience rising increases in health insurance costs (Chernew et al., 2005; Dauda, 2017). This increase in employee benefit costs, a fixed cost, has lowered the ability for small business to enact growth plans including the addition of its employee base because of a reduction in operating income (Dennis, 2016). Employee benefits, in particular health insurance, have been under increased scrutiny by employees entering the market as businesses shift a portion of the increasing cost back to the employee in an attempt to maintain operational profitability (Guo & Tao, 2015). This shift has created a disparity in opportunity for small business owners as they must compete with larger businesses that have lower health care increases based on a wider population pool of actual cost spread (Jacobe, 2013).
The findings of this research study are presented in the section below. The research questions and associated hypotheses presented in Section 1 were reviewed with the intent of contributing to academic literature. The organization of this section presents the findings as follows: (a) overview of the study, (b) presentation of findings, (c) applications to professional practice, (d) recommendations for action, (e) further study recommendations, (f) researcher reflections, and (g) summary and conclusions of the study.

**Overview of the Study**

Although the acquisition of ambulatory physician offices has been used as a method of hospital growth two distinct times over the last 30 years, the most recent acquisition activity has not followed the traditional cycle as physicians have not exited the employ of hospitals once their employment contracts expired (McCue, 2015; McCue et al., 2015). This change of cycle created recent additions to academic literature as an examination of governmental legislation, the concern of anti-trust issues, and business theory warrant further study across several focus areas (Greaney & Ross, 2016). While much of the research has focused on the cost of enacted legislation, research examining the efficacy of the relationship between the increased cost of health insurance premiums and the increased acquisition activity has remained inconclusive (Dennis, 2016; Himmelstein & Woodhandler, 2016; Lahm, 2014). This dissertation study was developed and conducted to contribute to the current body of academic literature and knowledge to bridge the identified gap.

The research design of the study was chosen based on the intention of examination of the relationship between the variables to appropriately address each research question and associated hypotheses outlined in Section 1 (Creswell, 2014). Each research question examined the relationship between acquisition activity and its impact on billing rates and insurance costs.
between the years of 2012 and 2019. The sample size of all active physicians within the U.S. was reduced to include only the active physicians working in the state of Virginia. This study included a second sample size of HCPCS billing codes utilized by physicians in ambulatory care and the HCPCS billing codes with the added OPPS codes utilized by physicians who remain in an ambulatory care setting but were acquired by a hospital entity. The sample size was reduced to include only the HCPCS billing codes that contained a dollar value in the OPPS payment amount based on the Medicare payment tables for the years 2012 - 2019. This reduced the sample size to 4,199 records from the total population of 9,254 records based on the 2019 HCPCS coding file available for public download from the Centers for Medicare and Medicaid website. The incorporation of two population groups within this research study allowed for a more robust analysis of acquisition activity providing more insight and application considerations for the healthcare and insurance industries (Robson & McCartan, 2016). The evaluation of the change in percentages between physicians that were self-employed and those under the employ of a hospital indicated statistically similar pattern changes between the years of examination. This research suggests that acquisition activity increases the cost of healthcare based on the increased billing rates for procedures that are performed within the physician office and outside of the hospital setting based solely on the change of ownership of the ambulatory practice (Baker et al., 2018). This increase in healthcare billing rates is passed to the health insurance companies creating a higher cost to premiums paid ratio increasing the subsequent rates for business entities with a disproportionate increase borne by small and medium sized organizations.
Presentation of the Findings

The section below presents the findings of the research dissertation study. The study investigation was designed to address research questions as outlined in Section 1. The hypotheses associated with each question are provided with a description of how each hypothesis and sub-hypotheses was tested as outlined in the design study methodology. The associated research question is linked to the conclusion of the tests conducted.

The data were constructed based on the annual percentage rate of change in the number of self-employed physicians and the percentage of physicians in the employ of hospitals for the years of 2012 - 2018, the statistical data for 2019 has not been published at the time of this research study. The increase in acquisition activity continues to impact the prices and spending across the healthcare marketplace (Capps et al., 2018). The economic impact of these changes continue to be discussed in relationship to the cost of technology, legislation, and pricing (Cuellar & Gertler, 2003).

The billing rate for self-employed physicians and hospital employed physicians, still working in an ambulatory practice setting, were examined for the years of 2012 - 2019. The billing rates were based on the Medicare allowable rates for each HCPCS code and corresponding OPPS billing increase by procedure (Cleverley & Cleverley, 2018). The actual health insurance rates for the years 2012 - 2019 were examined based on single coverage and family coverage, ownership of business entity, and age of insured to provide additional insight for the study. The increased health insurance costs are impacting the level of insurance coverage offered to employees as increased participation in high deductible plans continue to increase (Chernew et al., 2005).
Descriptive statistics were run on each relationship and pairing relevant to its hypothesis to confirm the appropriate parametric or non-parametric testing based on statistical distribution. Described in Section 2, a paired samples \( t \) test was determined to be the appropriate parametric test as indicated by the number of independent and dependent variables allowing comparison of the independent variable (Morgan et al., 2013). If the assumptions of the paired samples \( t \) test were violated, the nonparametric Wilcoxon test will be employed (Morgan et al., 2013). The paired samples \( t \) test assumes a normal distribution of the dependent variable as indicated by a normally shaped distribution curve (Morgan et al., 2013).

An assumption or condition that is inherent when using a paired samples \( t \) test is the dichotomy of the independent variable and the paring of groups. The skewness of the two variables will be assessed to determine if the dependent variable is normally distributed as required for the use of a paired samples \( t \) test (Morgan et al., 2013). A normally distributed curve is evidenced by symmetry, it is in proportion, mirrored, and has no kurtosis (Morgan et al., 2013). Morgan et al. (2013) provided an arbitrary guideline indicating that a skewness of more than +1.0 or less than -1.0 reveals a distribution that is skewed and the use of a nonparametric test is required. When using a two-tailed \( t \) test or and ANOVA skewness outside of the guideline may not have an impact on the result (Morgan et al., 2013).

Morgan et al. (2013) described kurtosis as a peak of distribution that is outside of the normal curve as leptokurtic and a heavy or flat tail on the curve as a platykurtic. As noted by the authors, statistical analysis does not seem to be impacted by kurtosis so it is usually not included in the testing of data (Morgan et al., 2013). The kurtosis for a standard normal distribution is 3, when the kurtosis is more than +3.0 or less than -3.0 it is indicative of a distribution that is not normally shaped and a nonparametric test should be utilized (Morgan et al., 2013).
The section below provides the details of the results for each hypothesis and its related sub-hypothesis. The descriptive statistics of each are provided in support of the use of a parametric \( t \) test or a nonparametric Wilcoxon related samples test. The statistical analysis for each result is provided and the implications and statistical significance is clearly stated.

**Hypotheses 1.** The first null hypothesis proposed that there is no statistically significant difference between the billing rates before acquisition of ambulatory medical practices in Virginia and the rates after acquisition. To test this hypothesis, the HCPCS billing rate before acquisition was compared with the rate billed after acquisition using a paired samples \( t \) test.

Below is a table of the descriptive statistics of the HCPCS rates billed by ambulatory physicians and the rates billed after practice acquisition.

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before Acquisition</td>
<td>186.9</td>
<td>180.61</td>
<td>2.96</td>
<td>18.34</td>
</tr>
<tr>
<td>After Acquisition</td>
<td>656.3</td>
<td>699.74</td>
<td>2.76</td>
<td>9.96</td>
</tr>
</tbody>
</table>

As the skewness and the kurtosis of the mean returns are indicative of a non-normally shaped distribution, the assumption of the paired samples \( t \) test was violated. As such, the Wilcoxon two related samples test was appropriate for the statistical analysis between the pairing, see Table 2 in Appendix A.

Wilcoxon signed ranks tests were used to compare the change in billing rate of the HCPCS billing code before and after acquisition by a hospital entity. Of the 4,199 codes included in the study, the billing rate after acquisition was higher for every HCPCS billing code. The difference between before acquisition and after acquisition was significant, \( z = -56.12, p = \)
.00, $r = -.87$. The effect size was much larger than typical with an $r$ statistic that was almost perfectly correlated (Morgan et al., 2013). See Appendix A for summarized results.

In summary, the Wilcoxon test for two related samples indicates that there is a statistically significant difference between the rates billed for procedures before an ambulatory practice is acquired and after an acquisition by a hospital entity. As such, the null hypothesis stating that there is no statistically significant difference between the billing rates for procedures before acquisition and after acquisition of an ambulatory practice is rejected. In other words, there is a statistically significant difference between the HCPCS billing rates for the same procedure before and after an ambulatory practice is acquired by a hospital. As described by Morgan et al. (2013) an $r$ size of $\geq .70$ indicates a much larger than typical relationship strength, with an $r = -.88$. With an $r$ statistic this high it indicates that the relationship is almost perfectly correlated.

**Hypotheses 2.** The second null hypothesis purports that there is no statistically significant relationship between the percentage increase in physicians employed by the hospital and the percentage increase in health insurance rates for both single and family coverage.

**Single insurance plans.** To test this hypothesis, the percentage increase of physicians employed by the hospital was compared to the percentage increase in single health insurance rates for the years 2012 – 2018. Further, the percentage increase of physicians employed by the hospital was compared to the percentage increase in family health insurance rates to provide a more robust analysis.

Below is a table of the descriptive statistics of the change in percentage of hospital employed physicians and the change in percentage of insurance rates, by year.
Table 3

Percentage Increase in Hospital Physicians and Insurance Rates

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean %</th>
<th>Standard Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Hospital</td>
<td>44.9</td>
<td>2.72</td>
<td>0.10</td>
<td>-2.18</td>
</tr>
<tr>
<td>% Single Rate</td>
<td>3.43</td>
<td>0.98</td>
<td>0.28</td>
<td>0.04</td>
</tr>
<tr>
<td>% Family</td>
<td>3.72</td>
<td>0.76</td>
<td>0.60</td>
<td>-.35</td>
</tr>
</tbody>
</table>

The skewness and kurtosis of the mean returns are within the acceptable range for a normally shaped distribution, the bivariate Pearson correlation would be the appropriate method of statistical analysis for this test assuming there is a linear relationship between the variables. If the variables do not have a strong linear relationship as indicated by a higher $r^2$ score then the linear assumption is violated and the nonparametric test, Spearman rho should be used. When reviewing the scatterplot for these variables it was determined that there is not a linear relationship as evidenced by the $r^2 = .009$. The quadratic $R^2 = .356$ indicating that the curve fits the points better led to the use of Spearman rho as the appropriate statistical test for these variables.

Figure 2. Scatter diagram for increase in hospital physicians and single insurance rates.
The bivariate Spearman rho correlation was used to test the relationship between the change in percentage of hospital physicians and the change in insurance rates for the single coverage level (See Appendix A).

To investigate if there was a statistically significant association between the percentage increase in hospital physicians and the percentage increase for single health insurance premiums a correlation was computed. The variables violated the linear assumption thus the Spearman rho statistic was calculated, \( r(7) = -0.037, p = .937 \). The direction of correlation was negative, which means that for every positive percentage increase in hospital physicians there is a slight decrease in the single health insurance rate based on a weak negative correlation between the years 2012 and 2018. The effect size is smaller than typical based on the \( r^2 \) value of .001 as defined by Morgan et al. (2013).

In summary, the Spearman rho test for correlation indicates that there is not a statistically significant relationship between the percentage increase in hospital physicians and the percentage increase in insurance rates for single coverage. As such, the null hypothesis stating that there is no statistically significant relationship between the percentage increase in hospital physicians and the percentage increase in insurance rates for single coverage was not rejected. In other words, there is not a statistically significant relationship between the percentage increase in physicians acquired by the hospital and the rates for business single insurance coverage.

**Family insurance plans.** When reviewing the scatterplot for the percentage increase in hospital physicians and the percentage increase in family health insurance rates it was determined that there is not a linear relationship as evidenced by the \( r^2 = .003 \). The quadratic \( R^2 = .622 \) indicating that the curve fits the points better led to the use of Spearman rho as the appropriate statistical test for these variables.
The bivariate Spearman rho correlation was used to test the relationship between the change in percentage of hospital physicians and the change in insurance rates for family coverage level. The bivariate Spearman rho correlation was chosen as the appropriate test based on the nonlinear nature of the scatterplot with an $r^2 = .003$ and a quadratic $R^2 = .62$ indicating a violation of the linear assumption.

To investigate if there was a statistically significant association between the percentage increase in hospital physicians and the percentage increase for family health insurance premiums, a correlation was computed. The variables violated the linear assumption thus the Spearman rho statistic was calculated, $r (7) = -.000$, $p = 1.0$. The direction of correlation was positive, which means that the variables move in the same direction. There is no correlation between the variables based on the Spearman’s rho statistical test. The effect size is much smaller than is typical based on the $r^2$ value of .003 as defined by Morgan et al. (2013; See Appendix B).

In summary, the Spearman rho test for correlation indicates that there is not a statistically significant relationship between the percentage increase in hospital physicians and the
percentage increase in insurance rates for family coverage. As such, the null hypothesis stating that there is no statistically significant relationship between the percentage increase in hospital physicians and the percentage increase in insurance rates for family coverage was not rejected. In other words, there is not a statistically significant relationship between the percentage increase in physicians acquired by the hospital and the rates for business family insurance coverage.

**Hypotheses 3A.** The third null hypothesis and sub-hypotheses of this study proposes that there is no statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase based on the age of the insured. To test this hypothesis, the percentage increase in insurances rates for single coverage for a business is compared to the percentage increase in individual insurance rates based on the age of the insured using a nonparametric Wilcoxon signed ranks test.

**Difference in single rates between business and individual based on age.** Below is a table of the descriptive statistics of the percentage increase in insurance provided by a business and the percentage increase based on the age of the insured. To test this hypothesis an independent samples t test was used.

Table 4

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean %</th>
<th>Standard Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Business Single Rate</td>
<td>3.60</td>
<td>0.083</td>
<td>-.04</td>
<td>-.91</td>
</tr>
<tr>
<td>% Individual Age 20-29</td>
<td>17.42</td>
<td>27.11</td>
<td>2.17</td>
<td>4.73</td>
</tr>
<tr>
<td>% Individual Age 30-39</td>
<td>17.48</td>
<td>27.29</td>
<td>2.18</td>
<td>4.77</td>
</tr>
<tr>
<td>% Individual Age 40-49</td>
<td>17.48</td>
<td>27.36</td>
<td>2.18</td>
<td>4.78</td>
</tr>
<tr>
<td>% Individual Age 50-59</td>
<td>17.46</td>
<td>27.44</td>
<td>2.18</td>
<td>4.78</td>
</tr>
<tr>
<td>% Individual Age 60+</td>
<td>17.48</td>
<td>27.31</td>
<td>2.18</td>
<td>4.76</td>
</tr>
</tbody>
</table>

As the skewness and the kurtosis of the mean returns are indicative of a non-normally shaped distribution, the assumption of normality is violated and a nonparametric test was used.
To investigate if there is a statistically significant difference between the rates of single insurance purchased by a business as compared to the single insurance rate purchased by an individual based on age the use of the Wilcoxon test for two related samples is appropriate.

**H3A Test: Age 20-29.** Wilcoxon signed ranks tests were used to compare the percentage increase of single insurance rates for a business and the percentage increase of single insurance rates for an individual based on the age range of 20-29. Of five years percentage change, three years of single insurance rates for business had a higher percentage increase, and two years of individual insurance rates had a higher percentage and there were no ties. This difference indicating more years of percentage increase for individual insurance, $z = -1.21$, $p = .23$, $r = .54$. The effect size is larger or larger than typical as $r^2 = .29$ and Morgan et al. (2013) defined this value as having a large or larger than typical strength of relationship if the $r$ value is .50 (See Appendix C).

In summary, for the age group 20-29 the Wilcoxon test for two related samples failed to reject the null hypotheses. As such, the null hypothesis stating that there is not a statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase based on the age of the insured is not rejected. In other words, there is not a statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase for the age band of 20 – 29 year old individuals.

**H3A Test: Age 30-39.** Wilcoxon signed ranks tests were used to compare the percentage increase of single insurance rates for a business and the percentage increase of single insurance rates for an individual based on the age range of 30-39. Of five years percentage change, three years of single insurance rates for business had a higher percentage increase and two years of individual insurance rates had a higher percentage and there were no ties. This difference
indicating more years of percentage increase for individual insurance, \( z = -1.21, p = .23, r = .54 \). The effect size is larger or larger than typical as \( r^2 = .29 \) and Morgan et al. (2013) defined this value as having a large or larger than typical strength of relationship if the \( r \) value is .50 (See Appendix C).

In summary, for the age group 30-39 the Wilcoxon test for two related samples failed to reject the null hypotheses. As such, the null hypothesis stating that there is not a statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase based on the age of the insured is not rejected. In other words, there is not a statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase for the age band of 30–39 year old individuals.

**H3A Test: Age 40-49.** Wilcoxon signed ranks tests were used to compare the percentage increase of single insurance rates for a business and the percentage increase of single insurance rates for an individual based on the age range of 40-49. Of five years percentage change, three years of single insurance rates for business had a higher percentage increase and two years of individual insurance rates had a higher percentage and there were no ties. This difference indicating more years of percentage increase for individual insurance, \( z = -1.21, p = .23, r = .54 \). The effect size is larger or larger than typical as \( r^2 = .29 \) and Morgan et al. (2013) defined this value as having a large or larger than typical strength of relationship if the \( r \) value is .50 (See Appendix C).

In summary, for the age group 40-49 the Wilcoxon test for two related samples failed to reject the null hypotheses. As such, the null hypothesis stating that there is not a statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase based on the age of the insured is not rejected. In other words, there is
not a statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase for the age band of 40–49 year old individuals.

**H3A Test: Age 50-59.** Wilcoxon signed ranks tests were used to compare the percentage increase of single insurance rates for a business and the percentage increase of single insurance rates for an individual based on the age range of 50-59. Of five years percentage change, three years of single insurance rates for business had a higher percentage increase and two years of individual insurance rates had a higher percentage and there were no ties. This difference indicating more years of percentage increase for individual insurance, $z = -1.21, p = .23, r = .54$. The effect size is larger or larger than typical as $r^2 = .29$ and Morgan et al. (2013) defined this value as having a large or larger than typical strength of relationship if the $r$ value is .50 (See Appendix C).

In summary, for the age group 50-59 the Wilcoxon test for two related samples failed to reject the null hypotheses. As such, the null hypothesis stating that there is not a statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase based on the age of the insured is not rejected. In other words, there is not a statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase for the age band of 50–59 year old individuals.

**H3A Test: Age 60+.** Wilcoxon signed ranks tests were used to compare the percentage increase of single insurance rates for a business and the percentage increase of single insurance rates for an individual based on the age range of 60+. Of five years percentage change, three years of single insurance rates for business had a higher percentage increase and two years of individual insurance rates had a higher percentage and there were no ties. This difference indicating more years of percentage increase for individual insurance, $z = -1.21, p = .23, r = .54$. 
The effect size is larger or larger than typical as $r^2 = .29$ and Morgan et al. (2013) defined this value as having a large or larger than typical strength of relationship if the $r$ value is .50 (See Appendix C).

In summary, for the age group 60+ the Wilcoxon test for two related samples failed to reject the null hypotheses. As such, the null hypothesis stating that there is not a statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase based on the age of the insured is not rejected. In other words, there is not a statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase for the age band of 60+ year old individuals. The years of 2017 and 2018 had a dramatic percentage increase over other years with 2018 having an extremely high increase in individual rates across all age bands. In contrast, the percentage increase in business insurance plans remained fairly stable as illustrated in the figure below.

![Increase in Insurance Rates for Business Plans v. Increase in Individual Age Band Plans](image)

**Figure 4.** Increase by years for business and individual age band plans.

When comparing the percent increase in business health insurance rates with age band individual insurance rates there was a consistency in the findings of $z = -1.21$, $p = .23$, $r = .54$ across all age bands.
Table 5

**H3A. Tabulated Difference in Business Single Rates and Individual Age Based Rates**

<table>
<thead>
<tr>
<th>Age Band</th>
<th>Z</th>
<th>Sig. 2-tailed</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>-1.21</td>
<td>0.23</td>
</tr>
<tr>
<td>30-39</td>
<td>-1.21</td>
<td>0.23</td>
</tr>
<tr>
<td>40-49</td>
<td>-1.21</td>
<td>0.23</td>
</tr>
<tr>
<td>50-59</td>
<td>-1.21</td>
<td>0.23</td>
</tr>
</tbody>
</table>

**Hypotheses 3B.** The third null hypothesis and sub-hypotheses of this study proposes that there is no statistically significant difference between the percentage increase in single insurance rates and the percentage increase in insurance rates based on the type of firm. To test this hypothesis, the increase in insurance rates for single coverage were compared to the increase in individual insurance rates based on the type of firm. Further, the increase in family insurance rates were compared to the increase in family rates based on the type of firm.

Descriptive statistics, shown below, of the percentage increase in insurance rates for single and family coverage and the percentage increase in single and family rates based on the type of firm. To test this hypothesis a parametric paired samples $t$ test was selected as the appropriate statistical analysis. The skewness and kurtosis of the mean returns were met for all firm types with the exception of the small public firm that had a skewness of 1.34 which violated the assumption of normality. Thus, the Wilcoxon signed ranks nonparametric test is the appropriate statistical test to determine if there is a statistical difference.

*Small and large firm types.*
Table 6

*H3B: Single Rate Increase Firm Type Small and Large*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Std. Error</th>
<th>Statistic</th>
<th>Std. Error</th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Increase for business plans</td>
<td>6</td>
<td>.024</td>
<td>.048</td>
<td>.03487</td>
<td>.008540</td>
<td>.392</td>
<td>.845</td>
<td>-.363</td>
<td>1.741</td>
<td>.392</td>
<td>1.741</td>
</tr>
<tr>
<td>Single Rate for Small Private For profit</td>
<td>6</td>
<td>.006</td>
<td>.082</td>
<td>.04746</td>
<td>.030484</td>
<td>-.468</td>
<td>.845</td>
<td>-1.615</td>
<td>1.741</td>
<td>-.468</td>
<td>1.741</td>
</tr>
<tr>
<td>Single Rate for Small Public</td>
<td>6</td>
<td>-.053</td>
<td>.233</td>
<td>.04735</td>
<td>.106622</td>
<td>1.164</td>
<td>.845</td>
<td>1.042</td>
<td>1.741</td>
<td>1.164</td>
<td>1.741</td>
</tr>
<tr>
<td>Single Rate for Small Not for profit</td>
<td>6</td>
<td>.003</td>
<td>.058</td>
<td>.02478</td>
<td>.021049</td>
<td>.801</td>
<td>.845</td>
<td>-.373</td>
<td>1.741</td>
<td>.801</td>
<td>1.741</td>
</tr>
<tr>
<td>Single Rate for Large Private For profit</td>
<td>6</td>
<td>.009</td>
<td>.053</td>
<td>.03135</td>
<td>.017890</td>
<td>.010</td>
<td>.845</td>
<td>-1.721</td>
<td>1.741</td>
<td>.010</td>
<td>1.741</td>
</tr>
<tr>
<td>Single Rate for Large Public</td>
<td>6</td>
<td>-.021</td>
<td>.073</td>
<td>.03138</td>
<td>.035546</td>
<td>-.203</td>
<td>.845</td>
<td>-.609</td>
<td>1.741</td>
<td>-.203</td>
<td>1.741</td>
</tr>
<tr>
<td>Single Rate for Large Not for profit</td>
<td>6</td>
<td>.005</td>
<td>.053</td>
<td>.03149</td>
<td>.016088</td>
<td>-.524</td>
<td>.845</td>
<td>1.383</td>
<td>1.741</td>
<td>-.524</td>
<td>1.741</td>
</tr>
<tr>
<td>Business Provided Family % Increase</td>
<td>6</td>
<td>.030</td>
<td>.045</td>
<td>.03733</td>
<td>.005857</td>
<td>.163</td>
<td>.845</td>
<td>-1.060</td>
<td>1.741</td>
<td>.163</td>
<td>1.741</td>
</tr>
<tr>
<td>Family Rate for Large Private For profit</td>
<td>6</td>
<td>.028</td>
<td>.048</td>
<td>.03736</td>
<td>.009234</td>
<td>.061</td>
<td>.845</td>
<td>-2.653</td>
<td>1.741</td>
<td>.061</td>
<td>1.741</td>
</tr>
<tr>
<td>Family Rate for Large Public</td>
<td>6</td>
<td>-.007</td>
<td>.074</td>
<td>.03942</td>
<td>.027698</td>
<td>-.814</td>
<td>.845</td>
<td>1.077</td>
<td>1.741</td>
<td>-.814</td>
<td>1.741</td>
</tr>
<tr>
<td>Large Not for Profit Family</td>
<td>6</td>
<td>.005</td>
<td>.060</td>
<td>.03151</td>
<td>.018691</td>
<td>.165</td>
<td>.845</td>
<td>.597</td>
<td>1.741</td>
<td>.165</td>
<td>1.741</td>
</tr>
<tr>
<td>Family Rate for Small Private For profit</td>
<td>6</td>
<td>.001</td>
<td>.082</td>
<td>.05134</td>
<td>.037654</td>
<td>-.838</td>
<td>.845</td>
<td>-1.887</td>
<td>1.741</td>
<td>-.838</td>
<td>1.741</td>
</tr>
<tr>
<td>Family Rate for Small Public</td>
<td>6</td>
<td>-.034</td>
<td>.092</td>
<td>.03655</td>
<td>.052124</td>
<td>-.273</td>
<td>.845</td>
<td>-2.213</td>
<td>1.741</td>
<td>-.273</td>
<td>1.741</td>
</tr>
<tr>
<td>Family Rate for Small Not for Profit</td>
<td>6</td>
<td>-.025</td>
<td>.075</td>
<td>.03302</td>
<td>.037264</td>
<td>-.587</td>
<td>.845</td>
<td>-.581</td>
<td>1.741</td>
<td>-.587</td>
<td>1.741</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Wilcoxon signed ranks tests were used to compare the percent change in single insurance rates with the percent increase in single insurance rates based on ownership type of small and large firms.

**Single rate for small and large private firms.** Wilcoxon signed ranks tests were used to compare the percentage increase of business plans and the percentage increase of small private firms. Of six years, four years of insurance rates for small private firms had a higher percentage increase, two years of single insurance rates had a higher percentage and there were no ties. This difference indicating that small private firms had a higher percentage insurance increase than business plans is not statistically significant, $z = -.73, p = .46, r = .30$.

Wilcoxon signed ranks tests were used to compare the percentage increase of business plans and the percentage increase of large private firms. Of six years, three years of insurance rates for large private firms had a higher percentage increase, three years of single insurance rates had a higher percentage and there were no ties. This difference indicating that large private firms had an equal number of increases as the business plans is not statistically significant, $z = -.31, p = .75, r = .13$. Although neither difference is statistically significant, the small private firms had a lower $p$ score than the large private firms.

**Single rate for small and large public firms.** Wilcoxon signed ranks tests were used to compare the percentage increase of business plans and the percentage increase of small public firms. Of six years, three years of insurance rates for small private firms had a higher percentage increase, three years of single insurance rates had a higher percentage and there were no ties. This difference indicating that small public firms had an equal number of years of higher percentage insurance increase as business plans is not statistically significant, $z = -.31, p = .75, r = .13$. 
Wilcoxon signed ranks tests were used to compare the percentage increase of business plans and the percentage increase of large public firms. Of six years, three years of insurance rates for large private firms had a higher percentage increase, three years of single insurance rates had a higher percentage and there were no ties. This difference indicating that large private firms had an equal number of increases as the business plans is not statistically significant, $z = -.31$, $p = .75$, $r = .13$. Although neither difference is statistically significant, the small public firms and the large public firms had an equal $p$ score.

Single rate for small and large not for profit firms. Wilcoxon signed ranks tests were used to compare the percentage increase of business plans and the percentage increase of small not for profit firms. Of six years, five years of insurance rates for small private firms had a higher percentage increase, one year of single insurance rates had a higher percentage and there were no ties. This difference indicating that small public firms had an equal number of years of higher percentage insurance increase as business plans is not statistically significant, $z = -1.15$, $p = .25$, $r = .47$.

Wilcoxon signed ranks tests were used to compare the percentage increase of business plans and the percentage increase of large not for profit firms. Of six years, four years of insurance rates for large private firms had a higher percentage increase, two years of single insurance rates had a higher percentage and there were no ties. This difference indicating that large private firms had an equal number of increases as the business plans is not statistically significant, $z = -.52$, $p = .60$, $r = -2.55$. Although neither difference is statistically significant, the small not for profit firms had a lower $p$ score than the large not for profit firms (See Appendix D for full comparison).
Table 7

**H3B Single Rate Statistical Comparison**

<table>
<thead>
<tr>
<th>Single Rate Private Firms</th>
<th>z</th>
<th>p</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>-0.73</td>
<td>0.46</td>
<td>0.30</td>
</tr>
<tr>
<td>Large</td>
<td>-0.31</td>
<td>0.75</td>
<td>0.13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public Firms</th>
<th>z</th>
<th>p</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>-0.31</td>
<td>0.75</td>
<td>0.13</td>
</tr>
<tr>
<td>Large</td>
<td>-0.31</td>
<td>0.75</td>
<td>0.13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Not for Profit Firms</th>
<th>z</th>
<th>p</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>-1.15</td>
<td>0.25</td>
<td>0.47</td>
</tr>
<tr>
<td>Large</td>
<td>-0.52</td>
<td>0.60</td>
<td>-2.55</td>
</tr>
</tbody>
</table>

In summary, the Wilcoxon test for two related samples failed to reject the null hypotheses. As such, the null hypothesis stating that there is not a statistically significant difference the percentage increase in single insurance rates and the increase in insurance rates based on the type of firm is not rejected. In other words, there is not a statistically significant difference between the percentage increase in single insurance rates and the increase in insurance rates based on the type of firm.

![Single Rate by Firm Type](image)

*Figure 5. H3B: Increase in Single Insurance by Firm Type.*
Family rate for small and large private firms. Wilcoxon signed ranks tests were used to compare the percentage increase of family insurance coverage business plans and the percentage increase of family coverage for small private firms. Of six years, two years of insurance rates for small private firms had a higher percentage increase, four years of single insurance rates had a higher percentage and there were no ties. This difference indicating that family coverage in small private firms had a lower percentage insurance increase than business plans is not statistically significant, \( z = -1.15, p = .25, r = .47 \).

Wilcoxon signed ranks tests were used to compare the percentage increase of business plans and the percentage increase of large private firms. Of six years, three years of insurance rates for large private firms had a higher percentage increase, three years of single insurance rates had a higher percentage and there were no ties. This difference indicating that large private firms had an equal number of increases as the business plans is not statistically significant, \( z = -.11, p = .92, r = .04 \). Although neither difference is statistically significant, the small private firms had a lower \( p \) score than the large private firms.

Family rate for small and large public firms. Wilcoxon signed ranks tests were used to compare the percentage increase of business plans and the percentage increase of small public firms. Of six years, three years of insurance rates for small private firms had a higher percentage increase, three years of single insurance rates had a higher percentage and there were no ties. This difference indicating that small public firms had an equal number of years of higher percentage insurance increase as business plans is not statistically significant, \( z = -.11, p = .92, r = .04 \).

Wilcoxon signed ranks tests were used to compare the percentage increase of business plans and the percentage increase of large public firms. Of six years, two years of insurance rates
for large private firms had a higher percentage increase, four years of single insurance rates had a higher percentage and there were no ties. This difference indicating that large private firms had an equal number of increases as the business plans is not statistically significant, $z = -.31, p = .75, r = .13$. Although neither difference is statistically significant, the large public firms had a lower $p$ score than the small public firms.

*Family rate for small and large not for profit firms.* Wilcoxon signed ranks tests were used to compare the percentage increase of business plans and the percentage increase of small not for profit firms. Of six years, three years of insurance rates for small private firms had a higher percentage increase, three years of single insurance rates had a higher percentage and there were no ties. This difference indicating that small public firms had an equal number of years of higher percentage insurance increase as business plans is not statistically significant, $z = -.31, p = .75, r = .13$.

Wilcoxon signed ranks tests were used to compare the percentage increase of business plans and the percentage increase of large not for profit firms. Of six years, five years of insurance rates for large private firms had a higher percentage increase, one year of single insurance rates had a higher percentage and there were no ties. This difference indicating that large private firms had an equal number of increases as the business plans is not statistically significant, $z = -1.15, p = .25, r = .47$. Although neither difference is statistically significant, the small not for profit firms had a lower $p$ score than the large not for profit firms (See Appendix D for a detailed comparison).
Table 8

**H3B Single Rate Statistical Comparison**

<table>
<thead>
<tr>
<th>Single Rate</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Firms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>-0.73</td>
<td>0.46</td>
<td>0.30</td>
</tr>
<tr>
<td>Large</td>
<td>-0.31</td>
<td>0.75</td>
<td>0.13</td>
</tr>
<tr>
<td>Public Firms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>-0.31</td>
<td>0.75</td>
<td>0.13</td>
</tr>
<tr>
<td>Large</td>
<td>-0.31</td>
<td>0.75</td>
<td>0.13</td>
</tr>
<tr>
<td>Not for Profit Firms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>-1.15</td>
<td>0.25</td>
<td>0.47</td>
</tr>
<tr>
<td>Large</td>
<td>-0.52</td>
<td>0.60</td>
<td>-2.55</td>
</tr>
</tbody>
</table>

*Figure 6. H3B: Increase in Family Insurance by Firm Type.*

**Hypotheses 3C.** The third null hypothesis and sub-hypotheses of this study propose that there is no statistically significant relationship between the increase in single insurance business rates and the decrease in the number of workers with insurance based on the size of the business. To test this hypotheses, the percentage increase of physicians employed by the hospital was compared to the percentage increase in single health insurance rates for the years 2013 – 2019.

Below is a table of the descriptive statistics of the increase in single insurance business rates and the decrease in the number of workers with insurance based on the size of the business, by year (See Appendix E for a full comparison).
**Employee Age Groups.**

Table 9

% Increase in Insurance Rates and % Decrease in Workers with Insurance by Business Size

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean %</th>
<th>Standard Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Increase in Rate</td>
<td>0.04</td>
<td>0.01</td>
<td>-.40</td>
<td>-.91</td>
</tr>
<tr>
<td>3-9 Employees</td>
<td>-.00</td>
<td>0.04</td>
<td>0.48</td>
<td>-.03</td>
</tr>
<tr>
<td>10-24 Employees</td>
<td>-.01</td>
<td>0.03</td>
<td>1.44</td>
<td>3.05</td>
</tr>
<tr>
<td>25-49 Employees</td>
<td>-.01</td>
<td>0.04</td>
<td>0.99</td>
<td>3.35</td>
</tr>
<tr>
<td>50-199 Employees</td>
<td>-.00</td>
<td>0.02</td>
<td>-.58</td>
<td>0.05</td>
</tr>
</tbody>
</table>

3-9 Employees. If skewness and kurtosis of the mean returns are within the acceptable range for a normally shaped distribution, the bivariate Pearson correlation would be the appropriate method of statistical analysis for this test assuming there is a linear relationship between the variables. If the variables do not have a strong linear relationship as indicated by a higher $r^2$ score then the linear assumption is violated and the nonparametric test, Spearman rho should be used. When reviewing the scatterplot for these variables it was determined that there is not a linear relationship as evidenced by the $r^2 = .18$. The quadratic $R^2 = .24$ indicating the use of Spearman rho as the appropriate statistical test for these variables. See figure below.
The bivariate Spearman rho correlation was used to test the relationship between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm. To investigate if there was a statistically significant association between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm a correlation was computed. The variables violated the linear assumption thus the Spearman rho statistic was calculated, $r (7) = -.25, p = .59$. The direction of correlation was negative, which means that for every positive percentage increase in health insurance rates there was a slight decrease in the percentage of workers with health insurance in firms with 3-9 employees based on a weak negative correlation. The effect size is medium based on the $r^2$ value of .18 as defined by Morgan et al. (2013; See Appendix E).

Figure 7. Scatter Diagram 3-9 Employees.
10-24 Employees. If skewness and kurtosis of the mean returns are within the acceptable range for a normally shaped distribution, the bivariate Pearson correlation would be the appropriate method of statistical analysis for this test assuming there is a linear relationship between the variables. If the variables do not have a strong linear relationship as indicated by a higher $r^2$ score then the linear assumption is violated and the nonparametric test, Spearman rho should be used. When reviewing the scatterplot for these variables it was determined that there is not a linear relationship as evidenced by the $r^2 = .02$. The quadratic $R^2 = .10$ indicating the use of Spearman rho as the appropriate statistical test for these variables.

Figure 8. Scatter Diagram 10-24 employees.

The bivariate Spearman rho correlation was used to test the relationship between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm.
To investigate if there was a statistically significant association between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm a correlation was computed. The variables violated the linear assumption thus the Spearman rho statistic was calculated, \( r(7) = .16, p = .73 \). The direction of correlation was positive, which means that for every positive percentage increase in health insurance rates there was a slight decrease in the percentage of workers with health insurance in firms with 10-24 employees based on a weak positive correlation. The effect size is small based on the \( r^2 \) value of .02 as defined by Morgan et al. (2013; See Appendix E).

25-49 Employees. If skewness and kurtosis of the mean returns are within the acceptable range for a normally shaped distribution, the bivariate Pearson correlation would be the appropriate method of statistical analysis for this test assuming there is a linear relationship between the variables. If the variables do not have a strong linear relationship as indicated by a higher \( r^2 \) score then the linear assumption is violated and the nonparametric test, Spearman rho should be used. When reviewing the scatterplot for these variables it was determined that there is a linear relationship as evidenced by the \( r^2 = .17 \). The quadratic \( R^2 = .17 \). However, the skewness and kurtosis was violated for this data set indicating the use of Spearman rho as the appropriate statistical test for these variables.
Figure 9. Scatter Diagram 25-49 employees.

The bivariate Spearman rho correlation was used to test the relationship between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm.

To investigate if there was a statistically significant association between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm a correlation was computed. The variables violated the linear assumption thus the Spearman rho statistic was calculated, $r(7) = .22, p = .63$. The direction of correlation was positive, which means that for every positive percentage increase in health insurance rates there was a slight decrease in the percentage of workers with health insurance in firms with 25-49 employees based on a weak positive correlation. The effect size is medium based on the $r^2$ value of .17 as defined by Morgan et al. (2013; See Appendix D).
50-199 Employees. If skewness and kurtosis of the mean returns are within the acceptable range for a normally shaped distribution, the bivariate Pearson correlation would be the appropriate method of statistical analysis for this test assuming there is a linear relationship between the variables. If the variables do not have a strong linear relationship as indicated by a higher $r^2$ score then the linear assumption is violated and the nonparametric test, Spearman rho should be used. When reviewing the scatterplot for these variables it was determined that there is not a linear relationship as evidenced by the $r^2 = .01$. The quadratic $R^2 = .82$, as violated for this data set indicating the use of Spearman rho as the appropriate statistical test for these variables.

![Figure 10. Scatter Diagram 50-199 employees.](image)

The bivariate Spearman rho correlation was used to test the relationship between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm.
To investigate if there was a statistically significant association between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm a correlation was computed. The variables violated the linear assumption thus the Spearman rho statistic was calculated, $r (7) = .11, p = .82$. The direction of correlation was positive, which means that for every positive percentage increase in health insurance rates there was a slight decrease in the percentage of workers with health insurance in firms with 50-199 employees based on a weak positive correlation. The effect size is small or small than typical based on the $r^2$ value of .01 as defined by Morgan et al. (2013; See Appendix E).

200-999 Employees. If skewness and kurtosis of the mean returns are within the acceptable range for a normally shaped distribution, the bivariate Pearson correlation would be the appropriate method of statistical analysis for this test assuming there is a linear relationship between the variables. If the variables do not have a strong linear relationship as indicated by a higher $r^2$ score then the linear assumption is violated and the nonparametric test, Spearman rho should be used. When reviewing the scatterplot for these variables it was determined that there is not a linear relationship as evidenced by the $r^2 = .77$. The quadratic $R^2 = .77$, as violated for this data set indicating the use of Spearman rho as the appropriate statistical test for these variables.
The bivariate Spearman rho correlation was used to test the relationship between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm.

To investigate if there was a statistically significant association between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm a correlation was computed. The variables violated the linear assumption thus the Spearman rho statistic was calculated, \( r(7) = .87, p = .01 \). The direction of correlation was positive, which means that for every positive percentage increase in health insurance rates there was a slight decrease in the percentage of workers with health insurance in firms with 200-999 employees based on a weak positive correlation. The effect size is much larger than typical based on the \( r^2 \) value of .76 as defined by Morgan et al. (2013; See Appendix E).
In summary, the Spearman rho test for correlation indicates that there is not a statistically significant relationship between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm for all firm sizes except for the 200-999. As such, the null hypothesis stating that there is no statistically significant relationship between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm was not rejected. In other words, there is not a statistically significant relationship between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm.

For the firm size of 200-999 employees the Spearman rho test for correlation indicates that there is a statistically significant relationship between the percentage increase in insurance rates and the percentage decrease in insurance coverage for this size firm. As such, the null hypothesis for the 200-999 employees stating that there is no statistically significant relationship is rejected. In other words, there is a statistically significant relationship between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm.

Relationship of hypotheses to research questions. Each research question is addressed below and the results of the hypothesis and sub-hypotheses are linked back to the appropriate research question. As a result, the conclusions presented indicate that questions have been addressed in an appropriate manner.

Research Question 1. What is the difference between billing rates for procedures before acquisitions of ambulatory practices and after acquisition in the state of Virginia? The first null hypothesis and sub-hypothesis proposed there is no statistically significant difference between the billing rates for procedures before acquisition of ambulatory medical practices and after
acquisition of the practice was rejected. Descriptive statistics were reviewed, indicating a non-normal distribution requiring performance of a Wilcoxon of the two related samples test. This statistical analysis is appropriate based on the number of independent variables and dependent variables (Morgan et al., 2013).

The HCPCS billing code rates for ambulatory practices were compared with the billing rates of practices after acquisition. The HCPCS billing codes were downloaded for the years 2012 – 2019 from the Centers for Medicare & Medicaid Services. The same HCPCS code, per year, were compared annually to identify the change in rate after acquisition. The same process was followed for the OPPS billing codes specifically identified by a dollar value rather than a conversion factor allowing for comparability by year.

Of the 4,199 codes included in the study, the billing rate after acquisition was higher for every HCPCS billing code. There was a statistically significant difference in the HCPCS billing codes before acquisition and after acquisition, $N = 4,199$, $z = -56.12$, $p = .00$, $r = -.87$. See Appendix A for summarized results. As described by Morgan et al. (2013), an $r$ size of $\geq .70$ indicates a much larger than typical relationship strength, with an $r = -.88$. With an $r$ statistic this high it indicates that the relationship is almost perfectly correlated.

Research Question 2. What is the relationship between acquisitions of ambulatory physicians and increased health insurance rates in Virginia? The second null hypothesis states that there is no statistically significant relationship between the percentage increase in physicians employed by the hospital and the percentage increase in health insurance rates for both single and family coverage. The descriptive statistics for single coverage were reviewed and the distribution was nonlinear based on the scatterplot as evidenced by the $r^2 = .009$. The quadratic $R^2 = .356$ indicating that the curve fits the points better for the single coverage level that led to
the use of Spearman rho as the appropriate statistical test for these variables. The descriptive statistics for family coverage were also nonlinear as evidenced by the $r^2 = .003$ with a quadratic $R^2 = .622$.

The direction of correlation was negative for the single coverage rate, indicating that for every positive percentage increase in hospital physicians there is a slight decrease in the single health insurance rate based on a weak negative correlation. The direction of correlation for family coverage was positive, indicating that for every positive percentage increase in hospital physicians there is a slight positive increase in the family health insurance rate. The effect size for the single and family coverage rate was smaller than typical based on the $r^2$ value of .001 for single coverage and .003 for family coverage respectively as defined by Morgan et al. (2013).

The tests revealed that there was not a statistically significant association between the percentage increase in hospital physicians and the percentage increase for single and family health insurance premiums as evidenced by the Spearman rho statistic, $r (7) = -.037, p = .937$ and $r (7) = -.000, p = 1.0$, respectively. As such, the null hypothesis stating that there is no statistically significant relationship between the percentage increase in hospital physicians and the percentage increase in insurance rates for single coverage was not rejected. The results of these performance measures were provided in Appendix B.

**Research Question 3.** Is there a difference or relationship between the percentage increase in health insurance rates and the age of the insurance pools, ownership of the firm, or the size of the business entity? Each of these mitigating variables was addressed with a separate hypothesis and will be related to the research question accordingly.

**Research Question 3A.** Is there a difference between the percentage increase in health insurance rates and the percentage increase in individual insurance plans based on the age of the
insured? The null hypothesis and sub-hypothesis of this study proposes that there is no statistically significant difference between the percentage increase in insurance provided by a business and the percentage increase based on the age of the insured. To test this hypothesis, the percentage increase in insurance rates for single coverage for a business is compared to the percentage increase in individual insurance rates. The tests were done based on five age bands in accordance with individual health plans and the ACA age bands using an independent samples $t$ test.

Descriptive statistics were reviewed for each of the five categories, each indicating a non-normal distribution which required a nonparametric Wilcoxon two related samples test to be performed. The statistical analysis is appropriate based on the number of dependent or mitigating variables and the comparison with the independent variable (Morgan et al., 2013).

The percentage increase in insurance rates for the years 2015-2019 were compared to the percentage increase for 20-29, 30-39, 40-49, 50-59, and 60+ to determine if there is a statistical difference. The results of the Wilcoxon signed ranks tests for the five age bands, as compared to the single business plan rate increase, are presented in Appendix C. Of the five age bands studied there was no statistically significant difference based on age, $N = 5$, $z = -1.21$, $p = .23$, and $r = .54$. As a result, the null hypothesis failed to be rejected indicating that there is no statistically significant difference. There was a higher than normal percentage increase in the year 2018 as is evidenced in Appendix C with all other years for age band relatively comparable with the percentage increase for business single insurance rates.

*Research Question 3B.* Is there a difference between the percentage increase in health insurance rates and the percentage increase in insurance rates based on the firm type? The null hypothesis and sub-hypothesis of this study proposes that there is no statistically significant
difference between the percentage increase in single or family insurance rates and the percentage increase in insurance rates based on the firm type. To test this hypothesis, the percentage increase in insurance rates for single and family coverage were compared to the increase in individual insurance rates based on the type of firm. The firm types were categorized between small and large for three types of firms: private for profit, public, and not for profit. The insurance rates compared were single and family for each of the firm types.

Descriptive statistics were reviewed for each of the categories and sub-categories each indicating a non-normal distribution which required a nonparametric Wilcoxon two related samples test to be performed. The statistical analysis is appropriate based on the number of dependent or mitigating variables and the comparison with the independent variable (Morgan et al., 2013).

For the single rate, the results of the Wilcoxon signed ranks tests for the categories and sub-categories are presented in Appendix D. The first category of private firms indicated that there was no statistical difference based on small, \( N = 6, z = -.73, p = .46, r = .30 \); or large firms, \( N = 6, z = -.31, p = .75, r = .13 \). Of six years, small firms had a higher percentage increase for four years as compared to two years for large private firms. The second category of public firms indicated that there was no statistical difference based on small or large firms each with the statistical results of \( N = 6, z = -.31, p = .75, r = .13 \). Of six years, small and large firms had a higher percentage increase for three years and a lower percentage for the remaining three years with no ties. The third category of not for profit firms indicated that there was no statistical difference based on small, \( N = 6, z = -1.15, p = .25, r = .47 \); or large firms, \( N = 6, z = -.52, p = .60, r = -2.55 \). Of six years, small firms had a higher
percentage increase for five years as compared to four years for large private firms (See Appendix D for results comparison).

For the family rate, the results of the Wilcoxon signed ranks tests for the categories and sub-categories are presented in Appendix D. The first category of private firms indicated that there was no statistical difference based on small, \( N = 6, z = -1.15, p = .25, \) and \( r = .47; \) or large firms, \( N = 6, z = -.11, p = .92, \) and \( r = .04, \) respectively. Of six years, small firms had a higher percentage increase for two years as compared to three years for large private firms. The second category of public firms indicated that there was no statistical difference based on small, \( N = 6, z = -.11, p = .92, \) and \( r = .04; \) or large firms, \( N = 6, z = -.31, p = .75, \) and \( r = .13 \), respectively. Of six years, small large firms had a higher percentage increase for three years and large firms had a higher percentage for two years with no ties. The third category of not for profit firms indicated that there was no statistical difference based on small, \( N = 6, z = -.31, p = .75, \) and \( r = .13; \) or large firms, \( N = 6, z = -1.15, p = .25, \) and \( r = -.47, \) respectively. Of six years, small firms had a higher percentage increase for three years as compared to five years for large private firms (See Appendix D for results comparison).

As a result, the null hypothesis failed to be rejected indicating that there is no statistically significant difference between the percentage increase in single insurance rates and the increase in insurance rates based on the type of firm. There was a higher than normal percentage increase in the year 2018 as is evidenced in Appendix D for small public firms; all other years for type of firm displayed no abnormally large increases. Interestingly, the small public firm had a decrease percentage in years 2016 and 2017 that may have contributed to the 2018 increase as seen in Appendix D.
Research Question 3C. Is there a relationship between the percentage increase in health insurance rates and the decrease percentage in the number of workers with insurance based on the size of the business? The null hypothesis and sub-hypothesis of this study stated that there is no statistically significant relationship between the increase in single insurance business rates and the decrease in the number of workers with insurance based on business size. To test this hypotheses, the percentage increase of physicians employed by the hospital was compared to the percentage increase in single health insurance rates for the years 2013 – 2019.

The results of the descriptive testing indicated that there the following relationship based on 3-9 employees, \( r(7) = -.25, p = .59 \) and a negative correlation. The results for 10-24 employees were \( r(7) = .16, p = .73 \) with a positive correlation. The results for 25-49 employees indicated \( r(7) = .22, p = .63 \) with a positive correlation. For businesses with 50-199 employees the results were \( r(7) = .11, p = .82 \) with a positive correlation. Finally, for 200-999 employees the results were \( r(7) = .87, p = .01 \) with a positive correlation.

Based on the testing, there is not a statistically significant relationship between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm for all firm sizes except for the 200 - 999. As such, the null hypothesis stating that there is no statistically significant relationship between the percentage increase in insurance rates and the percentage decrease in insurance coverage for workers by size of firm was not rejected. For firms that employ 200-999 employees, there is a statistically significant relationship between the percentage increase in insurance rates and the percentage decrease in insurance coverage as indicated by the \( p \) score of .01. As such, the null hypothesis for the 200-999 employees stating that there is no statistically significant relationship is rejected. This is also
evidence in Appendix D where $p = .01$. The effect size is much larger than typical based on the $r^2$ value of .76 as defined by Morgan et al. (2013).

**Summary of the findings.** As discussed in previous sections, the results of H1 indicate that there is a statistically significant difference between the billing rates for procedures before acquisition and after acquisition rejecting the null. Further, the effect size has a much larger than typical strength indicating almost perfect correlation between these variables. This finding is consistent with Capps et al. (2018) and Dauda (2017) who concluded that the acquisition activity was driven by increased cost of procedures due to the allowance of OPPS billing rates outside of a hospital setting. This is supported by Cleverly and Cleverly (2018) based on billing procedures for ambulatory and hospital procedures driven by the ownership of the entity.

In contrast the results of H2 indicate that there is no statistically significant relationship between the percentage increases in hospital employed physicians and health insurance rates for single and family coverage for the years 2012 – 2018. This finding is supported by Camilleri (2018) who concluded that the driving cost of health insurance is based on the expansion of the ACA driving changes in the Medicaid system. Blumenthanl and Nuzum (2015) also reveal the rising cost of insurance and attribute the percentage changes to governmental legislation and healthcare lobby activities surrounding the ACA.

Similarly, the results of H3A and H3B indicate that there is no statistically significant difference between the percentage increase in insurance rates and the rates for individuals based on age or firm type. It is interesting to note that when evaluating the cost of private individual health insurance both 2017 and 2018 indicate large percentage increases during the same period of mandated ACA adoption within the U.S. as discussed by Depew and Bailey (2015). In addition, the firm type did not indicate a statistically significant difference for small or large
firms based on private, public, and not for profit entities. It is worth noting that the small public
firm had an unusually large percentage increase in 2018 although this was not a consistent theme
for the large firm or for any other firm type.

Finally, H3C indicated no statistically significant relationship between the percentage
increase in insurance rates and the decrease in the number of employees with insurance based on
firm sizes of 3-9 employees, 10-24, employees, 25-49, employees, and 50-199 employees. It is
worth noting that when evaluating firms with 200-999 employees, there is not a statistically
significant association between the increases in insurance rates and the percentage of employees
with insurance coverage by the firm. Interestingly, there is very little change in the percentage of
employees with health insurance as the percentage ranges between 98 and 99 percent with no
fluctuation based on the increase in health insurance cost. This is consistent with research
conducted by Chernew et al. (2005) who studied the declining percentage of insurance offered
by smaller firms as insurance rates increased. In 2016, a study conducted by the National
Federation of Independent Business outlined the rising cost of insurance for small business. Guo
and Tao (2015) concluded that employer response to rising healthcare cost was influenced by the
size of the organization, indicating that larger organizations were not as likely to reduce or share
the percentage of insurance with employees.

Applications to Professional Practice

This dissertation research study was designed to contribute to the body of knowledge
regarding the increase of acquisitions of ambulatory physician practices by hospital entities
(Capps et al., 2018; Cuellar & Gertler, 2003) and the impact on the rising cost of health
insurance premiums (Chernew et al., 2005; Dauda, 2017). The rising percentage increase of
health insurance premiums have created operational profitability issues for small to medium
sized organizations (Dennis, 2016). Previous research has primarily focused on the increase in governmental legislation and the additional cost burden on hospital and healthcare organizations (Blumenthal et al., 2015; Camilleri, 2018), but the initial cost of these mandates has been absorbed. Health insurance premiums continue to increase year over year creating a gap in academic research surrounding this continued cost increase (Chernew et al., 2005; Depew & Bailey, 2015).

The need for continued study is evident as small businesses are faced with the growing cost of employee benefits each year leading to a delay in strategic initiatives in an attempt to maintain benefit levels (Guo & Tao, 2015). Additionally, the demographic of the U.S. continues to age, creating a larger spend on healthcare costs by the insurance companies or the patient (Himmelstein & Woodhandler, 2016). The ACA created a federal mandate requiring health insurance for all U.S. citizens through the use of a healthcare exchange (French et al., 2016). Studies show that over 41 percent of small businesses have delayed hiring decisions and over 38 percent have reduced growth plans or full-time employees in an effort to avoid the penalties of the ACA (Lahm, 2014).

**Hospital acquisitions.** The continued rise of hospital employed physicians impacts the reimbursement rates set by the Centers for Medicare and Medicaid (Baker et al., 2018). These rates are foundational and serve as a basis for all insurance carrier reimbursement plans for physicians who are a participating provider (Cleverly & Cleverly, 2018). In addition, the acquired physician practice continues operations after acquisition with little transparency of an acquisition transaction by the general public. A typical patient, with health insurance, will notice minimal changes during routine physician visits after the acquisition. For patients with a high deductible insurance plan the initial cash outlay to meet the deductible will occur at a much
faster rate because of the additional OPPS fee that accompanies the procedure billing rate (Fifer, 2016; Himmelstein & Woodhandler, 2016).

Increased acquisition activity creates diminished competition within the healthcare market leading to less patient choice and a decrease in patient care (McCue, 2015). The acquisition of private physician practices have created a monopolistic effect for many smaller communities faced with only one choice for healthcare. Further, the increase in acquisition activity gives rise to anti-trust issues as discussed by Greaney and Ross (2016).

The healthcare market is facing maturity. The theory of market maturation drives strategic decisions designed to sustain an organization and provide competitive advantage (Guerin-Calvert, 2014; Thompson et al., 2018). One of the strategies used in a mature market includes acquisition, this provides a reduction in vertical or horizontal competition (David & David, 2017). As competition is reduced, the price of healthcare services may rise and with limited or no competition patients and insurance carriers will bear the financial burden of monopolistic behavior (Greaney & Ross, 2016).

As the theories of market maturation, Porter’s five forces, and economic supply and demand are examined within the healthcare market the importance of academic research provides evaluation of the impact of this increased acquisition (Thompson et al., 2018). In addition to adding to the body of academic knowledge, the findings of this study were intended to be applicable to professionals within the business community: healthcare, insurance, and small to medium sized business leadership. Further, the cost of the acquisitions is applicable to professional across all organizations as well as individual healthcare consumers as addressed in the first hypothesis of this study.
Health insurance cost. The importance of planning and accounting for the cost of business decisions is critical to organizational profitability providing a plan that can be monitored and evaluated to improve the efficiency and effectiveness of the organization (Wild & Shaw, 2019). The impact of cost is an important component of organizational profitability, the containment of fixed costs is critical to break-even point. As healthcare insurance benefit costs continue to increase, the fixed costs of an organization also rise in a manner that is unpredictable or irregular with small business owners reporting increases of up to 20 percent per annum (Jacobe, 2013). In addition, the ACA has created an additional burden on businesses in the form of reporting requirements and penalties that have now been removed (Baker et al., 2018). The second hypothesis in this study addresses the relationship between the percentage increase in health insurance cost and the increase in hospital acquisitions to analyze if there is a statistically significant relationship between these variables. The results showed no statistically significant relationship between the increase in hospital acquisitions and the increase in healthcare insurance rates in Virginia between the years of 2012 – 2019.

The third sub-hypotheses examined the difference between the percentage increases in health insurance cost based on the firm type and the percentage increase based on the age bands of insured individuals. Building off previous research that explored the increase in patient cost in relationship to hospital acquisitions (Yang, 2014). This study compared the difference in the percentage of insurance cost increase based on the increase in annual cost of age banded premiums. The research question was targeting the topic of age as it relates to the cost of insurance and by association, the cost of healthcare. The results of hypothesis 3A determined that there was no statistically significant difference in the percentage increase in the cost of healthcare insurance based on age. The study did reveal an interesting phenomenon in 2018 as
the percentage increase in cost for this year was much higher than found in years 2015, 2016, 2017, and 2019. Further, hypothesis 3B determined that there was no statistically significant difference between the percentage increase in single or family health insurance rates and the type of firm with the exception of 2018 when small public firms had a higher percentage increase as compared to private and not for profit small and large firms.

In conclusion, the results of this study was designed to add to the body of academic knowledge and help practitioners understand the relationship and differences in the cost of health insurance based on acquisition activity. As further studies surrounding this increased acquisition activity are conducted, a better understanding of the long term impact of healthcare consolidation can occur. Data from this study can assist in an understanding of the impact for the years associated with this study and can be used to identify changes in cost structures as the increase cost of healthcare procedures continue through the billing cycle and insurance renewal annual process.

**Biblical integration.** The results of this study contribute to the Biblical integration of stewardship as a responsibility that extends into the proper allocation and use of business resources. Keller and Alsdorf (2012) described stewardship as pleasing to God; it is cultivation of resources, talents, and time in the most efficient and effective manner to reap the rewards of effort. Provers 27:18 describes the importance of stewardship; “Whoever tends a fig tree will eat its fruit, and he who guards his master will be honored.” Cultivation is clearly an important component of stewardship, it requires work. Matthew 25:14-30 further illustrates the importance of stewardship in the parable of the talents; the resources that are provided in business must be properly managed to provide a return to the business owner(s) (Blocher et al., 2019).
Stewardship extends beyond financial gains, it will impact shareholders, stakeholders, and society.

Creation is provided as a clear example of work, God created the heavens and the earth providing mankind with the blueprint for excellence. Work provides mankind with the opportunity to serve and it should motivate, inspire, challenge, and engage allowing mankind to continue to grow and learn. “Whatever you do, work at it with all your heart, as working for the Lord, not for human masters, since you know that you will receive an inheritance from the Lord as a reward” (Colossians 3:23-24, New International Version). The drive to work is ordained by God, He commands that every task be done as an offering of service. “This revolutionary way of looking at work gives all work a common and exalted purpose: to honor God by loving your neighbors and serving them through your work” (Keller & Alsdorf, 2012, p. 64).

There is little doubt that the healthcare industry is one filled with opportunities for service. The ability to provide patients with quality care is at the forefront of the Hippocratic Oath. From a Biblical perspective the role of service is instilled in man as it was part of God’s original plan (Echeverri & Akesson, 2018). Matthew 22:37-39 provides Biblical basis for the role of service and reinforce the importance of serving well. Treating others with compassion and care is critical in every business, but especially in healthcare where lives are at stake.

This study provides important information to professionals in managerial accounting, in particular those working with healthcare organizations. God’s blueprint for work is to serve others well, to continue to cultivate and grow, and to be good stewards of the resources that are provided. By extension, the importance of cost containment, operational profitability, and the allocation of resources are Biblically based principles that are the foundation for a successful organization. The results of this study help to increase awareness regarding the changes that
create increased cost for business organizations and to help stimulate further research and study on this topic.

**Recommendations for Action**

This applied research study seeks to provide clarity on the quantitative ramifications of the increase in acquisition activity that is occurring in the healthcare industry and its impact on the healthcare insurance cost for business entities, primarily focusing on small to medium sized businesses within the 3-200 employee range. As academics continues to exam the impact of the ACA, HITECH, HIPAA, and other governmental legislative activities on the cost and quality of healthcare, this study adds to the growing knowledge regarding the acquisition impact on the cost of healthcare. The target audience for the results of this study are professionals within the healthcare insurance industry and business entities that provide healthcare for employees as part of its benefit package. As such, the healthcare insurance industry can incorporate the findings herein to lobby for a change in the allowable billing rates based solely on the ambulatory practice acquisition.

**Billing rates for procedures.** This study builds on the academic knowledge of the healthcare billing industry, its billing procedures, and the addition of the OPPS to the HCPCS billing codes after acquisition of an ambulatory medical practice. The findings should be incorporated in current financial arguments surrounding the exclusion of OPPS rates for billing purposes provided that the ambulatory practice continues operations in essentially the same manner as before the acquisition. Thus, the premise of the OPPS fee does not apply as it serves to provide an additional allowable amount for services that are performed within a healthcare setting based on the increased overhead cost of the hospital. The overhead within the ambulatory or physician office setting does not increase or accumulate at the same rate as is found within a
hospital. The small to medium sized business owners, through the National Federation of Independent Business or other organizations, should incorporate the findings in journal articles and other written arguments detailing the increased cost of healthcare as a result of the acquisition of ambulatory practices. One consideration would be the review of the OPPS rates to determine a more equitable overhead rate for ambulatory acquisitions. The limitation of this would be the ability to obtain governmental approval for this change.

The ability of a hospital to acquire ambulatory practices allows for an immediate increase in procedural billing income, as described within the study, without the additional overhead cost. While there is an associate cost of acquisition, this is not a continued cost of overhead and should be largely disregarded as a justification for the allowance of OPPS billing (Dauda, 2017).

Further, many hospitals are not for profit creating a greater savings on taxes; income, personal property, business tax, and real estate tax. This decrease in revenue for the community can be large especially as hospitals are purchasing greater than 50 percent of ambulatory practices.

Further studies should enable the small to medium sized businesses to lobby in a more effective manner to address the annual percentage increase of health insurance premiums. The ability to purchase health insurance across state lines, part of the ACA, may have unintended consequences of allowing health insurance companies to select the most healthy to mitigate their risk of loss. As a result, business insurance premiums may continue to rise at a large percentage creating further fixed cost issues and impacting operational profitability.

**Healthcare cost.** As previously mentioned in the research study, the percentage of premiums of healthcare insurance continues to grow annually (Chernew et al., 2005; Dennis, 2016; Depew & Bailey, 2015). Research question two examined the relationship between acquisition activity and the increased health insurance rates in Virginia. Additionally, the third
hypotheses examined the difference in percentage increase based on the age bands for individuals and the firm types for business healthcare insurance plans. Finally, the relationship between the increase in healthcare premiums and the size of the firm was reviewed to determine if the rising cost of healthcare decreased the percentage of employees covered under a business plan.

Those most impacted by these results include businesses that provide healthcare as a benefit to its employees. The rising cost of healthcare premiums creates operational profitability issues, including the reduction of full-time employees and the increased use of high deductible health insurance plans (Dauda, 2017; Depew & Bailey, 2015; Himmelstein & Woodhandler, 2016). Communication of the findings of this study could be accomplished through academic and non-academic or professional journal articles that target the small to medium sized businesses. Practitioners currently seeking methods of risk mitigation when addressing the rising cost of healthcare could also benefit from the publication of the study results. Further, small business entities may use the results of the study to lobby for a change or a modification to OPPS rates when the ambulatory practice remains separated from the hospital entity and/or for a limit in the allowance or percentage increase of annual health insurance premiums. In publishing these results, the education of those within the small to medium sized business community would be increased. Further, individuals would also benefit from the results of this study as they seek to attain the highest quality of care and outcomes for the most reasonable cost.

**Recommendations for Further Study**

The most obvious consideration is the limited time of data included in analysis. Many hospital acquisitions have occurred over the last five years and the full impact of the change in billing rates may not yet be included in the current health insurance premium cost. As
longitudinal data provide greater authoritative guidance, a larger sample size \((n = 5\) years) may provide different statistical results that those yielded in this study. Arguably, the increase in insurance premiums may rise at a faster percentage as acquisition activity reaches maximum saturation. Further, the reduction in competitive forces should also be studied as healthcare within many communities may result in a singularly owned entity limiting patient choice and increasing cost.

The results of this study indicated no difference or relationship for the percentage increase in the cost of healthcare premiums, however, there were some interesting changes in the cost increases for the years 2017 and 2018 which warrant further study. The study could be expanded to include additional healthcare premium drivers. As the U.S. population continues to age, the resulting cost of care will also grow. Annual premium increases for business entities may become even greater leading to increase operational performance issues. The results of this study although not addressed in this study. This may lead to a greater increase in discrimination for older employees who are, at this stage of life, likely to be greater users of healthcare. Further, the continued percentage increase in healthcare costs could be compared with the percentage increase of other business or individual insurance plans.

**Reflections**

This research study resulted from my experience working in a small business that faced annual increases in health insurance premiums, many times in the double digits. This increase in fixed costs required the organization to choose between several alternative actions: a) absorb the cost of the increase decreasing profitability, b) look for alternative insurance offerings with another insurance provider, c) transition some of the cost of health insurance to employees, d) reduce new hiring or pay increases, or e) scale growth plans back to accommodate cost increases.
When the decision made impacted employee benefits or net pay, the communication of the change was always met with opposition.

Interestingly, I was working in the healthcare industry with an organization that provided healthcare IT solutions for billing and EHR to ambulatory practices. My observations of hospital acquisitions, therefore, is driven by 25 years of experience and the cyclical nature of acquisition activity within this market. It is through this lens of an accounting business professional working in the healthcare industry that my interest in this topic led to my academic research.

My knowledge of billing practices within the healthcare industry led me to question how the change in billing rates impacted the cost of healthcare premiums for business entities. This knowledge base indicated that as the cost of healthcare continues to rise, from legislative and acquisition activity. The amounts billed to insurance carriers increased leading to annual premiums that were deficient to cover the annual billing rates paid. My intuition led me to question whether the increased acquisition activity was a driver of the increased healthcare premium cost.

When I began this research project I believed that the increase in hospital acquisition activity has a negative impact on the cost of healthcare procedures because of the additional billing allowed by Medicare designed to cover the increased cost of overhead in hospitals. The hypothesis was based on personal observation of billing rates gathered from working with practice management and hospital billing software programs. The data gathered from the Centers for Medicare and Medicaid for the years of 2012 – 2019 provide a non-facility fee and a facility fee. In addition, there is an allowance or a conversion factor that is applied to the HCPCS code used to cover the setting of the services provided outside of the physician office: the hospital or ambulatory surgical center. I do not believe that the results of this study were impacted by my
observations or the decline in number of ambulatory physician practices creating a loss of business for the healthcare technology company where I was employed.

I was not surprised that the results of the study indicated that there was a statistically significant difference between the billing rates before and after acquisition. Further, the effect size indicated that there was a much larger than typical relationship strength $r = -.88$, indicating an almost perfectly correlated relationship. This supported my preliminary assumption that the increase in hospital acquisitions has increased the cost of healthcare procedures based on the additional fees that are billed under Medicare rules.

The results of the second hypothesis in the study were surprising as they indicated that there is no statistically significant relationship between the percentage increase in physicians employed by the hospital and the percentage increase in health insurance premiums for single or family coverage. The increase in hospital physicians may be created by ambulatory acquisitions or other factors such as physicians entering the industry directly from medical school or ambulatory physicians that have chosen to close their practice. The relationship between the increase in hospital physicians and the increase in single and family health insurance rates was not linear and the quadratic $R^2 = .356$ indicated that a curve was a better representation. The rates for the single premium exhibited a negative correlation. In contrast, the rates for the family premium exhibited a positive correlation.

The results of the third hypothesis (H3A and H3B) and sub-hypotheses examined the difference of the percentage increase in health insurance premiums to a) the difference in percentage of individual age band premiums, and b) the difference in percentage decrease in health insurance provided to employees based on the size of the firm. The difference for H3A was not statistically significant, however, the rates of increase in age band premiums for 2017
were moderately larger than other years. The rates for 2018 were much larger than any of the other years and prompted additional questions as to the reason for this abnormally large increase. The difference in percentage decrease in health insurance provided to employees to the percentage increase in health insurance rates were not statistically significant with the exception of firms that employ 200-999 employees. There was a statistically significant difference in this firm size with less than a one percent decrease in the percentage of workers insured when there is an increase in health insurance premiums. These results were not surprising based on the importance of health insurance in an employee benefit package. Businesses understand the importance of this benefit and are unlikely to eliminate this benefit even when faced with rising costs.

While some of the results of this study were surprising, the importance of understanding the cost drivers of health insurance premiums is an important topic for businesses who are struggling to control this fixed cost. It is important to consider that Biblical teachings provide clear guidance on the ability to control costs creating the need to understand and evaluate the resources of an organization and the consequential spending of those resources in an effort to create a profitable return. Luke 14:28 reminds believers of the importance of stewardship stating, “For which of you, desiring to build a tower, does not first sit down and count the cost, whether he has enough to complete it?”

The results of this study provide small businesses additional academic study of the rising costs of health insurance premiums and the increase in hospital acquisitions. It provides a sound argument for an evaluation of the allowable billing rates used by the hospital for procedures and care provided in a physician practice setting. Further, it offers supporting research for continued academic study of the factors that surround the rising employee health benefit cost. Some of
these conclusions were anticipated, but many were not providing additional academic curiosity about the long term impact of acquisition activity.

Summary and Study Conclusions

The intention of this dissertation research was to study the increased acquisition activity within the healthcare market to determine if the activity was creating an increased cost for healthcare procedures. In addition, the relationship between the increased acquisitions activity and the increase in health insurance premiums for small to medium sized businesses was examined to determine if there was statistical significance in this relationship. A total of 4,199 HCPCS billing codes were included in the sample section for the billing rate population for the years 2012 - 2019. The increase in insurance premiums rates for the years 2012 – 2018 comprised the second sample size, the 2019 data had not been published at the time of this research study. The incorporation of: a) the percentage increase in insurance rates based on age bands and 60+; b) the percentage increase in health insurance rates for single and family coverage based on organization type for public, private, and not for profit firms; and c) the percentage decrease in insurance coverage for employees based on the size of the firm. These additional factors were integrated into the study to provide a more robust analysis of the mitigating factors for the increases in health insurance premiums.

The percentage increase in billing rates after acquisition was statistically significant. This research suggests that although the percentage increase in hospital physicians is not statistically significant today, it should be carefully monitored as acquisition activity continues. At some future point, it is likely that there may be a statistically significant impact as the percentage of hospital employed physicians continue to increase. There were several interesting findings, while not statistically significant, surrounding the study of the percentage of health insurance rate
increases. The percentage increases in age bands and the percentage increase in the single insurance rate for small public firms during 2018 that warrant further study to determine the cause of these anomalies.

The results of this study contribute to the academic research and body of literature on the rising cost of health insurance costs, but additional research still needs to be completed on this issue. Recommendations for further research include a study of the long term impact of hospital acquisition on the cost of health insurance, quality of patient care, and the reduction of entrepreneurial minded medical professionals. Currently the ACA remains in effect across the U.S., the cost of this legislative Act will continue to create disruption throughout the healthcare industry. These changes require additional study to understand if the desired outcomes of lower cost and improved quality of care presented as the desired outcome of this Act have been met or if it served as a catalyst for increased costs within the healthcare system. Understanding the cost component of healthcare premiums can benefit society and business organizations, it also provides biblically based stewardship of the allocation of resources.
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Appendix A: Supplemental Tables for paired samples $t$ tests

Table 1

**HCPCS Billing Rates Before Acquisition v. After Acquisition**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Std. Error</th>
<th></th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Statistic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before Acquisition</td>
<td>4199</td>
<td>.00</td>
<td>1902.31</td>
<td>186.8639</td>
<td>180.60514</td>
<td>2.957</td>
<td>.038</td>
<td>18.335</td>
<td></td>
<td>.076</td>
</tr>
<tr>
<td>After Acquisition</td>
<td>4199</td>
<td>30.35</td>
<td>5809.05</td>
<td>656.2542</td>
<td>699.73805</td>
<td>2.758</td>
<td>.038</td>
<td>9.963</td>
<td></td>
<td>.076</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>4199</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2

**HCPCS Billing Rates Before Acquisition v. After Acquisition**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pair 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before Acquisition</td>
<td>186.8639</td>
<td>4199</td>
<td>180.60514</td>
<td>2.78713</td>
</tr>
<tr>
<td>After Acquisition</td>
<td>656.2542</td>
<td>4199</td>
<td>699.73805</td>
<td>10.79848</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>After Acquisition - Before Acquisition</td>
<td>Negative Ranks</td>
<td>0(^a)</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Positive Ranks</td>
<td>4199(^b)</td>
<td>2100.00</td>
</tr>
<tr>
<td></td>
<td>Ties</td>
<td>0(^c)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4199</td>
<td>8817900.00</td>
</tr>
</tbody>
</table>

\(^a\) After Acquisition < Before Acquisition  
\(^b\) After Acquisition > Before Acquisition  
\(^c\) After Acquisition = Before Acquisition

**Test Statistics\(^a\)**

<table>
<thead>
<tr>
<th></th>
<th>After Acquisition - Before Acquisition</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Z$</td>
<td>-56.122(^b)</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.000</td>
</tr>
</tbody>
</table>

\(^a\) Wilcoxon Signed Ranks Test  
\(^b\) Based on negative ranks.
Appendix B: Supplemental Tables for Correlation Models

Table 3

Percentage Increase in Hospital Physicians and Insurance Rates

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness Std. Error</th>
<th>Kurtosis Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>% hospital</td>
<td>7</td>
<td>41.8%</td>
<td>48.4%</td>
<td>44.914%</td>
<td>2.7230%</td>
<td>.100</td>
<td>.794</td>
</tr>
<tr>
<td>% increase</td>
<td>7</td>
<td>2.00%</td>
<td>5.00%</td>
<td>3.4286%</td>
<td>0.97590%</td>
<td>.277</td>
<td>.794</td>
</tr>
<tr>
<td>Single</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Increase</td>
<td>7</td>
<td>3.00%</td>
<td>5.00%</td>
<td>3.7143%</td>
<td>0.75593%</td>
<td>.595</td>
<td>.794</td>
</tr>
<tr>
<td>Family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4

Percentage Increase in Hospital Physicians and Single Rates Scatter Diagram

\[ y = 26.75 + 11.35x - 1.65x^2 \]
\[ y = 45.94 - 0.27x \]

\( R^2 \text{ linear } = 0.009 \)
\( R^2 \text{ quadratic } = 0.365 \)
Table 5

*Percent Increase in Hospital Acquisitions and Single Rate Insurance Cost*

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>% hospital</td>
<td>44.914%</td>
<td>2.7230%</td>
<td>7</td>
</tr>
<tr>
<td>% increase Single</td>
<td>3.4286%</td>
<td>0.97590%</td>
<td>7</td>
</tr>
</tbody>
</table>

**Correlations**

<table>
<thead>
<tr>
<th></th>
<th>% hospital</th>
<th>% increase Single</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spearman’s rho</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% hospital</td>
<td>Correlation Coefficient</td>
<td>1.000</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.</td>
<td>.937</td>
</tr>
<tr>
<td>% increase Single</td>
<td>Correlation Coefficient</td>
<td>-.037</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.937</td>
<td>.</td>
</tr>
</tbody>
</table>

a. Listwise N = 7

Table 6

*Percentage Increase in Hospital Physicians and Family Rates Scatter Diagram*
Table 7

Percent Increase in Hospital Acquisitions and Family Rate Insurance Cost

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>% hospital</td>
<td>44.914%</td>
<td>2.7230%</td>
<td>7</td>
</tr>
<tr>
<td>% Increase Family</td>
<td>3.7143%</td>
<td>0.75593%</td>
<td>7</td>
</tr>
</tbody>
</table>

Correlations\(^a\)

<table>
<thead>
<tr>
<th>Spearman's rho</th>
<th>% hospital</th>
<th>% Increase Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>% hospital</td>
<td>Correlation Coefficient</td>
<td>1.000</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.</td>
<td>1.000</td>
</tr>
<tr>
<td>% Increase Family</td>
<td>Correlation Coefficient</td>
<td>.000</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>1.000</td>
<td>.</td>
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</table>

\(^a\): Listwise N = 7
Appendix C: Supplemental Tables for Age Difference Tests H3A

Table 8

**H3A: Difference in Business Single Rates and Individual Age Based Rates**

<table>
<thead>
<tr>
<th>% Increase in</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness Statistic</th>
<th>Std. Error</th>
<th>Kurtosis Statistic</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Business Rate</td>
<td>7</td>
<td>2.396%</td>
<td>4.791%</td>
<td>3.59399%</td>
<td>0.829191%</td>
<td>-.040</td>
<td>.794</td>
<td>-.913</td>
<td>1.587</td>
</tr>
<tr>
<td>% Increase in individual rate age 20-29</td>
<td>5</td>
<td>3.261%</td>
<td>65.596%</td>
<td>17.41589%</td>
<td>27.107163%</td>
<td>2.168</td>
<td>.913</td>
<td>4.733</td>
<td>2.000</td>
</tr>
<tr>
<td>% Increase in individual rate age 30-39</td>
<td>5</td>
<td>3.241%</td>
<td>66.016%</td>
<td>17.48035%</td>
<td>27.286571%</td>
<td>2.175</td>
<td>.913</td>
<td>4.765</td>
<td>2.000</td>
</tr>
<tr>
<td>% Increase in individual rate age 40-49</td>
<td>5</td>
<td>3.309%</td>
<td>66.149%</td>
<td>17.47695%</td>
<td>27.360014%</td>
<td>2.177</td>
<td>.913</td>
<td>4.770</td>
<td>2.000</td>
</tr>
<tr>
<td>% Increase in individual rate age 50-59</td>
<td>5</td>
<td>3.252%</td>
<td>66.284%</td>
<td>17.45972%</td>
<td>27.438061%</td>
<td>2.180</td>
<td>.913</td>
<td>4.782</td>
<td>2.000</td>
</tr>
<tr>
<td>% Increase in individual rate age 60+</td>
<td>5</td>
<td>3.364%</td>
<td>66.048%</td>
<td>17.48008%</td>
<td>27.305437%</td>
<td>2.175</td>
<td>.913</td>
<td>4.764</td>
<td>2.000</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 9

**H3A Age 20-29 Comparison**

<table>
<thead>
<tr>
<th>Ranks</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Increase in individual rate age 20-29 %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase in Single Business Rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Ranks</td>
<td>2a</td>
<td>1.50</td>
<td>3.00</td>
</tr>
<tr>
<td>Positive Ranks</td>
<td>3b</td>
<td>4.00</td>
<td>12.00</td>
</tr>
<tr>
<td>Ties</td>
<td>0c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. % Increase in individual rate age 20-29 < % Increase in Single Business Rate
b. % Increase in individual rate age 20-29 > % Increase in Single Business Rate
c. % Increase in individual rate age 20-29 = % Increase in Single Business Rate

**Test Statistics**

| % Increase in individual rate age 20-29 - % Increase in Single Business Rate |
|---------------------------------|---------------------------------|
| Z                               | -1.214b                         |
| Asymp. Sig. (2-tailed)          | .225                            |

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.
Table 10

Age 30-39 Comparison

<table>
<thead>
<tr>
<th>Ranks</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Increase in individual rate age 30-39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase in Single Business Rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Ranks</td>
<td>2^a</td>
<td>1.50</td>
<td>3.00</td>
</tr>
<tr>
<td>Positive Ranks</td>
<td>3^b</td>
<td>4.00</td>
<td>12.00</td>
</tr>
<tr>
<td>Ties</td>
<td>0^c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. % Increase in individual rate age 30-39 < % Increase in Single Business Rate  
b. % Increase in individual rate age 30-39 > % Increase in Single Business Rate  
c. % Increase in individual rate age 30-39 = % Increase in Single Business Rate

Test Statistics^a

<table>
<thead>
<tr>
<th>% Increase in individual rate age 30-39 - % Increase in Single Business Rate</th>
<th>Z</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-1.214^b</td>
<td>.225</td>
</tr>
</tbody>
</table>

a. Wilcoxon Signed Ranks Test  
b. Based on negative ranks.
Table 11

*Age 40-49 Comparison*

<table>
<thead>
<tr>
<th>Ranks</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Increase in individual rate age 40-49 - % Increase in Single Business Rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Ranks</td>
<td>2a</td>
<td>1.50</td>
<td>3.00</td>
</tr>
<tr>
<td>Positive Ranks</td>
<td>3b</td>
<td>4.00</td>
<td>12.00</td>
</tr>
<tr>
<td>Ties</td>
<td>0c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. % Increase in individual rate age 40-49 < % Increase in Single Business Rate
b. % Increase in individual rate age 40-49 > % Increase in Single Business Rate
c. % Increase in individual rate age 40-49 = % Increase in Single Business Rate

**Test Statistics**

<table>
<thead>
<tr>
<th>% Increase in individual rate age 40-49 - % Increase in Single Business Rate</th>
<th>Z</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-1.214b</td>
<td>.225</td>
</tr>
</tbody>
</table>

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.
Table 12

Age 50-59 Comparison

<table>
<thead>
<tr>
<th>Ranks</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Increase in individual rate</td>
<td>Negative Ranks</td>
<td>2&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.50</td>
</tr>
<tr>
<td>50-59 - % Increase in Single</td>
<td>Positive Ranks</td>
<td>3&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.00</td>
</tr>
<tr>
<td>Business Rate</td>
<td>Ties</td>
<td>0&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

a. % Increase in individual rate 50-59 < % Increase in Single Business Rate
b. % Increase in individual rate 50-59 > % Increase in Single Business Rate
c. % Increase in individual rate 50-59 = % Increase in Single Business Rate

Test Statistics<sup>a</sup>

<table>
<thead>
<tr>
<th>% Increase in individual rate</th>
<th>% Increase in Single Business Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>-1.214&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.225</td>
</tr>
</tbody>
</table>

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.
Table 13

**Age 60+ Comparison**

<table>
<thead>
<tr>
<th>Ranks</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Increase in individual rate age 60+ - % Increase in Single Business Rate</td>
<td>Negative Ranks</td>
<td>2&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.50</td>
</tr>
<tr>
<td>Positive Ranks</td>
<td>3&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.00</td>
<td>12.00</td>
</tr>
<tr>
<td>Ties</td>
<td>0&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. % Increase in individual rate age 60+ < % Increase in Single Business Rate  
b. % Increase in individual rate age 60+ > % Increase in Single Business Rate  
c. % Increase in individual rate age 60+ = % Increase in Single Business Rate

**Test Statistics<sup>a</sup>**

| % Increase in individual rate age 60+ - % Increase in Single Business Rate | 
|---|---|
| Z | -1.214<sup>b</sup> |
| Asymp. Sig. (2-tailed) | .225 |

a. Wilcoxon Signed Ranks Test  
b. Based on negative ranks.
Table 14

*Increase by Years for Business and Individual Age Band Plans*

<table>
<thead>
<tr>
<th>Age Band</th>
<th>Z</th>
<th>Sig. 2-tailed</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>-1.21</td>
<td>0.23</td>
</tr>
<tr>
<td>30-39</td>
<td>-1.21</td>
<td>0.23</td>
</tr>
<tr>
<td>40-49</td>
<td>-1.21</td>
<td>0.23</td>
</tr>
<tr>
<td>50-59</td>
<td>-1.21</td>
<td>0.23</td>
</tr>
</tbody>
</table>

Table 15

*H3A. Tabulated Difference in Business Single Rates and Individual Age Based Rates*

<table>
<thead>
<tr>
<th>Age Band</th>
<th>Z</th>
<th>Sig. 2-tailed</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>-1.21</td>
<td>0.23</td>
</tr>
<tr>
<td>30-39</td>
<td>-1.21</td>
<td>0.23</td>
</tr>
<tr>
<td>40-49</td>
<td>-1.21</td>
<td>0.23</td>
</tr>
<tr>
<td>50-59</td>
<td>-1.21</td>
<td>0.23</td>
</tr>
</tbody>
</table>
### Appendix D: Supplemental Tables for Firm Type Difference Tests H3B

Table 16

**H3B: Difference in Percent Increase in Insurance Rates and Firm Type**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
</tr>
<tr>
<td>% Increase for business plans</td>
<td>6</td>
<td>.024</td>
<td>.048</td>
<td>.03487</td>
<td>.008540</td>
<td>.392</td>
<td>.845</td>
</tr>
<tr>
<td>Single Rate for Small Private For profit</td>
<td>6</td>
<td>.006</td>
<td>.082</td>
<td>.04746</td>
<td>.030484</td>
<td>-.468</td>
<td>.845</td>
</tr>
<tr>
<td>Single Rate for Small Public</td>
<td>6</td>
<td>-.053</td>
<td>.233</td>
<td>.04735</td>
<td>.106622</td>
<td>1.164</td>
<td>.845</td>
</tr>
<tr>
<td>Single Rate for Small Not for profit</td>
<td>6</td>
<td>.003</td>
<td>.058</td>
<td>.02478</td>
<td>.021049</td>
<td>.801</td>
<td>.845</td>
</tr>
<tr>
<td>Single Rate for Large Private For profit</td>
<td>6</td>
<td>.009</td>
<td>.053</td>
<td>.03135</td>
<td>.017890</td>
<td>.010</td>
<td>.845</td>
</tr>
<tr>
<td>Single Rate for Large Public</td>
<td>6</td>
<td>-.021</td>
<td>.073</td>
<td>.03138</td>
<td>.035546</td>
<td>-.203</td>
<td>.845</td>
</tr>
<tr>
<td>Single Rate for Large Not for profit</td>
<td>6</td>
<td>.005</td>
<td>.053</td>
<td>.03149</td>
<td>.016088</td>
<td>-.524</td>
<td>.845</td>
</tr>
<tr>
<td>Business Provided Family % Increase</td>
<td>6</td>
<td>.030</td>
<td>.045</td>
<td>.03733</td>
<td>.005857</td>
<td>.163</td>
<td>.845</td>
</tr>
<tr>
<td>Family Rate for Large Private For profit</td>
<td>6</td>
<td>.028</td>
<td>.048</td>
<td>.03736</td>
<td>.009234</td>
<td>.061</td>
<td>.845</td>
</tr>
<tr>
<td>Family Rate for Large Public</td>
<td>6</td>
<td>-.007</td>
<td>.074</td>
<td>.03942</td>
<td>.027698</td>
<td>-.814</td>
<td>.845</td>
</tr>
<tr>
<td>Large Not for Profit Family</td>
<td>6</td>
<td>.005</td>
<td>.060</td>
<td>.03151</td>
<td>.018691</td>
<td>.165</td>
<td>.845</td>
</tr>
<tr>
<td>Family Rate for Small Private For profit</td>
<td>6</td>
<td>.001</td>
<td>.082</td>
<td>.05134</td>
<td>.037654</td>
<td>-.838</td>
<td>.845</td>
</tr>
<tr>
<td>Family Rate for Small Public</td>
<td>6</td>
<td>-.034</td>
<td>.092</td>
<td>.03655</td>
<td>.052124</td>
<td>-.273</td>
<td>.845</td>
</tr>
<tr>
<td>Family Rate for Small Not for Profit</td>
<td>6</td>
<td>-.025</td>
<td>.075</td>
<td>.03302</td>
<td>.037264</td>
<td>-.587</td>
<td>.845</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 17

**H3B: Increase for Single Insured compared with Firm Type**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Increase for business plans</td>
<td>6</td>
<td>.03487</td>
<td>.008540</td>
<td>.024</td>
<td>.048</td>
</tr>
<tr>
<td>Single Rate for Small Private For profit</td>
<td>6</td>
<td>.04746</td>
<td>.030484</td>
<td>.006</td>
<td>.082</td>
</tr>
<tr>
<td>Single Rate for Small Public</td>
<td>6</td>
<td>.04735</td>
<td>.106622</td>
<td>-.053</td>
<td>.233</td>
</tr>
<tr>
<td>Single Rate for Small Not for profit</td>
<td>6</td>
<td>.02478</td>
<td>.021049</td>
<td>.003</td>
<td>.058</td>
</tr>
<tr>
<td>Single Rate for Large Private For profit</td>
<td>6</td>
<td>.03135</td>
<td>.017890</td>
<td>.009</td>
<td>.053</td>
</tr>
<tr>
<td>Single Rate for Large Public</td>
<td>6</td>
<td>.03138</td>
<td>.035546</td>
<td>-.021</td>
<td>.073</td>
</tr>
<tr>
<td>Single Rate for Large Not for profit</td>
<td>6</td>
<td>.03149</td>
<td>.016088</td>
<td>.005</td>
<td>.053</td>
</tr>
</tbody>
</table>

<table>
<thead>
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<th></th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Rate for Small Private For profit - % Increase for business plans</td>
<td></td>
<td>3.50</td>
<td>7.00</td>
</tr>
<tr>
<td></td>
<td>Negative Ranks</td>
<td>2a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Positive Ranks</td>
<td>4b</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ties</td>
<td>0c</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Single Rate for Small Public - % Increase for business plans</td>
<td></td>
<td>4.00</td>
<td>12.00</td>
</tr>
<tr>
<td></td>
<td>Negative Ranks</td>
<td>3d</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Positive Ranks</td>
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<td></td>
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<td>0f</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Single Rate for Small Not for profit - % Increase for business plans</td>
<td></td>
<td>3.20</td>
<td>16.00</td>
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<td>Negative Ranks</td>
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<td></td>
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<td>Positive Ranks</td>
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<td></td>
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<tr>
<td></td>
<td>Ties</td>
<td>0i</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Single Rate for Large Private For profit - % Increase for business plans</td>
<td></td>
<td>4.00</td>
<td>12.00</td>
</tr>
<tr>
<td></td>
<td>Negative Ranks</td>
<td>3j</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Positive Ranks</td>
<td>3k</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ties</td>
<td>0l</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Single Rate for Large Public - % Increase for business plans</td>
<td></td>
<td>3.00</td>
<td>12.00</td>
</tr>
<tr>
<td></td>
<td>Negative Ranks</td>
<td>4m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Positive Ranks</td>
<td>2n</td>
<td></td>
</tr>
</tbody>
</table>

Note: The superscripts a, b, c, d, e, f, g, h, i, j, k, l, m, n indicate the ranks.
<table>
<thead>
<tr>
<th>Ties</th>
<th>0^Vis</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Single Rate for Large Not for profit - % Increase for business plans</th>
<th>Negative Ranks</th>
<th>4^p</th>
<th>3.25</th>
<th>13.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Ranks</td>
<td>2^q</td>
<td>4.00</td>
<td>8.00</td>
<td></td>
</tr>
<tr>
<td>Ties</td>
<td>0^r</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Single Rate for Small Private For profit < % Increase for business plans
b. Single Rate for Small Private For profit > % Increase for business plans
c. Single Rate for Small Private For profit = % Increase for business plans
d. Single Rate for Small Public < % Increase for business plans
e. Single Rate for Small Public > % Increase for business plans
f. Single Rate for Small Public = % Increase for business plans
g. Single Rate for Small Not for profit < % Increase for business plans
h. Single Rate for Small Not for profit > % Increase for business plans
i. Single Rate for Small Not for profit = % Increase for business plans
j. Single Rate for Large Private For profit < % Increase for business plans
k. Single Rate for Large Private For profit > % Increase for business plans
l. Single Rate for Large Private For profit = % Increase for business plans
m. Single Rate for Large Public < % Increase for business plans
n. Single Rate for Large Public > % Increase for business plans
o. Single Rate for Large Public = % Increase for business plans
p. Single Rate for Large Not for profit < % Increase for business plans
q. Single Rate for Large Not for profit > % Increase for business plans
r. Single Rate for Large Not for profit = % Increase for business plans

### Test Statistics

<table>
<thead>
<tr>
<th>Single Rate for Small Private For profit - % Increase for business plans</th>
<th>Single Rate for Small Not for profit - % Increase for business plans</th>
<th>Single Rate for Large Private For profit - % Increase for business plans</th>
<th>Single Rate for Large Public - % Increase for business plans</th>
<th>Single Rate for Large Not for profit - % Increase for business plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>-.734^b</td>
<td>-.314^c</td>
<td>-.314^c</td>
<td>-.314^c</td>
</tr>
<tr>
<td>Asymp.</td>
<td>.463</td>
<td>.753</td>
<td>.249</td>
<td>.753</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.
c. Based on positive ranks.
Table 18

**H3B Single Rate Statistical Comparison**

<table>
<thead>
<tr>
<th>Single Rate</th>
<th>Private Firms</th>
<th>Public Firms</th>
<th>Not for Profit Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Small</td>
<td>Large</td>
<td>Small</td>
</tr>
<tr>
<td>Private Firms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Rate</td>
<td>-0.73</td>
<td>-0.31</td>
<td>-1.15</td>
</tr>
<tr>
<td>z</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>0.46</td>
<td>0.75</td>
<td>0.25</td>
</tr>
<tr>
<td>r</td>
<td>0.30</td>
<td>0.13</td>
<td>0.47</td>
</tr>
</tbody>
</table>

Table 19

**H3B: Increase in Single Insurance by Firm Type**

![Graph showing single rate by firm type over years from 2013 to 2018. The x-axis represents the percentage increase for business plans, single rate for small private for profit, single rate for small public, single rate for small not for profit, single rate for large private for profit, single rate for large public, and single rate for large not for profit. The y-axis represents the percentage increase ranging from -10.00% to 25.00%. The graph includes data points for each year from 2013 to 2018, with different colors indicating the years.]
Table 20

*Increase for Family Insured compared with Ownership Type Small and Large*

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Provided Family % Increase</td>
<td>6</td>
<td>.03733</td>
<td>.005857</td>
<td>.030</td>
<td>.045</td>
</tr>
<tr>
<td>Family Rate for Large Private For profit</td>
<td>6</td>
<td>.03736</td>
<td>.009234</td>
<td>.028</td>
<td>.048</td>
</tr>
<tr>
<td>Family Rate for Large Public</td>
<td>6</td>
<td>.03942</td>
<td>.027698</td>
<td>-.007</td>
<td>.074</td>
</tr>
<tr>
<td>Large Not for Profit Family</td>
<td>6</td>
<td>.03151</td>
<td>.018691</td>
<td>.005</td>
<td>.060</td>
</tr>
<tr>
<td>Family Rate for Small Private For profit</td>
<td>6</td>
<td>.05134</td>
<td>.037654</td>
<td>.001</td>
<td>.082</td>
</tr>
<tr>
<td>Family Rate for Small Public</td>
<td>6</td>
<td>.03655</td>
<td>.052124</td>
<td>-.034</td>
<td>.092</td>
</tr>
<tr>
<td>Family Rate for Small Not for Profit</td>
<td>6</td>
<td>.03302</td>
<td>.037264</td>
<td>-.025</td>
<td>.075</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ranks</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Rate for Large Private For profit - Business Provided Family % Increase</td>
<td>Negative Ranks</td>
<td>3a</td>
<td>3.33</td>
</tr>
<tr>
<td></td>
<td>Positive Ranks</td>
<td>3b</td>
<td>3.67</td>
</tr>
<tr>
<td></td>
<td>Ties</td>
<td>0c</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Family Rate for Large Public - Business Provided Family % Increase</td>
<td>Negative Ranks</td>
<td>2d</td>
<td>4.50</td>
</tr>
<tr>
<td></td>
<td>Positive Ranks</td>
<td>4a</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td>Ties</td>
<td>0f</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Large Not for Profit Family - Business Provided Family % Increase</td>
<td>Negative Ranks</td>
<td>5g</td>
<td>3.20</td>
</tr>
<tr>
<td></td>
<td>Positive Ranks</td>
<td>1h</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>Ties</td>
<td>0i</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Family Rate for Small Private For profit - Business Provided Family % Increase</td>
<td>Negative Ranks</td>
<td>2j</td>
<td>2.50</td>
</tr>
<tr>
<td></td>
<td>Positive Ranks</td>
<td>4k</td>
<td>4.00</td>
</tr>
<tr>
<td></td>
<td>Ties</td>
<td>0l</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Negative Ranks</td>
<td>3m</td>
<td>3.67</td>
</tr>
<tr>
<td></td>
<td>Positive Ranks</td>
<td>3n</td>
<td>3.33</td>
</tr>
<tr>
<td>Family Rate for Small Public - Business Provided Family % Increase</td>
<td>Ties</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>Family Rate for Small Not for Profit - Business Provided Family % Increase</td>
<td>Negative Ranks</td>
<td>3&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4.00</td>
</tr>
<tr>
<td></td>
<td>Positive Ranks</td>
<td>3&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td>Ties</td>
<td>0&lt;sup&gt;0&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

a. Family Rate for Large Private For profit < Business Provided Family % Increase  
b. Family Rate for Large Private For profit > Business Provided Family % Increase  
c. Family Rate for Large Private For profit = Business Provided Family % Increase  
d. Family Rate for Large Public < Business Provided Family % Increase  
e. Family Rate for Large Public > Business Provided Family % Increase  
f. Family Rate for Large Public = Business Provided Family % Increase  
g. Large Not for Profit Family < Business Provided Family % Increase  
h. Large Not for Profit Family > Business Provided Family % Increase  
i. Large Not for Profit Family = Business Provided Family % Increase  
j. Family Rate for Small Private For profit < Business Provided Family % Increase  
k. Family Rate for Small Private For profit > Business Provided Family % Increase  
l. Family Rate for Small Private For profit = Business Provided Family % Increase  
m. Family Rate for Small Public < Business Provided Family % Increase  
n. Family Rate for Small Public > Business Provided Family % Increase  
o. Family Rate for Small Public = Business Provided Family % Increase  
p. Family Rate for Small Not for Profit < Business Provided Family % Increase  
q. Family Rate for Small Not for Profit > Business Provided Family % Increase  
r. Family Rate for Small Not for Profit = Business Provided Family % Increase

### Test Statistics<sup>a</sup>

<table>
<thead>
<tr>
<th>Family Rate for Large Private For profit - Business Provided Family % Increase</th>
<th>Family Rate for Large Public - Business Provided Family % Increase</th>
<th>Large Not for Profit Family - Business Provided Family % Increase</th>
<th>Family Rate for Small Private For profit - Business Provided Family % Increase</th>
<th>Family Rate for Small Public - Business Provided Family % Increase</th>
<th>Family Rate for Small Not for Profit - Business Provided Family % Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>-105&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-1.153&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-1.153&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-105&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-314&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Asymp.</td>
<td>.917</td>
<td>.753</td>
<td>.249</td>
<td>.249</td>
<td>.917</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Wilcoxon Signed Ranks Test  
<sup>b</sup> Based on negative ranks.  
<sup>c</sup> Based on positive ranks.
Table 21

**H3B Single Rate Statistical Comparison**

<table>
<thead>
<tr>
<th>Firm Type</th>
<th>Small</th>
<th>Large</th>
<th>Z</th>
<th>P</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Firms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>-0.73</td>
<td>0.46</td>
<td>0.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>-0.31</td>
<td>0.75</td>
<td>0.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Firms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>-0.31</td>
<td>0.75</td>
<td>0.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>-0.31</td>
<td>0.75</td>
<td>0.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for Profit Firms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>-1.15</td>
<td>0.25</td>
<td>0.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>-0.52</td>
<td>0.60</td>
<td>-2.55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 22

**H3B: Increase in Family Insurance by Firm Type**

![Family Rate by Firm Type](image)
Appendix E: H3C -Supplemental Tables for Decrease in Workers

Table 23

% Increase in Insurance Rates and % Decrease in Workers with Insurance by Business Size

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
</tr>
<tr>
<td>% Increase for</td>
<td>7</td>
<td>.02</td>
<td>.05</td>
<td>.0359</td>
<td>.00829</td>
<td>-.040</td>
<td>.794</td>
</tr>
<tr>
<td>business plans</td>
<td></td>
<td>Statistic</td>
<td>Statistic</td>
<td>Std. Error</td>
<td>Std. Error</td>
<td>Std. Error</td>
<td>Std. Error</td>
</tr>
<tr>
<td>3-9 workers</td>
<td>7</td>
<td>-.06</td>
<td>.07</td>
<td>-.0043</td>
<td>.04467</td>
<td>.475</td>
<td>.794</td>
</tr>
<tr>
<td>10-24 workers</td>
<td>7</td>
<td>-.05</td>
<td>.05</td>
<td>-.0143</td>
<td>.03207</td>
<td>1.435</td>
<td>.794</td>
</tr>
<tr>
<td>25-49 or more</td>
<td>7</td>
<td>-.07</td>
<td>.06</td>
<td>-.0143</td>
<td>.03823</td>
<td>.987</td>
<td>.794</td>
</tr>
<tr>
<td>50-199 workers</td>
<td>7</td>
<td>-.03</td>
<td>.02</td>
<td>-.0014</td>
<td>.01676</td>
<td>-.582</td>
<td>.794</td>
</tr>
<tr>
<td>200-999 workers</td>
<td>7</td>
<td>-.01</td>
<td>.01</td>
<td>.0014</td>
<td>.00900</td>
<td>-.353</td>
<td>.794</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 24

Scatter Diagram 3-9 Employees
Table 25

### Correlations

<table>
<thead>
<tr>
<th>Spearman's rho</th>
<th>% Increase for business plans</th>
<th>Correlation Coefficient</th>
<th>3-9 workers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Increase for business plans</td>
<td></td>
<td>1.000</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.</td>
<td>.</td>
<td>-.250</td>
</tr>
<tr>
<td>N</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

3-9 workers

<table>
<thead>
<tr>
<th>Correlation Coefficient</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>-.250</td>
<td>.589</td>
<td>7</td>
</tr>
<tr>
<td>1.000</td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

Table 26

*Scatter Diagram 10-24 Employees*
Table 27

<table>
<thead>
<tr>
<th>Spearman's rho</th>
<th>% Increase for business plans</th>
<th>Correlation Coefficient</th>
<th>10-24 workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Increase for business plans</td>
<td>Correlation Coefficient</td>
<td>1.000</td>
<td>.164</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.</td>
<td>.726</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>10-24 workers</td>
<td>Correlation Coefficient</td>
<td>.164</td>
<td>1.000</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.726</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

Table 28

Scatter Diagram 25-49 Employees

\[ y = 0.04 + 0.05x - 0.08x^2 \]

\[ R^2 \text{ Linear} = 0.170 \]

\[ R^2 \text{ Quadratic} = 0.171 \]
Table 29

<table>
<thead>
<tr>
<th>Spearman's rho</th>
<th>% Increase for business plans</th>
<th>Correlation Coefficient</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-49 or more</td>
<td>% Increase for business plans</td>
<td>Correlation Coefficient</td>
<td>Sig. (2-tailed)</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.000</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.222</td>
<td>.632</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 30

Scatter Diagram 50-99 Employees

![Scatter Diagram 50-99 Employees](image-url)
Table 31

<table>
<thead>
<tr>
<th></th>
<th>% Increase for business plans</th>
<th>50-199 workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spearman's rho</td>
<td>Correlation Coefficient</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>7</td>
</tr>
<tr>
<td>50-199 workers</td>
<td>Correlation Coefficient</td>
<td>.109</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.816</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 32

Scatter Diagram 200-999 Employees

[Scatter diagram image with regression lines and equations: \( y = 0.0340x + 0.628x^2 \), \( R^2 \) linear = 0.795, \( R^2 \) quadratic = 0.778]
Table 33

<table>
<thead>
<tr>
<th></th>
<th>% Increase for business plans</th>
<th>200-999 workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spearman's rho</td>
<td>Correlation Coefficient</td>
<td>.869*</td>
</tr>
<tr>
<td>% Increase for business plans</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.</td>
<td>.011</td>
</tr>
<tr>
<td>N</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>200-999 workers</td>
<td>Correlation Coefficient</td>
<td>1.000</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.011</td>
<td>.</td>
</tr>
<tr>
<td>N</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).