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PROCUREMENT OF FOODS IN MISSISSIPPI DELTA SCHOOLS

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ABSTRACT

PURPOSE/OBJECTIVES

The objective of the present study was to determine school food procurement amounts (weight and cost) in two Mississippi school districts to illustrate the potential economic and agricultural impacts of purchasing local foods for use in school meals.

METHODS

School food procurement data from two school districts similar in size and demographics (one participating in the Fresh Fruit and Vegetable Program [FFVP] and one not participating) located in the rural Mississippi Delta were collected for this observational study. Data collection covered two academic years, 2018-2019 and 2019-2020. Research staff members coded and classified foods into eight categories – fruits, vegetables, grains, protein, dairy, added sugars, fats, and miscellaneous. Summary statistics (food group amounts and percentages) were computed for descriptive purposes.

RESULTS

For the non-FFVP district, the largest procurement amounts for fruit and vegetable categories were juices and potatoes, while for the FFVP district, they were apples and potatoes. The number of various fruits and vegetables procured for the FFVP district were greater than the non-FFVP district (16-18 versus 12 different fruits; 19-20 versus 17-18 different vegetables, respectively). For both districts and years combined, 146,678 pounds of fruit and 100,779 pounds of vegetables were purchased.

APPLICATION TO CHILD NUTRITION PROFESSIONALS

Although school districts purchase substantial amounts of fruits and vegetables each year, few of these items are procured locally. Enhancing readily available identification of local items, offering training opportunities focused on rural and small school districts regarding how to procure local foods within constraints, and continuing efforts like the Farm to School Census are all ways to promote procurement of local items. Likewise, engagement of school administrators with local producers is necessary for mutually beneficial effects on school nutrition programs and local agricultural economies.

KEYWORDS: Procurement, School Meals, Local Foods, Rural

INTRODUCTION

Procurement of Foods in Mississippi Delta Schools

In Mississippi, the state with the nation's lowest median household income, more than one third of children are overweight or obese (State Obesity Data, 2020). Agriculture is the number one industry in Mississippi, employing approximately 17.4% of the state's workforce on nearly 35,000 farms (Mississippi Agriculture Snapshot, 2020). Hence, using traditional agricultural strengths of Mississippi may offer a unique approach to addressing childhood obesity in this state. In particular, enhancing Farm to School (F2S) efforts, particularly related to local food procurement, may prove especially effective as such initiatives can strengthen the local food system and ultimately increase consumption of local foods (Bobronnikov et al., 2021).

Revised standards put in place for school meal programs increased the amounts of fruits and vegetables served, emphasized whole grain-rich foods, required that only lower-fat and nonfat milk be offered, limited calories, reduced saturated fat and sodium, and required that each student's lunch include a fruit or vegetable (*Child Nutrition Programs*, 2018). School districts can facilitate meeting these new standards as local foods available via F2S span the plate including fresh fruits and vegetables, grains, legumes, dairy, and animal protein. The incorporation of fruits and vegetables is particularly important because Mississippi children consume less than one serving of fruits and vegetables daily ("State Obesity Data," 2020), well below the recommended 2-5 daily servings which puts Mississippi children at increased risk for nutrient deficiency.

A recent literature review published by USDA (Bobronnikov et al., 2021) indicated that nationwide, some of the biggest barriers to F2S are procurement, which includes finding food, knowing what food to request and in what quantity, mismatched agricultural calendars with academic availability, and funding. Despite the known benefits of F2S enhancing local economies, supporting job growth, and promoting fruit and vegetable intake in school children, the perception of the barriers remains greater than the noted benefits. Hence, the objective of the present study was to determine school food procurement amounts (weight and cost) in two Mississippi school districts to illustrate the potential economic and agricultural impacts of purchasing local.

METHODS

Design and Sample

The study was designed to collect descriptive data on food procurement from two school districts located in the rural Mississippi Delta. Schools were similar in size with three schools in each district and between 600-785 students. The majority of students in both districts identified as Black (90% and 99%) and participated in free or reduced lunch (73% and 100%). School food service administrators from the two school districts, one of which participated in the USDA Fresh Fruit and Vegetable Program (FFVP), were contacted by study investigators and agreed to provide procurement records for research purposes. Procurement documents were sent via email to study investigators and included all records for prime, milk, bread, and vegetable vendors. Data collection covered two academic years, 2018-2019 and 2019-2020. The Institutional Review Board of Delta State University approved and classified the study as exempt.

Data Analysis

Procurement records, provided in portable document format (pdf), were converted to Excel spreadsheets for coding and analysis. Research staff members coded and classified foods into eight categories – fruits, vegetables, grains, protein, dairy, added sugars, fats, and miscellaneous. The fruits category included fresh, frozen, dried, and sauced (e.g., apple) fruits, and fruit juices and slushies. The vegetables category included fresh, frozen, dried (e.g., kidney beans), pickled, and sauced (e.g., tomato) vegetables, and vegetable juices. The grains category included items made from corn, oat, rice, and wheat. The protein category included beef, chicken, eggs, fish, nuts, pork, seafood, and turkey. The dairy category included cheese, ice cream, milk (wet and dry), pudding, sour cream, and yogurt. The added sugars category included sugar and syrup. The fats category included margarine, oil, and whipped topping. The miscellaneous category included baking items (e.g., corn starch), coffee, condiments, flavoring (e.g., spices), gelatin, gravy, salt, tea, vinegar, and water. Mixed items were classified according to their main ingredient (e.g., breakfast burritos were classified as pork).

To enable comparisons among the eight food categories, all procurement amounts were converted to weight (in pounds). The majority of item descriptions provided sufficient information to allow for weight calculations (i.e., number of items, size of individual item, and unit). For those items with insufficient descriptions, missing information was obtained from corresponding food manufacturer websites. For liquid foods (e.g., milk, juice), conversion rates were based on values obtained from two websites (www.calculateme.com; www.aqua-calc.com). For whole fruits and vegetables, average weights were obtained from two websites (www.aqua-calc.com; https://weightofstuff/average-weight-of-all-fruits-and-vegetables).

Statistical analyses were performed using SAS® software, version 9.4 (SAS Institute Inc., Cary, NC). Summary statistics (food group amounts and percentages) for separate school districts (FFVP and non-FFVP) and the two academic years (2018-2019 and 2019-2020) were computed for descriptive purposes. We did not conduct inferential testing on differences between the two school districts or between academic years because of small sample size (n=2).

RESULTS AND DISCUSSION

Results from FFVP Participating District

Procurement total and percentage amounts for the FFVP school district are presented in Table 1. In the 2018-2019 academic year, fruits and vegetables each accounted for approximately 9-11% by weight and 10-13% of expenditures. Dairy alone accounted for over 60% by weight and protein and dairy represented over half of expenditures. The fruits category consisted of 18 different items with four items – apples, oranges, mixed fruit, and pears – representing over half by weight and over half of expenditures. The vegetables category consisted of 20 different items with four items – potatoes, tomatoes, greens, and corn – representing over half by weight and over half of expenditures. In the 2019-2020 school year, 16 different fruits were purchased, two less than the 2018-2019 school year, with three items– apples, juice, and oranges – representing over half by weight and over half of expenditures. In the 2019-2020 school year, 19 different vegetables were purchased, one less than the 2018-2019 school year, with three items – potatoes, tomatoes, and legumes – representing over half by weight, while potatoes, tomatoes, and greens represented over half of expenditures. Differences between the 2018-2019 and 2019-2020 academic years were small – less than 5% – with some notable exceptions (Figures 1 and 2). In the 2019-2020 academic year, fruit weight and expenditure amounts increased by 11% and 7%,

respectively; vegetable amounts increased by less than 3%. Grains weight and expenditures amounts increased by 6% and 7%, respectively, while dairy weight and expenditures decreased by 27% and 15%, respectively. For both academic years combined, 90,501 pounds of fruit and 60,095 pounds of vegetables were purchased.

Results from Non-FFVP Participating District

Procurement percentage amounts for the non-FFVP school district are presented in Table 2. In the 2018-2019 academic year, fruits and vegetables each accounted for approximately 14-17% by weight and 14% of expenditures. Dairy accounted for almost 40% by weight, while grains and protein combined represented approximately half of expenditures. The fruits category consisted of 12 different items, with juice alone accounting for 50% by weight, while apples and juice represented almost half of expenditures. The vegetables category consisted of 18 different items with three items – potatoes, tomatoes, and juice – representing over half by weight and potatoes, tomatoes, and corn representing over half of expenditures. In the 2019-2020 academic year, 12 different fruits were purchased, the same number as the 2018-2019 academic year, with juice alone again accounting for over 50% by weight while apples and juice represented half of the expenditures. The vegetables category consisted of 17 different items, one less than the 2018-2019 school year, with three items combined – potatoes, tomatoes, and juice – representing over half by weight and over half of expenditures. Differences between the 2018-2019 and 2019-2020 academic years were small – less than 5% – with fruit percentages increasing by 2-3% and vegetable percentages decreasing by 3% (Figures 1 and 2). For both academic years combined, 56,177 pounds of fruit and 40,684 pounds of vegetables were purchased.

In this study, the FFVP district purchased more fruits and vegetables than the non-FFVP district. By weight, apples and potatoes were the most purchased fruit and vegetable in the FFVP district, while juices and potatoes were the most purchased fruit and vegetable in the non-FFVP district.' For all vegetables and most fruits procured during academic years 2018-2020, schools could purchase these locally in Mississippi. To gain an understanding of the potential impact of local procurement on schools and the local agricultural economy, we projected local procurement amounts of produce purchased by the school districts, as well as foods commonly grown in the area. To feed 500 school children at least one locally procured fruit or vegetable each week (given 1 cup serving sizes and 40 weeks), a producer could count on a school district purchasing 20,000 pounds of greens, 6,000 pounds of sweet potatoes, 3,125 pounds of watermelon, and 1,000 pounds of blueberries during an academic year. However, issues such as seasonality, volume, profitability, and processing need to be considered for schools to purchase produce from local farmers. Engagement of school administrators with local producers is necessary for bringing about mutually beneficial effects on school nutrition programs and local agricultural economies.

Table 1. *Mississippi Delta FFVP School District Food Procurement Amounts*

	Academic Year 2018-2019				Academic Year 2019-2020			
	Weight (pounds)		Expenditures ($)		Weight (pounds)		Expenditures ($)	
Food Group	**Amount**	**% of Total**	**Amount**	**% of Total**	**Amount**	**% of Total**	**Amount**	**% of Total**
Fruits	38344	10.7	34734	12.6	52157	21.7	42724	19.6
Vegetables	32066	8.9	28263	10.3	28029	11.6	26065	12.0
Grains	32698	9.1	51113	18.5	35641	14.8	55812	25.6
Protein	26151	7.3	61991	22.5	17319	7.2	40811	18.7
Dairy	225246	62.8	94464	34.3	86550	36.0	41779	19.2
Added Sugars	1805	0.5	1272	0.5	2397	1.0	3704	1.7
Fats	1171	0.3	869	0.3	917	0.4	1289	0.6
Miscellaneous	1355	0.4	2884	1.0	17587	7.3	5834	2.7
Total	*358837*		*275590*		*240596*		*218017*	
Fruits	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Apples	10047	26.2	8496	24.5	11799	22.6	8117	19.0
Bananas	4200	11.0	2063	5.9	6840	13.1	3360	7.9
Cantaloupe	284	0.7	170	0.5	446	0.9	250	0.6
Cherries[a]	--	--	--	--	26	0.0	50	0.1
Cranberries	195	0.5	197	0.6	39	0.1	39	0.1
Grapes	1227	3.2	1780	5.1	2034	3.9	2477	5.8
Juice	280	0.7	232	0.7	11557	22.2	5995	14.0
Kiwis	207	0.5	486	1.4	439	0.8	1034	2.4
Lemons[b]	11	0.0	21	0.1	--	--	--	--
Melons	32	0.1	23	0.1	192	0.4	98	0.2
Mixed fruit	4836	12.6	4006	11.5	3354	6.4	3171	7.4
Oranges	5867	15.3	4694	13.5	8459	16.2	9296	21.8
Peaches	2184	5.7	1854	5.3	2301	4.4	1953	4.6
Pears	4739	12.4	3937	11.3	2131	4.1	1749	4.1
Pineapple	2223	5.8	1291	3.7	1014	1.9	800	1.9
Plums[b]	837	2.2	2886	8.3	--	--	--	--
Raisins	107	0.3	292	0.8	88	0.2	217	0.5
Strawberries	990	2.6	2282	6.6	1439	2.8	4119	9.6
Watermelon[b]	80	0.2	26	0.1	--	--	--	--
Total	*38344*		*34734*		*52157*		*42724*	

Table 1. *Mississippi Delta FFVP School District Food Procurement Amounts*

Vegetables	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Beans[a]	--	--	--	--	60	0.2	55	0.2
Broccoli	717	2.2	673	2.4	1050	3.7	785	3.0
Cabbage	75	0.2	79	0.3	560	2.0	295	1.1
Carrots	954	3.0	824	2.9	586	2.1	491	1.9
Cauliflower[b]	24	0.1	92	0.3	--	--	--	--
Celery[b]	55	0.2	95	0.3	--	--	--	--
Corn	3717	11.6	3574	12.6	1220	4.4	1368	5.2
Cucumbers	597	1.9	423	1.5	653	2.3	478	1.8
Green beans	2028	6.3	1134	4.0	1482	5.3	906	3.5
Green peas	1287	4.0	921	3.3	1482	5.3	1095	4.2
Greens	3813	11.9	4059	14.4	3388	12.1	3993	15.3
Jalapeno peppers	77	0.2	167	0.6	38	0.1	83	0.3
Juice[a]	--	--	--	--	121	0.4	87	0.3
Legumes	3366	10.5	1970	7.0	3663	13.1	2110	8.1
Mixed vegetables	1566	4.9	1245	4.4	808	2.9	1779	6.8
Onions	708	2.2	625	2.2	384	1.4	343	1.3
Peppers	615	1.9	707	2.5	444	1.6	525	2.0
Potatoes	6583	20.5	5826	20.6	6253	22.3	5600	21.5
Radishes[b]	1	0.0	2	0.0	--	--	--	--
Squash	180	0.6	179	0.6	80	0.3	80	0.3
Sweet potatoes	1770	5.5	2500	8.8	312	1.1	393	1.5
Tomatoes	3934	12.3	3168	11.2	5446	19.4	5596	21.5
Total	*32066*		*28263*		*28029*		*26065*	
Grains	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Corn	3507	10.7	11002	21.5	3281	9.2	8682	15.6
Oat	618	1.9	763	1.5	456	1.3	618	1.1
Rice	628	1.9	895	1.8	720	2.0	992	1.8
Wheat	27944	85.5	38453	75.2	31184	87.5	45519	81.6
Total	*32698*		*51113*		*35641*		*55812*	
Protein	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Beef	4274	16.3	10888	17.6	2482	14.3	6257	15.3
Chicken	9338	35.7	22221	35.8	5096	29.4	12229	30.0

Table 1. *Mississippi Delta FFVP School District Food Procurement Amounts*

Eggs	1543	5.9	2474	4.0	894	5.2	1409	3.5
Fish	342	1.3	728	1.2	467	2.7	1461	3.6
Nuts[a]	--	--	--	--	30	0.2	42	0.1
Pork	10315	39.4	25025	40.4	8127	46.9	18830	46.1
Turkey	340	1.3	655	1.1	224	1.3	584	1.4
Total	*26151*		*61991*		*17319*		*40811*	
Dairy	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Buttermilk	98	0.0	31	0.0	17	0.0	6	0.0
Cheese	1723	0.8	3642	3.9	1506	1.7	3385	8.1
Ice cream[b]	594	0.3	941	1.0	--	--	--	--
Milk	221709	98.4	88313	93.5	82432	95.2	35474	84.9
Milk dry	50	0.0	171	0.2	25	0.0	92	0.2
Sour cream	650	0.3	761	0.8	160	0.2	215	0.5
Yogurt	423	0.2	606	0.6	2411	2.8	2608	6.2
Total	*225246*		*94464*		*86550*		*41779*	
Added sugars	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Sugar	1584	87.8	1067	83.9	1134	47.3	789	21.3
Syrup	221	12.2	205	16.1	1263	52.7	2915	78.7
Total	*1805*		*1272*		*2397*		*3704*	
Fats	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Margarine	960	82.0	693	79.7	643	70.2	525	40.7
Oil	175	14.9	95	10.9	261	28.5	737	57.2
Whipped topping	36	3.1	81	9.4	12	1.3	28	2.1
Total	*1171*		*869*		*917*		*1289*	
Miscellaneous	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Baking	48	3.5	38	1.3	243	1.4	210	3.6
Condiment[a]	--	--	--	--	13127	74.6	2602	44.6
Flavoring	466	34.4	2039	70.7	699	4.0	1949	33.4
Gelatin	243	17.9	310	10.7	189	1.1	252	4.3
Gravy	72	5.3	149	5.2	36	0.2	74	1.3
Salt	493	36.4	341	11.8	349	2.0	250	4.3
Tea[a]	--	--	--	--	24	0.1	73	1.2

Table 1. *Mississippi Delta FFVP School District Food Procurement Amounts*

Vinegar	33	2.5	8	0.3	67	0.4	17	0.3
Water[a]	--	--	--	--	2854	16.2	407	7.0
Total	*1355*		*2884*		*17587*		*5834*	

[a] Not purchased in 2018-2019.

[b] Not purchased in 2019-2020.

Table 2. *Mississippi Delta Non-FFVP School District Food Procurement Amounts*

	Academic Year 2018-2019				**Academic Year 2019-2020**			
	Weight (pounds)		**Expenditures ($)**		**Weight (pounds)**		**Expenditures ($)**	
Food Group	**Amount**	**% of Total**	**Amount**	**% of Total**	**Amount**	**% of Total**	**Amount**	**% of Total**
Fruits	27236	16.5	20079	14.1	28941	19.4	22128	16.4
Vegetables	23769	14.4	19717	13.8	16915	11.3	14501	10.7
Grains	21184	12.8	34348	24.1	19910	13.4	34673	25.7
Protein	15171	9.2	35694	25.0	13183	8.8	32250	23.9
Dairy	65043	39.4	25905	18.1	55558	37.3	25850	19.1
Added Sugars	1333	0.8	2158	1.5	777	0.5	1337	1.0
Fats	894	0.5	1103	0.8	683	0.5	1086	0.8
Miscellaneous	10598	6.4	3736	2.6	13140	8.8	3343	2.5
Total	*165228*		*142740*		*149108*		*135168*	
Fruits	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Apples	4194	15.4	4341	21.6	2942	10.2	2570	11.6
Bananas	880	3.2	432	2.2	1240	4.3	609	2.8
Cranberries[a]	39	0.1	39	0.2	--	--	--	--
Grapes	75	0.3	126	0.6	629	2.2	739	3.3
Juice	13608	50.0	5206	25.9	15869	54.8	8480	38.3
Kiwis[b]	--	--	--	--	65	0.2	152	0.7
Mixed fruit	1365	5.0	1133	5.6	1755	6.1	1516	6.9
Oranges	791	2.9	542	2.7	1782	6.2	1941	8.8
Peaches	1755	6.4	1489	7.4	1014	3.5	861	3.9
Pears	2428	8.9	2223	11.1	1545	5.3	1444	6.5
Pineapple	897	3.3	578	2.9	1209	4.2	954	4.3
Raisins	811	3.0	2456	12.2	685	2.4	2088	9.4
Strawberries	394	1.4	1513	7.5	208	0.7	774	3.5
Total	*27236*		*20079*		*28941*		*22128*	

Table 2. *Mississippi Delta Non-FFVP School District Food Procurement Amounts*

Vegetables	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Broccoli	339	1.4	325	1.6	267	1.6	242	1.7
Cabbage	50	0.2	53	0.3	130	0.8	109	0.8
Carrots	843	3.5	814	4.1	639	3.8	732	5.1
Corn	2380	10.0	2113	10.7	838	5.0	897	6.2
Cucumbers	318	1.3	244	1.2	236	1.4	168	1.2
Green beans	1716	7.2	1078	5.5	741	4.4	453	3.1
Green peas	897	3.8	672	3.4	390	2.3	288	2.0
Greens	855	3.6	944	4.8	583	3.4	794	5.5
Jalapeno peppers[a]	38	0.2	83	0.4	--	--	--	--
Juice	3077	12.9	2053	10.4	2077	12.3	1446	10.0
Legumes	1639	6.9	1046	5.3	1677	9.9	1013	7.0
Mixed vegetables	722	3.0	638	3.2	538	3.2	553	3.8
Onions	257	1.1	231	1.2	166	1.0	162	1.1
Peppers	213	0.9	245	1.2	150	0.9	183	1.3
Potatoes	6267	26.4	5484	27.8	5426	32.1	4644	32.0
Squash	260	1.1	261	1.3	40	0.2	40	0.3
Sweet potatoes	687	2.9	831	4.2	444	2.6	625	4.3
Tomatoes	3210	13.5	2603	13.2	2574	15.2	2151	14.8
Total	*23769*		*19717*		*16915*		*14501*	
Grains	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Corn	1601	7.6	5365	15.6	741	3.7	3133	9.0
Oat	555	2.6	973	2.8	282	1.4	398	1.1
Rice	524	2.5	1204	3.5	712	3.6	1820	5.2
Wheat	18504	87.4	26805	78.0	18175	91.3	29322	84.6
Total	*21184*		*34348*		*19910*		*34673*	
Protein	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Beef	2701	17.8	6936	19.4	1657	12.6	4584	14.2
Chicken	5050	33.3	11106	31.1	4164	31.6	9793	30.4
Eggs	736	4.9	1263	3.5	457	3.5	606	1.9
Fish	680	4.5	1443	4.0	548	4.2	1476	4.6
Pork	5820	38.4	14490	40.6	6141	46.6	15204	47.1
Seafood[a]	100	0.7	240	0.7	--	--	--	--

Table 2. *Mississippi Delta Non-FFVP School District Food Procurement Amounts*

Turkey		84	0.6	216	0.6	216	1.6	587	1.8
	Total	*15171*		*35694*		*13183*		*32250*	
Dairy		**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Cheese		1158	1.8	2433	9.4	1260	2.3	3333	12.9
Milk		63070	97.0	22170	85.6	52985	95.4	20456	79.1
Milk dry		25	0.0	82	0.3	25	0.0	92	0.4
Sour cream		74	0.1	95	0.4	118	0.2	182	0.7
Yogurt		717	1.1	1125	4.3	1171	2.1	1786	6.9
	Total	*65043*		*25905*		*55558*		*25850*	
Added sugars		**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Sugar		589	44.2	441	20.4	*296*	38.1	226	16.9
Syrup		744	55.8	1717	79.6	481	61.9	1111	83.1
	Total	*1333*		*2158*		*777*		*1337*	
Fats		**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Margarine		703	78.6	571	51.8	423	61.9	387	35.7
Oil		191	21.4	532	48.2	236	34.5	644	59.3
Whipped topping[b]		--	--	--	--	24	3.5	55	5.1
	Total	*894*		*1103*		*683*		*1086*	
Miscellaneous		**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**	**Amount**	**% of Group**
Baking		114	1.1	112	3.0	12	0.1	17	0.5
Condiments		6467	61.0	1285	34.4	10029	76.3	1548	46.3
Flavoring		213	2.0	938	25.1	74	0.6	377	11.3
Gelatin		336	3.2	488	13.1	510	3.9	770	23.0
Gravy		108	1.0	223	6.0	72	0.5	149	4.5
Salt		324	3.1	260	7.0	207	1.6	159	4.7
Vinegar[b]		--	--	--	--	67	0.5	17	0.5
Water		3036	28.7	429	11.5	2169	16.5	307	9.2
	Total	*10598*		*3736*		*13140*		*3343*	

[a] Not purchased in 2019-2020.

[b] Not purchased in 2018-2019.

Figure 1. *Expenditure Changes in Procurement from 2018-2019 and 2019-2020*

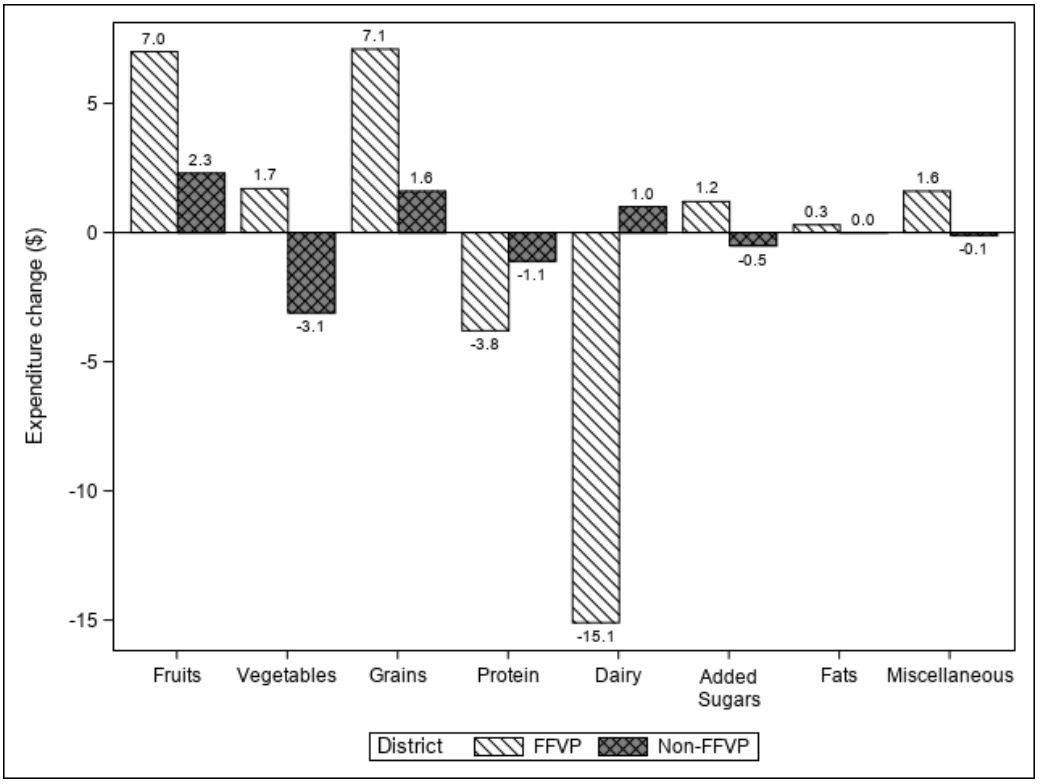
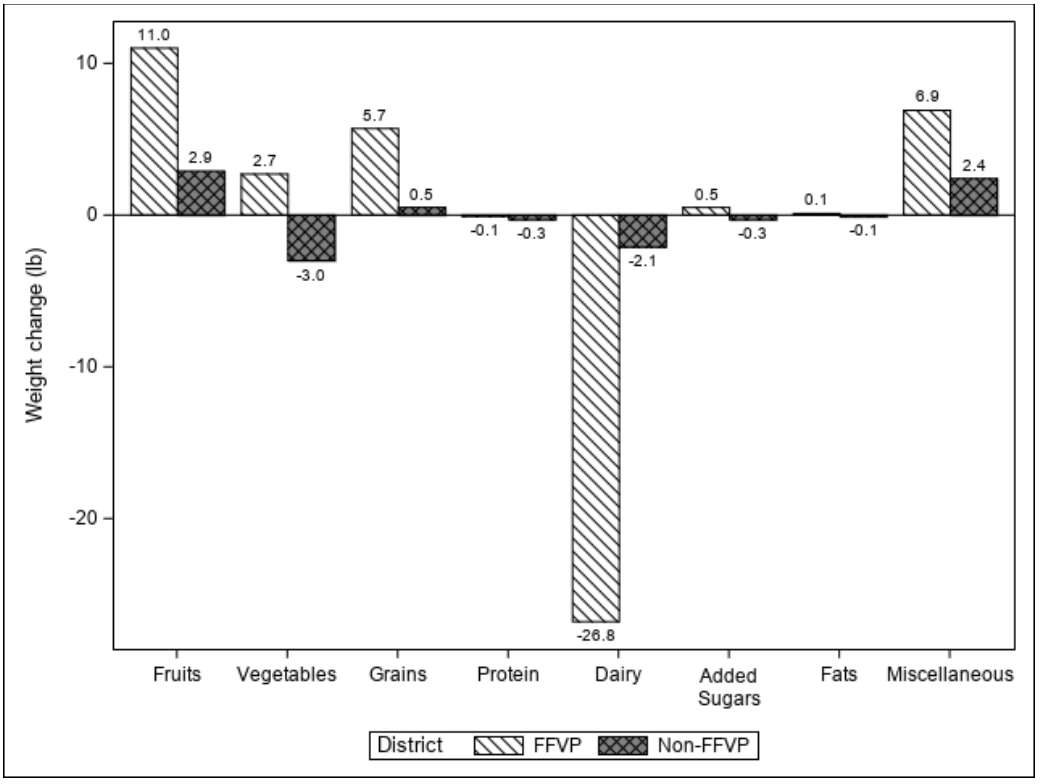


Figure 2. *Weight Changes in Procurement from 2018-2019 and 2019-2020*



CONCLUSIONS AND APPLICATIONS

During the 2013-2014 school year, schools nationwide spent nearly $790 million on local foods (*About The Farm to School Census*, 2019). Data from the Farm to School Census represents only those schools who opted to respond to the survey. Additionally, identifying which foods are local can be difficult if they are procured from broadline distributors or wholesalers and not explicitly labeled or identified as local. Therefore, reported amounts purchased of local items may underrepresent the actual amount schools spend on local foods. During the 2011-2012 school year, schools that reported serving local foods, 53% reported obtaining food directly from farmers and other producers, while 77% reported using a distributor (USDA, 2019). School nutrition professionals may request that local items are marked or identified as such which may in turn be a solution for schools to more frequently identify purchases from broadline distributors and wholesalers.

A recent trend in local food procurement is that larger school districts (enrollment > 5,000 students), urban districts, and districts located in counties with a higher density of farmers' markets reported being likely to serve local foods daily (Ralston et al., 2017). Small or medium size schools are more likely to purchase foods on a weekly basis (instead of daily), which may affect purchasing decisions (Stokes & Arendt, 2018). Other factors identified that may affect purchasing decisions included storage capacity, delivery availability, and product use (Stokes & Arendt, 2018). Given that more than 50% of school districts across the US are rural and small (Johnson et al., 2014), increased outreach for training and resources related to procurement of local items is needed in these areas. Procurement processes in general can be confusing and viewed as inconsistent and complicated (School Nutrition Association, 2016). Those affiliated with the School Nutrition Association have advocated for years, and particularly in a White Paper published in 2016, for increased attention for training and technical assistance for operators who must interpret and apply quickly changing laws and policies related to procurement.

The Mississippi Department of Education operates the largest school purchasing cooperative in the nation (Mississippi Department of Education, n.d.). Items available to participating districts include produce, milk, ice cream, bread, general foods, and supplies. Through this purchasing cooperative, food prices are more affordable, and procurement is simplified. However, logistical challenges still exist in Mississippi, where procurement of foods for school meals is highly coordinated. In other places where there are disjointed efforts to procure foods, local food may not even be considered as an option.

Finding existing distributors who advertise and offer local foods may be one option to help ease food safety concerns, make products more affordable, and assure quality standards. Food hubs, cooperatives, and buying groups may also be options. Adding local items to menus can also pose challenges to standardized menus and may force changes to traditional offerings. Seasonality must be considered and oftentimes the volume needed for larger schools may not be available from one producer (Bobronnikov et al., 2021). School nutrition professionals may consider providing detailed information about what is currently used and forecasted needs may help producers see the benefits of seeking school purchasing contracts or developing their own cooperatives.

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BIOGRAPHY

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