

HOSPITALS AS THE INTERSECTION OF CARE, BUSINESS AND POLICY IN THE U.S.  
HEALTHCARE SYSTEM WITH REFERENCE TO THE INDIVIDUAL INSURANCE  
MANDATE

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Abstract

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This study evaluates the U.S. healthcare system through the interactions of care, business and policy as modeled by the ability of hospitals to remain financially viable in lieu of healthcare reform under the Patient Protection and Affordable Care Act and the proceeding non-enforcement of the individual mandate of insurance. To do so, I develop historical and political context in respect to each of the three functions of U.S. healthcare (care, business and policy) for hospitals and their interactions with the individual insurance mandate. In order to evaluate this interaction, I use a difference-in-difference empirical model to measure the changes in hospital financial stability after non-enforcement of the individual insurance mandate in Massachusetts and Connecticut. In combining these various approaches and analysis to evaluate the functions of the U.S. healthcare system, the ineffective aspects of the system will be identified, thus providing insight for improving U.S. health outcomes and optimizing health spending.

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Luke 1:38

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## Introduction

When we think of health spending, we usually think about the investments and expenses we make on our physical health. For example, I could think of this as the costs of visiting the doctor, my insurance premium or my allergy medication. You may also be inclined to include your gym membership and your annual flu shot as your health spending. At the policy level, “health spending” engages an expansive definition that goes beyond individual inputs of health (such as the ones mentioned earlier) to encompass all the components that make the healthcare system work. As seen through the COVID-19 pandemic, government involvement, public health infrastructures, and private businesses matter in trying to overcome such a massive crisis (note, these are the contributors to health spending). Connection, communicability and resource management within a health system largely influences the complexity of managing widespread dangers to health. After having lived subject to health systems throughout the pandemic, how can we begin understanding and engaging with the functions of health systems in order to decide how health spending makes a system succeed (or fail)? More specifically, how can we comprehend the U.S. healthcare system to determine its effectiveness?

The United States employs the most expensive health system amongst developed countries. In 2019, health spending accounted for 17.7% (nearly one-fifth) of gross domestic product (GDP) in the United States. According to the Centers for Medicare and Medicaid Services, this equates to \$3.8 trillion dollars of the U.S. economy going towards “expenditures for health care goods and services, public health activities, government administration, the net cost of health insurance, and investment related to health care”. In comparison, other member countries of the Organization for Economic Cooperation and Development (OECD) average about 8.6% of GDP towards health spending. Provided the high cost of the U.S. healthcare

system, an important question to consider analyzes the “quality” of U.S. healthcare dollars. That is, does the additional spending in health lead to better health outcomes?

Measures for health outcomes look at various aspects of health systems, such as population health (or health status of a population), access to care, and quality of care. According to OECD’s 2019 reports, the United States falls behind other OECD countries in health status indicators such as life expectancy, infant mortality, and chronic disease morbidity. Practically, this means the United States generally reports lower health status. In terms of access to care, the United States also falls below OECD averages for overall insurance coverage, financial protection from health costs and access to primary care, however, outperforms in timely access to preventative services. When it comes to quality of care, the U.S. falls behind in effective primary care, however, outperforms in secondary (i.e., heart attack treatment, general acute care) and cancer care. These measures characterize the United States as an effective health system in terms of sophisticated medical science and technology, though, ineffective in maintenance due to poor primary care and access. In other words, the U.S. has potential to provide sophisticated and high-quality care during times of sickness but lacks otherwise. Note, United States healthcare is not inherently bad- it merely has some very-effective aspects and some less-effective aspects. This prompts the questions: what are the various functions of the healthcare system? How do these functions interact to make up the U.S. health system (or any health system)?

The various functions of health systems involve providing care, maintaining businesses to do so, and public policies that maintain these directives. Naturally, health systems exist to provide medical care to communities in order to support individual health. To provide care, there needs to be availability to healthcare professionals (i.e., doctors, nurses, pharmacists, physical therapists, etc.), a place for treatment (i.e., hospitals, clinics, emergency departments, etc.),

availability of these resources (i.e., distance from healthcare facility and available treatment spots), and access (i.e., financial resources needed to receive care). In order to meet these needs, businesses exist under different business models shaped according to the type of expected payments (i.e., uninsurance, private insurance, or public insurance), the need for their healthcare services in a community (i.e., rural or urban centers, population health status, etc...), and the amount of funding to begin providing services (i.e., medical degree, medical technology and other facilities, etc...). Policy exists to balance both the needs of providing care and maintaining business by establishing standards and regulating compliance. At the same time, political ideologies and social schools of thought determine the extent that policy can play a role in either care providing and in businesses, thus making it another determinate to the functions of a health system.

Care providing, businesses, and policy altogether produce a health system, as neither functions without interacting with the other functions. The various components and interactions within the U.S. healthcare system creates a series of effects whenever a single function of healthcare makes a decision. For example, a policy change will determine the standard of care health providers must meet, however, also increases costs for the health provider. Conversely, increasingly poor health status requires a healthcare provider to increase services beyond existing capacity, thus prompting policy changes to support this growth. At all levels, neither providers, businesses, nor policy can act unilaterally as decisions made within one function of healthcare effects the others. If our goal is to observe these functions and make sense of their interactions, how can we distill a clear measure of what happens in one function of healthcare in respect to all the others? In other words, how does one change affect all the other moving parts? More importantly, how strong are these interactions?

To do so, the following study focuses on hospital care in the United States. Due to uninsurance, hospitals bear the financial cost of providing care to people who do not have insurance. Moreover, historical roles and public policy indicate that hospitals help keep communities healthy. In order to ensure this, hospital corporations are eligible to receive tax exemptions through nonprofit status. Hospitals, therefore, play an essential role in the framework of the healthcare system but are also subject to high policy regulations that manage care expectations. Note as well, the reason behind hospital care expectations arises from the prevalence of tax-exempt hospitals that operate as not-for-profit organizations. Questions regarding the type of business model a hospital operates as, the level of care they provide, and how much public policy influences hospital operations make hospitals a major intersection of all the functions of the healthcare system. Furthermore, the diversity and scope of modern hospitals feature a wide range of healthcare services encompassed under a single entity that promote hospitals as the intersection of healthcare. Hospitals, therefore, provide an option to identify how the various functions of healthcare (care providing, business and policy) interact in lieu of changes in one of the functions.

In the proceeding sections, hospitals will be described within their roles as “The Care Providers,” “The Business” and “The Policy Agents.” For the purposes of evaluating the functions and interactions of these roles within the U.S. healthcare system, this analysis will observe how the individual insurance mandate constructed into the Patient Protection and Affordable Care Act interacts with these functions. The individual insurance mandate itself serves as the measure for a policy change that effects hospitals as business entities and, consequently, hospitals as care providers. The results of the empirical analysis in Chapter V provides tangible measures to the degree in which these different functions interact by using



hospital financial stability as a measurable outcome to policy changes. The change in individual mandate law represents the function of policy, hospital finances identify the impact on the function of business, and financial stability models the impact of these interactions on a hospital's ability to stay open- or ability to provide care. In combining these various approaches and analysis to evaluate the functions of the U.S. healthcare system, the ineffective aspects of the system will be identified, thus providing insight for improving U.S. health outcomes and optimizing health spending.

### Chapter I: "The Care Providers"

The first, and arguably most important, function of healthcare focuses on providing care in response to meeting the health needs of a population. Historically, hospitals serve as the epicenter of addressing population health, thus, making the precise focus of being "the care providers" a malleable and living definition that shapes in accordance with society. This begs the question: what are hospitals and, more specifically, what has been the scope of care of hospitals throughout time? By defining hospitals and their purpose throughout time, we can identify the patient care expectations of contemporary hospitals.

The emergence of contemporary hospitals faces some level of controversy within the historical community. A popular source discussing the history of medicine in the United States is Paul Starr's *The Social Transformation of American Medicine*. In his book, Starr refers to hospitals "From their earliest origins in preindustrial society" to "[have] been primarily religious and charitable institutions for tending the sick, rather than medical institutions for their cure" (Starr 145). Conversely, Timothy Miller contests this view in his subsequent publication, *The Birth of the Hospital in the Byzantine Empire*, by providing historical evidence of more advanced care centers existing prior to the charitable institutions Starr refers to.

One such example offered by Miller discusses the quality of care provided by the Pantokrator Xenon in 12<sup>th</sup> century Constantinople. In 1136, Emperor John II Komnenos established the Pantokrator Monastery with the Pantokrator Xenon as one of its charitable institutions. His vision for this describes a place that house and care for the sick, with around the clock nursing care, and access to the physicians of that time. As per Miller, the Pantokrator Xenon has similar components in the categories of facilities, staff, medical treatment, and even patient demographics to make it comparable to what we know to be a modern hospital. The facility itself contained wards of quality<sup>1</sup> beds that were sorted out in a specialty-like manner (i.e., similar conditions were placed together), separate restroom-like structures for men and women, and a common area to bathe. Moreover, patients were provided with what modern-day nutritionists consider a well-balanced meal in the Pantokrator Xenon. The staff consisted of various physicians (including specialists assigned to certain wards such as women and surgery), medical assistants, and servants who operated the hospital under monthly schedules. Two high-ranking physicians, *premmikerioi*, supervised the hospital treatments and took turns doing rounds on all the patients. Furthermore, they also employed administrators (referred to as *nosokomos*), pharmacists, housekeepers, bakers, etc. to ensure full operations of the establishment. The medical treatment itself consisted of different types of therapies, some medicines (outlined by ordering records maintained by administration) and spiritual treatment provided by staff priests. Lastly, the Pantokrator Xenon provided care for people of all socio-economic classes, as some had more notable resources (such as supplying their own bed covers) in comparison to other patients (Miller 15-20). These characteristics- caring for various socioeconomic classes,

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<sup>1</sup> Beds had mattresses and bedding; some mattresses were designed with a hole in them for the bedridden

incorporating available medical science, institutional organization- will help reconcile the debate of how the Pantokrator Xenon compares to contemporary hospitals.

Conversely, Starr begins his story of the evolution of the contemporary hospital at the end of the nineteenth century where “hospitals had been primarily religious and charitable institutions for tending the sick, rather than medical institutions for their cure” (Starr 145). Medieval and Middle Age institutions were developed and run by religious communities, thus embedding a communal character into hospitals. Provided that these early hospitals were almshouses, they mainly served as landing places for the sick, the old, and other people who were unable to care for themselves, so that it was only by accident that they treated the sick (Starr 149). These conditions of religion and charity coincide with Miller who also assimilates the origins of the hospital to charitable institutions such as the Pantokrator Xenon, however, Miller’s account makes it clear that the Pantokrator Xenon intentionally cared for the sick- not accidentally. Progressing into the U.S. colonial period, hospitals maintained their communal and charitable structure from Europe, but slowly developed from community-oriented to transaction-oriented institutions, which defines the major shift in hospital care. This shift was also noted as the patients treated began to include more socioeconomic classes than just the poor, and the fee-for-service system’s birth (Starr 149-150). Alongside this, Starr emphasizes that the Industrial Revolutions transcended into hospital functions as medical science advanced, physicians and administrators became more involved, nursing became more structured of a profession, and hospitals overall became a “workplace for the production health”(Starr 146). It is based off these conditions that Starr defines the birth of the modern hospital.

Despite the debate of hospital origins, both Miller and Starr make similar arguments as to what a contemporary hospital is. A contemporary hospital incorporates medical science and care

for people of all socioeconomic classes. This is the basis for Miller's argument supporting the Pantokrator Xenon as the first contemporary hospital, but also how Starr defines the difference between almshouses and the making of the modern hospital. We can also see how this definition transcends to our modern understanding of healthcare- grounded in medical science and available to everyone. While the condition of availability of healthcare stirs debates due to affordability (which will be discussed in Chapter III), the arguments posed by Miller and Starr define pre-contemporary hospitals as being exclusively used by the poor. Modern-day hospitals serve people of all socioeconomic classes (excluding the condition of ability to pay) and use medical science for treating patients, thus affirming the definition of the contemporary hospital used by Miller and Starr. Now that we have defined the contemporary hospital, how did the expectations for patient care arise?

As we know, the contemporary U.S. healthcare system still functions as a capitalistic market born from the Industrial Revolution, though, the transformation of the contemporary hospital since then shapes its distinct role in providing care. Specifically, we can see the role of hospitals during wartime and epidemics since the end of the 19<sup>th</sup> century through the 20<sup>th</sup> century to observe some of the defining characteristics and expectations of hospitals to provide patient care. These observations craft the origins for services provided by modern-day hospitals that extend beyond treating a sick patient, making the true patient care expectation more than just clinical practices.

While oftentimes referred to as the "Middle Ages of medicine in the United States," battlefield care delivery during the Civil War (1861-1865) established an organized system to hospital care and emergency medicine. Prior to the Civil War, hospitals were small in size and unpopular due to their reputation as "places to go to die." Medical Director of the Army of the

Potomac, Jonathan Letterman, established a sophisticated ambulatory system that expedited the process of getting wounded soldiers to medical care. A trained ambulance corps combined the different brigade ambulances operating on the battlefield to create multiple categories of care: small dressing stations on the battlefield, field hospitals a safe distance from the battlefield, and systems of large general hospitals in surrounding cities (Reimer). While these practices remain largely popular in organized military medicine, the efficiency of Letterman's system produced good enough results to change public opinion regarding hospital care. It is important to note, however, that Letterman's organization worked alongside implementation of Florence Nightingale's sanitation teachings.

Following the Civil War, medical advances in the U.S. took off with more established community hospital systems and sanitation practices. New hospital structures followed Nightingale's standard large-style ward and hygiene procedures. Looking at hospitals emerging in New York City in 1869, religious communities moved to form exclusive hospitals to serve their own community of followers. Each hospital still admitted all types of people but incorporated their own cultural practices into the operations of the hospital (Kisacky). The incorporation of community design into hospital establishment defines the intertwining of hospitals with the surrounding community. This fundamental connection begins forming the expectation of hospitals to serve both their patients and their communities. Furthermore, patient admission patterns to hospitals show the trends in types of care (i.e., ambulatory care, surgical, specialty care, etc.) demanded that influence the type of services hospitals would offer (Kisacky). In other words, hospitals determine the types of services to offer based off the community's needs.

Progressing to the 1918 Spanish Influenza, hospitals were the primary center for care coordination. Hospitals took decisive steps to prioritize *influenza* patients, expanded their medical staff, and more hospitals were established in community buildings such as gymnasiums and church halls (Schoch-Spana). It is important to remember here that medical care prior to the popularization of hospitals following the Civil War occurred primarily at home due to distrust of hospitals. Capacity expansion and duties bestowed upon hospitals during the epidemic establish their new role as being responsible for providing care to the community. As medicine advanced in the first half of the 20<sup>th</sup> century in producing new treatments and therapies successful at treating illnesses, hospitals gained prestige and solidified their essentialness to communities.

The position of hospitals in communities progressed with the passing of the Hospital Survey and Construction Act of 1946, best known as the Hill-Burton Act. The Hill-Burton Act created a federal grant program that assisted states in building new hospitals where needed and sustainable. While controversial due to its inclusion of a “separate but equal” provision, the Act succeeded in building the nation’s health care infrastructure and expanding access to care. This legislation led to the 1944 Public Health Service Act (PHSA) that continues to govern healthcare in the U.S. today (Largent). At that point in time, the contemporary hospital had both taken shape and become an integral of American society. Hospitals assumed the role of providing patient care by being born from the needs of communities to access medical care, whether it be due to war, epidemics or common everyday illnesses. The passage of the Hill-Burton Act commemorates the essentialness of hospitals as the government deems it a critical need for all citizens to have hospital care. The Hill-Burton Act merely introduces the role contemporary hospitals would play in society.

The patient care expectations of the modern-day hospital move away from being determined by the communities by being codified into both federal and state laws. Arguably, U.S. society and state communities determine public law, so the process of assigning patient care responsibilities to hospitals simply adds standardization and formality. The Public Health Service Act dates back to 1798 to authorize marine hospitals for U.S. merchant seaman and evolved throughout the 1800s to support public health needs of the country, but the 1944 Act broadly expanded its scope through the creation of the Public Health Service. Surgeon general Thomas Parran led these efforts for legislation to be more expansive in improving sanitation, expanding quality health facilities, training medical professionals and supporting medical research efforts (Snyder). While the Public Health Service has since been repealed, the Public Health Service Act (PHSA) lives in Chapter 42 of U.S. Code and houses all major health care laws (i.e., the Patient Protection and Affordable Care Act is codified in it). Nevertheless, the PHSA only includes federal law, as the U.S. healthcare system also separates federal and state powers.

State and federal regulations influence the types and number of services offered by hospitals. The definition of the word “hospital” lives in each state’s regulatory code as the federal government leaves that power to the states. Policy and regulation will be discussed more closely in Chapter II, however, note the boundary on federal regulation and care coordination. State and federal regulation set the quality standards for patient care through licensure, minimal requirements, patient protections, reporting standards, etc.... One such minimal requirement that highly impacts local communities is the requirement to render emergency medical treatment under the Emergency Medical Treatment and Labor Act (EMTALA) first passed in 1986. Medicare-participating hospitals with an Emergency Department must provide a medical screening to anyone who comes within 250 yards of the hospital, regardless of an individual’s

ability to pay. This creates an uncompensated care aspect to hospitals providing care.

Uncompensated care is services rendered by a healthcare provider that are not reimbursed by the patient or a health insurer. Garthwaite, Gross and Notowidigdo (2015) found that hospitals average \$900 in uncompensated care for each newly uninsured person in their community. The business functions of hospitals in Chapter II will more closely explain what happens to hospitals with respect to uncompensated care, however this expectation of providing care without collecting fees ties the care aspect of healthcare to the business side. Furthermore, uncompensated care makes hospitals the key access point for individuals that do not have health insurance and cannot afford medical care fees.

In summary, the development of hospitals establishes them as integral parts of community health by addressing the specific needs of the community and maintaining access for all individuals. Policy serves the community's access to care providers by ensuring hospitals offer necessary services and are able to keep their doors open. When hospitals close, the surrounding community loses access to healthcare and the health benefits promised by policy. These ideas will develop in upcoming chapters, but it's important to see that the provision of hospitals (and the healthcare system at large) to provide care does not work in isolation from either the business or policy aspects. Hospitals serve as an isolated facility that can focus the various aspects of healthcare, which follows from their role in building the infrastructure of the U.S. healthcare system.

## Chapter II: "The Business"

While hospitals primarily maintain the identity as care providers, they also work under corporate charters and act as agents in a competitive economy. Despite the transformation of hospitals and care coordination following the Civil War, the U.S. hospital sector continues to



operate as a largely private industry. At the time Paul Starr wrote *The Social Transformation of American Medicine* in the mid 20<sup>th</sup> century, he describes the U.S. hospital sector as a “mixed economy” composed of both public and private institutions. While this remains true, Kaiser Family Foundation reports only 18.7% of total U.S. hospitals in 2019 were publicly owned community hospitals. The other 81.3% places the majority of hospitals in the private sector, however, split between not-for-profit (NFP) (57.3%) and for-profit (24%) hospitals. In comparison to 1999, the overall percentage of for-profit hospitals has increased from 15.1% to 24% in 2019 and more significantly reduced the percentage of public hospitals from 24.2% in 1999. This shift in ownership types notes that public, not-for-profit and for-profit hospitals differ in essential functions and change over time. To that end, the majority of hospitals are not-for-profits. In order to properly discuss hospitals as businesses, the economic theory surrounding not-for-profit hospitals and its consequences must be explained.

Returning to the origins of hospitals as charitable facilities, the existence of not-for-profit hospitals mimics this same purpose in providing care where none would be provided otherwise (in other words, a market failure). This typically happens in the case of public goods, or goods that can be provided to everyone for the same cost it would take to provide it to one (i.e., firework displays) and one person’s consumption does not prevent someone else’s consumption of the same good. In other words, public goods are nonexcludable and nonrival. Conversely, healthcare is a private good used on an individual basis and limited resources mean that one’s consumption prevents someone else’s; therefore, it is both rival and excludable. So, if not-for-profit organizations typically exist to provide public goods the free market will not provide, then why is healthcare, a private good, provided under not-for-profit organizations?

To review, a common theme in our discussion regarding the development of hospitals as authorities in medicine involves public trust of hospital care quality. With increasing regulation and study, nowadays patients usually have access to some information to help them distinguish the quality of services provided by a hospital. At the same time, the scope of hospital care involves a wide array of care providers and services that make capturing the quality of care difficult to the outsider. This gap in quality information (or asymmetrical information) means that individuals also rely upon the “character” of an organization. For-profit organizations distribute profits amongst chairholders, while not-for-profit organizations repurpose their profits (presumably, for the benefit of their organizational mission). Individuals, in general, tend to have more faith in not-for-profit organizations in the gamble of quality information (Hansmann). Not-for-profit organizations also benefit from tax-exemptions (described in more detail later in this chapter) to help them achieve their mission.

Different theories exist about how not-for-profit hospitals practically use their tax-exemption to achieve their mission. According to Joseph Newhouse (1970), the mission of a not-for-profit hospital is quality and quantity of care. Newhouse poses that the combination of quality and quantity of hospital services would provide prestige as an incentive to hospital physicians and decision makers. Under this model, the point at which both quantity and quality can be jointly maximized is the point where hospital decision makers would opt to provide services, as these conditions would satisfy the conditions for maximizing prestige (Newhouse 1970). Practically, Newhouse’s model poses not-for-profit hospitals as providing the quality care that individuals expect from a not-for-profit firm. That is, when decision makers of a hospital opt to pursue prestige by providing plentiful quality care, individual consumers can overlook their

lack of information regarding actual quality for general perceived quality. Practically, this model justifies not-for-profit tax exemption as society could benefit from overall better care and health.

Pauly and Redisch (1973) theorize a different approach to hospital decision making that detaches from quality and focuses on quantity. More specifically, Pauly and Redisch observe not-for-profit hospitals as physician cooperatives that make the decision of the amount of care to provide based on where staff can make the most profit. The number of services a hospital would provide depends on the number of staff, and the number of staff depends on how much staff a facility could employ in order for physicians to realize the highest salaries possible (Pauly and Redisch 1973). The dependent decision in this theory focuses on possible profits, a considerable contradiction to the existence of a not-for-profit establishment. Modern not-for-profit hospitals experience scrutiny in light of justifying their reason for tax-exemption. The first question being do not-for-profit hospitals deserve tax exemption? Is tax-exemption merited due to improved access to medical care through lower costs and support of the uninsured? Is it true that not-for-profit hospitals provide better care than for-profit hospitals?

Breaking down the tax-exemption law will provide insight to answer these questions. To re-establish, not-for-profit hospitals and for-profit hospitals differ due to their governing tax structure. The mid 20<sup>th</sup> century establishment of the welfare state in the U.S. and the bustling development of civil rights in government paved the way for the creation of Section 501(c)3 in the Internal Revenue Service Code (IRC) that provides not-for-profit organizations with tax exemption. Under IRC Sec. 501(c)3, not-for-profit hospitals must provide “community benefits” in order to justify their tax-exempt status, while for-profit hospitals have no such documented expectations. These “community benefits” applied to not-for-profit hospitals first appear in the 1969 Internal Revenue Service (IRS) Revenue Ruling 69-545 that “recognized the promotion of

health as ‘one of the purposes in the general law of charity that is deemed beneficial to the community as a whole even though the class of beneficiaries eligible to receive a direct benefit...does not include all members of the community ... provided that the class is not so small that its relief is not of benefit to the community (emphasis added)’ ” (Somerville). The rule modifies a previous ruling by removing the requirement to provide charity care or care “without charge or at rates below cost.” This definition broadened the scope of community health services a not-for-profit hospital could provide or support outside of providing charity care, while still meeting the expectations for tax exemption. Consequently, hospital administrators must also plan for these differences in establishing business plans for maintenance of hospitals.

While community benefit standards continue today, mixed sentiments exist over not-for-profit hospital tax-exemption due to billing practices. For context, health insurance heavily impacted the transition of hospitals from charitable organizations to commercial not-for-profit entities. The passing of Medicaid and Medicare legislation in the mid 20<sup>th</sup> century freed hospitals from their dependence on charitable donations to working under the fee-for-service system. Health insurance, whether public (Medicaid/Medicare) or private (all other health insurance), reimburse hospitals for the services provided to plan members. Health insurers will contract with health care providers to come to an agreement on how much a health care provider will charge a health insurer for a given service.

In the early 2000s, a series of news reports began exposing aggressive bill collection efforts by not-for-profit hospitals on uninsured patients. Bills were sent to collection agencies and hospitals withheld wages from people with outstanding charges. More interestingly, the uninsured paid larger sums for treatment than did Medicaid and private insurance reimbursement rates. That is, hospitals expected the uninsured to pay the full amount listed in their chargemaster

(a.k.a. a price menu for services) while typical reimbursement for hospital treatment would be individually negotiated with different insurance companies (Reinhardt et al.). This discrepancy in pricing coupled with aggressive billing efforts caught national attention and called into question whether hospitals merited not-for-profit taxation status. Consequential legislation reflects this distaste for unfair billing practices; however, the recent federal No Surprises Act may dismiss this concern.

Under the 2010 Patient Protection and Affordable Care Act (PPACA), the latest major legislation regarding United States healthcare, hospitals have increased standards for maintaining their not-for-profit status. Reforms to support merited tax exemption are written in

Section 501(r) of the Internal Revenue Code [which] now requires each hospital to establish a written financial-assistance policy that applies to all “emergency and medically necessary care.” Through these policies, hospitals must strive to ensure that patients who qualify for fully or partially subsidized charity care can apply for and receive it, are charged reasonable amounts, and are not subject to extraordinary bill-collection practices when they have outstanding medical debt. Hospitals are also required to assess the health needs of their community every 3 years. Failure to comply with Section 501(r) could result in a \$50,000 excise tax, losing tax-exempt status, or both, once the requirements are fully implemented in 2016 (Nikpay and Ayanian).

These additions motivate increased “community benefits” by not-for-profit hospitals, while also ensuring fair pricing and billing practices. At the same time, however, the effects of this reform will be dependent upon the practical application by hospitals to address community needs.

The market for hospitals has changed over the years. Changes in policy and population patterns influence where hospitals open and how they operate in order to financially survive.

Hospitals are essential components of health delivery and provide resources to support healthy communities. According to data from the American Hospital Association (AHA), the number of hospital beds in the United States has steadily decreased since the 1990s. Meanwhile, outpatient visits have increased from 368k in 1990 to 879k in 2018. The overall number of hospitals in the United States have fluctuated over time, with a drastic drop in the 2000s but rising back to 1990s numbers in recent years. Since 2014, however, there has been a notable decline in the number of rural hospitals with 1.91k in 2014 to 1.82k in 2018. More clearly, the total number of U.S. hospitals in 2014 was 6.174k and in 2018 was 6.146k. Looking at the change between 2014 and 2018, the total number of rural hospitals has decreased by 90 ,while the total number of U.S. hospitals has only decreased by 28. Coupled with this, the number of hospitals in a system has increased from 3.38k to 3.49k. In this time, as well, free standing emergency rooms have also created a new means of ambulatory care competing with hospital emergency departments. Ultimately, the hospital market presents a changing landscape that policy and business models will need to respond to.

As seen with the characteristics of hospitals as care providers, hospitals as businesses heavily feel the impact of policy. Tax-exemption shapes the for-profit and not-for-profit nature of the hospital market and fundamentally interacts with the duty of hospitals as care providers. The business aspect of hospital and healthcare overall can be described as the response to the interaction between the duty to provide care and the policies formed to make sure that happens. This opens a new question of analysis: what does the healthcare policy landscape look like in the United States and how do we see all these interactions within the hospital market?

### Chapter III: “The Policy Agents”

To understand the healthcare policy landscape in the United States, it is necessary to contextualize the U.S. healthcare market in respect to other markets throughout the globe. To begin, there are really only four models of healthcare systems throughout the world. The Bismarck Model (utilized in Germany, Belgium, Switzerland, Japan, and somewhat in Latin America) operates using private insurers and healthcare providers, however, the government places tight regulations on these industries in order to ensure access and affordability to everyone. The Beveridge Model (utilized in the United Kingdom, Spain, Italy and the U.S. Department of Veteran Affairs) is what T.R. Reid refers to as “what Americans have in mind when they talk about ‘socialized medicine’.” Under the Beveridge Model, the government owns and operates all<sup>2</sup> healthcare facilities so individuals never see a bill for healthcare. The National Health Insurance Model (NHI) (utilized in Australia, Taiwan, South Korea, but, most notably, Canada) creates a national health insurance program that everyone pays into. This allows for the government to enter price contracts with healthcare facilities. Lastly, is the Out-of-Pocket Model used by the majority of the world. Only about 40 countries have the wealth and political organization to have a particular health system, so those who do not operate under regular fee-for-service (meaning only those with the wealth to afford healthcare have access) (Reid 17-21). An important concept to grasp here involves the establishment of a particular system and that the United States falls into none of these categories. This is the crux of complexity of United States healthcare.

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<sup>2</sup> Privately-owned healthcare facilities and insurance are allowed. For example, a small private healthcare sector exists in the U.K., however, individuals are responsible for this cost making access dependent on wealth.

To begin, let's discuss the political landscape of U.S. healthcare, specifically, health insurance. We know that hospitals began as charities and then transitioned to a fee-for-service system that meant care would require payment. Drawing from Kaiser Family Foundation's *Timeline: History of Health Reform in the U.S.*<sup>3</sup>, in 1912, under twenty-sixth President Teddy Roosevelt, health insurance first emerges in the U.S. with the National Association of Insurance Commissioners (NAIC) developing the first model of health insurance regulation to advise state laws. Around this time, nation health insurance programs (such as the Beveridge Model in the U.K.) gain popularity in Europe, however, Americans did not share the same enthusiasm for "compulsory health insurance." Following the Great Depression (1929-1939), President Franklin D. Roosevelt created a committee to address the issues of unemployment, medical care, and retirement to advise the New Deal. Though President F.D. Roosevelt achieved health reform in maternal and child health, the fear of a large federal government prevented further progress. It would not be until President Truman's Administration after World War II that a mandate for national health insurance would be discussed, but, similar to FDR, fear of socialism and racial integration dismissed this idea. (Note that the previously discussed Hill-Burton Act that funded the construction of hospitals passed under President Truman.)

Throughout and after Roosevelt's and Truman's Presidencies, employer-sponsored health insurance became widely popular; however, the development of group and individual markets for health insurance created the issue of adverse selection. In our conversation regarding the motivations for not-for-profit organizations, we defined asymmetrical information as the principal of one agent knowing the true quality of a product or service while one agent does not know (i.e., healthcare providers know the quality of care they offer while patients do not).

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<sup>3</sup> <https://www.kff.org/wp-content/uploads/2011/03/5-02-13-history-of-health-reform.pdf>



Similarly, health insurers do not know the level of health of a person they offer health insurance to, so they do not truly know how much insuring a person will cost. The consequence of this asymmetrical information in health insurance leads to what is called adverse selection, or “death spiraling.”

Economist George A. Akerlof (1970) explains that in market exchanges with asymmetrical information, both buyers and sellers have a price they are willing to pay or accept, or reservation price. These reservation prices determine the how buyers and sellers make their decisions. In the context of health insurance, people purchasing health insurance can be either healthy or sickly. A healthy person will have a lower reservation price (i.e., lower expected healthcare costs) and a sickly person will have a higher reservation price (i.e., higher expected healthcare costs). Since health insurance companies do not know these reservation prices as they do not know the health of consumers, they will base their premiums<sup>4</sup> off an average guess of expected healthcare costs. Individuals who have lower expected healthcare costs than the premium will opt out of purchasing insurance. This means that the insurance company now has more high-cost people in the insurance pool, but less income from premiums collected from low-cost individuals who opted out of purchasing insurance. Consequently, premiums will rise to meet this change and the same process of people not purchasing insurance will cause premiums to rise again. This process is what is referred to as “death spiraling,” because the number of people purchasing insurance will continue decreasing and premiums will continue rising. Eventually, only the sickest people will purchase insurance, however, the cost of premiums will be high. This leads to the next development in healthcare policy in the U.S..

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<sup>4</sup> The price paid by a consumer for a health insurance plan

Health policy in the 1960s direct attention towards the issue of adverse selection in the insurance market outside of employer-sponsored plans<sup>5</sup>. The people purchasing health insurance were the retired, disabled and elderly, therefore, health insurance companies set high premiums to meet high healthcare costs. Policymakers then shifted their focus to creating affordable health insurance options for these marginalized groups through the 1965 incorporation of Medicare and Medicaid into the Social Security Act under President Lyndon B. Johnson. The political atmosphere of the time, coupled with the exclusion of cost controls and fee schedules, set the stage for this large-scale national healthcare reform. Medicaid (aid the poor) and Medicare (care for the old) establishes a public insurance program to address the issue of high premiums caused by adverse selection in the insurance markets.

Effectively, this now creates a public insurance system in addition to the existing private insurance system. In terms of national models mentioned earlier, the U.S. creates a combination of the Bismarck (highly regulated private insurance) and National Health Insurance (NHI) (public insurance everyone pays into) models. The U.S. differs by not maintaining the high regulation condition of the Bismarck model, and limiting public insurance to particular populations unlike the NHI model. Since not everyone receives public insurance and the private health insurance market is not highly regulated against adverse selection, not every person in the U.S. has access to healthcare; effectively, this adds the Out-of-Pocket health system model to the U.S.. By 1975, the consequences of low regulation resulted in healthcare cost containment took priority over expanding health coverage during the Carter Administration. Nowadays, alternatives to health insurance include health maintenance organizations (HMOs), health

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<sup>5</sup> Health plans where the premium cost is paid between the employer and the employee.

savings accounts (HSAs), and other state insurance market alternatives exist to provide individuals with more affordable options to access healthcare coverage.

Rising healthcare costs remains a health policy priority and controversy today, as does coverage expansion. In continuum to our discussion of international health system models, it's important to note that each system revolves around the application and design of health insurance. So, while the U.S. does not distinctly fit into any of the international models, health insurance does serve as the principal regulation of healthcare. According to the Centers for Medicare and Medicaid Services<sup>6</sup> (CMS), National Health Expenses (NHE) in 2019 account for 17.7% of gross domestic product (GDP), where Medicaid and Medicare accounted for 37% of total NHE, private insurance 31%, and out-of-pocket spending 11%. Arguably, this makes public insurance the largest payer<sup>7</sup> in the market, thus, giving CMS market power in setting health insurance standards. Present-day political processes use CMS's power as a means for health reform, as state insurance departments (as well as the National Association of Insurance Commissioners) defer to CMS administrative rules for interpretations of federal health laws.

The Patient Protection and Affordable Care Act (PPACA) passed under the Obama Administration in 2010 represents the most expansive health reform law in recent history. One of the primary provisions of the PPACA ensures that everyone can receive insurance coverage at an affordable rate by age group and not penalize people for pre-existing conditions. To do so, the PPACA creates a "community rating" provision that requires health insurers to charge everyone in a community the same health insurance premium. This, though, would theoretically trigger a

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<sup>6</sup> <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NHE-Fact-Sheet#:~:text=NHE%20grew%204.6%25%20to%20%243.8,16%20percent%20of%20total%20NHE.>

<sup>7</sup> Commonly used in health sector to refer to agent that pays health bills

“death spiral” that would cause the health insurance market to eliminate itself, as previously discussed. To prevent this, the PPACA includes an individual insurance mandate that would require all individuals to purchase health insurance. Doing so would ensure sufficient premiums collected for the projected health spending of a community, or “risk pool.” Jonathan Gruber (2010) elaborates in describing the original PPACA as a “three-legged stool” for improving insurance access in nongroup and small group insurance markets. The first leg of the stool is regulation that ensures everyone can receive insurance coverage. The PPACA achieves this through community rating and coverage for pre-existing conditions. Since community rating raises the issue of a “death spiral” (where the market would eliminate itself and only the sickest would be insured and high premiums), the second leg of the stool is an individual mandate that ensures a sufficient insurance pool. The individual mandate written into the PPACA requires everyone to purchase health insurance, otherwise, they will receive a tax penalty for not having health insurance. Despite these provisions, some people may still not be able to afford insurance premiums (or wish to comply with the mandate). This motivates the third leg of the stool to ensure affordability by providing insurance subsidies for households at three times the federal poverty level (Gruber). Based in theory, the provisions of the PPACA would improve access for nongroup and small group insurance markets by decreasing premiums and helping more households afford health insurance.

Aside from nongroup and small group insurance, the PPACA also incorporates provisions to make the law affordable for the poorest people and the government (which would finance that coverage). Expanding on that third leg of affordability, the law expands Medicaid eligibility to include adults with or without dependents up to 138% of the federal poverty level. This would expand the Medicaid safety-net and further reduce the uninsured rate (Lyon et al.).

When first passed into the law, both the Medicaid expansion and individual insurance mandate were mandatory for all states; however, the *NFIB v. Sebelius* case rules that the federal government does not have the power to enforce either of these conditions. Since then, states have passed their own legislation on whether to accept Medicaid expansion in their state and create their own enforcement for the individual insurance mandate<sup>8</sup>. At the same time, Title III under the PPACA strategically reduces Disproportionate Share Hospital payments<sup>9</sup> in order to account for increased insurance coverage the PPACA would induce, but also to offset the costs of expanding Medicaid coverage (Lyon et al.). In other words, more insurance coverage translates to decreased demand for uncompensated care in hospitals, therefore, the government does not need to provide as much financial support for hospitals.

Since first passing into law, the PPACA has faced severe political and social scrutiny. In 2011, a Florida judge ruled that the individual insurance mandate written into the PPACA oversteps the federal government's power to regulate commerce (Whelan). A 2012 review by the Supreme Court of the United States (*NFIB v. Sebelius*) holds that the individual mandate does overstep federal power under the commerce clause, however, the individual mandate is constitutional as a tax. In other words, "Congress doesn't have the power to require individuals to purchase health insurance, [but] it does have the power to tax those individuals who do not" (Blake). Despite this ruling and subsequent enforcement of the individual insurance mandate, the 2017 Tax Cuts and Jobs Act zeroes the tax penalty that enforces the individual insurance mandate- therefore voiding the policy (Glied). Consequently, the accompanying policies in the

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<sup>8</sup> The states of California, the District of Columbia, Massachusetts, New Jersey, Rhode Island, and Vermont have their own states health insurance mandate laws.

<sup>9</sup> Financial support from the federal government meant to offset the burden of uncompensated care costs realized by hospitals

PPACA will experience different outcomes as their design originates from projections made with the enforcement of an individual insurance mandate. Moreover, an ongoing court case, *Texas v. California*, contests the constitutionality of the PPACA under the principal of whether the individual insurance mandate is severable from the rest of the law.

While repealing an expansive healthcare law in the middle of a pandemic may have its critics, repeal is still possible. The specific case of the PPACA debate lends opportunity to evaluating how the three functions (providing care, sustaining businesses, political agency) of the U.S. healthcare system interact. Provisions of the ACA increases insurance regulation that expands access to care and ensures payment for care to healthcare providers, however, judgement of successful health reform is subjective to political beliefs. The following chapters attempt to judge the severability of the individual mandate of the PPACA in terms of its effects on the other functions of healthcare, as it serves as the crux of the constitutionality case. Moreover, the individual mandate itself responds to issues identified between the different functions of healthcare by applying economic theory in policy intervention. This makes the individual mandate a good measure between the relationships because it is the theoretical crux of ensuring policy success. In context, if the individual mandate succeeds in preventing adverse selection and the individual mandate cannot be upheld by the scope of the federal government, then provisions of the PPACA will cause a “death spiral” in the U.S. health insurance market. As such, the PPACA should be repealed. But what happens to people’s ability to achieve health and healthcare provider’s businesses with such repeal? More importantly, this responds to the question- can policy interventions that intersect the three functions of healthcare (care, business and policy) succeed? To do so, the following chapters apply empirical analysis to measure the

magnitude of these changes within the interactions of the three functions of healthcare (care, policy and business) within hospitals.

#### Chapter IV: The Individual Mandate in Context

Observing the impact of the individual mandate helps characterize how policy interacts with the agents of the healthcare market. Specifically, the following study observes this impact in the context of hospital financial stability. Historically, hospitals set the standard for providing care and establish the business models for healthcare providers. Moreover, hospitals' responsibilities in providing community benefits and uncompensated care make them key stakeholders in health reform. The literature review presented in this chapter provides past outcomes in studies regarding the use of an individual insurance mandate on general healthcare finances.

The literature regarding the impact of the individual mandate on hospital finances closely intertwines with the effects of the Medicaid expansion and subsequent effects of the PPACA such as changes in insurance levels. A 2018 study conducted by Eibner and Nowak estimates the changes in enrollment, premiums and the federal deficit following the nonenforcement of the individual mandate. They used the RAND COMPARE microsimulation model to test the effects of eliminating the individual mandate under various policy scenarios. With this, they identify varied results depending on how the mandate penalty itself would be eliminated and how subsequent policy changes would affect the overall cost of eliminating the mandate (Eibner and Nowak). This verifies how the combination of policies in the PPACA work together, but also emphasizes how ubiquitously the individual mandate works with other healthcare reforms and regulations.

In terms of insurance levels, Frean et al. (2017) observes the insurance coverage effects of the PPACA. Their results credit 40% of insurance coverage gains under the PPACA to premium subsidies and the rest to Medicaid expansion. Results for the individual mandate had negligible effects and, while they do not explicitly dismiss the impact of the mandate, suggest that individuals may not respond to the penalty (Frean et al.). The use of premium subsidies decreases the cost of insurance, thus decreasing the cost of premiums and making insurance available to groups of people who would not have otherwise purchased insurance. This increases the people in the risk pool, thus allowing for overall insurance premiums to decrease and become more affordable (where Medicaid covers those who are unable to meet premiums). While making insurance more affordable would entice consumers to enroll in insurance, there is also the question of how much of that decision depends on their taste-for-compliance in adhering to the individual mandate. Some may prefer to pay the penalty than to purchase insurance, while others would enroll simply to deter any kind of penalty.

The degree to which people adhere to the individual mandate carries influences of its own. Fung et al. (2019) conducted a survey in California in order to estimate who would still purchase insurance without the individual mandate penalty. Nineteen percent of their survey sample identified people who only purchased insurance because of the penalty. Elimination of these people from the insurance risk pool would cause a 4-7% increase in overall marketplace premiums without the individual mandate penalty, though, it is “unlikely by itself to destabilize the California Insurance Market.” Moreover, they also find that vulnerable subgroups such as people with less education, those who had been uninsured the year prior and Hispanics were less likely to purchase insurance without the penalty (Fung et al.). If these people who would not purchase insurance without the penalty drop out of the market, insurance premiums would



increase, therefore making people who could barely afford their premium drop out of the insurance market. (The same effect would continue into what we called the “death spiral”). Provided that the survey finds some vulnerable subgroups to be disproportionately affected, removing the individual mandate may affect certain portions of the populations more than others.

As changes in insurance levels affect the cost of insurance and, consequently, who can purchase insurance, changes in insurance levels also impact hospital profitability. Moghtaderi et al. (2020) look at hospital revenue between the years of 2014-2017 to observe the impact of the Medicaid expansion on hospital finances. Between hospitals in Medicaid expansion and non-expansion states, no significant gains in total patient revenue and operating margin were realized by hospitals in expansion states. Hospitals in expansion states did realize higher Medicaid revenue, however, this balanced out with decreases in commercial insurance revenue (Moghtaderi et al.). Similarly, Wilson and Cutler (2014) use emergency department revenue estimates to identify how implementing the PPACA would impact department profitability. Data shows that emergency departments compensate for underpayment through reimbursement rates from private insurance. Their estimates find that emergency departments would experience higher profit margins with the PPACA (Wilson and Cutler). Emergency departments typically bear the greatest burden of uncompensated care, thus making them good measures of how policy impacts the costs of uninsurance. A subset of Moghtaderi et al. also found that hospitals experienced different changes in revenue depending on if they were rural hospitals, small urban hospitals, or large urban hospitals (Moghtaderi et al.). This suggests that the communities in which hospitals serve has a greater impact on hospital finances than policy itself. The type of insurance dominating a community dictates the reimbursement hospitals receive, therefore, affecting hospital finances.

Hospitals also vary by location and ownership type. Kaufman et al. (2016) observes the differences the Medicaid expansion had on rural and urban hospitals. All hospitals in expansion states experienced an increase in Medicaid revenue, however, the increase was greater in rural hospitals. Uncompensated care dropped more for urban hospitals than rural hospitals in expansion states yet there was no change in operating margin (Kaufman et al.). Even with Medicaid insurance expansion, the absolute impact on hospital finances seems to vary. Bazzoli (2015) observes the changes in hospital finances by hospital-ownership type following an expansion of an indigent care program [not Medicaid] in California. While all types of hospitals experienced increased operating margin, the improving economy during the years of the study could have impacted this result. In general, there were no significant changes in hospital finances, however, for-profit hospitals were less likely to incur bad debt and provided less charity care after this program was implemented (Bazzoli). This shows that hospital finances shift in variation depending on the type of hospital ownership, where a hospital is located, and how a policy addresses healthcare and affordability.

Uncompensated care typically marks how these variables interact in the hospital market. Dranove, Garthwaite, and Ody (2016) examine the effects of the Medicaid expansion on uncompensated care (which they define “as the sum of losses on charity care and bad debt) levels between expansion and non-expansion states. They find that hospitals in expansion states experienced a decrease in uncompensated care from 4.1 to 3.1 percentage points of operating costs while hospitals in non-expansion states realize little to no change. This study excludes the effect the individual mandate could have on uncompensated care (Dranove et al.). Similarly, Blavin (2016) observes the impact of Medicaid expansion on hospitals finances after the first year of Medicaid expansion in 2014. This study finds that hospitals in expansion states had lower

levels of uncompensated care and improved excess margins but experienced no improvement in operating margins (Blavin). Increasing insurance coverage through the Medicaid expansion can decrease uncompensated care, however, Medicaid reimbursement has historically been insufficient. This could explain why hospital finances do not vary significantly to pre-Medicaid expansion levels; however, hospitals do have the option to offer varying community benefit services outside of uncompensated care.

The PPACA also instituted changes to reporting mechanisms for nonprofit hospitals. Principe et al. (2012) observes the effects additional regulatory oversight similar to those added under the PPACA had on Maryland hospitals. Changes to IRS Form 990 and the accompanying Schedule H report provide improved insight on the community benefits provided by hospitals similar to reporting forms used in Maryland. Using evidence from Maryland hospitals, the overall effect of the individual mandate on nonprofit hospitals is unclear. While the mandate itself will reduce uninsurance and reduce uncompensated care by 25%, the CBO still estimates 8% of the population will consistently be uninsured, thus requiring nonprofit hospitals to provide uncompensated care (Principe et al.). In other words, uncompensated care will always exist to a similar degree. Whether it be due to changes in employment, cost of premiums, or health outlooks, people continuously fall in and out of the insurance market.

By looking more closely at the effect of the individual mandate on hospital finances, the study will add to the literature in identifying more closely how changes in the insurance market can impact hospital financial viability. Provided the literature reviewed, this also means looking at how policy changes the insurance market in respect to targeting populations most vulnerable to uninsurance. Uninsured populations immediately impact hospital finances through increasing the demand for uncompensated care in certain hospital markets. The individual mandate

specifically targets these variables by identifying what kinds of populations still fall out of the insurance market despite policies addressing uninsurance, including the individual mandate itself. This will support future policy recommendations addressing the level of financial support needed to sustain hospitals, but also identifying which hospitals fall into that category.

## Chapter V: Empirical Study on the Individual Mandate and Hospital Finances

### *Empirical Model*

A difference-in-difference model is used to measure the impact of enforcing the individual insurance mandate on hospital financial stability. This model is a statistical tool used to identify the net change of a treatment (in this case, a policy change such as the individual mandate non-enforcement) on an outcome (such as hospital financial stability). It uses observations from before and after the policy change from both an experimental and control group to identify the isolated difference from the policy. That is, it controls for the amount of change that normally happens in order to show what the effect of the policy was. In the context of a regression analysis, the model observes which group an observation belongs to (experimental or control), the time of the observation (before or after policy change), and the interaction between time and treatment. The results of these three indicators (or variables) describe the outcome of the difference-in-difference model.

Using a difference-in-difference model, this study compares hospital-level data in two states where one state has a state-level individual insurance mandate, and the other state does not. The control group is the state that has a state-level mandate (Massachusetts). The experimental group is the state that does not have a state-level mandate (Connecticut). Data from the years 2015 and 2016 will indicate periods of full enforcement (before policy change) of the

federal individual insurance mandate in both states, while data from 2019 will indicate the period after non-enforcement of the mandate (after policy change). The model is as follows:

$$\begin{aligned}
 \text{Financial State}_{it} &= \beta_0 + \beta_1 \text{NoIndividual Mandate}_{it} \\
 &+ \beta_2 \text{Individual Mandate Not Enforced}_{it} \\
 &+ \beta_3 (\text{NoIndividual Mandate}_{it})(\text{Individual Mandate Not Enforced}_{it}) \\
 &+ \beta_4 \text{Hospital Characteristics}_i + \beta_5 \text{Market Characteristics}_i + \theta
 \end{aligned}$$

*NoIndividual Mandate*<sub>it</sub>

= 1 if state belongs to no individual mandate group, 0 otherwise

*Individual Mandate Not Enforced*<sub>it</sub>

= 1 in periods of no mandate enforcement, 0 otherwise

*Financial state* is the dependent variable which identifies the financial state of individual hospitals in both the treatment (Connecticut) and control (Massachusetts) groups both before and after individual mandate enforcement. The financial measure used in this analysis is annual operating margin. This will be compared across both states for both time periods while controlling for differences identified by *Hospital Characteristics* (i.e., hospital ownership, hospital size as indicated by staffed beds) and *Market Characteristics* at the county-level (i.e., uninsurance, poverty, median income, unemployment).

The purpose of choosing to compare Massachusetts and Connecticut responds to limitations in accessible information and need for state comparability. Massachusetts and Connecticut both reside in the Northeast region of the United States with populations of

comparable size. Moreover, both states issue public reports on hospital-level finances and financial measures. These similarities, coupled with Massachusetts's state-enforced individual insurance mandate law, meet the necessary conditions and provide sufficient information to satisfy this model.

### *Data*

All data has been collected from across multiple publicly available sources. The dependent variable, *Financial State*, was retrieved for each year from state reporting systems for both Massachusetts and Connecticut. Information for Massachusetts comes from the Center for Health Information and Analysis (CHIA) *Massachusetts Acute Hospital Financial Performance* reports for fiscal years 2015<sup>10</sup>, 2016<sup>11</sup> and 2019<sup>12</sup>. Information for Connecticut comes from the Office of Health Strategy's (OHS) publications using data collected in their annual filings from hospitals. Connecticut hospital data from 2015 was retrieved from publicized Audited Financial Statements<sup>13</sup> for each hospital, while data for years 2016 and 2019 come from the OHS *Annual Report of Connecticut's Short Term Acute Care Hospitals for Fiscal Year 2019*<sup>14</sup> that also contained historical data for 2016.

*Hospital characteristics* in this model include the size of the hospital as indicated by the number of staffed beds (in 2018), ownership in terms of nonprofit status, and emergency department status. Ownership information and staffed bed numbers for Massachusetts were retrieved from CHIA's *Massachusetts Acute Hospital Profiles* available on their website.

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<sup>10</sup> <https://archives.lib.state.ma.us/handle/2452/423799?show=full>

<sup>11</sup> <https://archives.lib.state.ma.us/handle/2452/735300>

<sup>12</sup> <https://archives.lib.state.ma.us/handle/2452/833453>

<sup>13</sup> <https://portal.ct.gov/OHS/Health-Systems-Planning/Hospital-Financial-Data/Audited-Financial-Statements/Audited-Financial-Statements-2015>

<sup>14</sup> [https://portal.ct.gov/-/media/OHS/ohca/HospitalFillings/2020/Financial-Stability-Report\\_2019.pdf](https://portal.ct.gov/-/media/OHS/ohca/HospitalFillings/2020/Financial-Stability-Report_2019.pdf)

Ownership information for Connecticut was retrieved from the American Hospital Association's (AHA) hospital directory, while the number of staffed beds came from the OHS *Annual Report of Connecticut's Short Term Acute Care Hospitals for Fiscal Year 2019* (same source for Connecticut as *Financial State*). Status of emergency departments for both states came from the AHA's hospital directory when available or hospital website. Hospitals that experienced mergers or closures between the years 2015-2019 were excluded.

*Market Characteristics* for this model include uninsurance, poverty, median income, and unemployment measured at the county-level for the year 2018. This data applied to all observations for the different years measured (2015, 2016, 2019) as these measures are unlikely to change between years. Uninsurance rates for both Connecticut and Massachusetts counties were retrieved from the State Health Access Data Assistance Center (SHADAC) *2018 ACS Tables: State & County Uninsured Rates, with Comparison Year 2017* (which uses information from the American Community Survey (ACS) conducted by the U.S. Census Bureau). Data for both poverty (in percentage points) and median income (by the thousands) come from the U.S. Census Bureau's *QuickFacts* function on their website. Unemployment is measured as the 12-month average unemployment rate (in percentage points) for each county in 2018, as reported by the Department of Labor Statistics.

### *Descriptive Statistics*

The dependent variable of this study is *Operating Margin* which is representative of hospitals' financial stability. Using the operating margin as the measure for *Financial State* follows from persistent comparison of operating margin in past literature. Operating margin is a proportional measure that compares operating income to total revenue, therefore, making it comparable across hospitals. This measure also limits other business activities outside of

providing care by representing only the profit realized from operations (a.k.a. providing care).

The average operating margin in this sample is 2.52% with a maximum value of 20.1 percent and a minimum of -26.3 percent.

The variable *No individual mandate (NOIM)* indicates whether a given observation belongs to the control group (Massachusetts) or experimental group (Connecticut), while *After no individual mandate (After NOIM)* indicates an observation's time period in respect to the policy change. *Interaction I* measures the degree to which both *NOIM* and *After NOIM* act upon each other, thus indicating if the policy change effected either the control group or experimental group differently.

Looking at hospital characteristics, *Not-for-Profit Status (NFP status)* is a binomial variable that indicates the ownership status of a hospital where NFP=1 if a hospital is a not-for-profit, 0 otherwise. According to Kaiser Family Foundation, 96.9% of Connecticut hospitals had not-for-profit status in 2018 as did 74.7% in Massachusetts. The national average of not-for-profit hospitals for that same year is 56.5%. *Staffed beds* indicates the number of staffed beds in each hospital, thus providing information on the size and capacity of each facility. Hospitals vary widely in size with a maximum of 1,474 staffed beds and a minimum of 21 staffed beds.

*Emergency Department* is a binomial variable indicating whether or not a hospital includes an emergency department as one of their services. The majority of hospitals in this sample did have an emergency department.

Looking at market characteristics, *Uninsurance rate* indicates in percentage points the uninsurance rate of the county each hospital is located in for the year 2018. The highest uninsurance in this sample is 8.1% in Fairfield County in Connecticut and the lowest is 1.9% in Norfolk County in Massachusetts. According to Kaiser Family Foundation, the average



uninsurance rate in 2018 for Massachusetts is 2.7% and 5.3% for Connecticut, while the national average in 2018 is 8.9%. *Median income* reports the median income for a given county in 2018 which provides perspective on the wealth of the general population a hospital serves. Likewise, *below federal poverty level* describes the percentage of the total population in a county living below the 2018 federal poverty level. *Unemployment* describes the average unemployment rate for a county in the year 2018 where the highest unemployment rate is 4.6% and the lowest is 2.7%. (Figure 1.0 contains a full summary of descriptive statistics)

### *Results*

Figure 2.0 shows the regression results of the empirical model. The regression finds hospital and market characteristics to be significant factors impacting the operating margin of hospitals, however, no significant results were shown on the difference-in-difference variables (*NOIM, after NOIM, Interaction I*). The p-values for *NOIM, after NOIM, Interaction I* are -1.14, 0.47, and 0.80, accordingly. This fails to reject the null hypothesis that removing the individual insurance mandate does not directly impact hospital financial stability in Connecticut and Massachusetts at the 90%, 95% and 99% significance levels. The R-squared value of this regression, though, indicates only 23.20% of data lies in this regression.

Significant hospital characteristics include the variables *Not-for-Profit Status (NFP status)* and *staffed beds*. *NFP status* is statistically significant ( $p < 0.01$ ), and its coefficient indicates that operating margin experiences a marginal decrease of -3.72 for every 1% increase in *NFP status*. In practical terms, *NFP status* decreases operating margin, thus indicating that for-profit hospitals experience higher operating margins (so are more profitable). *Staffed beds* (transformed into a log value in the regression), is also significant ( $p\text{-value} < 0.01$ ). The

coefficient on *staffed beds* shows a positive relationship between the size of a hospital and operating margin, meaning that larger hospitals tend to have higher operating margins.

Significant market characteristics include the variables *median income*, *below federal poverty level*, *uninsurance* and *unemployment*. *Median income* ( $p < 0.01$ ) illustrates a marginal decrease in operating margin for every 1% increase in a county's median income. These results are unexpected, as wealthier counties likely have more financially stable hospitals. Similar in p-value and significance, *below federal poverty level* also reports a marginal decrease in operating margin when poverty increases with a coefficient of -1.125. In contrast to *median income*, the results of *below poverty level* present more intuitive results as more poverty results in lower operating margins (i.e., less financial stability). *Uninsurance* ( $p < 0.05$ ) has a positive relationship with operating margin with a coefficient of 0.997. This strays from intuition as it indicates that for every 1% increase in *uninsurance*, operating margin increases; the opposite is expected as more uninsured bears higher financial burden on hospitals. *Unemployment* ( $p < 0.01$ ) has a coefficient of -2.856. This says that operating margin decreases as *unemployment* increases, which is expected as a grand portion of health insurance plans are employer sponsored.

#### *Alternate Specifications*

Included in an alternate regression analysis (results summarize in Figure 3.0) is *Interaction II*, an indicator variable measuring the relationship between *NOIM* and *Uninsurance*. In other words, it quantifies how changing individual insurance mandate laws relates to the uninsured rate in the state, since *NOIM* categorizes each observation by the policy condition the observation was exposed to. The results for *Interact II* ( $p < 0.01$ ) show that when uninsured increases in states with no mandate (in this case, Connecticut) increases, operating margin changes by 2.361. Results of the alternate specification differ from the original results in that

*uninsurance* no longer shows significant results, however, all other significant variables previously reported remained significant and coefficients are similar. The other significant variable resulting from this analysis is the treatment variable, *No individual mandate (NOIM)*. To recall, the variable *No individual mandate (NOIM)* indicates whether a given observation belongs to the control group (Massachusetts) or experimental group (Connecticut). The relevance of *NOIM* now being significant when controlling for the contents of *Interaction II*, the baseline difference between experimental and control groups is significant. That is, the coefficient of -9.399 is the mean difference between operating margins in both Massachusetts and Connecticut before Connecticut removed the individual insurance mandate policy. Practically, it says operating margin in is on average -9.399 lower in Connecticut than Massachusetts before the removal of the individual insurance mandate.

## Chapter VI: Discussion and Conclusion

This specific empirical model evaluates the direct relationship between the individual health insurance mandate and hospital finances. The individual mandate did not have a significant effect on hospital finances; however, this does not mean that every effect of the individual mandate is insignificant. For example, the mandate could have significant effects on county uninsurance levels- a significant determinant to hospital finances. Moreover, provided that hospital and market characteristics (i.e., size and ownership of hospital, county unemployment and poverty rates) significantly impact hospital operating margin, it is possible that hospitals act in response to these factors. If a county experiences high levels of uninsurance, for-profit hospitals will likely avoid providing services in those areas as it would expect high levels of uncompensated care. So, in the long term, (for-profit) hospitals may not open in those areas. Similarly, hospitals (such as not-for-profit hospitals) will likely experience high levels of

uncompensated care if they do provide services to those areas. In the case that policy changes, such as the removal of the individual insurance mandate, hospitals may respond in the short term by providing less services that would result in more uncompensated care. (Provided policies such as EMTALA discussed in Chapter I, hospitals may decide to close their emergency departments to protect financial viability.) Altogether, this affirms that uninsured individuals and their communities face the highest risk in losing access to care as a result of public policies. It is likely these populations also face the highest risk for unemployment and employment without health benefits, thus contributing to their uninsurance. In agreement with previous literature (and the historical issues that lead to the development of Medicaid and Medicare), individuals who do not receive insurance through their employers are more likely to be uninsured due to the affordability of insurance premiums in the small group market. This gap in access to care for whole populations may contribute significantly to low health outcomes.

In terms of the broader discussion, these results can be viewed through the lenses of the functions of healthcare. The changes in hospital operating margins before and after the nonenforcement of the individual insurance mandate in Massachusetts and Connecticut model the magnitude of the effect of policy change on financial stability. On its own, the individual mandate does not affect hospital finances, therefore, this particular policy change carries little magnitude in the associations between the three functions of healthcare (care, business and policy). Other factors in the empirical model, the hospital and market characteristics, provide more insight into these associations. Larger hospitals and for-profit hospitals experience higher operating margins, thus making them more financially stable in comparison. Hospitals located in counties with higher unemployment and poverty rates experience lower operating margins (or less financial stability). These results identify that the functions of business (i.e., hospital size

and ownership) and care providing as a consequence of the needs of the community (i.e., unemployment and poverty) impact the ability of a hospital to succeed financially more than a single policy change.

While this answers our question regarding how we can identify the magnitude of associations between the three functions of healthcare introduced at the beginning of this project, the limitations of this measure must be noted. To begin, this study consolidates the overall healthcare system in the United States to individual hospitals. While hospitals do account for a large portion of health spending and services, this still neglects to include the production side of healthcare spending (i.e., medical device and pharmaceutical manufacturing, health insurance, etc...). Moreover, only hospitals in Massachusetts and Connecticut were observed. As discussed in the previous literature, the location and community a hospital resides in impacts their financial stability. Larger states, such as Texas that has wide ranges of rural areas and large urban centers, may yield different results. Differences in states laws, such as Massachusetts progressive healthcare system, also vary how federal policy changes will be experienced within states. For example, both Massachusetts and Connecticut adopted the Medicaid expansion under the PPACA. Literature found that Medicaid expansion had more significant effects on hospital operating margins, therefore, results would also vary on account of whether states opted to expand Medicaid or not.

Generally, the insignificance of the individual insurance mandate on hospital finances coincides with literature that finds the individual mandate to have generally negligible effects. While non-Medicaid expansion states may yield different results, it can be argued that removing the individual mandate will not result in a “death spiral” of the U.S. healthcare market. Isolating the specific impact of the individual insurance mandate on its own brings difficulty, as the

mandate strives to “fill” a potential gap between the various functions of healthcare (as described in Chapter III). At the same time, this places the individual mandate at the intersection of all these functions, thus offering important insight as to how the functions interact. Future studies should consider these results concerning the individual insurance mandate to construct additional models to measure the impact of other policies (such as the Medicaid expansion) in various groups of states sorted by similarities in overall state health laws. This will add clarity to how care, business and policy work together to make the U.S. health system function.

The ultimate endeavor of this study attempts to evaluate the U.S. health system’s functions for the purpose of identifying the most effective practices to make the system successful. Health spending, or rather the high level of health spending in the U.S., prompts this examination by considering spending as a consequence of the functions of healthcare. If the goal of future policy aims to improve health outcomes, it could be argued that supporting the business and care providing aspects of healthcare could yield the best results. At the same time, both businesses and care providers respond to the needs of the population, so policy may want to directly address those health needs. Referring again to the empirical analysis in Chapter V, county unemployment and poverty rates were more significant indicators of hospital financial stability than the policy intervention itself. The prudent response to these results would be to focus policy on reducing poverty and increasing employment, however, this may only be a singular perspective of the overall barriers to U.S. health outcomes. Ultimately, the issue of high health spending in the U.S. will not be perfectly resolved with a singular decision. The health system interacts with society through various functions and perspectives, thus identifying unique and precise issues throughout the system. By understanding those micro issues and interactions,

health spending dollars can gain the knowledge to optimize their value for improving health outcomes.

*Figure 1.0. Descriptive Statistics*

Variable (N=237)	MEAN	SD	MIN	MAX
Operating Margin	2.52	6.29	-26.3	20.1
No Individual Mandate (NOIM)	.32	.47	0	1
After No Individual Mandate	.33	.47	0	1
Interaction I (NOIM & After NOIM)	.11	.31	0	1
Not-For-Profit Status	.86	.35	0	1
Staffed Beds	253.10	249.85	21	1479
Emergency Department	.97	.16	0	1
Uninsurance Rate	3.66	1.56	1.9	8.1
Median Income	79145.95	14114.26	55429	107717
Below Federal Poverty Level	10.36	3.38	5.5	16.7
Unemployment	3.73	.66	2.7	4.6
Interaction II (NOIM & Uninsured)	1.64	2.61	0	8.1



Figure 2.0. Empirical Model Regression

Prob&gt;F =0.0000

R-SQUARED= 0.2320

Variable (N=237)	Coefficient (T=)
No Individual Mandate	-1.444 (-1.14)
After No Individual Mandate	.442 (0.47)
Interaction (NOIM& After NOIM)	1.342 (0.80)
Not-For-Profit Status	-3.721*** (-3.40)
Staffed Beds	2.631*** (6.33)
Emergency Department	-1.166 (6.33)
Uninsurance Rate	.997** (2.48)
Median Income	-.000231*** (-3.75)
Below Federal Poverty Level	-1.125*** (-4.67)
Unemployment	-2.856*** (-2.90)

\* 90% significance level  
\*\* 95% significance level  
\*\*\* 99% significance level

Figure 3.0. Alternate Specification (Including Interaction II)

Prob&gt;F = 0.000

R-SQUARED= 0.2543

Variable (N=237)	Coefficient (T=)
<i>No Individual Mandate</i>	-9.399*** (-2.84)
<i>After No Individual Mandate</i>	.442 (0.48)
<i>Interaction (NOIM &amp; After NOIM)</i>	1.341 (0.81)
<i>Not-For-Profit Status</i>	-3.499*** (-3.22)
<i>Staffed Beds</i>	2.490*** (6.02)
<i>Emergency Department</i>	-1.625 (-0.63)
<i>Uninsurance Rate</i>	-1.027 (-1.17)
<i>Median Income</i>	-.0002125*** (-3.47)
<i>Below Federal Poverty Level</i>	-.834*** (-3.17)
<i>Unemployment</i>	-2.202** (-2.19)
<i>Interaction II (NOIM &amp; Uninsured)</i>	2.361*** (2.49)

\* 90% significance level  
\*\* 95% significance level  
\*\*\* 99% significance level  
\*\*\* 99% significance level

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