



**RURAL SCHOOL NUTRITION POLICY  
IMPLEMENTATION STUDY:  
Summary of Findings Report**

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## Executive Summary

### Background

The Healthy, Hunger-Free Kids Act (HHFKA) directed the U.S. Department of Agriculture (USDA) to revise school meals and snacks (aka ‘competitive foods and beverages’) to meet the Dietary Guidelines for Americans of 2010.<sup>1</sup> As a result, Nutrition Standards in the National School Lunch and Breakfast Programs<sup>2</sup> (summarized in [Appendix A](#)) and Nutrition Standards for All Foods Sold in School or *Smart Snacks in Schools*<sup>3</sup> were adopted (summarized in [Appendix B](#)). Both sets of standards required schools to increase healthy food offerings, including fruits, vegetables, and whole grain-rich products, as well as reduce levels of sodium, saturated fat, and trans fat. Hereafter, they will be referred to together as ‘revised nutrition standards.’ School districts were required to comply with revised school meal standards beginning July 1, 2012; most recently, the USDA revised these standards to allow flexibilities for milk, whole grain-rich items, and sodium; a final rule is expected to be released in fall 2018 to take effect for 2019-2020<sup>4</sup>. *Smart Snacks in Schools* requirements were required beginning July 1, 2014.

Such federal initiatives aimed to ensure that *all* children may equitably access health promoting food environments; however, studies indicate that disparities exist in access to healthy foods in schools. Rural districts and schools – particularly at the secondary school level – are still lagging behind urban districts and schools in the quality of policies and practices supporting healthy food environments.<sup>5-10</sup> In response, the objective of this study was to identify key factors and practice- and policy-relevant strategies for the translation of standards into school food and nutrition practices in rural high school communities.

### Methods

This Summary of Findings Report presents the results of key informant interviews with 38 rural school professionals – food service directors (FSDs), principals, school nurses, and others – from 22 rural high schools and school districts from 7 states. Telephone interviews were conducted during April-July 2017 and focused on respondents’ experiences and perspectives on revised school nutrition standards implementation. Additional information on the sample and methods can be found in [Appendix C](#).

### Key Findings

Key findings of the study include the following themes:

- There are many ‘faces’ of rural school district settings and as a result, a wide range of rural school nutrition standards implementation experiences;
- Rural school professionals reported that the implementation of the revised nutrition standards was ‘bumpy’ at first but overall, acceptance to changes improved with time;
- ‘Flexible’ school meal standards will not drastically change current practices;
- A wide range of perceptions on the potential impacts of school nutrition reform were reported;
- Home and community food environments were perceived to play a strong and mostly negative role in students’ acceptance of changes to their school food environments;

- Rural school professionals reported small administrative size and capacity to undertake implementation compared to larger districts;
- Rural high school's geographic distances posed some challenges to support changes to healthier school food environments;
- Rural school professionals reported strategies to facilitate implementation, including joining or forming purchasing co-ops to enhance purchasing power;
- State technical assistance organizations were reported to strongly support implementation efforts; and
- When possible, rural school professional formed partnerships with external organizations to enhance resources and facilitate implementation.

## **Report Overview**

This report provides a background of school nutrition standards and the rural context before presenting the findings, which are organized into overall implementation experiences, challenges, and strategies to facilitate implementation. The report concludes with opportunities for supporting rural schools and districts to advance and sustain initiatives to improve their school nutrition environments.

## Background

The Healthy, Hunger-Free Kids Act (HHFKA) directed the U.S. Department of Agriculture (USDA) to revise school meals and snacks (aka ‘competitive foods and beverages’) to meet the Dietary Guidelines for Americans of 2010.<sup>1</sup> As a result, Nutrition Standards in the National School Lunch and Breakfast Programs<sup>2</sup> (summarized in [Appendix A](#)) and Nutrition Standards for All Foods Sold in School or *Smart Snacks in Schools*<sup>3</sup> were adopted (summarized in [Appendix B](#)). Both sets of standards required schools to increase healthy food offerings, including fruits, vegetables, and whole grain-rich products, as well as reduce levels of sodium, saturated fat, and trans fat. Hereafter, they will be referred to together as ‘revised nutrition standards.’ School districts were required to comply with revised school meal standards beginning July 1, 2012; most recently, the USDA revised these standards to allow flexibilities for milk, whole grain-rich items, and sodium; a final rule is expected to be released in fall 2018 to take effect for 2019-2020<sup>4</sup>. *Smart Snacks in Schools* requirements were required beginning July 1, 2014.

Such federal initiatives aimed to ensure that *all* children may equitably access health promoting school food environments; however, studies indicate that disparities exist in access to healthy foods in schools. Rural districts and schools – particularly at the secondary school level – are still lagging behind urban districts and schools in the quality of policies and practices supporting healthy food environments.<sup>5-10</sup> Nationwide, rural school districts’ snack policies (included in district wellness policies) are significantly weaker than those of urban districts.<sup>10</sup> And, rural districts are less likely than urban districts to implement snack policies and tend to have fewer overall policies,<sup>11</sup> while rural high schools were found to be significantly less likely to have policies limiting the purchase of low-nutrient salty snacks as compared to urban schools. One notable study by the Kids’ Safe and Healthful Foods Project studied rural school nutrition professionals’ reporting on rural school meal programs and found that poor administrative capacity, lack of qualified staff, dispersed student populations, limited food and supply options, and outdated equipment posed challenges to implementation.<sup>12</sup> Another study examined school meal standards implementation and reported on barriers and challenges reported by rural school food service professionals, including cost, student preferences, and negative perceptions of the HHFKA.<sup>13</sup> Taken together, there is a gap in the literature examining rural school nutrition policy implementation, particularly since the release of revised school nutrition standards.

The objective of this study was to identify key factors and practice- and policy-relevant strategies for the translation of standards into school food and nutrition practices in rural high school communities. This report presents the results of key informant interviews with 38 school professionals – food service directors (FSDs), principals, school nurses, and others – from 22 rural high schools and school districts from 7 states. Telephone interviews were conducted during April-July 2017 and focused on rural school professionals’ experiences and perspectives on revised school nutrition standards implementation. Additional information about the study methods are available in [Appendix C](#).

As a formative examination of rural school nutrition policy implementation, this study included high schools from rural remote, rural distant, and rural fringe classifications based on the National Center for Education Statistics definitions.<sup>14</sup> Accordingly, school professionals' reported a wide range of school, district, and community contexts in which school nutrition policy implementation activities took place, highlighting that often settings that are considered together as 'rural schools' or 'rural communities' are not homogenous entities. For example, high schools varied widely in their levels of staff and organizational capacity for implementation and their perspectives about nutrition standards. This Summary of Findings Report captures commonalities and shared themes across these diverse contexts; when notable, however, outliers and exceptions are documented within each theme.

Our sample was not unique within the context of broader literature examining rural America. Additional rural studies have documented the changing 'faces' of modern rurality as a result of shifts in poverty and racial inequities, highlighting the need to better understand the shifting phenomenon of the "new rural America" and the concept of rurality.<sup>15-18</sup> Advocates assert that in order to better address the inequities and the well-being and health of rural America, a more nuanced conceptualization of rural populations is urgently needed.<sup>18</sup> The findings presented next are situated within these important shifting contexts.

## OVERALL IMPLEMENTATION EXPERIENCES

Across rural stakeholders' accounts, common overall implementation experiences were notable and described next.

### Bumpy road to acceptance but now on "cruise control"

Rural school professionals recalled many initial challenges with implementation of the revised school meal standards, including poor acceptance and resistance from the school community, particularly with specific components (e.g., change in portion size, sodium levels, and whole grain-rich products).

*They missed their favorite things...they **didn't like the whole wheat**. They didn't like that they have to take the veggies, the portions. – Principal, Utah*

*Well, **sodium and fat and then the calories** were a big thing. When you cut the calories, especially for the high school kids with their activities that they are in, they just don't get enough. – FSD, South Dakota*

However, almost all respondents in the current study indicated that student acceptance to the revised school meal changes improved over time; most reported that they did not hear about any school meal issues or complaints in the past school year. One FSD from Massachusetts described implementation to have finally reached a point of "cruise control."

*I think at first it was hard on the kids because they were used to certain things, but now the kids that are here, this is what they were exposed to for several years **so it is not like just a new change, a new shock to them.** – Nurse, Texas*

*I threw a flag out one time this year and I ordered white hot dog buns just to see, cause the rest I've always done wheat. Nobody said a word, **nobody said 'thank goodness you brought back the white bread.'** They didn't notice, they don't say a word about the whole grain. – FSD, Montana*

*But there are some things that if there were another shift that would throw everybody into a loop...then five years later it would be the way it is and that's fine. I find that **people, especially kids, have very short memories.** – Principal, Massachusetts*

*There was some grumbling with regard to some of the changes...our students weren't used to eating vegetables and so there were some issues with that. However, we just continued to persevere with regard to that and I think **now that sort of...it's not even discussed,** kids eat their broccoli and cauliflower and you know, it doesn't have to be drowned in 10 pounds of sauce. – Principal, Montana*

*We've seen a pretty big increase in the amount in fresh vegetables over several years ...in the high school we've seen them taking a lot more of those and less tater-tots. We **are serving a lot more salads than we were initially...**I don't know if students are making a conscious decision to eat healthier, but there's definitely more accepting of more healthier option. – FSD, Texas*

This finding about gradual acceptance over time is consistent with a prior study with rural food service professionals that reported challenges with implementing whole grain-rich products and portion sizes by FSDs; similarly, respondents noted that with time, acceptance to standards improved and became more engrained in the schools' culture.<sup>13</sup> Further, another study, although not specific to rural schools, found that lunch participation increased by 15% by the second year of the new standards implementation, also suggesting improvement over time.<sup>19</sup>

### **Smart Snacks in Schools: Decreases in vending food sales and shifts to fundraising after school hours**

Rural school professionals were asked to describe vending machine, school store, and fundraiser availability on their respective school campuses, as well as their experiences implementing the *Smart Snacks in Schools* standards.<sup>3</sup> The majority of respondents reported that vending machines now mostly carried beverages only; one FSD described food vending as “*obsolete.*” In addition, only four high schools out of 22 operated a school store.

*There is **no food in those vending machines**. Those are flavored water that have no calories and no sugar, diet sodas and things like that, there is nothing there that does not comply with the standards. – FSD, Illinois*

***It was just easier to get rid of it than to change it.** We are like an hour from any grocery store, fresh food is not really an option for us and this way it's way easier to just not have it than to change them to whatever what's on the list. – Principal, Utah*

Across the rural high schools, a wide range of fundraising practices were reported; some schools had shifted sales towards activity-based events (e.g., 5K runs) and/or clothing sales (e.g., t-shirt with school logo); while other rural schools continued sales of foods and beverages (e.g., donut sales). Almost all rural respondents noted that sales were restricted to after-school hours, suggesting compliance with *Smart Snacks in Schools*.

*We no longer do a food fundraiser, we don't do that at grade school at all. If they have a fundraiser we try to encourage them to do something like roses on Valentine's day or you know **things like that that don't have food** because if they do a food fundraiser, it has to comply so makes it a little harder for them to do it. – FSD, Illinois*

*We don't have donuts on sale, we don't have bake sales or that sort of thing. We **don't do that during school hours at all**. I don't want a bunch of students walking around in the hallways eating donuts and cupcakes and pies and stuff like that and we're sitting here and giving them reduced calorie intake at lunch. It doesn't seem to make sense to me. – Principal, Montana*

*The state has the waivers that they offer of few times a year but none of our schools have wanted to take it...They all felt like it was **easier to just say no**, then to try and decide who gets them. – FSD, Utah*

In only two of the rural high schools, FSDs were involved with ensuring fundraising items were compliant with *Smart Snacks in Schools*, otherwise principals stated that they oversee fundraising sales.

A small number of respondents noted that the removal of vending machines and fundraising faced resistance from faculty and administration who had relied on the funds and not yet replaced them with non-food/beverage or compliant sources of revenue. Fundraising was noted to generate important funds and their school communities had a difficult time adjusting to alternative sales.

*Like I said, you know one of those touchy subjects that when you start messing with high school fundraisers and high school vending and stuff, nobody wants to deal with. **We're just trying to deal with it as it comes but we are not as on top of it as we should be.** – FSD, Utah*

## 'Flexible' school meal standards will not drastically change practices

Rural school professionals were asked whether they had heard of the Secretary of the USDA's announcement in May 2017 for greater flexibility in school meal standards and whether modifications to the requirements would change their practices. Since that time, the USDA released a final rule in December 2018 that codified flexibilities with the meal program, including allowances for flavored, low-fat milk, reducing the frequency of whole-grain rich requirements (eliminating whole grain-rich exemptions) and allowing more time for sodium reduction.<sup>20</sup> The final rule will be effective February 2019.

Despite the implementation challenges initially experienced, most rural respondents stated that they had reached a point of compliance and student acceptance and as a result, do not expect to make drastic changes to their current school meal practices in response to the 'flexible' standards. Further, many reported perceptions that students benefited from the healthier revised school meal standards and it was important to sustain students' access to healthier foods.

*I might leave mine the way it is 'cause I **finally got them all on the whole grains** and they seem to really like it now. – FSD, Montana*

*Actually last year we got a grant in the cafeteria for a salad bar...so now we offer a salad bar in the cafeteria for our students...and obviously part of giving out the salad bar is to give students options that meets the standards and stay healthy. You know, I think if the standards changed, **it's not like we are going to say: 'alright, there goes the salad bar, let's get the hamburgers back.'** – FSD, Illinois*

*No, it's not going to [change practices]. I think what we are doing is the right way. When I look at the number of obese kids we have...even though we only have them for 7 hours, but we have them for two meals a day and I think at least during the day or trying to **offer them the opportunity to have the quality of food** that they need down the road. – Principal, Montana*

Notably, a handful of rural respondents expressed “*relief*” about the 'flexible' standards, particularly with respect to sodium targets, which were reported to be one of the more challenging components of the revised standards:

*I think it is going to be wonderful because we don't have to make **that second level on sodium**. Because if we had to meet that **it was going to be very hard** and it was going to be to the point that the kids are going to quit eating. – FSD, Tennessee*

*Sodium is in a lot of things. It is even in milk. **So by relaxing that restriction we can now offer flavored milk, even skim milk we can still offer like the chocolate milk or the strawberry milk...** Things you don't usually think of. – FSD, South Dakota*

This finding that school meal practices will overall remain unchanged despite the ‘flexibilities’ is consistent with a recent study examining superintendents’ perspectives on local school wellness policies, of which school meal standards are one provision.<sup>21</sup> While the superintendents were from a range of urban, suburban and rural schools, most participants also reported that they did not expect to drastically change school meal practices as a result of the ‘flexible’ standards.

## Perceptions of school nutrition standards implementation

Rural school professionals were asked about their perspectives on school nutrition standards and their intended outcomes. As described above, the rural settings included in this study represented a wide range of ruralities and implementation settings; accordingly, a wide range of perspectives were represented. While some reported perceptions that the standards may positively influence students’ awareness around healthy eating, others perceived that they did not promote positive changes in their schools. In many cases, some stakeholders described both positive and negative perceptions about different aspects of the standards, highlighting the complex insights and experiences held by those at the school and district level responsible for translating the standards into practice.

### Positive perceptions

Some rural school professionals reported that changes to the school food environment had overall improved the types of foods available on campus; in addition, implementation had raised a level of awareness around healthy eating amongst students and school communities.

*I think they [standards] have gone a long way...you know, [I don't know] that they've met every piece and solved every problem we have with eating, but I think they have certainly **raised the level of consciousness** with regard to what we put in our body and what that could do to us. – Principal, South Dakota*

*So there is much more discussion about what actually constitutes a meal, what actually might be healthy. Like why they can't get candy in the vending machines anymore. Those are the **kind of conversations that do happen** and it happens not only like on the floor of the cafeteria but also happens in health classrooms, and the classrooms in general where kids will bring it up. – Principal, Massachusetts*

*I think the overall attempt to make sure that we **don't become the providers of access to negative food choices** as far as kids going into a vending machine and grabbing a soda and candy during the day or even right after school, is a positive thing. – Principal, Massachusetts*

*When I walk in to [a] classroom, **I can almost bet that I can point out to kids who were late and missed breakfast**...I am not saying 100%, but they are the ones that aren't engaged with the teacher, engaged with the classroom. The students have the option to*

*eat breakfast for two reasons I think. They are here to have a breakfast, but they are also here to communicate with their peers, that communication occurs along with getting that meal they are more attentive in the classroom. I can see that when I walk in to classrooms. – Principal, Montana*

### **Negative perceptions**

Some rural school professionals reported negative perceptions about the intended outcomes of school nutrition standards. A few rural FSDs were frustrated that school meals were targeted to address childhood obesity because they reported that schools were not responsible for causing or contributing to obesity. Others reported perceptions that changes to school meals were not necessarily healthier or had unintended consequences of steering students away from healthy foods.

*I did not like it and I know...we lost, our count went down for student participation what that was...yeah and they should have just left us alone because **our kids are not getting fat from our school lunches**. – FSD, South Dakota*

*I think you are pushing them in the opposite direction that you want to push them. I think you could do the healthy options and invite them to eat healthy and still have food that tastes good, I think you can go too far. I think **if you go too far then you push them away from healthy food** and not encourage them to eat healthy food. Those are my thoughts. – FSD, Utah*

*[Are there any positive outcomes that you've seen?] Not really. They **don't think the food tastes as good as it used to**... 'cause you know, when you start cutting sodium and cut this and that...I think what helps more now is the spice bar 'cause they...there's no cholesterol, no salt, no nothing. That [spice bar] seems to help. – FSD, South Dakota*

These perspectives are consistent with a prior study with rural FSDs in Iowa who reported negative perceptions of changes to the revised school meal guidelines; in particular, FSDs in the study also did not view childhood obesity to be a problem in their student populations.<sup>13</sup> However, as noted above and consistent with the current study's findings, respondents often had both positive and negative reflections about these reforms. The rural Iowan study also reported that the fruit and vegetable requirements were perceived to be the easiest to implement and overall accepted well by students.<sup>13</sup>

## **IMPLEMENTATION CHALLENGES**

Rural stakeholders shared different challenges that they had encountered while implementing school nutrition standards in their respective school communities.

## The influence of rural home and community food environments

Rural school professionals overwhelmingly described the negative influences of home and community food environments on rural students' acceptance of the revised school nutrition standards. Social and economic factors in home and community environments presented barriers to extending healthier nutrition practices outside of their rural school food environments.

While these discussions occurred across rural respondents from various socioeconomic school communities, some specifically talked about the impacts of poverty on food access and poor community food environments overall. These interwoven influences are described below across individual, family, and community levels.

### ***“They don’t eat like city kids”***

At the individual level, respondents described rural students' sociocultural food preferences, both as being unique from urban students' preferences due to the cultural and geographic influences of their respective regions, as well as more specifically due to limited exposure to “ethnic” foods. For example, FSDs described challenges with serving Asian-inspired entrees or Italian pastas with Alfredo sauce (students were unfamiliar with non-tomato based pasta sauce).

***Our kids were raised on meat and potatoes and vegetables out here. They want their meat, potatoes and vegetables. They aren’t vegans, they are not, you know, we don’t have a lot of the interracial kids, so we don’t have to have, you know what I mean.***  
– FSD, Illinois

***I mean in the deep south you know everything is covered in gravy or butter or deep fried. That’s basically what we eat here...I am in a gumbo country, down here that’s a way of life...you grew up eating, you have biscuits and gravy at home and we are trying to give you granola in a parfait...that’s a little jarring.*** – FSD, Texas

This finding is consistent with a rural Iowan study that reported similar references to “meat and potatoes kids” and that the changes to the school meal program did not “fit [the] community” due to athletic and farming students' needs for greater caloric diets due to their levels of physical activity.<sup>13</sup> The Iowan study highlights the many ‘faces’ of rural students' needs; in addition, the authors note that this is inconsistent with previous literature, indicating rural students are less likely to have access to active lifestyles.<sup>13</sup>

### ***“Home doesn’t focus on nutritional value”***

The role of family education was reported to be an important factor in rural students' acceptance of the revised school nutrition standards. Respondents noted many barriers for healthful food environments to be reinforced at home: parents' busy work schedules, financial constraints and access to healthy foods, lack of awareness or concern about nutrition education, amongst others. Notably, respondents expressed frustration with the discordance

between the healthy changes in the school environment and lack of reinforcement in home environments.

*Because **home doesn't focus on nutritional value**, not in our community, anyways.  
– Principal, Montana*

*We try to help the problem, it is all we can do by serving a nutritional meal. But we can't solve the problem all by ourselves when these kids go home and spend more time at home than they do at school. I know how people shop and **what they do is they buy foods that the kids can prepare themselves**. So the kids are very self-sufficient that way. When they get home they can get something to eat, they don't have to worry about whether their parents are there to cook or not. And as far as I'm concerned that's not a very nutritious way to go. – FSD, Montana*

*I think that **parents actually leave it up to the school** to make sure that...well they know that they are going to get healthy foods at the school. So with the home...you fend for yourself. – FSD, Tennessee*

*Fruits and veggies are a lot of times a waste, they just don't get it at home. Mom and dad or guardians and whatever grandparents, whoever their guardian is, just goes down to the **gas station and go get some food**. Yeah, it's a different...you know I came from a large city, and then you move into a small community that's under 1,000 people and it is a different culture even. – FSD, South Dakota*

*Lots of kids still bring hot pies and soda into school. They are bringing snacks from home or they have their **parents stop at the gas station before they get to school**.  
– Principal, Utah*

*But it comes down to the family...If the families are not making that food at home, those kids don't like it and sad to say, but parents...a lot of the kids are coming to school with these cinnamon snacks, [candy bar], [snack food]. **And as I said, it's the parents**. There's not much you can do, parents are the ones that dictate what their kids eat. – RN, Utah*

*I think they're doing an awesome job in the cafeteria, but the kids, **they're used to [fast food burger restaurants]**, they aren't used to the salad and fruit and the portion sizes.  
– Nurse, Texas*

*Oh there's a little difference...You can **tell the ones that are more farmers-fed** as I would say, 'cause I know some of the foods we make and with the parents working so much and all...you can tell what kids like...fast food a lot. – FSD, South Dakota*

### **Access to healthy foods for “people in poverty”**

Intersecting heavily with the challenges of individual food preferences and home food environments, respondents described challenges with rural students' acceptance of fruit and

vegetables because they perceived that students did not have access to the types of foods provided in the reformed school food environment.

*I'm in a pretty high economically disadvantaged area, **so my students just haven't been exposed to many kinds of food.** You know...at different events, we would set up... tables...and have fresh produce. It's shocking how many parents say their kids don't like those. We tell them they [students] eat every single day at lunch, broccoli or whatever might be...so just they are not getting right at home...so it is sometimes a little challenging to me...we really have to educate our students...like chicken parmesan! No one here knew what it was...Any kind of ethnic food, we really had to have a lot of taste testings and try to get them to accept the food that's kinda outside their comfort zone, which is unfortunately fast food. Students in the evenings are eating fried chicken...so, I think they are just not exposed to different options they have in the urban area. – FSD, Texas*

Some school professionals also reported strong concerns about the impacts of poverty and food insecurity on students more broadly.

*I think what impacts their ability to learn more than the hunger...is the **anxiety that goes along with not being able [to] access food at home.** So the anxiety that goes along with poverty just in general is much higher among...you know I see much more anxiety among kids that are living in poverty than I do naturally that's exhibited by kids that are not. I don't think it is a hunger thing as much as it is an anxiety thing. It does impact what happens in school. – Principal, Massachusetts*

On the other hand, the current study included a few rural high schools in higher socioeconomic communities where school professionals noted that students' did not have problems accepting the revised school meal items because they were accustomed to healthier eating.

*I have to say the kids here, because I think of just the **socioeconomic level of the kids, these kids have very sophisticated pallets** and they are very open to...very healthy eating kids. – FSD, Massachusetts*

### **Community food deserts**

Many respondents described challenges for families to purchase fresh fruits and vegetables due to poor access in their communities. While this was particularly notable from respondents in high poverty communities, several respondents in low poverty areas also described challenges with long geographic distances to grocery outlets.

*We don't have a grocery store in town so there is not even the option to have fresh produce or healthy options. We have a [dollar store] or [corner store], when those two places both accept Link, **what are your options? It's not lettuce or apples.***  
– Principal, Illinois

*I think an ongoing challenge, availability of not necessarily healthy, you know, just a variety of food. **We don't have supermarkets that provide us just a real rich variety of vegetables.** We've got cucumbers, lettuce and tomatoes and you know broccoli and cauliflower, you know which are good, but our choices are limited.*

– Principal, South Dakota

*They [students] don't participate [in school meals]. Because they are close to the interstate and there's **convenience stores and there's fast food restaurants.***

– FSD Tennessee

Studies of food insecurity have reported that despite rural communities being food producing regions, rural families – particularly rural poor communities – cannot afford to buy healthy foods and lack transportation to reach large supermarkets that may offer cheaper options.<sup>22</sup>

These findings are aligned with a study in low-income rural Midwestern communities, where residents expressed concerns about the lack of the variety of foods both in rural area stores and restaurants; notably, respondents pointed to food deserts and social environments that put the most constraint on healthy food access.<sup>23</sup> In addition, a study conducted in rural Iowa counties reported that communities lacked nutritious and healthy diets due to the lack of grocery stores; as a result of geographic distances to large supermarkets, residents of rural counties bought food from small, local stores that lacked a variety of healthy foods.<sup>23</sup> In addition to the barrier of geographic distances, rural area residents in another study identified the cost of healthy foods as another barrier to healthy diets.<sup>24</sup> Researchers and advocates outside the school nutrition field have also addressed research agendas to target policies addressing food access in rural communities.<sup>25</sup> Other researchers have noted the importance of community, home, and school environments and their role as key factors in supporting healthful eating behaviors and changes to health and wellness environments.

### Limited staff size and capacity posed challenges

Rural school professionals, particularly those in smaller school districts, reported that it was very common that staff '*wore many hats.*' For example, one principal also served as the school bus driver and two FSDs were responsible for overseeing food service programs for several school districts in the region.

*She [FSD in neighboring small district] doesn't have the opportunity to leave and go to meetings because she is the food service, cook, **you name it, she does it all.***

– FSD, Massachusetts

*The staff here is just three and they were at one time four. **If there's one missing here the à la carte line will not run** or if they sell something basic it may just run out at the same line and the à la carte line won't be open.* – Principal, Illinois

This theme was consistent with findings from a report by the Kids' Safe and Healthful Project<sup>12</sup> that documented challenges with administrative capacity in rural school communities in Indiana, Louisiana, and Texas. The limited staff capacity was noted to be a barrier for school meal standards implementation.

### **Staff size and capacity influenced ability to write grants**

Studies suggest that nutrition-related programs or initiatives, such as school gardens, may enhance fruit and vegetable acceptance and consumption, thereby supporting the implementation of school nutrition standards.<sup>26</sup> In the current study, a small number of FSDs in larger rural school districts focused on writing grants to enhance their Child Nutrition programs by supporting additional equipment and programming.

*One of my big pushes is grant writing, that is just a big focus...we are trying to pursue outside funding for our district...we are actually getting all new equipment to our kitchen next year through the state, so that will definitely expand our service capability of our antique machinery. We've gotten grants through a couple of non-profits, we can now do smoothies for breakfast...**We definitely try to pursue whenever we can, outside funding to supplement our initiatives.** – FSD, Texas*

Grants required rural school professionals to obtain funding and oversee implementation and reporting about those funds. Respondents in smaller districts noted that due to their limited staff capacity, they were not able to apply for grants to fund equipment, additional programming, or other initiatives that may facilitate school nutrition policy implementation.

*A lot of times funding...doesn't take into account that a poor district now has to pay someone to do that [the program]...to monitor it, and there's never administrative costs built into it...**our staff are already busy...we can't add more stuff to their plate.** – FSD, Utah*

*I guess my problem is I'm one person in my district, I don't have anybody else to do my free and reduced. Like the bigger districts have ten people that do the nutrition, you know and they've got time to play with it. So that's been a challenge for me because I don't have...**I already work 10 hours a day and only get paid for eight.** I don't have the time to put in to anymore to try to, you know, I guess I just don't have the time to put into that [additional programs] to get it where...I'm trying. I've tried, but no I am not there yet. – FSD, Utah*

This finding highlighting the challenge of obtaining additional funding through grants is important, given that a Midwestern study reported rural and town schools were more effectively able to increase fruit and vegetable consumption through a USDA Fresh Fruit & Vegetable Program compared to urban and suburban schools.<sup>27</sup> In part, rural and town students had poorer access and intakes prior to the intervention, thus they increased consumption more with the intervention. The study recommended that state program

administrators more actively solicit proposals from rural and town schools, highlighting the need to better address barriers to grant writing and administration.<sup>27</sup>

In the current study, a small number of rural school professionals perceived that urban districts received more grant funding compared to rural schools. One respondent noted that while he understood the rationale for larger school districts that offer the “*greatest bang for your buck*,” there were frustrations nevertheless.

*It is hard to get your voice to be heard because it is an issue in our rural schools and I think a lot of times our smaller school districts, you know, we miss out on the funding because we don't have as many kids. So our money is very limited as to what comes to us...It's usually bigger schools...like inner city schools, suburbs, with more kids...get more [grants] than us. Which I understand but **we kind of feel lost out here in our little rural areas**. – FSD, Illinois*

*It is a major Massachusetts problem that's probably shared by a lot of the country that the **rural areas are experiencing population decline** and so we are struggling with drastically dropping numbers and budgets that are problematic year to year. It also makes us, you know, you would think that in some case that would put you **high on a list of need for grants**, but not when you are talking about a small number of students...That's frustrating to be a rural school and see that...So you don't have the student numbers and you have folks that are looking at decisions based on **what's going to have the biggest bang for the buck** or have the greatest impact we are kind of lost off the table as far as that consideration is concerned. – Principal, Massachusetts*

### **Recruiting and retaining food service professionals**

Respondents also noted challenges associated with recruiting school nutrition and food service professionals to rural communities.

*We have problems staffing the schools that are further drawn away from the inner city...yes it is a big challenge...It is hard to provide the many hours based on the funding. You get only so much for each meal, **so you have to be careful how we staff the schools** because we just can't afford to pay benefits for all the employees. That's the problem. The benefits, the cost of the benefits. – FSD, Tennessee*

*It is a difficult lifestyle. It is not for everyone. **You have to be a certain kind of person to handle a rural lifestyle**. There aren't the conveniences of living in a city. There is not the entertainment options, there is not shopping options, there is not the grocery options, you have one grocery store. Sometimes it is more expensive cause you have to pay more for things and if you do leave to go you have to take a whole day to go shop somewhere else. So it takes a different kind of person to be able to live in a rural small community. Especially a person who can teach in one of our reservation schools, that's definitely a different kind of person. **So we see a lot of turnover**. People think they can handle it and they come, they spend a year, and they're gone. – FSD, Utah*

Relatedly, several respondents described challenges with recruiting FSDs who met the USDA Professional Standards for All School Nutrition Program Employees,<sup>28</sup> which updated minimum hiring standards for school nutrition and food service professionals. The standards adopted training and minimum hiring requirements for School Nutrition Program Directors and State Directors hired after July 1, 2015. The minimum education standards are based on student enrollment, with school districts <2,499 students requiring a professional with at least a high school diploma (or GED) and at least 3 years of relevant experience. In comparison, school districts with >10,000 students require a professional with at least a Bachelor's degree in a specific concentration. On March 6, 2018 (after interviews for the current study were conducted), the USDA released a proposed rule that allows, amongst other flexibilities,<sup>29</sup> the hiring of new directors with less than the required years of food service experience for districts <2,499 students and to consider volunteer or unpaid work as relevant experience. The proposed rule aimed to address hiring challenges faced by small school districts.

In the current study, there appeared to be some misinformation among FSD respondents about the specific requirements for hiring standards, particularly for smaller school districts. Many FSDs reported that they were unclear about the details of the required standards but all perceived that it posed challenges for recruitment and retention.

*One of the things that I think we have to do a lot in rural schools is the professional standards changing. **It's been a challenge for little districts to get directors who qualify.** And I know many times that companies [food service management companies] won't take on small districts. I talked to several districts with 1500 or less students with existing directors retiring or leaving, absolutely unable to find anyone who qualifies, most young people don't go into school cafeterias. – FSD, Texas*

*Now they are requiring a certain education. Where 30 years ago your food service director could have started as a cook...and they had like a high school education, well now they are requiring more education than just that. **Also if they've been there for 30 years they are used to doing it a certain way. So change is hard for everybody.** – FSD, South Dakota*

***The only reason I am still here is that I was grandfathered in.** This year they passed the bill that said your food service director or...the head of your department now has to have some type of degree. I know there's lots of people around me that make a lot more money doing what I am doing in one district and I am doing two. If they would have to hire someone, they would have to pay a lot more than what they pay me, especially someone who's been in college for 4 years. – FSD, Illinois*

This finding highlighting the challenges of recruiting school food professionals was consistent with the Kids' Safe and Healthful Foods Project<sup>12</sup> that reported a key strategy for recruitment and retention of food service professionals was to improve the way schools and broader communities view school nutrition programs and professionals. The report proposes that one mechanism is positive promotions of these careers through institutions of higher education.

### Food service management companies

Respondents from four high schools out of 22 used an external food service management company to run Child Nutrition programs. While one school had always used a management company, the other schools had switched over, noting that the challenges of staff capacity and recruitment issues had led them to consider external services.

*We are seeing more of a trend happening especially in the Midwestern and smaller school districts. We are finding that **it is more efficient for the school districts to contract through different food service companies.** Just because they can take care of all of the regulations and make sure that they are in compliance. – FSD, South Dakota*

While some respondents reported being pleased with the company's services, others expressed challenges with this change and concerns related to the types of foods and beverages provided over time.

*Now that was initially when we switched to [Company Name] the last couple of years. I think they have softened up a little bit and they are offering more à la carte items that they sell to kids on the side. More cookies, more different, not healthier things cause it helps the bottom dollar. A little frustrated with that because the reason we went to [Company Name] was **it is supposed be better quality food and healthier and now they start selling more things to the kids,** so it costs the kids more and it is not as healthy as it should be. – Principal, South Dakota*

*I think the challenge really is for school lunches, this concept of can you make any profit. **It is pretty cost neutral and I think that can be a challenge cause...**then they come in and they say, 'oh we are going to do all these things' and then when they are not making the money to do those things, those services can go. – Principal, Massachusetts*

### School nutrition reform and political push back

A wide range of comments were made by rural school professionals regarding the role of government in regulating school meals and snacks standards. Some respondents reported that the revised school nutrition standards were “one more thing that the federal government is doing to us.”

***Just that the federal government needs to get out of the way.** States and districts are more responsive to the needs and wishes of institutes than the federal government. – Principal, Utah*

Some school professionals recalled that these political views created “*push back*” to implementation efforts, while some were able to respond to these comments compared to others.

*There was little bit of that **political push back**. But people went...you know, ‘get over it...it's good for our kids whether it's her [Michelle Obama], us, you or them or who what when or why...this is good for kids. This makes sense, so, just do it (laughs)!’*  
– Principal, South Dakota

*I’m in the middle of Republican stronghold, so anything with Obama's name attached to it is automatically viewed with a lot of skepticism and so all this unnecessary and political aspect attached to Hunger-Free Kids Act that we garnered a lot of resistance, not only in rural areas, I think Texas is all like a...we have a lot of push back just because of the names that we are championing... but I think it is a blind partisanship, honestly, and **nutrition is an unfortunate casualty**. – FSD, Texas*

*Well at this part I would say what I experience out here is that it is not necessarily an issue of healthy versus not healthy. I think it is more an issue of the **perception of government regulation**. You know there is definitely the political element that people... this...a certain sentiment that there’s a resentment of that. – Principal, Massachusetts*

A similar theme was noted in a rural FSD study that reported perceptions that the revised school nutrition standards were because “*someone in Washington thinks that kids are too obese.*”<sup>13</sup> Further, views presenting “*push back*” to these types of initiatives are not unique to rural school districts. In response, advocates have addressed how policy and environmental change initiatives broadly can be framed to schools and communities in ways that garner more support,<sup>30</sup> particularly when addressing social determinants of health for communities in need.<sup>31</sup>

## Transportation challenges created barriers for anti-hunger programs

A handful of rural FSDs and principals in high poverty communities attempted to implement additional nutrition programs, such as the USDA’s Summer Food Service Program (SFSP). However, due to transportation challenges in their rural communities, they faced barriers to participation. Such barriers prevented full implementation of the school districts’ efforts to improve access to healthy food during summer months.

*We have low-income apartments here, but they are so far away from where my schools are that I can’t do a summer feeding program because they can’t get here. We tried several times to do that, and we’ve opened up the site and **we couldn’t get anybody to come**...in the summer time there is no school buses. – FSD, Tennessee*

This theme was also consistent the Kids' Safe and Healthful Foods Project<sup>12</sup>, noting the dispersed nature of rural students across their communities, some who may have to travel several hours to get to school. Both studies point to logistical barriers in rural communities that inhibit school professionals' ability to comprehensively address healthy eating and food insecurity with the breadth of programs offered by the USDA.

## STRATEGIES THAT FACILITATED IMPLEMENTATION

Despite the number of barriers as noted above, stakeholders also shared strategies that facilitated implementation of nutrition standards in their rural school communities.

### Purchasing co-ops enhanced purchasing power

Rural FSDs were asked if they faced challenges with procuring items for the school meal programs. The majority did not describe procurement as a challenge since they had formed or joined neighboring districts to create purchasing co-ops, also called 'consortiums' or 'buying groups' to enhance their purchasing power, which mitigated any procurement barriers.

*[Consortiums] is the way to go. So you won't be out there alone... **Volume speaks louder than anything else.** I think in our rural area, that's what all of us are doing. – FSD, Tennessee*

*Because we are such small school we started a cooperative. All these schools have one person we send all our items in that we need for the year and then they make the contracts and send out the bids and award contracts. Usually the bread companies don't want to drive way out in the country more than once a week, and they want to deliver more than 60 loaves of bread. **So by having this co-op, you know we can set the parameters** and say, yeah you have to come to [high school name] three times a week. That helps. – FSD, Massachusetts*

This strategy was also recommended in a report by the Kids' Safe and Healthful Foods Project<sup>12</sup>, where co-ops formed at the local, regional, or state level were noted to be an important strategy to increase purchasing power and obtain locally sourced products.

Notably, there were a small number of FSDs who reported challenges with procuring directly from local farmers. In addition, there were a small number of rural FSDs who reported having to pick up or deliver school meal items because delivery trucks would not deliver to their respective districts.

*You know, they grow melons here and pumpkins and none of them were really willing to do that [sell to the school district], which really kind of left the bad taste in my mouth simply because 'this is your community. These are people who help support you and*

*your farm.’ Their answer was, ‘we only ship by semi.’ Really? **You couldn’t put a few bushels of stuff in your truck and bring them over?** So I yeah...I was really disappointed.*  
– FSD, Illinois

*We’ve got one school that is four hours away, it sits on the north end of [lake] and there’s only eleven students out there. We have to make all of the deliveries in that community because the **delivery companies won’t delivery there.*** – FSD, Utah

*Well, when it comes to the Farm to School a lot of the bigger farms and vendors don’t want to be bothered with a little school district that will call up and say can you send me half case of tomatoes. **They don’t want to be bothered with that.*** – FSD, Massachusetts

## State technical assistance facilitated implementation

Rural FSDs enthusiastically described relationships with their respective state technical assistance bodies, particularly state Child Nutrition agencies. The resources and trainings provided by these organizations were noted to strongly facilitate revised school nutrition standards implementation efforts. Respondents noted that state officials answered questions in a tailored manner, provided important resources, and offered support for rural FSDs in other valuable ways.

*Our state department is the **most amazing department there ever was!** They are so, you know they are almost like the easy button that you can call them and they get right back with you. I can’t say enough about our state department.* – FSD, Tennessee

*They [state department] are always open to answering questions for us. They also provide some webinars trainings that we can participate in, too. **So, yes they have been very helpful.*** – FSD, South Dakota

In addition to direct technical assistance, relationships with state organizations led to several schools obtaining equipment and other grants to support revised school meal standards implementation.

***She [cafeteria manager] applied for a grant and as a result for the grant she was able to secure an entire salad bar.** So now we are able to offer that in a cost effective manner. But everyday our students have the option of creating a fresh garden salad with a variety of different toppings.* – FSD, IL

This finding is also consistent with the Kids’ Safe and Healthful Foods Project<sup>12</sup> report, indicating that state technical assistance was critical to implementation of school meal standards, as well as with local school wellness policy implementation.

## External partnerships provided additional resources

A few rural school professionals formed partnerships with external organizations (e.g., Food Corps) and described how these efforts had facilitated school nutrition policy implementation. For example, external partners provided nutrition education, such as school garden education, that enhanced students' familiarity with fruits and vegetables. In addition, partners brought in additional resources and helped rural FSDs and other school professionals write grants to support additional programming. Lastly, partnering with external organizations was described to improve recognition about of the Child Nutrition program.

*...And they (Food Corps) were awesome and **they taught me a lot**. That's how I got into Farm to School and local foods, they helped me, you know they were the source of these programs. – FSD, Montana*

*Any time I can, **I try to partner with other organizations and try to make it a district-wide concern**, rather than something that crazy food guy is always bringing up [laughing]" – FSD, Texas*

It is important to note that, similar to obtaining grants, forming and maintaining relationships with outside partners was also reported to require time from rural school professionals, which was not considered to be an option for some. When asked if they had formed any partnerships to facilitate implementation, one FSD replied:

*Um, **you know we just don't have that option**. I mean there are two of us that work in the kitchen so we are here pretty much all day doing our job. – FSD, Montana*

## Conclusion and Opportunities

This study examined rural high school professionals' perspectives and experiences of revised school nutrition standards implementation. While summarizing the common themes across high schools, the study also highlighted the wide range of perspectives, experiences and heterogenous contexts in which such implementation activities occur in rural schools and communities. Overall, implementation experiences and student acceptance appear to have improved over time, however, respondents had both positive and negative perspectives on how the changes have improved school food environments and student health. Rural school professionals shared challenges with implementation, including unhealthy home and community environments that negatively influenced rural students' familiarity and acceptance of the new standards. Lastly, rural school professionals also shared strategies that they had incorporated to facilitate implementation, including relying on state organizations for technical assistance and grants, as well as joining procurement co-ops to improve purchasing power.

The study offers opportunities for government agencies, child health advocates, and other technical assistance bodies working with rural high schools and districts to facilitate implementation and sustainability of school nutrition policy initiatives. The following are some examples of strategies and areas for opportunity based on the respondents' insights:

- Facilitate school and community partnerships and advocacy to address community-wide food insecurity issues;
- Address poor community nutrition environments to ensure consistent healthy eating opportunities across homes, schools, and communities;
- Provide nutrition education for parents and guardians to improve home food environments;
- Facilitate close partnerships with regional and state organizations (e.g., Child Nutrition agencies) to connect rural schools/district to resources and technical assistance;
- Communicate updates to *USDA Professional Standards for All School Nutrition Program Employees* to rural districts;
- Provide support to address barriers (e.g., geographical distances) to accessing supplemental programs, such as USDA Summer Feeding Program;
- Support rural districts to form or join purchasing co-ops; and
- Facilitate partnerships with external organizations for additional technical assistance and grant writing capacity.

## Appendix A

### USDA Revised School Meal Standards Summary

#### USDA School Breakfast and School Lunch Programs Nutrition Standards: Summary of Selected Provisions<sup>1</sup>

- Fruit and Vegetable Requirements
  - Require students to select a fruit or vegetable as part of their reimbursable meal
  - Offer fruits and vegetables as two separate meal components
  - Offer fruit daily at breakfast and lunch
  - Offer vegetables daily at lunch

Effective February 11, 2019, the Final Rule on *Child Nutrition Programs: Flexibilities for Milk, Whole Grains and Sodium Requirements* include:

- Whole-grain Rich Requirement
  - Beginning in school year 2019-2020, at least half of weekly grains offered in National School Lunch Program and School Breakfast Program meet the whole grain-rich criteria; remaining items must be enriched
  - Whole grain-rich exemptions for hardship will be removed
- Milk Requirement
  - Beginning in school year 2019-2020, milk options expanded to offer flavored, low-fat milk; unflavored milk be offered at each meal service
- Sodium Limits
  - Beginning in school year 2019-2020, school districts can retain Sodium Target 1 through the end of SY 2023-2024; compliance with Target 2 behind July 1, 2024; and Target 3 is now eliminated.

<sup>1</sup>A comprehensive overview of USDA meal pattern requirements and nutrition standards, including resources and tools, is available at <https://www.fns.usda.gov/school-meals/nutrition-standards-school-meals>

## Appendix B

### USDA *Smart Snacks in Schools* Summary

#### Nutrition Standards for Foods<sup>3</sup>

Any food sold in school must:

- Be a “whole grain-rich” grain product; or
  - Have as the first ingredient a fruit, a vegetable, a dairy product, or a protein food; or
  - Be a combination food that contains at least ¼ cup of fruit and/or vegetable; or
  - Contain 10% of the Daily Value (DV) of one of the nutrients of public health concern in the 2010 Dietary Guidelines for Americans (calcium, potassium, vitamin D, or dietary fiber).\*
- Foods must also meet several nutrient requirements:
    - Calorie limits:
      - Snack items: ≤ 200 calories
      - Entrée items: ≤ 350 calories
    - Sodium limits:
      - Snack items: ≤ 230 mg\*\*
      - Entrée items: ≤ 480 mg
    - Fat limits:
      - Total fat: ≤35% of calories
      - Saturated fat: < 10% of calories
      - Trans fat: zero grams
    - Sugar limit:
      - ≤ 35% of weight from total sugars in foods

\*On July 1, 2016, foods may not qualify using the 10% DV criteria.

\*\*On July 1, 2016, snack items must contain ≤ 200 mg sodium per item

#### Nutrition Standards for Beverages

- All schools may sell:
  - Plain water (with or without carbonation)
  - Unflavored or low fat milk (flavored low fat milk is permitted for the 2018-19 school year)
  - Unflavored or flavored fat free milk and milk alternatives permitted by NSLP/SBP
  - 100% fruit or vegetable juice
  - 100% fruit or vegetable juice diluted with water (with or without carbonation), and no added sweeteners.
- Elementary schools may sell up to 8 fluid ounce portions, while middle schools and high schools may sell up to 12 fluid ounce portions of milk and juice. There is no portion size limit for plain water.
- Beyond this, the standards allow additional “no calorie” and “lower calorie” beverage options for high school students.

- No more than 20 fluid ounce portions of
- Calorie-free, flavored water (with or without carbonation); and
- Other flavored and/or carbonated beverages that are labeled to contain < 5 calories per 8 fluid ounces or ≤10 calories per 20 fluid ounces.
- No more than 12 ounce portions of
- Beverages with ≤ 40 calories per 8 fluid ounces, or ≤ 60 calories per 12 fluid ounces.

#### Other Requirements

- Fundraisers
  - The sale of food items that meet nutrition requirements at fundraisers are not limited in any way under the standards.
  - The standards do not apply during non-school hours, on weekends and at off campus fundraising events.
  - The standards provide a special exemption for infrequent fundraisers that do not meet the nutrition standards. State agencies may determine the frequency with which fundraising activities take place that allow the sale of food and beverage items that do not meet the nutrition standards.
- Accompaniments
  - Accompaniments such as cream cheese, salad dressing and butter must be included in the nutrient profile as part of the food item sold.
  - This helps control the amount of calories, fat, sugar and sodium added to foods accompaniments, which can be significant.

## Appendix C

### Methods

This study applied qualitative, key informant interviews to address a main objective: to identify key factors and practice- and policy-relevant strategies for the translation of standards into school food and nutrition practices in rural high school communities. To understand the processes and factors influencing the implementation of revised school nutrition standards in rural high schools, this study was informed by the Consolidated Framework for Implementation Research (CFIR).<sup>32-33</sup>

#### Instruments

Semi-structured interviews were developed based on the CFIR theoretical framework, available literature, and input from the Expert Panel (described next). The interview guide ([Appendix D](#)) was aligned with key domain areas and their corresponding topics relevant to school food and nutrition standards. The instrument was pilot-tested with two rural FSDs prior to commencement of interviews; pilot testing checked that questions were easily understood, appropriate terminology was used, and the interviewed flowed in a natural manner.

#### Expert Panel

The Expert Panel consisted of 6 academic and practitioner experts in the field of school and rural health and nutrition (listed in Acknowledgements). The Panel met three times over the course of the project to provide guidance and feedback on study design and sampling, preliminary results, the conceptual framework, and dissemination strategies. In addition, individual panel members were consulted for specific areas of expertise throughout the course of the project.

#### Sampling and Recruitment

To identify high schools, we first used the state law database for National Wellness Policy Study (NWPS) SY 2014-2015 to purposively select states in each region with strong and weak state laws for school meal and *Smart Snacks in Schools* policies. The highest and lowest scoring states in each region were identified; scores were determined by a system developed and updated for state law coding by the Bridging the Gap program.<sup>10</sup> After identifying states, we used National Center for Education Statistics (NCES) Year 2014-2015 to identify high schools in each state with both low and high socioeconomic status (SES) schools as measured by the proportion of free- and reduced-price lunch-eligible (FRPL) students. Low SES is defined as a FRPL >68-100% and high SES is defined as 0-40% FRPL. Once high schools were identified, we created a back up list of schools with similar characteristics in anticipation that not all would agree to participate.

First we contacted the superintendent to obtain permission to contact the FSD and principal of the high school. Next, both respondents were contacted via email with invitations to participate in interviews. After obtaining either written or verbal consent, telephone interviews were conducted using either a GoTo meeting software or by telephone. All interviews were audio taped through GoTo meeting or audio recorder and transcribed verbatim; interviews lasted 25-60 minutes. Respondents were asked to identify additional rural respondents within the district

who were involved with implementation of school nutrition policies; in some cases, additional respondents were also recruited using the same process. The recruitment and interview process lasted from February to June 2017. Table 1 lists characteristics of the final sample of high schools and the respondents included in the study.

Table 1. Final sample

	<b>High Schools n = 22 (%)</b>	<b>Respondents n = 38 (%)</b>
<b>Region</b>		
West	8 (36%)	15 (39%)
Midwest	7 (32%)	13 (34%)
South	4 (18%)	6 (16%)
Northeast	3 (14%)	4 (11%)
<b>State</b>		
Utah	4 (18%)	7 (18%)
Montana	4 (18%)	8 (21%)
Illinois	3 (14%)	7 (18%)
South Dakota	4 (18%)	6 (16%)
Texas	1 (5%)	3 (8%)
Tennessee	3 (14%)	3 (8%)
Massachusetts	3 (15%)	4 (11%)

	<b>High Schools n = 22 (%)</b>	<b>Respondents n = 38 (%)</b>
<b>Free &amp; reduced price lunch eligibility</b>		
High (68-100%)	9 (41%)	21 (55%)
Low (0-40%)	13 (59%)	17 (45%)
<b>Locale</b>		
Rural-Fringe (<5 miles from urban area)	6 (27%)	11 (29%)
Rural-Distant (>5 but<25 miles from urban area)	2 (9%)	2 (5%)
Rural-Remote (>25miles urban area)	14 (64%)	25 (66%)
<b>Majority ethnicity</b>		
Majority White (>=66%)	13 (59%)	19 (50%)
Majority Black (>=66%)	1 (5%)	1 (3%)
Other	8 (36%)	18 (47%)
<b>Enrollment</b>		
Large (365+ students)	5 (23%)	9 (24%)
Medium (128-364 students)	14 (64%)	24 (63%)
Small (0-127 students)	3 (14%)	5 (13%)

## **Analysis**

All audio files were transcribed by a research assistant or a professional transcription service. Transcribed files were uploaded into Atlas.ti Qualitative Analysis Software v8 for team coding. Two qualitative analysts used a draft coding guide, which was developed and revised based on the research questions and CFIR framework. During the coding and analysis process, the coding guide was heavily revised. First, each analyst independently coded a set of transcripts. Memos were used to document project progress, coding processes, and emergent insights. Then, the analysts discussed agreements and discrepancies over several rounds of meetings to make revisions to the coding guide, leading to refinement of the definitions and emergent themes. An inter-rater agreement of 90% was achieved on 20% of the transcripts prior to commencement of coding the remaining data. Once analysts established a high inter-rater agreement, they applied constant comparative analysis to conduct within- and cross- case analysis. This process involved analyzing similarities and differences within and across the respondents as grouped by state, socioeconomic background, small and large high school groups. To deepen the analysis, the researchers employed co-occurrence, code frequencies and primary document (pdoc) tables as some of the exploratory features of Atlas.ti. Generating the additional reports through these functions, the researchers were able to deepen the analysis and confirm or disconfirm “emergent” themes. As themes were identified, analysts looked for negative cases or outliers to examine whether they were consistent with the previously identified themes. To organize the comparison of emergent themes across cases, we created theme matrices. In each cell, we recorded notes and/or illustrative quotes from the data that pertained to the themes listed. Analysis of themes led to an understanding of the factors that influenced implementation of revised school meals and snacks standards in rural high schools.

## **Limitations**

There are several notable limitations. First, the rural study was limited to 22 high schools and 38 respondents’ perspectives at one point in time. We noted a wide range of rural perspectives, and while this highlighted the many ‘faces’ of rural schools and stakeholders, the study may have yielded more homogenous results with a more narrow sampling strategy. Further, examination of each high school case in a more in-depth manner – namely, more respondents per high school, may have yielded a deeper analysis about each constructs. Second, this was a formative analysis of a theoretical framework, based on nascent process of applying CFIR to school and community-based research. Further development of this methodology would enhance standardization of analysis processes as they apply to school-based research. In addition, CFIR authors note the limited development of the ‘individual’ domain, resulting in minimal guidance as to what researchers should examine with respect to the constructs. Lastly, the analysis was based upon school professionals’ perspectives on implementation; additional sources of data to corroborate stakeholder perspectives would enhance rigor of the findings.

This study was approved by the University of Illinois at Chicago (UIC) Institutional Review Board (IRB) (Protocol #2016-1211).

## Appendix D

### Interview Guide

#### Telephone Interview Guide Food Service Director

Hello, this is [researcher name] and I'm a researcher at the University of Illinois at Chicago. Thank you for agreeing to participate in this study. As you may know, I'm conducting a study about rural school nutrition policy and factors that influence implementation. I'm interviewing people who work in rural high schools with the aim of informing how nutrition in rural settings can be better supported and sustained.

[Confirm that consent form signed and returned OR review consent form and obtain verbal consent]

I would like to remind you that this study is voluntary and you do not have to participate in this study if you don't want to. Refusing to participate will not affect your employment or standing with [school district name] or the University of Illinois at Chicago. During the interview, if I ask you a question that you would prefer not to answer, just let me know and we can skip it. Also, you can stop the interview and withdraw from the study at any point. This interview will take about 45 minutes to one hour, are you ok to speak until [time]? [If no] Ok, is there another time when we can reschedule?

I see from the consent form that you have [agreed/disagreed] to be audio taped? [If agreed] Please feel free to request that I stop the audiotape at any time. [If disagreed] Would it be ok if I took notes during our interview?

Before we begin, do you have any questions for me about the study in general?  
[Respond to questions]

#### Introductory Questions

1. Please start by telling me about your role as a FSD at your school district.
  - Probe: How long have you been at the district? In the same role or other roles?
2. For this study, I'm interested in learning about [HIGH SCHOOL NAME] in the district.
  - Probe: Have you visited the school recently? Have you connected with staff/principals at the school?

I want to start by learning about you and the school food environment at your high school. When I say 'school food environment,' I'm referring to the food and beverage options available to students on campus during the school day, including meals and à la carte in the cafeteria and beverages and snacks sold in other places on schools grounds.

I want to start by learning about you and the school foods available at your high school, such as the food and beverage options available to students on campus during the school day, including meals in the cafeteria and snacks sold and served across campus.

### **Nutrition Environment & Services**

3. Does the school offer breakfast? Is it offered every day? Offered to all students?
4. Have there been parts of the **HHFKA regulations for breakfast** that have been challenging to implement and are not yet in compliance?
5. Does the school use strategies to promote participation in breakfast?
6. Does the school offer lunch? Is it offered every day? Offered to all students?
7. Have there been parts of the **HHFKA regulations for lunch** that have been challenging to implement and are not yet in compliance?
8. Have you heard of Smarter Lunchrooms? Does the school use Smarter Lunchroom strategies to promote meal participation?
9. How confident are you that it is not possible for the students to identify those who qualify for free or reduced lunch?
10. How does your school ensure that children who are receiving meals cannot be identified in the cafeteria or other ways?
11. How long are the lunch periods for students? How much time do students have to eat lunch (seated time)?
12. Do high school students leave campus during lunch?
13. How many hours of training do cafeteria and food service staff receive each year?
14. How would you describe the atmosphere of the school cafeteria? (see list of probes)
15. How is the nutrition information for school meals and snacks communicated to students and parents?
16. Do students have access to free water during meals in the cafeteria?
17. Do students have consistent and easy access to free water throughout the day?

### **Other Nutrition-Related Programs:**

18. Does the school have any of the following programs:
  - Farm to School program (or other buy local policy?)
  - Department of Defense (DoD) Fresh Fruit and Vegetable Program
  - School garden
  - Harvest of the Month (K-8)
  - Any other nutrition-related initiatives
19. Is there an active **district level** school wellness committee or health advisory committee? **[WellSAT-I]**
  - If yes, how frequently does the committee meet?
  - If yes, who is on the wellness committee? Who leads the committee?

### **Inner Setting**

20. How do people communicate changes made to food and beverages available within the high school building? How about across the different schools within the school district?
  - a. Probe: word of mouth, official wellness committee meetings, school website, social media, emails
  - b. Do you feel that the changes are supported by administration and staff at this high school?
21. Do you have some people who are especially supportive or especially unsupportive?
  - c. Probe: Is healthy eating a priority of your school district leadership?
  - d. Probe: Is healthy eating a priority of the school community?
22. There are some people who feel that health is a personal issue that is the responsibility of the family, and other people who feel that the community of people who have influence on children share this responsibility. How do you think the people in your school district feel?

### **Outer Setting**

23. Does the larger community outside of the school system know about changing being made to the foods and beverages available on school campus?
  - Probe: Do they support these changes?
24. Does the high school/school district have any partnerships with outside organizations, such as the health department, non-profits organizations (e.g., Action for Healthy Kids), or universities, cooperative extension, for school nutrition policy implementation?
  - Probe: How long have you had these partnerships? What types of resources or assistance do they provide? Do they provide financial resources?
25. Are you aware if [STATE] has laws/guidelines related to school meals and Smart Snacks? Fundraisers?
  - Probe: How do these laws/guidelines support or inhibit your initiatives?
26. Some state and federal agencies and professional groups tried to help people at rural schools like yours make changes in your districts. Did you feel like there were people out there trying to help? Who were they and what did they provide?
27. What kind of barriers or resistance have you experienced?
  - Probe: Procurement challenges? Lack of acceptance by students; lack of staff support
28. What kind of support have you experienced?
29. What do you envision as the next step in your district's nutrition policies?
30. Of the changes you've implemented, which ones do you feel confident will be sustained? Which ones are challenging to sustain?

### **Vending Machines:**

31. Are there competitive foods sold to students during the school day?
32. What is the system for ensuring all items meet Smart Snacks regulations?
33. How confident are you that all items meet Smart Snacks nutrition standards?

34. Are there vending machines on the school campus for students during the school day?
35. Who receives the money from the vending machines?

### **School Stores**

36. Are there school stores on the school campus for students during the school day?
37. Who receives the money from the school stores?
38. What is the system for ensuring all items in the school stores meet Smart Snacks regulations?
39. How confident are you that all items meet Smart Snacks nutrition standards?

### **Fundraisers**

40. Do fundraisers occur during the school day that involve selling food and/or beverages?
41. Who is in charge of approving all fundraising activities?
42. Do food and beverages that are used in fundraisers meet the USDA's Smart Snacks in Schools nutrition standards?
43. How confident are you that the people/groups who conduct fundraisers understand what Smart Snacks are?

### **End of WellSAT-I Questions**

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### **Policy Characteristics**

Next, I would like to ask about some information I obtained from the school website/ district office. I found out that (say what you found) and I have a few questions about this. [If applicable: probe for school-level policy].

44. Have you been involved with developing or revising the school districts' school meals?
  - Probe: When did you first get involved?
  - Probe: How – if at all – have you adapted the district policy to fit this high school?
45. Have you been involved with developing or revising the school districts' competitive foods/ Smart Snacks standards?
  - Probe: When did you first get involved?
  - Probe: How – if at all – have you adapted the district policy to fit this high school?
46. Do you feel the Smart Snacks standards is understood by administrators, teachers, and school staff in your school district?
47. You mentioned that the school district is making [xyz change], what is the biggest motivator for these efforts? Would you say improving eating habits? Teaching students about nutrition?
48. Is there any type of evidence that the policies are having a positive impact on the eating habits of students? Why or why not?

### **Process**

49. [Based on Smart Snacks policy at the district] I see you have standards for fundraising, who's responsible for making sure the standards are followed?
  - a. Probe: Who are the leaders in these initiatives? Who are the champions?
50. Who is involved in periodically reviewing, assessing, and updating policies?
  - What is included in the evaluation?

### **Flexible standards**

51. Recently the USDA Secretary announced that they will roll back some of the revised school meal standards for school meals, including delaying the sodium requirement,
  - Did you happen to hear this announcement?
  - [If yes]: In what ways will this change what you do with your school breakfast and lunch program?

### **Concluding**

52. Is there anything that you'd like to add about anything we've talked about today?
53. Do you have any questions for me regarding the study?

Thank you very much for your time today. Do you have any questions for me? If you think of any questions, please do not hesitate to contact me at any time. I will be mailing your gift card, please confirm for me the correct address where you'd like it sent [CONFIRM]. Thank you again!

## Appendix E

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