



The Impact of Relaxing Nurse Practitioner Licensing to Reduce COVID Mortality: Evidence from the Midwest

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Executive Summary

Nurse practitioners (NP) are well-trained health care personnel for primary, acute, and specialty care in the US. However, 32 states have restrictions on their scope of practice and Illinois is one of them.

In response to the shortage of health care workers during the coronavirus pandemic, twenty-one states granted NP full practice authority to cope with the increasing demand for health care services. In the Midwest, Kansas, Indiana, Michigan, Missouri, and Wisconsin, adopted a more expansive scope of service for NP.

This report evaluates the effect of this policy change on the rate of COVID-related deaths in the Midwest states, which expanded NP authority and sheds light on healthcare policy in Illinois.

Findings:

- NP in Illinois have full practice authority only if they have had 4,000 hours of clinical experience and completed 250 training hours.
- Illinois and Ohio are the only two Midwest states, which did not expand the scope of practice for NP during the pandemic.
- In the states that did expand the scope of practice for NP, COVID related deaths were potentially reduced by 10 cases per day
- If Illinois had expanded the scope of practice, 8% fewer COVID-19 deaths would have occurred in Cook County, which is the most affected area in the state.

The findings reveal that granting NP full practice authority is effective in easing the shortage of health care workers and improves health care quality. Our result echoes the findings by other healthcare researchers that granting NP independent practice authority improves patient outcomes. This report recommends that health care regulators in Illinois grant *all* NP independent practice authority in order to meet the states' growing health care demand.

Introduction

The shortage of healthcare professional in the US has been a notable concern among health policy makers. According to the Bureau of Health Workforce, in 2017 only 55 percent of the need for primary care professional was met.¹ For Illinois, the Bureau estimated that 468 extra primary care health providers were needed to address the shortage problem, which is roughly 188% of the existing number of primary care providers in the state. The shortage problem is the biggest in the Midwest.

The nationwide healthcare labor force shortage manifests itself even more during the COVID-19 pandemic. To address the health workforce shortage, a number of states temporarily expanded the scope of practice for nurse practitioners (NP). NP are well-trained health care personnel, typically requiring post-graduate training. According to the American Association of Nurse Practitioners (AANP), NP with full autonomy are authorized to "evaluate patients; diagnose, order and interpret diagnostic tests; and initiate and manage treatments".² Although they are well-prepared to provide primary, acute, and specialty care, their scope of practice varies by state. According to the classification by AANP, in a state with "restricted/reduced practice," NP need to have a collaborative agreement with, or work under direct supervision of a licensed health professional (e.g. physician, dentist). The limited authority of NP has not only reduced health access in rural areas, but also significantly increased the administrative burden of the supervising personnel. It has also reduced the amount of time dedicated for patient care (Traczynski and Udalova, 2018). Healthcare researchers have claimed that granting NP independent practice authority would have a positive impact on patient outcomes.

This report estimates the impact of expanding the scope of practice for NPs on COVID mortality in the Midwest. In the region, seven states were classified prior to the pandemic as "restricted/reduced NP practice" by the AANP. Among those, Kansas, together with Indiana, Michigan, Missouri, and Wisconsin granted NPs independence, whereas Illinois and Ohio did not implement changes.³ In the empirical exercise, we leverage on this quasi-experimental setting to compare daily COVID mortality in the treated states with that in Illinois and Ohio before and after the emergency response. Although the discussion evaluates the recent emergency response under the pandemic, the finding here contributes to the ongoing debate of whether NP should be granted independent authority.

¹ The National Conference of State Legislatures provided a detailed summary on the statistics, which is retrievable at <https://www.ncsl.org/research/health/health-professional-shortage-areas-2017-postcard.aspx>

² See the official website of AANP (<https://www.aanp.org/advocacy/state/state-practice-environment>) for more details.

³ Only experienced NPs in Illinois enjoy full practice authority. More discussion follows in the next section.

According to our estimates, expanding the scope of practice for NPs potentially reduced COVID-related deaths by ten per day in those states that implemented the changes. To put this figure into context, the number amounts to a reduction of 8% of the average death toll in Cook County during the sample period. These results add support to granting NP full independent authority to ease the healthcare workforce shortage.

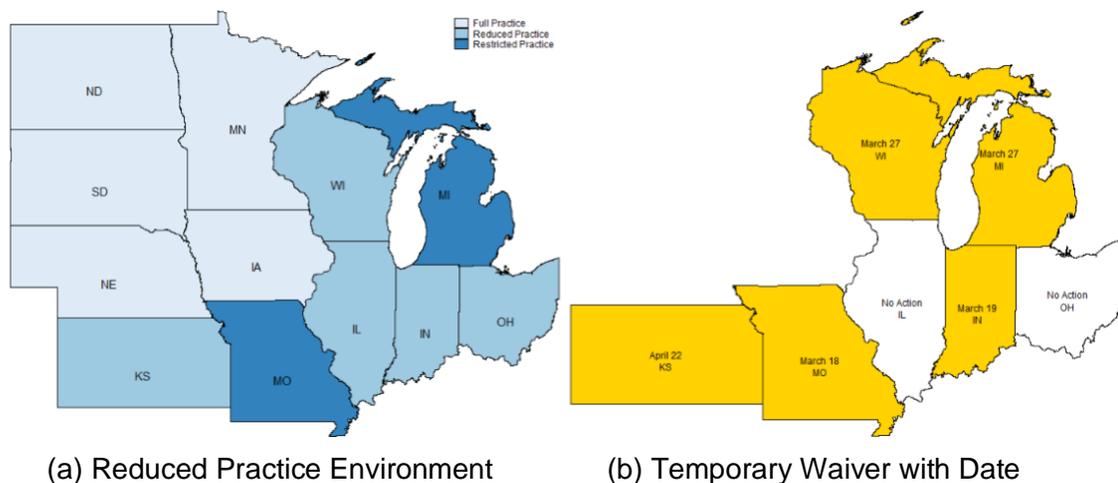
Restriction on NP and State Emergency Response

The scope of practice for nurse practitioners varies by state. According to the American Association of Nurse Practitioners (AANP), five of the Midwest states allow full practice (light blue in Figure 1a), meaning that NP can work independently and are authorized for patient diagnosis and prescription.

Illinois with four other Midwest states (Figure 1a) classify NP under “reduced practice” restrictions. Illinois regulations amended in 2017 do allow a subset of NP full practice authority, but the change only applies to NP who have had at least 4,000 hours of clinical experience and completed 250 training hours.⁴ In contrast, North Dakota, South Dakota, Nebraska, Minnesota and Iowa permit a full scope of practice for all NP without a minimum threshold of accrued work hours.

In Illinois, NP are required to have a collaborative agreement with a health professional (e.g. licensed physician), listing the types of care, treatment and procedures the NP is allowed to perform. NP in Illinois and five other Midwest states can work quasi-independently because physicians are not required to be physically present with the NP. Prior to the pandemic outbreak, Missouri and Michigan had the most restrictive rules, requiring that NP work under direct supervision of a physician (Figure 1a).

Figure 1: Midwest Restriction on NPs and COVID-19 Response



⁴. See detail in the Nurse Practice Act at <http://www.ilga.gov/commission/jcar/admincode/068/068013000D04650R.html>.

As the pandemic unfolded, states with reduced or restricted practice authority began to expand the scope of practice for NP. The aim of the change was to enlarge the healthcare workforce capable of providing COVID-19 care.

Among the Midwest states shown in Figure 1b, Missouri and Indiana were the first to waive part of the supervision requirements. At the date of this report, Illinois and Ohio were the only two states, which have not taken action to expand the scope of practice for NP.

Policy Effect on COVID-related Mortality

To evaluate the effectiveness of expanded scope of practice, this report looks into the impact on COVID-related mortality. Data on county level daily mortality are retrieved from the *New York Times*.⁵

To estimate a cause-and-effect relationship between expanded scope of practice and COVID-19 mortality, this report employs the synthetic control method (Abadie and Gardeazabal, 2003; Abadie, Diamond, and Hainmueller, 2010). The essence of this statistical technique is to construct a counterfactual which mirrors the post-policy mortality that would have been observed had the policy not happened. We then obtain the daily policy effect by directly comparing the counterfactual mortality with the observed mortality. To ensure the counter-factual offers a valid comparison, we make use of several important indicators that would predict COVID-related deaths. These include the pre-policy number of COVID death, pre-policy number of confirmed cases (also retrieved from the *New York Times* database), and county characteristics (number of NPs, population size, percent of 65+ population, percent of black, number of hospital, and number of beds) obtained from the Area Health Resource Files (AHRF, 2020).

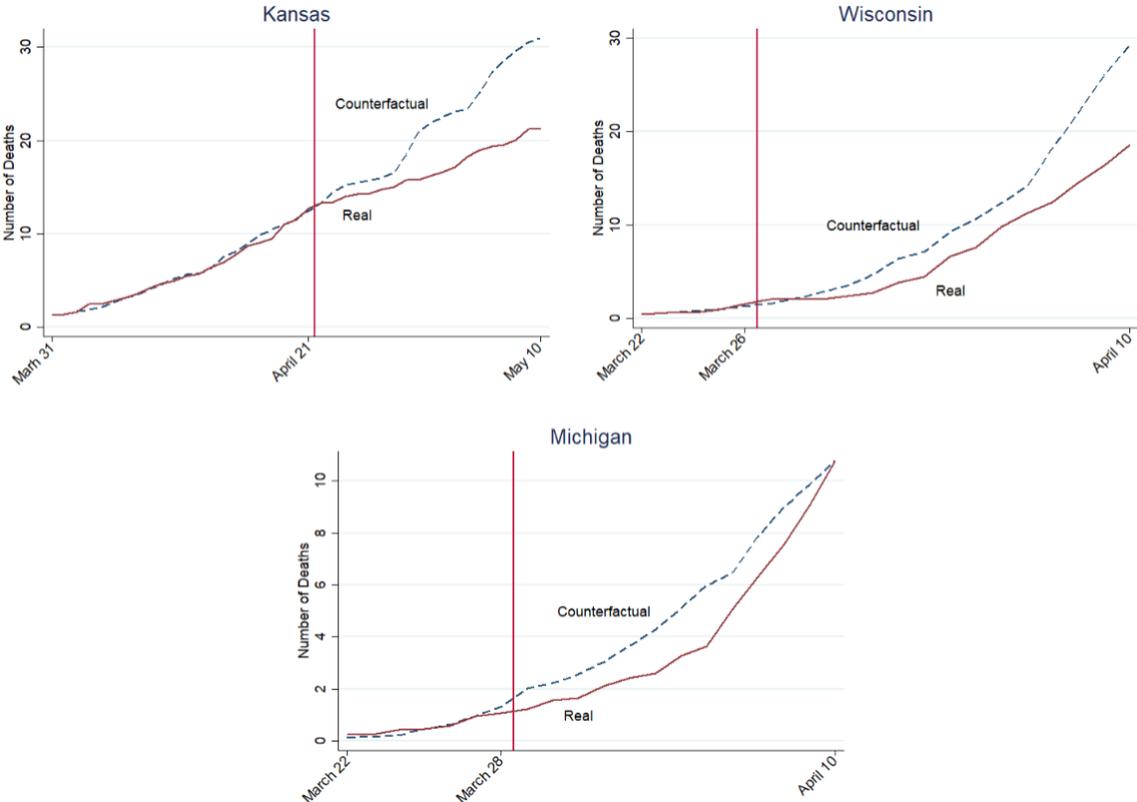
An important property of the synthetic control technique is that the pre-policy number of COVID death has to be informative enough to produce reliable post-policy predictions. In other words, we rely on the pre-policy trend to predict the post-policy movement. This limits the start of the sample period to late March because many counties did not record any COVID deaths until then. For this reason, we are not able to produce a dependable counterfactual for the counties in Missouri and Indiana because they granted authority to NP prior to reporting any COVID-19 deaths.

Figure 2, shows the estimation result for Kansas, Wisconsin, and Michigan. The solid line of each graph represents the actual daily mortality of a state (average of all counties), whereas the dotted line shows the predicted counterfactual using the synthetic control technique. The red vertical line in the middle of each graph represents the day before the policy takes place. For example, in the top-left corner, the solid line

⁵ The New York Times hosted a database about COVID-related death and cases on GitHub. It is publicly available at <http://https://github.com/nytimes/covid-19-data>.

shows that Kansas counties recorded an increasing number of COVID-related death with a modest decline in magnitude since April 22, which is the date Kansas started to authorize temporary independent practice for NPs. The trend afterward clearly diverges from the predicted no-policy counterfactual, which implies that the policy slowed down the death toll. Until the end of the sample period, the maximum impact by the policy reduces the daily death toll by 10 cases. We also observe a similar pattern in Wisconsin and Michigan, though the magnitude of death reduction in Michigan is smaller.

Figure 2: Expanded NPs Scope of Practice on COVID Deaths

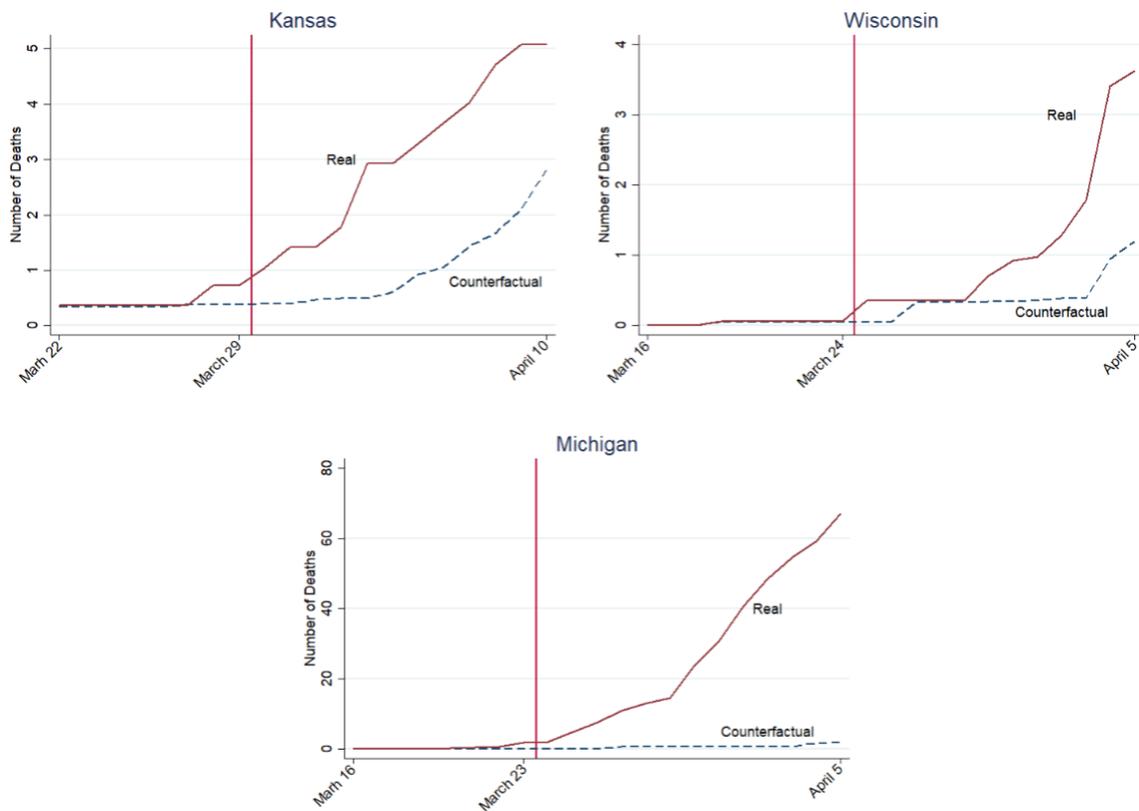


There is however the possibility that the reduction in deaths was caused by some other concurrent policies and any reduction in fatalities would then be falsely attributed to the expanded scope of practice. This concern is particularly valid because there were many policies adopted in response to the nationwide health risk.

Therefore, to check the robustness of our prediction of reduced deaths associated with NP scope of authority, we tested to see if the social distancing policy, a major attempt by states in response to the pandemic, had the same associated improvement on the cases of COVID-19 deaths.

For Kansas, Wisconsin, and Michigan, social distancing measures were implemented in late March. We therefore implemented the same estimation procedures using the synthetic control method but moving the treatment date in each state to correspond to the start of the state's shelter-in-place order. As shown in Figure 3, in each of the three states, the actual cases of death continues to grow at a higher rate than the predicted counterfactual. This finding suggests that the lock down policies did not produce the same reduction in the number of COVID-related fatalities as the expanded scope of practice.

Figure 3: Impact of State Lock Down on COVID Deaths



Conclusion and Policy Implication

Amid the unprecedented health crisis, it is important that state regulators consider the cost of occupational regulations.

The argument for occupational licensing is that it protects the consumer. In the case of NPs scope of practice, regulators often worry about the quality of service if the scope is widened. This report however suggests there is empirical evidence that granting NPs independent authority has contributed to a reduction in COVID-19 deaths.

The Midwest case studies examined in this report provide useful references for Illinois to consider a re-examination of its more restrictive NP policies.

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