Journal of Nutrition and Food Security
Shahid Sadoughi University of Medical Sciences
School of Public Health
Department of Nutrition

eISSN: 2476-7425 pISSN: 2476-7417 JNFS 2025; 10(3): 473-483 Website: jnfs.ssu.ac.ir

Parent Satisfaction and Organizational Factors Associated with Curbside School Meal Distribution in Southern California during the COVID-19 Pandemic

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ARTICLE INFO

ORIGINAL ARTICLE

Article history:
Received: 23 Jan 2025
Revised: 17 Mar 2025
Accepted: 17 Mar 2025

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Keywords
COVID-19; Meals; United States Department of Agriculture; Organizational Innovation; Schools; Food policies.

ABSTRACT

Background: During the COVID-19 pandemic, school meals served nationally in 2020 declined by 30%. However, meals increased by 147% in the Redlands Unified School District of Southern California, with United States Department of Agriculture waivers regarding the Universal Free Meals Program (UFM) and participation in the Farmers to Families Food Box Program (FFFB). The study examined parental assessments regarding weekly meal pick-ups and factors supporting school involvement in those government programs. **Methods:** A cross-sectional, anonymous survey was given per vehicle (n=2,889) at six sites during a weekly meal distribution service in November 2020. There were 2,356 complete surveys (79% response rate). Multivariable binary logistic regression was used to identify significant associations with high usage (3 to 4 times per month) of school meals pickups. **Results**: Those excited about FFFB were more likely to be frequent users, Odds Ratio 1.52, $P<0.001$. Most helpful communication for high usage was district website or referral, OR =1.38, $P=0.034$. Eighty-four percent of families had more than one child. Families with four to five children were 2.07 times more likely to be high users, $P<0.001$. Among optional comments (n=907), common messages were gratitude (85.8%) and positive customer service (45.3%). Substantial organizational changes such as renting refrigerated trucks and trailers and shifts beginning at 3:30 am, were needed to distribute meals successfully. **Conclusion:** Parental gratefulness for UFM 'Grab and Go' school meals program suggests that all-inclusive access to UFM may reduce food aid stigma. Programs such as FFFB could address food insecurity; but require schools to make operational changes.

Introduction

The United States Government has provided meals to public school students for decades, with numerous rules and many students paying some of the cost. The COVID-19 pandemic upset the cafeteria-style meal distribution when schools closed to in-class instruction. However, the federal government provided waivers on student payments and relaxed many rules. They also

This paper should be cited as: Christine Betty Crocker, Jim E. Banta, Albin Grohar, Seth Wiafe, Khaled Bahjri. ***TITLE: Parent Satisfaction and Organizational Factors Associated with Curbside School Meal Distribution in Southern California during the COVID-19 Pandemic.*** *Journal of Nutrition and Food Security (JNFS)*, 2025; 10(3): 473-483.

[DOI: 10.18502/jnfs.v10i3.19246]

implemented a program of boxing products directly at farms for public distribution. This paper examines one public school district that was able to take full advantage of the waivers and Farms to Families Boxes program to increase the number of meals distributed to students.

As of July 2023, the COVID-19 pandemic was responsible for at least 1.1 million American deaths (Centers for Disease Control & Prevention 2023). The pandemic was associated with increased levels of stress (Jean-Baptiste *et al.*, 2020) and changes in employment, such as tele-commuting, with an astounding 49.8 million adults in May 2020 working fewer or no hours in the prior four weeks, since their employer closed or lost business due to the pandemic (US Bureau of Labor Statistics, 2022) In a 2020 national online parent survey, more than 60 percent of respondents reported a pandemic-related decrease in income, with the majority of these families low or very low food security (Adams *et al.*, 2020). Food insecurity aggravated by the pandemic had negative effects on the mental health of parents and their children (Steimle *et al.*, 2021). In March 2020, U.S. schools were closed to in-person teaching to stem COVID-19 transmission.

Providing public funding for a daily hot lunch to American school children, each school day began with the National School Lunch Program Act of 1946, administered by the U.S. Department of Agriculture (USDA) (Hopkins and Gunther, 2015). It has been expanded to include breakfast programs, with a complex system of federal funding and oversight, plus state and local laws and policies (Hirschman and Chriqui, 2013). USDA directives address, among other matters, the quality and type of food provided to children, how and where the food is served, and how much families should pay for those meals. The Healthy, Hunger-Free Kids Act of 2010 created the Community Eligibility Provision (CEP), which allows eligible schools in high-poverty areas to provide free breakfast and lunch to all students regardless of income. That program became available nationwide in 2014, and by school year 2019-2020, approximately 69% of eligible schools participated in CEP (Hecht *et al.*, 2022b). In federal fiscal year 2019, federal costs were $14.2 billion to support nearly 100,000 schools serving school lunch to 29.6 million students each day, with 7.7 million students paying full price and the rest having reduced or free-price (School Nutrition Association, 2023) (School Nutrition Association, 2023). During the same year, federal costs were $4.6 billion to support breakfast for 14.77 million students each day, of whom 2.23 million paid full price (School Nutrition Association, 2023).

The pandemic threatened the integrity of the school food environment, disrupted access to school meals, and reduced food-service staffing to below critical levels (School Nutrition Association, 2023). Furthermore, the cessation of in-person schooling had multiple implications, including potential for lost meals. Indeed, during the first 9 months of COVID-19 school meal programs served 30 % fewer students compared to the prior year (Jowell *et al.*, 2023). Students who ate home-based rather than school lunch tended to consume more calories and less nutrition (Hecht *et al.*, 2022a).

Initially, the pandemic-related rise in unemployment meant that more school districts qualified for Universal Free Meals programs (Hecht *et al.*, 2020). In addition, congress passed the Families First Coronavirus Response Act (H.R. 6201 Public Law: 116–127), which allowed states to apply for waivers granting flexibilities in implementing school meal programs. These included waivers permitting pick-up of multiple or several days of meals in batches, allowed school meals to be served ‘off-site’ in non-congregate settings, and allowed parents to pick up school meals without children present (Jowell *et al.*, 2023). The new USDA guidelines allowed for flexible service times, multiple meal service, distribution of meals for home consumption, and even distributing up to a week’s worth of meals directly to families, covering weekends and holidays (Kinsey *et al.*, 2020). Though waivers were in place, it was up to school districts whether to provide lunch only or to include

[DOI: 10.18502/jnfs.v10i3.19246]

breakfast and up to two snacks per day. With these waivers in place, all school districts were eligible to provide no-cost meals to all district families regardless of income, in effect providing Universal Free Meals (Kinsey *et al.*, 2020). One of the initiatives to support food distribution was the USDA Farmers to Families Food Box Program (FFFB), which distributed more than 173 million boxes of fresh produce, milk, dairy, cooked meats, and seafoods worth more than $5 billion between May of 2020 and May 2021 (United States Department of Agriculture, 2023).

Though the COVID-19 pandemic in the United States has officially ended and school attendance has returned to normal, it is still worthwhile examining school districts that were successful in food delivery during the COVID crisis. It may be helpful for better dealing with current food insecurity challenges, as well as when planning responses to future crises. One such a successful program was in Southern California.

Across all 58 counties, during school year 2020-2021, the California Department of Education (CDE) released data for 1,114 public school districts, representing 9,461 public school sites (California Department of Education, 2022). If one includes a handful of private schools and specialty programs, there will be an average daily attendance of 5,208,716 students in California (California Department of Education, 2022). Within San Bernardino County, which comprises 2.2 million residents (USA Facts, 2023), there were 48 public school districts including 580 public school sites (California Department of Education, 2022). One of the public districts in that county is the Redlands Unified School District (RUSD), which had 21,233 students enrolled in grades K-12 as of fall 2020 (Redlands Unified School District, 2022). The City of Redlands has a population of 73,168 with 8.7% living below the Federal Poverty Level (US Census Bureau, 2023). Though most RUSD students live in Redlands, the district boundary also includes parts of five other cities. Approximately 71% of students were eligible for free or reduced price meals for school year 2020-21 (Ed-Data, 2023).

RUSD nutrition staff implemented its COVID feeding program in a curbside, contactless operation that adhered to pandemic guidelines. As a district which participates in the full range of school meal options, staff from RUSD prepared, packaged, and distributed 7 days' worth of breakfast, lunch, and snack to families in a curbside, contactless service at six district schools. This amounted to 28 meals weekly for each child, even those not yet old enough to attend school. RUSD quickly arranged to be a distribution site for Farmers to Families program and soon saw hundreds of cars lining up each week to receive boxes at the 'Grab and Go' sites.

The aim of this study was to evaluate the RUSD feeding effort during the COVID pandemic through assessing parents' satisfaction with the RUSD COVID feeding program, reflecting on factors associated with positive performance, and examining trends in RUSD number of meals served.

Materials and Methods

The program assessment was conducted by the first author who was also director of the RUSD school nutrition program at the time. In developing the survey, the author collaborated with the San Bernardino County Department of Public Health and No Kid Hungry, a national non-profit organization focusing on child hunger. The 12-item survey included fill-in and open-ended text questions, topics included frequency of participation, ease of access, item preferences, demographics, employment, education level, number of children in household, and economic impact of COVID-19. Most questions were structured in a Likert format with 4 to 5 data points (Strongly Disagree; Disagree; Neutral; Agree; Strongly Agree). Parents were encouraged to include any comments or information that had not been covered by the survey questions. The survey instrument was field tested by RUSD staff who were parents of children attending school in the district. These field test surveys were not used in this analysis.

[DOI: 10.18502/jnfs.v10i3.19246]

On November 17, 2020, school district staff distributed a hard copy survey to parents waiting in their cars at all six RUSD 'Grab and Go' sites. The surveys were offered in both English and Spanish. The week before Thanksgiving was chosen for the survey, since vouchers for free turkeys would be distributed, and attendance would be high. Each survey stated that participation in the study was anonymous and completely voluntary. Parents who did not wish to participate were directed to pick up their 'Grab and Go' meals and food boxes. No identifying data were collected to preserve anonymity. There were 2,889 surveys handed out on that day and 2,356 returned. Exclusion criteria were surveys returned with no responses (n=73). The remaining 2,283 (79% of all distributed surveys) were included for analysis, even if not all questions were answered. The authors' university Institutional Review Board determined that the anonymous program assessment survey did not meet the definition of human subject research (IRB# 5210114).

Data regarding the number of meals served by the RUSD were taken from the CDE, which receives reports from all school districts in the state (California Department of Education, 2022). A number of key operational changes are summarized in **Table 3**.

Data analysis

Survey data were entered into an Excel database. Data analysis was conducted using SPSS Statistics version 26.0 (IBM Corporation, 2020). Optional text responses were entered into a separate sheet and reviewed by the lead author for emerging themes. Descriptive statistics for all categorical variables were obtained using frequencies and percentages. A bivariate analysis was performed to identify the significant variables associated with a high frequency of program participation (3 or 4 services per month). A multivariable binary logistic regression was used to identify measures significantly associated with high program usage, after adjusting for other measures. Statistical significance was set at P-value less than 0.05.

Results

As seen in **Table 1**, most survey respondents (n=2,283) identified as Hispanic/Latino (42.8%), non-Hispanic White (26.9%), or Asian (17.0%). Most participants reported that they regularly accessed curbside service (91.57%), with first-time visitors (8.4%) likely due to the turkey vouchers distributed for the Thanksgiving holiday. The number of surveys included in the analysis accounted for approximately 20% of all RUSD families.

Table 2 shows the cross-sectional associations of higher frequency of program usage compared to lower frequency. Multivariate odds ratio (OR) for high frequency use increased with family size: 2-3 children (OR=1.44; 95% CI=1.11, 1.86; *P*=0.006), 4-5 children (OR=2.07; 1.47, 2.91; *P*<0.001), and 6 or more children (OR=2.89; 1.34, 6.25; *P*=0.007). Results also showed that parents rated the district outreach program highly, which contacted families through weekly recorded messages (69.2%). Participation was driven by the USDA FFFB program (OR=1.52; 95% CI=1.21, 1.90; *P*<0.001) and the UFM 'Grab and Go' student meals (OR=1.38; 95% CI=1.14, 1.69; *P*=0.001), compared to those not in these programs. Many families reported that COVID-19 had negatively affected their household income, that was not a significant predictor of high frequency use (OR=1.07; 95% CI=0.87, 1.33; *P*=0.519), compared to those who were low frequency users.

Table 1. 'Grab and Go' survey participants' characteristics (n=2,283).

Variable	n	%
Employment		
Full-time	815	36.4
Part-time	511	22.8
Unemployed	647	28.9
Retired	122	5.4
Self-Employed	146	6.5
Race / Ethnicity		
Hispanic/Latino	932	42.8
Black/African American	101	4.6
White	586	26.9

[DOI: 10.18502/jnfs.v10i3.19246]

Asian	370	17.0
Native Hawaiian/Pacific Islander	30	1.4
More than one race	156	7.2
American Indian/Native American	3	0.1
Education		
Grades 0-8	91	4.1
Grades 9-11	112	5.0
High school diploma/GED	788	35.5
College	1,228	55.3
Number of children living in home		
One	336	16.0
Two to three	1,373	65.3
Four to five	350	16.7
Six or more	43	2.0
'Negative impact of non-availability of 'Grab and Go'		
Strongly disagree	135	6.2
Disagree	112	5.1
Neutral	555	25.5
Agree	824	37.8
Strongly Agree	552	25.3
Ease of participation in 'Grab and Go'		
Very difficult	59	2.6
Somewhat difficult	83	3.6
Neutral	216	9.6
Easy	394	17.3
Very Easy	1,490	65.3
Frequency of 'Grab and Go' meal pickup		
3-4 times a month	1,376	60.4
1-2 times per month	710	31.2
My first time	192	8.4
Method of hearing about 'Grab and Go' service		
District call out	1,575	69.2
District website/referral	420	18.4
Social media	140	6.1
Other	70	3.1
Family/friend	72	3.2
Offerings that most excite you		
UFM student meals	1,089	47.7
USDA product boxes / FFB	1,710	74.9
Bulk family style meals	974	42.7
Obstacles to participation		
Service hours	503	22.0
Location	105	4.6
Transportation	117	5.1
None	1,169	51.2
Other	403	17.7
Waiting Time / lines	16	0.7
COVID-19 negative impact on household income		
Strongly disagree	123	5.5
Disagree	175	7.9
Neutral	476	21.4
Agree	844	37.9
Strongly agree	610	27.4

There were 907 surveys (39.7%), which contained comments in the open text box section. Such a high percentage of written comments may be attributed to the time waiting in line, allowing parents the opportunity to provide additional comments. The three themes most frequently expressed by respondents were gratitude (85.8%), customer service (43.4%), and pandemic pressures (7.3%), signified by job loss, financial hardships, newly single parental status, and food insecurity. A respondent wrote: "Our family appreciates you so much! I want to cry every time I drive away." Other parents wrote: "Thanks to what my kids eat!"; "Without these meals we could not survive. All districts should do this."

Table 3 summarizes some of changes by the RUSD nutrition program team to meet the demands of the new curbside format. It required innovation in obtaining different types of equipment, training staff how to use the new equipment, and developing procedures to handle the huge pallets of food safely and efficiently. There were also changes in staff work location and scheduling, particularly on 'Grab and Go' dates. Each weekly "serve" was another opportunity for district staff to improve the operation. Data did not show, but outreach and communication were a crucial part of the success of the new format. The night before each weekly food service, a member of the RUSD nutrition staff sent a recorded or text message to families. All pandemic safety measures were scrupulously followed, with staff wearing masks and gloves, disinfecting surfaces regularly, and maintaining social distancing with parents, usually filling trunks with little to no contact. Providing excellent customer service was the RUSD team's goal, serving families efficiently and courteously. Serves preceding a holiday often featured team members donning funny masks, hats, and costumes to create a fun, friendly atmosphere. These efforts served two purposes: creating good word-of-mouth to encourage participation and mitigating any stigma families might be feeling about accepting aid.

Prior to COVID-19, the RUSD served an average of 53,740 meals per week (California Department of Education, 2022). Though the number of meals served declined over the summer of 2020, by September the numbers had risen to 153,000, peaking in October and November with 187,000 meals served weekly. The RUSD increased the number of meals it served during the

[DOI: 10.18502/jnfs.v10i3.19246]

pandemic by 147% compared to pre-pandemic (**Figure 1**) (California Department of Education, 2022). Similarly, as seen in **Figure 1**, the linear trend for monthly meals served was flat during 2019-2020, but showed an increase in 2020-2021.

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Table 2. Predictors of heavy program use, i.e. 'Grab and Go' meal, 3-4 times per month.

Variable	OR	95% CI	P-value
Number of children living in home			
One (ref.)	---	---	---
Two to three	1.44	[1.11, 1.86]	0.006
Four to five	2.07	[1.47, 2.91]	<0.001
Six or more	2.89	[1.34, 6.25]	0.007
Negative impact of non-availability of 'Grab and Go'			
Strongly Disagree/Disagree/Neutral (ref.)	---	---	---
Agree / Strongly Agree	1.66	[1.35, 2.05]	<0.001
Ease of participation in 'Grab and Go'			
Very Difficult / Somewhat Difficult	0.46	[0.30, 0.69]	<0.001
Neutral	0.54	[0.39, 0.75]	<0.001
Easy / Very Easy (ref.)	---	---	---
Method of hearing about 'Grab and Go' service			
District Call Out (ref.)	---	---	---
District Website / Referral	1.32	[1.02, 1.71]	0.034
Social media	0.85	[0.56, 1.27]	0.422
Other	0.62	[0.34, 1.12]	0.111
Family / Friend	0.27	[0.15, 0.48]	<0.001
Offerings that most excite you			
UFM Student Meals (yes vs. no)	1.38	[1.14, 1.69]	0.001
USDA Product Boxes /FFFB (yes vs. no)	1.52	[1.21, 1.90]	<0.001
Bulk Family Style Meals (yes vs. no)	1.21	[0.99, 1.47]	0.061
Obstacles to participation			
Service Hours (yes vs. no)	0.83	[0.63, 1.10]	0.19
Location (yes vs. no)	0.89	[0.55, 1.43]	0.627
Waiting Time_ lines (yes vs. no)	1.2	[0.94, 1.52]	0.14
COVID-19 negative impact on household income			
Strongly Disagree / Disagree / Neutral (ref.)	---	---	---
Agree / Strongly Agree	1.07	[0.87, 1.33]	0.519

OR: *Odds ratio;* ***CI:*** *Confidence interval; Additional parent demographics not included in the final regression model.*

Table 3. Redlands Unified School District innovation to maximize 'Grab and Go' service.

Equipment acquisitions	Rented three refrigerated trailer units and custom-built ramps to support pallet weight. Allowed sites to receive and store grocery pallets and vendor deliveries. Purchased/rented five electric pallet jacks and seven manual pallet jacks to facilitate palletized service. Rented refrigerated truck with ten pallet capacity. Site equipment purchase 50+ EZ ups, 30+ six-foot tables, 30+ utility carts.
Department Level	Utilized all USDA waivers to support grocery style service with 28 meals for each child. Added FFFB program with a pivot to early morning deliveries and advance deliveries in refrigerated trailers. Shifted start times to 3:30 AM to facilitate receiving grocery pallets at sites without refrigerated trailers. Staged labor in pods for service and central kitchen production to reduce exposure levels. Reassignment of shifts from other departments: security, campus monitors, custodians, and transportation.
Central kitchen	250 grocery bags per pallet (28 meals per bag) utilizing tri-walls and thermal blankets to keep meals cold; adding bulk items to support plastic bag capacity. Consolidated all production labor to central kitchen. Created grocery bag assembly line in central kitchen with relocating kitchen equipment from school sites.

[DOI: 10.18502/jnfs.v10i3.19246]

'Grab and Go' sites	Shifted to early morning (6:00 a.m.) service to allow families to pick up prior to distance learning start times. Consolidated 'Grab and Go' service to a weekly pickup to consolidate labor and ease burden on families. Added bulk deliveries to 'Grab and Go' sites (gallon milk, dozen eggs, bread loaves, and bulk groceries). Added local vendors to include grocery store chains, farmers, and restaurants. Assembly line at 'Grab and Go' service to bag and pack bulk items (eggs, bread, baked items, and dry bulk) into boxes, since they could not be placed in palletized grocery bags. Serve multiple cars at a time by establishing two or three assembly lines and placing numbers on cars to indicate number of children to be fed. Establish a welcome station for parents to open trucks and place numbers on cars, provide human contact to lessen the shock of changing USDA regulations. Repurposed storage racks in walk-in refrigerators and freezers to stage food and roll out to distribution site.

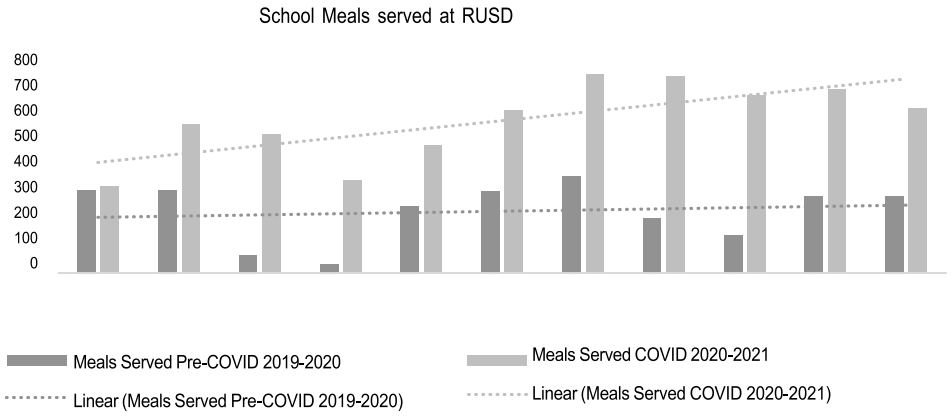

Figure 1. RUSD meals served pre-COVID-19 and COVID-19.

Discussion

RUSD went against national trends during the COVID-19 pandemic by distributing more, not fewer meals. The enhanced access to healthy food by RUSD families undoubtedly had positive health impacts on children, likely including prevention against weight gain, particularly with many children having reduced activity levels during the lock-down. It was estimated that between March and November 2020, students who were eligible for free meals but did not receive school lunch, ate emergency or home-prepared meals, consumed an extra 640 calories per week, roughly equivalent to low-income children consuming 41 million additional candy bars each week (Hecht *et al.*, 2022a). Others have documented the correlation between poor diet and poor mental health among children (Banta *et al.*, 2013).

One of the biggest findings was the role of the FFFB as a primary driver of family participation in weekly meal pick-ups. Parents who participated in 'Grab and Go' food distributions were positive and appreciative of the service. Nearly 40% of survey respondents wrote comments expressing gratitude for the program. UFM student meals were especially popular for food-insecure families and families with two or more children. District outreach efforts, in the form of recorded messages, texts, and emails, were key to encouraging participation in each week meal distribution.

Respondents reported that the USDA FFFB was the most popular item offered. Interest in food boxes was a key factor in allowing RUSD to distribute so many meals. Initially, demand outstripped supply, with boxes becoming as popular if not more so than the school meals. Surprisingly, there have been few published articles regarding FFFB. More common are newspaper reports, indicating that some individuals were appreciative of boxes they received.

[DOI: 10.18502/jnfs.v10i3.19246]

Government auditing revealed that the program involved hundreds of contractors and that food was delivered to a majority of counties, though there was insufficient data for a thorough evaluation (Government Accountability Office, 2021). Others have argued that the government spent too much money for the food, contractors did not adequately distribute boxes, and that food did not always reach those most in need (Charles, 2020). It has been suggested that the billions spent on FFFB could have been more efficiently folded into existing systems for providing food assistance to those in need (Charles, 2020). However, RUSD benefited from the program by developing the capacity to distribute directly to families with children.

We found that families having two or more children were more likely to report high frequency of program usage. This is consistent with research based on the Child Development Supplement of the Panel Study of Income Dynamics, which found that higher participation levels in school meal programs were positively associated with the number of siblings in the household (Dunifon and Kowaleski-Jones, 2003). That study also found that their surrogate indicator of food insecurity among families was significantly associated with high usage frequency (Dunifon and Kowaleski-Jones, 2003). Unfortunately, we did not explicitly ask about food insecurity, which has been shown in California to be more prevalent among immigrants (Mc Kinney *et al.*, 2019). The economic impact of COVID-19 on household income was a contributing factor to RUSD families' higher participation in the 'Grab and Go' program. A 2020 national telephone survey of 1,202 households by the Kaiser Family Foundation showed that 31.0% reported having difficulty paying for "the basics," e.g., rent, mortgage, utilities, health insurance, and food (Kirzinger *et al.*, 2020). As a result, those affected by COVID were more likely to rely on multiple safety net programs, including food pantries and SNAP (Saloner *et al.*, 2020).

Many of these findings are consistent with findings from a statewide analysis of public-school nutrition programs, which found that 97% of surveyed school districts provided on-site pickup of meals (Hecht *et al.*, 2022b). Potential barriers to access, such as service hours, location, and wait times were not reported to be significant barriers by those parents who completed the surveys. The most valued communication tool was the district outreach program that prompted families with menu items and program announcements. Families positively rated the district's weekly outreach program for information and reminders.

One element which likely contributed to RUSD's success in COVID meal distribution was prior experience with summer feeding programs. Going into the community, such as at parks, and providing meals requires additional skills, equipment, and collaboration beyond that of producing and serving within a fixed cafeteria. RUSD had recently started summer meals, with the food services director receiving a national award in 2018 (Johanna Elsemore, 2018). Professional connections, such as collaboration with the Quad County Collaborative, also played a role in the success. That organization is made up of school nutrition directors, No Kid Hungry representatives, and public health nutrition leaders from Los Angeles, Orange, Riverside, and San Bernardino Counties. It began during the COVID-19 pandemic out of a need to provide peer connection and support to school nutrition leaders during an extremely challenging and unprecedented time (No Kid Hungry, 2023).

The COVID-19 pandemic required government agencies and school districts to adapt to serving meals while schools were closed. The USDA responded decisively to revise regulations, easing the way for districts to feed their students during the pandemic. Other analysis of school food authorities emphasized that they were generally able to restructure to serve the increased need, but planning for future disasters should explicitly include school food authorities (Kenney *et al.*, 2021). In thinking about possible future crises, it has been suggested that large urban school districts may benefit from the use of geographic information systems (GIS) software to identify meal site locations relative to student population,

[DOI: 10.18502/jnfs.v10i3.19246]

areas of high poverty and high minority populations, and food deserts (McLoughlin *et al.*, 2020).

A strength of the parent survey is that the number of surveys collected during one day of food delivery was large enough and with substantial response rate, to be reasonably representative of parents in one school district who participated in weekly food pick-up via automobile. Limitations include the logistical issues involved in distributing and collecting surveys from individuals waiting in their vehicles to participate in the program being assessed: 1) Participants might be rushed or distracted in their vehicles; 2) Relatively few questions were asked to keep the survey as brief and non-intrusive as possible, and 3) Non-random surveys from approximately 20% of RUSD families on one day might not accurately reflect all families in the district. It is also unknown how well results would generalize to other school districts and states. A more extensive evaluation would have included additional stakeholders and financial data.

Conclusion

This survey provided important insight into families taking part in the 'Grab and Go' school meal program, as well as exploring school nutrition delivery models for future national, state, and community emergencies. This study provides additional evidence that Universal Free Meals, of which the 'Grab and Go' school meals were a part, are readily accepted when offered to all district families regardless of income, which may reduce stigma regarding food aid. Though there is limited national data regarding effectiveness, the Families Food Box Program was successful in at least one school district willing to make necessary operational changes. Further research is needed to examine the utilization of UFM in higher performing districts to reveal best practices and inform future policies.

Acknowledgements

We would like to thank Redlands Unified School District nutrition staff who helped with distribution and collection of surveys. The author(s) received no financial support for the research, authorship, and/or publication of this article.

Authors' contributions

Betty Crocker C conceptualized the study. Banta JE, Grohar A, and Wiafe S refined research design. Betty Crocker C obtained data. Bahjri KA performed statistical analysis. Betty Crocker C drafted the initial manuscript. Banta JE, Grohar A, and Wiafe S edited the manuscript. All authors approve this version; no organizational review or approval is required by the university or school district.

Conflict of interest

Authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. The lead author served as nutrition director at Redlands Unified School District when the evaluation was conducted.

Funding

No external funding was obtained for this study.

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