

PROPELLER HEALTHY SCHOOL FOOD RESEARCH OVERVIEW

(2011-2022)

OVERVIEW

From 2011-2022, nonprofit organization Propeller: A Force for Social Innovation has coordinated multi-year research and intervention initiatives to improve healthy food access and consumption for New Orleans public school children. Through collaborations with the Healthy School Food Collaborative LLC (HSFC), countless school leaders, staff, students and families, the Louisiana Public Health Institute, the W.K. Kellogg Foundation, K. Allen Consulting, and many others, we have influenced the New Orleans school feeding ecosystem, resulting in increased healthy food access and nutritional quality of meals. We have also uncovered a number of factors within school policies and operations that have significant impacts on students' healthy school food consumption.

This project summary reviews the various phases of our research, findings, and provides evidence for the following recommendations:

- **Many low-cost or no-cost interventions exist to support students to consume more of their healthy food offerings.**
- **We encourage school administrators to schedule recess or physical activity options prior to the lunch meal to increase students' healthy food consumption.**
- **We recommend that school administrators do not implement punitive lunch room practices, such as silent lunch, which has a direct negative impact on meal consumption levels.** Behavior management tactics that do not foster social emotional learning and positive cafeteria environments are, furthermore, not aligned with trauma-informed education and trauma-informed nutrition principles. These practices can directly harm a child's physical and mental state as well as long term nutrition outcomes. Read more about trauma-informed nutrition [here](#).
- **We encourage school administrators to consistently monitor food quality and to include criteria for improved food quality standards in the RFP rubric for school food services.** Sample RFP rubric language can be found [here](#). If a Food Service Management Company (FSMC) is consistently failing to meet standards of quality, consider switching vendors and including a provision in the contract to allow for cancellation of contracts when food quality standards are not met.
- **We recommend that schools integrate nutrition education for staff, students and families to positively impact consumption and an increased awareness of the importance of eating a healthy lunch.**

Full reports for each phase of research can be accessed in links provided throughout the summary.

BACKGROUND & PROJECT HISTORY

Hunger among schoolchildren can negatively impact academic performance, concentration, and school attendance.¹ In New Orleans, LA, where 82%+ of children qualify for free or reduced-price lunch, it is especially critical that school food provide sufficient nutrition and calories to ensure children's healthy development and academic success.

In the years following Hurricane Katrina, interviews of New Orleans public school leaders revealed an overwhelming need and desire to improve the quality of school food. In 2011, Propeller partnered with KIPP New Orleans Schools to create a School Food Authority (SFA), an administering body to manage food service operations and receive federal meal reimbursement, named the Healthy School Food Collaborative (HSFC) to provide an avenue for public charter schools to increase food quality standards and oversee school food independently from the school district. The formation of the HSFC SFA led to an increase in food service management companies offering improved food quality standards. [Increased food quality standards included no rBST hormones in milk, no high-fructose corn syrup, no canned fruits or vegetables, and only muscle meat.]]For example, in the 2019-20 school year, the HSFC successfully provided 27,820 students with nutritious meals. Over the course of the year, participating children consumed 2,073,035 healthy breakfasts, 2,758,957 healthy lunches, 596,597 healthy snacks, and 190,337 healthy suppers.

With support from the W.K. Kellogg Foundation, Propeller and research partner, the Louisiana Public Health Institute, embarked on a multi-year study to measure our impact in improving the nutritional quality and availability of meals. The research spanned over six years and consisted of four distinct phases. The beginning phases centered around the impacts of the HSFC on nutritional quality and student consumption levels. Through conducting the largest plate waste data collection of its kind in the nation at the time, the research team was able to measure food quantity, estimated calories, macro and micronutrients, and types of foods consumed. Findings from Phase I and II revealed:

- **All study schools were compliant to USDA standards.**
- **Social lunches were associated with greater consumption levels than silent lunches.**
- **Students consumed more of the lunch meal when recess occurred before lunch compared to recess after lunch.**
- **Students, regardless of whether they attended an HSFC or non-HSFC school, consumed less than half of the recommended calorie requirements for the lunch meal.**
- **On average, the non-HSFC comparison school offered the highest level of calories and grams of total fat.**

¹ Kleinman, R. E., Hall, S., Green, H., Korzec-Ramirez, D., Patton, K., Pagano, M. E., & Murphy, J. M. (2002). Diet, breakfast, and academic performance in children. *Annals of Nutrition & Metabolism*, 46(01), 24.

- **One participating HSFC school had the highest consumption of the vegetable portion of the meal as well as dietary fiber.**
- **Student satisfaction surveys and focus groups indicated that regardless of food vendor, students stated they desired more time for lunch with a majority stating that they were still hungry after lunch.**

The later phases of the research centered around cafeteria environments and school lunch policies on consumption levels. Phase III also implemented a multi-pronged intervention to test the effect of nutrition education and engagement at the student, staff, and family levels on consumption levels. The purpose of Phase IV was to gain additional insight into the impact of previously examined school lunch policies-- silent vs social lunch and the timing of recess. Findings from Phase II and III revealed:

- **In research Phases II and III, the timing of recess before lunch had a significant positive effect on student consumption.**
- **Nutrition education and social support for healthy eating are associated with increased consumption levels, increased entree consumption, fruit selection, and vegetable consumption.**

PHASES I AND II

Propeller contracted with the Louisiana Public Health Institute to conduct research Phases I and II to investigate impacts of the new SFA, including the following research questions:

- *Do HSFC schools offer better quality meals (as measured by internally set food quality standards) as compared to non HSFC schools?*
- *Do HSFC schools have better compliance to nutrition standards mandated by the USDA?*
- *Do HSFC students consume more of their healthy lunch meal?*
- *Are there other cafeteria factors at play that affect consumption levels?*

Phase I: Phase I investigated differences in total consumption between HSFC and non-HSFC vendor schools. Phase I also focused on fine tuning the methodology through piloting the feasibility of conducting plate waste data collection at participating schools combined with menu analysis data to interpret consumption results at the micro and macro nutrient level.

Phase II: In order to increase generalizability of Phase I findings, the plate-waste data collection and menu analyses were extended during Phase II from 1 day to 40 days, increasing total trays examined from 2,081 trays to 20,526 trays. The Phase II evaluation added several new evaluation components, such as fidelity monitoring (monitoring food vendors' compliance with school lunch menus compared to actual cafeteria offerings) and cleanliness of food preparation areas. In addition, Phase II added focus groups and questionnaires to investigate factors that impact students' school meal satisfaction. Environmental scans of the cafeterias were conducted to study different lunch cultures, cleanliness of lunch areas, lighting, smell, and

other factors. Phase II also included collecting observational data on lunchtime characteristics. These characteristics comprised of school policies or environmental factors that may influence rates of consumption, such as the timing of the lunch period and the impact of the practice of silent lunches.

Phase I and II fidelity monitoring revealed that the nutritional content of lunches being served at all schools met USDA requirements. However, further evaluation is needed to examine compliance with specific HSFC standards (i.e. no high fructose corn syrup, no canned fruits and vegetables, etc.) to determine if adherence to the increased standards, rather than HSFC membership alone, impacts the healthfulness of school meals. Although the evaluation phases did not examine directly whether HSFC food nutrition requirements affected student behavior towards healthier choices, the Phase II evaluation did reveal that students eating lunches provided by the vendor with the lowest sodium levels consumed the least amount of food. It also showed that the vegetable component of the lunch meal from all vendors had the lowest average consumption levels (Table 1). The most critical finding was that students throughout the eight schools were consuming approximately 50% of the 550-650 calories that the USDA recommends for children in the specified age range (Table 2).

Table 1. Percent Consumption of Lunch Food Item by Vendor

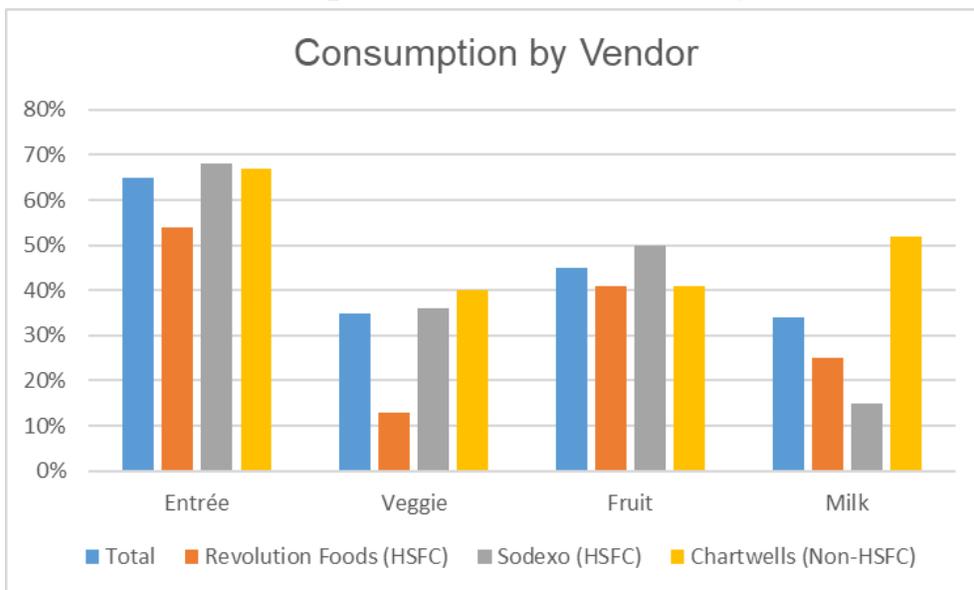


Table 2. Consumption Results by Vendor

Nutrient	Aramark N=714	Revolution N=723	Sodexo N=644
Kcal	366.47 kcal	218.91 kcal	278.44 kcal
Total Fat	12.47 g	5.65 g	7.91 g

Cholesterol	48.95 mg	22.50 mg	39.74 mg
Sodium	529.15 mg	247.72 mg	631.38 mg
Carbohydrate	44.98 g	31.26 g	34.80 g
Protein	20.05 g	12.36 g	14.59 g
Dietary Fiber	4.48 g	3.34 g	4.67 g

All comparisons between vendors across nutrient types are significantly different at $p < .05$.

A more detailed report on Phase I and II can be accessed [here](#).

PHASE III

The Louisiana Public Health Institute led the research in Phase III during School Year 2015-16 and continued to examine the impacts of cafeteria environments on consumption levels. Phase III built upon Phases I and II and included three charter schools that all used the same food vendor, all of which were members of the HSFC. The interventions in Phase III were developed on the premise that by positively changing several small factors, such as the timing of recess, perceptions of the cafeteria environment, and type of lunch, schools can increase consumption of healthy meals.

Of the three participating schools, one school began with recess before lunch in the fall, and as part of the policy intervention, switched to recess after lunch in the spring. The other two schools received a “Comprehensive Intervention” which included cafeteria environment changes, staff trainings, nutrition education, and changes to cafeteria policies. Each of the schools served as its own comparison by examining student lunch consumption before and after interventions were implemented.

The most important findings from Phase III supported findings from previous phases including:

- **Recess before lunch had a significant positive effect on student consumption.** Focus group findings suggest that students felt hungrier when they had recess before lunch and that they felt less rushed.
- **Silent punitive lunch is associated with decreased consumption.** Analysis of plate waste and lunch room data indicate that students consumed an average of 25% more calories (58 kcal) during social lunch versus silent or silent punitive lunches.
- **Consumption increased in all three schools during Phase III interventions; however, students still were not consuming the 550-650 calories per lunch recommended by the USDA.**
- **Impacts of the intervention suggest that nutrition education and social support for healthy eating are associated with increased consumption levels,** including: an increase in total entree consumption (73.2% before the

intervention to 87.9% after), an increase in fruit selection (52.7% before the intervention to 75.7% after), and an increase in vegetable consumption (increased from 24.9% to 41.1%).

A more detailed report on Phase III can be accessed [here](#).

PHASE IV

The purpose of Phase IV, conducted by the Louisiana Public Health Institute, was to gain additional insight as to how lunch culture, primarily timing of recess and social vs. silent lunches affects school food consumption. Phase III findings indicated that there is a correlation between silent lunch and school food consumption. However, there was insufficient control of confounding variables to assert a causal relationship based on the data and design. For example, while schools may have had an official policy that silent lunches not be used as a behavior management practice, in day-to-day practice, many schools still implemented them, as revealed through cafeteria environmental scans. Based upon the findings of Phases II and III, Phase IV sought to address the following research questions:

- *Does the timing of recess affect the amount of food that students consume during lunch?*
- *Do the food vendors at participating schools serve food that meet or exceed USDA and HSFC standards?*

Three schools participated in the intervention, with a total of 45 days of plate waste data collection. Two of the schools used the same food vendor and one school contracted with a different food vendor. All three of the schools had similar demographics with most students qualifying for the National School Lunch Program with free and reduced lunches. The plate waste data collection occurred pre- and post- school culture policy intervention at the school. The pre-test period occurred when lunch was held prior to recess. The post-test period occurred when lunch was held after recess. Data collection took place over fall and winter 2018 and 2019, respectively.

Two of the three schools showed a significant increase in student lunch consumption from the pre- to post- test period. The third school had a slight increase in food consumption from the pre- to post- test period but was not statistically significant. Phase IV results indicate the replicability of Phase III findings:

- **The timing of lunch directly following recess results in increased student food consumption and social lunch results in increased student food consumption (Table 3).**
- **In addition, administrators observed that students were calmer at lunch and had smoother transitions between lunch and class when recess was held before lunch.**

Table 3. Average kCalories Consumed by Lunch Type

Lunch Types	Avg kCalories Consumed	t-value	p-value
Social (Soc) vs. Silent (S)	221 Soc, 146 S	1.66	<0.05
Soc vs. Silent Punitive (SP)	221 Soc, 182 SP	1.66	<0.05
Soc. vs. S & SP	221 Soc, 171 S & SP	1.65	<0.05
S vs. SP	146 S, 182 SP	3.61	<0.05

A more detailed report on Phase IV can be accessed [here](#).

COVID-19

In 2022, Propeller launched a final research study with research partners at Xavier University School of Public Health Sciences and Tulane University School of Public Health and Tropical Medicine. The purpose of this study is to increase our understanding of pandemic-related school feeding responses in Orleans Parish by conducting key informant interviews with ten school leaders and other food access stakeholders. Findings will inform policies and practices that allow for improved food access and health equity for children of New Orleans.

Findings and recommendations will be finalized and published to our website in December of 2022.

CONCLUSIONS AND RECOMMENDATIONS

Now more than ever, it is critical to examine our approach to healthy food access in schools. Our research has uncovered many low-cost or no-cost interventions that support students to consume more of their healthy food offerings. The study also provides insights into the importance of creating a safe, calm, and respectful environment for students as they interact with food. Food and nutrition behavior is often missing from conversations around health equity, trauma-informed education, and social emotional learning in schools. This research highlights the impact of school lunch on a child’s health and well-being from the moment a contract is executed with a school food service management company to the time meals are served in the cafeteria. Our findings are replicable and generalizable to education systems nationwide. Therefore, we recommend the following actions in order to immediately address issues of food access as well as the holistic well being of our students:

- **Ensure students have access to recess or physical activity options prior to the lunch meal to promote consumption and a calm setting for meals.**
 - Having physical activity prior to the lunch meal led to increased consumption levels in our study population. Focus group and survey data supported these findings by revealing that students felt less rushed (more likely to consume more

of their lunch meal) and were in a calmer state of mind allowing them to focus on mindful eating.

- **Exercise caution when using disciplinary tactics in feeding settings.**
 - We recommend that school administrators enforce strict policies around behavior management tactics that foster social emotional learning and positive cafeteria environments. Silent punitive lunch has a direct impact on consumption levels. Even further, this practice is not aligned with trauma-informed education and trauma-informed nutrition principles. These practices can directly harm a child's physical and mental state as well as long term nutrition outcomes. Read more about trauma informed nutrition [here](#).
- **Monitor food quality and hold vendors accountable.**
 - We recommend that school administrators consistently monitor food quality. When drafting school food service RFP criteria, consider including criteria for improved food quality. Sample RFP criteria language can be found [here](#). If a FSMC is consistently failing to meet standards of quality, consider switching vendors and including a provision to allow for cancellation of contracts when food quality standards are not met.
 - Ensure food service management companies have a proven history and/or commitment for offering culturally competent menus. Cycle menus from schools in Los Angeles might not be relevant to the diets of students in New Orleans and vice versa.
 - If school staff, parents, or students have adjusting feedback for school meal offerings, provide the information directly to the school COO or other administrative personnel who handle vendor procurement. School administrators should also be proactive about speaking with students and their families to collect information on satisfaction with the school meal and cafeteria environment.
- **Integrating nutrition education for staff, students and families can positively impact consumption and an increased awareness of the importance of eating a healthy lunch.**
 - Unlike the above no/low cost interventions, nutrition education has certain costs associated. We encourage schools to once again leverage their food service management company contracts who often offer nutrition education and marketing to help fulfill [School Wellness Policy](#) requirements.
 - Partnerships with nonprofits and other NGOs who offer age appropriate nutrition education can be an additional low cost method of bringing nutrition education to schools.
 - We encourage integrating nutrition education into pre-existing health curriculum for all ages.

PROJECT TEAM

We thank the Healthy School Food Research project teams over the years for your research and hard work. At the Louisiana Public Health Institute, the project teams consisted of: Kristie Bardell, Hayley Alexander, Tom Carton, Samantha Francois, Taslim van Hattum, Lindsey

Rudov, Melanie Canterbury, Marsha Broussard, and Kelley McDonough. At the Health School Food Collaborative, the project team consisted of James Graham. At Propeller, the project team members consisted of Kristine Creveling and Andrea Chen. Our school outreach partner was Krystal Allen at K. Allen Consulting. Thank you all for making this research possible.