

## HER NOPREN Summer Speaker Series for Students Virtual Student Presentations August 16, 2023 – 4:00-5:00 p.m. ET

1

### Improving the Diet Quality of WIC-Participating Women using Digital Food Environments: Preliminary Results

**Presenter:** Yarisbel Melo Herrera  
**University:** University of Rhode Island

**Objective:** To assess the feasibility and acceptability of a WIC-tailored, modifiable pre-filled online grocery shopping cart compared to individually selecting items to improve WIC benefit redemption and diet quality of grocery purchases using a mixed-methods pilot randomized-controlled trial.

**Background:** Most WIC participants do not fully redeem their benefits, due to barriers including transportation, unclear labeling, and category-specific limits; potentially hindering diet quality optimization. With the implementation of online food shopping, there is an opportunity to employ choice architecture techniques to promote benefit redemption and optimal diet quality.

**Methods:** We enrolled Rhode Island WIC participants (n=24) who were >18 years and primary food shoppers, spoke English or Spanish, had internet, and no special dietary needs. We used Gorilla Shop Builder to design a simulated store. At baseline, participants completed a sociodemographic questionnaire and a simulated shopping episode (SSE) to assess grocery purchase diet quality. Instructions indicated to shop as if using all monthly food benefits and to buy WIC and non-WIC items to last 10 days. After a week, we randomized participants to the intervention or control group to complete the second SSE. The intervention group had a modifiable cart pre-filled with WIC items providing 100% of the benefits proposed on the 2022 food package revision, except for fruits/vegetables and milk, and was personalized based on the items selected during the first SSE. The control group selected their items individually. Both groups had a list of their assigned benefits, and WIC labels for approved items. We conducted qualitative interviews after the second SSE to better understand their food shopping decisions online vs. in-person, and perceptions, barriers, and facilitators of online shopping. Feasibility of the online platform was assessed using a 5-item, 5-point Likert scale survey. Acceptability of the pre-filled grocery cart was assessed using a 2-item, 5-point Likert scale survey. We performed descriptive statistics to summarize feasibility, acceptability, and baseline covariates.

**Preliminary Results:** Women were on average 29.4±1.1 years old, primarily Hispanic (75%), White (50%), postpartum (63%), partially breastfeeding (42%), and had never grocery shopped online (54%). Most reported participating in SNAP (63%) and being food insecure (83%). ≥92% of participants "Strongly agreed" or "Agreed" to 4 out of 5 feasibility questions. 67% of participants "Strongly agreed" or "Agreed" to the question "I would prefer to shop online vs. in person to use my WIC benefits", consistent with qualitative responses indicating preference to purchasing fresh produce in-person. Over three quarters of intervention group participants "Strongly agreed" or "Agreed" to both acceptability questions. Initial qualitative analyses suggest high interest in online ordering for WIC, with positive perceptions including time-savings, flexibility, and reduced impulse purchasing.

**Implications:** Preliminary results of this study suggest that 1) WIC online shopping is feasible, and that 2) a WIC-tailored, modifiable pre-filled cart is acceptable to WIC participants. These measures are vital for future adaptation of a full-scale efficacy trial to improve benefit redemption and grocery purchases diet quality in real-life settings.

## 2

### The Influence of the COVID-19 Pandemic on Household Food Sourcing and Food Security in Rural Appalachia: A Qualitative Study

**Presenter:** Katharine Garrity

**University:** Ohio State University

**Objective:** To understand how the constellation of pandemic-related 'shocks' (e.g., job changes; daycare and school closings; food supply disruptions) influenced households' food sourcing strategies and food security dynamics in rural Appalachian Ohio.

**Background:** The COVID-19 pandemic and related economic impacts precipitated numerous challenges for households across the socioeconomic spectrum, including changes in household composition, resources, and routines. Various studies have explored how the unique circumstances of 2020-2021 impacted households, particularly with regard to food insecurity, but rural communities remain underrepresented among this literature.

**Methods:** This study employed a mixed methods sequential explanatory design. A recruitment postcard was mailed to all residential addresses in the Athens County region of Appalachian Ohio in late June 2020. Adult recipients were invited to complete quarterly surveys, including a demographic questionnaire and the Household Food Security Survey Module (HFSSM). A purposively selected sub-sample of respondents were invited for qualitative, in-depth semi-structured interviews (n=16, May-June 2021); our maximal variation sample included households demonstrating consistent food security (n=7, 44%), episodic insecurity (n=5, 31%), and persistent insecurity (n=4, 25%) during 2020-2021. A subset of authors conducted iterative rounds of general inductive coding guided by the research objective to discern key themes using NVivo 12 software.

**Results:** Regardless of food security status, households employed a complex mix of strategies to support their food needs; in many cases, adults applied lessons learned during previous episodes of food insecurity to stretch resources in the context of household constraints and supply chain limitations. Pandemic-related shocks had ripple effects for many households, including exacerbating the cognitive effort invested in household food work (primarily by women). Even so, pandemic-related circumstances enabled positive changes in health behaviors for some and enhanced community connectedness (e.g., via food sharing).

**Implications:** This study highlights the role of life course experiences in equipping households for unexpected shocks to resources and routines. It also reveals how rural households demonstrated resiliency and experienced positive outcomes despite the disruptive nature of this period.

### 3

## Evaluation of a Produce Delivery Program for Patients at an Urban Health Center: Early Results and Lessons Learned

**Presenter:** Melissa Lutz

**University:** Johns Hopkins School of Medicine

**Objective:** To determine the feasibility and acceptability of a produce home delivery program for patients visiting an urban health center experiencing food insecurity (FI).

**Background:** Common interventions to address FI in the clinical setting include referrals to food banks, community-based organizations, and in-clinic food pantries. However, several barriers, such as storage limitations, regulatory requirements limiting healthy food options, and inconsistent transportation to off-site resources, prevent families from accessing food. Novel interventions, like mobile or home delivery food provision programs could circumvent these challenges.

**Methods:** In this pilot study, patients at a Federally Qualified Health Center in Baltimore City who screened positive for FI during a clinic visit were eligible to receive monthly produce deliveries to their home. Participants were enrolled in the program by student volunteers who are part of the clinic's social needs navigation program. Produce boxes contained 10-15 fruits and vegetables with the option to add on eggs and/or bread and were provided through a partnership with Hungry Harvest™, a company that rescues surplus produce from farms and wholesalers. Participants completed monthly phone surveys about the delivery experience and food usage to determine feasibility and acceptability. At baseline, 3 months, and 6 months, they were also asked to rate their food security status (using the USDA 6-item questionnaire) and report the impact that receiving deliveries had on use of other food resources. Reported results are from baseline through the three-month follow-up.

**Results:** Of the 10 households enrolled to date, 9 (90%) desired to continue in the program at the three-month follow-up. Food box delivery success rate was 100%, 90%, 100% at months one, two, and three, respectively. All participants reported that the delivery process was convenient. Over the three-month period, for the majority of participants (86%) the food boxes lasted between 1-3 weeks and 90% used the food to prepare 3 or more meals. Participants also reported using community resources, grocery stores, corner stores, and restaurants/takeout/fast food less often. Mean FI score was lower at the three-month follow-up (2.89, SD 2.17) than at enrollment (4.38, SD 1.85); with a statistically significant difference of 1.5 (SD 1.41),  $p=0.02$  ( $df=7$ ).

**Implications:** This pilot study demonstrates preliminary evidence of success for a produce home delivery program through a clinic-community partnership. The program was generally accepted as a convenient way to receive food by households experiencing FI and FI severity scores decreased after three months of deliveries.

## 4

### Implementation Strategies Used in Policy, Systems, and Environmental Interventions Addressing Obesity-Related Outcomes in Early Childhood Education Settings: A Systematic Review

**Presenter:** Robert E. Anderson III

**University:** University of North Carolina at Chapel Hill

**Objective:** The purpose of this review was to 1) examine the implementation strategies used to support implementation of interventions utilizing PSE approaches in the ECE setting and 2) describe how the level of implementation support is related to the effectiveness of these interventions.

**Background:** Policy, systems, and environmental (PSE) approaches can improve child health outcomes in early childhood education (ECE) settings. However, less is known about the strategies used to support the implementation of these interventions.

**Methods:** Seven databases were systematically searched (January 2000-October 2022) for ECE-based interventions focusing on children (0-6 years) that utilized at least one PSE approach. Eligible studies included a child level weight, physical activity, or dietary outcome or nutrition and physical activity environment outcome. Data was extracted based on guidelines for specifying and reporting implementation strategies. The Downs and Black checklist was completed to assess study quality. Implementation strategies were coded using the School Implementation Strategies Translating ERIC Resources (SISTER) taxonomy.

**Results:** One hundred and four studies representing 97 interventions were identified. The majority (86%) reported at least one implementation strategy. However, few (6%) specified the implementation strategy used by clearly naming and defining the strategy. The mean number of strategies per intervention was 3.8 ( $\pm 2.3$ ) (range 1-11). The majority of implementation strategies utilized (56%) came from the “train and educate stakeholders” SISTER domain and the most frequently used implementation strategy was “conduct educational meetings (60%). The number of implementation strategies was not indicative of better outcomes with the exception of the nutrition and physical environment.

**Implications:** While many studies demonstrated the use of implementation strategies to support ECE PSE interventions, few actually explicitly identified strategies. In order to close the translation gap from research to practice, it is necessary for future interventions in the ECE setting to explicitly identify implementation strategies and evaluate their use. Only then will we be able to disseminate these effective interventions to promote population level change.

## 5

### A qualitative exploration of Spanish-speaking Latina experiences participating in WIC before and during the COVID-19 pandemic

**Presenter:** Carlos Roberto Soto Diaz

**University:** University of North Carolina at Chapel Hill

**Objective:** To understand the perceptions and experiences of Spanish-speaking Latina WIC participants with the WIC program before and during pandemic-related changes to the program.

**Background:** WIC is a federal nutrition assistance program that provides nutritious foods to over six million families with low incomes in the US. Over one third of WIC participants identify as Latina, but over the last five years there have been notable declines in the percent of income-eligible Latinas participating in WIC. During the COVID-19 pandemic, there were various policy changes to the WIC program, including remote enrollment and recertification, and an increase in the Cash Value Benefit (CVB). Despite many WIC participants identifying as Latina, few studies have focused on Spanish-speaking Latina perceptions about the WIC program before and during the COVID-19 pandemic and this information can be used in the development of policies and programs to increase Latina WIC enrollment and retention.

**Methods:** We conducted 18 virtual in-depth-interviews in Spanish with Latina WIC participants in North Carolina in August 2022 to understand their perceptions and experiences with the WIC program and policy changes that occurred during the pandemic. We recorded, transcribed, and coded all interviews. We used thematic analysis with deductive and inductive coding to derive key themes.

**Results:** Informal social networks played an important role in learning about and enrolling in WIC and navigating food shortages during the pandemic. Perceptions about the WIC program were mixed, with positive thoughts about the healthfulness of the foods provided, and negative perceptions about the variety of WIC-approved products, monthly benefit amounts which were perceived to be too low, and the cultural appropriateness of foods provided (i.e., juice, peanut butter). Participants also described challenges related to communication with WIC staff and agencies and the need for more Spanish-language resources. Pandemic-related WIC policy changes such as remote appointments and the CVB increase were positively perceived; however, barriers to using benefits during the pandemic included limited communication from WIC agencies about policy changes, food shortages, and concerns about not being granted U.S. citizenship or permanent resident status due to use of WIC (i.e., Public Charge).

**Implications:** Concerns about the cultural appropriateness of foods provided, communication challenges, and the chilling effect of proposed discriminatory policies such as Public Charge emphasize the need for resources dedicated in the WIC program to improving Spanish-speaking Latinas' experiences. Our findings can be used to inform changes to the WIC program to improve the Spanish-speaking Latina experiences such as revisions to the food packages and recent United States Department of Agriculture investments in diversifying the WIC workforce and community outreach to increase WIC enrollment (CIAO). This information is critical as Latina participation in WIC has declined more than any other racial or ethnic group in the last five years.

## Student Posters

The posters are available on the NOPREN website: <https://nopren.ucsf.edu>

1

### Big Dreams, Small Businesses: Bolstering Latina Community Food Entrepreneurship to Strengthen Community Food Security in Knoxville, Tennessee

**Presenter:** Ashlyn Anderson

**University:** London School of Hygiene and Tropical Medicine

**Objective:** A Community Based Organization (CBO) research project funded by the United Way of Greater Knoxville was started to foster economic and leadership opportunities for Latinas within the food system to positively impact food security and health.

**Background:** The Community Food Security Assessment began in 2022 led by the United Way of Greater Knoxville; Three3, a research non-profit; the Knox County Health Department; and community partners like Centro Hispano, a Latinx non-profit resource organization, to gather stakeholder perspectives on food insecurity and equity issues across Knoxville's food system. The Latino community in Knoxville makes up 5.7% of the city's total population, yet experiences over double the rates of food insecurity at 22% as compared to white households at 11%. Needs assessments and asset mapping were used to identify challenges and opportunities across the food system in order to strategically plan programs and resource investments that will address barriers to access and root causes. Initial asset mapping revealed the pre-existing entrepreneurial capacity for Latinas in Knoxville to grow food business ownership and increasing economic purchasing power; yielding improved health and food security outcomes through cuisine that is culturally relevant and desired within immigrant populations.

**Methods:** Three focus groups were conducted in Spanish and divided based on the stage of food business entrepreneurship: basic, medium, and advanced. Mixed-methodology was employed through a combination of qualitative discussion, Post-It note sharing, and written surveys for Latinas from 9 countries of origin in Latin America to learn more about the needs and barriers for operating a prepared food business. Qualitative discussion questions were used to assess entrepreneurial training and prior knowledge, scale of preparation and production of foods, and future oriented questions on food system growth and next steps.

**Results:** Various barriers and facilitators to owning and operating a food business were identified. Challenges included not having knowledge of the licensing and Health Department standards to comply with in Spanish, not receiving family and social support for entrepreneurship goals, and lacking the budget or financial resources. Assets included having an adequate kitchen space that could comply with the health standards such as Real Good Kitchen- a non-profit commercial kitchen space in Knoxville, and being well-educated and prepared both in the legal and financial aspects of food business operation.

**Implications:** The results demonstrate how the Latina community can continue to foster self sufficiency and resilience through ownership of prepared food businesses if given proper support. Participants were encouraged to enroll or had already participated in the Grandes Sueños Pequeñas Empresas (Big Dreams, Small Businesses) program at Centro Hispano which provides access to general business management knowledge for Latino small businesses. Action items include generating a list of accessible community garden spaces in Spanish, identifying a Spanish-speaking contact at the Health Department to educate on certifications and licensing, and increasing the number of Latina food businesses users in Real Good Kitchen.

## 2

### The Experimental Beverage Marketplace: A promising tool to study how individuals respond to sugar sweetened beverage taxes

**Presenter:** Haylee Downey  
**University:** Virginia Tech

**Objective:** The objectives of this research were to 1) determine if individual behavior is sensitive to a tax manipulation in the Experimental Beverage Marketplace and to 2) assess participant perspectives of the Experimental Beverage Marketplace to improve future studies.

**Background:** Substantial evidence has accumulated that links sugar sweetened beverage (SSB) consumption to health outcomes including type 2 diabetes and cardiovascular disease. The World Health Organization recommends taxing SSB as a strategy to reduce consumption of SSB. Monitoring the impact of existing SSB taxes is important to understand their effectiveness. However, as many analyses of existing SSB taxes use sales data from stores, little individual-level data exists, which is a major gap in knowledge. To address this gap in knowledge, we developed the Experimental Beverage Marketplace (EBM) to examine factors that influence beverage purchasing, including SSB taxes. In experimental marketplaces, product availability, presentation, and price are under the control of experimenters. The EBM is a virtual storefront that presents participants with beverages typically available at grocery stores.

**Methods:** Participants (n = 23, data collection ongoing) were recruited from Prolific, an online survey platform. Included participants were the primary grocery shopper in their household, reported always or usually keeping SSB at home, and frequently consuming SSB ( $\geq 4$  12 fluid ounce servings per week). In a within-subjects design, participants hypothetically shopped for a week's worth of beverages for their household under a no tax condition (control) and a 40% SSB tax condition using the Experimental Beverage Marketplace (order counterbalanced). During the tax condition, regular soda, sports drinks, energy drinks, and juice drinks were taxed, but 100% juice, diet drinks, and flavored milk were untaxed, similar to the majority of SSB taxes in the US. Participants rated the experimental marketplace on several characteristics using a Likert scale.

**Results:** Preliminary analyses revealed that overall, under the tax condition, ounces of taxed beverages purchased decreased by 11.6%, calories from taxed beverages decreased by 12.4%, and number of taxed items purchased decreased by 14.9%. At the individual level, there was substantial heterogeneity in response to the SSB tax. Compared to the control condition, in the tax condition, 11 participants bought fewer ounces of SSB, 6 bought the same amount of SSB, and 6 bought more ounces of SSB. Of the 11 participants that bought fewer ounces of SSB in the tax condition (the expected effect), the median percent decrease in SSB ounces purchased was 50%. All participants reported the EBM was easy or very easy to use. Most participants agreed or strongly agreed that finding beverages was easy (16/23), there were enough options (15/23), purchasing in the store was similar to their regular purchases (19/23), and that the EBM felt like a real online grocery store (16/23).

**Implications:** The tax manipulation had an effect on behavior in the Experimental Beverage Marketplace. Individual-level variability in response to the SSB tax warrants further investigation. Future iterations of the EBM should include more products and improved product organization.

### 3

#### Arraigados Juntos: Lessons Learned from a Cross-Sectoral Food as Medicine Pilot

**Presenter:** Elaijah Lapay

**University:** Duke University

**Objective:** There is a dearth of literature in understanding how community-based food resources can be best used to support the health of food insecure populations, especially those experiencing diet-related chronic disease. While there is a rising emergence of pilots in the “food as medicine” movement (e.g., “medically tailored meals”), intentional engagement of historically disenfranchised communities and their respective community-based organizations in nutrition access research is scarce.

**Background:** The Root Causes Fresh Produce Program (RC FPP) at Duke University is an entirely student-led food initiative that feeds over 400 families bi-weekly in Durham County, NC, through direct-to-door produce deliveries. In 2023, RC FPP procured funding from the Duke Clinical Translational Science Institute (CTSI) and in collaboration with North Carolina Central University’s (NCCU) Dietetics Internship Program and Latino-centered community-based organization El Centro Hispano (ECH) to pilot “Rooted Together” or “Arraigados Juntos,” a randomized, controlled clinical trial designed to evaluate the impact of fresh produce deliveries with structured nutrition education on low-income, food insecure adults diagnosed with hypertension identifying as black/African American and/or Hispanic/Latino/a/x.

**Methods:** Participant screening and consenting of Durham County community members in English and Spanish occurred in March and April 2023 with primarily undergraduate, graduate, and medical student volunteers through controlled calling of Duke Health system patients that fit study inclusion criteria. Study members were randomized upon enrollment into an intervention group that received weekly deliveries of fresh produce and up to 6 in-person nutrition education and data-collection sessions with language-concordant dietetics students and study team members; or a control group with 3 in-person data-collection sessions compensated only with produce bags at the time of data-collection. Members of both groups completed a baseline social health and nutrition access survey and across data-collection sessions had height, weight, blood pressure, and responses to instruments regarding food access, nutrition access, and general well-being completed. In June, home visits were iteratively instituted for data collection for those enrolled unable to attend in-person sessions conducted with students and community health workers. A total of 50 participants (24 Black/African American, 26 Hispanic/Latino/a/x) were screened and consented into the study, with 34 participants having at least 3 data collection points across the study period collected from team members, 16 in the Intervention arm and 18 in the Control arm.

**Results & Implications:** An overall average reduction in blood pressure and weight of intervention participants compared to control group participants was observed, though not at statistical significance. Self reported fruit and vegetable intake increased and food insufficiency levels decreased for participants in both intervention and control groups over the course of the study. Takeaways from the pilot study’s process at large reveal fundamental challenges in coordination and preparation for community based research across health systems and community based organizations, particularly those that serve historically excluded populations. Unique circumstances about the skill set presented by the student volunteers that undertook this study (e.g., bilingualism, RedCap background, EHR access, etc.) raise concern about the replicability of the study in a similar manner without a larger budget and personnel.



## 4 Digital Food promotion in Nigeria; marketing strategies and engagement metrics of selected food/nutrition-related social media accounts

**Presenter:** Gideon Onyedikachi Iheme

**University:** Michael Okpara University of Agriculture Umudike Nigeria

**Background:** Innovative strategies employed by food/nutrition brands in the marketing of food/nutrition in the electronic/new media contributes to the surge in the burden of non-communicable diseases in Nigeria. However, little is known about the extent and nature of digital food promotion in Nigeria.

**Objective:** This study aimed to examine the marketing strategies and level of engagements received by food/nutrition brands in the new media.

**Methods:** A retrospective content analysis of social media posts of selected 40 social media accounts (20 each from Instagram and Facebook) of top food companies and food related health promotion brands was conducted between February 2022 and January 2023. Accounts selected were active, public, with a minimum of 5,000 followers and designed for the Nigerian audience. Social Status protocols and INFORMAS food marketing protocols were used to generate evidence on social media strategies - type of post, nature of post texts, number of tags, and level of engagement - interactions and engagement. All statistical analysis were done using IBM SPSS version 25

**Results:** More than ten thousand posts were made by the selected Instagram (6708) and Facebook (4,924) profiles. Bulk (68.6%) of the posts made were from nutrition/wellness brands. Bulk of Facebook posts had photos (77.4%) and videos (19.5%) while images (38.4%), reels (32.7%) and carousel album (20.2%) dominated the Instagram post types. The key messaging techniques employed were advection (26.7%), prompting engagements (20.1%), health/nutrition contents (11.1%), felicitations (11.1%) with more engagements and interactions. The selected profiles received massive interactions (5.46 million) and engagement (4.72k) in one year.

**Implications:** The digital food environment is expanding and all stakeholders and food manufacturers are aggressively pushing these products to consumers. There is a need to adopt effective policies to regulate the promotion of unhealthy processed foods on social media.

## 5

### Social determinants of health and food insecurity in older adults: An exploratory analysis

**Presenter:** Jingyi Wang

**University:** Indiana University

**Objective:** To better understand the social inequalities of food insecurity and support healthy aging, this exploratory study used the social ecological model to examine the interplay across the dimensions of the social ecological model and food insecurity categories to identify high-risk subgroups in the older adult population.

**Background:** One in every 14 U.S. seniors aged 60 and over reported food insecurity in 2019. Defined as the lack of access to nutritious food, food insecurity is associated with negative health outcomes and decreased quality of life. Past research suggests food insecurity disproportionately affects socially marginalized communities. However, little is known about how these systematic inequalities independently and jointly affect food insecurity in older adults.

**Methods:** Participants (N = 4186; age  $69 \pm 7.57$ ) from the United States were drawn from the Panel Study of Income Dynamics 2019 for this study. Using 17 variables to represent the social ecological model domains, a classification and regression tree (CART) was grown to identify key factors and subgroups for food insecurity.

**Results:** The CART revealed 12 subgroups of food insecurity in older adults (mean scaled food insecurity score ranging from 0.00 to 5.67). The poverty to income ratio was the most potent predictor of food insecurity status in the older adult population. Variables that amplified this relationship include housing ownership, number of household members, psychological distress, type of federal food assistance received, social connection, marital status, and the U.S. region participant currently live in. All  $p \leq .001$ .

**Implications:** This study highlights the roles of social inequalities on food insecurity outcomes in a sample of older adults. Additional confirmatory studies are needed to test the interactive hypotheses derived from this analysis. If confirmed, these findings may help in designing specific intervention programs to combat food insecurity and maintain quality of life for older adults.

## 6

### Examining Factors Associated with Increased Participation in Community Eligibility Provision

**Presenter:** Praytoosh Kashyap

**University:** Colorado State University

**Objectives:** To examine federal and state policy factors associated with higher rates of participation in CEP. The findings from this study are of particular interest to policymakers and institutions seeking to increase adoption of CEP in their state and reduce state expenditures associated with adoption of universal free school meals.

**Background:** Food insecurity for households with children is a large problem in the United States, an issue exacerbated by the COVID-19 pandemic. In the last decade, a combination of federal and state policies, grants, and reimbursement programs have pushed for nutrition assistance through school meals. Indeed, the National School Lunch Program is the second largest federally assisted meal program in the U.S. Focus on the federally funded Community Eligibility Provision (CEP) is increasing as a growing number of states in the U.S. are passing legislation to adopt universal free school meals as a means to combat child food insecurity. Funding for the statewide program is tied to the CEP, a universal free school meal program available to school districts with high levels of low-income children. The policy in Colorado, for example, goes into effect starting school year 2023-24, and like other states that have adopted universal school meals, it requires eligible school districts to adopt CEP to maximize the federal dollars to fund school meals. Yet, only 28.4% of the eligible school districts in Colorado had adopted CEP in SY 2018-19 whereas the rate was 53.8% for the U.S. as a whole.

**Methods:** Using a policy diffusion approach and a Cox regression model, this research examines federal and state policy factors associated with higher rates of participation in CEP.

**Results:** Informing state and federal agencies, and policymakers, the results demonstrate the importance of a school district's identified student percentage (reflecting school district level poverty) and a state's direct certification rate (a process that certifies students for free school meals) in increasing the likelihood of CEP adoption.

**Implications:** Efforts by states to improve direct certification may make more school districts eligible for CEP and increase the ISP. Any increase in participation in CEP will not only benefit the state finances, but also nutrition and food security outcomes for students, as well as schools.