ADVANCING CERTIFICATE-OF-NEED REFORM IN TENNESSEE

DANIEL J. SMITH
MACY SCHECK

A POLICY STUDY OF

Political Economy Research Institute
MIDDLE TENNESSEE STATE UNIVERSITY

Advancing Certificate-of-Need Reform in Tennessee

Macy Scheck
Ph.D. Fellow, Political Economy Research Institute
Middle Tennessee State University

Daniel J. Smith, Ph.D.[1]
Professor, Department of Economics and Finance
Director, Political Economy Research Institute
Middle Tennessee State University

Executive Summary

The modern aim of certificate-of-need laws is to decrease healthcare costs, improve healthcare quality, and increase access to healthcare by restricting healthcare expenditures. But, by empowering incumbent healthcare providers to restrict competition, they can also increase healthcare costs, decrease quality, and decrease access to healthcare. This paper reviews the evidence on the effectiveness of CON laws and finds that they overwhelmingly tend to fail to achieve their stated ends. Furthermore, most healthcare services covered by CON laws in Tennessee lack convincing empirical justification, especially taking into consideration the possibility for heightened demand for healthcare facilities in response to global pandemics, natural disasters, and acts of terrorism. Tennessee policymakers can improve healthcare cost, quality, and access for Tennesseans, and help Tennessee prepare for future pandemics, by further reforming CON laws. This paper reviews a range of possible reforms from complete removal of CON laws to the adoption of healthcare facility licensing.

Release: December 20, 2021

[1] Corresponding author: Daniel.smith@mtsu.edu. We thank two referees for providing helpful feedback that improved this policy paper.

Political Economy Research Institute
MIDDLE TENNESSEE STATE UNIVERSITY

ABOUT THE POLITICAL ECONOMY RESEARCH INSTITUTE
AT MIDDLE TENNESSEE STATE UNIVERSITY

Established in 2016, the Political Economy Research Institute is a joint venture between the Jennings A. Jones College of Business and the University Honors College, established with initial seed money from the Charles Koch Foundation.

The mission of the institute is to engage undergraduate and graduate students with faculty in research that will further the understanding of business and economic principles, as well as their impact on regional, national, and international financial conditions and the well-being of society. To advance its mission, the PERI will engage in research and educational programs which uncover the institutions and policies that encourage and enhance human well-being.

Learn more at mtsu.edu/peri

Guarantee of Quality Scholarship

The Political Economy Research Institute at Middle Tennessee State University guarantees the quality of its public policy studies. All policy studies go through a rigorous refereeing process. If a fact or reference is found to be incorrect, we will update the study with appropriate, noted corrections.

Acknowledgment

Thank you to PERI publication editor Brian Delaney for his assistance with this policy paper.

INDEX

TABLES AND FIGURES

Introduction

Certificate-of-need (CON) laws are regulatory programs initially designed to prevent the unnecessary and costly duplication of healthcare services. CON laws were intended to accomplish this by establishing a regulatory review process for new healthcare facilities and services. This review process empowers existing healthcare providers to object and block new healthcare services and facilities if they can demonstrate that they are already sufficiently meeting the demand for that service in the relevant geographic region. Modernly, CON laws are defended because they can serve to limit the unnecessary growth of healthcare costs and investment to increase the affordability and quality of healthcare, especially for rural and indigent residents.

At least 35 states extend CON law to at least one healthcare service, thereby restricting the growth of these specific healthcare services within their borders. The services covered by CON laws range from open-heart surgery and organ transplants to home health, hospice, and substance abuse programs.[2]

CON laws were widely implemented after the National Health Planning and Resources Development Act of 1974. The Act gave states access to federal funding predicated on the adoption of CON regulatory standards and procedures that created regulatory boards to review the expansion of healthcare services and capital expenditures. The idea is that CON laws could help control rising healthcare costs caused by the perverse incentives created by the cost-plus reimbursement system prevalent at that time. Expense reimbursement led healthcare facilities to expand their facilities even in the absence of sufficient demand because they were guaranteed to have their expenses reimbursed. Healthcare facilities no longer face this perverse structure of incentives since healthcare has moved to a fixed reimbursement model, which provides much better incentives for healthcare

[2] Mitchell, Philpot, and McBirney (2021).

facilities to control costs in this regard.[3] The federal CON funding mandate was repealed in 1987, allowing states to maintain, reform, or repeal their CON laws.

Although the original justification for CON laws is no longer relevant, CON infrastructure has remained in place in many states. Some states have even extended their CON laws to additional services and facilities. This means that the approval process for many healthcare services in states still maintaining CON laws remains in the hands of incumbent healthcare providers. Existing providers are thus in a position to deny, delay, and increase the cost of entry for new healthcare facilities and services. Thus, CON laws provide a mechanism through which existing providers can artificially restrict the entry of competitors, allowing them to earn monopoly or cartel rents detrimental to healthcare consumers.[4] In this case, rather than lowering costs and raising quality, CON restrictions on the supply of healthcare could raise the cost of healthcare and decrease quality by protecting inefficient incumbents from competition. As hospitals consolidate and increase market concentration, prices tend to increase,[5] and quality deteriorates.[6] In fact, one of the modern justifications for maintaining CON laws is precisely that the monopoly or cartel profits generated from the artificial restriction of competition in high growth areas can be used to cross-subsidize healthcare for rural and indigent residents.[7]

There is broad variation among the states when it comes to CON laws. Texas, California, and Pennsylvania have no CON provisions. States like Ohio, Indiana, and Arkansas have CON provisions on a few services. Whereas states such as New York, Georgia, and Kentucky have extensive CON provisions. Hawaii earns the distinction of having the greatest number of CON provisions, with 28 healthcare services and facilities

[3] Ohlhausen (2015).
[4] Ford and Kaserman (1993).
[5] Gaynor, Ho, and Town (2015).
[6] Beaulieu, Dany, Landon, Dalton, Kuye, McWilliams (2020).
[7] Banks, Foreman, and Keeler (1999), Campbell and Furnier (1993), and David, Lindrooth, Helmchen, and Burns (2011).

covered. This variation has generated careful empirical research discerning the effects of CON laws on the cost and quality of healthcare.

The broad consensus in the empirical literature finds that CON laws decrease access to certain healthcare services and increase their cost, ultimately harming consumers in need of healthcare services. Some research even finds that CON laws diminish the quality of healthcare services provided. Developing research also shows that CON laws do not cross-subsidize healthcare for rural or indigent residents.

The experiences with COVID-19, and the fear of not having adequate hospital resources and beds in a future global pandemic, provides another argument against using CON laws to artificially restrict the supply of healthcare. Heavy restrictions on healthcare capacity can limit healthcare providers' ability during a pandemic, natural disaster, or act of terrorism.

Despite two rounds of helpful CON reforms, Tennessee still maintains an extensive CON footprint on its healthcare system. Thus, the evidence suggests that Tennesseans are underprovided and overcharged for their healthcare needs and may even be receiving lower-quality healthcare.[8] Neighboring states such as Arkansas, Louisiana, and Florida have far less strenuous and extensive CON restrictions, enabling market competition to better meet the needs of their residents.

While Tennessee has recent success in reforming CON laws, there is still much progress to be made. To inform this policy debate, this paper provides a summary of the theoretical and empirical literature on CON laws. Evidence is examined on the effect of CON laws in relation to healthcare spending, quality, and access by each specific healthcare specialty covered by CON laws in Tennessee. Little evidence is found to support most of Tennessee's CON laws. The current state of CON laws in Tennessee is outlined, including

[8] Koopman and Stratmann (2015).

recent reforms enacted in response to COVID-19. A comparison is made of an array of possible reforms to expand healthcare access and affordability.

Tennessee should join the ranks of those states with more competitive healthcare markets by drastically reducing or even entirely eliminating their CON laws to enable market competition to operate in healthcare. Market competition in healthcare will likely decrease costs, improve quality, and increase access.

2. Certificate-of-Need Laws: Theory and Evidence

2.1 Theoretical Evaluation of CON Laws

CON laws were originally implemented with the goal of limiting the excessive supply of healthcare facilities and services to control costs and improve quality for consumers. This was achieved by empowering healthcare providers in the relevant geographical area to review applications for new healthcare facilities or services and the extension of services by existing firms. The incumbent healthcare firms, likely to have the most knowledge of the local needs, are thus commissioned to determine if there was a legitimate community need for the proposed service or facility. If they concur that there is a need, they approve the project to proceed. If they determine that there is not a community need, the application for the proposed project is denied, effectively barring the new healthcare service or facility. Those looking to expand healthcare options thus must convincingly demonstrate to existing healthcare providers that the existing providers are not adequately servicing the needs of consumers.

The original reasoning behind CON laws is that if healthcare providers are allowed to overinvest in certain communities, it will drive up the costs of healthcare. This was likely true under the cost-plus reimbursement model prevalent when CON laws were initially adopted. Healthcare facilities were ensured of full expense reimbursement, so there was little incentive

for any individual provider to cut costs or to appropriately consider consumer need before undertaking expensive expansions of services.[9] CON laws, in this reimbursement model, could theoretically mitigate this incentive.[10]

However, the incentives for healthcare facilities to disregard costs due to the cost-plus reimbursement model are no longer applicable. Reimbursement has moved to a universal fee model, which provides healthcare facilities with far more of an incentive to more carefully weigh proposed expansions against the demand for those services.[11]

Given that the cost-plus reimbursement justification for CON is no longer relevant, the modern justification for CON laws now relies on two new arguments. First, the involvement of third parties, such as Medicare, introduces moral hazard. This moral hazard leads to overinvestment in healthcare facilities and services because healthcare firms do not bear the full cost of their financial decisions. This is especially problematic for healthcare services that tend to be overprescribed, such as radiation therapy for low-risk prostate cancer. Second, some healthcare providers servicing poor or rural populations may lack the tax base and population density necessary to support adequate healthcare in the presence of competition (Koopman, Stratmann, and Elbarasse 2015). CON laws would enable profits earned from the restriction of markets in more successful markets (i.e., monopoly or cartel profits) to be used to cross-subsidize the provision of healthcare in rural and indigent populations.

Theoretically, however, allowing incumbent firms to approve or deny competitors can lead to three primary problems. First, there is a potential conflict of interest with existing

[9] Ohlhausen (2015) and Nyman (1985).
[10] Some early studies using data during this period, however, do not find strong empirical support for the effectiveness of CON laws (Noether 1988; Sloan and Steinwalk 1980; Sloan 1981; Salkever and Bice 1976; Hellinger 1976; Wendling and Werner 1980).
[11] Ohlhausen (2015). CON laws can also be justified if there is substantial public ownership of healthcare facilities and services. In such an environment, investments in healthcare are being made with public dollars and duplicative services compete against already established public programs. But this is decidedly not the healthcare environment in the United States, where the vast majority of healthcare is provided by profit and non-profit providers (Fraze, Elixhauser, and Holmquist 2008).

providers preferring to not compete with new entrants for consumers. Incumbent firms could use the CON process to artificially restrict competition and thereby raise prices and/or reduce quality. This would make healthcare consumers worse, not better, off. Second, new healthcare facilities in the same geographic area compete for consumers, and compete for healthcare workers. Restricting labor market competition for workers with CON restrictions could also make workers worse off. Third, the required approval process forces new entrants to reveal their potentially innovative plans to their competitors. This raises the costs of, and decreases the benefit to, adopting innovative practices in healthcare.[12] In summary, CON laws run the real risk of protecting healthcare firms from competition, potentially reducing the welfare of consumers and workers.[13]

Since the initial adoption of the first state CON law in 1964, states adopting CON laws largely adopted similar programs. In 1982, for instance, every state had established CON regulation that was more or less identical, with the exception of Louisiana.[14] While many states have repealed or modified their certificate of need laws, various extents of CON laws still remain and lead to substantial variation in the regulatory framework between states. As of 2021, 35 states and Washington, D.C. have some degree of CON regulation.[15] While some state's CON laws apply to only ambulatory services, in other states these regulations can affect hospitals, adult care facilities, nursing homes, hospices, MRI's, and more.[16] This variation offers a chance to systematically compare the performance of CON laws in achieving their intended purpose.

[12] Caudill, Ford, and Kaserman (1995).
[13] Wendling and Werner (1980).
[14] Simpson (1985).
[15] Mitchell, Philpot, and McBirney (2021).
[16] Ibid.

2.2 General Empirical Evidence on CON Laws

Most research into the effects of CON laws tends to examine one of their three intended outcomes. First, the impact of CON regulations on healthcare spending and/or investment. Second, the effects of CON regulations on the quality of healthcare. Third, the effect of CON regulations on the access to healthcare among poor or rural residents.

Even using evidence from when the cost-plus reimbursement model was being used, and thus a period when CON laws should theoretically have had the greatest ability to reduce healthcare spending and investment, there is little evidence that CON laws reduced healthcare spending and investment and even some evidence that it increased it.[17] For instance, an early review of the emerging literature on CON laws found that they do not measurably impact hospital costs or expenditures.[18]

A more recent (2020) systematic review of ninety studies, published in *BMC Health Service Research*, while admitting that the literature is mixed, finds that on average that "CON [laws] increases health expenditures."[19] Table 1 provides a review of literature examining the general evidence of CON laws on healthcare spending. There is no general evidence from the reviewed studies[20] that suggest CON laws have significantly reduce healthcare expenditures.

Table 1: General Evidence on CON Laws and Healthcare Spending	
CON laws have no statistically significant effect on per capita costs, although they do increase per day and admission costs.	Antel, Ohsfeldt, and Becker (1995)
CON laws do not reduce spending for major payers or providers and increase spending on some types of health care.	Bailey (2019).
CON laws do not affect health expenditures.	Hellinger (2009)
CON laws do not control expenditures.	Noether (1988)
CON laws do not limit healthcare price inflation or reduce healthcare spending.	Mitchell (2016)
CON laws do not affet hosptial costs.	Sloan and Steinwell (1980)
CON laws on average increase health expenditures.	Conover and Bailey (2020)
CON laws increase hospital, nonhospital, and total healthcare expenditures per capita.	Lanning, Morrisey, and Ohsfeldt 1991)
CON laws are associated with an increase in health expenditures per admission.	Rivers, Fottler, and Younis (2007)
Strict CON laws increase healthcare spending per admission.	Rivers, Fettler, and Frimpong (2010)
CON laws do not reduce hospital costs or expenditures.	Wendling and Werner (1980)

[17] Sloan and Steinwald (1980), Salkever and Bice (1976), and Hellinger (1976).
[18] Sloan (1988).
[19] Conover and Bailey (2020).
[20] We searched Google Scholar in October 2021.

The literature also finds that CON laws tend not to achieve their goal of restraining healthcare investment. For instance, one study finds "no empirical evidence to suggest" that CON laws decrease investment.[21] Rather, the evidence suggests that CON laws affect the composition, not the level of healthcare investment, away from hospital beds towards new services and equipment.[22] For instance, a 2009 study found that CON laws reduced hospital beds by ten percent and provided only a "slight reduction in the growth of healthcare expenditures."[23]

Another way to test this is to see if healthcare investment increases when CON laws are removed. A study in the *Journal of Health Politics, Policy and Law* found "there is no evidence of a surge in acquisition of facilities or in costs following removal of CON regulations."[24] Another study, published in the *Journal of Health Care Organization, Provision, and Financing*, found states that repealed CON laws "had no significant growth in either nursing home or long-term care Medicaid expenditures."[25]

Table 2 provides a summary of the research on the effects of CON laws on general healthcare investment. Similar to healthcare spending, there is no general evidence finding that CON laws reduce healthcare investment.

Table 2: General Evidence on CON Laws and Healthcare Investment	
CON laws do not result in a surge of acquisitions or costs following their removal.	Conover and Sloan (1998)
CON laws do not decrease healthcare investment.	Hellinger (1976)
CON laws do not affect hospital investment.	Salkever and Bice (1976)

Relatedly, the literature does not find systematic evidence that CON laws increase healthcare efficiency. Table 3 provides a summary of the research of CON laws on general healthcare efficiency. The general evidence is mixed, which suggests that there is not sufficient evidence to justify the associated harms that often come from CON laws.

[21] Hellinger (1976)
[22] Salkever & Bice (1976).
[23] Hellinger (2009).
[24] Conover & Sloan (1998).
[25] Grabowski, Ohsfeldt, and Morrisey (2003).

Table 3: General Evidence on CON Laws and Healthcare Efficiency	
CON and non-CON states have equally efficient hospitals.	Bates, Mukherjee, and Santerre (2006)
CON states have less efficient hospitals.	Eakin (1991)
CON laws are associated with more efficient hospitals.	Ferrier, Leleu, and Valdmanis (2010)
CON laws are associated with more efficient hospitals.	Rosko and Mutter (2014)

The literature also does not convincingly find that CON laws result in higher quality healthcare.[26] A 2018 study found no evidence of higher quality care supplied in CON states.[27] Similarly, a 2020 study saw "no significant differences found between states without and with certificate of need regulation for overall hospital procedural volume; hospital market share; county-level procedures per 10,000 persons; or risk-adjusted 30-day postoperative mortality, surgical site infection, or readmission."[28] A study investigating all-cause mortality and CON regulation found that CON laws have no statistically significant effect on all-cause mortality.[29]

In some instances, CON regulations have actually decreased measures of healthcare quality.[30] A modern systematic review of the evidence finds that "while more and higher quality research is needed to research confident conclusions, our cost-effectiveness analysis based on the existing literature shows that the expected costs of CON exceed its benefits."[31] Table 4 summaries the evidence on the effect of CON laws on healthcare quality. There is no general evidence finding that CON laws systematically improve healthcare quality.

Table 4: General Evidence on CON Laws and Healthcare Quality	
There is no significant difference in all-cause morality between CON and non-CON states	Bailey (2018)
CON laws increase overall elderly mortality.	Conover and Bailey (2020)
CON laws do not result in higher equality healthcare.	Stratmann and Willie (2018)
CON laws do not affect the volume, hospital market share, county-level procedures, risk-adjusted 30-day postoperative mortality, surgical site infection, or readmission for Medicare beneficiaries.	Yuce, Chung, Barnard, and Bilimoria (2020)

The developing literature on the relationship between CON regulation and healthcare access for rural or poor residents suggests that CON laws do not achieve this objective either. A

[26] A dissenting study by Ho (2004) finds that CON laws "may be marginally effective in improving outcomes for PTCA" but the author admits the study has "several limitations" including not controlling for physician volume, not accounting for patient clustering, and the use of a potential predictor as an explanatory variable.
[27] Stratmann & Wille (2018)
[28] Yuce, Chung, and Barnard (2020).
[29] Bailey (2018).
[30] Ho, Ku-Goto & Jollis (2009).
[31] Conover and Bailey (2020).

working paper systematically looking at the evidence between certificate of need laws and the supply of indigent care finds no evidence in favor of CON laws.[32] Table 5 provides a summary of the sole paper addressing the ability of CON laws to cross-subsidize the healthcare for rural and indigent residents. The paper does not find evidence that CON laws expand access to healthcare among rural and indigent residents. While it is only one paper, it is worth stressing that not a single paper on the general effects of CON laws finds evidence that CON laws increase access to healthcare for rural or indigent residents.

Table 5: General Evidence on CON Laws and Access to Healthcare Among Rural or Indigent Residents	
CON laws do not increase the supply of indigent care	Stratmann and Russ (2018)

2.3 Service-Specific Evidence on the Effectiveness of CON Laws

There has also been research done on the effect of CON laws on specific healthcare services. In this subsection, all the evidence is reviewed of CON laws on specific healthcare services that are covered by CON laws in Tennessee.

2.3.1. Ambulatory Surgical Centers

Table 6 provides a summary of the research on the effect of CON laws on ambulatory surgical centers. Only one of 13 studies conducted found a result in favor of ambulatory surgical centers. These studies tend to find that CON laws on ambulatory surgical centers do not produce the desired effects, and decrease innovation and rural access to surgical care.

[32] Stratmann and Russ (2018).

Table 6: Ambulatory Surgical Centers (ASC) & Various Procedures	
CON laws are associated with lower per captia utilization of **total knee arthroplasty surgery** and the use of higher-volume facilities, but there is no evidence that they improve the quality of care.	Browne, Cancienne, Casp, Novicoff, and Werner (2018)
CON laws do not limit the growth of **total hip arthroplasty** or the quality of care or outcomes.	Casp, Durig, Cancienne, Werner, and Browne (2019)
CON laws reduce the adoption of innovative healthcare innovations in **hemodialysis**.	Caudill, Ford, and Kaserman (1995)
CON laws did not affect **open and endoscopic carpel tunnel release** spending or utilization.	Denduluri, Roe, Bala, Fogel, Ziino, and Kamal (2021).
CON laws effectively constrain competition in the **dialysis industry**, leading to reduced quality and higher patient morality.	Ford and Kaserman (1993)
CON laws did not affect patient access and reduced hosptial charges for lumbar discectomy, acoustic neuroma resection, and microvascular decompression for tirgeminal neuralgia.	Fric-Shamji and Shamji (2008)
CON laws have no effect on the ability of surgical residents to gain experience.	Fric-Shamji and Shamji (2010)
CON laws did not affect the accessibility, quality, or cost of **total joint arthroplasty**.	Schultz, Shi, and Lee (2021)
CON laws did not have a significant increase in quality or price for **posterior lumbar fusion survey** patients.	Sridharan, Malik, Phillips, Retchin, Zu, Yu, and Khan 2020)
CON laws decrease rural access to healthcare.	Stratmann and Koopman (2018)
CON laws did not affect the growth of **anterior cervical discectomy and fusion.**	Ziino, Bala, and Cheng (2020a)
CON laws saw higher utilization increases of **lumbar micro decompression utilization** and had no effect on overall reimbursement.	Ziino, Bala, and Cheng (2020b)
CON laws did not affect the utilization of single-level **cervical discectomy**.	Ziino, Bala, and Cheng (2021)

2.3.2 Cardiac Catheterization

Table 7 provides a summary of the single paper on the effects of CON laws on cardiac catheterization. The paper finds some modest support for CON laws on cardiac catheterization for modestly improving the quality of weakly indicated cardiac catheterization, but found no improvement in quality for strongly indicated cases.

Table 7: Cardiac Catheterization	
CON laws produce modestly lower rates of weakly indicated cardiac catheterization after admission for acute myocardial infarction, but there is not difference between CON and non-CON states in rates of strongly indicated catheterization.	Ross, Ho, Wang, Cha, Epstein, Masoudi, Nallamothu, and Krumholz (2007).

2.3.3 Emergency Care Centers

Table 8 provides a summary of the evidence on the effect of CON laws on emergency care. Emergency care is one identified area of healthcare that may be over-utilized compared to cheaper sources of care, such as urgent care centers. While the evidence supports the fact that CON laws reduce investment and use of emergency care facilities, and thus drive costs down, it is counterbalanced by the finding that stricter laws on emergency care centers increase wait times and reduce the quality benefit of CON laws. Thus, this indicates that licensing, rather than CON laws, may be more appropriate. As Vivian Ho argues, “states could instead develop licensing requirements without certificate of need to regulate entry of freestanding

emergency departments."[33] Interestingly, one these studies finding a positive impact of CON laws on the quality of emergency department care notes that strict CON laws reduce the observed benefit.[34] There is no direct evidence in the literature, however, that CON laws for emergency care actually reduce emergency care spending.

Table 8: Emergency Care	
CON laws reduce investment in freestanding emergency departments per capita.	Gtierrez, Lindro, Baker, Cutler, and Schuur (2016)
CON laws restrict the entry of freestanding emergency departments, which are associated with higher prices for similar services performed at urgent care centers.	Ho, Metcalfe, Dark, Vu, Webter, Shelton, and Underwood (2017)
CON laws restrict the entry of freestanding emergency departments, which are associated with more emergency spending per capita	Ho, Zu, and Akhter (2019)
CON laws on emergency departments impact median wait times for examination, medication administration, hospital admittance, and hospital discharge. Stricter laws result in longer expected wait times.	Myers and Sheehan (2020)
CON laws enhance the intensity of competition among emergency departments.	Ni, Paul, and Bagchi (2017)
CON laws are associated with higher quality emergency department care by shortening emergency department stays, but increasing the strictness of the CON law reduces this benefit.	Paul, Ni, and Bagchi (2014)

2.3.4 Home Healthcare

Table 9 provides a summary of the evidence of the effect of CON laws on home healthcare. There are no studies that find comprehensive evidence in support of CON laws on home healthcare.

Table 9: Home Health	
CON laws do not imrpove economies of scale or scope.	Anderson and Kass (1986)
CON laws decrease per patient costs (which may be related to quality reductions) but increase total Medicare costs for home health by increasing caseloads	Ettner, Zinn, Xu, Ladd, Nuccio, Sorkin, and Mukamel (2020)
CON laws have an affect on bed growth, but not Medicaid reimbursement.	Harrington, Swan, Nyman, and Carrillo (1997)
States with CON laws were more less likely to have high quality ratings for home health agencies	Ohsfeldt and Li 2018
CON laws have no effects on Medicare costs and healthcare quality.	Polsky, David, Yang, Kinosian, and Werner (2014)
CON laws do not effect aggregate Medicare and Medicaid spending on home health care and states with CON laws on nursing homes and home health have the slowest healthcare growth	Rahman, Galarraga, and Zinn (2015)

2.3.5 Hospice Healthcare

Table 10 provides a summary of the evidence of CON laws on hospice healthcare. The primary finding is that these laws reduce the supply of hospice healthcare, decreasing access for patients in need of hospice care. One study, in particular, finds a need for expanded pediatric hospice care in Tennessee.[35]

Table 10: Hospice	
CON laws reduce access to hospice.	Carlson, Bradley, Du, and Morrison (2010)
There is need for more pediatric hospice care in Tennessee.	Lindley and Edwards (2014)
CON laws reduce the supply of hospice and palliative care.	Silveira, Connor, Goold, McMahon, and Feudtner (2011)

[33] Ho (2020).
[34] Paul, Ni, and Bagchi (2014).
[35] Lindley and Edwards (2014).

2.3.6 Hospital Beds

Table 11 summarizes the evidence of CON laws on hospital beds. Two studies found that CON laws do restrict the growth of hospitals and hospital beds. Whether this is good or not for residents, especially for indigent residents or during a pandemic (or other natural disaster or terrorist event), when the demand for hospitals may spike, is questionable. Restricting the quantity of healthcare, with little evidence of cost savings, does not provide compelling evidence to maintain CON laws.

Table 11: Hospital Beds (Acute, General, Med-Surg, etc.) and General CON Law Evidence on Healthcare	
Con laws reduce number of hospital beds by 12 percent and the number of hospitals per 100,000 people by 48 percent.	Eichmann and Santerre (2011)
CON laws reduce hospital beds by 10 percent and reduced healthcare expenditures by 2 percent.	Hellinger (2009).

2.3.7 Long-Term Acute Care

Table 12 summarizes the evidence of CON laws on long-term acute care. CON laws modestly decrease per capita spending on long-term acute care, but there is no evidence that removing CON laws increase costs or affects the quality of healthcare or access to it.

Table 12: Long-Term Acute Care (LTAC)	
CON states have 5 percent less spending for long-term acute care spending per capita, but no reduction in total per capita spending. No evidence of surge of consolidations or an increase in cost when CON laws are removed. CON programs can slightly reduce bed supply by two-percent, but generate higher costs per day and per admission. There is no evidnece that CON laws affect qualtiy of care or access to healthcare.	Conover and Sloan (1998)
CON states had lower long-term acute care use.	Kahn, Werner, Carson, and Iwashyna (2012)

2.3.8 Magnetic Resonance Imaging

Table 13 summarizes the evidence of CON laws on MRI healthcare. The single study finds that CON laws restrict the number of providers by 20 to 33 percent, increasing the likelihood that residents will drive out-of-state to obtain needed scans.

Table 13: Magnetic Resonance Imaging (MRI) Scanners	
CON laws reduce the number of providers by 20 to 33 percent. Residents of CON states are 3.4-5.3 percent more likely to travel out-of-state to obtain scans.	Baker and Stratmann (2021)

2.3.9 Neonatal Intensive Care

Table 14 summarizes the effect of CON laws on NICU care. The single study finds that CON laws reduce the number of NICU beds without affecting infant mortality rates. However, states with CON laws and at least one major metropolitan area did see a slight increase in infant mortality.

Table 14: Neonatal Intensive Care	
CON laws reduce the number of hospitals with a NICU and the number of NICU beds by nearly 50 percent, with no difference in infant morality rates. States with CON laws with at least one large metropolitan area had .54 more infant deaths per 1,000 births than states without CON laws.	Lorch, Maheshwari, and Even-Shoshan (2012)

2.3.10 New Hospitals

Table 15 summarizes the evidence on the effect of CON laws on new hospitals. The two studies done in this area find that states with CON laws are more likely to experience intensive care unit bed shortages and that CON laws decrease rural access to healthcare.

Table 15: New Hospitals or Hospital-Sized Investments	
States with CON laws are twice as likely to have intensive care unit bed shortages.	Mitchell, Stratmann, and Bailey (2020)
CON laws decrease rural access to healthcare.	Stratmann and Koopman (2018)

2.3.11 Nursing Homes and Long-Term Care Beds

Table 16 summarizes the evidence of the effect of CON laws on nursing homes and long-term care beds. In general, the evidence finds that CON laws are ineffective in controlling expenditures on nursing homes and long-term care beds, reduce access, and even reduce quality. The sole study finding evidence in favor of CON laws on nursing homes is that they can reduce the expansion of the bed stock. Taking into consideration the other studies, they do so without improving healthcare costs or quality.

Table 16: Nursing Home Beds/Long-Term Care Beds	
CON laws reduce health survey scores for nursing homes by 18-24 percent, reduces the employment of registered nurses and licensed practical nurses, sources of high-quality care, and increases employment of certified nursing assistances, sources of lower-quality care.	Fayissa, Alsaif, Mansour, Leonce, and Mixon, Jr. (2020)
CON laws do not have an effect on Medicaid nursing and long-term care expenditures.	Grabowski, Ohsfeldt, and Morrisey (2003)
CON law limitations placed on home and community service providers can reduce access.	Harrington, Anzaldo, Burdin, Kitchener, and Miller (2008)
CON laws increase community-based long-term care Medicaid expenditures.	Miller, Harrington, and Goldstein (2002)
CON laws do not effect aggregate Medicare and Medicaid spending on nursing home care. CON laws protect nursing homes from competition, especially home health competition and states with CON laws on nursing homes and home health have the slowest healthcare growth.	Rahman, Galarraga, and Zinn (2015)
CON laws reduce the expansion of nursing home bed stock.	Swan and Harrington (2008)

2.3.12 Open-Heart Surgery

Table 17 summarizes the evidence of the effect of CON laws on open-heart surgery. The evidence of the effect of CON laws on open-heart surgery expenditures and quality is heavily mixed, suggesting that there is no definitive evidence to support the justification for CON laws for open-heart surgery.

Table 17: Open-Heart Surgery	
CON laws increase heart attack morality by 6-10 percent.	Chiu (2021)
CON states had lower rates of rarely appropriate percutaneous coronary interventions, but absolute differences were small.	Chui, Parzynski, Ross, Desai, Gurm, Spertus, Seto, Ho, and Curtis (2019)
CON laws reduce heart surgery mortality.	Conover and Bailey (2020).
Repeal of CON laws on CABG in Pennsylvania saved more patient lives but was welfare neutral after adjusting for quality-of-life effect estimates.	Cutler, Huckman, and Kolstad (2010)
CON and non-CON states have similar mortality rates for CABG surgery patients.	DiSesa, O'Brien, Welke, Beland, Haan, Vaughan-Sarrazin (2006)
CON laws increase the propensity to perform open-heart procedures, leading to higher overall expenditures for the health system. But, CON laws decrease the average cost of open heart surgery and marginally improve outcomes for PTCA surgery (but the study has, admittedly, severe limitations).	Ho (2004)
CON laws raise hospital volume and lower average cost of open heart surgery or coronary angioplasty surgery with little reduction in inpatient morality.	Ho (2006)
States that dropped CON laws had lower costs per patient for CABG and lower Medicaid costs for CABG and percutaneous coronary interventions. The costs savings exceeded the cost of new facilities that emerged after deregulation.	Ho and Ku-Goto (2013)
Removal of CON laws was not associated with lower-quality CABG or percutaneous coronary interventions.	Ho, Ku-Goto, and Jollis (2009)
No difference in CABG utilization rates between CON and non-CON states.	Ho, Ross, Nallamouthu, and Krumholz (2007)
CON laws lower admission to hospitals offering coronary revascularization and increase the probability of patients undergoing early revascularization, but with no affect on morality.	Popescu, Vaughan-Sarrazin, and Rosenthal (2006)
CON law removal in Pennsylvania increased the number of CABG facilities, but did not increase the number of CABG surgeries or affect the morality rate.	Robinson, Nash, and Moxey (2001)
CON laws decrease mortality rates in Medicare heart bypass patients.	Vaughan-Sarrazin, Hannan, Gormley, and Rosenthal (2002)

2.3.13 Organ Transplants

Table 18 summarizes the one study on the effectiveness of CON laws on organ transplant surgeries. The sole study finds that CON laws could lower the number of transplant centers without affecting the number of procedures performed or the quality of outcome. The study did not explore the costs effects of CON laws on transplant centers, so the evidence provided in this single study does not appear to justify CON laws on organ transplants.

Table 18: Organ Transplants	
States with CON laws had a lower number of transplant centers, but there was no difference in the volume of transplants performed or the quality of outcome.	Cosby (2011)

2.3.14 Positron Emission Tomography

Table 19 summarizes the one study done on the effect of CON laws on PET scans. CON laws reduce the number of PET providers, but this increases the likelihood that residents will travel out-of-state to obtain a needed scan.

Table 19: Positron Emission Tomography (PET) Scanners	
CON laws reduce the number of providers by 20 to 33 percent. Residents of CON states are 3.4-5.3 percent more likely to travel out-of-state to obtain scans.	Baker and Stratmann (2021)

2.3.15 Radiation Therapy

Table 20 summarizes the evidence of the effect of CON laws on radiation therapy. One area where there is a consensus that a healthcare service is consistently overprescribed, and thus a strong argument in favor of CON laws, is radiation therapy for prostate cancer. Yet, the evidence finds that CON laws do not reduce the use of radiation therapy for prostate cancer.

Table 20: Radiation Therapy	
States with CON laws have higher use of IMRT for elderly patients less likely to need this treatment for low-risk breast and prostate cancer patients.	Falchook and Chen (2014)
CON laws increase travel time to care at radiation oncology facilities.	Herb, Wolff, McDaniel, Holmes, Royce, and Stitzenberg (2021)
Even strict CON laws do not limit IMRT overtreatment.	Jacobs, Zhang, and Hollenback (2012)
CON laws fail to create entry barriers for IMRT.	Jacobs, Zhang, Scholars, Wei, Montie, Schroeck, Hollenbeck (2012)
CON laws did not limit intensity modulated radiation therapy (IMRT) use or reduce prostate cancer health care cost.	Khanna, Hu, Gu, Nguyen, Lipsitz, and Palapattu (2012)
IMRT was used more often for low risk prostate cancer patients in CON law states than non-CON states.	Kim, Patel, Nelson, Shen, Mayer, Moore, Lu-Yao (2016)
CON laws did not limit the use of IMRT in older or debilitated patients with low cancer risk.	Lu-Yao, Nelson, Shen, Shao, Li, Mayer, Moore, and Kim (2013)
CON laws are not limiting the use of IMRT among patients who are less likely to benefit from the procedure.	Newlson, Kin, Shen, Shao, Mayer, Moore, Lu-Yao (2012)
CON and non-CON states had similar use of cancer procedures, but those with acute-care CON had fewer oncology providers per cancer patient.	Short, Aloia, and Ho (2008)

2.3.16 Substance and Drug Abuse Treatment

Table 21 provides the evidence from one study on the effects of CON laws on substance and drug abuse treatment. The sole study finds that CON laws do not affect the number of facilities, beds, or clients per capita.

Table 21: Substance/Drug Abuse	
CON laws for **substance abuse facilities** reduce the likelihood that facilities will accept private insurance and Medicaid, with no difference in facilities, beds, or clients per capita between CON and non-CON states.	Bailey, Lu, and Vogt (2021)

2.3.17 Healthcare Provisions Licensed in Tennessee Without Empirical Evidence

Table 22 lists the remaining healthcare provisions falling under the CON purview in Tennessee, with no empirical evidence in the academic literature to justify their CON status. It is worth noting that healthcare services such as burn care, care for patients with intellectual disabilities, and rehabilitation are unlikely to be overprescribed and thus lack even theoretical justification for CON.

Table 22: No Relevant Literature
Burn Care
Intermediate Care Facilities (ICFs) for Individuals with Intellectual Disabilities
Linear Accelerator Radiology
Rehabilitation

3. Certificate of Need Laws and COVID-19

The experience of COVID-19 amplified the harmful effects of CON laws on healthcare cost, quality, and access in Tennessee and across the nation. When reexamining healthcare systems to be more robust against global pandemics, it is helpful to review the preliminary findings on healthcare outcomes and COVID-19.

According to a recent study, counties subject to CON regulation had an additional 104.53 reported cases of SARS-COV-2 cases, on average.[36] The increase is thought to be related to the higher bed utilization and larger nursing home populations in these counties due to the restrictions on expanding services. A new working paper finds that "mortality rates are

[36] Kosar & Rahman (2021).

higher in states with CON laws relative to that in states without any CON laws. Furthermore, states with high healthcare utilization due to COVID that reformed their CON laws during the pandemic saw a significant reduction in mortality resulting from natural death, Septicemia, Diabetes, Chronic Lower Respiratory Disease, Influenza or Pneumonia, and Alzheimer's Disease in addition to reduction in COVID deaths."[37]

Recognizing the harm of CON laws during a pandemic, several states suspended provisions to allow for more rapid expansion of healthcare facilities.[38] Twenty states suspended provisions of their CON laws, especially those pertaining to hospital beds, ambulance services, and other projects necessary for responding to COVID-19. Another four states activated emergency provisions to provide more flexibility to the healthcare sector to respond to the pandemic.[39] However, given the lengthy process it takes to expand healthcare facilities and services, there was little states could do to seriously reverse the effects of previous CON restrictions.[40] Many of the reforms simply allowed existing facilities to expand the number of hospital beds through makeshift facilities. But, research shows that while not having CON laws does substantially decrease expected shortages of intensive care unit beds, temporary suspensions have no effect on shortages.[41] A 2014 paper suggesting CON laws as a cost-containment strategy to reduce the number of ICU beds argued that a major limitation was that "fewer ICU beds means less ICU availability for care during disasters and pandemics" but argued that "it is unlikely there will ever be enough ICU beds for a true pandemic" as an counter-argument.[42]

Such suspensions raise the question of whether the pandemic experience suggests that we need permanent CON reform. Rapidly expanding healthcare facilities is difficult to do

[37] Ghosh, Choudhury, and Plemmons (2020).
[38] Fournier, Rakotoniaina, & Butler (2020), Mitchell (2021), and Erickson (2021).
[39] Erickson (2021).
[40] Ibid.
[41] Mitchell, Stratmann, and Bailey (2020).
[42] Gooch and Kahn (2014).

during a pandemic, especially while retaining normal hospital operations. All the better to allow the industry to build the capacity they need ahead of a pandemic without artificial restrictions on supply. Simply relaxing the ability to create makeshift facilities in an emergency gives a competitive advantage to incumbent healthcare facilities and puts patients in less-than-ideal facilities with healthcare facilities lacking permanent staffing for the expanded capacity. Reforming CON laws and eliminating unnecessary service restrictions would better ensure that there were ample beds and staff when they are needed most.

4. Certificate-of-Need Law Reforms in the United States

Eleven states, including California, Texas, and Pennsylvania, have zero CON restrictions on the provision of healthcare services and facilities. An additional two states, Arizona and New Mexico, only have one remaining CON restriction on ambulance services. Indiana and Ohio only have a CON restriction on nursing home beds. Other states with few CON restrictions include Nevada (3), Minnesota, Nebraska, and Oklahoma (4), Wisconsin (5), Arkansas (6), and Louisiana (7).[43]

In 2016, New Hampshire repealed its CON program and instead implemented a specialized licensure process for certain healthcare facilities such as open-heart surgery services.[44] A licensing system creates a transparent and uniform set of standards that all new facilities or services must meet, without artificially restricting the supply. If the facility meets the transparent requirements, then it is approved, removing the ability of incumbent providers to carte blanche deny the entry of new competitors. While New Hampshire moved towards repealing its CON laws, its regulatory landscape certainly does not resemble other states like

[43] Mitchell, Philpot, and Birney (2021).
[44] NH SB481 Reg. Sess. (2016).

New Mexico and Idaho, which completely did away with any regulatory structure over the expansion of services.

In 2019, Florida repealed its certificate-of-program and adopted a process like New Hampshire's licensure program. This means that general hospitals, complex rehabilitation centers, and non-restricted facilities like neonatal intensive care units will no longer require a CON to expand services or open a new location.[45] This repeal also eliminates the chance for established providers to oppose or restrict new competitors. Nursing homes and other intermediate care facilities are, however, still subject to CON regulation.

Minnesota and Wisconsin have officially repealed their CON programs but still operate under a framework that maintains an approval process.[46] Colorado repealed its CON program in 1987 since the legislation was contingent upon the elimination of the federal mandate.[47] Several other states like California, Pennsylvania, and Idaho implemented time-bound repeals.[48] These sunset clauses expire after a certain period. Pennsylvania, for instance, has a sunset period of four years.[49]

The main challenge in these reforms is the danger they pose to incumbent healthcare providers, who see the increase in competition, and the loss of their cartel or monopoly privileges, as a threat. Under CON laws, the approval of an expansion of services or certain expenditures is restricted to a small group of providers, so there is immense pressure put on legislators by lobbyists for incumbent providers to maintain the status quo. For example, if there exists only one hospital or health system in a city or region, artificially protected by CON regulation, there is no incentive for the provider to move away from such regulation and invite other providers to compete against them. CON laws have been estimated to

[45] Davis, Rogers, & Becker (2019).
[46] Ibid.
[47] Colo. rev. Stat. § 25-3-521 (1982).
[48] Simpson (1986).
[49] Longwell & Steele (2011).

provide urban hospital CEOs with $91,000 in economic rents per year.[50] This entrenched protectionism is what makes reforms so difficult. In addition, healthcare lawyers and lobbyists specializing in CON, as well as the politicians themselves, also benefit from maintaining the system. For instance, one study has found that CON applicants donating to political campaigns increases the probability that their application will be approved.[51]

CON laws are also difficult to reform because the average citizen is often unaware of these restrictions or the potential harm they are causing. This means the actual voice of healthcare consumers often plays little role in the policy process vis-à-vis incumbent firms. Even a patient with underlying health conditions who frequently requires MRIs would likely be unaware that their access to such equipment is not dictated by the market attempt for healthcare providers to meet market demand, but rather by state actors and boards. One may notice that appointments must be made weeks out, but not understand that it is because other providers are literally unable to offer such services due to CON regulation.

5. Certificate of Need in Tennessee

CON regulation dates back to 1973 in the Volunteer State. Tennessee took a positive step in the right direction in 2016 by reforming some of its worst CON provisions.[52] These reforms included the elimination of CON requirements for birthing centers, lithotripsy, rehabilitation services for drug and alcohol treatment, and hospital swing beds. A recent bill, effective in 2021, expanded upon these reforms.

Effective October 2021, psychiatric services will no longer require a CON.[53] In addition, previously licensed hospitals can open up treatment centers for opioid addiction without obtaining an additional CON. The bill also relaxed CON provisions for some home

[50] Eichmann and Santerre (2011).
[51] Stratmann and Monaghan (2017).
[52] Brent, Puri, Hoffmann, and Pan (2016).
[53] TN HB0948 112th Gen. Ass. (2021) and Brent, Puri, Hoffmann, and Pan (2021).

health and hospice services and lowered the population thresholds for some CON restrictions on certain healthcare services. The bill also introduces several changes for existing hospitals. They are now permitted to expand the number of beds if they are not used for new treatments not previously provided. However, the bill does not allow new facilities with hospital beds to be built without approval.

The bill also gives complete CON exemption for healthcare services and facilities in economically distressed counties without an existing hospital. The definition of economically distressed is those counties meeting one of the following conditions; 1) per capita GDP less than eighty percent of the national average, 2) unemployment rate for 24 months at least one-percent greater than the national average, 3) has experienced or will experience a special need due to actual or severe unemployment or economic adjustment from economic changes, or 4) has a correctional facility where property is used by the state.[54] As of May 2021, this included Lake, Clay, and Grundy Counties.[55]

Due to both the pandemic and the opioid crisis, the bill also includes an emergency review process. The emergency provisions remain quite weak since they still require a review process that allows opposition from incumbent providers. The emergency provisions also only allow the exemption to last a maximum of 120 days.

There is still work to do, as Tennessee's CON regulation remains stringent compared to other states. The new reforms only fully repealed one major area of CON law, psychiatric services, leaving 19 healthcare services in Tennessee regulated. Of the 35 states (and Washington DC) which have some form of CON program (this includes states like Minnesota and Wisconsin), Tennessee ranks eleventh in regulated services in a five-way tie with Alaska, Michigan, Mississippi, and Oregon.[56] That means many states have CON frameworks more

54 TN Code Title 67. Taxes and Licenses § 67-6-104
[55] Waller Law (2021).
[56] Mitchell, Philpot, & McBirney (2021).

conducive to market competition, to seek lower costs and improve quality for their residents. This includes eleven states with no CON restrictions whatsoever.

Tennessee regulates a wide range of healthcare services, including ambulatory surgical centers, burn care, cardiac catheterization, home health, hospice, hospital beds, intermediate care facilities, linear accelerator radiology, long-term acute care, magnetic resonance imaging, neonatal intensive care, new hospitals, nursing home and long-term beds, open-heart surgery, organ transplants, positron emission tomography, radiation therapy, rehabilitation, and substance/drug abuse.[57] The average Tennessean will engage with many, if not most of these services over the course of their life. Thus, an optimally functioning framework is of the utmost importance. States, such as Arkansas, Louisiana, and Florida, have far less CON provisions, only having 6, 7, and 9 regulated services respectively.[58]

The Health Services and Development Agency (HSDA) is the organization which hears CON applications. The group consists of eleven members, three of which are consumer representatives appointed by different state actors. The next five are industry incumbents with associations to, but "not limited to", the Tennessee Hospital Association, the Tennessee Health Care Association, the Tennessee Medical Association, and the Tennessee Association of Home Care. The remaining three members are the Comptroller of the Treasury, the director of TennCare, and the Commissioner of the Department of Commerce or their respective designees.[59] As stated previously, this board is granted power over 19 different services, a plethora of different capital expenditures, and even certain actions. One of these actions includes the relocation of beds to another facility or site.[60]

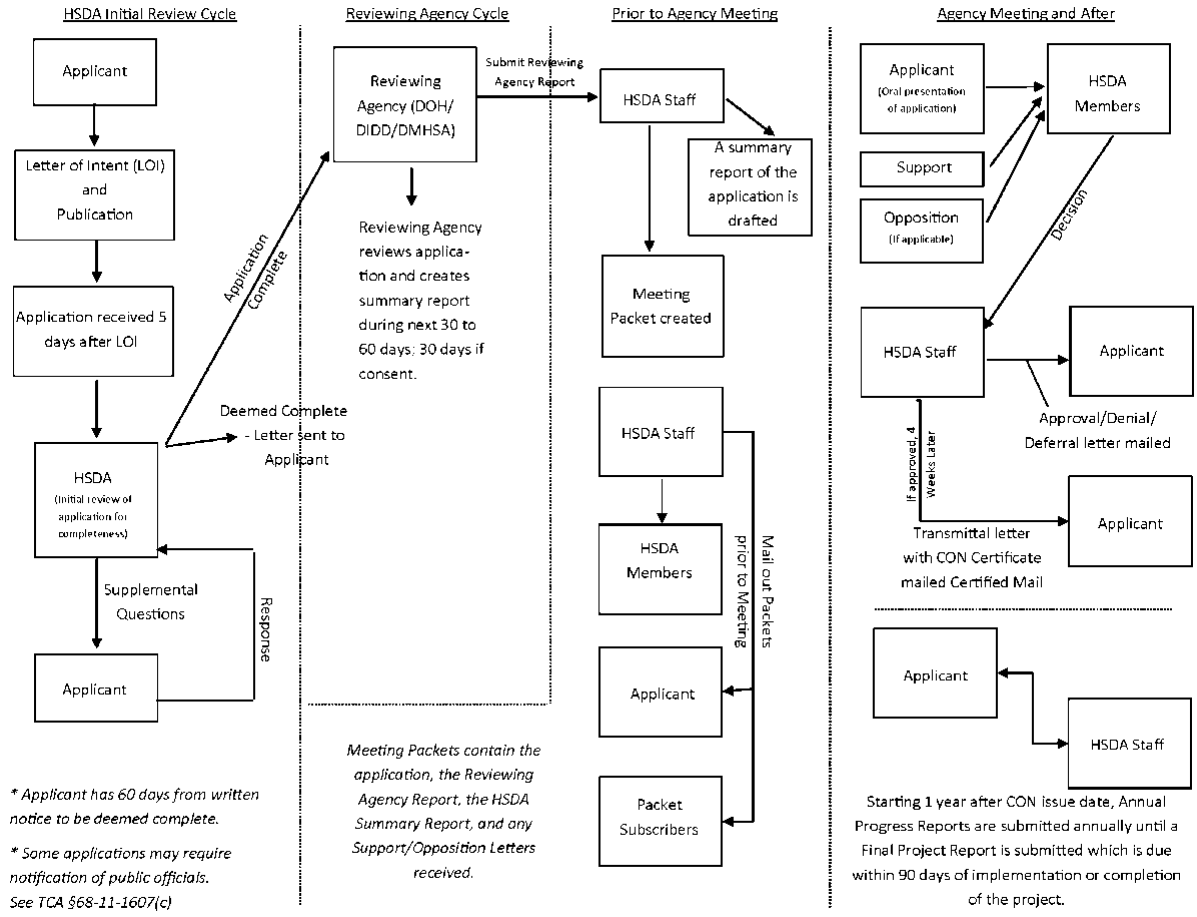
The process of submitting such an application is not at all intuitive. In fact, the HSDA lists a 13-step guide for maneuvering the application process, which can be "neatly"

[57] National Conference of State Legislators (2019).
[58] Mitchell, Philpot, and McBirney (2021).
[59] Health Services and Development Agency (2021).
[60] Ibid.

summarized in Figure A.[61] To summarize, the applicant must meet the stated criteria and start the process by making a preliminary meeting. The proposal is summarized and passed onto other departments like the Tennessee Department of Health. The applicant gives an oral presentation to the HSDA members, which then issues a decision. This is just the beginning, as the applicant must submit progress reports until the proposed project is completed. The only changes to this process since the adoption of the new bill are to do with timing. The review cycle is now thirty days rather than sixty, and select deadlines are more generous, but no steps have been eliminated.[62] The HSDA goes on to list the criteria for review, which is ordered into three categories. The first is need, in which the HSDA provides certain factors upon which the need can be evaluated. These factors include the population served by the proposal, the utilization of services, and the extent to which Medicare or TennCare patients will be served by the project, among others. The second category is the provision of health care that meets quality standards. Unfortunately, a set of emergency rules dictating quality standards is still being drafted due to the pandemic. And the last category, which has been recently added, is that the effects attributed to competition or duplication must be positive for the consumer.[63]

[61] Ibid.
[62] TN HB0948 112th Gen. Ass. (2021).
[63] Elrod & Swearingen (2021).

Figure A: Tennessee's CON Approval Flowchart[64]



6. Reform Recommendations for Tennessee

The Tennessee CON reforms taking effect in 2021 are mostly a positive step in the right direction. Included in the bill is a provision stating that the director of the Health Services and Development Agency must submit a plan to consolidate the powers of the board with the Board of Licensing Health Care Facilities by 2023 to create a more streamlined and quicker application process. The bill, however, took a step in the wrong direction by increasing the annual fees for all providers, and most dramatically for hospitals.[65]

[64] Source: Health Services and Development Agency (2021).
[65] Waller Law (2021).

Perhaps the best reform would be to pursue a full repeal of all remaining CON laws. As the evidence reviewed above indicates, there is a strong consensus that CON laws often do not achieve their own stated goals, which may even be detrimental to them. A 2018 U.S. Department of Labor study concludes that "State policies that restrict entry into provider markets can stifle innovative and more cost-effective ways to provide care while limiting choice and competition. These policies have resulted in higher health care prices and fewer incentives for providers to improve quality. This report makes several recommendations to promote choice and competition in provider markets, including state action to repeal or scale back Certificate of Need laws…"[66] A 2004 Federal Trade and Department of Justice Commission Report, the Federal antitrust agencies, recommends the elimination of CON laws due to their anti-competitive nature.[67]

By leaving the expansion of services and facilities to healthcare investors risking their own money, policymakers would allow market competition to ascertain the needs of Tennessee communities. A lack of a competitive process would lead to an artificial restriction of healthcare according to the decisions of a regulatory board, overwhelmingly controlled by incumbent firms. Investors looking to expand healthcare would have the incentive to conduct market research and an analysis of the current competition before investing. They would retain the benefits if they were successful and would suffer the losses if they were not. This is the competitive market process that has driven innovation, lowered costs, and improved the lives of countless individuals around the world in and outside of healthcare.[68]

Research by the Mercatus Center at George Mason University suggests that removing CON across-the-board in Tennessee would save Tennesseans $233 per year in healthcare

[66] Azar, Mnuchin, and Acosta (2018).
[67] Department of Justice and the Federal Trade Commission (2004).
[68] Carden and McCloskey (2020); Cox and Alm (2000); Fogel (2004); Hall and Lawson (2014); Leeson (2010); McCloskey (2016); Mueller (1999); Mokyr (2002); Rosling (2018); Shleifer (2009); Strain (2020).

costs.[69] The study also estimates that the total number of hospitals and ambulatory surgical centers in Tennessee would increase by nearly 42 percent and 17 percent respectively, which would include an estimated 25 new rural hospitals and four new rural ambulatory surgical centers. The study also estimates that mortality rates for heart attacks, heart failure, and pneumonia would drop and that there would be an over 5 percent drop in post-surgery complications. Finally, the study also estimates that there would be a 4.6 percent increase in patients rating their hospital at least nine out of ten inpatient surveys.

If full repeal is not politically possible, Tennessee could repeal CON laws across-the-board and replace them with licensing provisions. Given a review of the empirical evidence, this might be appropriate for emergency health care centers, the only healthcare provision with strong evidence in favor of some restrictions. Licensing would retain some of the advantages of CON laws in emergency care centers without the negative effects of strict CON laws increasing wait times and reducing quality for emergency care. For instance, as Vivian Ho argues, to address the area where CON laws have been most effective in slowing investment and expenditures, in freestanding emergency departments, "states could instead develop licensing requirements without certificate of need to regulate entry of freestanding emergency departments."[70]

Under a license system, healthcare services can be provided as long as they meet the established requirements. A healthcare facility and services licensing regime would transparently provide a minimum set of standards and criteria that a new or extended facility or service would need to meet in order to get approval. A licensing system reduces the ability of incumbent firms to restrict welfare-enhancing competition, but still provides a regulatory

[69] Mitchell, Stratmann, Koopman, Baker, Bailey, and Wille (2020).
[70] Ho (2020).

structure for the industry. A recent example of this is Florida's repeal and move to such a system.[71]

Policymakers must be careful not to allow incumbent firms to have a heavy hand in determining the licensing requirements. Setting them unnecessarily high could artificially restrict healthcare competition, harming consumers. Policymakers must resist the urge to set standards so high that it will adversely impact the availability and affordability of healthcare for the indigent. A move to a licensing system over CON laws is a step in the right direction only if reasonable and uniform licensing requirements are adopted.

Policymakers can also look to implement various forms of partial repeal, including incremental removal of specific regulated healthcare services and facilities. There are a variety of ways this can be done. As a Mercatus Center study points out, the regulation that impacts vulnerable populations or procedures that are unlikely to be overprescribed provides a good starting point that is often politically feasible.[72] Tennessee, for instance, regulates capital expenditures pertaining to procedures that are unlikely to be overprescribed such as the burn unit and the neonatal intensive care units. Such procedures do not have the potential to be oversupplied, and thus, repealing CON legislation in this instance would be a common-sense reform step. In addition, policymakers could remove CON provisions for healthcare services and facilities that most other states with CON laws do not find necessary to regulate. Table 23[73] shows the remaining healthcare services and facilities that require some degree of CON oversight in Tennessee and shows how many other states also include that service or facility in their CON laws. Few other states require CON approval for burn care units, linear accelerator radiology, hospice, neonatal intensive care, home health, PET's, MRI's, or radiation therapy.

[71] Davis, Rogers, & Becker (2019).
[72] Mitchell, Amez-Droz, & Parsons (2020).
[73] Data comes from Mitchell, Philpot, and McBirney (2021). We updated Tennessee's CON provisions according to recent legislation effective in 2021.

Table 23: Comparison of CON Healthcare Service Coverage in Tennessee to the United States	
Healthcare Service Requiring CON Approval in Tennessee	**Other States Requiring CON Approval for Healthcare Service (2020)**
Burn Care	10
Linear Accelerator Radiology	14
Hospice	15
Neonatal Intensive Care	17
Organ Transplants	17
Home Health	18
Positron Emission Tomography (PET) Scanners	18
Magnetic Resonance Imaging (MRI) Scanners	19
Radiation Therapy	20
Open-Heart Surgery	21
Rehabilitation	23
Substance/Drug Abuse	23
Cardiac Catheterization	24
Long-Term Acute Care (LTAC)	24
Ambulatory Surgical Centers (ASC)	25
Hospital Beds (Acute, General, Med-Surg, etc.)	26
Intermediate Care Facilities (ICFs) for Individuals with Intellectual Disabilities	27
New Hospitals or Hospital-Sized Investments	28
Nursing Home Beds/Long-Term Care Beds	33

Policymakers could also provide relief from CON regulation to freestanding centers and providers such as outpatient surgical centers. Alternative providers such as these stand to gain the most from a more streamlined licensing model as they compete with larger hospitals for patients.

Tennessee would also benefit from sunset clauses on all remaining CON provisions, which set a scheduled end date for these programs to prompt legislators to periodically revisit and study the need for CON laws. By providing a set time for the expiration of their CON programs, these repeals would be met with less resistance when compared to a full or immediate repeal. Although as seen in Pennsylvania, the sunset clause was still be met with some resistance.[74]

Alternatively, legislators could implement a temporary elimination of CON provisions in certain areas on a trial basis. Rather than the indefinite expiration of legislation, regulations could be retired for a set amount of time and even for certain segments of the

[74] Longwell & Steele (2011).

state. This would provide a natural experiment to evaluate how the market responds devoid of CON regulation.

Another innovative approach that the Mercatus Center report outlines is making the repeal contingent on other state's reforms.[75] This is one of the most realistic approaches given that the burden falls on bordering states rather than lawmakers who could face potential backlash. And, because the State of Tennessee is influenced by its neighbor's choices, incumbents would have an incentive to repeal the regulation. There is evidence that patients who live in CON states are more likely to travel for care.[76] Knowing this, current providers would be aware of changes in other states and understand that such changes would make Tennessee more of a competitor among surrounding states. For instance, Arkansas, Louisiana, and Florida all have substantially fewer healthcare services covered by CON laws.

Additional minor reforms policymakers ought to explore include fee reduction, the elimination of certain criteria, and increased transparency; all of which Tennessee could greatly benefit from.[77] While the minimum fee requirement in Tennessee is $3,000, the maximum goes all the way up to $45,000.[78] Such a high fee schedule is another barrier faced by new entrants and only comes to hurt the average Tennessean. One possible reform, aside from just reducing these fees, would be a loser pay provision. If an incumbent healthcare facility opposed a new facility or expansion by a competitor and it was deemed that there was no basis to the challenged, the incumbent firm would be required to pay the legal and regulatory fees for the CON process.

Additionally, the Tennessee CON program includes a measure of utilization of services. There is no explanation for such a requirement as it is vital for providers to be able to accommodate patients. In places prone to natural disasters, including earthquakes and

[75] Mitchell, Amez-Droz, & Parsons (2020).
[76] Baker & Stratmann (2021).
[77] Mitchell, Amez-Droz, & Parsons (2020).
[78] Research and Planning Consultants, LP (2014).

tornadoes, or pandemics, providers should be ready to care for heightened demand to avoid a bed shortage. Such a requirement goes against the stated aim of adequately serving the population.

7. Conclusion

CON laws designed to protect patients with rising healthcare costs have not fulfilled their aim. The literature shows these programs have had little to no effect on cost, quality, and access. CON laws do not provide the benefits promised yet come with substantial costs. This is especially true in light of the possibility of global pandemics.

Building on the recent CON reforms undertaken in Tennessee, lawmakers should continue exploring options to enable a healthcare system to meet the needs of residents more effectively. Reforms offer the possibility of lifting regulatory burdens the artificially restrict the size and scope of our healthcare system. This would improve healthcare competition within the state, leading to decreased costs and improved access and quality for Tennesseans.

While a full repeal of CON laws—undertaken already by eleven other states—would benefit residents the most, this study offers a wide range of solutions and minor reforms as intermediate steps to return the provision of healthcare to market competition.

References

Anderson Keith B. and David I. Kass (1986). "Certificate of Need Regulation of Entry into Home Health Care." Report prepared for the Federal Trade Commission. Washington, DC: Bureau of Economics. Available online: https://www.ftc.gov/sites/default/files/documents/reports/certificate-need-regulation-entry-home-health-care/231954.pdf

Antel, John J., Robert L. Ohsheldt, and Edmund R. Becker (1995). "State Regulation and Hospital Costs," *The Review of Economics and Statistics* 77(3): 416-422.

Azar, Alex M., Steve T. Mnuchin, and Alexander Acosta (2018). "Reforming America's Healthcare System Through Choice and Competition," U.S. Department of Health and Human Services, U.S. Department of the Treasury, and the U.S. Department of Labor. Available online: https://www.hhs.gov/sites/default/files/Reforming-Americas-Healthcare-System-Through-Choice-and-Competition.pdf

Bailey, James (2018). "The Effect of Certificate of Need Laws on All-Cause Mortality." *Health Serv Res.*, 53(1): 49-62.

Bailey, James (2019). "Can Health Spending Be Reined in Through Supply Constraints? An Evaluation of Certificate-of-Need Laws," *Journal of Public Health* 27: 755-60.

Bailey, James, Thanh Lu, and Patrick Vogt (2021). "Certificate of Need and Substance Use Treatment," SSRN Working Paper. Available online: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3757059

Baker, Matthew C., and Thomas Stratmann. 2021. "Barriers to entry in the healthcare markets: Winners and Losers from certificate-of-need laws." *Socio-Economic Planning Sciences* 77.

Banks, Dwayne A., Stephen E. Foreman, and Theodore E. Keeler (1999). "Cross-Subsidization in Hospital Care: Some Lessons from the Law and Economics of Regulation," *Health Matrix* 9(1): 1-35.

Bates, Laurie J., Kankana Mukherjee, and Rexford E. Santerre (2006). "Market Structure and Technical Efficiency in the Hospital Services Industry," *Medical Care Research and Review* 63(4): 499-524.

Beaulieu, Nancy D., Leemore S. Dany, Bruce E. Landon, Jesse B. Dalton, Ifedayo Kuye, and J. Michael McWilliams (2020). "Changes in Quality of Care after Hospital Mergers and Acquisitions," *New England Journal of Medicine* 382: 51-59.

Brent, Michael D., Christopher C. Puri, Stephanie M. Hoffmann, and Janus Pan (2021). "Tennessee Legislature Passes Sweeping Changes to CON Law," Bradley. Available online: https://www.bradley.com/insights/publications/2021/06/tennessee-makes-major-changes-to-con-law#:~:text=Economically%20Distressed%20Eligible%20Counties%20%2D%20In,the%20state%20Department%20of%20Economic

Browne, James A., Jourdan M. Cancienne, Aaron J. Casp, Wendy M. Novicoff, and Brian C. Werner (2018). "Certificate-of-Need State Laws and Total Knee Arthroplasty," *Health Policy & Economics* 33(7): 2020-2024.

Campbell, Ellen S. and Gary M. Furnier (1993). "Certificate-of-Need Deregulation and Indigent Hospital Care," *Journal of Health Politics, Policy and Law* 18(4): 905-925.

Cancienne, Jourdan M., Robert Browning, and Emmanuel Haug (2021). "Certificate-of-Need Programs Are Associated with a Reduced Incidence, Expenditure, and Rate of Complications with Respect to Knee Arthroscopy in the Medicare Population," *The Musculoskeletal Journal of Hospital for Special Surgery* 16(2): 264-271.

Carden, Art and Deidre McCloskey (2020). *Leave Me Alone and I'll Make You Rich*. University of Chicago Press.

Carlson, Melissa D.A., Elizabeth Bradley, Quinling Du, and R. Sean Morrison (2010). "Geographic Access to Hospice in the United States," *Journal of Palliative Medicine* 13(11): 1331-1338.

Casp, Aaron J., Nicole E. Durig, Jourdan M. Cancienne, Brian C. Werner, and James A. Browne (2019). "Certificate-of-Need State Laws and Total Hip Arthroplasty," *The Journal of Arthroplasty* 34(3): 401-407.

Caudill, Steven B., Jon M. Ford, and David L. Kaserman (1995). "Certificate-of-Need Regulation and the Diffusion of Innovations: A Random Coefficient Model," *Journal of Applied Econometrics* 10(1): 73-78.

Chiu, Kevin (2021). "The Impact of Certificate of Need Laws on Heart Attack Morality: Evidence from County Borders," *Journal of Health Economics*, forthcoming.

Chui, Philip W., Craig S. Parzynski, Joseph S. Ross, Nihar R. Desai, Hitinder S. Gurm, John A. Spertus, Arnold H. Seto, Vivian Ho, and Jeptha P. Curtis (2019). "Association of Statewide Certificate of Need Regulations with Percutaneous Coronary Intervention Appropriateness and Outcomes," *Journal of the American Heart Association* 8(2).

Conover, Christopher J. and James Bailey (2020). "Certificate of Need Laws: A Systematic Review and Cost-Effectiveness Analysis," *BMC Health Services Research* 20: 748.

Conover, Christopher J., and Frank A. Sloan (1998). "Does removing certificate-of-need regulations lead to a surge in health care spending?" *J Health Polit Policy Law*, 23(3): 455-81.

Cosby, Courtney (2011). "Analyzing the Association of Certificate of Need Regulations on Volume and Quality Indicators for Heart and Kidney Transplantation," VCU Dissertation. Available online: https://scholarscompass.vcu.edu/cgi/viewcontent.cgi?article=3356&context=etd

Cox, Michael W. and Richard Alm (2000). *Myths of the Rich and Poor*. Basic Books.

Cutler, David M., Robert S. Huckman, and Jonathan T. Kolstad (2010). "Input Constraints and the Efficiency of Entry: Lessons from Cardiac Surgery," *American Economic Journal: Economic Policy* 2(1): 51-76.

David, Guy, Richard Lindrooth, Lorens A. Helmchen, and Lawton R. Burns (2014). "Do Hospitals Cross Subsidize?" *Journal of Health Economics* 37(C): 198-218.

Davis, Gary Scott, Adam J. Rogers, and Carole M. Becker. 2019. "Florida Repeals Significant Portions of Certificate of Need Law." *Natlawreview.com*, July 1.

Degen, Ryan M., Jourdan M. Cancienne, and Brian C. Werner (2019). "Do Certificate of Need Regulations Impact Total Shoulder Arthroplasty Volumes and Associated Complication Rates?" *The Physician and Sportsmedicine* 47(3): 357-363.

Denduluri, Sahitya K., Allison Roe, Abiram Bala, Nathaniel Fogel, Chason Ziino, and Robin N. Kamal (2021). "The Impact of Certificate of Need Status on the Utilization and Reimbursement of Open and Endoscopic Carpel Tunnel Release," *Journal of Surgerical Orthopaedic Advances* 30(2): 90-92.

Department of Justice and the Federal Trade Commission (2004). "Improving Health Care: A Dose of Competition. Available online: https://www.ftc.gov/sites/default/files/documents/reports/improving-health-care-dose-competition-report-federal-trade-commission-and-department-justice/040723healthcarerpt.pdf

DiSesa, Verdi J., Sean M. O'Brien, Karl F. Welke, Sarah M. Beland, Constance K. Haan, and Mary S. Vaughan-Sarrazin (2006). "Contemporary Impact of State Certificate-of-Need Regulations for Cardiac Surgery," *Circulation* 114(20): 2122-2129.

Eakin, B. Kelly (1991). "Allocative Inefficiency in the Production of Hospital Services," *Southern Economic Journal* 58(1): 240-248.

Eichmann, Traci L. and Rexford Santerre (2011). "Do Hospital Chief Executive Officers

Extract Rents from Certificate of Need Laws?" *Journal of Health Care Finance* 37(4): 1-14.

Elrod, Dan and Travis Swearingen. 2021. "Tennessee Reforms Certificate of Need Process and Coverage." *Jdsupra.com*, July 20.

Erickson, Angela C. (2021). "States are Suspending Certificate of Need Laws in the Wake of COVID-19 But the Damage Might Already Be Done," Pacific Legal Foundation. Available online: https://pacificlegal.org/certificate-of-need-laws-covid-19/

Ettner, Susan, Jacqueline Zinn, Haiyong Xu, Heather Ladd, Eugene Nuccio, Dara H. Sorkin, and Dana B. Mukamel 2020). "Certificate of Need and the Cost of Competition in Home Healthcare Markets," *Home Health Care Services Quarterly* 39(2): 51-64.

Falchook, Aaron David and Ronald C. Chen (2014). "Association Between Certificate of Need (CON) Legislation and Radiotherapy Use Among Elderly Patients with Early Cancers," *Journal of Clinical Oncology* 32(30).

Fayissa, Bichaka, Saleh Alsaif, Fady Mansour, Tesa E. Leonce, and Franklin G. Mixon, Jr. (2020). "Certificate-of-Need Regulation and Healthcare Service Quality: Evidence from the Nursing Home Industry," *Healthcare* 8(4): 423.

Ferrier, Gary D., Hervé Leleu, Vivian G. Valdmanis (2010). "The Impact of CON Regulation on Hospital Efficiency," *Health Care Management Science* 13: 84-100.

Fraze, Taress, Anne Elixhauser, and Laurel Holmquist (2008). "Public Hospitals in the United States," Healthcare Cost and Utilization Project Statistical Brief #95. Available online: https://www.hcup-us.ahrq.gov/reports/statbriefs/sb95.pdf

Fogel, Robert William (2004). *The Escape from Hunger and Premature Death, 1700-2100*. Cambridge University Press.

Ford, Jon M. and David L. Kaserman (1993). "Certificate-of-Need Regulation and Entry: Evidence from the Dialysis Industry," *Southern Economic Journal* 59(4): 783-791.

Fournier, Deborah, Adney Rakotoniaina, and Johanna Butler. 2020. "Anticipating Hospital Bed Shortages, States Suspend Certificate of Need Programs to Allow Quick Expansions." *nashp.org*, April 6.

Garrison, Robert (2021). "Why Rural Hospitals in Colorado are Faring Better than Expected Amid the Pandemic," TheDenverChannel.com. Available online: https://www.thedenverchannel.com/rebound/why-rural-hospitals-in-colorado-are-faring-better-than-expected-amid-the-pandemic.

Gaynor, Martin, Kate Ho, and Robert Town (2015). "The Industrial Organization of Heatlh-Care Markets," *Journal of Economic Literature* 53(2): 235-284.

Ghosh, Sriparna, Agnitra Roy Choudhury, and Alicia Plemmons (2020). "Certificate-of-Need Laws and Healthcare Utilization During COVID-19 Pandemic," SSRN Working Paper: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3663547

Gooch, Rebecca A. and Jeremey M. Kahn (2014). "ICU Bed Supply, Utilization, and Health Care Spending," *JAMA Viewpoint* 311(6): 567-568.

Grabowski, David C., Robert L. Ohsfeldt, and Michael A. Morrisey (2003). "The Effects of CON Repeal on Medicaid Nursing Home and Long-Term Care Expenditures," *Inquiry: The Journal of Health Care Organization, Provision, and Financing* 40: 146-157.

Granderson, Gerald (2010). "The Impact of Hospital Alliance Membership, Alliance Size, and Repealing Certificate of Need Regulation, On the Cost Efficiency of Non-Profit Hospitals," *Managerial and Decision Economics* 32(3): 159-173.

Gutierrez, Catherine, Rachel A. Lindor, Olesya Baker, David Cutler, and Jeremiah D. Schuur (2016). "Emergency Departments Varies Widely, Affecting Location, Growth, and Services Provided," *HealthAffairs* 35(19).

Hall, Joshua C. and Robert A. Lawson (2014). "Economic Freedom of the World: An

Accounting of the Literature," *Contemporary Economic Policy* 32(1): 1-19.
Harrington, Charlene, Sharee Anzaldo, Anna Burdin, Martin Kitchener, and Nancy Miller (2008). "Trends in State Certificate of Need and Moratoria Programs for Long-Term Care Providers," *Journal of Health & Social Policy* 19(2): 31-58.
Harrington, Charlene, James H. Swan, John A. Nyman, and Helen Carrillo (1997). "The Effect of Certificate of Need and Moratoria Policy on Change in Nursing Home Beds in the United States," *Medical Care* 35(6): 574-588.
Health Services and Development Agency. 2021. "Certificate of Need Basics." *https://www.tn.gov/content/dam/tn/hsda/documents/con_process_flow_chart2014.pdf*.
Hellinger, Fred J. (1976). "The Effect of Certificate-of-Need Legislation on Hospital Investment," *Inquiry* 13(2): 187-193.
Hellinger, Fred J. (2009). "The Effect of Certificate-of-Need Laws on Hospital Beds and Healthcare Expenditures: An Empirical Analysis," *The American Journal of Managed Care* 15(10).
Herb, Joshua, Rachel T. Wolff, Philip M. McDaniel, G. Mark Holmes, Tervor J. Royce, and Karyn B. Stitzenberg (2021). "Travel Time to Radiation Oncology Facilities in the United States and the Influence of Certificate of Need Policies," *International Journal of Radiation Oncology*Biology*Physics* 109(2): 344-351.
Ho, Vivian (2004). "Certificate of Need, Volume, and Percutaneous Transluminal Coronary Angioplasty Outcomes," *American Heart Journal* 147(3): 442-448.
Ho, Vivian (2006). "Does Certificate of Need Affect Cardiac Outcomes and Costs?" *International Journal of Health Care Finance and Economics* 6: 300-324.
Ho, Vivian (2020). "Revisiting States' Experience with Certificate of Need," *JAMA* Editorial. 324(20): 2033-2035.
Ho, Vivian and Meei-Hsiang Ku-Goto (2013). "State Deregulation and Medicare Costs for Acute Cardiac Care," *Medical Care Research and Review* 70(2): 185-205.
Ho, Vivian, Meei-Hsiang Ku-Goto, and James G. Jollis (2009). "Certificate of Need (CON) for Cardiac Care: Controversy Over the Contributions of CON." *Health Serv Res.*, 44(2 Pt 1): 483-500.
Ho, Vivian, Joseph S. Ross, Brahmajee Nallamouthu, and Harlan M. Krumholz (2007). "Cardiac Certificate of Need Regulations and the Availability and Use of Revascularization Services," *American Heart Journal* 154(4): 767-775.
Ho, Vivian, Leanne Metcalfe, Cedric Dark, Lan Vu, Ellerie Weber, George Shelton, Jr., and Howard R. Underwood (2017). "Comparing Utilization and Costs of Care in Freestanding Emergency Departments, Hospital Emergency Departments, and Urgent Care Centers," *Annals of Emergency Medicine* 70(6): 846-857.
Ho, Vivian, Yingying Zu, and Murtaza Akhter (2019). "Freestanding Emergency Department Entry and Market-level Spending on Emergency Care," Academic Emergency Medicine 26(11): 1221-1231.
Jacobs, Bruce L., Yun Zhang, and Brent K. Hollenback (2012). "131 Certifiate of Need Laws and the Diffusion of Intensity-Modulated Radiotherapy," *The Journal of Urology* 4S: e54.
Jacobs, Bruce L., Yun Zhang, Ted A. Skolarus, John T. Wei, James E. Montie, Florian R. Schroeck, Brent K. Hollenbeck (2012). "Certificate of Need Regulations and the Diffusion of Intensity-Modulated Radiotherapy," *Urology* 80(5): 1015-1020.
Kahn, Jeremy M., Rachel Werner, Shannon S. Carson, and Theodore J. Iwashyna (2012). "Variation in Long-Term Acute Care Hospital Use After Intensive Care," *Medical Care Research and Review* 69(3): 339-350.
Khanna, Abhinav, Jim C. Hu, Xiangmei Gu, Paul L. Nguyen, Stuart Lipsitz, and Ganesh S.

Palapattu (2012). "Certificate of Need Programs, Intensity Modulated Radiation Therapy Use and the Cost of Prostate Cancer Care," *The Journal of Urology* 189(1): 75-79.

Kim, Sung, Akshar N. Patel, Carl Nelson, Shunhua Shen, Tina Mayer, Dirk F. Moore, Grave L. Lu-Yao (2016). "Does Certificate of Need Minimize Intensity Modulated Radiation Therapy Use in Patients with Low Risk Prostate Cancer?" *UrologyPractice* 3(5): 342-348.

Koopman, Christopher and Thomas Stratmann (2015). "Certificate-of-Need Laws: Implications for Tennessee," Mercatus Center. Available online: https://www.mercatus.org/publications/regulation/certificate-need-laws-implications-tennessee

Koopman, Christopher, Thomas Stratmann, and Mohamed Elbarasse (2015). "Certificate-of-Need Laws: Implications for Michigan," Mercatus on Policy. Available online: https://www.mercatus.org/system/files/Elbarasse-Certificate-of-Need-MI-MOP.pdf

Kosar, Cyrus M., and Momotazur Rahman. 2021. "Early Acceleration of COVID-19 in Areas with Larger Nursing Homes and Certificate of Need Laws." *Journal of General Internal Medicine*, 36(4): 990-997.

Lanning, Joyce A., Michael A. Morrisey, and Robert L. Ohsfeldt (1991). "Endogenous hospital regulation and its effects on hospital and non-hospital expenditures." *Journal of Regulatory Economics*, 3 (June): 137-154.

Leeson, Peter T. (2010). "Two Cheers for Capitalism?" *Society* 47: 227-233.

Lindley, Lisa C. and Sheri L. Edwards (2014). https://journals.sagepub.com/doi/full/10.1177/1049909114543641?casa_token=VRWdu_4x_-YAAAAA%3AAiE2u00oJNl6L2IGHwZlQgDGpZZjPYVlnfV0O-uei4I_P1ScteajwdG9-gGnA3fFrrBth7j1HIMfFA

Longwell, Carol Brayshaw and James T. Steele Jr. 2011. "The Rise and Fall of Certificate of Need In Pennsylvania: An Experiment in Health Care Planning and the Role of the Commonwealth Court." *Widener Law Journal*, 21(1): 185-212.

Lorch, S. A., P. Maheshwari, and O. Even-Shoshan (2012). "The Impact of Certificate of Need programs on Neonatal Intensive Units," *Journal of Perinatology* 32: 39-44.

Lu-Yao, Grace, Carl Nelson, Shunhua Shen, Yu-Hsuan Shao, Hui Li, Tina M. Mayer, Dirk Moore, and Sung Kim (2013). "Certificate of Need and Use of IMRT in Elderly Patients with Low-Risk Prostrate Cancer," *Journal of Clinical Oncology* 31(6).

McCloskey, Deirdre N. (2016). *Bourgeois Equality*. Chicago University Press.

Miller, Nancy A., Charlene Harrington, and Elizabeth Goldstein (2002). "Access to Community-Based Long-Term Care: Medicaid's Role," *Journal of Aging and Health* 14(1): 138-159.

Mitchell, Matthew D., 2016. "Do Certificate-of-Need Laws Limit Spending?" Mercatus Center working paper, September 29.

Mitchell, Matthew D. 2021. "It's Time for States to Ditch Certificate of Need Laws," U.S. News & World Report. Available online: https://www.usnews.com/news/best-states/articles/2021-07-09/on-the-heels-of-the-pandemic-states-should-get-rid-of-certificate-of-need-laws

Mitchell, Matthew D., Elise Amez-Droz, and Anna K. Parsons. 2020. "Phasing Out Certificate-of-Need Laws: A Menu of Options." Mercatus Center policy brief, February.

Mitchell, Matthew D., Anne Philpot, and Jessica McBirney. 2021. "CON Laws in 2020: About the Update." *Mercatus.org*, February 19.

Mitchell, Matthew D., Thomas Stratmann, and James B. Bailey (2020). "Raising the Bar:

ICU Beds and Certificates of Need," Mercatus Special Edition Policy Brief. Available online: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3590714

Mitchell, Matt, Thomas Stratmann, Christopher Koopman, Matthew C. Baker, James Bailey, and David Wille (2020). "Certificate-of-Need Laws: Tennessee," Mercatus Center. Available online: https://www.mercatus.org/publications/certificate-need-laws-tennessee-0

Mokyr, Joel (2002). *The Gifts of Athena*. Princeton University Press.

Mueller, John (1999). *Capitalism, Democracy, & Ralph's Pretty Good Grocery*. Princeton University Press.

Myers, Molly S. and Kathleen M. Sheehan (2020). "The Impact of Certificate of Need Laws on Emergency Department Wait Times," *The Journal of Private Enterprise* 35(1): 59-75.

National Conference of State Legislators. 2019. "CON-Certificate of Need State Laws." *Ncsl.org*, December 1.

Nelson, C., S. Kim, S. Shen, Y. Shao, T. Mayer, D. Moore, and G. Lu-Yao (2012). "Certificate of Need (CON) Status and Its Impact on Overtreatment of Low-risk Prostate Cancer in the Elderly," *International Journal of Radiation Oncology* 84(3): S123-S124.

Ni, Huan, Jomon Aliyas Paul, Aniruddha Bagchi (2017). "Effect of Certificate of Need Law on the Intensity of Competition: The Market for Emergency Care," *Socio-Economic Planning Sciences* 60: 34-48.

Noether, Monica (1988). "Competition Among Hospitals," *Journal of Health Economics* 7(3): 259-284.

Nyman, J. A. (1985), "Prospective and "Cost-Plus" Medicaid Reimbursement, Excess Demand, and the Quality of Nursing Home Care," *Journal of Health Economics* 4(3): 237-59.

Ohlausen, Maureen K. (2015). "Certificate of Need Laws: A Prescription for Higher Costs," *Antitrust* 30(1): 50-54.

Ohsfeldt, Robert L. and Pengxiang Li (2018). "State Entry Regulation and Home Health Agency Quality Ratings," *Journal of Regulatory Economics* 53: 1-19.

Paul, Jomon, Huan Ni, and Aniruddha Bagchi (2014). "Effects of Certificate of Need Law on Emergency Department Length of Stay," *Journal of Emergency Medicine* 47(4): 453-461.

Polsky, Daniel, Guy David, Jianing Yang, Bruce Kinosian, and Rachel Werner (2014). "The Effect of Entry Regulation in the Health Care Sector: The Case of Home Health," *Journal of Public Economics* 1(110): 1-14.

Popescu, Ioana, Mary S. Vaughan-Sarrazin, and Gary E. Rosenthal (2006). "Certificate of Need Regulations and Use of Coronary Revascularization After Acute Myocardial Infarction," *JAMA* 295(18): 2141-2147.

Rahman, Momotazur, Omar Galarraga, Jacqueline S. Zinn, David C. Grabowski, and Vincent Mor. 2016. "The Impact of Certificate-of-Need Laws on Nursing Home and Home Health Care Expenditures." *Med Care Res Rev.*, 73(1): 85-105.

Research and Planning Consultants, LP. 2014. "Tennessee: Certificate of Need (CON) Overview." *Rpcconsulting.com*, February.

Rivers, Patrick A., Myron D. Fottler, and Jemima A. Frimpong (2010). "The Effects of Certificate of Need Regulation on Hospital Costs," *Journal of Health Care Finance* 36(4): 1-16.

Rivers, Patrick A., Myron D. Fottler, and Mustafa Zeedan Younis (2007). "Does Certificate of Need Really Contain Hospital Costs in the United States," *Health Education Journal* 66(3): 229-244.

Robinson, Jamie L., David B. Nash, and Elizabeth Moxey (2001). "Certificate of Need and the Quality of Cardiac Surgery," *American Journal of Medical Quality* 16(5): 155-160.

Rosko, Michael D. and Ryan L. Mutter (2014). "The Association of Hospital Cost-Inefficiency with Certificate-of-Need Regulation," *Medical Care Research Review* 7 1(3): 280-298.

Rosling, Hans (2018). *Factfulness*. Flatiron Books.

Ross, Joseph R., Vivian Ho, Yongfei Wang, Stephen S. Cha, Andrew J. Epstein, Frederick A. Masoudi, Brahmajee K. Nallamothu, and Harlan M. Krumholz (2007). "Certificate of Need Regulation and Cardiac Catheterization Appropriateness After Acute Myocardial Infarction," *Circulation* 115(8): 1012-1019.

Salkever, David S., and Thomas W. Bice (1976). "The Impact of Certificate-of-Need Controlson Hospital Investment." *Milbank Memorial Fund Quarterly. Health and Society*, 54(2): 185-214.

Schultz, Olivia A., Lewis Shi, and Michael Lee (2021). "Assessing the Efficacy of Certificate of Need Laws Through Total Joint Arthroplasty," *Journal of Healthcare Quality* 43(1): e1-e7.

Fric-Shamji, Elana C. and Mohammed F. Shamji (2008). "Impact of US State Government Regulation in Patient Access to Elective Surgical Care," *Clinical and Investigative Medicine* 31(5): e236-e241.

Fric-Shamji, Elana C. and Mohammed F. Shamji (2010). "Effects of US State Certificate of Need Regulation on Operating Rooms on Surgical Resident Training," *Clinical and Investigative Medicine* 33(2): e78.

Shleifer, Andrei (2009). "The Age of Milton Friedman," *Journal of Economic Literature* 47(1): 123-135.

Short, Marah N., Thomas A. Aloia, and Vivian Ho (2008). "Certificate of Need Regulations and the Availability and Use of Cancer Resections," *Annals of Surgical Oncology* 15: 1837-1845.

Simpson, James B. 1985. "State Certificate-of-Need Programs: The Current Status." *American Journal of Public Health*, 75(10): 1225-1229.

Simpson, James B. 1986. "Full Circle: The Return of Certificate of Need Regulation of Health Facilities to State Control." *Indiana Law Review*, 19(4): 1079.

Silveira, Maria J., Stephen R. Connor, Susan D. Goold, Lawrence F. McMahon, and Chris Feudtner (2011). "Community Supply of Hospice: Does Wealth Play a Role?" *Journal of Pain and Symptom Management* 42(1): 76-82.

Sloan, Frank A. (1988). "Containing Health Expenditures: Lessons Learned from Certificate-of-Need Programs." In *Cost. Quality, and Access in Health Care: New Roles for Health Planning in a Competitive Environment*, edited by Frank A. Sloan, et al. San Francisco: Jossey-Bass Publishers, Chapter 3

Sloan, Frank A. and Bruce Steinwald (1980). "Effects of Regulation on Hospital Costs and Input Use," *The Journal of Law and Economics* 23(1): 81-109.

Sridharan, Mathangi, Azeem Tariq Malik, Frank M. Phillips, Shedon Retchin, Wendy Zu, Elizabeth Yu, Safdar N. Khan (2020). "Certificate-of-Need State Laws and Elective Posterior Lumbar Fusions: Is It Time to Repeal the Mandate?" *World Neurosurgery* 144: e495-e499.

Strain, Michael R. (2020). *The American Dream is Not Dead*. Templeton Press.

Stratmann, Thomas and Christopher Koopman (2018). "Entry Regulation and Rural Health Care: Certificate-of-Need Laws, Ambulatory Surgical Centers, and Community Hospitals," Mercatus Working Paper: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3191476

Stratmann, Thomas and Steven Monaghan (2017). "The Effect of Interest Group Pressure on Favorable Regulatory Decisions," Mercatus Working Paper. Available online: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3046838

Stratmann, Thomas and Jacob Russ (2018). "Do Certificate-of-Need Laws Increase Indigent Care?" Mercatus Working Paper: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3211637

Stratmann, Thomas, and David Wille. 2018. "Certificate-of-Need Laws and Hospital Quality." Mercatus Center working paper, July 12.

Swan, James and Charlene Harrington (2008). "Certificate of Need and Nursing Home Bed Capacity in States," *Journal of Health & Social Policy* 2(2).

Vaughan-Sarrazin, Mary S., Edward L. Hannan, Carol J. Gormley, and Gary E. Rosenthal. 2002. "Mortality in Medicare beneficiaries following coronary artery bypass graft surgery in states with and without certificate of need regulation." *JAMA*, 288(15): 1859-66.

Waller Law. 2021. "Tennessee revises Certificate of Need (CON) requirements." *Wallerlaw.com*, May 14.

Wendling, Wayne and Jack L. Werner (1980). "Nonprofit Firms and the Economic Theory of Regulation," *Quarterly Review of Economics and Business* 20: 7-18.

Yuce, Tarik K., Jeanette W. Chung, Cynthia Barnard, and Karl Y. Bilimoria (2020). "Association of State Certificate of Need Regulation With Procedural Volume, Market Share, and Outcomes Among Medicare Beneficiaries," *JAMA* 324(20): 2058-2068.

Ziino, Chason, Abiram Bala, and Ivan Cheng (2020a). "Does ACDF Utilization and Reimbursement Change Based on Certificate of Need Status?" *Clinical Spine Surgery* 33(3): E92-E95.

Ziino, Chason, Abiram Bala, and Ivan Cheng (2020b). "Does Certificate-of-Need Status Impact Lumbar Microdecompression Reimbursement and Utilization? A Retrospective Database Review," *Current Orthopaedic Practice* 31(1): 85-89.

Ziino, Chason, Abiram Bala, and Ivan Cheng (2021). "Utilization and Reimbursement Trends Based on Certificate of Need in Single-level Cervical Discectomy," *Journal of the American Academy of Orthopaedic Surgeons* 29(10): e518-e522.