Chapter 8

How Can Certificate-of-Need Laws Be Reformed to Improve Access to Healthcare?

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When the Metcalf-McCloskey Act of New York passed in 1964, the United States was seeing its first certificate-of-need (CON) law. This law allowed the state of New York to regulate "the exact [healthcare] needs of the community prior to hospital construction."[1] The New York legislators meant to control healthcare costs by limiting the construction of healthcare facilities and encouraging their spread across the state—maximizing access for those seeking medical treatment. In order to expand an existing facility or build a new facility, interested parties (e.g., physicians/entrepreneurs) had to file an application with the state.[2] Through these regulations, New York hoped to increase access to healthcare (especially in rural areas), increase the quality of care, and decrease healthcare spending.[3]

In 1974, the National Health Planning and Resources Development Act (NHPRDA) brought the idea of certificate-of-need to the federal government. Like New York's law, this act implemented state agencies designated for the regulation of the building, expansion, and modernization of healthcare facilities and medical equipment.[4] In an effort to encourage the development of healthcare facilities in rural and low-income areas, The NHPRDA allocated $1 billion (about $4.2 billion in 2020 money) over three years to aid in the expansion of healthcare

through resource development and health planning.[5] To be eligible for these funds, a community would need to implement its own CON law. Over the decade that followed, every state except Louisiana enacted some form of a CON law.[6]

Motivated by the lack of evidence that CON laws restrained costs and by the Reagan administration's deregulatory efforts, Congress, in 1986, repealed the federal requirement for CON laws in state healthcare systems.[7] Still, today the majority of states, 35, maintain CON laws.[8]

In this chapter we discuss the effects on CON laws, which have been studied extensively ever since the first law was passed in New York. Researchers have documented effects on access to care, affordability of care, quality of care, and—in a few cases—health outcomes. In short, previous studies show that CON laws are ineffective at improving access, affordability, or quality of care. On the basis of these findings, we lay out several potential policy alternatives. In most cases, patients will be best served by the repeal of state-level CON laws in favor of experimentation by entrepreneurs. Where that is not possible, policymakers should consider modifications to current CON laws or other options, such as administrative relief, to allow for increased access to healthcare.

Access to high-quality health services and care is vital for the well-being of individuals in communities across the US. Despite the intentions of CON laws' proponents, the evidence shows that the laws are more a barrier to achieving this goal than a pathway toward it.

What Are the Effects of Certificate-of-Need Laws?

Certificate-of-need laws were intended to support the expansion of healthcare by means of regulations that enhanced healthcare facilities and increased the use of medical devices. Many of the people who developed CON laws thought the laws could regulate costs to make healthcare more affordable and could facilitate the expansion of healthcare, allowing for accessible care in rural areas and optimizing the use of medical devices.[9] However, evidence suggests that the laws have instead reduced the quality, accessibility, and affordability of healthcare.

Quality of Care

A central goal of CON laws is to improve the quality of the care provided within the healthcare system. [10] Yet surgical research results suggest that CON laws may contribute to higher mortality rates and reduce the quality of care. Reforming CON laws in states that still have them likely improves the quality of health, based on evidence collected before and after the removal of CON laws in several states.

Every year, approximately 790,000 knee replacement surgeries and 450,000 hip replacement surgeries are performed in the United States.[11] (Since these are commonly performed surgeries, it may be more practical to observe how these are affected by CON laws.) One study of Pennsylvania's CON law repeal in 1996 examined the surgical outcomes of knee and hip replacements. Researchers discovered that the rate of death related to knee and hip replacement surgeries declined after the CON law's repeal.[12] It seems that if CON laws are removed elsewhere, their removal might correlate with an increase in longevity of life.

Cardiac care is another area that can be looked at to see the effects of CON laws. The researchers who conducted a different study focused on coronary artery bypass graft surgeries and found an increase in mortality rates prior to Pennsylvania's CON law repeal.[13] A similar study followed patients undergoing artery bypass surgery after the repeal of CON laws in multiple states. This study discovered that the removal of CON laws resulted in lower mortality rates. Additionally, there was no evidence suggesting that CON laws were associated with higher-quality care.[14] Overall, both of these surgical studies conclude that CON laws reduce the quality of care through their regulations and contribute to higher mortality rates.

An economic study of Vermont predicts that the quality of care would rise with the removal of CON laws: the researchers found a 4.5 percentage point increase in patient satisfaction rates. Perhaps more importantly, the study also suggests that eliminating CON laws would lower mortality rates.[15] A similar study for the state of Virginia found that if CON laws were repealed, the total number of post-surgery complications would decrease by 5.2 percent and patient satisfaction would increase by 4.7 percent.[16]

In a recent study, economists Thomas Stratmann and David Wille found that the CON law review process resulted in limited entry of fewer healthcare facilities and lower hospital quality.[17] The study showed that nearly all the measures normally used to gauge hospital quality are worse in CON states. Importantly, this paper avoids concerns about reverse causality. In the case of CON laws, the reverse causality argument holds that it is poor health conditions or a lack of healthcare options that encourage the passage of CON laws. However, Stratmann and Wille's study shows that it is CON laws that drive poor healthcare outcomes, and not the other way around. The study mitigates concerns about reverse causality by examining communities that span CON and non-CON states.[18]

Supporters of CON laws believe restricting medical services, especially limiting the number of providers, will ensure that each provider has a higher number of patients –resulting in better quality of care. [19] But this prediction relies on the assumption that the providers operating under CON laws will be more proficient and specialized since a specialization allows a physician to perform the same procedure often. However, this is not always the case. In fact, research has shown that the quality of care has no difference with physicians practicing in CON vs non-CON states.[20]

Ultimately, research has revealed that CON laws have negative impacts on mortality rates and quality of care. Removing or modifying CON laws may achieve an improvement in quality of care. This will lead to an increased opportunity for longevity and could result in greater economic growth. As long as CON laws remain, they will hinder efforts to achieve these goals—but this will not be their only effect. Accessibility to care is also affected in states with CON laws.

Accessibility of Care

CON laws were designed with the intent to increase access to healthcare. However, research has shown that CON laws, by limiting the ability of entrepreneurs to start medical businesses, have reduced access to care or at the most made no improvement.

Under CON laws it becomes more difficult for medical providers to obtain medical devices. This suggests that patients will experience both

reduced quality and reduced accessibility of care. The evidence bears out this prediction: For example, one study found that states with CON laws experience decreased utilization of medical equipment (i.e., fewer MRI scans, CT scans, and PET scans) from nonhospital providers by 34 to 65 percent.[21] The rare use of these medical devices within CON states is likely due to the regulations for expanding current medical facilities.

Because of these restrictions imposed by CON laws, it is difficult for entrepreneurs to expand medical facilities. A lack of medical facilities can encourage consumers to travel long distances, even out of state, to receive medical care where it is more accessible.[22] This generates a decline in medical equipment usage in states with CON regulations because consumers would rather travel outside of their state to receive efficient medical care, perpetuating the cycle. Also, the potential smaller selection of medical devices in CON-regulated states consequently forces patients to travel out of state for their medical care.

According to Thomas Stratmann and Matthew Baker (a PhD student at George Mason University), there are "3.93 percent more MRI scans, 3.52 percent more CT scans, and 8.13 percent more PET scans" occurring outside CON-regulated states.[23] Removing CON laws would decrease barriers to entry for medical providers and provide increased access to medical devices, improving healthcare overall for patients who need access to medical devices. Because CON laws limit access to medical equipment and services, they limit patients' options. Patients facing a restricted supply are forced to travel further or wait longer for medical care.

The economic study of Vermont mentioned earlier estimates how the removal of CON laws would also provide more access to healthcare services. If CON laws were removed, there would be approximately six more hospitals available in Vermont (most in rural areas), 36.4 percent more MRI scans available, and 70 percent more CT scans available.[24] This study demonstrates an increase in accessibility with the removal of CON laws, but—like before—the increase can be more easily analyzed by looking at common surgical procedures.

A study by researchers at the University of Virginia revealed that fewer total hip replacement surgeries were performed in states that had

CON laws, compared to their counterparts without CON laws.[25] This suggests that CON laws likely play a role in inhibiting access to care.

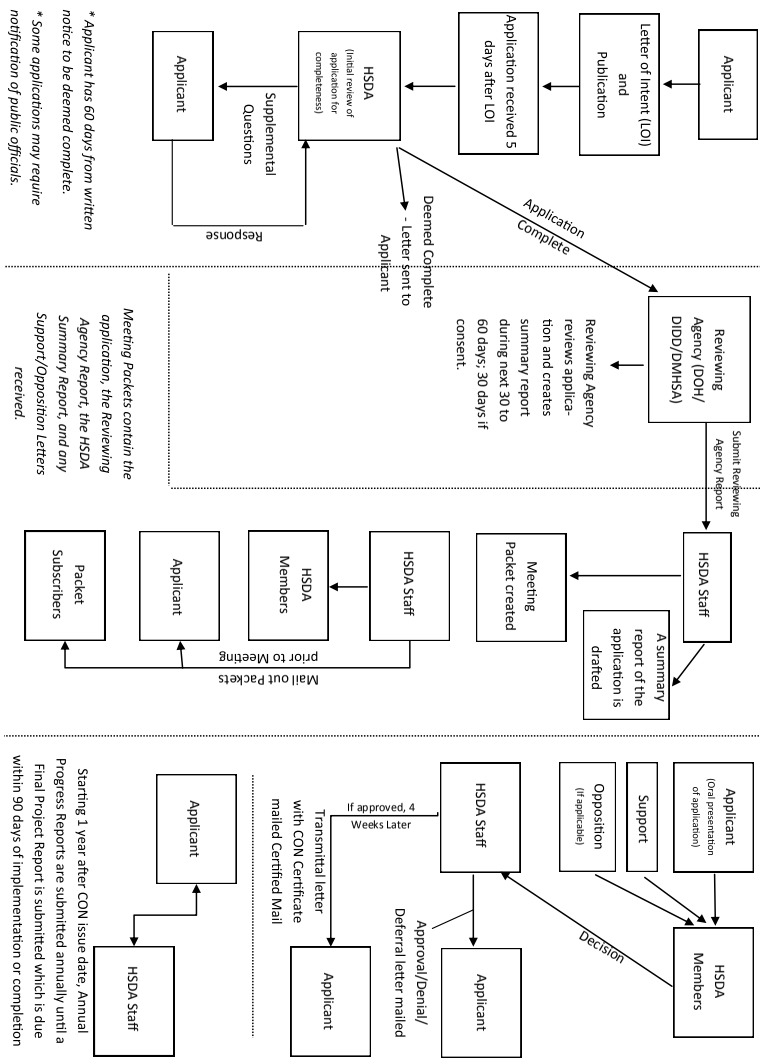
We have examined how CON laws hinder access to medical devices and to healthcare in general. Now we will see how the CON application process also creates barriers to providing healthcare services.

In Tennessee, entrepreneurs must jump through several hoops and wait on the decisions of state regulation agencies before they can build new facilities, expand existing facilities, or buy new medical devices. As shown in figure 1, the process begins when an applicant files a letter of intent with the state. (This letter must also be published in the newspaper.) The applicant must then pay a filing fee before the request goes under review by the Tennessee Health Services and Development Agency. The review process often results in additional questions for the applicant. The applicant's responses are taken into consideration as the application enters a second cycle of review. Tennessee's review cycle begins on the first of each month and can take approximately 60 days for applicants to receive an approval or denial of their application. If the application is denied, the applicant may appeal within 15 days from their initial notification. If the application is approved, it can take an additional four weeks for the applicant to receive their certification. Once the certificate has arrived the changes requested in the application can be made.[26]

This lengthy process delays projects that would increase access to care and means entrepreneurs have weaker incentives to expand existing facilities. The entire CON application process in the state of Tennessee can take anywhere from 65 to 110 days.[27] Figure 1 illustrates how the complexity of the application process might be one reason why many potential entrepreneurs are hesitant to begin the process.

In order to help improve the accessibility of care, states should consider removing the long review process. Without the applications, fees, waiting times, and associated frustrations, facilities would be able to enter the construction phase sooner and would therefore be available to provide more care to their communities. Thanks to this increase in care and accessibility, there would be more opportunity for competition. This increased competition would incentivize entrepreneurs to

Figure 1. Tennessee Certificate-of-Need Application Process



Note: DOH = Tennessee Department of Health, DIDD = Tennessee Department of Intellectual and Developmental Disabilities, DMHSA = Tennessee Department of Mental Health and Substance Abuse Services Agency, HSDA = Tennessee Health Services and Development Agency.

Source: Flowchart published by the Tennessee Health Services and Development Agency, accessed October 2, 2020, https://www.tn.gov/content/dam/tn/hsda/documents/con_process_flow_chart2014.pdf.

expand medical facilities and equipment within each formerly regulated state and encourage those seeking medical attention to stay inside state lines—bolstering the state's economy.

Affordability of Care

Despite CON law proponents' intentions, research suggests that the laws have failed to make healthcare affordable. In terms of geographic proximity and in terms of financial costs, CON laws have made care less accessible and less affordable. An early indication of the limitations of CON laws can be found in a thorough 1988 report conducted by the Federal Trade Commission (FTC). In its review, the FTC found that healthcare costs were not lower after CON laws were enacted.[28] In fact, contrary to what the law's proponents had anticipated, many of the states that had incorporated CON laws appeared to have higher healthcare spending than states that did not enforce CON laws.[29]

Ophthalmology, the branch of medicine that deals with eyes, illustrates why CON law modifications or removal can increase affordability of care. Ophthalmology is still regulated under CON laws, however, this focus of medicine seems to have a higher probability of building and using existing ambulatory surgical centers (ASCs). ASCs were first developed due to physician frustrations with local hospitals. [30] Physicians had a difficult time finding the resources needed to perform their surgeries at hospitals so they developed ASCs. [31] The use of ASCs is increasing in ophthalmology. Between 2001 and 2014, the use of ASCs (particularly for cataract surgery) has grown by 2.34 percent each year.[32] This shift from hospitals to ASCs increases accessibility for eye surgeries and drives down their costs for patients (and insurers) because of gains in convenience.[33] If CON laws were removed this could increase the number of ASCs, provide more resources to physicians (decreasing frustrations), and increase affordability for patients.

Cataract surgeries provide a good example of how costs can be brought down while a procedure remains easily accessible. Cataract surgery is a procedure that removes the natural crystalline lens in the eye and replaces it with an artificial lens.[34] Historically, cataract surgery has been performed mostly in hospitals. Over the past few decades,

however, this has changed. Most cataract surgeries are now performed in ASCs. This shift from hospitals to ASCs has instigated a decline in costs for the procedure. For example, in 2014 the average co-pay for a cataract removal in an ASC was $190, compared to $350 in a hospital.[35]

Cataract surgeries are not the only eye procedures that highlight CON laws' failings—cosmetic eye surgeries also provide a great example. Laser-assisted in situ keratomileusis, better known as LASIK, has become a popular cosmetic surgery for many citizens in the United States. In 2010 approximately 800,000 LASIK surgeries and similar procedures were performed.[36] As technology improves and the market becomes more saturated with LASIK providers, the cost of LASIK declines. LASIK's decrease in price is also influenced by the transparency of the market.[37] For example, many businesses showcase the price of their LASIK procedures, encouraging competitive pricing. Some businesses even offer specials as cheap as $250 per eye in order to attract patients. This allows consumers to find the best option available to them.

One reason this procedure fosters a competitive market is the nature of the surgery. LASIK is an elective procedure, meaning the patient has the choice to undergo the surgery or not. Many insurers do not cover the cost of LASIK; others cover only a minimal amount. Therefore, individuals contemplating LASIK surgery have an incentive to consider the cost as well as the safety of the facility they choose to perform the procedure. CON laws do not allow such competition to arise around other healthcare procedures (many of which are urgent or non-elective), so patients and providers do not have similar incentives to decrease the costs. Theoretically, the removal of CON laws could allow more competition within the healthcare market and provide an incentive to decrease costs for other areas of healthcare.

Unfortunately, there are rare circumstances in which strict CON laws do not allow for ASCs. In 2017, a doctor in Cedar Rapids, Iowa, was unable to use an already-constructed ASC because the facility was denied certification. The doctor applied for certification four times, each time explaining the need for the ASC and demonstrating how the facility would provide for the community. However, the state denied each application. Iowa's Hospital Association pointed out that the facility

would take paying patients away from hospitals.[38] Some studies demonstrate that preexisting facilities don't lose patients when new facilities are opened, however[39]—and even if they did, their loss might indicate that patients are receiving better care and services.

Many studies have found results suggesting that CON laws have failed to lower healthcare costs. These results, reported in the appendix, confirm the FTC's earlier findings that CON laws increase healthcare costs.[40] (The tables in the appendix summarize how CON laws affect spending and efficiency.) Overall, 13 of the studies included in the appendix show that CON laws increase healthcare costs or decrease efficiency. The other 9 show no effect on healthcare costs, or show that CON laws improve efficiency. Both the FTC's 1988 report and this more recent review of the research suggest that CON laws are at least questionable as a means of reducing healthcare costs.

Other studies continue to find similar results. For example, studies of Vermont and Virginia suggest that CON laws raise the prices of healthcare services in both states. According to estimates for Vermont, the removal of CON laws may reduce healthcare costs $228 per capita, and would decrease healthcare spending per physician per year by $68.[41] In the case of Virginia, the removal of CON laws would reduce spending by $79 per physician per year, and also would lower total healthcare spending by $205 per capita.[42] The authors of these two studies points out that this decline in healthcare costs happens because there are fewer restrictions to providing more healthcare services.

CON laws are not the only factor raising healthcare costs, however. Economists James Bailey and Tom Hamami have found that, on a national level (during 1996 – 2019), 10.5 percent of the increase in per capita healthcare spending was associated with CON laws.[43] To put this into perspective, for every dollar spent, approximately 10 cents could be saved by the removal of CON laws. This shows that the removal of CON laws has a significant effect on healthcare costs overall and could help improve access to care.

If CON laws were modified to encourage competition within the healthcare market, entrepreneurs would have an incentive to increase price transparency and provide lower-cost services. Recall how

competition works: If store A sells a soda for one dollar, its competitor, store B, will want to sell the same product for 99 cents. This will encourage store A to lower its price to 98 cents. The back-and-forth will eventually level out and each store will charge the same price for a soda. This model could apply to the healthcare industry as well, if government policies encourage healthy competition to lower the cost of healthcare services and provide more affordable healthcare.

A Blueprint for Better Access and Higher-Quality Healthcare Services

Research suggests a number of alternatives to CON laws that will be more effective at providing access to high-quality healthcare services. They range from a full repeal of CON laws to changing how CON laws currently work.

The most straightforward policy response to the failures of CON laws is repeal. As of January 2020, 35 states maintain some kind of CON program. The positive experiences of the states that have repealed their own CON laws suggest that repeal improves access to healthcare and results in better-quality care at a lower cost.[44] Research shows that states that have removed CON laws do not experience a surge of healthcare spending and tend to see improved access to healthcare facilities.[45]

A second-best response is to modify existing CON laws. Such modifications have included near-repeal (see, e.g., Florida[46]) and a process of phasing out the laws over time (see, e.g., Georgia[47]), among other approaches. States should revise their regulations to prevent the denial of modifications to existing medical facilities because of economic costs. If a state is unable to repeal its CON laws entirely, then it should clarify that the only acceptable reason for denying applications to build new facilities, expand current medical facilities, or purchase additional medical technologies and tools are that existing facilities are lacking optimal capacity and use. In other words, the current medical facilities are not seeing a high volume of patients so the need for a new facility or expansion of a current facility may not be justifiable.

In 2020, nine states have introduced legislation to modify their current CON laws.[48] These bills have taken a number of forms. Florida's,

for example, removed the CON application requirement for several types of providers. The legislation exempted general hospitals, complex medical rehabilitation beds, and tertiary hospital services from the application and state-level approval process.[49] Georgia's legislation increased the expenditure threshold for facilities from $2.5 million to $10 million, and for medical equipment from $1 million to $3 million. This means that some healthcare expansions that would formerly have been contingent on CON approval can now avoid the CON application process.[50] While there is no evidence yet about how this change will affect the application process, the hope is that there will be fewer CON applications and an increase in healthcare innovation. For example, a brand-new MRI machine can cost up to $3 million.[51] Under the new legislation, a facility that wants to add a machine will no longer have to go through a CON application process and be approved.

Maryland is following in Florida and Georgia's footsteps. The Maryland Health Care Commission did extensive research on CON laws and how they affected the healthcare system in the state.[52] One suggestion the commission came up with was to remove the expenditure threshold altogether. This would allow physicians to expand their current facilities without the hassle of trying to optimize their resources to fit under a specific monetary parameter.[53] Maryland's decision to modify its CON laws is a step in the right direction and will hopefully allow more access in areas where healthcare seems scarce.

Another minor, but perhaps meaningful, reform proposal is to wrap a CON process within existing community health needs assessment requirements.[54] When the Affordable Care Act was passed, Congress required hospitals to fill out a community health needs assessment (a form provided through the IRS). This document assesses the community impact a hospital provides and if the hospital can justify their community impact they can maintain a tax-exempt status. This document helps identify opportunities to improve the healthcare services within a community by requiring hospitals to implement strategies to meet the health needs of that community; in this way they are similar to CON laws. Combining the two would eliminate the need to enforce

CON laws because the health needs assessment identifies areas of need within the healthcare system, making CON laws redundant.[55]

Repealing CON laws through interstate agreements is another option that may appeal to those who defend CON laws.[56] Colorado and Arkansas have already decided to repeal their CON laws if other states are willing to also repeal their CON laws.[57] This type of agreement is not uncommon among states. For example, Utah has a similar interstate agreement in regards to Daylight Saving Time.[58] According to the bill, the state house and senate must approve the bill in addition to "four other western states" in order for Utah to have year-round standard time.[59] Using this type of alternative approach to address CON laws may be beneficial because it could influence neighboring states to follow suit.

A fifth option that could save time and money for those involved in the CON application process is administrative relief.[60] Examples of administrative relief include fee reduction and a simplified application process.[61] As mentioned earlier, the current Tennessee CON application process is quite complex. It can take months for an application to be approved and thousands of dollars to apply. This CON application process is similar in other CON regulated states as well. If the fees were significantly reduced and the application process were made much simpler, there might be an increase in applications—and eventually an increase in the healthcare system's accessibility.

One final recommendation that may assist with CON reform is early temporary suspension of CON laws during an emergency (i.e., a pandemic). On March 11, 2020, the United Nations and the World Health Organization declared a pandemic of SARS-CoV-2, the virus that causes COVID-19.[62] Because of the limitations imposed by CON laws, many states were unprepared for the increased need of healthcare during the pandemic.

While many states (e.g., New York, Tennessee, Virginia, Georgia) temporarily suspended their CON laws in spring 2020, their response was not quick enough to handle the COVID-19 outbreak.[63] New York, for example, suspended its CON laws in mid-March, but this gave healthcare providers only one week to prepare for the exponential growth in demand that they were about to experience.[64] According to a 2018

study, there are approximately 2.8 hospital beds per 1,000 people in the United States.[65] Compared to other countries this number is terribly low: for example, China has 4.3 beds per 1,000 and France has 6.5 beds per 1,000.[66] If states decide to retain their CON laws after the COVID-19 pandemic, it would be worthwhile for them to investigate the pre and post effects the temporary suspension had on healthcare accessibility and cost.

Conclusion

When certificates of need were first introduced, they were intended to increase equity in healthcare. Although they were well intentioned, these policies have contributed to increased healthcare costs and limited access to healthcare.

Research suggests that CON laws do not support the expansion of healthcare services that communities and patients desperately need. Overall, the best policy for improving access to care and attaining higher-quality care is to remove CON laws. For states where a full repeal is unachievable, an alternative strategy is to modify CON laws by allowing for more capital expenditure for existing facilities. Georgia's and Maryland's experiences with this strategy appear promising.

Access to high-quality healthcare services is vital for the well-being of individuals in communities across the US. Despite the intentions of their proponents, CON laws are more of a barrier to these goals than a pathway toward better health outcomes. Policymakers should pursue reforms that either remove CON laws or bring them into line with their intended outcomes of increased accessibility and lowered healthcare costs.

Appendix: Empirical Studies of Certificate-of-Need Regulation and Health Spending

Effect of CON Regulation on Per Unit Costs, Prices, or Charges

Study	Effect of CON regulation	Quotation
Monica Noether, "Competition among Hospitals," *Journal of Health Economics* 7, no. 3 (September 1988): 259–84.	CON regulation increases the average price for specific disease categories such as congestive heart failure and pneumonia.	"CON's strongest effect is that it creates cost-raising inefficiencies which are passed on in higher prices."
David C. Grabowski, Robert L. Ohsfeldt, and Michael A. Morrisey, "The Effects of CON Repeal on Medicaid Nursing Home and Long-Term Care Expenditures," *Inquiry: A Journal of Medical Care Organization, Provision, and Financing* 40, no. 2 (Summer 2003): 146–57.	CON repeal has no statistically significant effect on per diem Medicaid nursing home charges or per diem Medicaid long-term care charges.	"The results . . . show that regulatory change did not have a statistically significant effect on either Medicaid payment rates or overall days."
Vivian Ho and Meei-Hsiang Ku-Goto, "State Deregulation and Medicare Costs for Acute Cardiac Care," *Medical Care Research and Review* 70, no. 2 (April 2013): 185–205.	Removing CON regulation decreases the cost of some procedures.	"We found that states that dropped CON experienced lower costs per patient for coronary artery bypass grafts (CABG) but not for percutaneous coronary intervention (PCI)."
James B. Bailey, "Can Health Spending Be Reined In through Supply Constraints? An Evaluation of Certificate-of-Need Laws" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, July 2016).	Removing CON reduces hospital charges by 5.5% five years after repeal.	"CON repeal . . . is associated with . . . a statistically significant 1.1% reduction in average hospital charges per year (a 5.5% reduction for a mature CON repeal)."

Effect of CON Regulation on Expenditures

Study	Effect of CON regulation	Quotes
Frank A. Sloan and Bruce Steinwald, "Effects of Regulation on Hospital Costs and Input Use," *Journal of Law and Economics* 23, no. 1 (April 1980): 81–109.	Comprehensive CON programs have no effect on hospital expenditures per patient day; noncomprehensive programs increase hospital expenditures per patient day.	"The short-run effect of a mature, noncomprehensive program is to raise total expense per adjusted patient day by nearly 5 percent; the long-run effect is over twice this."
Frank A. Sloan, "Regulation and the Rising Cost of Hospital Care," *Review of Economics and Statistics* 63, no. 4 (November 1981): 479–87.	CON regulation has no effect on hospital expenditures per admission, per patient day, or per adjusted patient day.	"The certificate-of-need coefficients imply CON has had no impact on costs."
Joyce A. Lanning, Michael A. Morrisey, and Robert L. Ohsfeldt, "Endogenous Hospital Regulation and Its Effects on Hospital and Non-hospital Expenditures," *Journal of Regulatory Economics* 3 (June 1991): 137–54.	CON regulation increases per capita hospital, nonhospital, and total health expenditures.	"The coefficient of CON is positive and statistically significant in all three expenditure equations. The most pronounced effect is on hospital expenditures, where CON appears to add 20.6 percent to per capita hospital expenditures in the long run. This is consistent with the view that CON programs act to protect inefficient hospitals from competition."
John J. Antel, Robert L. Ohsfeldt, and Edmund R. Becker, "State Regulation and Hospital Costs," *Review of Economics and Statistics* 77, no. 3 (August 1995): 416–22.	CON regulation increases per-day and per-admission hospital expenditures but has no relationship to per capita hospital expenditures.	"CON investment controls imply higher per day and per admission costs, but have no statistically significant effect on per capita cost."
Christopher J. Conover and Frank A. Sloan, "Does Removing Certificate-of-Need Regulations Lead to a Surge in Health Care Spending?," *Journal of Health Politics, Policy and Law* 23, no. 3 (1998): 455–81.	CON regulation has no effect on total per capita health expenditures; there is no evidence of a surge in spending after repeal.	"Mature CON programs are associated with a modest (5 percent) long-term reduction in acute care spending per capita, but not with a significant reduction in total per capita spending. There is no evidence of a surge in acquisition of facilities or in costs following removal of CON regulations."

Study	Effect of CON regulation	Quotes
Nancy A. Miller, Charlene Harrington, and Elizabeth Goldstein, "Access to Community-Based Long-Term Care: Medicaid's Role," *Journal of Aging and Health* 14, no. 1 (February 2002): 138–59.	CON regulation increases per capita Medicaid community-based care expenditures.	"Use of a nursing home CON or combined CON/moratorium was associated with increased community-based care expenditures."
David C. Grabowski, Robert L. Ohsfeldt, and Michael A. Morrisey, "The Effects of CON Repeal on Medicaid Nursing Home and Long-Term Care Expenditures," *Inquiry: A Journal of Medical Care Organization, Provision, and Financing* 40, no. 2 (Summer 2003): 146–57.	CON repeal has no statistically significant effect on either aggregate Medicaid nursing home expenditures or aggregate Medicaid long-term care expenditures.	"Using aggregate state-level data from 1981 through 1998, this study found that states that repealed their CON and moratorium laws had no significant growth in either nursing home or long-term care Medicaid expenditures"
Patrick A. Rivers, Myron D. Fottler, and Zeedan Younis, "Does Certificate of Need Really Contain Hospital Costs in the United States?," *Health Education Journal* 66, no. 3 (2007): 229–44.	CON laws increase hospital expenditures per adjusted admission.	"The results indicate that CON laws had a positive, statistically significant relationship to hospital costs per adjusted admission. . . .These findings suggest not only that CON do not really contain hospital costs, but may actually increase them by reducing competition."
Fred J. Hellinger, "The Effect of Certificate-of-Need Laws on Hospital Beds and Healthcare Expenditures: An Empirical Analysis," *American Journal of Managed Care* 15, no. 10 (October 2009): 737–44.	CON regulation is associated with fewer hospital beds, which in turn are associated with slower growth in aggregate health expenditures per capita. But there is no direct relationship between CON regulation and health expenditures per capita.	"Certificate-of-need programs did not have a direct effect on healthcare expenditures. . . . Certificate-of-need programs have limited the growth in the supply of hospital beds, and this has led to a slight reduction in the growth of healthcare expenditures."

Study	Effect of CON regulation	Quotes
Patrick A. Rivers, Myron D. Fottler, and Jemima Frimpong, "The Effects of Certificate of Need Regulation on Hospital Costs," *Journal of Health Care Finance* 36, no. 4 (July 2010): 1–16.	Stringent CON programs increase hospital expenditures per admission.	"Implications from these results include the inability of CNR [CON regulations] to contain HC [hospital costs] as assumed or expected, and the possibility that CNR [CON regulations] may actually increase HC [hospital costs], while reducing competition."
Momotazur Rahman et al., "The Impact of Certificate-of-Need Laws on Nursing Home and Home Health Care Expenditures," *Medical Care Research and Review* 73, no. 1 (February 2016): 85–105.	CON regulation increases the growth in Medicare and Medicaid expenditures on nursing home care but decreases the growth in home healthcare expenditures.	"Compared with states without CON laws, Medicare and Medicaid spending in states with CON laws grew faster for nursing home care and more slowly for home health care."
James B. Bailey, "Can Health Spending Be Reined In through Supply Constraints? An Evaluation of Certificate-of-Need Laws" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, July 2016).	CON regulation is associated with higher overall per capita healthcare expenditures and with higher per capita Medicare expenditures.	"CON increases total health spending [per capita] by a statistically significant 3.1%. Increases are especially high for spending on physician care—a statistically significant 5.0%. . . . CON is estimated to increase overall Medicare spending [per capita] by a statistically significant 6.9%."

Effect of CON Regulation on Hospital Efficiency

Study	Effect of CON regulation	Quotation
B. Kelly Eakin, "Allocative Inefficiency in the Production of Hospital Services," *Southern Economic Journal* 58, no. 1 (July 1991): 240–48.	CON hospitals are less efficient than non-CON hospitals.	"Hospitals subject to CON regulations have a greater measure of allocative inefficiency by .88 to 1.03 percentage points."
Laurie J. Bates, Kankana Mukherjee, Rexford E. Santerre, "Market Structure and Technical Efficiency in the Hospital Services Industry: A DEA Approach," *Medical Care Research and Review* 63, no. 4 (2006): 499–524.	CON hospitals are not any less efficient than non-CON hospitals.	"Evidence . . . implies that the presence of a state certificate-of-need law was not associated with a greater degree of inefficiency in the typical metropolitan hospital services industry."

Study	Effect of CON regulation	Quotation
Gary D. Ferrier, Hervé Leleu, and Vivian G. Valdmanis, "The Impact of CON Regulation on Hospital Efficiency," *Health Care Management Science* 13, no. 1 (March 2010): 84–100.	CON hospitals are more efficient than non-CON hospitals.	"In general, we found that the hospital sector in states with active CON regulations performed better in terms of aggregate technical and mix efficiency, irrespective of the stringency or laxness of this oversight."
Michael D. Rosko and Ryan L. Mutter, "The Association of Hospital Cost-Inefficiency with Certificate-of-Need Regulation," *Medical Care Research and Review* 71, no. 3 (June 2014): 280–98.	CON hospitals are more efficient than non-CON hospitals.	"Average estimated cost-inefficiency was less in CON states (8.10%) than in non-CON states (12.46%)."

Effect of CON Regulation on Investment

Study	Effect of CON regulation	Quotation
David S. Salkever and Thomas W. Bice, "The Impact of Certificate of Need Controls on Hospital Investment," *Milbank Memorial Fund Quarterly: Health and Society* 54, no. 2 (Spring 1976): 185–214.	CON regulation does not decrease investment, but does change its composition.	"CON did not reduce the total dollar volume of investment but altered its composition, retarding expansion in bed supplies but increasing investment in new services and equipment."
Fred J. Hellinger, "The Effect of Certificate-of-Need Legislation on Hospital Investment," *Inquiry: A Journal of Medical Care Organization, Provision, and Financing* 13, no. 2 (June 1976): 187–93.	CON legislation induced hospitals to increase investments.	"The empirical results support the hypotheses that [CON] legislation has not significantly lowered hospital investment and that hospitals anticipated the effect of [CON] legislation by increasing investment in the period preceding the enactment of the legislation."

Source: Matthew D. Mitchell, "Do Certificate-of-Need Laws Limit Spending?" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, September 2016).