Unintended Consequences: How New Subsidy Regulations Reduced Child Care Supply in Rural and Urban Communities

Aparna Jayashankar

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Paper presented to:

Department of Economics
Economics Preceptor, Michael Galperin
Co-Director Undergraduate Program, Professor Kotaro Yoshida
Co-Director Undergraduate Program, Professor Victor Lima

Department of Public Policy Studies
Public Policy Studies Preceptor, Kelsey Berryman

Faculty Advisor and Second Reader, Professor Julia Henly

Abstract

As America's child care landscape becomes more regulated, policymakers are grappling with whether to regulate home-based license-exempt care, commonly known as Family, Friend, and Neighbor (FFN) care. In 2017, Illinois imposed new training requirements on FFN providers in the state's Child Care Assistance Program (CCAP). While the policy intended to improve child care quality, prior research shows that it disincentivized providers from participating in CCAP. I shed light on how child care regulation impacts rural communities - who are more dependent on home-based care - by examining: How did the threat of new training requirements affect the supply of subsidized FFN care in rural versus urban Illinois communities? Using CCAP administrative data, interviews with staff from Child Care Resource and Referral Agencies, and a triple difference-in-differences methodology, I found that announcing training requirements led to large reductions in subsidized FFN care supply across rural and urban areas. Results suggest that rural communities may have experienced a lower decrease, although this decrease was not significant due to large standard errors. Many rural providers may not have reacted to the requirements due to lack of awareness of the new policy, caused by weaker social networks and less access to internet and technology.

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Contents

1 Introduction

Subsidized child care is vital in driving more equitable access to child care for low-income families who otherwise cannot afford high-quality child care that meets their needs. Yet it is unclear what role the state should play in strengthening child care support beyond providing subsidies. With a stream of new federal and state investments into the child care landscape over the past decade, including temporary COVID-19 stimulus payments to expand child care support for families and child care providers, child care is increasingly being recognized as one of the foundational pillars of a country's economy that helps parents manage the often-competing responsibilities of work and caregiving. However, policymakers today contend over whether new funding should be accompanied by increased federal- and state-level regulation of child care quality, particularly for care offered in home-based settings. Is it the state's responsibility to pass legislation that monitors and seeks to improve child care quality? If so, how will regulations impact the supply of care in more rural communities, where providers have limited access to resources like transportation and families rely more heavily on home-based care options?

Aside from the issue of determining regulation levels, policymakers must also determine how to design welfare policies in more equitable ways to ensure that they work for everyone, including vulnerable groups who are more likely to face barriers in child care subsidy participation. One such group is families living in rural areas, where factors including high economic insecurity leave parents with fewer options that meet their work schedule, lifestyle, and other needs (Henly and Adams 3). The relative lack of center-based care options is also partly responsible for making rural parents more reliant on home-based care compared to urban parents (Anderson and Mikesell). Thus, the availability of subsidized home-based care is critical for low-income rural families. Rural child care providers also have less access to opportunities for professional development and training, which in turn can impact their ability to become licensed (Henly and Adams 16). While these considerations make it all the more important to conduct research into how child care policies can better serve rural communities, social welfare policies - including child care reform - have historically been informed by mainly urban-focused studies. For example, the 1996 Welfare Reform Act that established the Temporary Assistance for Needy Families (TANF) program

was developed around landmark poverty research such as William Julius Wilson's "The Truly Disadvantaged" – a seminal work that examined the relationship between race and poverty, with a heavy emphasis on urban America. Meanwhile, few studies of rural America were given a similar level of attention during TANF's creation. Today, as new child care programs are created and pre-existing ones are expanded, the policy changes that are founded on both urban and rural data and research will be more successful at supporting a diverse geographic range of communities.

This paper examines how rural and urban areas were impacted by increased regulation of providers in the Child Care Assistance Program or CCAP. CCAP, a subsidy program administered by the Illinois Department of Human Services (IDHS), is the primary source of child care assistance for low-income families in Illinois. CCAP is managed by 16 local Child Care Resource & Referral (CCR&R) Agencies, each responsible for aiding CCAP providers in their assigned county or counties. CCAP was originally designed to support low-income families and broaden the child care options available to parents, including centers and home-based arrangements. However, in recent years, CCAP has expanded its objectives from increasing child care access to improving care quality.

In February 2017, the State of Illinois announced a major policy change to CCAP: Family, Friend, and Neighbor (FFN) child care providers in CCAP would need to complete new Health and Safety (H&S) training requirements to maintain subsidy eligibility. FFN providers are license-exempt, provide care in their own homes or the child's home, and serve only a few children at a time – the providers themselves are usually relatives or trusted family friends as the name Family, Friend, and Neighbor suggests. Policymakers envisioned that implementing new training requirements for FFN providers in CCAP would improve the overall quality-of-care that children received. With modules ranging from CPR/First Aid to Child Growth and Development and Mandated Reporter Training, these new requirements held the potential to improve the health and safety of children from low-income families receiving subsidized FFN care. Each local CCR&R also hired Health and Safety coaches (H&S coaches) to inform providers of the new requirements and support them in completing the trainings.

For several states, including Illinois prior to the 2017 announcement of training

requirements, the state child care subsidy program does not prescribe clear regulations for home-based and license-exempt providers – named FFN in Illinois. This means that a significant percentage of subsidy payments go to license-exempt providers who are accustomed to facing minimal regulatory requirements. Thus, the increased level of regulations imposed by these new training requirements was an unanticipated departure from what FFN providers were used to. Home-based providers who were licensed – known as Family Child Care (FCC) – and center-based licensed providers were not affected, as they had already completed required trainings to gain licensure.

According to research from the nonprofit Illinois Action for Children, the announcement of the new requirements did not result in a newly trained FFN subsidized sector. Instead, the announcement resulted in a significant decline in subsidized FFN providers, as providers responded to the new training expectations by leaving CCAP (Illinois Action for Children 2). This finding is reminiscent of prior studies, which have shown that child care subsidy usage tends to drop as programs grow more complex and institute more training and eligibility requirements (Hahn et al.). Whether or not the new regulations resulted in higher quality care for providers who completed the trainings remains unknown. What is clear is that the announcement of new requirements led many FFN providers to exit the subsidy program.

FFN providers were told that if they failed to complete the trainings before October 1, 2017, they would no longer be allowed to receive subsidy payments from IDHS. For many providers, CCAP was their primary source of income, so those without adequate resources to complete trainings would need to find other means of generating income. Low-income families receiving subsidized FFN child care would either need to seek out alternate arrangements if their provider became ineligible for CCAP or would have to leave the subsidy program altogether. Notedly, the policy was never enforced, and as of May 2022, no providers have been removed from CCAP due to not completing the trainings; the deadline for completing the trainings has been pushed multiple times without the policy ever being enforced. However, providers were unaware that the policy would not be enforced and many apparently dropped out due to the threat of enforcement. It is also possible that once out of the system, providers were not aware of the lack of enforcement or found it too cumbersome to rejoin.

In this paper, I investigate how announcing increased regulation of subsidized, license-exempt child care in Illinois impacted rural versus urban communities. By doing so, I hope to shed more light on how rural and urban places may respond differently to policies increasing child care regulation. Given that the announcement of new training requirements for Illinois FFN providers in CCAP was found to reduce the total number of FFN providers participating in CCAP, I expand this analysis to explore whether the post-announcement drop in CCAP FFN participation was of a similar magnitude in urban and rural counties. Specifically, I research the following question: How did the threat of new mandatory CCAP training requirements for FFN child care providers affect the supply of subsidized FFN care in rural versus urban Illinois communities?

I compare rural and urban counties using longitudinal monthly administrative provider payment data from CCAP. Each Illinois county is classified as rural or urban based on the Office of Management and Budget's (OMB) Rural-Urban Continuum Codes (RUCCs). Using a triple difference-in-differences design, I measure the drop in CCAP FFN provider participation after the policy announcement – for both urban and rural counties – and compared the size of this drop based on rurality. Since licensed family child care (FCC) providers were not the target of the policy change, I use the number of CCAP FCC providers as a comparison variable. I also conducted interviews with 4 urban-serving Health and Safety Coaches, 3 rural-serving coaches, and a rural-serving Director of Operations responsible for managing the coaches.

I hypothesized that rural areas would experience a greater drop in CCAP FFN provider participation after the announcement of new training requirements because rural providers may have faced more challenges in accessing transportation, internet access, and other resources to complete the trainings. However, the triple difference-in-differences analysis suggests that the drop in CCAP FFN provider participation may have been greater in urban areas, though not significantly so. The qualitative interviews with Health and Safety coaches indicate that, while rural and urban providers faced similar barriers in completing the trainings, rural FFN providers were less likely to be aware of the requirements. In more rural communities, many providers lacked internet access and had a weaker social network with other FFN providers, which limited the avenues through which they could have heard of the

policy change. Based on these findings, I recommend that CCAP build relationships with and survey a diverse range of stakeholders to inform future FFN policy. To ensure all FFN providers hear about policy changes, I advocate for CCR&Rs to use multiple modes of communication to maintain regular contact with providers in rural areas. Finally, I suggest that each CCR&R agency works to connect providers in their region, building a stronger FFN provider social network.

2 Background

2.1 About the Child Care Assistance Program (CCAP)

The Child Care Assistance Program or CCAP is Illinois' state-level child care subsidy program, run by the Illinois Department of Human Services (IDHS). It is administered by 16 Child Care Resource and Referral (CCR&R) Agencies across the state, each of whom are responsible for managing CCAP in their assigned county or group of counties. Families who meet CCAP eligibility requirements and the income threshold of 200 percent of the Federal Poverty Level can apply to receive subsidized care from a provider participating in CCAP ("01.02.01 - Income Guidelines"). If approved, IDHS pays for a portion of the cost through a transfer to the family's child care provider, and parents must pay a weekly or monthly co-payment determined by their income and family size (Adams and Pratt 40).

Four different types of subsidized child care options are available through CCAP, varying by setting – center-based versus home-based – and license status – licensed versus license-exempt. Licensed center-based care is the most common form of subsidized child care in Illinois, while license-exempt center-based care is not widely available. In contrast with center-based options, home-based care serves fewer children and is delivered at a child care provider's home or at the child's home. Subsidized home-based options consist of licensed Family Child Care (FCC) and license-exempt Family, Friend, and Neighbor (FFN) (Child Care Options). The majority of FFN providers are related to the children they serve, and most serve only one or two children.

It is important to note that no one type of child care is suitable for all families, so parents should have a diverse range of child care options available to them. Although

center-based care and licensed FCC are sometimes presumed to be better options given that their providers are licensed, these care types do not meet the needs of many families. In particular, parents who work nontraditional hours or live in rural communities where there is a limited supply of formal child care may need the option of license-exempt FFN care. As new training requirements and other policies attempt to regulate subsidized FFN care, FFN providers may be disincentivized from participating in child care subsidy programs like CCAP (Henly and Adams 7). Reductions in the supply of subsidized license-exempt care could leave families who depend on FFN care without a child care option that meets their budgets, work schedules, and needs.

2.2 New Required Trainings

In November 2016, IDHS informed CCR&Rs that FFN providers would be required to complete new trainings to remain on the CCAP subsidy program. Subsequently, each CCR&R hired Health and Safety coaches to make providers aware of the requirements and provide them with resources and support to complete the trainings. This policy change was made in response to the 2014 federal Child Care and Development Fund (CCDF) reauthorization, which mandated that license-exempt child care providers participate in "preservice, orientation, and ongoing training, as well as annual site monitoring," for health and safety (Adams and Pratt 27). Illinois was, therefore, not the only state to impose this change.

While the policy change was officially announced to providers via mail in February 2017, some Health and Safety coaches began communicating details about the new training requirements to providers as soon as they found out. This means that some providers were notified as early as November 2016 while others found out much later, and some have yet to hear of the policy change. Even among providers served by the same CCR&R, there may be significant variation in when they heard of the training requirements, as differences in internet access, how often providers check their mail, and other factors could have influenced the time taken for Health and Safety coaches to reach providers. Since almost all providers who were aware of the training requirements heard about them after November 2016, I attempt to capture the policy's full effect by considering November 2016 as the policy announcement

date for analytical purposes.

The policy's initial language indicated that all CCAP providers would need to complete the trainings, regardless of care type. However, FCC and licensed child care center providers were already required to undergo the trainings to gain licensure, so the policy was in reality targeted at FFN providers and child care centers who are license-exempt. In later policy announcements, CCAP clarified that only these two groups of providers would need to comply with policy change ("05.05.01 - CCAP Provider Training Requirements"). The training requirements differed for FFN providers and license-exempt child care centers; this paper focuses on how rural and urban FFN providers responded to the policy change. License-exempt child care centers were no doubt impacted by the policy as well, and their response is an important subject for future policy research.

Prior to the announcement of these training requirements, FFN providers had no requirements apart from a criminal background check and a registration process that involved submitting a copy of their state ID and social security card. To satisfy the new requirements, FFN providers needed to complete 16 modules of Illinois Early Childhood Care and Education (ECE) online trainings as well as Mandated Reporter training, training on "What is CCAP", and CPR/First Aid Certification ("Important Announcement"). The CPR/First Aid certification needed to be completed in-person while the other modules could be taken online. According to interviews with Health and Safety coaches, the CPR and First Aid training cost providers approximately $175, but this cost could be later reimbursed. After the initial trainings were announced, providers were also informed that they would be subject to a yearly home visit from a Health and Safety coach from their local CCR&R. However, as was the case with the trainings announcement, there was significant variation in when providers heard about the home visit requirement. During these visits, the coaches would ensure that the children were being cared for in a safe environment that was fully equipped with outlet plug covers, pack n' plays, and other essential resources. Coaches would also serve as a guide, giving providers a space to talk through any problems they were encountering and offering suggestions.

Providers were informed by IDHS that they needed to complete these trainings before October 1, 2017 to maintain CCAP eligibility and continue receiving subsidy payments. Once this date had passed, CCAP decided to not enforce the requirements

and instead pushed the deadline by a few more months. Over time, this became a cycle where CCAP would issue a new deadline only to extend it once again. As of May 2022, CCAP has yet to kick any provider off the subsidy program for not completing the training requirements; this is due in large part to the struggles providers have faced during the COVID-19 pandemic. The pandemic notwithstanding, researchers from Illinois Action for Children assert that adding these new requirements was burdensome for FFN providers and contributed to the declining number of providers participating in FFN under CCAP (Illinois Action for Children 2).

In addition to pushing the deadline several times, CCAP also exempted FFN providers who are related to the children in their care – known as FFN relative providers – from having to complete the trainings requirements, in late 2018 or 2019. Given that this exemption was announced considerably after the November 2016 policy launch, I assume that relatives responded similarly as non-relatives after the initial announcement. Additionally, CCAP has decreased the number of modules that providers need to complete since they initially announced the trainings. However, during the few months I consider before and after the policy announcement, the requirements were not significantly reduced.

2.3 Rural-Urban Differences in CCAP Participation

Table 1 shows the number of children in CCAP for every 1000 people. The child totals are aggregated by care type and rurality level as of October 2016, March 2017, and August 2017. I calculated these totals based on CCAP administrative data from Illinois Action for Children. After accounting for differences in population sizes between urban, rural, and very rural places, urban areas have the highest child CCAP usage rate (see Methods for how I classified counties by rurality). For every 1000 people, there are more than twice as many children in urban counties enrolled in CCAP than children in rural or very rural counties. Urban children also have the highest CCAP enrollment rates across FNN, FCC, and center-based care.

Table 1: Child CCAP Usage in IL, per 1000 People

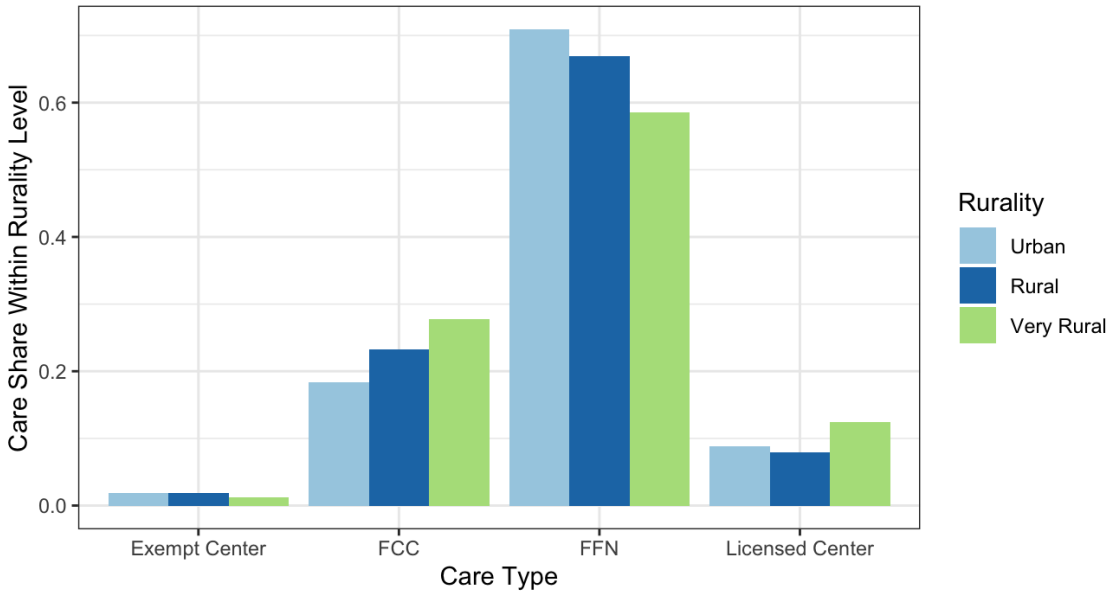
Rurality	October 2016	March 2017	August 2017
Urban	11.49	11.1	11.09
FFN	3.38	3.03	2.92
FCC	2.9	2.82	2.9
Center	5.37	5.4	5.44
Rural	5.4	5.2	5.48
FFN	1.67	1.49	1.44
FCC	1.52	1.46	1.52
Center	2.29	2.29	2.61
Very Rural	4.05	3.83	3.99
FFN	1.16	0.92	1.01
FCC	1.31	1.07	1.18
Center	1.55	1.67	1.79
Total	10.76	10.39	10.4

One potential explanation for higher child CCAP usage rates in urban areas is that rural areas face more challenges in accessing CCAP. Hirschl and Rank argue that welfare participation may be lower in rural areas due to social stigma and inaccurate information on eligibility (156). This could disincentivize low-income rural families from enrolling their children in CCAP despite being unable to afford child care. There is also limited availability of licensed FCC and center-based care in rural areas because providers face high costs relative to revenues, including the costs of completing licensing requirements, meeting regulations, and hiring staff (Henly and Adams 4). Rural families are more geographically dispersed, so there may not be enough children living nearby who need care. There are few FCC homes and centers in rural communities that can raise enough revenue to offset their fixed costs and continue operating. With fewer available child care options in CCAP, parents who cannot find care that meets their needs may forgo CCAP assistance altogether, resulting in lower child CCAP enrollment rates in rural Illinois (Schmit et al. 11). However, we require more evidence to support this explanation; it is merely one potential hypothesis.

Figure 1 shows the percentage of CCAP providers in each type of care for urban,

rural, and very rural counties. The green bar for FFN, for example, represents the percentage of all rural CCAP providers who deliver FFN care. Similarly, the light blue bar for FFN shows the percentage of all urban CCAP providers who deliver FFN care. Regardless of rurality, the majority of providers in CCAP deliver FFN care, followed by FCC, licensed center care, and license-exempt center care. FCC and licensed center care comprise a larger portion of CCAP providers in rural counties than in urban counties. The opposite is true for FFN – the percentage of all CCAP providers who deliver FFN care is smaller in rural than in urban areas.

Figure 1: CCAP Provider Care Share by Rurality, Jan 2016



One possible reason why FCC and licensed care comprise a greater share of all CCAP providers in rural counties is that - as previously mentioned - many rural providers would be unable to operate licensed and center-based care options without significant subsidy funding to offset fixed costs. Many FCC and licensed center care providers in urban communities also rely on subsidy funding; however, rural providers have fewer nearby children they can serve to justify opening an FCC home or licensed center without a subsidy. This could result in a higher proportion of subsidized FCC and licensed center care providers in rural communities.

3 Literature Review

In this section, I introduce the concept of a "provider social network". I discuss the theory that providers with a strong social network have greater awareness of a subsidy program's eligibility requirements and gain a better understanding of what they entail. Then, I explain how concerns over home-based license-exempt care quality have driven increased federal- and state-level regulation of FFN care. Finally, I present literature showing that FFN care has its own unique strengths and that new training mandates can reduce the supply of FFN child care.

3.1 Social Network Theory

In this paper, I use the term "social network" to refer to a group of FFN providers in CCAP who are in close contact with each other. A CCAP FFN provider with a strong social network knows many other FFN providers who are also in the subsidy program. Those with a weak social network are not well-connected with others like them who participate in CCAP. I apply this concept of a provider social network to analyze whether rural and urban FFN providers would have been aware of the 2017 training requirements and understood what they entailed.

Prior research has found a person's social network to be a good predictor of whether they will participate in a subsidy program. Hirschl and Rank argue that a few basic factors influence welfare participation: whether a person is aware of the program, knowledgeable about the eligibility criteria, and wishes to participate (157). They assert that all three criteria are dependent on population density, as a greater exchange of information between people can lead to greater awareness about a welfare program and its requirements (171). They reason that exchange of information is essential in promoting welfare participation because most individuals learn about welfare programs by informal means, including word of mouth (157).

Hirschl and Rank further argue that knowing other people who are using a given welfare program can improve how well one understands the program's eligibility criteria (including training requirements such as the one studied in this paper) (156). Due to lower population density, rural households may know fewer people participating in a subsidy program, leading them to possess a lack of information or incorrect information on a program's eligibility requirements (157).

While Hirschl and Rank use population density as a proxy for the strength of an individual's social network, their paper was published in 1999; I argue that technological improvements since then have allowed for some individuals to build strong social networks with other subsidy participants without being in a high population-density area. A given CCAP FFN provider may not know of other FFN providers in their community who are also in CCAP. Yet they may still be connected with CCAP FFN providers residing in other communities or counties through social media groups and online messaging platforms.

The extent to which population density serves as a proxy for social networks may also depend on rurality. Providers living close to a large metropolitan area are more likely to have internet access and a personal device that they can utilize to seek out other providers in CCAP. While many rural communities are tight-knit, there are fewer FFN providers in CCAP in each rural community, so rural providers may need to look outside their community to find others like them in CCAP. Rural providers may not have access to the same level of technology or possess a high level of technology skills – two factors that can hinder their ability to build a strong FFN social network using online means. As a result, a rural community with broadband access and high technology usage rates may be more likely to have a strong CCAP FFN social network than a rural community without access to these resources. If we compare two rural communities that have similar levels of broadband and technology access, then population density may have greater importance in determining the strength of a provider's social network.

There is a gap in literature discussing how social networks may impact a child care provider's response to new training requirements. However, one study on Illinois' Child and Adult Care Food Program (CACFP) suggests that stronger social networks can help keep child care providers up-to-date on new subsidy eligibility requirements (Katherine E. Speirs et al. 1). CACFP is the primary food subsidy program in Illinois, and it supports providers in serving children nutritious food by reimbursing healthy meals. In their research on CACFP, Speirs et al. argue that greater child care provider density in urban areas could lead to stronger social networks in which providers share strategies on where to shop and how to prepare meals – all activities that help them meet CACFP eligibility requirements (1). While this provider network can be formal or informal, it can give those who live in urban areas a strong

support system that helps them stay up-to-date on subsidy eligibility requirements (1). The CACFP study also found evidence that providers in rural Illinois communities reported facing greater difficulty in preparing meals that both met the eligibility requirements and were appealing to the children they served.

One benefit of applying the CACFP study to the CCAP context is that CACFP is also a subsidy program for child care providers in Illinois. It concerns a similar sample of child care providers as the one studied in this paper, and it examines how rural and urban providers dealt with subsidy eligibility requirements in different ways. However, the CACFP study does not explore responses to new eligibility requirements – it focuses on preexisting ones. It also presented a case where awareness of eligibility requirements was beneficial for remaining in the subsidy program. However, I hypothesize that providers who were unaware of the 2017 CCAP training requirements were better off, as they were not incentivized to leave CCAP and were never kicked off the program.

Given Hirschl and Rank's theory and the CACFP study findings, it is possible that differences in social networks influenced the likelihood that rural and urban FFN providers found out about the new CCAP training requirements. It also may have influenced their ability to fully understand what the policy change entailed, whether the change applied to them, and the consequences for failing to comply with the training mandate. Thus, social network theory is instrumental in analyzing how increased subsidy regulation impacts rural versus urban subsidy participation.

3.2 Regulation of Home-Based and License-Exempt Care

Historically, child care programs have focused on supporting working parents who cannot afford child care that meets their needs. However, recent concerns about the quality of home-based and license-exempt child care options have driven new federal- and state-level initiatives that focus on promoting healthy child development. In Illinois, the announcement of new 2017 training requirements for CCAP FFN providers was one of the major changes that signaled this shift towards improving child care quality. Another significant quality-improvement initiative was the 2013 overhaul of Illinois' old Quality Rating and Improvement System (QRIS) in favor of a more comprehensive, research-based system called ExceleRate Illinois (Alexander

and Stoll 3). With these changes, states are creating a more regulated child care landscape with hopes of incentivizing providers to deliver higher-quality care.

While quality-improvement efforts have been driven by concerns that home-based and license-exempt care have poor quality, measuring quality is a more complicated endeavor. Prior research has found that center-based care and licensed home-based family child care (FCC) may be better for a child's cognitive development than license-exempt home-based FFN care, but FFN care may promote better socioemotional skills. The longitudinal Study of Early Child Care found that child care homes, such as FFN and FCC, were associated with fewer positive development outcomes than child care centers (National Institute of Child Health and Human Development). In contrast, the Three City Study concluded that child care setting matters little in determining child care quality (Coley et al.). Further, one study found that children in FCC had higher rates of behavioral problems than children in FFN care (Fuller et al.). Some child care researchers argue that FFN care cannot be measured by the same quality standards as center-based care, as home-based settings and center-based settings each have their own unique strengths. For one, FFN care has been shown to promote better socioemotional development (Henly and Adams 4). Each parent may have their own markers of "quality child care", and this further complicates attempts to produce an objective measure of quality. Despite center-based, FCC, and FFN each having their own positive and negative aspects, states continue to increase regulation of home-based and license-exempt care in an effort to improve child care quality.

It is also not clear that increasing FFN regulation – such as through new training requirements or more stringent eligibility requirements for providers – is effective at improving child care quality without significantly increasing funding and other supports. This is especially uncertain in rural areas due to a lack of literature addressing how rural FFN providers respond to new regulations and training requirements. In general, there is evidence that more training for early childhood education teachers can positively impact child development. However, the Cato Institute finds that more training can also have negative effects: reductions in child care supply, higher child care prices for low-income families, and less access to child care (Bourne). In 2014, the Child Care Development Fund reauthorization mandated that states implement

new Health and Safety training requirements for license-exempt care, which Illinois announced for its FFN providers in 2017. The Economic Policy Institute shows that the CCDF's new training mandate fell short because it attempted to increase child care quality without changing provider compensation levels (Gould et al.). It also failed to give providers adequate resources to complete the trainings and offer higher-quality care. It should be noted that neither the Cato Institute nor the EPI research focused on how the rural child care ecosystem is impacted by increased regulation. Overall, there is a dearth of case studies that provide strong evidence supporting the implementation of new required trainings for child care providers, and this is particularly so for rural areas.

It is also important to acknowledge that many parents and providers are opposed to increased regulation of FFN care because it has traditionally been a child care option with few government restrictions. The majority of FFN providers are related to the children they serve, and if they are not related, they are typically a trusted family friend. Individuals providing and receiving FFN care are not accustomed to strong government regulation, and some providers and families may find new quality-improvement measures to be unnecessary or intrusive. New regulatory measures could thus lead some families and providers to leave child care subsidy programs.

4 Methods & Data

To determine the differential effect of new CCAP FFN eligibility requirements on rural versus urban providers, I used a mixed methods approach comprised of triple difference-in-differences models and interviews with staff members working at Child Care Resource and Referral (CCR&R) agencies. First, I conducted an initial quantitative descriptive analysis of provider-level CCAP data, followed by the triple difference-in-differences estimation of the drop in FFN providers relative to FCC providers, post-training announcement versus pre-announcement, in rural versus urban communities. Next, l interviewed rural and urban CCR&R staff to gain insights on providers' experiences and understand in what ways the same policy may have incentivized different CCAP participation rates among rural and urban providers. This project was approved by the University of Chicago Institutional Review Board

(IRB).

4.1 Comparison Group

FCC (Family Child Care) is comprised of licensed providers who deliver child care in their own homes and serve up to 12 children at once. FFN (Family, Friend, and Neighbor) care is also provided in home-based settings; however, its providers are license-exempt and cannot care for more than three unrelated children (children who are unrelated to each other) at once. FCC is typically more formalized than FFN, and FCC providers tend to have higher educational attainment and more training compared to FFN.

IDHS initially announced that all CCAP providers – including FCC, FFN, licensed child care centers, and license-exempt child care centers – would need to complete the training requirements. However, they soon revised the policy to only include license-exempt providers – FFN providers and license-exempt child care centers. For FFN providers who were used to experiencing little government regulation, the training requirements represented a major departure from the level of oversight they were used to. FCC providers had already completed the trainings to gain their licensure, so despite being included in the initial policy change, they did not need to complete any additional trainings. Further, the revised policy explicitly excluded them. Thus, I assume that FCC providers knew that they were not affected by the policy change and did not respond. If this assumption holds, then this makes FCC a good comparison group for the analysis. I hypothesized that, after the announcement of the 2017 training requirement, rural areas experienced a greater drop than urban areas in CCAP FFN participation compared to CCAP FCC participation. In other words, I predicted that the drop in FFN - FCC after the policy announcement would be greater in rural counties. The quantitative analysis in the Findings section tests this hypothesis by measuring how FFN care changed relative to FCC, in rural versus urban areas, and before versus after the policy change.

4.2 Descriptive Quantitative Analysis

The primary unit of measurement was the total number of providers in CCAP, aggregated in monthly totals for each of Illinois' 102 counties, from January 2016 to

April 2019. Monthly CCAP provider totals were further segregated by type of care – FFN (license-Exempt Family, Friend, and Neighbor), FCC (licensed Family Child Care), and licensed center care providers. I also explored a similar dataset consisting of CCAP child totals rather than provider totals. These datasets were provided by Illinois Action for Children.

Beyond CCAP administrative data, the Office of Management and Budget (OMB)'s system for determining a county's level of rurality – the Rural Urban Continuum Codes (RUCC) – was paired with CCAP data to assign each Illinois county a measure of rurality. RUCC is a scale of 1 (most urban) to 9 (most rural). Codes 1 - 3 are assigned to metropolitan counties, which are determined the size of their population. Codes 4 - 9 are nonmetro or rural counties – grouped first by population and then delineated by their adjacency to a metropolitan area. This classification scheme is not specific to Illinois but is rather used nationwide. From these RUCC codes, I created my own categories of Urban (codes 1-3), Rural (4-6), and Very Rural (7-9) for the descriptive analysis. I formed these categories solely for the sake of understanding how the child care landscape differs in counties of varying rurality, so these are not classifications based on substantial evidence and should not be extrapolated for any other purposes. For the triple difference-in-differences analyses, I used the metro-nonmetro distinction as an indicator of urban versus rural. See Appendix A for more details on the classification system used for the descriptive analysis as well as the mean and standard deviation of the number of providers per county. [1]

Adams County was excluded from all analyses due to a significant number of errors where CCAP usage in other counties had been miscoded as Adams County; according to the data source, Illinois Action for Children, these errors occurred because Adams County has the lowest county code among the Illinois counties. There is a chance that these errors affected the accuracy of our data for other counties. I assume that the miscoding occurred randomly, so it most likely is not correlated with

[1]There exist many different definitions for what should be considered a "rural" community; the Census Bureau offers their own rural-urban classification system that greatly differs from what is used by the Office of Management and Budget. The OMB classifications are typically used by economic researchers because they provide classifications at a county level, which is useful for aggregating with labor market trends and other economic data. The Census Bureau's definition provides classifications at a much smaller geographical unit, based on population size and density. Hence, it is important to note that the OMB definition of rural is not fully accurate and excludes communities that should be classified as rural. To learn more about rural-urban classifications, see the **USDA Economic Research Service Review of Rural Definitions.**

any of the predictor variables examined in this paper.

4.3 Triple Difference-in-Differences Quantitative Analysis

Several triple difference-in-differences models were used to measure the difference between FFN and FCC, in rural versus urban areas, and before versus after the policy change. As mentioned before, the Triple Difference-in-Differences analysis treated the metropolitan/nonmetro RUCC classification by the OMB as an urban/rural indicator, as is done by the OMB and other federal agencies, as opposed to using the urban/rural/very rural classification I created for the descriptive analysis. Two basic models are provided below – the first is the two time period model, which considers time as a binary indicator variable to represent whether the data point is before or after the policy announcement date of November 2016. The multiple time periods model considers time as a number from -10 to 29; for example, -10 represents ten months before the policy announcement or January 2016, and 29 represents twenty-nine months after the policy announcement or April 2019.

Two Time Period Model

$$\Upsilon_{tcr} = \boldsymbol{\alpha_{tcr}} + \beta_t + \gamma_c + \delta_r + \theta_{tc} + \mu_{tr} + \rho_{cr} + \eta + \varepsilon_{tcr} \tag{1}$$

Here, t references time, which equals 0 for before or 1 for after the policy announcement. Since I assume November 2016 to be the policy announcement date, t equals 0 for all months prior to November 2016 and 1 for all months after, including November 2016. c indicates care type and equals 0 for FCC and 1 for FFN care. r denotes rurality and equals 0 for urban and 1 for rural. Υ_{tcr} represents the number of CCAP providers, and η controls for county-level differences in percent child poverty and monthly unemployment levels.

The model also includes interaction variables between t, c, and r. θ_{tc} represents the average change in the difference between FFN (the treatment) and FCC (the control) after the policy change; μ_{tr} indicates the average change in the difference between rural and urban provider totals after the policy change; and ρ_{cr} denotes the average difference between FFN and FCC in rural versus urban areas. ε_{tcr} accounts for error. The most important variable is the triple interaction between time, care

type, and rurality: α_{tcr} measures the difference between FFN and FCC, before and after the policy, and in rural versus urban areas. If this variable is significant, it indicates that there may be a consequential difference in how the policy impacted FFN providers in rural versus urban areas.

Multiple Time Periods Model

$$\Upsilon_{tcr} = \sum_{-10}^{29} \boldsymbol{\alpha_t}\ \mathbf{1}(\boldsymbol{FFN\ \&\ rural})_{\boldsymbol{cr}} + \beta_t + \gamma_c + \delta_r + \theta_{tc} + \mu_{tr} + \rho_{cr} + \eta + \varepsilon_{tcr} \quad (2)$$

The key difference between the two time period model and the multiple time period model is that t is a binary variable in (1) and consists of 40 variables in (2). In (2), t equals 0 for November 2016, -1 for October 2016, 1 for December 2016, and so on. Rather than creating one triple interaction coefficient, the Multiple Time Periods Model has 40 α_{tcr} variables, each calculating the rural-urban difference in FFN-FCC relative to November 2016. For example, α_{tcr} at time $t = 1$ measures the reduction in CCAP FFN participation from November to December 2016, in rural versus urban areas. Hence, α_{tcr} at time $t = 0$ is equal to 0.

The triple difference-in-differences methodology relies on a few key assumptions. First, I assume parallel trends, meaning that, in the absence of new training requirements being announced, FFN would have followed a similar trend as FCC. Urban areas would have also experienced similar post-policy announcement CCAP provider participation rates as compared to before the trainings were announced; the same is assumed for rural areas. While we have no knowledge of what would have actually happened in a counterfactual world, FFN and FCC are both more informal, home-based care options and we have reason to believe that they follow similar trends. The number of providers for both types of care has been dropping in recent years due to rising costs of housing and insurance, low wages, lack of respect for their roles, and new or increased regulations (National Center on Early Childhood Quality Assurance 8-10). As a result, the availability of both subsidized FCC and FFN care has been declining in Illinois and nationally. In contrast, center-based care options deal with a much different set of factors, as subsidy usage is trending towards more center-based care, and providers of center care typically receive higher wages, are required to spend fewer hours in operation, and are less likely to be the target of new regulations (8-9).

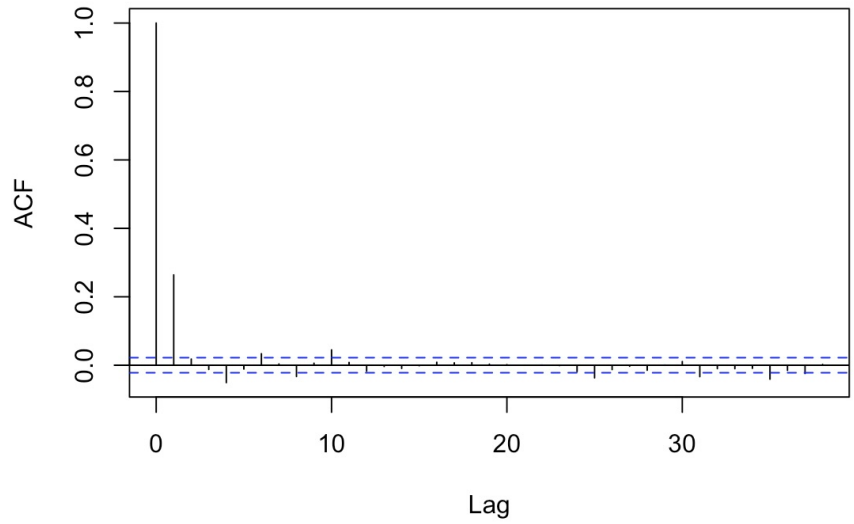
The main pressures affecting the availability of FFC and FFN care are similar, and no other major policy changes are known to have occurred during this time period which would have targeted only FCC care; this leads us to believe that the parallel trends assumption holds.

The second important assumption we make is the Stable Unit Treatment Value Assumption. This implies that there are no spillover effects from the treatment group to the control group, so FCC providers in the CCAP subsidy program should not have been affected by the imposition of new training requirements for FFN providers. The policy directly targeted FFN providers and not FCC providers, so this assumption likely holds. However, there is a chance that some FCC providers may have mistakenly believed that the new training requirements affected them, which could have influenced their subsidy participation. During my interviews with CCR&R staff, I did not hear of a significant portion of FCC providers who responded to the training announcement in this manner. Therefore, I assume that the Stable Unit Treatment Value Assumption is relatively strong, allowing us to identify the treatment effect using FFN as the treatment group and FCC as a comparison.

4.4 Robustness Checks

Given that the CCAP provider monthly totals were panel data, I accounted for serial autocorrelation using the Cochrane-Orcutt method. Figure 2 displays the ACF plot of residuals, which indicates first-order autocorrelation. Autocorrelation violates our assumption of uncorrelated error terms and can result in inflated R^2 values and underestimated standard errors. To correct for this, I used the Cochrane-Orcutt method for both the Two Time Period and Multiple Time Period models to generate a more accurate AR(1) model.

Figure 2: ACF Plot of Residuals



To check for multicollinearity between variables, I calculated the Variance Inflation Factor, which measures the correlation between each predictor variable in the model. As seen in Table 2, each predictor's VIF value was a little over 1, indicating little correlation between predictor variables. This is not significant enough to warrant concern of multicollinearity.

Table 2: Variance Inflation Factor Values

Variable	Time	Type of Care	Rurality	% Child Poverty	Unemployment
VIF	1.200566	1.000289	1.031363	1.451813	1.620128

4.5 Child Care Resource & Referral Agency Interviews

To understand why the new CCAP training requirements may have incentivized rural FFN providers to respond differently than urban FFN providers, I interviewed 4 Health and Safety (H&S) coaches from a more urban-serving Child Care Resource & Referral (CCR&R) agency and 3 from a more rural-serving CCR&R agency. I also interviewed a rural-serving Director of Operations who is responsible for managing H&S coaches. Health and Safety coaches were hired specifically to assist providers in completing the training requirements, as well as to perform yearly home visits to ensure providers were caring for the children in a safe environment equipped with essential resources. Interviewees were selected by reaching out to the CCR&R leaders,

each of whom referred several of their employees who would be willing to share their story. Of the 9 contacts who were provided, 8 responded, yielding a high response rate. However, as the interviewees were chosen by the CCR&R leaders, they were not randomly sampled. See Appendix B for a list of the interviewees and their respective positions.

Interviews were each 30-minutes long, semi-structured, and conducted virtually on Zoom. After giving their verbal consent to being interviewed, coaches answered questions describing when providers first heard of the policy change, how they perceived the training requirements, how willing they were to complete the trainings, and what challenges they faced in doing so. Examples of questions asked include "How important was a provider's social network in finding out about the trainings?," "How seriously did providers think the training mandate would be enforced?," and "How important was access to transportation, broadband, or other resources for participation?". See Appendix C for a more complete overview of interview protocol. Interview transcripts were compiled and coded to identify common themes indicated by only rural-serving coaches, by only urban-serving coaches, or by all coaches. Based on these themes, the data were subsequently coded and analyzed.

5 Findings

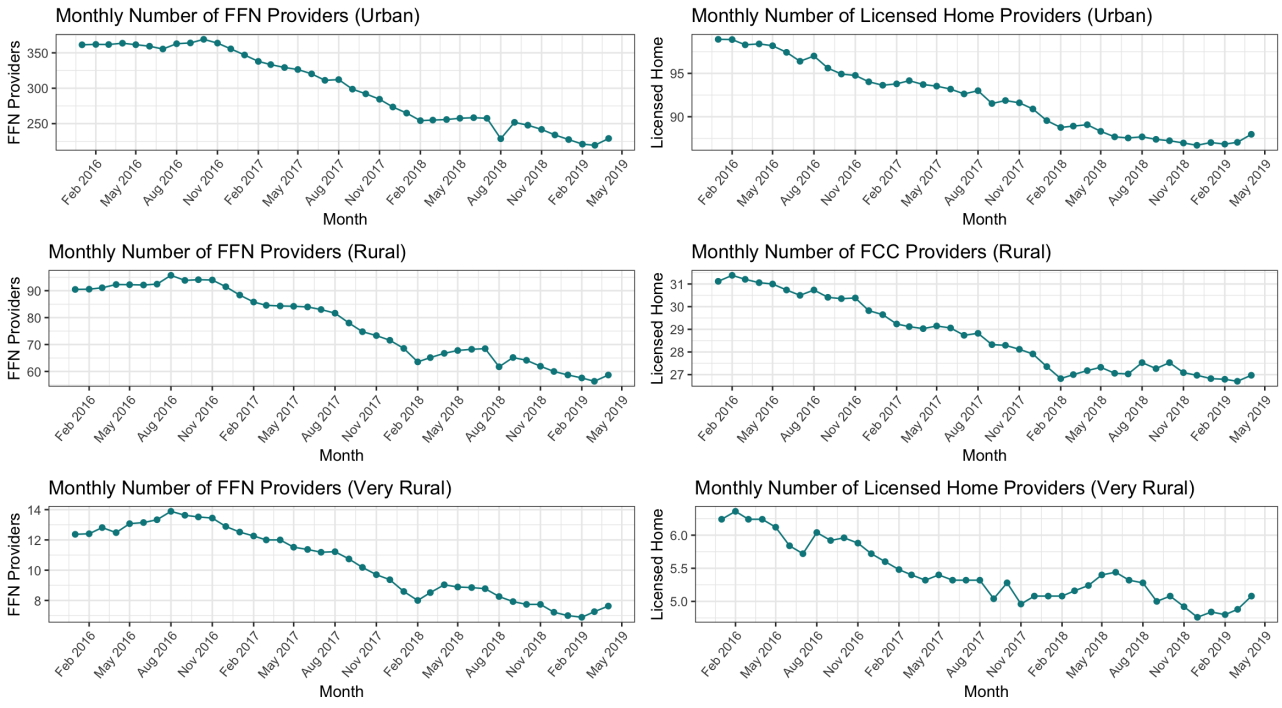
Based on descriptive analyses of child- and provider-level CCAP data, triple difference-in-differences models, and interviews with Health and Safety coaches, I draw several conclusions for how the threat of new mandatory CCAP training requirements for FFN child care providers affected the supply of subsidized FFN care in rural versus urban communities in Illinois. First, both urban and rural counties experienced a noticeable drop in FFN provider participation in CCAP after November 2016. Second, contrary to my expectation, CCAP administrative data demonstrates that urban areas may have experienced a greater drop in subsidy participation compared to rural areas, though not at a high significance level. Third, interviews with CCAP program staff suggest that FFN providers encountered many of the same barriers in completing the Health and Safety trainings whether they lived in a rural or urban area – these include lack of technology and internet access, lack of technology savviness, and lack of safe and accessible transportation, as well as feelings of frustration at being asked

to complete new trainings and confusion over what the trainings entailed. Finally, I find that lack of internet and technology access and weaker social networks left many rural providers unaware of the new training requirements; this may have dampened the rural response to the policy announcement.

5.1 Drop in FFN Providers Post-Policy Announcement Across Urban and Rural Counties

The training requirements were announced sometime between November 2016 and February 2017; this is around the same time when we begin observing a drastic decline in the number of FFN providers in CCAP. This trend is not unique to urban, rural, or very rural counties as observed in Figure 3. The decline in monthly FFN provider totals in CCAP continues until around February 2018, after which it begins to plateau.

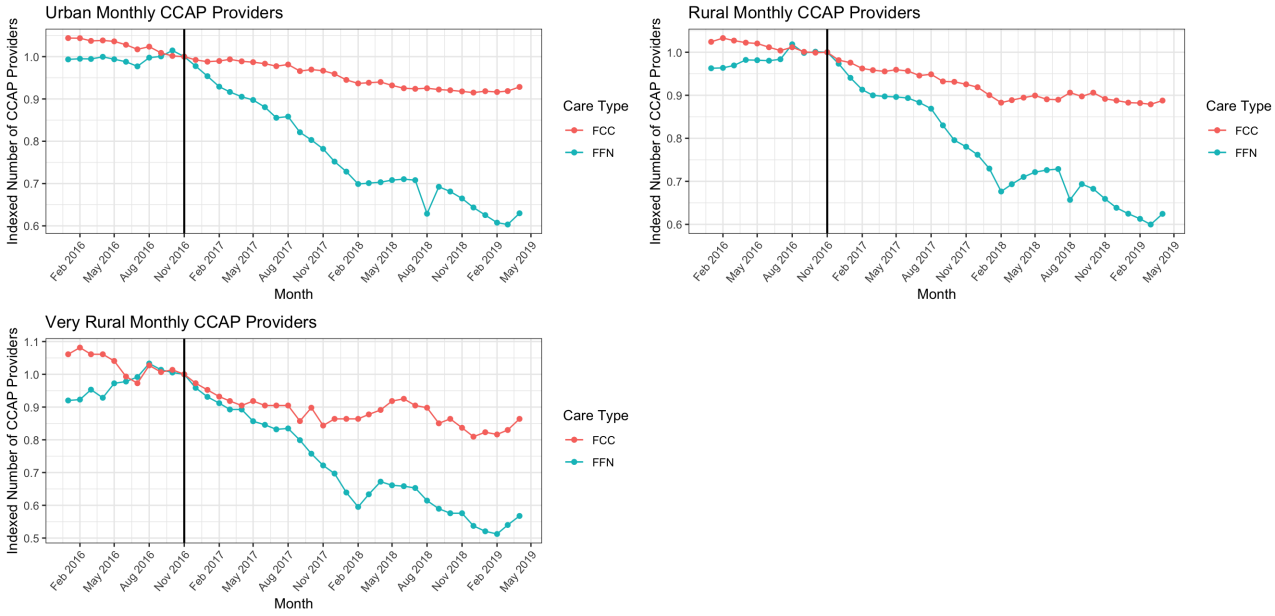
Figure 3: Monthly FFN and FCC Provider Totals in CCAP by Rurality Level



While Figure 3 lends strong visual evidence that the announcement of new training requirements caused a large reduction in CCAP FFN participation, the comparison FCC provider totals also appear to decrease significantly during this time period (Figure 3). To better understand how the decline in FFN provider CCAP participa-

tion compared to the decline in FCC provider CCAP participation, as well as whether this decline varied by rurality, I indexed monthly FFN and FCC provider totals to the announcement date of November 2016. The indexed totals are charted for urban, rural, and very rural Illinois counties in Figure 4.

Figure 4: Monthly FFN Provider Totals in CCAP by Rurality Level



All three levels of rurality – urban, rural, and very rural – experienced declines in CCAP FFN at a faster rate compared to FCC beginning around November 2016 (Figure 4). While the number of CCAP FCC providers also declines over this period, they do not experience as large a drop as FFN providers. Very rural counties experienced the greatest overall drop in FFN providers from November 2016 to February 2018 – a 40% decrease – and the number of very rural FCC providers reduced by about 15% during this period. The sudden reduction in CCAP FFN providers across all rurality levels indicates that the training requirements may have incentivized some portion of providers to drop off CCAP regardless of where they lived and/or disincentivized new providers from joining.

5.2 Potential Greater Reduction in CCAP Participation for Urban FFN Providers

Using a triple difference-in-differences methodology to construct a two time period (1) and a multiple time periods model (2), I found that urban FFN provider participation

in CCAP was more likely to drop in response to the training requirements compared to rural provider participation. As explained in the Methods section, the key parameter of interest in the triple difference-in-differences models is the triple interaction variable between time, the FFN indicator, and the rural indicator. This measures the average treatment effect on FFN providers by calculating the difference between FFN and FCC, in rural versus urban counties, and before and after the policy change.

Two Time Period Model

From the regression output in Table 3, I draw three main conclusions. First, the Time x Type of Care interaction is negative and significant at a 10% level (-72.17); on average, I estimate that there were 72 fewer FFN providers per county than FCC providers, post-policy announcement, compared to what we would expect from pre-policy announcement trends. This supports Illinois Action for Children's prior finding that the introduction of new training requirements led a significant number of FFN providers to leave CCAP or not join the subsidy program as a new provider. Second, the Type of Care x Rurality variable is also negative and significant (-183.75) which indicates that the average rural county has approximately 184 fewer CCAP FFN providers relative to FCC providers than urban counties. This is consistent with Figure 1 in the Background section, which showed that FFN makes up a smaller share of all CCAP providers in more rural counties. The triple interaction coefficient – Time x Type of Care x Rurality – is positive but not significant (57.29). Had this figure been significant, I would estimate that the average urban county had a greater post-policy announcement drop in CCAP FFN participation than rural areas – a drop that was greater by 57 providers – based on what we would expect from pre-policy announcement trends. This is contrary to my expectation; I hypothesized that rural areas would experience a greater drop in CCAP FFN participation than urban areas. However, due to large standard errors, we are unable to conclude heterogeneous treatment effects for rural versus urban areas. Consequently, we fail to reject the null hypothesis that rural and urban areas experienced similar post-policy announcement reductions in subsidy participation.

Table 3: Two Time Period Model

	Model 1	SD
(Intercept)	225.97***	(49.21)
Time	−46.19	(37.13)
Type of Care (0 = FCC, 1 = FFN)	242.18***	(35.01)
Rurality (0 = Urban, 1 = Rural)	−115.79**	(38.50)
Percent Child Poverty	428.37**	(140.52)
Unemployment	−30.60***	(7.47)
Time x Type of Care	−72.17•	(40.42)
Time x Rurality	14.63	(44.32)
Type of Care x Rurality	−183.75***	(46.51)
Time x Type of Care x Rurality	57.29	(53.70)
R^2	0.03	
Adj. R^2	0.03	
Num. of time periods	40	
Num. of counties	101	

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\bullet}p < 0.1$

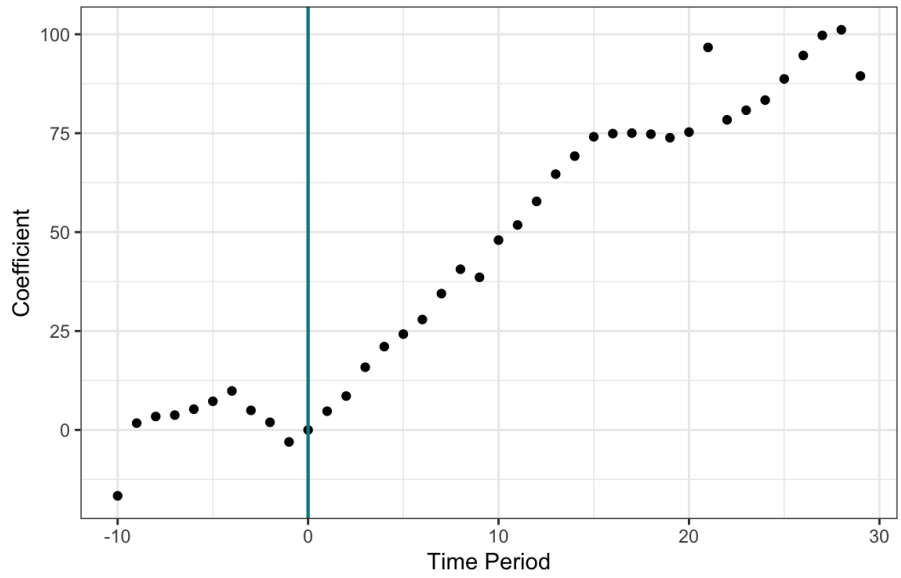
The finding that urban FFN providers may have been more likely to drop off CCAP or not join the program in response to the training requirements is upheld by the Multiple Time Periods Model (although it too does not reach statistical significance), which replicates the Two Time Period Model in all parameters with the exception of time. Here, time is instead a collection of 40 different variables, ranging from the period ten months before the policy announcement (January 2016) to 29 months after (April 2019).

Multiple Time Periods Model

Figure 5 shows that the triple difference coefficients – the difference between

FFN and FCC in rural versus urban areas, in comparison to November 2016 – is roughly constant around 0 prior to the policy announcement. This means that prior to the policy change, there was not a crucial difference between rural FFN – FCC (the difference between FFN and FCC) and urban FFN – FCC. However, after time period 0, the coefficients begin growing larger, rising sharply from period 0 to 15 and then increasing at a slightly slower rate. Thus, a gap began growing between rural FFN-FCC and urban FFN-FCC, indicating that urban FFN providers may have reacted more strongly negatively to the policy announcement. This reinforces the findings from the Two Time Period Model – the drop in FFN relative to FCC post the policy announcement is estimated to have been larger in urban areas than in rural communities. For a full list of the Multiple Time Period Model's Triple Interaction Coefficients, see Table 6 in Appendix D.

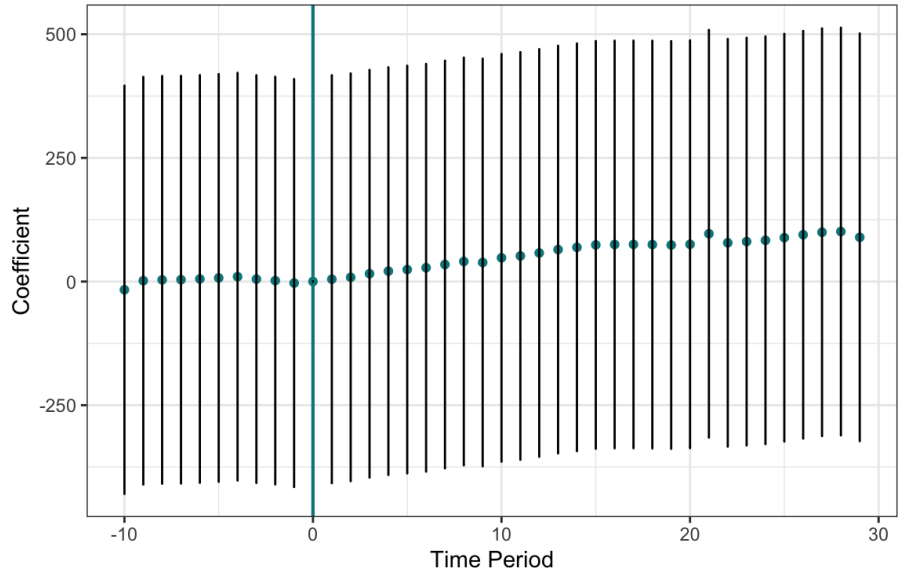
Figure 5: Multiple Time Periods Model, Triple Interaction Regression Coefficients



Observed in Figure 6, each of the standard error bars overlap with the x-axis; due to the large standard errors, this data alone does not allow us to conclude that FFN provider participation in CCAP was significantly more likely to reduce in urban areas than rural areas after the announcement of new training requirements. However, there is a clear rise in the size of the triple interaction coefficient after the policy change, whereas it hovers around 0 prior to the training mandate announcement. Further, the qualitative data from the Health & Safety coach interviews strengthen the argument that there was a greater drop in subsidy participation by urban FFN providers in

response to the training requirements. However, the lack of a statistically significant quantitative result means that, using the Multiple Time Periods Model, we again fail to reject the null hypothesis that rural and urban areas experienced similar post-policy announcement reductions in subsidy participation. This finding prompts for further research to be conducted to determine how rural versus urban FFN providers reacted to the policy announcement.

Figure 6: Multiple Time Periods Model, Triple Interaction Regression Coefficients With Error Bars



5.3 Similar Challenges for Rural and Urban Providers

During interviews, Health and Safety coaches shared the major challenges that providers encountered in completing the training requirements, and most of these barriers were expressed by both rural- and urban-serving staff members. When attempting to complete the 16 modules of online trainings, providers often lacked an internet connection, access to technology, and technology skills – "What they needed to do, even though we reached out there's a lot of them that don't answer our calls. They don't have access to email, don't have access to the Internet to do these classes or even the basic skills to take them," expressed Kathleen, a rural-serving Director of Operations. To sidestep technology-related barriers, coaches held in-person computer labs at local libraries and cafes, where they would offer providers free access to the Internet and laptops and guide them through each step of the trainings. However, accessing these in-person trainings – as well as in-person CPR/First Aid training –

was not convenient either. As Karen, an urban-serving coach described, "They were upset because they were not able to attend, because the hours of trainings ... were scheduled during the times that they care for the children. Oh, and then they didn't have transportation ... if the last training was at 6 o'clock, they would be there late, and then the public transportation to there wasn't safe." The CPR/First Aid training also posed a monetary cost of approximately $175; while this fee could be reimbursed, the reimbursement process was "a big step" and the "money certainly matters if they had to pay up front – sometimes they just couldn't."

Besides difficulties in time, transportation, internet and technology access, and money, staff reported that many providers held a general distaste for the training requirements themselves. For providers who had been caregivers for years, even decades, being asked to now complete trainings felt insulting and frustrating. Mindy, a rural-serving coach described providers' initial reactions upon hearing of the training requirements: "Frustration, I think you know, especially ones who had been doing it a long time. So I've been watching my grandkids for, you know, 5, 10 years. And now, all of a sudden, I have to do these things, what?" For these providers, their CCAP subsidy was at risk over a series of time-consuming, resource-draining trainings that they did not think would bring a tangible benefit to either them or the children they cared for.

Due to the high level of commonality in types of barriers faced by rural and urban providers, we may conclude that regardless of rurality level, CCAP FFN providers had a difficult time adapting to meet the new training requirements. A significant percentage of providers across rurality levels may have chosen to drop off CCAP rather than invest resources into completing the training requirements. Further, some potential FFN providers may have decided to not join the subsidy program due to the higher barrier to entry. However, the extent of these effects – and the incentives to participate in CCAP – may have varied by rurality.

5.4 Less Awareness of Training Requirements Among Rural Providers

Interviews with Health & Safety coaches shed light on why there may have been a smaller drop in CCAP participation by rural FFN providers (see Appendix E for

potential responses to training requirements). At Node 1, there are two possibilities: FFN providers either heard about the training requirements and knew they needed to complete them, or they were unaware (Appendix E). Those who were unaware of the requirements would not have responded to the policy change, and all else constant, they would have remained on CCAP. Those who heard of the new requirements would have continued onwards to Node 2 (Appendix E).

While Health and Safety coaches mentioned attempting to reach out to providers in multiple ways, including calling, emailing, sending physical letters, and posting on social media, coaches in the rural-serving CCR&R attested that some providers still do not know that they need to complete training requirements, as of May 2022, almost 5.5 years after IDHS first announced the trainings. Three key reasons emerged for this; first, Health and Safety coaches were newly hired and had no previous contact with the FFN providers they now needed to engage. Second, many providers - particularly in more rural counties - did not have access to technology or internet access to read emails or social media posts about the trainings, and they may not have checked their mail or answered their phone calls. Third, rural caregivers had a weaker social network of FFN providers, limiting the number of people from whom they would have heard about the requirements.

As Health and Safety coaches were hired after the trainings were announced, they had not built relationships with FFN providers and needed to establish communication with them to inform them of the training requirements. As Kathleen, Director of Operations for a rural-serving CCR&R, explained:

> We were looking at a lot of providers that we don't typically have contact with. So the fact of getting them through all of this, these classes and doing a monitoring visit was very overwhelming. [Before the training requirements were implemented] their only contact was with our CCAP staff. And so if they had questions about that they could call but it wasn't quite the one-on-one experience that they get with the coaches.

While both urban- and rural-serving Health and Safety coaches were newly hired and needed to establish contact with FFN providers, only 1 of 4 urban-serving coaches reported that they had trouble contacting their providers compared with 3 of 4 rural-serving coaches. The urban-serving coach who experienced trouble - Karen - men-

tioned that providers were unaware of the requirements if they "didn't access the Internet," didn't have "knowledge about their emails," and "didn't get the mail or didn't answer the phone because they didn't recognize the number...". Rural-serving coaches attested to the same challenges and said that providers would have not been anticipating such a large policy change: "You don't think that something's going to be coming like this, and if they got it they just didn't think it was applicable to them."

Kristen, a rural-serving interviewee, did believe that all the providers they were responsible for contacting knew about the training requirements: "I've called them everybody on my spreadsheet, I've built up that repertoire with my providers to where they know they can pick up the phone and call me if they're getting stuck on a program...all knew about it." However, given that one of the main parts of the interviewee's job was to get in touch with providers and alert them of the training requirements, it is possible that some interviewees did not trust me enough to share if they had been unsuccessful in contacting some of the providers.

Another limitation is that interviewee sample sizes were too small to conclude solely based on interview data that rural-serving coaches faced more difficulties in informing providers of the training requirements. However, many of the obstacles that interviewees described in reaching providers – internet access, access to a phone or laptop, technology savviness – are exacerbated in rural areas due to digital divides. According to the Federal Communications Commission, "22.3 percent of Americans in rural areas and 27.7 percent of Americans in Tribal lands lack coverage from fixed terrestrial 25/3 Mbps broadband, as compared to only 1.5 percent of Americans in urban areas" (2020 Broadband Deployment Report). Further, a 2021 Pew Research Center survey finds that while almost 9 in 10 urban Americans report owning a smartphone, only 8 in 10 rural Americans say the same (Emily Vogels). If access to technology and broadband were key barriers in learning of the training requirements, then rural FFN providers would very likely have had fewer opportunities to hear of the policy change.

The strength of a provider's social network with other CCAP FFN providers would have also played a role in whether they learned of the training requirements: as one coach explained, "Maybe only one person in the network actually reads about it [the training requirement] and understands it, and then they spread it to their

friends who are also license-exempt providers." An urban-serving coach – Karen – described how well-organized FFN provider networks are in urban communities – "We have what we call a provider-based network. We have providers that network with each other ... there is something that's implemented, a change or something that has been updated ... they actually have a network when they get on Zoom calls with each other or call each other, or they meet, and they talk about these changes." This stands in stark contrast with the weaker rural FFN provider network. "I have quite a few providers that know each other, but I have others, they have no clue who the other license-exempt providers are. They only meet each other when I have a computer class going on so that they can come do trainings, and then they start to kind of talk to each other. But for the most part it's not tight woven," mentioned Kristen, a rural-serving Health and Safety coach. With rural FFN providers having fewer people in their network alerting them of key changes to CCAP, they would have been more likely to miss the announcement of new training requirements.

FFN providers who were not aware of the new training requirements would have not responded. This means that, holding all else constant apart from the announcement of new training requirements, FFN providers in more rural areas would have been more likely to remain on CCAP, given that no provider was kicked off CCAP for not completing the trainings. Weaker social networks and limited internet and technology access in rural areas may therefore explain why FFN provider CCAP participation in these communities did not reduce as much as in urban areas.

5.5 Discussion of Results & Welfare Impacts

Thus far, I have discussed three potential reasons why rural FFN provider CCAP participation may have reduced less than urban FFN provider participation. First, rural-serving H&S coaches may have faced greater difficulties in alerting providers of the new training requirements. Second, rural providers had less access to internet and technology that they could have used to find out about the training requirements. Finally, rural providers had a weaker social network with other FFN providers, again limiting the odds that they were aware of the policy change. All three of these pathways may have led them to not respond to the announcement of new training requirements. In contrast, urban providers were far more likely to have heard of

the policy change, and due to the barriers they faced in attempting to complete the trainings, many providers were disincentivized from participating in CCAP.

These findings hold two important implications for how new subsidy regulations can impact urban versus rural populations. First, many rural providers were unaware of the policy change. Not knowing of the training requirements may have benefited rural providers in this particular case, given that no providers have been removed from CCAP. However, other policies will undoubtedly be enforced, bearing negative consequences for providers who are unaware. Some H&S coaches also suggested that CCAP may soon begin enforcing the 2017 training requirements as early as June 2022, stopping subsidy payments to providers who are noncompliant with the training requirements. If some rural FFN providers are still not aware of the new training requirements, then they may be kicked off the CCAP program without knowing why, leading to a large loss in the supply of subsidized FFN care. It is vital that rural FFN providers hear about policy changes in a timely manner because their livelihoods – and the availability of child care for the families they serve – may be greatly affected by new subsidy policies. Child care options are already limited for rural families. For every rural provider who leaves the CCAP subsidy program, the task of finding affordable and accessible child care that meets their needs becomes exponentially more difficult for parents.

Second, increased subsidy regulations had a negative impact on both rural and urban communities; the supply of subsidized FFN care reduced after the policy announcement regardless of rurality. This implies that subsidy regulations may have negative consequences for the availability of home-based license-exempt child care options in both urban and rural areas. While further research is required to better understand how new regulations affect rural versus urban places, my findings suggest that a more regulated child care landscape could reduce access to subsidized FFN care for low-income families in both rural and urban communities.

5.6 Counterclaims & Limitations

The primary counterclaim that challenges these findings is that, while rural and urban areas faced similar challenges in completing the training requirements, these barriers would have arguably been greater in rural communities. Accessing trans-

portation, internet, and technology is more difficult in rural areas, which means that rural providers who attempted to complete the requirements may have faced more difficulties; this should have caused a greater relative drop in rural provider subsidy participation.

I assert that the lack of awareness of the policy change and what it entailed was large enough to counteract the effect that differential access to resources may have had. Not only did many rural providers not hear of the policy change, but Hirschl and Rank's theory of population density suggests that rural providers were less likely to have understood the new eligibility requirements due to weak provider social networks. If this effect was as widespread as I assert, then it would have helped offset the drop in rural provider subsidy participation.

There are several limitations that could not be addressed within this study. For one, I did not have the necessary data to discern whether drops in FFN provider subsidy participation were driven mainly by providers leaving the program or a lack of new providers joining. If new providers were heavily disincentivized to join CCAP, there may be other important reasons why there was a smaller drop in rural FFN provider subsidy participation. Another limitation is that I did not speak directly with FFN providers while conducting research for this project. Their perspectives could have shed more light on how providers chose to either remain in CCAP or drop off. However, CCR&R staff perspectives were also important to hear given the large number of providers they are responsible for interacting with. Interviews with CCR&R staff were core to this project and offered essential insights on the challenges rural and urban providers faced in completing the training requirements.

Finally, I did not test the role of social networks or limited internet and technology access using quantitative methods in this paper. The main barrier to doing so was finding a proxy for social networks and technology access that did not have a high level of correlation with the "rural" variable in the regression; both population density and broadband access were strongly correlated with rurality. While there was significant qualitative evidence pointing to weak social networks and limited internet and technology access as potential causes for a lower drop in rural CCAP FFN participation, future research could test this narrative by adding proxy variables for social networks, internet access, and technology access to the triple difference-in-differences model.

6 Policy Recommendations

This study found evidence suggesting that the announcement of new training requirements may have caused higher drop in urban FFN provider participation in CCAP than in rural FFN provider participation. While this result was not significant, it is testament to the fact that further research is required to understand how child care policy changes may impact rural and urban areas in different ways. Given my results, I recommend that CCAP survey a diverse range of rural and urban stakeholders as they develop and implement new policies targeting subsidized FFN care. Future efforts to improve subsidized child care quality should favor optional trainings over regulatory requirements and compensate providers accordingly for their time and professional development after completing trainings.

I also found that rural areas were less likely to hear of the new training requirements due to a lack of access to internet and technology resources and weaker provider social networks. To ensure rural providers are informed of subsidy policy changes, I advocate for CCR&R staff to develop a system of constant and regular communication with providers that does not rely on broadband service, so that they can reach providers in a timely manner when new FFN policies are implemented.

Finally, I recommend that CCR&Rs, in particular those that serve rural areas, work to connect the CCAP FFN providers in their region. This will help providers build a stronger social network through which they can find support and stay informed of CCAP policy changes. To evaluate whether rural and urban providers are equally aware of policy changes, CCAP can measure how rural and urban communities respond to new policies by tracking metrics such as FFN provider participation in CCAP.

6.1 Survey a Diverse Range of Stakeholders

One of the main reasons why the new training requirements had unintended consequences despite well-intentioned policymakers was the lack of diverse stakeholder engagement prior to the policy's implementation. Moving forward, new policies affecting subsidized FFN care should be formulated based on input from four main rural and urban stakeholder groups: CCR&R employees, FFN care providers in CCAP, families receiving subsidized FFN care, and researchers and experts who specialize

in home-based license-exempt care. Had these groups been included in policy discussions before the training requirements were implemented, the policy design may have encouraged high-quality care without disincentivizing FFN provider participation in CCAP.

CCR&R Employees

All 8 of the CCR&R employees I spoke with, both rural and urban, mentioned that CCAP did not contact their organizations before deciding to implement the training requirements. CCR&R employees are local-level administrators of CCAP and serve as one of the first points of contact providers reach out to when they need CCAP-related assistance. As CCAP develops new policies, they should rely on input from CCR&R employees, who can provide vital insights on how new subsidy policies should be structured and implemented.

FFN Providers and Families in CCAP

CCAP should also survey a diverse range of FFN providers and families in CCAP before making changes to the program, particularly changes that involve increased regulation and new eligibility requirements. As discussed in the Findings section, many providers had been caring for children for years or decades, and the imposition of new training requirements felt insulting and frustrating. Rather than the trainings being perceived as an enriching professional development opportunity, they were seen as yet another sign of an increasingly regulated FFN landscape. For families enrolled in CCAP who received subsidized FFN child care, the training requirements may not have been perceived as a quality-improvement measure. As explained in the Literature Review, each parent may have a different idea of what "quality child care" looks like, and each family has different child care needs. Child care quality cannot be improved by imposing new training requirements on providers and families without their consent. Providers and families are the main stakeholder groups affected by changes in child care subsidy programs, and they should be included as active thought partners in finding ways to provide high-quality, affordable, and accessible subsidized care.

Experts in Home-Based License-Exempt Care

As discussed in the Literature Review, the push to create a more regulated child care landscape has been driven by concerns that home-based license-exempt care is inherently lower quality. However, prior research has found that while FCC and center-based care may produce more positive child development outcomes, FFN care has its own unique strengths including the promotion of socioemotional development. Additionally, it is not clear that new training requirements and increased FFN regulation leads to a significant increase in care quality. Increased regulation has also been shown to reduce the supply of child care and increase child care costs. Policymakers who strive to promote high-quality child care should speak with individuals who research FFN care to understand the best policies for improving quality. Child care researchers and experts who study home-based license-exempt care can provide a holistic and informed view of different quality-improvement policies, and they can advocate for strategies that have proven successful at encouraging high-quality FFN care.

Implementation

First, CCAP should conduct outreach to the aforementioned stakeholder groups, capturing rural and urban perspectives as well as minority voices. Past subsidy reform measures – including the 1996 Welfare Reform Act – have failed to include rural-focused research in policy decisions. Rural stakeholders may be more difficult to reach due to limited broadband and technology access, so CCAP should reach out to stakeholders via multiple modes of communication, including physical mail and mutual contacts. Second, CCAP should hold focus groups – both in-person and online – with stakeholders to understand what changes they believe CCAP should implement to ensure the subsidy program works for both FFN providers and families. They should offer rural providers and others facing limited transportation options the option to mail in a physical document containing their feedback and suggestions. Finally, guided by stakeholder recommendations, CCAP should work with CCR&R employees, FFN providers and families in CCAP, and experts in FFN care – including those from rural, urban, and minority communities – to develop FFN policies.

6.2 Favor Optional Quality-Improvement Programs Over Regulatory Requirements

New regulatory requirements, such as Illinois' 2017 health and safety training requirements, have been a major contributor to the decline in home-based care over the past decade. While these regulations to improve child care quality typically come from a place of good intentions, home-based license-exempt providers are used to experiencing low levels of government intervention. Moreover, these regulations can impose significant costs on FFN providers, many of whom are already strapped for resources. Rather than mandating all FFN providers to comply with new regulations, the decision to participate in new programs should be in the hands of providers. To encourage providers to get involved, CCAP can offer providers grants and other incentives for completing optional quality-improvement measures.

When creating these optional quality-improvement programs, whether they be trainings or other resources, CCAP should conduct a fiscal impact analysis to understand the additional costs these programs would impose on providers. As I found during my interviews with CCR&R staff, providers with fewer access to resources – e.g. time, money, internet, transportation – may not be able to complete new trainings even if they are interested in doing so. As CCAP develops new quality-improvement measures with provider input, it should also estimate the costs providers would bear if they chose to participate, taking into consideration how these costs may vary by geographical region, income level, and other differentiating factors. If completing optional trainings would require providers to travel to a given location, rural child care providers will likely face greater transportation costs due to fewer options for getting around. Many providers will be unable to afford these additional costs without a corresponding increase in wages. To offset training costs, CCAP should explore ways to support providers; these may include stipends, WiFi hotspots, and free transportation to trainings, among others. Further, CCAP should compensate and reward interested providers for participating in quality-improvement programs by adjusting their wages accordingly. As CCAP implements new programs to improve child care quality, they must endeavor to remove obstacles to provider participation whenever possible; this will be key to pursuing successful policies that improve child care quality.

6.3 Multiple Modes of Contact

Health and Safety coaches mentioned that they attempted to reach providers in multiple ways, including email, social media, and phone calls. However, they found it difficult to reach many rural providers due to barriers in internet and technology access and weak social networks. I recommend that coaches develop a regular and consistent stream of communication with providers through multiple modes of contact – particularly physical mail and in-person visits when possible – to ensure that providers are up-to-date on new policy changes. By maintaining consistent communication, coaches will be able to reach providers quickly to inform them of new training requirements or other CCAP policies that may impact them.

6.4 Strengthen Rural FFN Provider Social Networks

In this situation, weak FFN provider social networks in rural areas may have prevented some providers from dropping off CCAP. However, having a strong FFN provider social network is essential for staying up-to-date on eligibility requirements and identifying best practices for meeting them. This is particularly important given that CCAP is planning on enforcing the training mandate as early as June 2022. I recommend that each CCR&R connect the providers in their region, exchanging contact information between willing parties, to establish stronger provider networks in rural communities in particular. These provider networks can meet monthly to maintain communication about policy updates and tackle subsidy-related challenges. By facilitating communication between FFN providers in CCAP and forming regional groups of providers, CCR&Rs can also reduce the challenges their staff face in establishing contact with providers.

6.5 Evaluation

I propose that evaluation consist of three parts: a biannual survey to ensure that stakeholder input is incorporated into policies, monthly focus groups held by local CCR&Rs to determine policy effectiveness, and empirical analysis of rural-urban responses to policy changes. Twice a year, CCAP should send out a survey to CCR&R employees, FFN care providers in CCAP, families receiving subsidized FFN care, and researchers and experts who specialize in home-based license-exempt care. The

survey should contain questions to gauge whether CCAP FFN policies are being developed around stakeholder input or if the focus groups are not being translated into equitable child care subsidy policies. Based on survey responses, focus groups can adjust and reevaluate their approach to become more effective at developing sound policies. Additionally, rural, urban, and minority stakeholder input should continue to influence policies even once they are passed. This can be accomplished through monthly focus groups held by local CCR&Rs to gain a sense of how different communities are experiencing policy changes. Finally, just as was done in this paper, key metrics like provider participation in CCAP should be tracked over time and examined for pre-policy and post-policy trends. If these differ significantly between rural and urban providers, then there may be reason to believe that rural providers are not aware of new policy changes.

6.6 Directions for Future Research

There remains much more research work to be done to understand how new regulations for child care providers affect the supply of subsidized care in rural versus urban communities. In future research studies, it would be interesting to examine where rural versus urban providers went after they left CCAP. Did they switch to providing another form of subsidized care? Did they continue providing care without a subsidy? Or did they stop providing care altogether? The answer to each of these questions may differ significantly in rural versus urban areas based on the ease of transitioning between different care types and the potential for quickly finding another source of income. By examining these questions, we can better understand the full impact of new regulations on subsidized FFN care. Another important avenue to explore is whether the gender gap in earnings grew in counties with larger reductions in child care providers. With fewer available child care options for low-income parents, what steps may parents have taken to provide child care for their children? If we accept that additional child care regulations generally reduce the supply of subsidized care, then regulations may also have large equity implications for the people who typically shoulder the burden of care.

7 Conclusion

As the controversial debate of whether to increase child care regulations continues to wage on between policymakers, it is important to consider whether these regulations have positive impacts on access to subsidized home-based care for low-income families, particularly in rural areas. In a classic case of unintended consequences, Illinois' new policy effort to improve license-exempt FFN child care quality - known as the 2017 Health and Safety Training Requirements - backfired. Instead, many rural and urban FFN providers left the CCAP subsidy program, and some potential providers may have been disincentivized from joining CCAP. Using a triple difference-in-differences methodology alongside interviews with Child Care Resource and Referral Agency staff members, I found that both rural and urban communities faced reductions in their supply of subsidized FFN care. Qualitative evidence suggests that this drop in CCAP FFN participation may have been greater in urban areas, though large standard errors prevent us from drawing this conclusion using quantitative evidence. Interviews with CCR&R staff suggest that a large portion of rural providers did not hear of the new training requirements as a result of weak social networks and limited internet and technology access, which could have dampened the response to the policy announcement in rural areas. Going forward, CCAP should strive to formulate policy based on input from a wide range of stakeholders, including both rural and urban CCAP providers and families as well as experts on FFN care. Local Child Care Resource and Referral Agencies, who are responsible for administering CCAP in their respective counties, should also ensure that rural providers are aware of new policy changes by connecting subsidized providers in their region and growing the local FFN care provider networks.

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8 Appendix

A Rural-Urban Classification System

I experimented with several different grouping methods to determine the best way of comparing rural and urban counties for the descriptive analysis, including a separate group for counties in each RUCC code and counties coded 1-2, 3-4, 5-6, and 7-9. In the end, the selected method grouped counties coded 1-3, 4-6, and 7-9. This left a relatively even distribution of observations across each group and created categories of Urban, Rural, and Very Rural – the first column of Table 4 shows the grouping used. As stated in the Methods section, I created this classification system solely for the descriptive analysis to understand how the child care landscape may differ between more rural and more urban counties. The triple difference-in-differences analysis relied on the OMB's classification of rural and urban (termed as metro or nonmetro).

The rurality grouping of [Urban, Rural, Very Rural] was produced by grouping RUCC 1-3, 4-6, and 7-9.
1 (Urban) – for example, Cook, Lake, and Peoria Counties
2 (Rural) – for example, Franklin, Coles, and Fayette Counties
3 (Very Rural) – for example, Clay, Pulaski, and Edwards Counties

Table 4: Aggregation and Description of Illinois Counties by Rurality

Categorization I Used	**USDA Code**	**Number of IL Counties**	**Description**
Urban	1 - Metro	17	"In metro areas of 1 million population or more"
Urban	2 - Metro	10	"In metro areas of 250,000 to 1 million population"
Urban	3 - Metro	13	"In metro areas of fewer than 250,000 population"
Rural	4 - Nonmetro	9	"Urban population of 20,000 or more, adjacent to a metro area"

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Table 4: *(Continued)* Aggregation and Description of Illinois Counties by Rurality

Categorization I Used	**USDA Code**	**Number of IL Counties**	**Description**
Rural	5 - Nonmetro	2	"Urban population of 20,000 or more, not adjacent to a metro area"
Rural	6 - Nonmetro	23	"Urban population of 2,500 to 19,999, adjacent to a metro area"
Very Rural	7 - Nonmetro	17	"Urban population of 2,500 to 19,999, not adjacent to a metro area"
Very Rural	8 - Nonmetro	5	"Completely rural or less than 2,500 urban population, adjacent to a metro area"
Very Rural	9 - Nonmetro	5	"Completely rural or less than 2,500 urban population, not adjacent to a metro area"

With this rurality grouping, the Urban category contains the most counties with fewer counties in the Rural and Very Rural samples. However, the data set contains a large enough sample size of between 27 to 40 counties in each category (Figure 7). The triple difference-in-differences analyses used the OMB rural-urban classification, where the categories of Rural and Very Rural that I created are one large "rural" or "nonmetro" category. The triple DID analyses thus used an urban sample size of 40 counties and a rural sample size of 61 counties, both which are fairly sizable to provide a smaller margin of error.

Figure 7: Distribution of IL Counties by Rurality, 2013

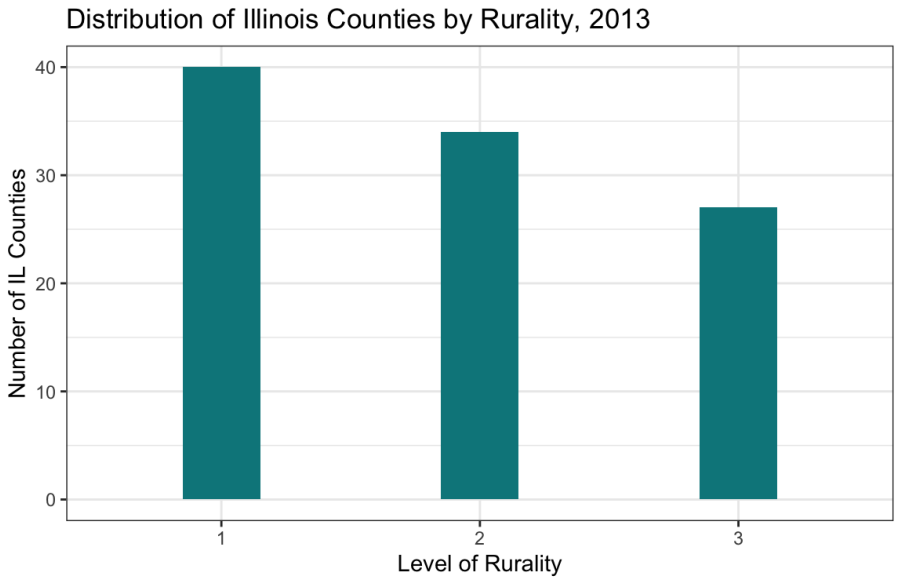

Table 5 shows the average number and standard deviation of FFN and FCC providers in CCAP for urban, rural, and very rural Illinois counties, as of January 2016. Across all rurality levels, there are more CCAP FFN than FCC providers in the average county. However, there is greater variation in the number of CCAP FFN providers by county, as the standard deviation in the number of subsidized providers is much higher for FFN care.

Table 5: Home-Based CCAP Provider Participation by Rurality, January 2016

Rurality	**Number of Counties**	**Type of Care**	**Providers per County - Mean**	**Providers per County - SD**
Urban	40	FCC	99	412.22
Rural	34	FCC	31	73.47
Very Rural	27	FCC	6	8.14
Urban	40	FFN	361	1549.29
Rural	34	FFN	90	184.82
Very Rural	27	FFN	12	25.13

B Interview Participants

Interviewee Name	Position	Organization Type
Kathleen	Director of Operations, responsible for managing H&S coaches	Rural-serving CCR&R
Mindy	Health and Safety Coach	Rural-serving CCR&R
Kristen	Health and Safety Coach	Rural-serving CCR&R
Tammy	Health and Safety Coach	Rural-serving CCR&R
Karen	Health and Safety Coach	Urban-serving CCR&R
Barbara	Health and Safety Coach	Urban-serving CCR&R
Laura	Health and Safety Coach	Urban-serving CCR&R
Ben	Health and Safety Coach	Urban-serving CCR&R

C Interview Protocol

I began each interview by going over Verbal Informed Consent to describe the research in which interviewees were being asked to participate and inform them of their specific rights and my responsibilities. They were also given the contact information of the Principal Investigator and University of Chicago Institutional Review Board Director to contact with questions.

Questions

Branch 1: Informing Providers of the Training Requirements

- When did you first hear of the 2017 training requirements? What were your initial reactions in terms of how they would affect FFN providers' use of the CCAP program?
- What percent of providers found about the training, and how did they typically find out? When did they find out?
- How important was a provider's a social network – for example, knowing other FFN providers or CCR&R staff – in finding out about the new trainings?

Branch 2: Providers' Views of the Trainings

- In your view, how did providers respond to the trainings? (Probe: How seriously did they take the new mandate and the trainings?)
- What portion of all FFN providers in your region are on CCAP, do you think? Is this number different for FCC and Center-based providers?
- To what extent is CCAP a steady, reliable source of funding for the FFN providers in your region? (compare rural vs. urban)
- To the best of your knowledge, did you sense differences between how providers in rural regions were affected by the threat of the mandate compared to providers in urban regions? (enforcement)

Branch 3: Key Challenges Providers Faced in Completing Trainings

- In your view, how challenging or difficult was the process of signing up for and scheduling the training on INCCRRA's workforce website, Gateways? How did providers feel about the process?
- How onerous was the training itself for providers?
- Were trainings offered in person and/or virtually? How important was access to transportation, broadband, or other resources for participation?
- Were trainings available and conveniently located for providers? (PROBE: did providers complain about the location and times of the trainings.)
- Were child care providers given any resources to support them in completing the trainings?
- What was the average estimated cost of the trainings for providers?
- Did you ever hear providers talk about the expense or inconvenience of taking trainings?
- How useful do you believe the training requirements were to providers who were able to complete them?

- After the announced training deadline passed in October 2017, how did providers react to the lack of enforcement?
- Could you think of a better way to have structured the training program and requirements that would have been less onerous for providers?

* Follow-up questions varied based on the participants' responses

D Triple Difference-in-Differences Analysis

Table 6: Multiple Time Period Model - Triple Interaction Coefficients

	Model 1	SD
Period -10 x Type of Care x Rurality	−16.65	(210.48)
Period -9 x Type of Care x Rurality	1.72	(210.19)
Period -8 x Type of Care x Rurality	3.40	(210.19)
Period -7 x Type of Care x Rurality	3.75	(210.19)
Period -6 x Type of Care x Rurality	5.25	(210.19)
Period -5 x Type of Care x Rurality	7.24	(210.19)
Period -4 x Type of Care x Rurality	9.86	(210.19)
Period -3 x Type of Care x Rurality	4.95	(210.19)
Period -2 x Type of Care x Rurality	1.93	(210.19)
Period -1 x Type of Care x Rurality	−3.03	(210.35)
Period 1 x Type of Care x Rurality	4.74	(210.35)
Period 2 x Type of Care x Rurality	8.57	(210.19)
Period 3 x Type of Care x Rurality	15.85	(210.19)
Period 4 x Type of Care x Rurality	21.06	(210.19)
Period 5 x Type of Care x Rurality	24.22	(210.19)
Period 6 x Type of Care x Rurality	27.91	(210.19)
Period 7 x Type of Care x Rurality	34.46	(210.19)
Period 8 x Type of Care x Rurality	40.62	(210.19)
Period 9 x Type of Care x Rurality	38.58	(210.19)
Period 10 x Type of Care x Rurality	47.98	(210.19)
Period 11 x Type of Care x Rurality	51.80	(210.19)
Period 12 x Type of Care x Rurality	57.77	(210.19)

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Table 6: *(Continued)* Multiple Time Period Model - Triple Interaction Coefficients

	Model 1	SD
Period 13 x Type of Care x Rurality	64.65	(210.19)
Period 14 x Type of Care x Rurality	69.21	(210.19)
Period 15 x Type of Care x Rurality	74.09	(210.19)
Period 16 x Type of Care x Rurality	74.90	(210.19)
Period 17 x Type of Care x Rurality	75.03	(210.19)
Period 18 x Type of Care x Rurality	74.76	(210.19)
Period 19 x Type of Care x Rurality	73.85	(210.19)
Period 20 x Type of Care x Rurality	75.28	(210.19)
Period 21 x Type of Care x Rurality	96.68	(210.19)
Period 22 x Type of Care x Rurality	78.39	(210.19)
Period 23 x Type of Care x Rurality	80.80	(210.19)
Period 24 x Type of Care x Rurality	83.36	(210.19)
Period 25 x Type of Care x Rurality	88.72	(210.19)
Period 26 x Type of Care x Rurality	94.64	(210.19)
Period 27 x Type of Care x Rurality	99.71	(210.19)
Period 28 x Type of Care x Rurality	101.14	(210.19)
Period 29 x Type of Care x Rurality	89.46	(210.21)
R^2	0.04	
Adj. R^2	0.04	
Num. of counties	102	

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

E Provider Decision Tree