



November 17, 2023

**Statement before Kentucky General Assembly
Special Committee Certificate of Need Task Force**

**Re: Opportunity for Testimony—Consideration of Kentucky’s Certificate of Need Law
Testimony of Laura D’Agostino, Attorney, Pacific Legal Foundation**

To: Chairman Webber, Chairman Douglas, and members of the Special Committee Certificate of Need Task Force:

My name is Laura D’Agostino, and I appreciate the opportunity to testify before this dedicated Committee on an issue impacting people across the Bluegrass State. I am an attorney at the Pacific Legal Foundation, a nonprofit law firm with 17 Supreme Court wins dedicated to advancing individual rights. This Committee stands at a critical juncture in Kentucky’s history—you have the opportunity to end a system that has impeded access to healthcare for your constituents for decades. More than 4 decades ago, the federal government incentivized Certificate of Need (CON) laws in states under a misguided attempt to ensure higher quality of care by restricting growth. It quickly reversed course, yet some states continue to subject themselves to an unproductive method of regulation.

As task force members, you have invested a great deal of time, energy, and effort to hear testimony about CON laws. I hope to highlight helpful points and underscore information that is imperative for your deliberations.

On a personal level, I have seen firsthand what happens when systems remain in place that prevent people like PLF’s client Phillip Truesdell from serving their local communities—the most vulnerable are ultimately the ones further marginalized. I am originally from a small fishing town in Italy. For the majority of my town’s history, people have suffered from lack of access to essential services, and even if they can arrange transportation to the nearest city, the health care system is overburdened, wait times are high, and service is poor. Compounding this problem are economic regulations so hostile to businesses that those seeking to provide medical assistance face a nearly insurmountable bureaucracy—resulting in talented people leaving the area and existing providers within the market doing everything possible to keep things that way. That European laws are archaic is not surprising, but that American laws prevent access to care and stifle innovation is unacceptable.

CON laws embody these same elements under the guise of allegedly furthering public health access, but the data clearly demonstrates the opposite. Forty years of research have shown that CON laws fail to provide



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an adequate supply of healthcare resources and are associated with greater racial disparities in access to care, increases in healthcare costs, and decreases in the quality of that healthcare. In fact, nearly every study done looking at supply and access to care find that there are fewer service providers and services offered in CON states than in non-CON states.ⁱ

During the course of PLF’s own legal challenge to CON laws that prevent Philip Truesdell from providing ambulance services to Kentucky citizens, the Cabinet for Health and Family Services admitted that the state is suffering from an ambulance shortage from which people are dying. The Cabinet and the for-profit ambulance company that joined its defense of the CON program never explained the connection between saving taxpayer money and ensuring access to emergency services. Kentucky is one of just 7 states that imposes a form of need review on ambulances and there is no evidence that emergency services in states without review are suffering without this scheme.

Moreover, according to Dr. Matthew Mitchell, whose current working paper summarizes 85 peer reviewed analyses on the effect of need review laws across diverse medical fields, “...the average patient in a CON state has access to 30 percent fewer hospitals; 14 percent fewer ambulatory surgery centers (Acs); 30 percent fewer *rural* hospitals; 13 percent fewer *rural* ASCs; 25 percent fewer open-heart surgery programs; 45 percent fewer facilities offering coronary artery bypass grafts...” and so forth. Patients in CON review states have access to fewer imaging devices and fewer hospital beds.”ⁱⁱⁱ

These findings are especially concerning given that Kentucky has a higher-than-average number of technologies and procedures that are regulated by CON. The decrease in access and quality of care is especially prevalent in Kentucky because ambulances and birth centers are subject to CON. The pandemic highlighted the detrimental impacts of these laws. Right from the onset in 2020, “Kentucky’s CON laws have been adjusted three different times to keep up with demand from public health emergencies, exposing how inflexible... CON laws are.”ⁱⁱⁱ Moreover, Kentucky actually expanded facilities without CON during this time, and more than 24 states modified or suspended their CON laws. But Kentucky’s CON problems long predate the pandemic. For example, in a 2018 report, urban counties in the Commonwealth had 25% fewer ambulance providers than other nearby states.

And, a 2020 report showed Kentucky as one of only 8 states to require CONs across six broad categories—hospital beds, beds outside hospitals, equipment, facilities, services and emergency medical transportation. Kentucky maintains 45 independent CON requirements, although it also has 40 exceptions that apply to things like primary care centers, rural health clinics and most mobile clinics. *See* Ky. Rev. Stat. § 216B.020. The state failed to issue any formal guidance or otherwise suspend any CON requirements in response to COVID-19, but it maintains a general emergency CON regulation that allows for temporary expansions without CONs in limited circumstances.

Since 2017, PLF’s client, Phillip Truesdell, and his children have been providing ambulance services in Ohio, just minutes across the border from Northern Kentucky. A native of Northern Kentucky, Philip has a strong desire to expand his business to help his friends and neighbors in the Commonwealth – particularly in an area where distance is an impediment to accessibility.

However, he has been prevented from doing so by Kentucky’s CON requirements, which have allowed other ambulance providers to object to his work in the state, on no basis other than their dislike of competition. Phillip’s company has received hundreds of requests from Kentuckians who need transport to essential healthcare visits, but until recently Philip was arbitrarily prevented from driving them out of the state and conducting business solely within the state.



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Thanks to a recent Sixth Circuit decision, Phillip is now allowed to offer services to those who need to leave the state, but the federal Court left it in the hands of the state legislature to address their intrastate problem—highlighting the need to do so. *See Truesdell v. Friedlander*, 80 F.4th 762, 776 (6th Cir. 2023) (“Kentuckians instead should seek to fix these in-state costs through the in-state ‘political process’”). This committee has the opportunity to do just that and fill the gap on ambulance and other necessary, life-saving healthcare services for patients in all areas of the state.

The data plainly demonstrates that CON laws are detrimentally impacting people across the Commonwealth. Ambulance services are just one example: Kentucky is one of only 4 states to use CON to regulate ambulances. While the discrepancies between urban and rural wait times are huge, both are suffering under CON and significantly above average. As legislators on this committee, you have been tasked with important, hard work identifying paths to protecting patients in your state—but I firmly believe that the issue before you today is manageable and able to be addressed.

First steps toward eliminating this destructive scheme can include measures like repealing the competitor’s veto from the CON process and implementing strict deadlines for a neutral application review process. *The protest or veto component of CON is counterproductive to improving quality on its face since a competing provider will always object.* These two changes alone would help make great strides in fostering a system that better serves constituents, particularly those in rural communities. Moreover, to the extent that CON laws are delineated within health-related statutes, work can be done to ensure those statutes remain in place while the CON clauses are repealed.

This Committee has the opportunity to remove the barriers to healthcare that have resulted in the loss of 4 rural Kentucky hospitals^{iv} while maintain reasonable regulations that allow providers to help the people of this great Commonwealth. I am available to answer any questions or concerns and I appreciate your time.

Sincerely,

LAURA D'AGOSTINO
Attorney, Pacific Legal Foundation



Citations

ⁱ Institute for Justice, Conning the Competition, August 19 2020, available at: <https://ij.org/report/conning-the-competition/>.

ⁱⁱ Matthew Mitchell, Certificate of Need Laws in Healthcare, November 2, 2023, working paper attached to written testimony. *See also* Appellants' Opening Br. at 28–29, *Phillip Truesdell, et al. v. Eric Friedlander, et al.*, No. 22-5808 (6th Cir. Nov. 1, 2022).

ⁱⁱⁱ Institute for Justice, Striving for Better Care: A Review of Kentucky's Certificate of Need Laws, August 2023, available at: <https://ij.org/report/striving-for-better-care/con-laws-during-recent-public-health-emergencies/>.

^{iv} UNC Rural Health Research Program, Rural Hospital Closures, last accessed Nov. 17, 2023, available at: <https://www.shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures/>.

Certificate of Need Laws in Health Care: A Comprehensive Review of the Literature¹

Matthew D. Mitchell²

November 2, 2023

Certificate of need (CON) laws limit the supply of health care services in about two-thirds of U.S. states. The regulations require those who wish to open or expand their facilities to first prove to a regulator that their services are needed. Once encouraged by the federal government, Congress eliminated the inducement in the 1980s and since then several states have either pared their CON programs back or eliminated them altogether. To date, there have been 114 academic assessments of CON laws and together these papers contain 413 tests. In this paper, I review this literature, organizing the results around the most common rationales for CON laws. The accumulated evidence is overwhelming that CON laws do not achieve their purpose. Instead, the balance of evidence suggests that these regulations increase spending, reduce access to care, undermine quality, and fail to ensure care for underserved populations.

JEL Classification: I11, I18, H75

Keywords: Certificate of need, health care, regulation

¹ I thank Jaimie Cavanaugh, Angela Erickson, Thomas Stratmann, and participants at the Certificate of Need Research Conference held at West Virginia University on June 2nd-3rd, 2023 for numerous helpful suggestions. I am solely responsible for any remaining errors or omissions.

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1. Background

A certificate of need law requires anyone hoping to open a new facility, expand an existing facility, or acquire certain equipment to first prove to a regulator that the new capacity is needed. Though the laws date back to the first decades of the 20th Century and have been applied to various markets, New York was the first state to adopt a CON law in health care in 1964 (McGinley 1995). A decade later, the federal government enacted the National Health Planning and Resources Development Act (hereafter NHPDA), which encouraged states to adopt CON regulations by threatening to withhold federal funds from any state without such a program (*NHPDA* 1975). The threat never materialized as Congress repeatedly postponed the financial penalty (Conover and Bailey 2020, 2). But the Act achieved its goal of encouraging state CON programs: By the 1980s nearly every state in the country had instituted a CON program in health care (Mitchell, Philpot, and McBirney 2021).

The intellectual origins of health care CONs date to 1959, when UCLA health researcher Milton Roemer published a coauthored study reporting a positive correlation between the number of hospital beds available per capita and the number of used hospital days per capita (Shain and Roemer 1959). The finding became known as “Roemer’s Law” and was shortened to the pithy characterization that “in an insured population, a hospital bed built is a hospital bed filled (Page 2001).”

In encouraging CON, lawmakers hoped hospitals would acquire fewer beds, fill them with fewer patients, and spend less money. The main purpose of CON, therefore, was to reduce health care expenditures by rationing care. The authors of the NHPDA also apparently believed that CON would restrain spending by encouraging “the use of appropriate alternative levels of health care, and for the substitution of ambulatory and intermediate care” which, presumably, would be

less-costly than other modes of care (*NHPRDA 1975*, 88:2). Beyond costs and expenditures, the authors of the NHPRDA also hoped to ensure an adequate supply of care, especially for “underserved populations,” including “those which are located in rural or economically depressed areas” (*NHPRDA 1975*, 88:3) Finally, they hoped to “achieve needed improvements in the quality of health services” (*NHPRDA 1975*, 88:4). These goals—cost containment, greater access (especially for underserved populations), and quality improvement—continue to be widely-shared aims of health policy. They also constitute convenient buckets into which the empirical CON research can be sorted.

If the NHPRDA had been Congress’s last word on CON, then research on the regulation’s effects might have come to an end once CON was universally adopted. By the mid 1980s, however, Congress had concluded that CON laws were not achieving their goals and so the federal CON mandate was repealed in 1986 (*Pub. L. 99-660, § 701, 100 Stat. 3799 1986*). Almost immediately, 12 states eliminated their CON programs and, in time, others followed suite. Over time, the trend has been for states to gradually pare their programs back either by eliminating CON requirements for certain categories of medical equipment, by raising the dollar threshold at which a CON is required, or by exempting certain areas, such as rural counties, from the requirement. This history has yielded quite a bit of variation in CON regulation across time and across states. And this, in part, explains why CON laws have been so widely studied.

2. CON Today

Today, 39 states and the District of Columbia require a CON for at least one health care service or technology.³ In many of these states, however, the CON regime is quite limited. For example, Arizona, Minnesota, and New Mexico only require CONs for ambulance services. Indiana, Montana, Ohio (and soon, South Carolina) only require CONs for nursing homes.⁴ Hawaii, which requires a CON for 28 services and technologies, regulates more activities than any other state.

The most-common CON requirement is for nursing home beds, which require CONs in 34 states (including DC). The next-most-common requirements are for psychiatric services (regulated in 31 states), new hospitals (29 states), and intermediate care facilities for those with intellectual disabilities (28 states). The least-common CONs are for ultrasounds (required in 2 states) and subacute services (only regulated by Illinois).

In most CON states, the decision to grant a CON is made by a board whose members are appointed by the governor. Employees of incumbent providers are typically allowed to serve on this board, earning the regulation the moniker “competitor’s vetoes” (Sandefur 2015; Ohlhausen and Luib 2015). In all but six CON states, incumbent providers are allowed to participate in the CON process and object to the application of a would-be competitor.⁵ Even when competitors do

³ Some states, such as Wisconsin, cap the total number of pieces of equipment. For example, they may cap the total number of beds in the state at 20,000. If the cap is set low enough it will be *more* restrictive than a CON regulation because there is no way for a provider to request to exceed the cap. If, on the other hand, the cap is set high enough (as is currently the case in Wisconsin), then the cap will be non-binding. Some researchers treat caps as equivalent to CONs. But given the fact that most caps are currently non-binding, I will ignore these regulations for the remainder of this piece.

⁴ On May 3, 2023, the South Carolina Senate accepted the House’s amendments to Senate Bill 164. If signed by the governor, it will immediately eliminate the CON requirement for all services except for hospitals and nursing homes. The requirement for hospitals will be phased out over three years, though it will not be enforced in counties that currently lack hospitals.

⁵ These are Indiana, Louisiana, Michigan, Nebraska, New Jersey, and New York. For more details see Cavanaugh et al. (2020, 4, 61, 75, 89, 117, 131).

not object, statutes and regulations typically require regulators to deny CONs if they believe the applicant's services will duplicate an existing service, virtually guaranteeing a local monopoly.

We lack systematic data on application costs, the length of review processes, dollar thresholds, or approval rates. And all of these factors would be good candidates for future study. Anecdotal evidence suggests, however, that the CON process is typically long and expensive. The process can take years and can cost providers tens or even hundreds of thousands of dollars in opportunity costs (Hoover 2012). One analysis found that approval ratings ranged from 51 percent in Virginia, to 57 percent in Georgia, to 77 percent in Michigan (Stratmann and Monaghan 2017). Another found that when Georgia competitors object to an application it adds about 520 days to the wait time for a final decision, while each additional party who objects adds another 129 days (Denson and Mitchell 2023).

3. Methods

The goal of this study is to identify and classify every peer-reviewed original empirical analysis of health care CON laws. To identify relevant papers, I relied on previous overviews,⁶ internet and library search engines, and helpful suggestions from others.⁷ I primarily focused on academic publications, but I also included a handful of academic-quality analyses by government agencies such as the Federal Trade Commission that appeared to have gone through a peer-review process. I only focused on original empirical analyses; I ignored literature reviews or studies that employed previous estimates to illustrate the effects of CON. I made no judgements about the quality of the

⁶ Conover and Bailey's (2020) review was especially helpful.

⁷ Angela Erickson of the Pacific Legal Foundation generously shared a quite helpful spreadsheet with many references. If you are aware of any articles that I have missed, please share them with me: matthew.mitchell1@mail.wvu.edu.

empirical tests, though by only including peer reviewed material, I believe my approach ensured a minimal threshold for quality.

Most studies included more than one test of CON and so my unit of observation is each empirical test, rather than each paper. This allows me to characterize the literature in more detail and to avoid using the vague catch-all “mixed results” if a paper has multiple regressions, some positive and some negative. I do often code results as “negligible or insignificant,” however. In these cases, I rely on the authors’ assessments to make these judgements about economic and statistical significance. In some cases, it was not always clear-cut how one can define a distinct “test” and I did have to use some discretion. My general approach was to define a test as a unique dependent and independent variable combination, without regard to mathematical transformation. For example, if a paper reported a regression of the form $Y = a + b \cdot \text{CON}$ and another regression of the form $\ln(Y) = a + b \cdot \text{CON}$, then I just considered this as one test since the underlying variables were identical in both tests.

As the analysis proceeded, it became clear that there were certain patterns to the literature and the patterns that emerged helped inform the organization of this review. Occasionally, some tests fit a pattern without the author’s knowing or emphasizing it. For example, some papers assess the effect of CON on efficiency by looking at output/input. In these tests, a higher output/input is generally interpreted as a “good” result because it implies greater technical efficiency. In my own test of bed shortages during COVID, coauthored with Thomas Stratmann, we found that there were higher bed utilization rates in CON states than in non-CON states (Mitchell and Stratmann 2022). At the time, we did not view this as a “good” result, focusing instead on the fact that hospitals were more likely to run out of beds in CON states than in non-CON states. Nevertheless, since several

other authors interpret higher output/input to be a good result, I feel compelled to categorize our finding as such in order to be consistent.

Finally, I should note that this approach does lead to some double counting. For example, one way that authors assess quality is to see if CON is associated with a costly or unwarranted treatment. If a paper finds, for example, that CON encourages an unwarranted treatment then I will code it as being associated with greater utilization of a procedure and lower quality, even though there was only one empirical test involved.

4. Results

My approach identifies 114 separate papers that together contain 413 tests. The bulk of these tests focus on the four aims of CON identified in the NHPRDA: spending, access, quality, and care for underserved populations. My summary begins with those four categories. To these we can add one other area of the literature with an obvious normative interpretation: The effects of CON on competition. Then I turn to several sets of tests with less obvious (but still interesting) normative implications. These tests focus on provider volume, provider profits, and the political economy of CON. For the sake of brevity, I will summarize a handful of recent tests in each sub-category here and I will post summaries of all 114 articles in an on-line database.

Before digging into the specific sub-categories of the literature, however, let me briefly summarize the broad results of those tests that have relatively obvious normative implications.⁸ Figure 1 summarizes these tests. It shows that among 389 tests with an obvious normative implication, a slight majority (205) associate CON with a “bad” outcome. These bad outcomes

⁸ As will become clear, I don’t always agree with the normative interpretations here. But enough researchers evidently do that it is relatively straightforward to categorize results as “good,” “bad,” or “neutral.”

include higher spending, diminished access, lower quality, diminished care for underserved populations, or less competition. The next-most-common result, found in 140 tests (36 percent of the sample) was a neutral or insignificant result. Finally, 44 tests, comprising 11 percent of the sample, associate CON with a “good” outcome such as less spending or higher quality. Tests associating CON with a bad outcome are 4.65 times more common than tests associating CON with a good outcome. With these broad patterns established, I now turn to more specific findings, starting with spending.

[Figure 1 about here]

4.1 CON and Spending

Do CON laws restrain spending? The first stated aim of CON was to reduce spending and so it makes sense to begin here. Authors have assessed the effects of CON on spending in three different ways. These are: spending per service, which I will denote by the shorthand $\$/Q$; spending per person, or $\$/capita$; and efficiency, as measured by output/input. I will take each in turn.

4.1.1 CON and Spending Per Service Rendered ($\$/Q$)

Forty-three tests assess the effect of CON on charges, reimbursements, prices, or per-unit costs. What sets these tests apart from others is that they look at spending *per service rendered*, or $\$/Q$. This is an intuitive way to think about spending because it is analogous to a market price, which is expressed in per-unit or per-service terms. It is also a normatively appealing way to assess the regulation because we typically want to know the financial sacrifice per service rendered.

Standard economic theory offers two reasons to suppose that CON regulation might increase spending per service. First, CON is a supply restriction. As economists Jon Ford and David

Kasserman explained nearly three decades ago, “the economic effect [of a CON] is to shift the supply curve of the affected service back to the left,” and “the effect of such supply shifts is to raise... [the] equilibrium price” (Ford and Kaserman 1993, 783–84). Second, because of its anti-competitive properties, CON seems likely to permit some degree of pricing power. The empirical literature on spending per service, summarized in Figure 2, is consistent with these expectations. It shows that for every test associating CON with lower spending per service, there are nearly ten tests associating it with higher spending per service.

[Figure 2 about here]

Among the 43 tests that assess the effects of CON on spending per service, 28 of them—65 percent—find CON is associated with higher spending per service. Among some of the more recent results, Ho and Ku-Goto (2013) find that reimbursements for coronary artery bypass grafts fell by 9 percent in Pennsylvania and by 3 percent in Ohio following CON repeal. Bailey (2016) finds hospital charges in non-CON states are 5.5 percent lower five years after repeal. Browne et al. (2018) find Medicare reimbursements for total knee arthroplasty are 5 to 10 percent lower in non-CON states than in CON states. Ziino et al. (2020b) find spinal surgery reimbursements fall faster in non-CON states than in CON states (about 11 percent per year). Schultz et al. (2021) find that total knee and total shoulder arthroplasty costs are higher in CON than in non-CON states. And Ziino et al. (2021) find reimbursements for cervical discectomy in inpatient settings are lower in non-CON states than in CON states.

Just three tests (7 percent of the sample) associate CON with lower spending per service. Malik et al. (2019) find that average 90-day reimbursements for posterior lumbar fusions are slightly higher in non-CON states than in CON states. Cancienne et al. (2020) find that in t-tests without controls, knee arthroscopy charges are lower in CON states than in non-CON states. And Ziino et

al. (2021) find that reimbursement for cervical discectomy in outpatient settings are higher in non-CON states than in CON states (recall that they had found the opposite in the inpatient setting). Twelve tests (28 percent of the sample) find insignificant or negligible results.

4.1.2 CON and Spending Per Capita (\$/Capita)

Fifty tests assess the effect of CON on spending per patient or per person (\$/capita). If \$/Q is analogous to a market price, then \$/capita is analogous to total expenditures, adjusted for the population.⁹ That is, it indicates the total amount spent, irrespective of the quantity of services rendered. The \$/capita metric seems to align with the initial goals of CON advocates. They believed that by rationing the acquisition of certain equipment, they could restrain spending. And in contrast with \$/Q, it is more plausible that CON might reduce \$/capita. After all, an extremely restrictive CON that didn't permit *any* health care resources, would result in \$0/capita. Under less extreme regimes, we can expect CON to reduce \$/capita in cases where the service in question is elastically demanded. In this case, the Q-reducing effect of CON will dominate the \$/Q-increasing effect of CON (Ford and Kaserman 1993; Mitchell 2016; Bailey 2018; Bailey and Hamami 2019). Most health care services, however, are generally thought to be inelastically demanded (Ringel et al. 2002). So even this theoretically possible effect of CON seems unlikely.

In contrast with the \$/Q metric, the \$/capita metric has a weaker connection to welfare. A reduction in expenditures per capita is only desirable in cases where marginal services are unwarranted or counterproductive. As we will see when we consider the quality literature below,

⁹ In some cases, the line between \$/Q and \$/capita is not obvious. This is especially true in the case of home health agencies, where the quantity of services rendered is often measured in patient days. In these cases, I coded these as \$/capita studies, though others might as easily consider them \$/Q studies.

there are some procedures that have been deemed unwarranted, cost-ineffective, or even contra-indicated and some researchers have evaluated the degree to which CON limits these undesirable procedures. However, CON is often applied to procedures and technologies that are thought to be desirable on the margin such as burn care, psychiatric care, substance abuse services, neo-natal intensive care, and hospice care. In short, while less spending per *service* is clearly desirable, it is not always the case that less spending per *person* is desirable. With these caveats in mind, let's turn to the data.

Figure 3 summarizes this sub-set of the literature. Among the 50 tests, the most-common finding—obtained in 23 tests constituting 46 percent of the sample—is that CON is associated with greater spending per capita. And for each test associating CON with less spending per person there are 2.9 that associate it with more spending per person.

[Figure 3 about here]

Among relatively recent tests, Rivers, Fottler, and Frimpong (2010) associate CON with higher hospital expenditures per admission. Rahman et al. (2016) find CON is associated with faster growth in Medicare and Medicaid expenditures on nursing home care. Bailey (2019) finds that states that eliminate CON experience 4 percent reductions in real per capita health care spending. Stratmann and Baker (2020) find Medicare spending per rural beneficiary is \$295 more in CON than in non-CON states and that ambulance spending per beneficiary is slightly higher in CON than in non-CON states. Ettner et al. (2020) find that nursing home CONs are associated with higher expenditures per resident. And Bailey and Hamami (2023) find CON causes spending on those with less than excellent health to be as much as 20 percent higher.

The next-most-common finding in this category is negligible or insignificant results. This result is obtained in 19 tests comprising 38 percent of the sample. For example, Polsky et al. (2014)

find that home health agency Medicare expenditures are not statistically significantly different in CON and non-CON states, while Bailey and Hamami (2023) find CON has no effect on spending on those in good health (recall that they had found it was associated with higher spending on those in poor health).

Finally, 8 tests, representing 16 percent of the sample, find CON is associated with lower spending per capita. To take a few examples, Rahman et al. (2016) find CON is associated with slower growth in Medicare and Medicaid home health care expenditures (they also found it was associated with faster growth in nursing home expenditures). Perry (2017) finds that CON is associated with reduced expenditures on MRIs. And Ettner et al. (2020) find CON is associated with lower per patient expenditures by home health agencies (though they caution that this could be due to “skimping”).

4.1.2 CON and Efficiency (Output/Input)

Ten tests assess the effect of CON on efficiency as measured by output/input. These tests look at whether inputs such as labor or capital are more intensely used in the presence of the regulation. Theory offers no clear prediction with these tests. On the one hand, by limiting the number of health care resources, CON might result in greater utilization of each resource, permitting providers to realize economies of scale. On the other, by undermining competition, CON might make providers inattentive to cost containment, resulting in greater x-inefficiency (Leibenstein 1966; Stensland, Gaumer, and Miller 2010; Robinson 2011). Like spending per capita, this metric is also not an especially useful gauge of welfare, but it does give us a sense of how CON affects technical (if not economic) efficiency. The empirical literature, shown in Figure 4, reflects this

ambiguity. Four tests find that CON is associated with greater output/input.¹⁰ Four find that it is associated with lower output/input.¹¹ And 2 tests find negligible or insignificant results.¹²

[Figure 4 about here]

4.2 CON and Access

Do CON laws improve access to care? This is the most-studied effect of CON. In total, 171 tests examine whether CON laws impede or enhance access to care. The literature takes two distinct approaches to this question, however: “availability tests” and “utilization tests.”

4.2.1 CON and Availability of Services

About half of the access tests—80 in total—measure access by looking at the availability of health care services. These tests take different approaches. One is to count the number of service providers per capita. Another is to count units of medical technology per capita. Some papers measure how far patients must travel to obtain care or how long patients must wait until they can be served. The important distinction with these tests is that they look at the availability of health care services, not at whether these services are used.

The theoretical expectation here is *relatively* straightforward. As a supply restriction, one would expect CON to reduce the overall availability of health care resources. It is not impossible, however, to imagine scenarios in which CON might increase the availability of *some* specific resources. For example, if CON applies to certain technologies or capital expenditures and not to

¹⁰ Chen (2005); Ferrier, Leleu, and Valdmanis (2010); Rosko and Mutter (2014); Mitchell and Stratmann (2022).

¹¹ Eakin (1991); Chen (2005); Granderson (2011); and And Jomon, Ni, and Bagchi (2019a).

¹² Anderson and Kass (1986) and Bates, Mukherjee, and Santerre (2006).

others, or if regulators are more restrictive with some investments and not with others, then we might expect to see the latter become more available.

Note that this possibility is consistent with both the public interest theory and the special interest theories of regulation. On the one hand, publicly spirited regulators might throttle costly or ineffective care in hopes of encouraging more efficient or effective modes. On the other, special interests might seek to restrict their competition or raise their rivals' costs and this might make the special interest's services relatively more abundant (Tullock 1967; Stigler 1971; Krueger 1974; Peltzman 1976; Salop and Scheffman 1983).

As shown in Figure 5, the empirical literature on CON and availability of care is lopsided. Of the 80 tests, 63 of them (representing 79 percent of the sample) find CON is associated with diminished availability of services. Eleven tests (14 percent of the sample) find negligible or inconclusive results. And just 6 tests (8 percent) associate CON with greater availability of resources.

[Figure 5 about here]

Several tests, dating back to the earliest studies, associate CON with fewer hospital beds. In recent years, Stratmann and Russ (2014) associate CON programs in general with 99 fewer hospital beds per 100,000 people and hospital bed-specific CON requirements with 131 fewer beds per 100,000. They also find that each additional service covered by CON reduces the number of beds by 4.7 per 100,000 persons. Mitchell and Stratmann (2022) find that hospitals in CON states were 27 percent more likely to run out of beds during COVID.¹³

Another common test assesses the relationship between CON and hospitals. Eichmann and Santerre (2011) associate CON with 48 percent fewer hospitals per capita while Stratmann and

¹³ Some of the older tests include Joskow (1980); Mayo and McFarland (1989); Custer et al. (2006); Hellinger (2009); Anderson (1991); and Eichmann and Santerre (2011).

Koopman (2016) associate CON with 30 percent fewer hospitals per capita as well as 30 percent fewer *rural* hospitals per capita.¹⁴

Several tests associate CON with diminished availability of particular services. For example, Bayman and Cram (2010) find that the number of hospitals offering coronary artery bypass graft surgery (CABG) increased in states that eliminated CON requirements for these procedures. Similarly, Vaughan-Sarrazin, Bayman, and Cram (2010), find that CON is associated with fewer CABG programs. Kostad (2009) finds that the number of facilities offering CABG increased 46 percent following Pennsylvania's CON repeal. Popescu, Vaughan-Sarrazin, and Rosenthal (2006) and Li and Dor (2015) find that in CON states, hospitals are less likely to offer cardiac revascularization. Cantor et al. (2009) and DeLia et al. (2009) find that hospitals offering coronary angiographies roughly doubled in New Jersey after the CONs for these diagnostic procedures were eliminated. Others, including Ho, Ku-Goto, and Jollis (2009); Vaughan-Sarrazin et al, (2010); Cutler, Huckman, and Kolstad (2010); Li and Dor (2015) find that CON is associated with fewer coronary artery bypass graft (CABG) programs.

Short, Aloia, and Ho (2008) find CON is associated with fewer hospitals per cancer incident for colectomy, rectal resection, and pulmonary lobectomy. Custer et al. (2006) and Ettner et al. (2020) find CON is associated with fewer home health agencies per capita. Similarly, Polsky et al. (2014) report that there are roughly twice as many home health agencies per Medicare beneficiary in non-CON states as in CON states. Lorch, Maheshwari, and Even-Shoshan (2012) associate CON with fewer neo-natal intensive care units and fewer beds in those units. Stratmann and Russ (2014), Horwitz and Polsky (2015), Perry (2017), and Baker and Stratmann (2021) find CON reduces the number of hospitals with medical imaging services. Stratmann and Koopman (2016)

¹⁴ See, also, Custer et al. (2006).

associate ambulatory surgery center (ASC)-specific CONs with 14 percent fewer ASCs per capita. Noh and Brown (2018) find that CON reduces the number of substance abuse facilities while Bailey, Lu, and Vogt (2022) find that these facilities are less likely to accept private insurance. Bailey and Lewin (2021) find psychiatric service CONs reduce the number of psychiatric hospitals per capita by 20 percent and reduce the odds that they will accept Medicare by 5.35 percentage points.

Travel distances and wait times have also been studied. Carlson et al. (2010) find that compared with patients in non-CON states those in CON states must drive further for hospice care. Cutler, Huckman, and Kolstad (2010) find that Pennsylvania's CON repeal reduced travel distance to CABG by 9 percent. Baker and Stratmann (2021) find CON increases the odds that patients will leave their state in order to obtain medical imaging services. Herb et al. (2021) find that CON is associated with prolonged travel time for radiation oncology services in both rural and urban tracts in the Midwest and Northeast. Myers and Sheehan (2020) find that CON programs increase median wait times for admittance, examination, pain medication administration, and discharge.

Among those tests that find insignificant or negligible effects of CON on the availability of services, Vaughan-Sarrazin, Bayman, and Cram (2010), whom I mentioned earlier as finding that CON is associated with fewer CABG programs, failed to find a similar effect with PCIs. Perry (2017), whom I mentioned earlier as finding CON limited the use of medical imaging devices (MRIs, in particular), also found that hospitals get around this limit to some degree by employing non-regulated mobile scanners. Bailey, Lu, and Vogt (2022) found CON has no statistically significant effect on the number of substance abuse facilities or substance abuse beds (though recall that they did find these facilities were less likely to accept private insurance). Herb et al. (2021), whom I mentioned earlier for finding CON is associated with prolonged travel times to radiation

oncology in some parts of the country, found CON has no association with travel time in the West. Finally, Mitchell and Stratmann (2022), whom I mentioned earlier for finding hospitals in CON states were more likely to run out of beds during COVID found no statistically significant difference in states that relaxed these rules.¹⁵

Finally, among those tests that associate CON with greater access, Noh and Brown (2018), whom I mentioned earlier as finding that CON was associated with fewer substance abuse facilities, also found that there were more of these facilities in states with CON *and* Medicaid expansion. And Herb et al. (2021), who found CON either increased or had no effect on drive times to radiation oncology in some parts of the country, also find that it is associated with lower odds of prolonged drive times in urban and rural tracks in the South.

4.2.2 CON and the Utilization of Services

The other common way to assess access is to see if CON correlates with the utilization of services. Here, too, it is reasonable to expect CON will reduce the utilization of services by restraining supply. The theoretical connection between CON and utilization, however, is slightly more tenuous than is the connection between CON and availability. As with availability, it is possible that CON may even increase the utilization of some services if it restrains the use of substitute services. Moreover, because health care is inelastically demanded, patients may still seek care even if it is costly or difficult to obtain. The results, shown in figure 7, are consistent with this ambiguity. In total, 91 tests assess the effect of CON on utilization of services, and 53 of these—59 percent of the sample—find that CON has either negligible or no statistically significant effects

¹⁵ Early tests with negligible results are found in Salkever and Bice (1976); Eastaugh (1982); Ashby (1984); and Gulley and Santerre (2003).

on utilization. Twenty-six tests, comprising 29 percent of the sample, find CON is associated with diminished utilization of services. And 11 tests, 12 percent of the sample, find CON is associated with increased utilization of services.

[Figure 6 about here]

Among those who find CON is associated with diminished utilization of services are Bailey and Lewin (2021), who find that psychiatric service CONs reduce the number of psychiatric clients per capita by 56 percent. Polsky et al. (2014) associate CON with 13.7 percent fewer home health admissions from hospitals. Several authors, including Browne et al. (2018); Casp et al. (2019); Cancienne et al. (2020); and Schultz, Shi, and Lee (2021) associate CON with fewer joint repair procedures. Perry (2017) and Stratmann and Baker (2021) find CON is associated with fewer medical diagnostic images.

Some of the authors who associate CON with diminished utilization of some procedures also associate it with increased utilization of alternative procedures. Li and Dor (2015), for example, found that following CON repeal there was a substantial increase in CABGs but no increase in percutaneous coronary interventions (PCIs). In fact, they found that PCIs were less common in incumbent hospitals following repeal and entry of new providers. They also found that entry by new cardiac surgery centers following repeal tended to sort high-severity patients into the more invasive CABG procedure and low-severity patients into the less-invasive PCI procedure, and this may have improved quality. While Stratmann and Baker (2021) associate the regulation with 23 to 70 percent fewer scans by new hospitals and 27 to 53 percent fewer scans by nonhospital providers, they also associate it with 6 to 21 percent *more* scans by older hospitals. This suggests that the regulation creates less business for some provider types and more for other types.

Others associated CON with greater use of certain procedures. Ziino, Bala, and Cheng (2020a) find that utilization of lumbar microdecompressions (a minimally-invasive procedure to treat pinched nerves in the lower back or lumbar region) increased more in CON states than in non-CON states. Kim et al (2016) find that unwarranted intensity modulated radiation therapy was used more often in CON states than in non-CON states, and they interpret this as a failing since the regulation was intended to discourage unwarranted procedures. Falchok and Chen (2015) and Lu-Yao et al. (2013) reach similar conclusions about unwarranted radiation therapy for elderly, and/or low-risk patients.

4.3 CON and Quality

Do CON laws improve the quality of care? CON advocates often make the case that CON ensures quality. How? The most-common rationale relates to the quality-volume relationship. It is well-documented that providers who perform a procedure over and over tend to get better at it (it is possible, of course, that causality could run in the opposite direction; especially competent providers may be in especially high demand). If CON results in fewer providers, and if each provider then ends up doing more procedures, then it is possible that it might indirectly enhance quality. On the other hand, competition tends to enhance quality as well. And so it is possible that by undermining competition, CON will undermine quality. What do the data say?

Ninety-eight papers assess the effect of CON on some metric of quality. One common technique is to see if CON correlates with outcome measures such as mortality rates, readmission rates, or infection rates. Another common technique to see if CON discourages the use of unwarranted procedures (in this case, what will be coded here as a “good” quality outcome will be coded above as a bad “volume” outcome). Figure 7 summarizes this literature. Of 98 tests, slightly

less than half (48 tests) associate CON with diminished quality of care. Forty tests, 41 percent of the sample, find either neutral or insignificant effects of CON on quality. And 10 tests, representing 10 percent of the sample, associate CON with improved quality.

[Figure 7 about here]

Nearly five times as many tests associate CON with lower quality outcomes as with higher quality. Among these tests, Stratmann (2022) associates CON with worse outcomes along eight dimensions of quality, including higher mortality rates among surgical inpatients with serious treatable complications; higher mortality rates for heart attack, heart failure, and pneumonia; and lower patient ratings. Ghosh, Choudhury, and Plemmons (2020) associate the regulation with higher mortality from natural death, septicemia, diabetes, chronic lower respiratory disease, influenza or pneumonia, Alzheimer's and COVID during the pandemic. Wu et al. (2019) associate CON with lower levels of functional improvement among home health patients for bathing, ambulating, transferring to beds, managing oral medication and managing pain, as well as higher ER and acute care admissions among home health patients.

Cancienne et al. (2020) associate CON with more ER visits within 30 days and more infections within six months of knee arthroscopy. Cutler, Huckman, and Kolstad (2010) associate the regulation with more surgeries performed by lower quality surgeons. And Ohsfeldt and Li (2018) associate CON with lower home health agency ratings by the Centers for Medicare and Medicaid Services.

Among recent tests that associate CON with higher quality, Gaines and Cagle (2023) find four measures of hospice quality were higher in CON states than in non-CON states while another four measures were not statistically different. Lorch et al. (2012) associate CON with lower NICU mortality in states with large metropolitan areas but find it is unrelated to low birth weights or very

low birth weights. Finally, Stratmann (2022), mentioned above for his finding that CON is associated with worse outcomes along eight dimensions, also found that CON is associated with better outcomes for postoperative pulmonary embolisms.

4.4 CON and Underserved Populations

Do CON laws improve the provision of care for underserved populations? Though CON is a supply restriction, the authors of the NHPRDA hoped that the regulation would ensure an adequate supply of care, especially for “underserved populations,” including “those which are located in rural or economically depressed areas” (*NHPRDA* 1975, 88:3). Evidentially they hoped that regulators might be able to divert health care resources from overserved populations to underserved populations. The evidence suggests that CON laws have not achieved this goal.

Figure 8 summarizes the literature on CON and underserved populations. These tests look at whether CON has undermined the financing or provision of care to rural or otherwise underserved populations. There have been 13 tests in this category and of these, 10 of them (77 percent) find that CON undermines the provision of care to underserved populations while 3 of them (23 percent) find no significant effects. No tests associate CON with enhanced provision of care for underserved populations.

[Figure 8 about here]

One study by Dobson et al. (2007) finds that safety net hospitals in non-CON states have higher margins than those in CON states. Perry (2017) finds that when CON is binding for MRI machines, Medicare patients and cancer patients are disproportionately crowded out. Stratmann and Koopman (2016) find that CON is associated with 30 percent fewer rural hospitals and that ambulatory surgery center (ASC) CONs are associated with 13 percent fewer rural ASCs. Cantor

et al. (2009) and DeLia et al. (2009) find that a large black-white disparity in the provision of coronary angiography screening disappeared once New Jersey stopped requiring CONs for the service. Zhang (2008) finds that states with CON laws, uncompensated care pools, and community benefit requirements have lower levels of uninsured admissions.

4.5 CON and Competition

The final set of tests with normatively clear implications address the effect of CON on competition. These tests usually measure the degree of competition with the Herfindahl-Hirschman Index. Figure 9 reports the results. Among five tests, three associate CON with less competition and 2 associate it with more competition.

[Figure 9 about here]

Custer et al. (2006) look at concentration in the home health care markets and acute care markets and associate CON with lower levels of competition in each. Polsky et al. (2014) also look at the home health care market. They find that the HHI is approximately 1,000 points higher in CON states than in non-CON states, making the difference between been a moderately concentrated and a highly concentrated home health care market.

On the other hand, Ni, Paul, and Bagchi (2017) find lower levels of concentration in emergency departments in CON states compared with non-CON states, concluding that the regulation might actually serve as an antitrust tool. The same authors come to a similar conclusion in the inpatient care market (Paul, Ni, and Bagchi 2019b).

4.6 CON and Provider Volume

So far it has been relatively easy to characterize results as “good,” “neutral,” or “bad.” Now I turn to a set of tests that are not so easily characterized. The first of these is provider volume. These tests assess whether CON increases or decreases the average provider’s volume of services. By limiting the number of providers, we would expect CON to lead to higher volumes by provider. Some scholars *infer* that this is a good result because it might allow providers to achieve economies of scale or to improve their quality through repetition. These outcomes, however, are better measured directly through the tests summarized above. The connection between CON and provider volume has a more mundane explanation: by limiting entry, CON laws permit each incumbent to do more business.

Figure 10 summarizes these tests and the evidence is consistent with expectations. Among 17 tests, 15 of them, 88 percent of the sample, associate the regulation with greater provider volume. One test finds neutral or negligible results and another associates CON with diminished provider volume.

[Figure 10 about here]

Cancienne et al. (2020) associate CON with more high-volume knee arthroscopy facilities. Malik et al. (2019) associate CON with more high-volume elective posterior lumbar fusion facilities. Casp et al. (2019) associate it with more high-volume facilities offering total hip arthroplasty, Browne et al. (2018) with more high-volume total knee arthroplasty facilities, and Ettner et al. (2020) with more high-volume home health care agencies. Interestingly, Culter et al.

(2010) found that following CON repeal in Pennsylvania, CABG surgeries were less likely to be performed by high-volume hospitals, but more likely to be performed by high-volume surgeons.

4.7 CON and Provider Profits

Are CON laws profitable? As a barrier to entry, one would expect CON laws to lead to higher profits among incumbent providers in the short run. These incumbent providers vigorously lobby against any proposals to repeal CON, and this, too, suggests that the laws are profitable (or at least that providers believe them to be so). Political economists, however, have long noted that contrived privileges only offer above-normal returns in the short run (Tullock 1975). Competition can occur along multiple margins and barriers to entry rarely succeed in covering all of these margins.¹⁶ Over longer periods of time, providers may expend costly resources seeking CONs, seeking to oppose the CONs of their competitors, and seeking to maintain the CON process itself. These costs may erode the extra-normal profits conferred by CON (Tullock 1967; 1980).

In any case, this is a relatively understudied phenomenon. There have only been three papers assessing the effect of CON on profitability and together they contain 4 tests. Figure 11 summarizes the literature. Among the 4 tests, 3 associate CON with diminished profitability while 1 associates it with enhanced profitability. An early paper by Sloan (1981) found that hospital profits fell following CON's implementation. I have already mentioned Dobson et al.'s (2007) finding that safety net hospitals have higher margins in non-CON states than in CON states. Cutler et al. (2010)

¹⁶ Regulatory economist, and regulator, Alfred Kahn described this phenomenon well: "Control price, and the result will be artificial stimulus to entry. Control entry as well, and the result will be an artificial stimulus to compete by offering larger commissions to travel agents, advertising, scheduling, free meals, and bigger seats. The response of the complete regulator, then, is to limit advertising, control scheduling and travel agents' commissions, specify the size of the sandwiches and seats and the charge for inflight movies. Each time the dyke springs a leak, plug it with one of your fingers." (McCraw 1984, 272)

find that hospital margins initially fell following Pennsylvania’s repeal but that they soon regained profitability and were, in fact, more profitable than comparable hospitals within a few years. Together, the results suggest that, if anything, CON depresses rather than enhances hospital profitability. But we should be cautious with these results given how limited this sub-category of the literature is.

[Figure 11 about here]

4.8 The Political Economy of CON

A small but interesting subset of tests examine the political economy of CON laws. These tests are idiosyncratic and their results are not easy to aggregate. Teske and Chard (2004) study the factors that make a state likely to retain its CON law, making this paper one of the few that study CON as a dependent variable.¹⁷ They find that CON laws were more likely to be retained in states with more Democrats in the upper and lower houses, higher hospital costs, more affluent and better-educated citizens, fewer physicians, and stronger hospital interests. The last of these variables is equal to the number of hospital industry–related interest groups active in a particular state multiplied by their average political action committee spending. While the strength of a state’s hospital interests is found to be significantly associated with retention of CON, legislative party makeup is more important. Eichmann and Santerre (2011) study the degree to which hospital executives capture the rents generated by CON laws, finding that urban CEOs earn \$91,000 more in CON than in non-CON states. Finally, Stratmann and Monaghan (2017) study whether political action committee (PAC) contributions affect CON approval rates in three states. They find that a 1 percent increase in PAC contributions from an applicant firm is associated with 6.7 percent

¹⁷ Note that because they find that CON is positively related to hospital costs and negatively related to the number of physicians, I have included this paper in the previous sections and coded it as indicating CON is associated with higher \$/Q and lower availability of health care.

greater odds of approval in Georgia, 1.8 percent greater odds of approval in Michigan, and 3.6 percent greater odds of approval in Virginia.

5. Discussion and Conclusion

A popular bumper sticker—popular, at least, among econometricians—proclaims: “I heart federalism (for the natural experiments).” Justice Brandeis’s dissent in *New State Ice* is, perhaps, the most famous exposition of this sentiment. There, the associate justice proclaimed: “It is one of the happy incidents of the federal system that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country” (*New State Ice Co. v. Liebmann*, 285 U.S. 262 1932). Econometricians who study CON would do well to remember that *New State Ice* was a certificate of need case.¹⁸

The state experiment with CONs in health care began in New York in 1964. A decade later, federal legislators encouraged the regulation through the National Health Planning and Resources Development Act of 1974. It threatened to withhold federal funds from any state that did not adopt a CON law. The federal inducement was eliminated in the mid-1980s, however, and since then about a third of states have repealed their health care CON laws and others have pared their programs back.

Few state policy experiments have been as thoroughly examined as certificate of need laws in health care. I have identified and coded 114 papers that together contain over 413 tests. The bulk of these tests address the stated goals of the regulation. They assess the effect of CON on spending, access, quality, and underserved populations. Other tests assess the effect of CON laws on competition, provider volume, and profits. And others assess the political economy of CON laws.

¹⁸ As the name implies, the case dealt with a CON for ice rather than for health care.

The balance of research suggests that CON laws do not achieve their stated goals. There is little evidence that they restrain spending, increase access, enhance quality, or improve the provision of care to underserved populations. In fact, the most-common finding is that CON laws undermine each of these goals. For every test associating CON with a “good” outcome, there are nearly five that associate it with a “bad” outcome.

These findings are consistent with standard economic theory. They suggest that CON laws are barriers to entry that enhance the business of incumbent providers, increase costs, and limit access to care. These barriers likely enhance the profits of incumbent providers in the short run but not necessarily in the long run.

Though CON laws have been exhaustively studied, my review has identified a number of relatively understudied aspects of the regulation, and so I will conclude by briefly summarizing these. First, CON law data is fragmentary and inaccessible. Though there have been hundreds of tests assessing the effect of CON laws, the data that these researchers have collected largely remains private. Future researchers could make a mighty contribution to the public good simply by collecting and posting their panel data on CON laws. Ideally, these data would indicate which states regulated which technologies and procedures in each year for the past several decades.

Second, while there have been some attempts to measure the stringency of CON laws, these tests have been relatively rare. Here again, it would be helpful if future researchers collected and disseminated data on approval rates, thresholds, and wait times. Though more difficult, it would be especially helpful to know the compliance and opportunity costs involved in seeking a CON. How much revenue is forgone in the CON process? How many patients are not served while providers navigate the process? And how many providers are discouraged by these costs and fail

to even apply? In some cases, qualitative case studies may be better at answering these questions than large cross section time series data analyses.

Third, little is known about the political economy of CON laws. To my knowledge, no one has studied whether the institutional environment affects CON decisions.¹⁹ For example, are CON applications more likely to be granted in states where the decisionmaker is a board rather than an administrator? Does the composition of the board make a difference? Do regulatory guidelines make a difference? We have some data that suggests that politically active applicants are more likely to be successful in seeking CONs (Stratmann and Monaghan 2017). Does the applicant's size, profitability, employment, nonprofit status, location, or political connections matter? Though one study (Teske and Chard 2004) has examined why states retain their CON laws, it is now nearly two decades old and it may be time to revisit this question. This area is especially ripe for investigation given several high-profile proposals to eliminate or pare back CON programs in several states in recent years.

Finally, while the “public interest” theory of CON has been well studied (and found lacking), the “special interest” theory of CON has been relatively understudied. Which interests benefit from CON laws? And which interests benefit from their repeal? How do CON laws affect employment and compensation in different health sectors? In many states, boutique consulting firms profit by shepherding providers through the CON process. To my knowledge, these entities have been entirely unstudied.

¹⁹ My colleague, Sriparna Ghosh and I are currently examining this question (Mitchell and Ghosh 2023).

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7. Figures

Figure 1. Summary of Tests with an Obvious Normative Implication

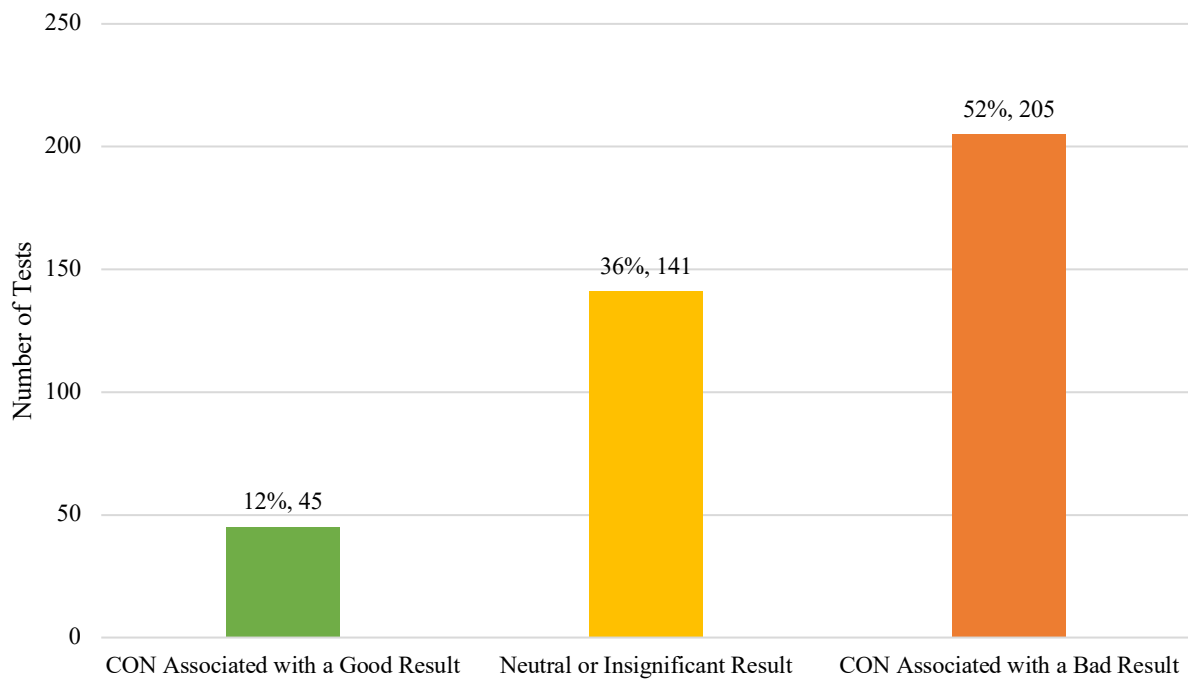


Figure 2. Tests Assessing the Effect of CON on Spending Per Service (\$/Q)

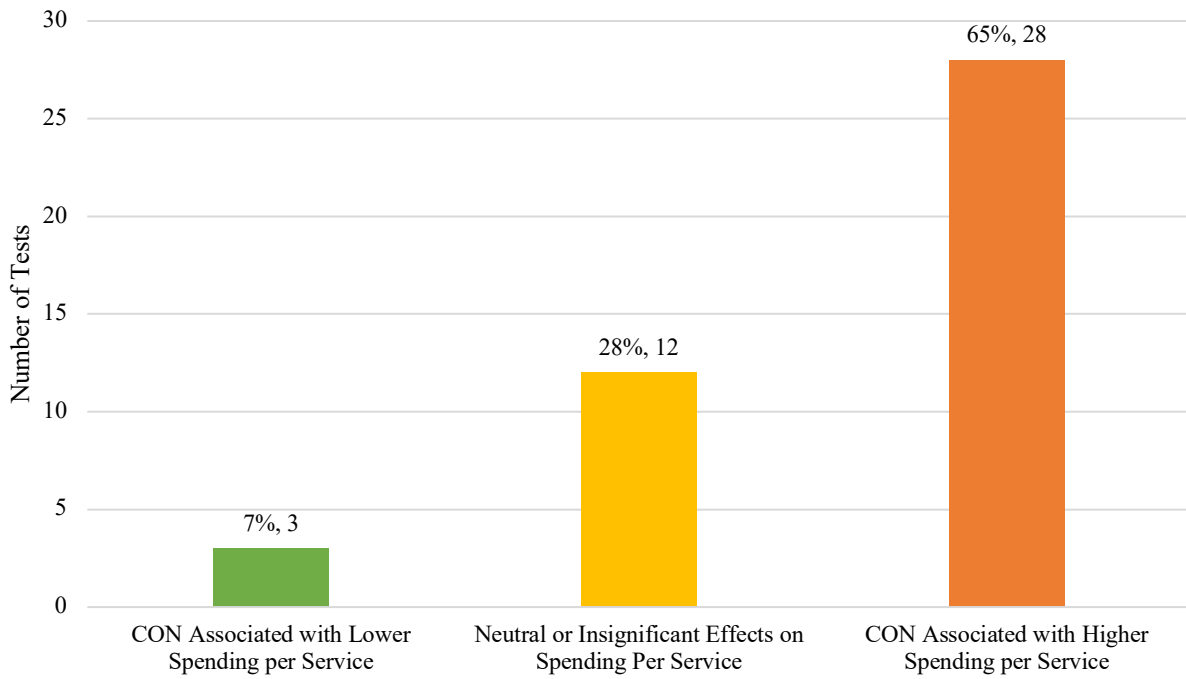


Figure 3. Tests Assessing the Effect of CON on Spending Per Capita (\$/Capita)

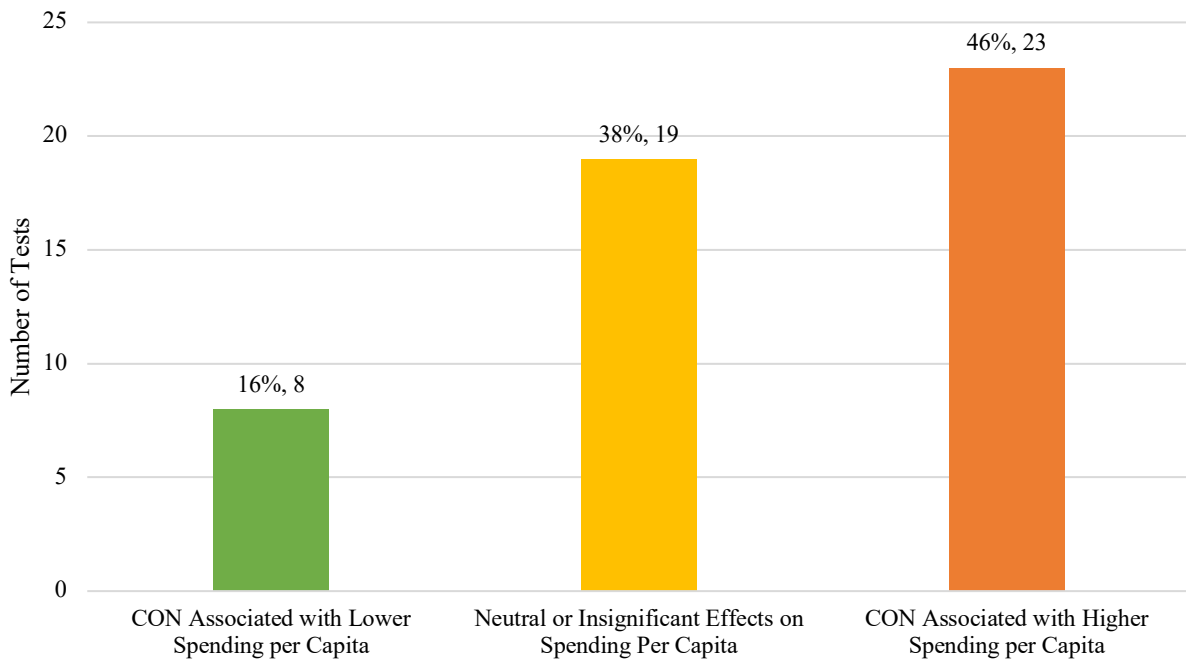


Figure 4. Tests Assessing the Effect of CON on Output / Input

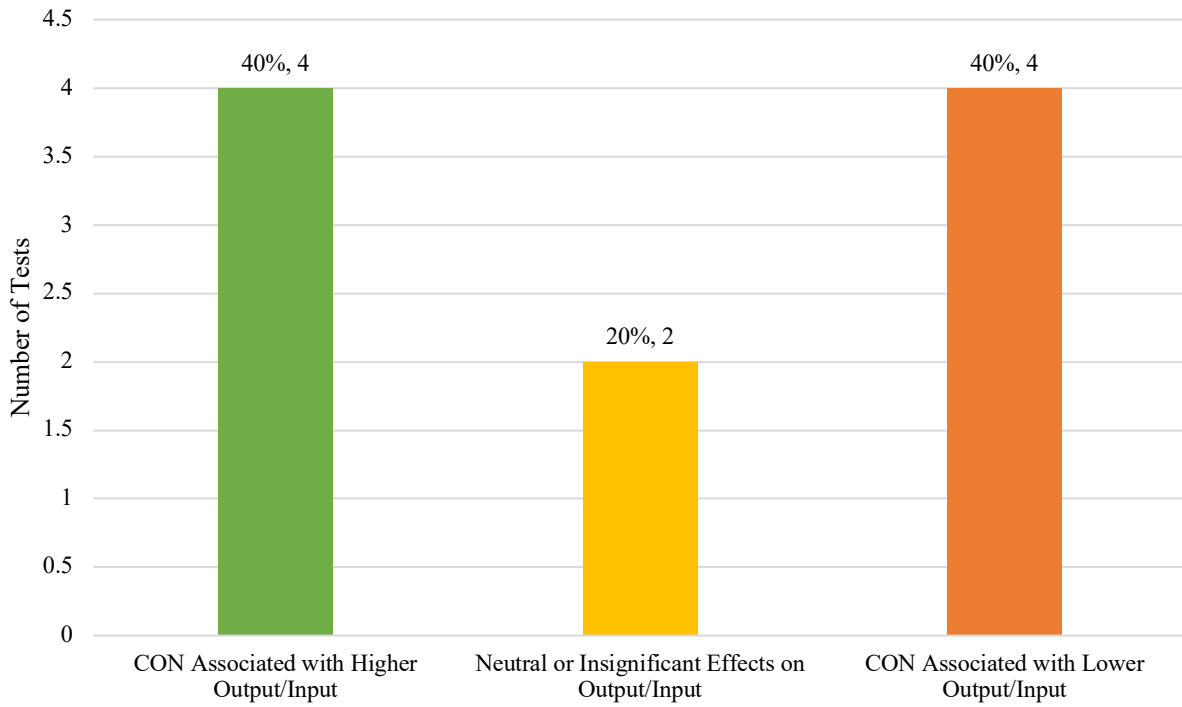


Figure 5. Tests Assessing the Effect of CON on Availability of Services

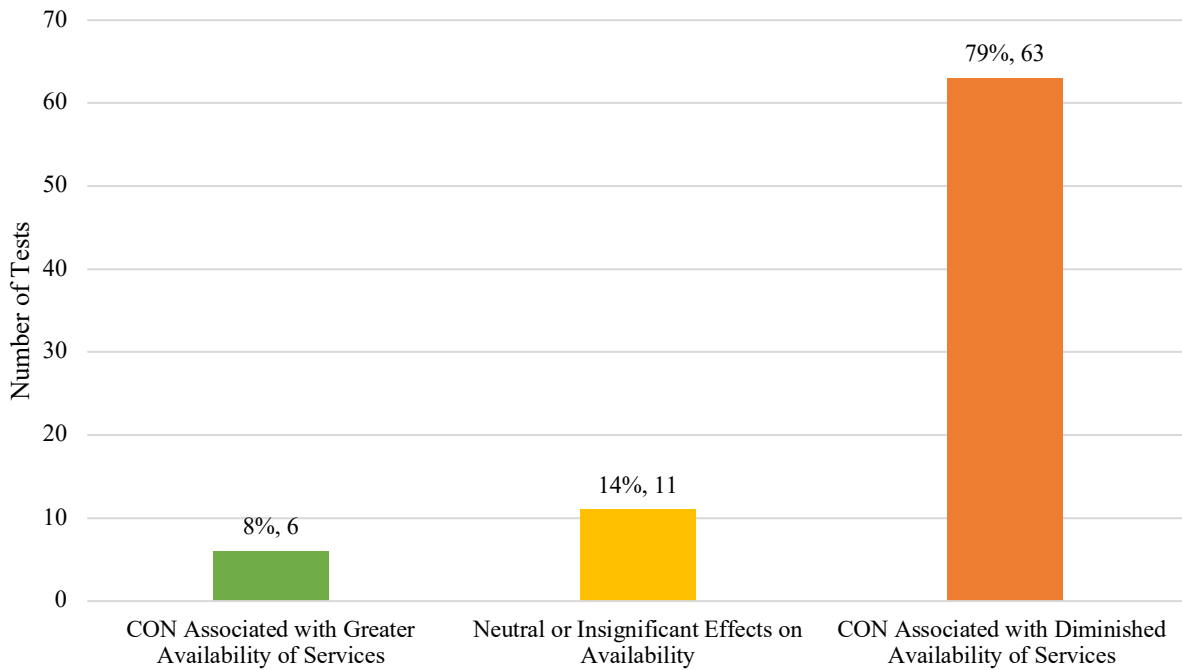


Figure 6. Tests Assessing the Effect of CON on Utilization of Services

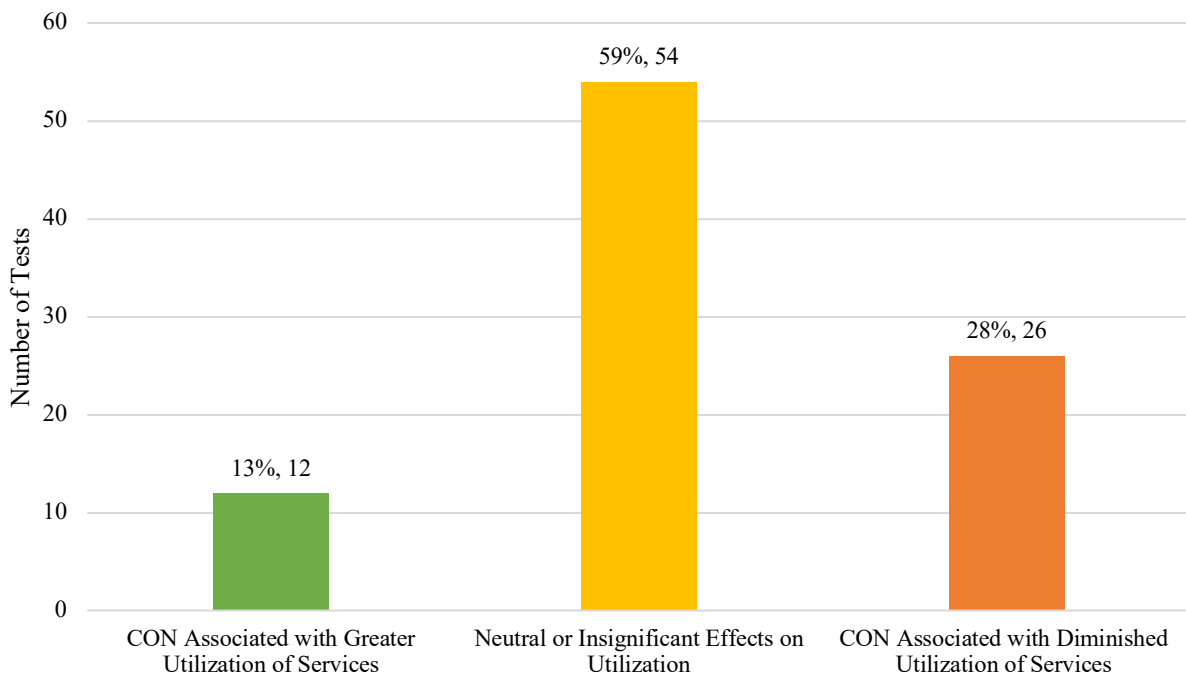


Figure 7. Tests Assessing the Effect of CON on Quality of Care

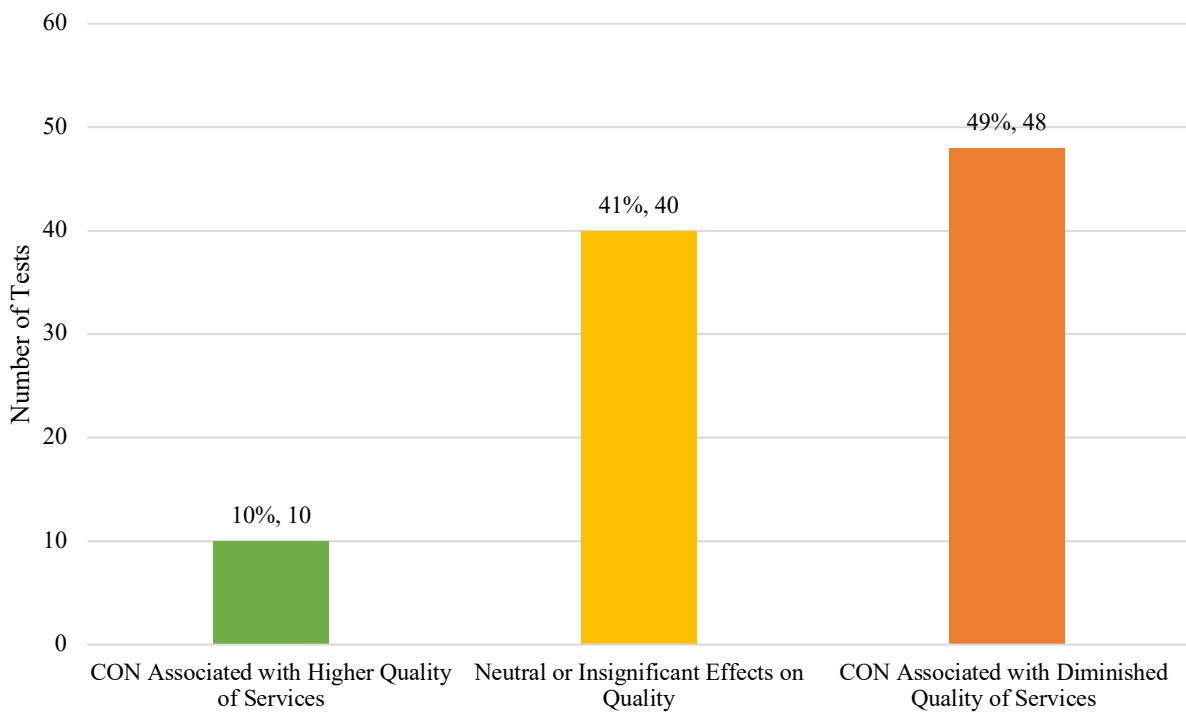


Figure 8. Tests Assessing the Effect of CON on Underserved Populations

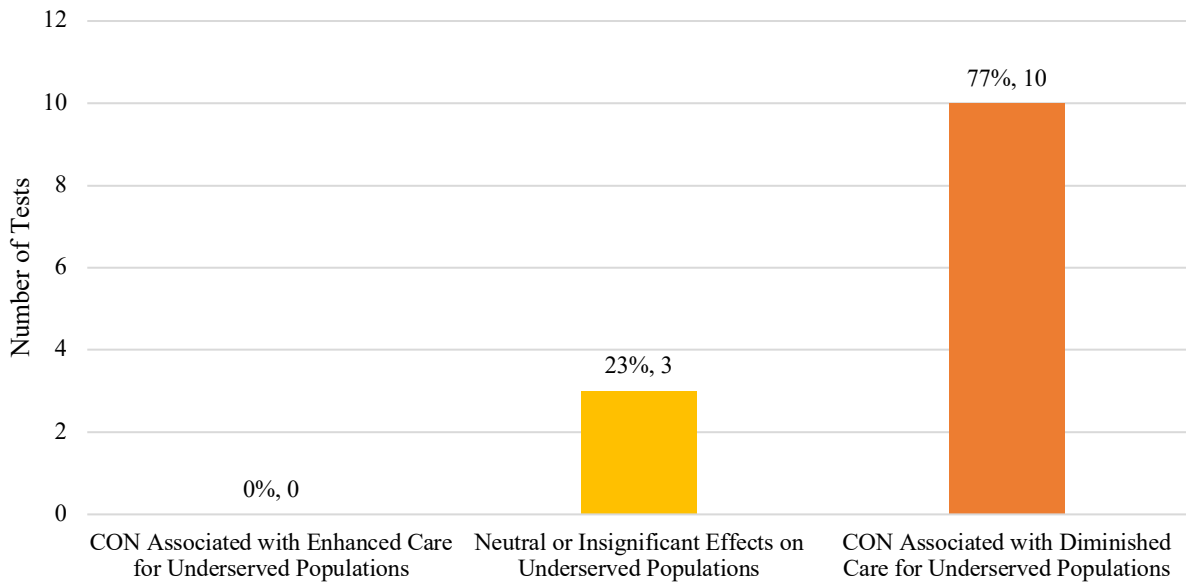


Figure 9. Tests Assessing the Effect of CON on Competition

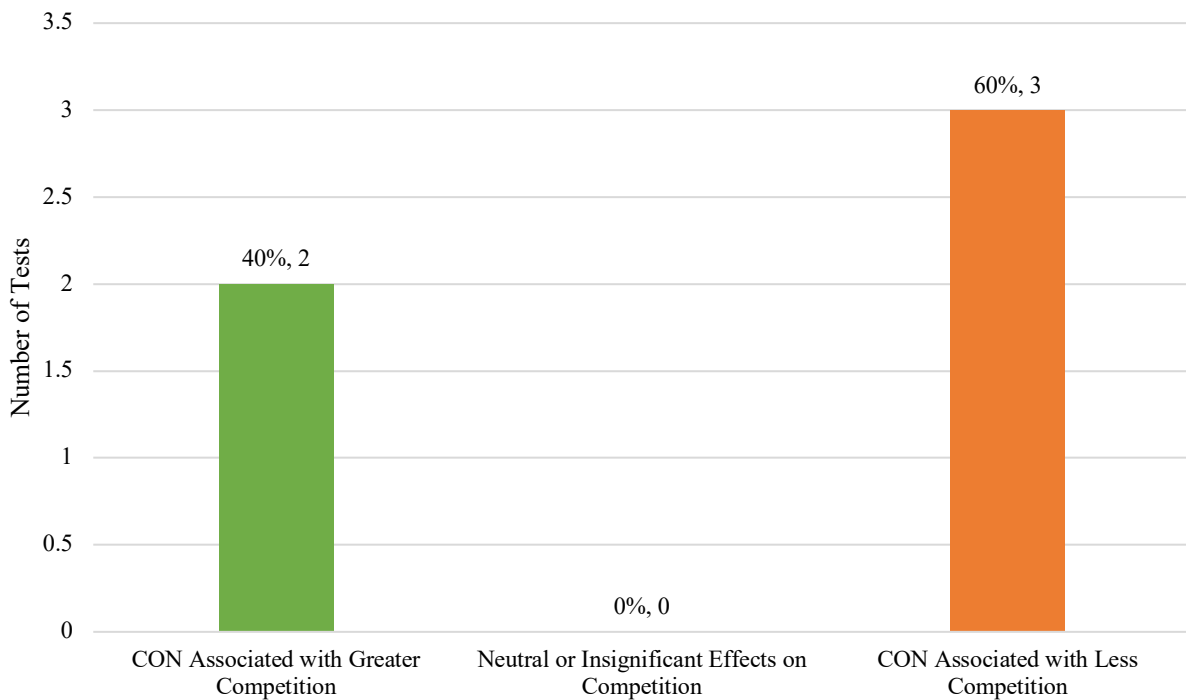


Figure 10. Tests Assessing the Effect of CON on Provider Volume

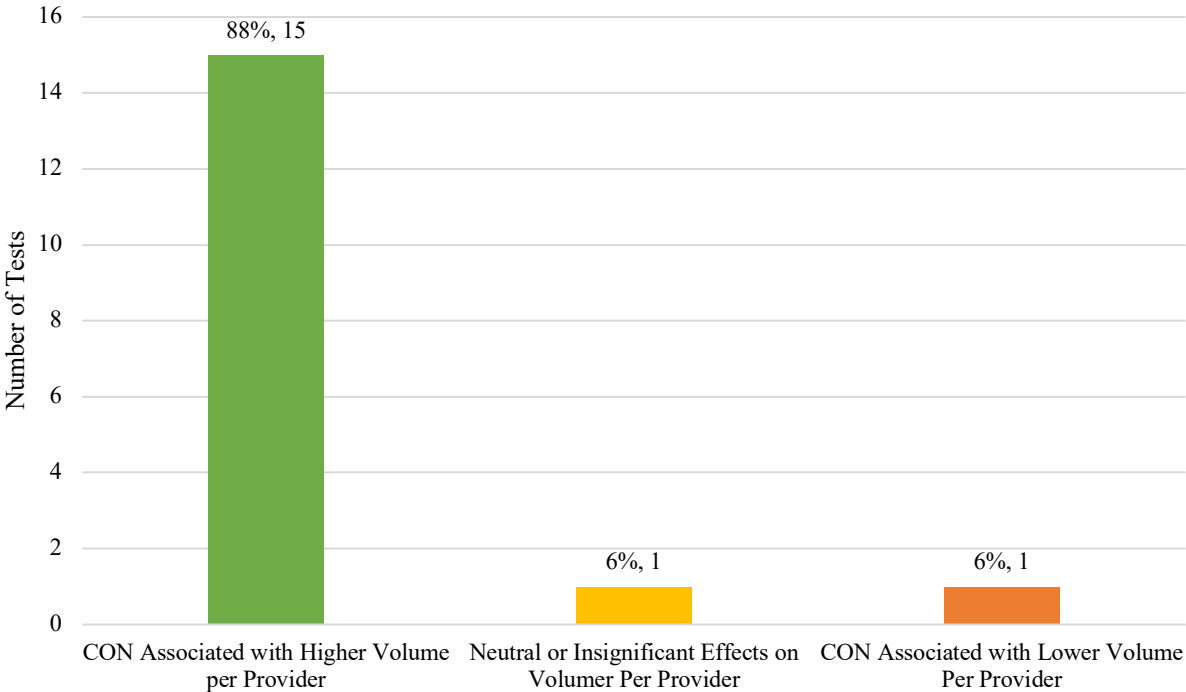


Figure 11. Tests Assessing the Effect of CON on Provider Profits

