**TRENDS IN HOSPITAL CLOSURES IN THE UNITED STATES FROM 1996-2016**

by

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**ABSTRACT**

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The number of acute care hospitals has declined in the United States in the last twenty years. Rural areas have experienced the most closures in recent years. These closures pose a serious concern as many of these hospitals serve vulnerable populations. Policies such as the Affordable Care Act have been enacted to help alleviate the strain many of these hospitals have and have shaped the healthcare market by affecting competition, capital, and responding to demand. Exploring the economic background of the healthcare system along with using HCRIS reports can indicate some trends that closed hospitals share from 1996-2016 and may in the future be used as a tool to identify hospitals at risk for closure. One important implication of hospital closures is a lack of access to healthcare services, particularly for acute illnesses and time-sensitive emergencies. The public health relevance of these implications shift the conversation onto the meaning of access to health care and how is that achievable specifically when trying to reach vulnerable populations.

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# INTRODUCTION

Since the 1980s the United States has witnessed a slow decline in the overall number of acute care hospitals (Wallace, Seymour, and Kahn 2016). Specifically, in the last twenty years, rural hospitals have been closing at a higher rate than their urban counterparts raising important questions about access to healthcare services (Kaufman). The American Hospital Association listed number of rural hospitals being 1,825 out of 4804 community hospitals with the rest being urban hospitals (AHA). The already low number of rural hospitals make the rate of hospital closures a concern. This concern is due to infrequency of duplication of services which may lead to a greater impact for access to health services. This impact for access is an additional concern for safety net hospitals as they take on a greater number of those in vulnerable populations. The critical access hospital program (CAH) was designed with helping rural hospitals, however, those who were not enrolled in the program experienced financial strain (CAH). Many of these rural hospitals not enrolled in CAH program had poor financial markers including low profitability and could not continue operating (Kaufamn). Several factors can lead and can contribute to a lower operating margin. The healthcare market aspects of competition and capital have growing networks in each state with fewer and fewer hospital operating as independent (Tsai). The changing healthcare landscape can be attributed to both financial recessions and health policies that aim to reach vulnerable populations. The enactment of the Affordable Care Act mandated health insurance for everyone with the aim of reaching those vulnerable population (Koh). This insurance coverage has been equated with more access to healthcare. However, in terms of acute illnesses, insurance can only do so much if there are no acute care hospitals in geographic proximity (Buchmuller).

# LITERATURE REVIEW

*Hospital Closures Had No Measurable Impact On Local Hospitalization Rates Or Mortality Rates, 2003–11.* This study looked at mortality rates in hospital service areas that had a hospital closure. They took Medicare reports along with AHA surveys to confirm closures along with health departments and newspaper articles. The study used difference in difference models with closures and other factors including 30 day mortality. They study provided information on hospital closures as a whole and the impact in regards to mortality for the 8 year time period. They concluded that no significant relationship was found but that more research was needed as other factors could have contributed to minimal impact of the closures and there could be other effects that closures could have on a community.

*The Rising Rate of Rural Hospital Closures.* This study looked at economic characteristic of rural hospitals from 2010-2014. Differences were tested using Pearson's chi‐square (categorical variables) and Wilcoxon rank test of medians. The study also used logistic regression for the relationships between negative operating margin with market factors and utilization. The study found that both CAH and other rural hospitals had lower profitability markers and that many of these hospitals closed or turned into an alternative healthcare delivery.

*HCRIS.*These are the Medicare costs reports from the Center of Medicare/Medicaid Services website. They come in a zip file that lists hospital information such as name and location along with answers to questionnaire they have to fill out.

*Affordable Care Act.*This is the policy posted on the governmental website detailing the healthcare reform and timeline of enactment. This policy specifically covers multiple departments including funding for public health projects. One of the main focuses is policy changes for insurance and justification for nonprofits to keep their tax exempt status.

*Health Innovation in Pennsylvania Plan.* This is Pennsylvania plan to for revamping the healthcare system in the state. It addresses several issues including proposed plans to help rural hospitals that are susceptible to closing.

# Healthcare Markets

Healthcare markets share several features with traditional economic markets. Fundamentally healthcare markets have competition, capital, and demand. Providers compete with the available demand for health services to generate as much capital as possible in order to continue growing. However, unlike traditional economic markets, healthcare markets are distinctive in that they also have insurance and asymmetric information. Insurance is the component that is caught in the middle of providers and patients. Coverage for medical services is payed through allocation from the insured and negotiated with providers. Patients obtain insurance usually from employee work benefits but can also pay for it from the marketplace that was created throughout ACA. The ACA mandated insurance for everyone and this lead to greater chances of Asymmetric information as patient’s knowing more about their health than the insurance companies. Asymmetric information is an unbalance of knowledge. Asymmetric information is found in every party and can lead to inefficiencies (Austin). This unbalance of knowledge can also be physicians providing an overwhelming amount of medical information to a patient and may encourage or use unnecessary services and treatments. Each party having different information can make it difficult to properly provide the right coverage and to properly choose and utilize the best services for the patient.

## Competition

Microeconomics define competition as entities acting independent to each to other to offer the best services in order to obtain consumers. Features that affect competition are: product qualities, numbers of firms, information availability, geographic market areas, measures, and barriers to entry (Baker). Competition is generally considered to have a positive impact on the market, both from the perspective of the buyer that lead to lower prices and the seller, encouraging innovation and efficiency. However, these benefits may not be seen in the healthcare market. Specifically, will competition provide higher quality with lower prices? Healthcare differs from other markets because of specific components such as insurance and elasticity of demand. The ACA offers incentives and penalties for mandated health insurance. The greater coverage leads to more individuals seeking out healthcare services and the goal is to create more demand specifically for preventive care (Rosenbaum). Elasticity of demand can be commonly found in other markets and reflects supply and demand but with healthcare, many services are inelastic. This means price relationship of supply and demand is consistent. Currently, acquisitions and health networks are a large component of the healthcare market (Tsai). In addition to acquisitions, hospitals consolidation has been increasing with noting over 900 deals made 1994-2000 (Abraham). Through these various mergers, it can be difficult to measure true competition if it is unknown if the hospitals are under the same network or are they still acting as a separate entity in the same area. Often finding geographic areas where, rather than a market of different hospitals, there is a competition of networks who are incentivizing consumers to choose a hospital in their network (Gaynar). One of the ways to measure competition is looking at patient satisfaction (Baker). Hospitals get funding depending on their patient satisfaction score through Hospital Consumer Assessment of Healthcare Providers and Systems survey due to policies driven from CMS. Quality is a significant measure that many hospitals and other healthcare entities have driven their efforts into. While this measure is currently a focus, it does not look at the full scope of what constitutes quality as often outcomes are used and these outcomes can be associated with specific procedures and pricing. With this being said, the above questions of true competition are still present indicating that to truly measure competition and the effect of competition between hospitals, a broad scope incorporating different aspects needs to be used. In addition, the main measure most studies use to measure competition is the Herfindahl-Hirschman index. The Herfindahl-Hirschman index measures the market share of the firm or entity specifically the “sum of the squared market shares of all of the firms competing in the market” (Baker). These studies measure the specific market share a hospital network has in comparison to other networks in the area. Understanding competition in the hospital market could factor into why certain hospitals close and others prosper. Follow up notion would be to look at care patients are receiving as a result. A study looking at factors associated with ED closures found that hospitals in more competitive markets were more at risk for closing their EDs (Hsia).The study found that hospitals in competitive markets closed at a higher rate than those in less competitive markets (Hsia). The results of competition have mixed results. One study found that competition did improve quality with the addition of managed market determined (Gayner). It also needs to be noted that many of these studies are from 2000-2003 and does not include current policies made, in addition their data often to ends to be from the 1980s to early 2000s. However, it still showcases the pattern and trend the healthcare market has been heading towards. As mentioned before, there are different measures to look at competition and focusing on pricing, quality, and effect. Competition becomes multifaceted as it depends on what aspect hospitals are competing with. Hospitals compete for patients, but the way they compete for patients differs.

## CAPITAL

Capital is define by the value or wealth an entity has through cash and assets. Capital separates different types of business. Hospitals are typically sorted into two main groups, nonprofits and profits with nonprofits dominating the market as shown in Table 1 below.

Table 1. Hospital Ownership



**Source: HCRIS reports from CMS website**

These classifications are how these hospitals manage their capital or rather their perceived behaviors. Relating to the topic of profit, capital is large component for healthcare. While it is expected for profits to obtain the highest profits possible, nonprofits are not seen in the same way. However, they too also strive for a higher net income and once obtained, have to do something with the surplus they obtain. With that extra capital, it is economically sound to invest or use the money in way that would help to obtain more revenue rather than just saving. In 2011, the capital trend for hospitals was heavily investing into EMR as this was supported by the federal government (Burt). An ongoing trend is for hospitals to grow their network by acquisition and convergence. A study in New York looked into how hospitals were spending their money specifically into Medicare and if that resulted in better outcomes. They noted healthier higher income patients tended to go to hospitals with already better quality and took that into account (Doyal). The study also found an increase in hospital spending is associated with a 10% reduction in mortality (Doyal). It is encouraged for hospitals to use their capital yet at the same time they receive criticism for what could be seen as over spending.

On a national scale, the GDP allocation to healthcare continues to rise being currently around 17% (OECD). This is the highest spending compared to any other developed nation. The main issue spending is very high with the lowest quality is in comparison to other countries (OCED). Even though the spending seems geared for profit, this mentality applies for nonprofit too. While the practice is the same, the purpose lies in for different reasons. For profits are obligated to the shareholders to make more money in order to provide large stakes for the stake holders. For nonprofits, their stake holders is the community and that is who they have to answer to. The logic being, more money, maximized growth, and profit will be given back to the community. Nonprofits have to report to the federal government their contributions to the community which they can write off. This gives even more incentive for nonprofits to invest and grow. For profits motives are always in question and perception that quality will be sacrificed because they want to maximize profits which is the goal for businesses. However if nonprofits and for profits are doing the same practices and if nonprofits are able to grow their profits even more with the help with the tax empty status, then why does the perception still stand? The question becomes what to do with the extra capital that will maximize growth.

## DEMAND

Demand is the service or good in relation to the ability to obtain it. As mentioned before, a related concept is demand elasticity. Healthcare is often considered price inelastic, however specific services can be considered more elastic (Ringel). Preventive care can more elasticity as people may turn to substitutes (Ringel). With the Baby Boomers getting older, demand for health services will be increasing even more (Pallin). Projections for growth indicate “demand for inpatient beds will increase 22% faster than population growth by 2050. The total projected demand increase is 72%, including that attributable to population growth and that attributable to population aging” (Pallin). The aging population need for healthcare is currently present and will continue to grow.

Investment into technological services and with the Affordable Care Act increasing access to insurance has led to more usage (Pallin). This presents possible problems with closures as strain may increase for nearby hospitals or other health services. With inpatient services in demand, Emergency Department visits has been increasing in volume as well (Lee). The need and want for hospitals is there but volume and distribution of hospitals is not even. Controversial supplier induced demand is a possible reason for why certain services and procedures are in demand. The current payment system is fee for services thus giving more reimbursement if certain procedures are performed. An article published in the BMJ discussed Clinical Cascade Specialist that too focused within their own field that they may not pay attention to other co morbidities and which can contribute towards over treatment and over diagnosis (Mulley).

## Policy

Policy has been one of the major if not biggest reformers of the healthcare system in America. The introduction Medicare and Medicaid through the amendment of the Social Security Act in 1965 pushed forth the American Healthcare system towards a national health insurance for the elderly and poor. The political spotlight on healthcare was more amplified with the signing of the ACA. There continues to be debate on if these policies are benefiting the American public or if harming them in the long run.

### AFFORABLE CARE ACT

The Patient Protection and Affordable Care Act health related Portions of the Healthcare and Education Reconciliation Act of 2010 was a policy signed by Obama in March of 2010 (Blumenthal). This act encompasses a wide variety of policies that not only expanded insurance coverage to reach a larger underserved population but to shift the health delivery system away from fee-for-service into fee-for-value. Many of the new insurance policies include preventative services with a large focus on primary care. These preventative services include screenings for blood pressure, diabetes, and various specific services for adults, women including pregnant women, and children (Koh). In addition, the Act gave grants to fund several councils devoted to the purpose of promotion prevention and wellness. This act affected polices such as Medicaid and Medicare and to obtain greater coverage and to reach vulnerable populations who historically had low rates of access to healthcare. These changes continue to be added and set a federal base level on what must be covered and practices that are not allowed. Before the ACA, discretion could vary widely state to state with examples of insurances charging more to their premiums based on gender and denying coverage to older individuals (Blumenthal).

A main focus and controversial point in the ACA was insurance coverage. Under the ACA it was mandatory to have insurance. If not, individuals would have to pay a penalty. This was a major point for those against the act as it argued that this mandate infers with personal freedom (Blumenthal). The Supreme Court ruled that it was constitutional for the federal government require everyone to buy insurance and the ACA created a marketplace to allow people to do so. However, states had to have the option to not expand their Medicaid program. Insurance policies were additionally modified to where preexisting conditions could not be denied coverage and those under 26 could still be on their parent’s health insurance (Koh). This allowed 20 million people have insurance and in turn has been used a way to indicate access to care (Blumenthal). Through this insurance coverage, it can be argued that the ACA is moving the healthcare system into universal care and moving in the direction of other countries that have national health insurance such as Britain. In this moment though, employer based insurance is still the main path for insurance and businesses were given tax incentive to provide their employee with health insurance. The ACA still stayed within the private market but made its market place to give more options to those who were uninsured and those who had to purchase insurance.

Quality was a part of the Act by using funding as an incentive and a penalty based on hospital’s performance (Roesnbaum). One of the program enacted in 2015 was the Hospital Acquired Condition Reduction Program (CMS). This program was set out to incentivize hospitals to lower their rate of hospital acquired infections. Secretary of the Department of Health and Human Services gives out adjusted payments depending on how well the hospital performed (CMS). Hospitals with low rates will be rewarded with more funding while hospitals with high rates will be punished with less funding.

The ACA is relatively new but there is continued monitoring on its progress. While it is too soon to see any definitive direct relationship, it is agreed that the act has made enough changes that has slowed national spending on healthcare (Blumenthal).

### COMMUNITY HEALTH NEEDS ASSESMENT

The ACA revamped the enforcement on hospitals demonstrating their efforts for the community to justify their non-profit tax status (Rosenbaum). Most of hospitals are non-profit, and thus 2,849 non-profit community hospitals have to complete CNHA (AHA). The four main points that hospital must demonstrate are establish written financial assistance and emergency medical care policies,

* Establish written financial assistance and emergency medical care policies
* Limit amounts charged for emergency or other medically necessary care to individuals eligible for assistance under the hospital's financial assistance policy
* Make reasonable efforts to determine whether an individual is eligible for assistance under the hospital’s financial assistance policy before engaging in extraordinary collection actions against the individual
* Conduct a CHNA and adopt an implementation strategy at least once every three years (IRS)

This is an enforcement of non-profit hospital responding to back to the community.

### CERTIFICATE OF NEED

Health Planning Resources Development Act of 1976 stated that there needs to be proof that a community needs a hospital before it can be built (Cauchi). This law was implemented to help regulate the number of facilities and beds in an area to help prevent inflated costs. 34 states have kept or made some variation to this bill. This bill is argued as a form of entry barrier for new hospitals and in turn is curtailing competition that could be beneficial for the healthcare market in that area (Cauchi).

# METHODS

Literature Review was used to compare themes found in hospital closures in the country in both rural and urban settings. Many of studies did not include acute general hospitals and used a combination of HCRIS reports with AHA reports to confirm closures. The data in this essay took HCRIS reports from 1996-2016 and focused on general short term hospitals in both rural and urban settings along with federal hospitals. Closures were determined by if a hospital stopped making payments to Medicare and that specific hospital would stop appearing the HCRIS report. Some limitations are that it was unknown if a hospital was acquired or bought out as these hospitals would be given a new provider number. In addition, studies looked at different hospital types and many did not include general short term hospitals or federal hospitals.

# Findings

Through various studies of looking at hospital closures there have been some trends but not enough for any definitive contributions. Specifically taking general short term hospitals HCRIS reports. There are trends that shrinking and closed hospital share. Throughout the years there is an increase in closures but the overall number of hospitals seems to be stay in the 4000- to just over 5000 range.

Table 2. Hospital Status and Year

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**Source: HCRIS reports from CMS website**

The early to mid-2000 experinced the most amount of closures and then a downward trend with a large spike in 2016. Despite the variation of closures, hospital numbers tend to range from 4,700 to over 5000.

While closures have occurs throughout the country, several states have experinced higher rates of closure than others.

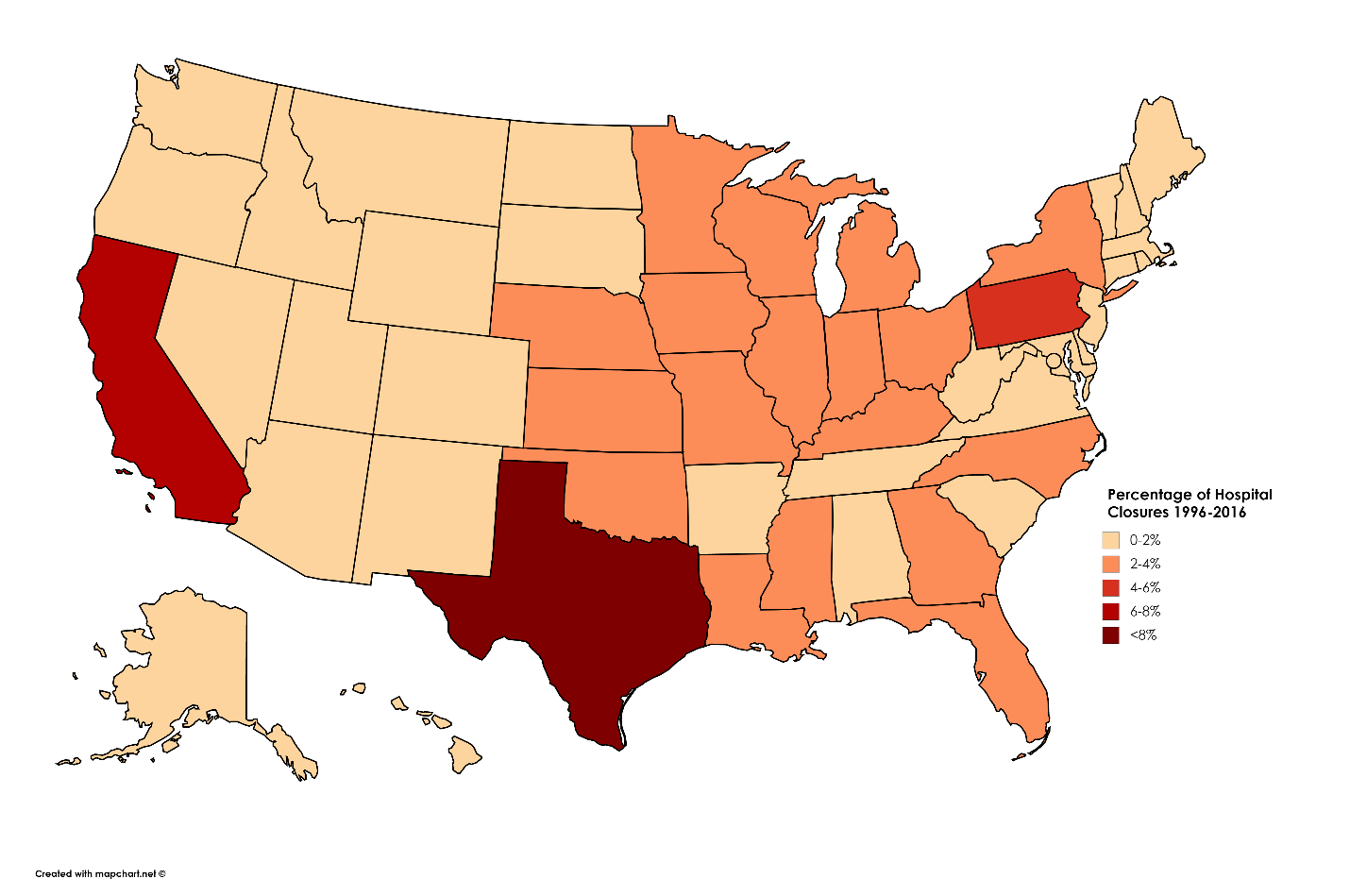


Figure 1. Hospital Status by State through 1996-2016

**Source: HCRIS reports from CMS website**

States with high populations and several of the states that opted out of the Medicaid expansion program set forth from the ACA experienced the highest number of closures. Texas had the highest rate of closures compared to any other state. This was also found from The North Caroline Rural Health Research Program specifically looked at “short-term, general acute, non-federal hospital that is a. not located in a metropolitan county OR b. is located in a RUCA type 4 or higher OR c. is a Critical Access Hospital” (UNC).

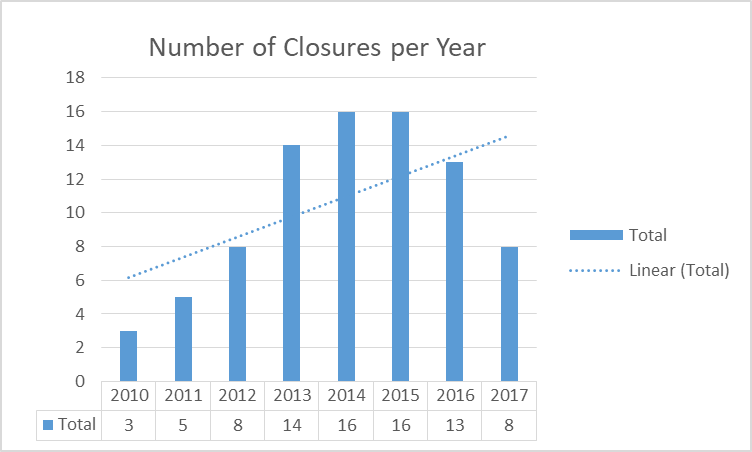


Figure 2. Number of Rural Hospital Closures from 2010-2017

**Source Cecil G. Sheps Center for Health Services Research**

UNC found that rural hospitals had a total of 83 closures from 2010 to 2017 with 2014 and 2015 having the highest rate of closures at 16 rural hospitals per year. Texas had the most closures compared to the states with a total of 14 since 2010 (UNC). States that have opted out of Medicaid had the highest rates of closures. All of the opted out states had closure during this 7 year period with the exception of Idaho, Utah, and Wyoming (UNC).

Other trends that have been observed through HCRIS reports in non-teaching hospitals had a high rate of closures.

Table 3. Hospital Status and Type



**Source: HCRIS reports from CMS website**

Studies have observed many of hospitals were in high competitive areas and did not have the profit margins to compete (Hsia). These hospitals had low staffing and beds and many provided a larger number of uncompensated care due to the population being uninsured (Kaufman). States that opted out of the Medicaid expansion had a higher rate of hospital closures (UNC). Hospitals had an accumulation of these factors before closing.

# IMPLICATIONS OF HOSPITAL CLOSURES

Hospital closures can have several effects from closing. These can be loss of employment and loss of access to care. Hospitals and health networks can be large employers for an area (Hernandez). Closing these centers can have multiple impacts on a community. There hasn’t any significant findings on overall higher morbidity through hospital closures. With that being said, acute illness that are time dependent on receiving care can be significantly affected. These can lead to the overuse of nearby health centers.

## EMERGENCY DEPARTMENTS

Hospital closures close down their Emergency departments close down as well. As hospitals closure rates go up so does emergency department rates. As a result, ED rates of nearby hospitals volume go up and more in demand (Lee). This increased demand for the next availability Emergency Department can cause strained “NYS from 2004 to 2010, there was significant variation in ED volume growth rates. This variability can be explained in part by certain hospital characteristics. ED volume increased nearly twice as fast in hospitals that were tertiary referral centers and in nonurban hospitals, when adjusted for other relevant factors.”(Lee) This demand can be straining as Emergency Departments are required to treat anyone regardless if patients can pay or not. Many patients are dependent on Emergency Departments. US physicians working in a hospital emergency department provide more acute care to Medicaid beneficiaries and the uninsured than the rest of US physicians combined (Hsia).

## ACUTE ILLNESS

Access to hospitals becomes limited if there is a closure. This in turn can affect mortality for acute illnesses. This is because time sensitive illness are more affected by time delays which in turn can contribute to mortality. As little as 10 minutes of delay can lead to severe adverse effects for illness such as acute myocardial infarction (Yu cho). Time delays postpone lifesaving interventions that can make both prognosis and recovery worse (Yu cho). There has not been a significant relationship measured between mortality and the rise of hospital closures, the interest is there.

# STATE EXAMPLE

In Pittsburgh there are two main competitors, UPMC and Alleghany Health Network. They dominate over the healthcare market leaving a small margin to independent hospitals (Brady). Both are expanding their networks, however there is debate to how much competition there is in the Pittsburgh market. UPMC and AHN used to have a contractual relationship but split up and both trying to create network of hospital along with insurance (Brady). Since the split, UPMC hospitals won’t accept Highmark insurance (the insurance for AHN) but will still take Highmark patients and have transfer agreements (Brady). This has led people little choice in who their provider is.

Many rural hospitals are financially struggling in Pennsylvania. “Nearly half (45%) of the 42 rural Pennsylvania hospitals faced negative operating margins in 2014, and an additional 33% of rural hospitals generated margins of only 0-3%” (PA). Many of these hospitals provide thousands of jobs for their community and often serving vulnerable populations as well (PA). The commonwealth of Pennsylvania is proposing incentives to help lessen the risk of closures due to the significant impact rural hospital closures will have in the state. One of these initiatives is to

Develop a multi-payer global budget model for rural hospitals. The goal

of this model is to create predictable revenue streams for hospitals to enable them to transform how they deliver care to better match the needs of the local population. This would replace the current fee-for-service payment model which rewards volume over value of care and is failing rural hospitals, as hospital volume has declined in rural areas (PA).

By addressing the impact hospital closures can especially on vulnerable populations access to care is expanded upon beyond insurance coverage.

# RECCOMENDATIONS and conclusion

More studies need to be done on hospitals closures and operations as it will lead into more accuracy for making health policies. For future studies, a key component to look at would be to see how many closures are part of mergers or acquisitions and consolidations along how many turned into alternative health service delivery care. In addition, clarification on hospitals and the different types of hospitals being measured need to be taken into account. Overall policies should continue to support safety net hospitals especially when discussing access and these hospitals take up the vulnerable populations and uncompensated care

The rate of hospitals closures have gone up particularly in rural areas. While there has not been any conclusive agreement on the actual impact hospital closures have had, the concern of access or lack thereof is still there. Hospital closures can be an indication of the healthcare market and can reevaluate the meaning of access to care beyond insurance.

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