Appendix A
Methods

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Tables

A.1. Sample selection and weights

The respondent universe for SNACS-II includes (a) the 48 contiguous States and the District of Columbia, (b) CACFP programs and their sponsoring organizations, if applicable, from sampled States, and (c) children and their parents or guardians who are enrolled in sampled programs. Table A.1 summarizes the universe overall and for States and programs (sampling stage or substrata).

Table A.1. SNACS-II respondent universe

Respondent category	Universe
State agencies	49
CACFP programs	158,999
Sponsored child care centers	18,723[a]
Independent child care centers	20,046[a]
Head Start centers	11,218
Family day care homes	87,398
At-risk afterschool centers	19,209[b]
Outside-school-hours care centers	2,405

Source: Tables 11 and 12 of the FNS National Data Bank April 2020 key data report.

[a] Estimate is based on the ratio of two proportions: the proportion of all CACFP programs that are sponsored child care centers (0.099) over the proportion of all CACFP programs that are independent and sponsored child care centers (0.205). This ratio is then multiplied by an estimate of the number of independent and sponsored child care centers (38,769). This estimate is based on the difference between the total number of centers (excluding family day care homes) in FY 2020 (71,601) and the number of Head Start centers, AR centers, and OSHCCs listed in Table A.1 (32,832). The proportion of CACFP programs that are independent and sponsored child care centers can be found on page 5-1 of Glantz et al. 2018.

[b] Estimate is based on the number of AR centers that participated in CACFP in FY 2015 (16,685) multiplied by the rate of growth in total child care centers between FY 2015 (62,194) and FY 2020 (71,601). The number of AR centers in FY 2015 can be found on page 8-1 of Glantz et al. 2018.

AR center = at-risk afterschool center; CACFP = Child and Adult Care Food Program; FNS = Food and Nutrition Service; FY = fiscal year; OSHCC = outside-school-hours care center.

The overall objective of the sample design was to produce nationally representative samples of CACFP programs for PY 2022–2023. The SNACS-II sample design builds on the SNACS-I design to ensure the results of the two studies are comparable and meet required levels of statistical precision while minimizing data collection costs and respondent burden.

We used a multistage stratified cluster sampling design. Because sampling frames for CACFP programs can be provided only at the State level, the first stage of selection, also known as the primary sampling unit (PSU), was the State. In the second stage, to make data collection more efficient, we constructed and sampled secondary sampling units (SSUs) within the selected and participating States based on a sample of core-based statistical areas (CBSAs)[1] and non-CBSA counties. In the third stage, we sampled CACFP programs within sampled SSUs. We selected a sample of CACFP programs to complete the Provider Survey and Menu Survey and a subsample to participate in onsite data collection.

[1] Metropolitan and micropolitan statistical areas are collectively referred to as CBSAs. Metropolitan statistical areas have at least one urbanized area of 50,000 or more people. Micropolitan statistical areas are a new set of statistical areas that have at least one urban cluster with a population of at least 10,000, but they have a population of fewer than 50,000 overall. Throughout the rest of this appendix, we will use the term "urban" to refer to CBSAs, which include suburban areas. "Urban" here essentially means "non-rural."

A.1.1. Selecting States

In the first stage, we selected a national probability sample of 25 States and 7 backup States from the sampling frame of the 48 contiguous States and the District of Columbia. We designed this probability sample to minimize the design effect, a measure of the expected impact of a sampling design on the variance of an estimator for some parameter, while allowing us to estimate domains of interest. We oversampled States with a higher proportion of children served in rural areas to ensure adequate sample sizes of rural programs. In addition, we sampled at least one State in each of the seven FNS regions.

The first step was to identify the set of States that should be included with certainty ("certainty States") based on their measure of size (MOS). These States are included with certainty because their MOS is so large that they would be included in any random sample selected. We then use a stratified sequential[2] probability proportional to size (PPS) design to select the remaining States, which did not need to be included with certainty ("non-certainty States"), with the strata defined primarily by the seven FNS regions. The MOS for the PPS selection was based primarily on the aggregated CACFP average daily attendance (ADA) for the State relative to overall ADAs and then created a weighted average of metro and non-metro ADA proportion in the State. We obtained the ADAs from FNS-44 data for 2021 that States submit to FNS, for all but three States. In those States, the 2021 numbers were suspect, and we used 2019 data for them instead.

We stratified non-certainty States by the seven FNS regions: Mid-Atlantic, Midwest, Mountain Plains, Northeast, Southeast, Southwest, and Western. In some of the States in the Mid-Atlantic and Northeast regions, nearly all the children in households with low incomes lived in metropolitan areas. To address this issue, we used the approach used in SNACS-I. Specifically, we combined the Mid-Atlantic and Northeast regions and then subdivided the combined region into two strata: (1) a highly urban stratum consisting of the States in which nearly all the children in households with low incomes lived in metropolitan areas and (2) a highly rural stratum consisting of the States in which a larger proportion of children in households with low incomes lived in rural areas. This permitted a more efficient allocation of rural versus urban SSUs than we would achieve by defining strata strictly by FNS region.

We determined the number of sampled States allocated to each stratum after we identified the certainty States. (Because we selected backup States, we also had to identify "pseudo-certainty" States—those that we only determined to be certainty selections because we had to use the backup sample.) Within each stratum, we computed the MOS of States by using a weighted combination of the separate estimates of the proportion of children in households with low incomes by the household's metropolitan status.[3] This relative weighting increased the probability of selection for States with larger shares of rural CACFP programs, allowing for an oversampling of these programs. We define the MOS for State *k* in the first stage of selection as follows:

[2] This sequential sampling technique is based on a procedure developed by Chromy (1979) and available as a procedure in SAS (*SurveySelect*). It offers all the advantages of the systematic sampling approach but eliminates the risk of systematic, list-order bias by making independent selections within each of the zones associated with systematic sampling, while controlling the selection opportunities for units crossing zone boundaries.

[3] We used the 2020 Small Area Income and Poverty Estimates (SAIPE) State and County Estimates of children in poverty by county after identifying which counties were metropolitan/micropolitan or not based on a list of CBSA counties from the Census Bureau.

$$0.75 * \left(\frac{Metro\ ADA\ in\ State\ k}{Non-Metro\ ADA\ in\ all\ States} \right) + 0.25 * \left(\frac{Non-Metro\ ADA\ in\ State\ k}{Non-Metro\ ADA\ in\ all\ States} \right).$$

We used this MOS to determine certainty States within each stratum,[4] resulting in six of them: California, Florida, Missouri, New York, Virginia, and Texas.

Oversampling States with relatively higher rural percentages results in some minor design effects caused by weighting, but it ensured that at least 25 percent of the sample of programs was from rural areas. We ultimately had to release one backup State (discussed below). Table A.2 presents the final selection of States by strata.

Table A.2. Selection of States by strata

First-stage stratum	States in stratum	Number of States selected	Backup States selected
Non-certainty States	**43**	**19**	**7**
Mid-Atlantic and Northeast 1 (non-rural)	CT, DE, DC, MD, NJ, MA, RI, PA, NH (9)	2	1
Mid-Atlantic and Northeast 2 (has rural)	ME, VT, WV (3)	2	1
Midwest	IN, MI, MN, WI, IA, IL, OH (7)	4	1
Mountain Plains	CO, KS, MT, NE, ND, SD, WY (7)	2	1
Southeast	NC, SC, TN, GA, AL, KY, MS (7)	4	1
Southwest	LA, NM, AR, OK, AZ, UT (6)	3	1
West	ID, NV, OR, WA (4)	2	1
Certainty States	**6**	**6**	**0**
California		1	0
Florida		1	0
Missouri		1	0
New York		1	0
Texas		1	0
Virginia		1	0
Total	**49**	**25**	**7**

FNS first notified the FNS Regional Offices about the study. The Regional Offices then notified the sampled States. We then sent study information to the States and followed up to answer questions and ask States for lists of their sponsors and providers. Twenty-four of the 25 States in the initial sample agreed to participate in the study. One State in the Midwest region refused to participate, and we released a backup State in the same stratum to replace it. The State-level response rate was 96 percent.

We asked the 25 participating States to provide contact information for all CACFP providers and their sponsor organizations, using the data reported to FNS on the form FNS-44 in March 2021. The program

[4] States with much larger MOS than the others (that is, exceeding the total MOS divided by sample size) are determined to be certainty States.

sponsor name; program name, address, and contact person; phone number; and program type. We then asked the State child nutrition directors to provide contact information for their CACFP programs.[5] Each State's list contained the contact information of eligible CACFP programs; their providers; their sponsors (if applicable); and other auxiliary information we used for sampling at later stages, including the program's ADA, program type, and location information.

A.1.2. Selecting secondary sampling units

In the second stage, we began by creating geographically defined SSUs and then selected a stratified PPS systematic sample of SSUs within the sampled States. Sampling SSUs makes in-person data collection less expensive by restricting the geographic range interviewers must travel, although it does introduce a design effect caused by clustering. We used the listings of CACFP programs obtained from the sampled States to define geographically contiguous SSUs. In sampling the SSUs, we adopted the approach used in SNACS-I;[6] that is, we used non-CBSA counties to represent rural areas and CBSAs (which generally comprise multiple counties) to represent non-rural areas. The CBSA-based SSUs we defined were CBSAs in metropolitan and micropolitan areas, and we defined the non-CBSA based SSUs by counties.[7] For each defined SSU, we required a minimum of 12 CACFP programs for CBSAs and 50 CACFP programs for non-CBSA counties (where possible); we combined contiguous counties of the same type as needed until we reached these minima.

Following the design for SNACS-I, we sampled 81 SSUs—60 urban (CBSA) SSUs and 21 rural (non-CBSA) SSUs. This oversampled the rural SSUs to help ensure 25 percent of sampled programs would be in rural SSUs.

The MOS used in sampling SSUs was the aggregated ADA within the SSU. Using an MOS based directly on program ADA was expected to yield more precise estimates than the ones in SNACS-I, in which the MOS was based on census information about children in poverty. Within CBSA or non-CBSA substrata in each of the 25 sampled States, we first determined whether there were any certainty SSUs (those with a very large MOS relative to other SSUs in the same stratum, which would have resulted in a selection probability of 1 or more). Next, we implicitly stratified the remaining SSUs by whether they were metropolitan or micropolitan (for CBSA) and geographically (using the first three digits of the zip code) within strata for sequential PPS sampling. In most of the non-certainty States, we selected two CBSA SSUs and one non-CBSA SSU. However, in the two States sampled from the Mid-Atlantic and Northeast 1 (non-rural) stratum, we could not form any non-CBSA SSUs. In addition, to select 20 non-CBSA SSUs (as required by the design) while having 23 States with non-CBSA SSUs, we absorbed the non-CBSA SSU counties into adjacent CBSAs in two of the smaller States in the Southwest and West regions to ensure each SSU had a non-zero chance of selection. We sampled one non-CBSA SSU in each of the remaining States. Table A.3 presents the sample of SSUs.

[5] We contacted the person who oversees the CACFP program in each State. This might not be the same as the child nutrition director, depending on the State.

[6] In SNACS-I, SSUs were defined to have about 30 listed providers; however, the number of providers in each area was not available before SSU selection began, so the study team estimated it using data on children from families with low incomes. Those data came from the ACS and Child Care Aware of America (2012) with further adjustments for whether the SSU was urban or rural.

[7] CBSAs that split across States included only the part of the CBSA within the sampled State.

Table A.3. Selection of secondary sampling units

First-stage stratum	Sampled States	Number of CBSA SSUs selected	Number of non-CBSA SSUs selected
Non-certainty States	**19**	**38**	**15**
Mid-Atlantic and Northeast 1 (non-rural)	2	4	0
Mid-Atlantic and Northeast 2 (has rural)	2	4	2
Midwest	4	8	4
Mountain Plains	2	4	2
Southeast	4	8	4
Southwest	3	6	2
West	2	4	1
Certainty States	**6**	**22**	**6**
California	1	6	1
Florida	1	3	1
Missouri	1	2	1
New York	1	3	1
Texas	1	5	1
Virginia	1	3	1
Total	**25**	**60**	**21**

A.1.3. Selecting programs

In sampling programs, we had to address two important challenges. First, more than one provider can be affiliated with a single sponsor. Sponsors often play an important role in the operations of their constituent providers. Consequently, including multiple programs or providers from the same sponsor could incur nontrivial intraclass correlation, which is a measure of the relatedness of clustered data. In addition, sampling more than one program or provider per sponsor would increase sponsors' response burden, which may result in a low rate of cooperation from providers in the sample.

Second, individual providers may operate more than one type of program. For example, a child care center might also operate an AR center. Asking a single provider to participate in data collection for more than one program or program type would impose a substantial response burden and could lead to lower rates of cooperation.

To avoid these challenges, our approach to sampling programs of providers involved using systematic sampling within SSU and program type, where the sample was sorted by sponsor and provider (by using their individual ADAs, as described below). This sorting, which grouped programs with the same provider together and providers with the same sponsor together, minimized the chances of sampling more than one provider per sponsor and, for providers that operated more than one program (multiple programs of the same type or different types of programs), the chances of sampling a provider more than once. To avoid confusion, the following description of our approach to sampling focuses on programs because programs are the actual sampling unit. Each sampled program is associated with a specific provider.

Within each of the 81 selected SSUs, we sampled CACFP programs through an equal selection probability design within program type, with some oversampling of particular types of programs. We reduced the State program lists to those within the 81 sampled SSUs and used this to construct the program sampling frame. The sample of programs selected for recruitment was large enough to achieve the desired number of participating programs[8] across the five primary types of programs:

- 310 child care centers
- 310 Head Start centers[9]
- 320 family day care homes (FDCHs)[10]
- 200 AR centers
- 200 OSHCCs

In each sampled SSU, we stratified the list of CACFP programs into eight mutually exclusive groups:

- Sponsored child care centers
- Independent child care centers
- Head Start centers
- FDCHs – Tier I[11]
- FDCHs – Tier II
- AR centers
- OSHCCs
- Programs associated with providers that operate more than one type of program (excluding OSHCCs)[12]

We sampled most programs from the first seven strata because most programs have CACFP providers that operate only one type of program.[13] For urban SSUs, we allocated the program sample of a particular program type proportionally across States (with a minimum of two) and then further allocated that State

[8] Based on the experience with SNACS-I, we assumed a 40 percent sample yield when selecting the sample and selected backup programs that we released in random order as needed.

[9] Based on information we had for Head Start centers before sampling began, we excluded 265 centers we identified as Early Head Start (infant and toddler) only. To do this, we used the Head Start Program Information Report and data from the Head Start Early Childhood Learning & Knowledge Center.

[10] The sample size was to allow for Tier I and Tier II sample sizes of 160 each, which were necessary to achieve the desired level of statistical precision.

[11] Under Section 3 of the Keep Kids Fed Act, Tier II FDCHs were considered the same as Tier I FDCHs during PY 2022–2023. No SNACS-II RQs planned for subgroup analyses comparing the tiers.

[12] Groups 1 through 7 excluded programs associated with providers that operate more than one type of program, unless one of their two program types was OSHCC. Because most OSHCCs are run by providers with other program types, we would not have been able to sample enough of them if we put such OSHCCs in Group 8.

[13] In SNACS-I, which did not take the issue of multiple programs into account in sampling providers, only 51 of more than 3,000 sampled providers operated more than one program. Although this was a small overall proportion, it was important to plan for this situation. Based on SNACS-I recruitment information, only 20 of these 51 providers completed any data collection activities, and none provided data for both programs that were part of the sample (source: SNACS-I summary memorandum on recruitment, April 2, 2018, submitted to Alice Ann Gola, FNS).

sample allocation proportionally across SSUs within a State. For rural SSUs, because of the smaller numbers, we allocated proportionally across States (with a minimum of two) rather than across SSUs. In Stratum 8, we first selected two programs per SSU. After we determined the program types, we subtracted two programs from the corresponding single-program–type strata allocations in each SSU. For example, in a given SSU, if our Stratum 8 sampling resulted in selecting one Head Start center from one provider and one AR center from another provider, we selected one fewer Head Start center from the Head Start stratum and one fewer AR center from the AR stratum in that SSU.

The overall approach was to sort the file of programs to account for possible duplicate programs on the file and then draw an "augmented" systematic sample of programs in which programs within each stratum had an equal probability of selection, assuming a 40 percent yield (1,340 completion target out of 3,350) of responding programs (based on SNACS-I experience), with additional backup programs (reserve sample) available as needed. An augmented sample has more sample units than are expected to be fielded. A subset of the augmented sample is released initially and then additional sample units can be released as needed to account for nonresponse. From this augmented sample, we subsampled an initial release that assumed an 80 percent program recruitment rate (1,704 recruitment target out of 2,150 initially released). We monitored the number of participating programs within stratum and released reserve sample from the augmented sample as needed. Table A.4 shows the targets for recruited sample sizes and the expected number of completed surveys for CACFP programs, overall and by subgroup.

Table A.4. Overall sample targets of programs across all States and secondary sampling units

Program type	Target completes	Target recruited	Initial release	Augmented sample
Child care center	310	388	490	775
Independent	162	203	257	405
Sponsored	148	185	233	370
Head Start center	310	388	490	775
Family day care home[a]	320	400	504	800
Tier I	160	200	252	400
Tier II	160	200	252	400
At-risk afterschool center	200	278	351	500
Outside-school-hours care center	200	250	315	500
Total	**1,340**	**1,704**	**2,150**	**3,350**

[a] We identified the tier statuses from States' data.

From the sample of programs shown in Table A.4, we selected a subsample for onsite data collection with children, as shown in Table A.5. We used the same explicit and implicit stratification scheme to subsample providers for onsite data collection. This method ensures that the full and subsamples would have similar characteristics related to variables used for stratification. Because not all SSUs had all program types, we subsampled within strata defined by State and program type but implicitly stratified (sorted) by SSU.

Table A.5. Subsample targets of programs for onsite child data collection across all States and secondary sampling units

Program type	Target completes	Target recruited	Initial release	Augmented sample
Child care center	91	115	144	226
Independent	48	60	75	118
Sponsored	43	55	69	108
Head Start center	90	115	144	224
Family day care home[a]	120	154	192	298
Tier I	65	77	96	162
Tier II	55	77	96	136
Outside-school-hours care center	47	61	76	116
At-risk afterschool center	73	93	116	182
Total	**420**	**538**	**672**	**1,046**

[a] We identified the tier statuses from States' data.

Before selecting the sample, within each stratum, we sorted programs by the ADA of their sponsor (where applicable); within that, by the ADA of their provider; and within that, by their own ADA.[14] Within each of the eight strata and within SSUs, providers may have appeared more than once in the list because they appeared once for each program they operated. This sampling approach for the overall and onsite samples helped ensure programs in different geographical areas and of different sizes were represented and minimized the possibility of sampling multiple programs of the same type from the same sponsor. Sorting by the sponsor's specific ADA results in grouping providers that are associated with the same sponsor together in the sorted list—and subsequently selecting a systematic sample of programs of providers from that sorted list—minimized the likelihood of sampling multiple programs of the same type from the same sponsor. In this sense, the sponsor's ADA acts as both a unique sponsor identifier and serves to ensure that providers of all sizes are included in the sample.

We linked programs sampled in Stratum 8 to the providers that operate them and told the provider the specific program chosen for the sample when we recruited them for the study. For example, we informed providers that operate both a child care center and an AR center that the study was asking them to participate for either the child care center or the AR center—whichever program was sampled—and not both. If at some point during data collection we found more than one program associated with the same provider, we selected one of the programs randomly (and applied a weighting adjustment for this subsampling). One exception to this methodology was OSHCCs associated with providers that had more than one type of program. Because most OSHCCs are associated with such providers, we would not have been able to sample enough of them if we placed them in Stratum 8. Instead, we placed all OSHCCs in the

[14] ADA was used as a proxy for unique identifier because was unlikely that two programs would have the same value.

OSHCC-only stratum and placed the remaining CACFP programs associated with them in their stratum disregarding the affiliated OSHCC program.[15]

AR centers and OSHCCs might stop operations between school years, and some sampled AR centers are "drop-in only" and therefore out of the scope of this study. Although we recruited and collected data from programs within the same PY, we expected some churn between the time we selected programs for the sample and the start of recruiting. To achieve the target number of recruited programs, we released the reserve sample while we monitored recruitment response rates.

After forming, combining (as needed), and selecting the rural SSUs (one per State for the 21 States with rural SSUs), we determined there were not enough programs of certain types or subtypes in these sampled rural areas to meet the sample design targets, even if we selected all of them. In particular, the independent child care centers and the Tier II FDCHs did not have enough programs in the sampled rural SSUs, and the OSHCCs had insufficient numbers of programs across all rural SSUs. To keep rural programs at 25 percent of the sample, we opted to make up for shortfalls as follows:

- To compensate for the shortfall in rural OSHCCs, we selected additional rural AR centers.
- To compensate for the shortfall in rural independent child care centers, we selected additional rural sponsored child care centers.
- To compensate for the shortfall in rural Tier II FDCHs, we selected additional rural Tier I FDCHs.

A.1.4. Sampling children for dietary recalls and plate waste observations

This section describes the process for sampling children for the dietary recalls and plate waste observations within sampled, participating programs.

To address Objectives 3a and 4, we collected child-level data on site in a subsample of 397 of the 1,288 programs contributing data for Objectives 1 and 2. For the onsite subsample, we designed the study to subsample enough programs to recruit 90 child care centers, 90 Head Start centers, 120 FDCHs, 60 AR centers, and 60 OSHCCs. Specifically, when we selected the sample of programs, we designated random subsamples of programs of each type as part of the onsite subsample. In child care centers, Head Start centers, and FDCHs, we focused the child sample on only the primary age groups served by these programs—namely, 1- to 5-year-olds. Similarly, in AR centers and OSHCCs, we focused the child sample on the primary age group served by these programs—6- to 12-year-olds. The goal of this focused selection was to avoid the problems encountered in SNACS-I, when some children older than 5 were sampled from early child care providers and some children younger than 6 were sampled from the school-age programs.

We sampled children in two stages: first, we sampled classrooms and then children within classrooms. We also used the child sample to select the plate waste observation sample. The following sections describe these procedures.

[15] For the handful of situations in which we sampled an OSHCC program and another program (of another type) from the same provider, we did not randomly remove one of the two. Instead, we kept both in the sample and immediately coded the non-OSHCC program as an eligible nonparticipant that would not be recruited.

A.1.5. Selecting classrooms

We collected the information needed to sample classrooms during the Pre-Visit Planning Interview. Specifically, we obtained a roster of all children and the number of children included in each classroom. We treated a program with no defined classrooms as a single "classroom." In center-based programs (child care centers, Head Start centers, AR centers, and OSHCCs), we used the following sampling procedure:

A. If a program had a single classroom of 30 or fewer children, we collected data from that classroom.
   - If a program had a single "classroom" of more than 30 ungrouped children, we divided the classroom into sub-classrooms by age group. For ECC programs with 31–90 ungrouped children, the age groups for sub-classrooms were 1–2 years and 3–5 years.
   - For before and after school (BAS) programs with 31–90 ungrouped children, the age groups for sub-classrooms were 6–9 years and 10–12 years.
   - For programs with more than 90 ungrouped children, we treated each single year of age as a sub-classroom.

B. If a program did not have any classrooms or sub-classrooms with at least 14 children, we paired the classrooms or sub-classrooms with others in the same program and treated the pair as a sampling unit so that (to the extent possible) the sampling units had at least 14 children.

C. Finally, we selected one classroom or sub-classroom sampling unit per program via simple random sampling.

For FDCHs, we obtained a roster of all age-eligible children. This roster was treated as one classroom.

A.1.6. Selecting children

Within the sampled classroom[16] or FDCH, we customized the study invitation packages that were given to each parent.[17] The invitation package included a consent form that asked parents about their child's usual attendance patterns. The sampling frame for children was composed of all children in a sampled classroom or FDCH whose parents consented to participate in the study and who were expected to attend on the day(s) of observation at the program. During the Pre-Visit Planning Interview, we asked programs to identify any children with medical or special dietary needs that required meal accommodations. Unless the program had a policy that restricted serving certain foods to all children (for example, peanut butter) or to all children in the subject child's classroom, we excluded children with medical or special dietary needs from the sample frame.

In centers, we observed the meals and snacks that up to 14 randomly selected children in each randomly selected classroom consumed in child care and asked their parents to complete a 24-hour dietary recall interview to obtain information about foods and beverages consumed outside of care. We assumed that this process would yield complete child-level data collection for an average of six children per program. In FDCHs, we observed up to four randomly selected and consented children per home, assuming that we would collect complete data for an average of three children. These random selections were made by

[16] From here forward, the term "classroom" implicitly refers to sub-classroom, where appropriate.

[17] The term "parent" is used inclusively, encompassing guardians and caregivers as well as biological parents.

assigning random numbers to all children in the sampled classroom and attempting to collect data on those with consent following the random number sequence.

We designed the sample to randomly include one classroom and then randomly sample children within that classroom rather than disproportionally sampling children in different age groups (for example, selecting a certain number of 1- to 2-year-olds and 3- to 5-year-olds). Disproportional allocation could increase the design effect and therefore the total sample needed. We designed the sample to provide sufficient precision for subgroups comprising at least 20 percent of the sample. Three- to 5-year-olds were the most heavily sampled group among the 1- to 12-year-olds in the child sample.

Overall, we expected to complete data collection for 2,160 children. We show targeted child sample sizes, overall, and by program subgroups in Table A.6. We summarize the eligibility criteria and sample sizes for the selection of children from each program in Table A.7.

Table A.6. Recruitment and completion targets for programs and children, by program subgroup: Objectives 3a and 4

CACFP program type	Recruited programs	Completed programs	Programs per SSU	Responding children per program	Completed children
Total	534	420	5.3	5.1	2,160
Key subgroups					
Child care centers	113	90	1.1	6.0	540
Independent centers	59	47	0.6	6.0	282
Sponsored centers	54	43	0.5	6.0	258
Head Start centers	113	90	1.1	6.0	540
FDCHs	150	120	1.5	3.0	360
AR centers	83	60	0.8	6.0	360
OSHCCs	75	60	0.8	6.0	360
Other subgroups					
Urbanicity of child care centers, Head Start centers, and FDCHs					
Rural	94	75	0.9	4.8	360
Urban	282	225	2.8	4.8	1,080
Sponsorship of sponsored centers					
Sponsored, affiliated	34	27	0.3	6.0	162
Sponsored, unaffiliated	20	16	0.2	6.0	96
Corporate/chain	24	19	0.2	6.0	114
Other sponsored	30	24	0.3	6.0	144
Size of center, for child care centers and Head Start centers					
Small centers	75	60	0.8	6.0	360
Medium centers	75	60	0.8	6.0	360
Large centers	75	60	0.8	6.0	360
FDCH tier[a]					
FDCH Tier I	75	60	0.8	3.0	180

CACFP program type	Recruited programs	Completed programs	Programs per SSU	Responding children per program	Completed children
FDCH Tier II	75	60	0.8	3.0	180

Notes: The recruited program sample size reflects an expected 80 percent combined retention rate and response rate among recruited programs. For AR centers, we anticipated a 10 percent ineligibility rate.

We selected the sample of programs within each key subgroup to achieve the targeted number of recruited programs. The recruited and completed program and child sample sizes in the "Other subgroups" are estimates and subject to variation. Details may not sum to totals because of rounding.

[a] We identified tier statuses from States' data.

AR center = at-risk afterschool center; CACFP = Child and Adult Care Food Program; FDCH = family day care home; OSHCC = outside-school-hours care center; SSU = secondary sampling unit.

Table A.7. Age eligibility criteria, sample sizes, and anticipated completed child sample sizes, by program type

CACFP program type	Age-eligible children	Observed children per program	Expected completed children per program
Child care centers and Head Start centers	1 to 5 years	1 classroom; up to 14 children per classroom	6 children per center
FDCHs	1 to 5 years	Up to 4 children per FDCH	3 children per FDCH
AR centers and OSHCCs	6 to 12 years	1 classroom; up to 14 children per classroom	6 children per center

AR center = at-risk afterschool center; CACFP = Child and Adult Care Food Program; FDCH = family day care home; OSHCC = outside-school-hours care center.

For each sampled child, we collected two days of dietary intake data—one child care day and one non-child care day.[18] In addition, in a subsample of visited child care centers, Head Start centers, and FDCHs, we collected a third day of dietary intake data (either an additional child care day or an additional non-child care day) for children ages 3 to 5 years to support estimation of usual dietary intakes.[19] We restricted the usual intake subsample to this age group because SNACS-I included all age groups but generated usual intake estimates only for 4- to 8-year-olds. Presumably, this was due to small sample sizes for other age groups. We expected that allocating the usual intake subsample to children ages 3 to 5 years would provide a sufficient number of usual intakes for analysis.

We selected two mutually exclusive subsamples of programs in which the third day of dietary intake data was collected (one subsample for the additional child care day and one subsample for the additional non-child care day). We designated all children in these subsamples for the third day of dietary intake data collection, with the goal of obtaining the third day of dietary intake data for 218 children in each subsample of programs. For the child care days in the usual intake subsample, we conducted an additional day of meal observations for sampled children during the same week and collected a second child care day dietary recall from parents of the sampled children. For the non-child care days in the usual intake subsample, we conducted an additional non-child care day dietary recall from parents of the

[18] We collected dietary intakes for child care days with meal observations of what each child consumed while in care plus a dietary recall interview with a parent to capture what each child consumed for the rest of the day while the child was not in care. Parents reported what each child consumed for the full day for non-child care days.

[19] Estimating usual dietary intakes is needed to assess the proportion of a population that is at, below, or above a recommended level of intake (for example, the percentage of children with adequate intakes of calcium) (National Cancer Institute 2024). See Section A.3 for more information about the procedures used to estimate usual intakes.

sampled children. We used the first child care day for children ages 3 to 5 years for the plate waste analyses.

There were 6,283 sampled children ages 1–12. Of these, eight were ineligible and 3,832 of the remaining 6,275 had parental consent to participate within the programs subsampled for in-person data collection. Note that eligibility was determined based on age-eligibility and dietary restrictions. Age-eligibility was determined with the age calculated using the child date of birth and the first day of the scheduled target week. Of these 3,832 children, 1,548 of their parents completed the Parent Survey.

A.1.7. Selecting teens

To address the RQs under Objective 3c (the teen study), we collected data from teens—defined as children ages 10 to 18 years—and their parents in AR centers and OSHCCs, with the goal of complete data for 720 teen-parent dyads. A complete dyad included a teen who completed the Teen Survey and a parent who completed the Teen Parent Interview. All children ages 10–18 in the study programs subsampled for in-person data collection were included in this study component. Any children ages 10 to 12 years who were sampled for Objective 3b were also included in the teen study (3c). We attempted to obtain consent for all teens and, among the consented teens, attempted to complete surveys with all.

There were 3,631 teens in the study's sample. Of these, 216 were ineligible and 984 of the remaining 3,415 had parental consent to participate within 100 programs subsampled for in-person data collection (68 AR centers and 32 OSHCCs). Note that eligibility was determined based on age-eligibility. Of these 984 teens, 745 completed the Teen Survey, 442 of their parents completed the Parent Survey, therefore a total of 442 teen-parent dyads were completed.

A.1.8. Selecting infants

To address Objective 5, we sampled infants within the subsample of ECC programs selected for onsite child-level data collection. Based on data from the CACFP Sponsor and Provider Characteristics Study (Glantz et al. 2018), the proportion of programs that serve infants varied—an estimated 72 percent of independent centers, 62 percent of sponsored centers, 29 percent of Head Start centers, and 78 percent of FDCHs served infants.[20] Thus, we expected the following number of completed programs in the onsite subsample to have at least one enrolled infant: 34 of the 47 independent center completes, 27 of the 43 sponsored center completes, and 26 of the 90 Head Start center completes (for a total of 87 completed child care center programs with at least one infant), and 94 of the 120 FDCHs.

We included and attempted to obtain consent for all infants in each center and FDCH.

There were 508 infants in the study's sample. Of these, 117 were ineligible, and 249 of the remaining 391 had parental consent to participate within 89 programs subsampled for in-person data collection (49 child care centers, 17 Head Start centers, and 23 FDHCs). Note that eligibility was determined based on age-eligibility. Of these 249 infants, 174 provided usable data on the infant's weight and age and 207 completed the Infant Intake Form.

[20] See Exhibit 2.11 in Volume 2 of the CACFP Sponsor and Provider Characteristics Study. Overall (all types of centers combined), 57 percent of CACFP centers serve infants.

A.1.9. Selecting programs for the cost sample

To address Objective 6, we collected cost data in a subsample of the programs contributing data for Objectives 1 and 2 (the *main subsample* selected for onsite data collection). FDCHs were not included in this study component. Without the FDCHs, we needed to select a *supplementary sample* of center-based programs to achieve desired levels of precision for the meal cost estimates. We selected the supplementary samples at the same time as the main subsample. We selected a supplementary sample designed to yield 144 center-based programs (60 child care centers, 60 Head Start centers, 12 AR centers and 12 OSHCCs). We did this using the same approach used to select programs for the main subsample but restricted the sampling frame to programs not selected into the main subsample. Combined with the sample of 300 center-based programs in the main subsample, we targeted a total sample of 444 center-based programs for the meal cost data collection including150 child care centers, 150 Head Start centers, 72 AR centers, and 72 OSHCCs (see Table A.8). All programs were selected randomly within their stratum.

Table A.8. Target recruited and completed sample sizes, by program subgroup: Objective 6

CACFP program type	Target recruited programs	Target completed programs			Programs per SSU
		Main subsample	Supplementary sample	Total	
Total	550	300	144	444	
Key subgroups					
Child care centers	181	90	60	150	1.9
Independent centers	94	47	30	77	1.0
Sponsored centers	87	43	30	73	0.9
Head Start centers	181	90	60	150	1.9
AR centers	99	60	12	72	0.9
OSHCCs	89	60	12	72	0.9
Other subgroups					
Urbanicity of child care centers and Head Start centers					
Rural	91	45	30	75	0.9
Urban	272	135	90	225	2.8
Sponsorship of sponsored centers					
Sponsored, affiliated	54	26	19	45	0.6
Sponsored, unaffiliated	33	16	11	27	0.3
Corporate/chain	37	18	13	31	0.4
Other sponsored	50	24	17	41	0.5
Size of center, for child care centers and Head Start centers					
Small centers	121	60	40	100	1.3
Medium centers	121	60	40	100	1.3
Large centers	121	60	40	100	1.3

Notes: We assumed that all programs in the main subsample that complete the onsite data collection (80 percent response rate) would complete the cost data collection. For programs selected in the supplementary sample, we assumed an 87 percent response rate to the cost data collection. For AR centers, the number also reflects an additional 10 percent ineligibility rate. We selected the sample of programs within each key subgroup to achieve the target number of recruited programs. The

recruited and completed program sample sizes in the "other subgroups" were estimates and subject to variation. Details may not sum to totals because of rounding.

AR center = at-risk afterschool center; CACFP = Child and Adult Care Food Program; OSHCC = outside-school-hours care center; SSU = secondary sampling unit.

A.1.10. Response rates

Tables A.9 and A.10 present State and program study participation and instrument-specific response rates for each study component included in the Topic 1 and Topic 2 analyses. The table presents conditional unweighted and cumulative weighted response rates. The rest of this section defines the elements in the table and describes how we calculated the response rates and how they can be used.

Study participation response rates represent the unit (State or provider) formally agreeing to participate in the study whereas the *instrument-specific response rates* represent the outcomes among providers that agreed to participate. A provider may agree to participate in the study generally but not provide responses to a specific instrument. We calculated Response Rate 4 (RR4) as defined by the American Association for Public Opinion Research (AAPOR 2023). The numerator includes completed and partially completed instruments with enough data to analyze (that is, sufficient partials). The denominator includes completes, sufficient partials, and non-completes (composed of incompletes, refusals, and non-contacts). Ineligible cases are excluded from the calculation. Because some cases could not be confirmed as eligible or ineligible for SNACS-II (for example, recruiters were unable to speak with someone about the study), there are some programs with unknown eligibility status.[21] Some of the cases with unknown eligibility are eligible and should be represented in the denominator of the response rate. We calculated the eligibility rate as the percentage of cases that were eligible among cases that were known to be eligible or ineligible. The eligibility rate is applied to the cases with unknown eligibility and the portion estimated to be eligible was included in the denominator.

In multistage samples, in which a sample is selected by sequentially selecting units in a hierarchical manner (for example, programs selected within sampled States), we compute both conditional and cumulative response rates. A *conditional response rate* represents the response at the current stage of sampling only, among those that participated at the previous stage. For example, we computed the conditional program response rate only among those programs that are located within participating States.

A *cumulative response rate* is the overall response rate including the current and previous stages. The cumulative response rate represents the response rate among all sampled units at the current stage, including those located in nonresponding units in previous stages. It is the product of the conditional response rate at the current stage and the conditional response rates at all previous stages. For example, the cumulative program response rate is the product of the conditional program response rate and the conditional State response rate.

For *unweighted response rates*, we use sample counts in the calculations described above, that is, how many sample units responded among those attempted and eligible. For *weighted response rates*, we apply

[21] Ineligible programs included those that did not participate in CACFP or were not in operation at the time of data collection. They also included programs that were not a child care program or did not serve the relevant age range, were Early Head Start only, or served drop-ins only.

sampling weights to those counts. These sampling weights account for the probability of selection at that stage of sampling but do not incorporate any nonresponse adjustments. The *conditional unweighted response rate* is useful for understanding the success of the data collection efforts at each stage of data collection. The *cumulative weighted response rate* is useful for understanding the overall representativeness of the study respondents.

Table A.9. State and program response status and response rates for Objective 1 components

Sampling unit	Response type	Sampled (including released backups)	Ineligible	Eligibility undeter-mined	Eligible non-respondents	Eligible respondents	Unweighted		Weighted	
							Conditional response rate (%)	Cumulative response rate (%)	Conditional response rate (%)	Cumulative response rate (%)
State	Study participation	26	0	0	1	25	96.2	96.2	98.2	98.2
Provider (all)	Study participation	3,009	570	803	348	1,288	57.7	55.5	48.9	48.0
	Provider Survey	1,288	0	0	215	1,073	83.3	46.2	79.7	38.3
Provider (in-person subsample)	Study participation	1,067	222	343	105	397	53.7	51.6	43.9	43.1
	Environmental Observation Form	397	0	0	8	389	98.0	50.5	99.3	42.8

Table A.10. State and program response status and response rates for Objective 2 components

Sampling unit	Response type	Sampled (including released backups)	Ineligible	Eligibility undeter-mined	Eligible non-respondents	Eligible respondents	Unweighted		Weighted	
							Conditional response rate (%)	Cumulative response rate (%)	Conditional response rate (%)	Cumulative response rate (%)
State	Study participation	26	0	0	1	25	96.2	96.2	98.2	98.2
Provider (all)	Study participation	3,009	570	803	348	1,288	57.7	55.5	48.9	48.0
	Provider Survey	1,288	0	0	215	1,073	83.3	46.2	79.7	38.3
	Menu Survey	1,288	0	0	200	1,088	98.0	50.5	99.3	42.8

Table A.11 presents response status and response rates for each study component included in the Objectives 3a and 4 analyses. The table presents conditional unweighted and cumulative weighted response rates. There are no ineligible cases among the instruments included in the Objective 3a and 4 analysis.

Table A.12 presents State and program response status and response rates for each study component included in the Objective 3b, 3c, and 5 analyses. The table gives conditional and cumulative response rates. A conditional response rate represents the response at the current stage of sampling only, among those that responded at the previous stage. For example, we computed the conditional child response rate only among those children that are enrolled within participating programs.

Table A.11. Child dietary intake and plate waste response status and response rates for Objectives 3a and 4 components

					Unweighted		Weighted	
Sampling unit	Response type	Sampled, eligible, and consented children	Eligible nonrespondents	Eligible respondents	Conditional response rate (%)	Cumulative response rate (%)	Conditional response rate (%)	Cumulative response rate (%)
Child	Meal observation	3,832	725	3,107	81.08	25.55	82.23	20.66
Child	Meal observation and 24-hour dietary recall for child care day	3,832	2,411	1,421	37.08	11.68	36.94	9.28
Child	Non-child care day dietary recall	3,832	2,572	1,260	32.88	10.36	33.51	8.42

Table A.12. Child, teen, and infant response status and response rates for Objectives 3b, 3c, and 5 components

							Unweighted		Weighted	
Sampling unit	Response type	Sampled (including released backups)	Ineligible	Eligibility undermined	Eligible nonrespondents	Eligible respondents	Conditional response rate (%)	Cumulative response rate (%)	Conditional response rate (%)	Cumulative response rate (%)
Children (ages 1–12)	Consent	6,283	8	0	2,443	3,832	61.1	31.5	58.3	25.1
Children (ages 1–12)	Parent Interview	3,832	0	0	2,284	1,548	40.4	12.7	41.0	10.3
Children (ages 1–12)	Height/ Weight	3,832	0	0	767	3,065	80.0	25.2	80.7	20.3
Teens (ages 10–18)	Consent	3,631	216	0	2,431	984	28.8	14.9	28.8	12.4
Teens (ages 10–18)	Teen Survey	984	0	0	239	745	75.7	11.3	75.7	9.4
Teens (ages 10–18)	Teen Parent Survey	984	0	0	542	442	44.9	6.7	44.9	5.6
Infants (age 0)	Consent	508	117	0	142	249	63.7	32.9	63.7	27.5
Infants (age 0)	Infant Intake Form	249	0	0	42	207	83.1	27.3	83.1	22.8

Sampling unit	Response type	Sampled (including released backups)	Ineligible	Eligibility undermined	Eligible nonrespondents	Eligible respondents	Unweighted		Weighted	
							Conditional response rate (%)	Cumulative response rate (%)	Conditional response rate (%)	Cumulative response rate (%)
Infants (age 0)	Infant Weight-for-Age	249	0	0	75	174	69.9	19.1	69.9	19.2

Table A.13 presents State and program response status and response rates for study components included in the Objective 6 analyses. Both unweighted and weighted conditional and cumulative response rates are included. For weighted response rates, we used the conditional sampling weights that account for that stage of sampling, but not for the previous stage(s). These sampling weights do not incorporate any nonresponse adjustments.

Table A.13. State and program response status and response rates for Objective 6 components

Sampling unit	Response type	Sampled (including released backups)	Ineligible	Eligibility undermined	Eligible nonrespondents	Eligible respondents	Unweighted		Weighted	
							Conditional response rate (%)	Cumulative response rate (%)	Conditional response rate (%)	Cumulative response rate (%)
State	Study participation	26	0	0	1	25	96.2	96.2	98.2	98.2
Program	Study participation	986	162	285	65	474	62.5	60.1	57.1	56.1
Program	Sponsor/Center Cost Interview	474	0	0	25	449	94.7	57.0	94.6	53.1
Program	All cost instruments[a]	474	0	0	319	155	32.7	19.7	34	19.1

[a] "All cost instruments" includes the Sponsor/Center Cost Interview, Center Director Cost Interview, Center Foodservice Cost Interview, Self-Administered Cost Questionnaire, Meal & Snack Counts, and the Menu Survey. The final sample of 155 providers includes providers with sufficient data from all six required cost instruments. For sufficient partials, we imputed missing items within instrument. We never imputed entire instruments. The final sample excluded cases with insufficient data for key variables.

A.1.11. Weights

Overview. We computed analysis weights at the program level for each instrument, consistent with proposed analysis plans and completion rates. We designed the weights to bring the weighted distribution of the sample back in line with the population distribution (see Table A.1) and greatly reduce the potential for bias resulting from nonresponse. The various analysis weights comprise base weights that account for selection probabilities and adjustments to those weights for nonresponse.

The base weight for each stage of selection also accounts for the sampling probabilities of prior selection stages and any nonparticipation in those prior stages. We adjusted these cumulative base weights for program nonparticipation and instrument nonresponse. We computed the nonresponse adjustment factors within subsets of programs referred to as "weighting cells." We reviewed all weights for outliers that could have an outsized impact on the analysis results, and we trimmed extreme weights to bring them in line with other weights in the same sampling stratum.

We formed weighting class cells based on variables known for both those programs with known and unknown eligibility, that is, variables available on the sampling frame. The five variables available for forming weighting class cells were CBSA indicator (urban or rural status); type of program (child care center, Head Start center, FDCH, AR center, and OSHCC); ADA categorized into four groups; census division; and sponsorship status indicator (yes or no).

We grouped the programs by CBSA indicator and type of provider and created weighting cells within these weighting groups. An exception was the OSHCCs; too few rural OSHCCs could not support weighting class cell formation. For these providers, we collapsed across CBSA indicator. Therefore, we used nine weighting groups to create weighting cells.

Within weighting group, we used the recursive partitioning SAS package, HPSplit, to create weighting cells. We used the entropy method to model the propensity, or likelihood, that a program would have eligibility known based on the remaining three variables available for prediction: categorized ADA, census division, and sponsorship status indicator.

Program weights. The program base weight was the product of the inverse of the probability of selection at each previous level, including the State, SSU, and the program. Because there was State-level nonresponse, the State sampling weight had to be adjusted to account for the nonresponding State before we included it in the computation of the program base weight. Responding States in the same State sampling stratum were ratio adjusted such that the sum of the State sampling weights of the responding States after the adjustment equaled the sum of the State sampling weights for all States before the adjustment.

For the subsample with onsite data collection with children, we included the inverse of the probability of being selected for the subsample. This resulted in two sets of base weights for the analyses in this document—one each for the provider sample and child subsample.

Each sampled program was assigned an eligibility code (eligible, ineligible, and eligibility unknown). Eligibility was determined based on whether the program received CACFP funding and was currently serving at least one child between the ages of 1 and 12. Drop-in AR centers were ineligible.

We started by adjusting both sets of program base weights to account for programs whose eligibility could not be determined. Among those determined to be eligible, we further adjusted the weights to account for programs we could not recruit or programs we recruited but that never provided any data. We sorted programs into weighting cells. Within weighting cells, in the first adjustment, we ratio adjusted base weights for programs in which eligibility was known to account for programs whose eligibility could not be determined. We gave those latter programs a weighting factor of zero such that the sum of weights within the weighting class cell after the ratio adjustment was equal to the sum of weights before the ratio adjustment. The resulting weight is referred to as the eligibility-adjusted program weight.

We next adjusted both sets of eligibility-adjusted program weights (provider and child subsample) for program participation. We invited eligible programs to participate and assigned them each a participation disposition—respondent or nonrespondent. We then further adjusted the eligibility-adjusted program weights for responding programs to account for nonrespondents within weighting cells, using the same process we used to adjust for eligibility status. The resulting weight is referred to as the program participation weight.

Objective 1 weights. We then further adjusted the final program participation weights for response to the Provider Survey, using the same methods described previously—ratio adjusting program participation weights within weighting cells. This resulted in the final provider weights used in the Objective 1 analyses of the Provider Survey.

We then further adjusted the program participation weights for the child subsample for participation in the EOF, using the same methods described above. The EOF was completed in one randomly selected classroom in each visited program. This resulted in the final provider weights for the child subsample, which we used in the Objective 1 analyses of the EOF.

Objective 2 weights. The final program participation weights were further adjusted for response to the Provider Survey and another weight for the Provider Survey plus the Menu Survey using the same methods described previously—that is, by ratio adjusting the program participation weights within the weighting cells. This resulted in the final provider weights used in the Objective 2 analyses.

We further adjusted the program participation weights for the child subsample for participation in the meal observation using the same methods described above because we have program-level constructs from the meal level observations in Objective 2. We have one weight that requires a completed Menu Survey and as least one completed meal observation conducted on site. We have another weight that further requires a completed provider survey. Weighting class cells were formed using the covariates described previously.

Objective 3b, 3c, and 5 weights. The child-level base weight was the product of nonresponse adjusted program weight and the inverse of the probability of selection of the sampled children. Because all infants and teens within the study programs subsampled for in-person data collection were included in the study, they do not have a sampling weight separate from their program's weight. We simply applied the cumulative program sampling weight to all infants and teens in these programs and then excluded any coded as ineligible to get the infant or teen base weight, respectively.

For children ages 1–12, we first calculated a classroom-level weight equal to the number of classrooms within the program because we sampled one classroom per program. We then calculated a child-level weight equal to the total number of children believed to be eligible before sampling, divided by the number released for data collection. We calculated the product of the cumulative program sampling weight, the classroom weight, and the child sampling weight to get the child base weight. We then excluded any children found to be ineligible after attempting data collection to get the child base weight.

We determined eligibility based on the child's age relative to the typical ages served by the provider type and the study's age range guidelines, dietary restrictions, and actual enrollment in the program. For example, in ECCs only children ages 0–5 were eligible to participate.

For those determined eligible, we adjusted the base weights to account for sampled children for whom parental consent was not obtained. We sorted sampled and eligible children into weighting cells. Within weighting cells, we ratio adjusted base weights for sampled eligible children with parental consent to account for sampled eligible children without parental consent. We gave those latter children a weighting factor of zero so that the sum of weights within the weighting class cell after the ratio adjustment was equal to the sum of weights before the ratio adjustment, even though only the sampled eligible children would be contributing positively to the sum of weights. We refer to the resulting weight as the child, teen, or infant consent weight.

Once a sampled child's parent had consented to the study, we attempted to collect data on the child using various data collection instruments, depending on the child's age group. A separate weight was created for each instrument, starting with the associated consent weight. For the child (ages 1–12) sample, the parents of the consented children were asked to complete a survey, and we collected the height and weight of the child. For the teen sample, the teens and the parents were each asked to complete a survey. We created an additional weight for the teen and parent dyad so the Teen Survey and Parent Survey would be analyzed jointly. In other words, the analysis would only include teen and parent dyads if each completed the survey administered to them. For the infant sample, we asked the parents of the consented infants to provide the infant's weight and age at the time of measurement, and we also collected an Infant Intake Form for them. To create the weight for each of these instruments, we adjusted the child-level consent weight to account for instrument nonresponse. We assigned each sampled child a participation disposition—respondent or nonrespondent. We then further adjusted the eligibility-adjusted child-level weights for responding children to account for nonrespondents within weighting cells, using the same process we used for the consent weights.

We created one additional weight for the infant menu instrument. For Objective 5, we collected this provider-level instrument for all child care centers, Head Start centers, and FDCH programs providing meals to infants, even if these programs were not subsampled for in-person data collection. If we knew they did not provide meals to infants (572 from the Provider Survey), we did not send them an Infant Menu Survey. All other providers were sent the Infant Menu Survey. Among these, 40 replied that they did not provide meals to infants and 215 completed the Infant Menu Survey. For the remaining 105 programs that did not respond to the Infant Menu Survey, we did not know for sure whether they were eligible for this survey. We first constructed a weight that accounted for whether survey eligibility was determined (whether eligible or ineligible) or undetermined (no response), assuming some of the undetermined

programs were eligible and some ineligible for the Infant Menu Survey. The weight was created to account for survey completion using a process similar to that used for the consent weight and child weights. We then dropped all but the completed surveys from this weight.

Objective 3a and 4 weights. We computed analysis weights for each instrument and some instrument combinations, consistent with proposed analysis plans and completion rates. We designed the weights to bring the weighted distribution of the sample back in line with the population distribution and greatly reduce the potential for bias resulting from nonresponse, defined as nonconsent or nonresponse among those who consented.

The base weight for each stage of selection—the cumulative base weight—also accounts for the sampling probabilities of prior selection stages and any nonparticipation in those prior stages. Because all eligible and consented children are included in the dietary recall and plate waste samples, the child consent weights serve as the base weight for each instrument. Each weight builds upon a previous weight that accounted for a different type of nonresponse. We assigned a response status code (responding or nonresponding) to each child based on the presence of data for each instrument.

We adjusted these cumulative base weights for instrument nonresponse. We ran independent models for each program type (child care center, Head Start center, FDCH, AR center, or OSHCC), separately for urban CBSAs and non-CBSA (rural) counties (except for OSHCC, which combined CBSA and non-CBSA because there were fewer than five non-CBSA providers). We computed the nonresponse adjustment factors within subsets of sampled children referred to as "weighting class cells." We formed these cells based on program- and child-level variables known for both participating and nonparticipating children, that is, variables available on the sampling frame. The variables available for forming weighting class cells were program-level variables—program average daily attendance categorized into four groups, census division; and sponsorship status indicator (yes or no)—and the age of the child (categorized). If there were fewer than 10 respondents in a weighting class cell, we collapsed with an adjacent (similar) cell for weighting.

We first grouped the children by CBSA indicator (urban or rural status) and type of program (child care center, Head Start center, FDCH, AR center, or OSHCC) and created weighting cells within these weighting groups. Within each weighting cell a child's cumulative base weight was multiplied by an adjustment factor

For children who are respondents, the adjustment factor would be equal to the total number of children in the cell divided by the total number of respondents in that cell. For children who are nonrespondents, the adjustment factor would be zero.

We created the following nine weights for the analysis of the dietary recall and plate waste instruments; the first seven are for Objective 3a, and the last two are for Objective 4. For weights that represent a combination of instruments, such as weight 1 (meal observation and 24-hour dietary recall for child care day), a child must have data (complete or sufficient partial) for all the included instruments to be considered responding.

A. Meal observation and 24-hour dietary recall for child care day

B. Meal observation and CACFP dietary recall for child care day[22]

C. 24-hour dietary recall for a non-child care day

D. Meal observation and 24-hour dietary recall for one or more child care days for ages 3–5 (for usual intake analysis—includes second child care day recalls)

E. 24-hour dietary recall for one or more non-child care days for ages 3–5 (for usual intake analysis—includes second non-child care day recalls)

F. Parent Interview, meal observation, and 24-hour dietary recall for child care day

G. Parent Interview, Provider Survey, meal observation, and CACFP dietary recall for child care day

H. Child-level meal observation

I. Parent Interview, meal observation, classroom-level environmental observation, and Provider Survey

Objective 6 weights. Consistent with proposed analysis plans and completion rates, we computed analysis weights for the completed Sponsor/Center Cost Interview (SCCI), for all cost instruments completed, and for all cost instruments plus the Provider Survey completed. We designed the weights to bring the weighted distribution of the sample back in line with the population distribution and greatly reduce the potential for bias resulting from nonresponse. The various analysis weights comprise base weights that account for selection probabilities and adjustments to those weights for nonresponse.

The base weight for each stage of selection also accounted for the sampling probabilities of prior selection stages and any nonparticipation in those stages. We adjusted these cumulative base weights for program nonparticipation and instrument nonresponse. We computed the nonresponse adjustment factors within subsets of programs referred to as weighting cells.

For Objective 6, we excluded the FDCHs from the base weight, leaving us with the remaining main subsample component and associated base weight. For Objective 6, we also constructed a base weight that accounts for the supplementary sample selection and the study participation of those programs. Using the base weights for the 474 programs sampled for the cost study and agreeing to participate, we then adjusted the base weight for instrument completion. For the cost study, "completion" means that the instruments were completed with sufficient and plausible data.

We created three weights for Objective 6 analyses:

1. SCCI completed (SPON_CENT_COST_WT)

2. All the following instruments completed (COST_WT):

   a. SCCI

   b. Center Director Cost Interview (CDCI)

   c. Center Food Service Cost Interview (CFSCI)

   d. If applicable, CFSCI for a production kitchen that provided meals or snacks to a sampled center

[22] Eighty-five children in the 6- to-12-year-old sample did not report for the full 24 hours (missing either breakfast for lunch) and so do not qualify for the full 24-hour recall weight for child care days but are included in this weight.

e. Self-Administered Cost Questionnaire (SACQ)

f. Meal and Snack Counts Form

g. If applicable, Meal and Snack Counts Form for a production kitchen that provided meals or snacks to a sampled center

h. Menu Survey

3. Completed all instruments listed in (2) and the Provider Survey (COST_PROV_WT)

The base weight for each of these instrument weights was the provider cost weight. All participating providers were eligible for the three cost weights. A response status code (responding or nonresponding) was assigned to each provider based on the presence of data for each instrument. For weights that represent a combination of instruments, such as COST_WT, a provider must have data for all the included instruments to be considered responding.

We adjusted the provider cost weight for instrument participation. We sorted providers into weighting cells. Within weighting cells, we ratio adjusted base weights for responding providers to account for nonresponding providers. We gave those latter providers a weighting factor of zero so that the sum of weights within the weighting class cell after the ratio adjustment was equal to the sum of weights before the ratio adjustment. The resulting weight is referred to as the nonresponse adjusted instrument weight.

Variance estimation. The data files include stratum and unit codes to permit calculation of standard errors using the sample weights with Taylor series approximations. For most of the sampled States, the variance strata are the same as the sampling strata, and the variance units (primary sampling units) are the selected States. For the six States large enough to be selected with certainty,[23] the variance strata are the States, and the variance units (PSUs) are the SSUs (counties or groups of counties). We reviewed variance strata for each instrument weight to confirm that there were at least two PSUs within each variance stratum. We combined deficient variance strata with fewer than two PSUs with other variance strata.

A.2. Recruitment and data collection procedures

A.2.1. Overview

We completed several activities to lay the groundwork for data collection: recruitment and study coordination, obtaining institutional review board (IRB) approval, and training data collectors. We began recruiting sponsors in July 2022 and continued through September 2022, making some additional sponsor calls during provider recruitment. We began recruiting providers in September 2022 and continued through May 2023. After providers agreed to participate, we proceeded with study coordination on a rolling basis from October 2022 through June 2023. We trained field staff and telephone interviewers in January 2023, and began data collection that month. Data collection continued through July 2023. The following sections describe obtaining IRB approval, recruitment activities, and the instruments and data collection procedures for each objective.

[23] Certainty States are defined as the set of States that should be included with certainty based on their MOS. These States are included with certainty because their MOS is so large that they would be included in any random sample selected.

A.2.2. IRB and local research approvals

An independent IRB, Health Media Lab, reviewed and approved all study materials and procedures before we contacted sample members. We applied for expedited review and received approval in November 2020.

During recruitment, we identified 26 sponsors (primarily public school districts) that required additional approval before they participated in a study. Some of these organizations required a completed and approved research application before we could recruit their providers. In other cases, we could start provider recruitment (but not data collection) while the research applications were still being drafted or pending approval.

Whenever feasible, the study team worked with the sponsor and the institution granting research approval to submit complete and timely applications. Eighteen of the 20 applications submitted were eventually approved. Six organizations were unable to approve a research application within the time frame required by the study. Therefore, we could not recruit those sponsors or their providers.

A.2.3. Recruitment procedures

Recruiting sponsors and providers. Table A.14 summarizes the recruitment steps for sponsors and providers. We released the provider sample in three batches with a goal of recruiting a sample of 1,704 providers across the five program types. If we learned during recruitment that providers were operating a different program type than expected (for example, a child care center was listed as a Head Start center), we reassigned them to the correct program type for the purposes of data collection. This is because study procedures varied by program type. We did not, however, reassign the sample group during the weighting process, even if the provider type changed. Of the 3,009 providers we released for recruitment, we successfully recruited 1,650; 1,288 completed at least some data collection activities; 570 were ineligible; 348 declined to participate; and 803 did not participate at all (thus, we do not know whether or not they were eligible for the study). The following sections describe procedures for obtaining approvals to conduct the research, and detail steps in the recruiting process.

Table A.14. Recruitment steps for sponsors and providers

Respondent	Steps
Sponsors	Recruiters sent recruitment packages and followed up as needed Recruiters emailed confirmation of study enrollment and participation details Sponsors encouraged providers to participate
Providers	Recruiters sent recruitment packages, screened for eligibility, and followed up as needed Recruiters emailed confirmation of study enrollment and participation details Providers completed study coordination to schedule and plan for data collection activities

We trained the recruiting team on sponsor recruitment in June 2022 and on provider recruitment in August 2022. We held repeat trainings throughout the following months as a refresher for recruiters who had started already and as part of onboarding new recruiters.

We began outreach to sponsors with an email that included background information on the study, an endorsement letter from FNS, and the list of their providers that were chosen to participate. Recruiters

followed up by phone about a week after sending the recruitment email. If we could not reach sponsors after several phone and email attempts, we sent them a final courtesy email to inform them we would reach out to their providers to recruit them for the study.

When recruiters reached sponsors, they described the purpose of the study and the different research activities, informed the sponsor which of their providers were in the sample, confirmed provider contact information, and secured their endorsement of the study.

The study team sent customized emails to sampled providers that included background information on the study and the research activities they were being invited to complete. Recruiters followed up by phone within two weeks of sending the email. For emails that bounced back, we sent a hard-copy letter to the mailing address and waited several business days before contacting providers to allow time for the materials to arrive.

Recruiters used a call script that included a brief description of the overall study and data collection activities, a discussion of the provider's eligibility for the study, and confirmation of their enrollment numbers. Recruiters also answered providers' questions about the study and confirmed contact information for the person who was to receive the Provider Survey invitation. After providers agreed to participate, recruiters shared additional information about the logistics of participation, confirmed the provider's point of contact for the study, and scheduled the data collection activities.

We used several strategies with providers that were difficult to reach. For sponsored providers, we asked sponsors to confirm providers' contact information and encourage their providers to respond to our outreach. In cases where we still had difficulty reaching providers, we searched for additional contact information online. We occasionally assigned a different recruiter to providers if the first recruiter was not successful.

Recruiting parents. We began parent recruitment after recruiting the provider. The recruiting steps were as follows:

The study coordinator (a member of the project team) worked with the center director to identify an onsite point-of-contact (POC), and then spoke with the onsite POC to outline study procedures and establish rapport.

The study coordinator requested a roster of all children to be used for sample selection. The requested information included child names, dates of birth, sex, days of week in child care, assigned classrooms, and parents' contact information. We applied a sampling algorithm to select the classroom and children to include in the study and used the roster information for sampled children to develop customized study invitation packages for each parent. sampling algorithm to select the classroom and children to include in the study. Roster information for sampled children was used to develop customized study invitation packages for each parent. If a provider was unwilling to share the full roster before we selected the sample, we first selected a classroom and then obtained the roster of children in the classroom.

We then mailed the assembled study invitation packages to the onsite POC, who distributed the packages to the sampled parents. The invitation packages and onsite POCs directed parents to the study's website and email address and the project's telephone number for more information. Each package included

study information, a consent form, and a $2 cash incentive. Parents provided written informed consent by returning the consent form to the onsite POC or by submitting it electronically on the study's website.

A.2.4. Objective 1 instrument design, data collection, and processing

Provider Survey. The web-based, self-administered Provider Survey covered six main topics: menu planning practices, meal purchasing practices, food services practices, wellness policies and practices, infant feeding and physical activity practices, and general provider characteristics (Appendices I.1 and I.2). (The questions about infants addressed Objective 5 RQs). It was available in English and Spanish. We updated the SNACS-I Provider Survey by adding or deleting questions to align with SNACS-II RQs and, in some cases, adjusted or enhanced the wording for questions and response options. We conducted cognitive interviews with child care providers to pretest the instrument.[24] We tested the programmed survey to ensure the wording for questions and response options, the skip logic, and validation checks matched the specifications. FNS reviewed and provided feedback for the web survey before we fielded it.

We sent personalized email invitations to the points of contact identified for each recruited program (usually the program director or FDCH owner) and encouraged the contacts to have their most knowledgeable colleagues share responsibility for each topic as appropriate. Respondents could access the survey with a unique URL and, after answering some preliminary questions about their program, they could complete the remaining topic-based modules in any order. We followed up with nonrespondents by email and phone to answer any questions and encourage participation. Nonrespondents may have received up to four email reminders and three phone calls.

The Provider Survey contained built-in verification and quality control features such as hard checks to prevent skips for key survey items, soft checks to prompt respondents to correct invalid responses (such as checking for an @ symbol in email addresses), and data validation checks. We categorized surveys as complete if they contained a response to all applicable survey items, and partially complete if they contained a response to all applicable items in Sections 1 and 2 of the survey, and at least one question in Section 3. All other partially completed surveys were excluded from analyses. We treated survey items as missing if they should have been answered based on the skip logic but were not.

We manually reviewed all "other-specify" and free-text responses. For cases where the write-in response matched an existing response option, we recategorized the response to the existing option. We implemented data cleaning procedures in Stata.

Environmental Observation Form. We adapted two versions of the Environmental Policy Assessment and Observation (EPAO) tool into the EOF for SNACS-II (Appendix I.3): the EPAO-2019 (Benjamin et al. 2007) and the EPAO-FCCH[25] (Vaughn et al. 2017). We drew from both versions to ensure study findings could be compared across all program types included in the study.

We trained field staff to complete the EOF. The 2.5-day in-person training included a review of the hard-copy form and the various activities, space, and equipment that field staff would record. We presented

[24] Pretest procedures and findings are included in the SNACS-II Information Collection Request submitted to the Office of Management and Budget (see https://www.reginfo.gov/public/do/PRAViewDocument?ref_nbr=202105-0584-001).

[25] FCCH – family child care home.

video clips that could be used to practice completing the form. For certification, trainees reviewed four video clips and pictures for coding equipment items and scored them using the EOF. We compared trainees' scores to the lead trainer's. Thirty-three trainees passed certification and conducted observations.

During their visits to child care providers, field staff recorded activities that children in the sampled classrooms engaged in throughout the day while in care, including outdoor and indoor play and physical activity time, seated time, screen time, and nap time (excluding eating occasions), as well as staff interactions with the children. During nap times, field staff assessed and documented key aspects of the physical activity environment, such as the attributes of indoor and outdoor play spaces and available physical activity equipment on the day of observation. They shipped completed EOFs back to Mathematica's Survey Operations Center (SOC), where staff receipted the forms, entered the data, and archived the hard copies.

We included all the EOFs in the analysis (that is, no partial complete rule was needed) and entered and cleaned the data extensively. First, we scanned the EOFs and transcribed the data into raw files. We checked to ensure there were no duplicated scanned forms or missing transcriptions by comparing data records against the receipted hard copies, using each provider's unique identifier. The study team then conducted thorough manual and rule-based data edits to confirm handwritten marks were captured correctly. We used Stata to conduct in-depth data-cleaning to enforce skip logic and edit implausible or out-of-range responses. Finally, we manually reviewed all "other-specify" responses and, whenever possible, back-coded them into existing response categories.

A.2.5. Objective 2 instrument design, data collection, and processing

The Menu Survey collected information about all foods and beverages served to children in CACFP meals and snacks during a one-week period referred to as the target week (Appendices I.3 and I.4). It included instructions for completing the forms in the Menu Survey and a food description guide that described the desired level of detail to provide about each food (Appendices I.5 and I.6). (Portion sizes or amounts of foods served to children were not collected as part of the Menu Survey; see Section A.2.9 for information about collecting the amounts served to children in the meal observations.) When a food was prepared by combining two or more ingredients, respondents were asked to complete a "foods you prepared" form, which included detail on the ingredients or provide a copy of their printed recipe. Respondents were also asked to indicate the age groups (1 to 2, 3 to 5, 6 to 12, or 13 to 18 years) of children to whom each food was served.

The Menu Survey was a hard-copy, self-administered instrument available in both English and Spanish. There were two versions of the instrument: one for meals served through CACFP to children ages 1 to 18 years and a second version for infants (younger than age 1). Both instruments were nearly identical to the SNACS-I versions, with the only changes being to streamline the instructions and headers.

We trained 18 technical assistants (TAs) to assist providers with the Menu Survey. The virtual training lasted 10 hours over three days, concluding with certification. All 18 TAs passed certification.

The Menu Survey mailing and subsequent outreach was directed to the person identified as the Menu Survey respondent by the provider during recruiting. Each provider was assigned a target week for which they would complete the Menu Survey. We mailed the Menu Survey to the provider two weeks prior to

their target week. The Tuesday before the start of the target week, TAs called providers to confirm they had received their materials and went over expectations. The Friday before the target week, TAs reached out again either by phone or email to remind them about starting the Menu Survey, answer any questions, and to let those selected for in-person visits know what to expect. TAs reached out three times during the target week (Monday, Wednesday, and Friday) to check in, answer any questions and see if providers needed help. TAs also responded to any call-ins to the toll-free number throughout the target week. Field staff also called TAs if respondents they met in person had any questions about the Menu Survey. In the week after the target week, TAs emailed or called providers on Tuesday to see if they completed the Menu Survey and had sent it back. TAs called a second time on Friday as an extra check-in on returning the survey. We continued following up with nonrespondents every other week through the end of the field period. Menu survey respondents received a $50 incentive for completing the Menu Survey.

When TAs received a returned Menu Survey, they reviewed the instrument for completeness. They reached back out to respondents who had incomplete surveys (missing days) or other issues. At the start of data processing, nutrition coders reviewed the completed menu surveys and made follow-up calls to gather specific information about foods provided and listed on the Menu Survey. The follow-up calls from nutrition coders continued beyond the end of data collection, into September 2023.

A team of research associates (RAs) and supervisors were responsible for processing the Menu Survey data. RAs either had a bachelor's degree in nutrition, dietetics, or a related field or had prior experience with food service or nutrition studies. Supervisors had advanced nutrition degrees and previous research experience.

The procedures for nutrient coding of Menu Survey data involved several stages. First, after data retrieval, the RAs made final edits to the surveys and prepared them for data entry. After a Menu Survey was reviewed, edited, and finalized, the RAs followed standardized procedures to enter data into Survey Net. Survey Net (Version 4.2) is linked to the Food and Nutrient Database for Dietary Studies (FNDDS; Version 2019–2020) and provides food codes, descriptions, gram weights, and nutrient values for each food. The RAs entered data into Survey Net for all foods reported on the breakfast, morning snack, lunch, afternoon snack, and supper menus. The portion size for all menu items was entered using a placeholder amount of 100 grams. Each item reported on the menu was matched to the closest food in the database, taking into account reported characteristics of the food, such as the form (for example, fresh, canned, or frozen); the preparation method (for example, oven baked or deep-fried); and characteristics that affect nutrient content (for example, low fat or nonfat, low sodium, or rich in whole grains). When information needed to code a food in Survey Net was not available in the Menu Survey, the study team established study-specific defaults based on SNACS-I. In addition, as in SNACS-I, recipe modification targeted changes to ingredients most likely to affect the total fat, saturated fat, sodium, and whole grain content of the food.

We then performed additional data cleaning and preparation steps to create final raw data files for the Menu Survey. To obtain data on the food group content of menu items (for example, cup equivalents of fruit and ounce equivalents of whole grains), the study team linked foods to the Food Patterns Equivalents Database (FPED) (Version 2017–2020). Food group data for modified recipes are not provided in FPED. Thus, we made some adjustments to FPED values for modified recipes to reflect the substitutions made

for specific ingredients—including, adjustments for whole grains and the type of protein (meat, poultry, soy, and nuts). The study team classified all foods in the Menu Survey data to a major food group and set of minor food groups. The major and minor food groups were based on those used in SNACS-I and were updated to reflect new foods reported in the data (see Table A.45 at the end of this appendix).

A.2.6. Objective 3b instrument design, data collection, and data processing

Parent Interview. The purpose of the Parent Interview was to understand sociodemographic characteristics of children and their families, children's activity levels and screen time, household and child food security status, participation in nutrition assistance and other support programs, time children spent in child care per day and per week, and frequency and reasons for sending food from home to child care (Appendices J.1 through J.4). It was administered using a computer-assisted telephone interview instrument. The Parent Interview included five sections and a total of 10 questions: (1) foods and beverages in child care, (2) child's physical activity, (3) household members, (4) food security, and (5) child demographics and household program participation. The instrument was similar to the SNACS-I version; the only changes were adapting it to the updated SNACS-II RQs. One of the main changes was that we included the full, 18-item U.S. Household Food Security Module (Economic Research Service 2012) to assess the food security status of households and children, rather than including two questions about food security. We conducted cognitive interviews with parents to pretest the instrument.[26]

We conducted three virtual telephone interviewer trainings: one large training held in January 2023 and two additional, smaller trainings held in February and March 2023. Each of the trainings lasted approximately 20 hours over four days, concluding with certification. Forty trainees passed the certification, which involved a one-on-one mock-interview with a trainer.

Interviewers conducted the 20-minute interview in English or Spanish the day after the child was observed and immediately after completing the ASA24 dietary recall interview. If they were unable to conduct the Parent Interview right away, they attempted to complete it during any subsequent dietary recall interviews or data retrieval calls.

Child height and weight measurement. To assess children's body mass index (BMI) and weight status, field staff measured sampled children during the onsite visits (Appendix J.5). They took measurements using the protocols and forms used in SNACS-I, which are based on techniques used in the National Health and Nutrition Examination Survey (Fryar et al. 2012).

The two-hour, in-person training addressed taking the measurements and recording them on the hard-copy Height and Weight Form. For certification, 35 trainees weighed and measured trainers (for standing height and weight) and held a weighted backpack to measure standing and holding weight. We compared trainees' scores to the lead trainer's score to determine a passing score. Thirty-three trainees passed certification.

Field staff measured height and weight using two protocols based on child age and ability to stand. The standing and holding method was used with children ages 12 to 23 months and any child who could not

[26] See https://www.reginfo.gov/public/do/PRAViewDocument?ref_nbr=202105-0584-001 for information about pretest procedures and findings for the Parent Interview.

stand without assistance. Field staff weighed these children with help from the onsite POC, teacher, or other staff member the child was familiar with. The adult was weighed first, the scale was zeroed out, and the child was weighed in the arms of the adult. Field staff obtained two weight measurements and took a third measurement if the difference between the two measurements exceeded 0.1 kilogram (kg). Field staff also noted any concerns with the measurement. We did not measure length for these children.

For sampled children age 2 years and older who could stand without assistance, field staff measured each child's height and weight twice and took a third measurement if the difference between the two measurements exceeded 0.1 kg (for weight) or 0.5 centimeters (for height). Field staff also noted any concerns with the measurements, such as whether a child was wearing heavy clothing or shoes or had a hairstyle that interfered with the height measurements.

To ensure the height and weight measurements went smoothly, we sent the mailing and reminder email or telephone message to parents who had consented to participate. The reminders summarized the activities that were going to take place, including the height and weight measurement. They also included tips about preparing the child for the measurements, such as avoiding heavy clothing and footwear if possible. Only children whose parents had consented were approached, and children could refuse to be measured.

On the same day that the field staff completed the height and weight measurements, they entered the data from the hard-copy Height and Weight Form into an electronic system. Quality control (QC) managers reviewed the measurements shortly after data entry to ensure field staff measured all children who were observed for meals and snacks (see Objective 3a, above), completed all necessary measurements, and filled out the correct section of the hard-copy form. If any issues arose, the QC managers immediately followed up with the field staff to let them know what was needed. After each visit, field staff shipped the completed Height and Weight Forms back to Mathematica's SOC, where staff receipted the forms and reviewed them for completeness. The forms were then scanned and reviewed, and the data were archived.

A.2.7. Objective 3c instrument design, data collection, and processing

Teen Survey. The purpose of the Teen Survey was to learn about youth ages 10 to 18 years—their attendance at the BAS, types of physical and sedentary activities they participated in, and experiences with food at home (Appendices J.6 and J.7). The Teen Survey was a 10-minute, hard-copy self-administered booklet developed for SNACS-II to answer research questions about youth that were not asked in SNACS-I. It was designed with both English and Spanish versions in the booklet, thereby letting youth pick the language they preferred. Food security questions on the Teen Survey came from the Self-Administered Food Security Survey Module for Children Ages 12 Years and Older (Connell et al 2004). We conducted cognitive interviews with youth to pretest the instrument.[27]

Field staff administered the Teen Survey during their visits to providers. The field staff confirmed consent status and then distributed the surveys to youth whose parents or guardians signed a consent form granting permission. The staff read an assent statement aloud so that youth could decide whether to

[27] See https://www.reginfo.gov/public/do/PRAViewDocument?ref_nbr=202105-0584-001 for information about pretest procedures and findings for the Teen Survey.

participate. Youth returned their completed surveys to field staff and were given a string backpack as a thank-you gift. Field staff attempted a second day of administration if they received additional consents or consented youth were absent on the first visit day but present on the second. Field staff shipped the completed surveys to Mathematica's SOC for receipting, QC review, and data entry.

Teen Parent Interview. We asked parents of youth ages 10 to 18 years to complete a 10-minute web or telephone survey about their child's food situation at home and characteristics of the household, including household composition, household and child demographics, food security, and participation in food and other assistance programs (Appendices J.8 and J.9). The Teen Parent Interview was a subset of the questions in the Parent Interview described above and was administered to parents sampled only for Objective 3c. Parents who were sampled for Objectives 3a and 3b whose children were age 10 to 12 years and attended BASs completed the full Parent Interview; their responses were used to answer Objective 3c RQs in addition to RQs for Objectives 3a and 3b. The same telephone interviewers administered both versions of the interview.

Parents were first given the option of completing the data collection on the web if they completed the consent form online. They were taken from the consent form directly into the interview. For parents who completed hard-copy consent forms, telephone interviewers attempted to complete the Teen Parent Interview by phone after it was confirmed that their child had completed the Teen Survey during the data collection visit. We did not attempt to contact parents after their youth did not complete a Teen Survey during a data collection visit. Parents received a $10 gift card for completing the Teen Parent Interview.

A.2.8. Objective 5 instrument design, data collection, and processing

Infant Menu Survey. The Infant Menu Survey was a hard-copy self-administered instrument available in both English and Spanish (Appendices K.1 and K.2). Providers completed the instrument for CACFP meals served to infants (those under 12 months old). The instrument was nearly identical to the SNACS-I version; the only change was to streamline the instructions.

We trained the Menu Survey TAs to also assist providers with the Infant Menu Survey. The data collection and processing procedures were the same for the two menu surveys. See Section A.2.5 for details.

Infant Intake Form. Teachers or caregivers of sampled infants completed the Infant Intake Form when field staff were onsite during the target week (Appendices K.3 and K.4). The form, which was available in English and Spanish, asked respondents to record the types of foods and beverages consumed at each feeding while infants were in care, including the start time of each feeding; a description of the food or beverage; and the source (from home, from provider, mother nursed on site). We made targeted changes to the SNACS-I Infant Intake Form to better align it with SNACS-II RQs, improve data quality, and reduce respondent burden. We also obtained feedback from infant care providers about the administration procedures and incentive during the pretest.[28]

We trained 40 field staff on how providers should fill out the Infant Intake Form, and how the field staff should navigate anticipated challenges. Field staff handed out Infant Intake Forms to respondents, trained

[28] See https://www.reginfo.gov/public/do/PRAViewDocument?ref_nbr=202105-0584-001 for information about pretest procedures and findings for the Infant Intake Form.

respondents on how to complete the form, checked in throughout the day to check progress and answer questions, and collected completed forms. Respondents received books for young children as an incentive for completing the Infant Intake Form. Field interviewers shipped completed forms to Mathematica's SOC, where staff receipted the forms and sent them to Mathematica's Cambridge office, where nutrition coders reviewed and edited them. If the interviewer was unable to collect all forms before the end of the visit, they provided respondents with prepaid shipping envelopes to ship completed forms to Mathematica.

We categorized Infant Intake Forms as complete and included them in the analysis if they contained at least one recorded food or beverage item with a description that included sufficient detail to assign a major and minor food group. After nutrition coders finished their review and edit, we scanned the forms and transcribed the data into raw files. We checked to ensure there were no duplicated scanned forms or missing transcriptions by comparing data records against the receipted hard copies, using each provider's unique identifier. The study team then conducted thorough manual and rule-based data edits to confirm handwritten marks were captured correctly. When possible, we used the provider's Infant Menu Survey to impute missing data such as the source of the food or beverage item. We used Stata to conduct in-depth data cleaning to ensure data quality and edit implausible or out-of-range responses.

Infant weight-for-age. We collected data on infants' date of birth, sex, weight at the time of their last medical visit, and the date of the last medical visit on the consent form for parents of infants. The consent forms were available in English and Spanish, and on the web and hard copy. The web form had built-in verification and quality control features such as hard checks to prevent missing, out-of-range, or implausible data. If field staff collected any hard copy consents onsite, they shipped them to Mathematica's SOC, where staff receipted the forms, entered the data, and archived the forms.

We included infants in the weight-for-age analysis if they had complete data (that is, non-missing sex, date of birth, date of last medical visit, and weight at last medical visit). For hard-copy consents, we first scanned and transcribed the data into raw files. We checked to ensure there were no duplicated scanned forms or missing transcriptions by comparing data records against the receipted hard copies using each provider's unique identifier. The study team then conducted thorough manual and rule-based data edits to confirm handwritten marks were captured correctly. We used Stata to conduct in-depth data cleaning to ensure data quality and edit implausible or out-of-range responses.

A.2.9. Objectives 3a and 4 instrument design, data collection, and processing

Meal observations. Field staff used the hard-copy Meal Observation Booklet (MOB) to record, for each sampled child, visual estimates of amounts served, any additions or deletions (such as spillage or trading) during meal time, and amounts remaining at the end of meal service (Appendix J.10). On each MOB, they also recorded general information about the meal or snack being observed, including the specific meal or snack; start and end times; and the type of meal service (for example, family style or pre-portioned) used. The MOB also collected information about whether staff at the table ate and drank the same foods and beverages as the children. The SNACS-II final study plan (Fox et al. 2021) provides more information about

the contents of the booklet. We obtained feedback from child care providers about the procedures for obtaining reference portions and observing children during the pretest.[29]

We trained field staff to complete the meal observations. The 2.5-day in-person training addressed how to gather reference portions, weigh and measure foods, estimate portion sizes, record amounts children take and eat, and record classroom-level plate waste. Trainees had hands-on practice covering all aspects of meal observations for all meal and snack types. To be certified to collect data, trainees completed a full meal observation including weighing meal components and estimating amounts taken and remaining for various "meals" constructed. One station was specifically designed for certifying on classroom-level waste. (Classroom-level waste is discussed below for Objective 6.) We compared trainees' scores to those of the lead trainers. Sixty-three passed certification and conducted meal observations.

Field staff visited sites during the target weeks when provider staff were also completing the Menu Survey. During the visit, one or two field staff visited a provider for up to three days depending on whether the provider was an FDCH (one data collector for one day) or selected for a child care day usual intake observation (one data collector for two days for an FDCH and two data collectors for three days for other provider types). Each field staff recorded each eating occasion for sampled children throughout the observation day. Field staff observed the amounts consumed and wasted to the nearest ounce for liquids and nearest quarter-serving for solid foods. After each eating occasion, one of the field staff measured the classroom-level waste. They also indicated foods that were returned to inventory for serving at another eating occasion.

Field staff shipped completed MOBs back to Mathematica. Trained nutrition coders reviewed each MOB by comparing it to the corresponding provider's Menu Survey and checking for consistency and completeness across forms. The coders then prepared the meal observation and classroom waste forms for data entry and archived the hard copies.

All of the data collected on MOBs were transcribed into a data entry system. Next, coders linked observed foods from the MOB to corresponding foods reported in the Menu Survey to obtain nutrient and food group values. The portion sizes reported in the meal observations were used to impute average portion sizes of foods served in the full sample of providers that completed the Menu Survey.

In imputing average portion sizes for the analysis of the Menu Survey data, we based our approach on the one used in SNACS-I. We used the portion size food groups developed for SNACS-I as a starting point and adjusted, as needed, to reflect the foods reported in SNACS-II. For each portion size food group, we used the meal observation data on the reference portion size to estimate average portion sizes separately for each CACFP meal pattern age group (1 to 2 years, 3 to 5 years, and 6 to 12 years) and meal (breakfast, lunch/supper, and snacks). The meal observation portion sizes used to estimate portion sizes for the Menu Survey data reflected the median portion size (gram weight) of all foods observed within each portion size food group, by the CACFP meal pattern age group of the children observed and across all meals served to that age group. We compared resulting portion sizes to those used in SNACS-I and investigated any large discrepancies. Because of the changes in the meal pattern requirements since

[29] See https://www.reginfo.gov/public/do/PRAViewDocument?ref_nbr=202105-0584-001 for information about pretest procedures and findings for the meal observations.

SNACS-I—which, for example, require more whole grains and a wider variety of fruits and vegetables—we expected variation in the imputed portion sizes between SNACS-I and SNACS-II. Table A.15 shows the imputed portion sizes by CACFP meal pattern age group across all meals served to that age group.

Table A.15. Imputed portion sizes in grams, by age group

Portion size category	Imputed portion size in grams, by age group		
	1 to 2 years	3 to 5 years	6 to 12 years
Bacon	13	14	31
Bagels and muffins	41	50	57
Breaded meats	45	46	76
Breads, rolls, and other plain breads	26	28	52
Burritos	97	97	128
Cakes, brownies, cookies	30	40	40
Candy (hard candy, chocolate, gum)	—	3	13
Cereals	21	28	28
Cheese	28	28	28
Cheeseburger, similar beef/pork sandwiches with cheese	80	101	149
Condiments and toppings	10	11	12
Corn/tortilla chips	13	19	28
Crackers, croutons, and pretzels	17	21	26
Eggs	48	48	53
Frankfurter, corn dog, similar sausage sandwiches	76	76	112
Fruit	54	64	116
Fruit or vegetable drinks/ades/other sweetened beverages	118	118	125
Granola bars and breakfast bars	33	37	37
Hamburger, similar beef/pork sandwiches	101	126	130
Hot cereals	98	98	—
Infant formula	148	148	—
Meats with sauce	68	64	82
Milk	148	177	237
Mixtures with grain, meats/meat alternates and/or vegetables	111	111	132
Nacho dishes	—	92	146
Non-entrée soups + mixture without grains	134	134	134
Nuts, nut butters	26	28	28
Other desserts	29	61	61
Other sandwiches	86	75	139
Pancakes, waffles, French toast	39	39	40
Parfaits + yogurt	78	113	113
Pasta/Rice	76	76	114
Peanut butter sandwich	51	58	78
Pizza	67	102	132
Plain meats	51	55	77

Portion size category	Imputed portion size in grams, by age group		
	1 to 2 years	3 to 5 years	6 to 12 years
Quesadillas, fajitas, enchiladas	80	80	188
Salad dressings	10	13	20
Sandwich with breaded/fried meat, poultry, or fish	—	107	144
Sandwich with only cheese	46	46	114
Sandwich with plain meat, poultry, or fish	62	93	122
Sausage, frankfurters, and cold cuts	28	34	34
Snacks	19	20	28
Tacos	85	85	124
Vegetables	46	47	71
Water	118	118	148

Notes: For the items without a portion size listed, there were no children observed consuming any items from that portion size category within that age group. The table is limited to the portion size categories/age groups that exist in the Menu Survey data.

Twenty-four hour dietary recalls. We collected dietary intake data from onsite meal observations and interviewer-administered 24-hour dietary recall interviews with parents. The observations collected information about foods and beverages consumed in care (described above), and the interviews collected information for foods and beverages consumed outside of care. We interviewed parents over the telephone for child care days and non-child care days using the Automated Self-Administered 24-hour recall system (ASA24)[30] adapted for telephone interviews. One or two days before the first child care day interview, we provided parents a Child Food Diary to help them report their child's intake during the interviews and a Food Model Booklet to help them report portion sizes their child consumed.[31] We interviewed parents in English or Spanish, and the Child Food Diary and Food Model Booklet were available in both languages.

For child care days, trained telephone interviewers called parents the day after the child was observed in child care to obtain information about foods consumed outside of child care or brought into child care from home on the observation day. For foods brought from home, parents reported details about the foods and beverages sent. Children age 6 years and older were asked to participate in the interview with the parent. If the child could not participate, the telephone interviewer confirmed that the parent was able to report all foods and beverages the child had on the previous day or that the parent completed the Child Food Diary. For non-child care days, telephone interviewers contacted parents within two weeks of the observation day to ask them to report all foods and beverages the child consumed on a day the child was not in care.

To provide the data needed to estimate usual dietary intakes, we completed a second child care day observation and a second child care day dietary recall with a subsample of children ages 3 to 5 years

[30] For more information on this assessment tool, see https://epi.grants.cancer.gov/asa24/.

[31] The Child Food Diary includes multiple pages so that parents can record foods and beverages for the child care day and non-child care day, as well as for a second child care day or non-child care day if selected for one of the usual intake subsamples.

within the same week. We also completed a second non-child care day dietary recall with a separate subsample of children in this age group within four weeks of the first child care day recall.

For all dietary recall interviews, we attempted to reach parents multiple times, including after the scheduled appointment time. If parents were unable to complete the interview at the scheduled time (or when we reached them at a later time), interviewers scheduled a call-back time up to two days after the observation day. For both child care day and non-child care day recall interviews, interviewers attempted to reach parents up to five times. We mailed parents gift cards after they completed each interview: $20 for the first child care day interview, $30 for the first non-child care day interview, and, for parents of children in the usual intake subsamples, $30 for a second child care day or non-child care day interview.

Output files from the ASA24 provide complete data on foods consumed by children on non-child care days, and for child care days, the files provide complete data on foods consumed outside of care. These output files include calorie and nutrient values from the FNDDS (Version 2019–2020) and food group values from the FPED (Version 2017–2020) for all foods reported, so data processing was minimal. We manually reviewed output files to confirm linkages to FNDDS codes were appropriate and recoded foods as needed. After completing these checks, we completed 24-hour recalls for non-child care days.

We created complete 24-hour recalls for child care days by merging data from the meal observation data file. The meal observations provided data on the amounts of foods, nutrients, and calories that each child consumed from CACFP meals and snacks (and if applicable, from any afterschool snacks claimed through the National School Lunch Program). For any foods brought from home, nutrition coders reviewed the information the parent reported and adjusted amounts to reflect the amount the child consumed (using the amount documented in the meal observation file). We performed quality checks to identify intrusions (foods from home that are included in the meal observation data but parents did not report) and exclusions (foods from home that parents reported but are not included in the observation data). We used the observation data when conflicts arose. In BASs, some children had incomplete 24-hour dietary recalls because no meals were reported during the school day. These students were excluded from all analyses based on intakes over 24 hours. We included these partial recalls only in the analysis for RQs 4 and 5, which examine CACFP and Health Eating Index (HEI) 2015 components by meal.

During data cleaning, the study team reviewed outliers, including high calorie values for coding errors, and deemed that they were not implausible based on the foods and portion sizes reported for the age of the child. We then conducted a sensitivity analysis for 24-hour mean calorie intakes to identify outliers (Burcham et al. 2023). For total calorie intake, we used the 75th percentile plus three times the interquartile range. This identified three dietary recalls among 1- to 2-year-olds (1 child care day and 2 non-child care days), 6 recalls among 3- to 5-year-olds (5 child care days and 1 non-child care day), and 3 dietary recalls among 6- to 12-year-olds (1 child care day and 2 non-child care days). When we excluded the identified outliers, the *unweighted* 24-hour mean calorie estimates changed between 4 to 24 calories. The exclusion of these outliers did not change the pattern of findings for 24-hour mean calorie intakes. The differences in mean calorie intakes between child-care days and non-child care days remained not significant for 1- to 2-year-olds and remained significant for 3- to 5-year-olds. For 6- to 12-year-olds, the

difference in mean calorie intakes moved from being significant at the 0.05 level to the 0.001 level, which did not change the overall pattern of findings.[32]

A.2.10. Objective 6 instrument design, data collection, and processing

The SNACS-I cost instruments provided the foundation for SNACS-II instruments, with targeted enhancements to the contents and data collection approach to streamline the instruments and ensure alignment with the cost estimation approach used in SNACS-I (Appendices L.1 through L.5). For example, SNACS-II limited data collection to food and labor costs. We did not collect data about indirect costs and other direct costs because SNACS-I respondents could not reliably report them. We pretested the SCCI with child care providers to evaluate the administration procedures and obtain their feedback.[33]

The SACQ and Meal and Snack Counts Form collected data on sponsor and center characteristics, meal and snack counts for the prior Federal fiscal year and the current target week, operating days, and ADA. We sent these self-administered, hard-copy instruments to sponsors and independent centers before the onsite data collection visit. Field staff collected the SACQ during administration of the SCCI and instructed respondents to transmit the Meal and Snack Counts Form to Mathematica after the target week so that the counts represented the full week.

Field staff completed a three-day, in-person training to learn about the study and cost concepts, how to administer the cost interviews, and the procedures for conducting data collection visits. Twenty-six trainees passed a certification test and collected data for the study. Field staff conducted the three cost interviews during onsite data collection:

- **Sponsor/Center Cost Interview (SSCI).** Sponsor staff or center directors who were knowledgeable about CACFP and sponsor/center finances reported sponsor-incurred labor and food costs and revenues in the SCCI. The interviewers also collected and scanned documents (for example, financial statements and vendor records that included food prices) needed for the analyses, or asked respondents to upload documents to a secure file transfer site if any documents were not available during the interview. Directors of independent centers completed this interview in full. Some directors of sponsored centers completed portions of this interview that sponsor staff did not complete.
- **Center Director Cost Interview (CDCI).** Center directors reported the amount of time and types of food service activities that center staff who do not work primarily on food service but support the CACFP conducted. These staff included, for example, teachers or aides who help with meal service.
- **Center Food Service Cost Interview (CFSCI).** Food preparers in each center reported the amount of time and types of food service activities that center staff who work primarily on food service conducted. The food preparers also reported compensation information for these staff. Interviewers occasionally collected compensation details from sponsor staff or center directors if the food preparers did not have access to this information.

[32] In SNACS-I, outliers were identified using a different method and excluded from analysis. In SNACS-II, given that outliers did not change the pattern of findings, the study team included them to preserve sample size.

[33] See https://www.reginfo.gov/public/do/PRAViewDocument?ref_nbr=202105-0584-001 for information about pretest procedures and findings for the SCCI.

Some providers received meals and snacks from an offsite kitchen that prepares food for one or more receiving kitchens—a production kitchen. Because production kitchens contribute food and labor costs to the meal and snack costs for the sampled centers they serve, we sent production kitchen supervisors the Meal and Snack Counts Form and conducted an additional CFSCI to capture these costs.

After each visit, field staff shipped hard-copy instruments back to Mathematica. We first scanned and transcribed the data into raw files. We checked to ensure there were no duplicated scanned forms or missing transcriptions by comparing data records against the receipted hard copies using each provider's unique identifier. The study team then conducted thorough manual and rule-based data edits to confirm handwritten marks were captured correctly. We used Stata to conduct in-depth data cleaning to ensure data quality and edit implausible or out-of-range responses for cost interviews.

A team of nutrition research associates (RAs) and supervisors were responsible for processing vendor records submitted as part of the SCCI, the same team discussed above.

The price coding task involved matching food items reported on the Menu Survey with prices reported in the scanned vendor records. Coders followed standardized procedures to identify matches between food items from the Menu Survey and those listed in the vendor records; for each match identified, the coder entered the weight of the item, unit of the weight, and cost per item as it appeared on the vendor record. Standard conversion factors were used to convert units listed on vendor records to grams. If a price for a food item served by a provider during the Target Week could not be found in the vendor record, the price was imputed. Prices were imputed using the median available price for similar food items across providers. For a limited number of items, a similar food item with a price could not be identified; the prices for these "unique" items were imputed by looking up prices on external supermarket websites. Overall, 49 percent of food prices were imputed.

A.3. Analysis procedures

Across objectives, our analysis approaches included descriptive cross-tabulations of percentages, means, and occasionally medians. We adjusted estimates for the complex sample design and weighting. We tested for significant differences between provider types for a subset of RQs under each objective, as specified in the final study plan (Fox et al. 2021). For comparisons between SNACS-I and SNACS-II, we used SNACS-I analysis files to reproduce relevant estimates and standard errors and then conducted two-tailed t-tests to test for significance. We defined imprecise point estimates as having a standard error that is more than 30 percent of the mean—in other words, a relative standard error of > 0.30. These are flagged in the analytic tables with the ^ symbol. Estimates with an effective sample size of < 30 are flagged with the ~ symbol. Estimates with only one or two observations are suppressed to minimize the risk of identifying children with rare characteristics.

We present findings for most RQs by provider type; some objectives present many findings by other characteristics. For Objectives 2, 3a, and 4, we also present findings by meal type (breakfast, lunch, supper, and morning and afternoon snacks combined) and CACFP meal pattern age groups. We also present findings for Objectives 3b, 3c, and 5 by age groups and findings for Objective 3a by child care day and non-child care day.

The rest of this section describes the more complex analysis procedures used to some of the RQs for Objectives 2 through 6. See Section A.7 for crosswalks between RQs, data sources, and analytic tables presented in Appendices B through H.

A.3.1. Objective 2

Mean calorie and nutrient content. We applied the imputed portion sizes (by age group) from the meal observation data to the Menu Survey data to compute amounts of calories, nutrients, and FPEDs for all foods served in CACFP meals and snacks (in the Menu Survey data). For milk, fruits, and vegetables, we applied imputed portion sizes to the Menu Survey data, taking into consideration the number of items served at the meal or snack. This decision resulted in the menu day containing an average serving of milk, fruits, or vegetables. We then estimated mean calorie and nutrient content of CACFP breakfasts, lunches, suppers, and snacks served, along with standard errors and distributions, by provider type and CACFP age group.

Comparison of meals and snacks to CACFP meal pattern requirements. We estimated the following outcomes to assess how meals and snacks served compared to the CACFP meal pattern requirements by meal or snack and by CACFP meal pattern age group:

- Mean percentage of daily menus that included each and all required meal components
- Distribution of mean percentage of daily menus that included all required meal components
- Across all meals and snacks served, we estimated the following:
  - Percentage of providers that included all required meal components on all menu days across all meals and snacks served
  - Percentage of providers that served at least one whole grain–rich food per day and limited 100 percent juice to no more than one meal or snack
- Among providers in the meal observation sample, we estimated the following:
  - Mean amounts served of each required meal component
  - Percentage of providers meeting CACFP portion size requirements

To identify how foods served in meals and snacks contributed to the meal pattern requirements, we used the major food group assignments. We reviewed items assigned to the combination entrée's major food group to determine whether the items included meats/meat alternates and grains. We also identified allowed milk types for each age group based on the CACFP requirements. Table A.16 shows the required meal components for each type of CACFP meal and snack that we used for the analysis.

Table A.16. Required meal components for CACFP meals and snacks

Breakfast	Lunch	Supper	Snack
Must include at least one item per meal component			Must include at least two different components
Fluid milk[a]	Fluid milk[a]	Fluid milk[a]	Fluid milk[a]
Fruits or vegetables	Fruits	Fruits	Fruits
Grains	Vegetables	Vegetables	Vegetables

Breakfast	Lunch	Supper	Snack
	Meats/meat alternates	Meats/meat alternates	Meats/meat alternates
	Grains	Grains	Grains
Across all meals and snacks per provider: At least one whole grain-rich food per day must be offered, and 100 percent juice is limited to no more than one meal or snack per day.			

Source: CACFP Meal Pattern Tables, available at: https://www.fns.usda.gov/cacfp/meals-and-snacks.

Notes: A vegetable may be offered to meet the entire fruit requirement. When two vegetables are served at lunch or supper, two different kinds of vegetables must be served. Meats/meat alternates may be offered in place of the entire grains requirement, up to 3 times per week at breakfast.

[a] Must be unflavored whole milk for children age 1. Must be unflavored low-fat (1 percent fat or less) or unflavored fat-free (skim) milk for children ages 2 through 5 years. Must be unflavored or flavored fat-free (skim) or low-fat (1 percent fat or less) milk for children 6 years old and older.

CACFP = Child and Adult Care Food Program.

The estimates for mean amounts served for each meal component and the percentage of providers meeting CACFP portion size requirements were based on meal observation data collected from the smaller sample of providers. We used the U.S. Department of Agriculture (USDA) Food Pattern food group amounts from FPED as a proxy for how foods are credited in the CACFP meal patterns. For example, the dairy group in FPED includes fluid milk, yogurt, and cheese; in the CACFP meal patterns, milk is its own meal component and yogurt and cheese are credited as meats/meat alternates.

HEI-2015 scores. The HEI is a scoring metric that assesses the degree to which diets or meals align with key recommendations of the Dietary Guidelines for Americans. The HEI also provides an overall measure of nutritional quality. For CACFP meals and snacks, we estimated mean total and component HEI-2015 scores, as well as the mean percentage of the maximum possible score for each component. We estimated scores separately for each type of meal and snack and for all meals and snacks combined.

Different methods can be used to estimate HEI scores, depending on the purpose of the study and the available data. The National Cancer Institute's website describes the different methods and provides corresponding SAS code for each method to use in estimating HEI scores (https://epi.grants.cancer.gov/hei/). SNACS-I used the population ratio approach to estimate HEI-2015 score. To address the SNACS-II research questions, we needed to use two different methods to estimate HEI-2015 scores: the simple HEI scoring algorithm and the population ratio approach. The different methods produce different estimates of HEI-2015 scores.

We used the simple HEI scoring algorithm to estimate mean HEI-2015 scores for CACFP meals and snacks by provider type and CACFP age group. When using the simple HEI scoring algorithm, HEI scores are computed at the individual level (rather than population level)—that is, for each provider for each type of meal and snack served. We estimated these individual-level HEI-2015 scores based on each provider's average meals and snacks served across the week, and then estimated mean HEI-2015 scores across all providers. For estimating HEI-2015 scores by provider type and CACFP age group, we initially tried to use the population ratio approach to replicate the SNACS-I methodology. However, because of small sample sizes and low variation in the SNACS-II data, we were unable to calculate scores for most of the subgroups specified in the final study plan (by provider type and age group for each type of meal). In addition, the individual-level HEI scores computed for each provider were also needed for the multivariate analyses that

examined the relationship between the nutritional quality of CACFP meals and snacks and provider characteristics (described later in this section), which were not included in SNACS-I.

For comparisons between SNACS-I and SNACS-II, we were able to use the population ratio approach to replicate the SNACS-I methodology because the analysis focused on HEI scores for all ECCs and all BASs, which provided larger sample sizes. We used estimates and their corresponding standard errors and sample sizes to conduct two-tailed Welch's t-tests for differences in means between the SNACS-I and SNACS-II samples. Because of the two different methods used to estimate HEI-2015 scores for this study, the total HEI-2015 scores in Tables D.71 through D.76 differ from those presented in Tables D.37 through D.46 in Appendix D.

Major sources of calories and key nutrients. The study team examined top sources of calories, saturated fat, and other key nutrients in CACFP meals and snacks served by providers. For this analysis, we used the major food groups and further classified minor food groups into food source groups, as in SNACS-I. The outcome for this analysis was the mean percentage contribution of a particular food source group to the nutrient content of the meals and snacks served. For each nutrient, we ranked the percentage contributions of each major food group and minor food source group. The tabulations present the percentage contribution of each major food group and the top 10 contributors among the minor food source groups.

Relationship between nutrition quality of CACFP meals and snacks and provider characteristics. We used multivariate modeling to examine the relationships between the nutritional quality of CACFP meals and snacks (defined by total HEI scores) and (1) general characteristics of providers and (2) their food service practices. Our approach used a form of regularized regression known as least absolute shrinkage and selection operator (LASSO), which means we included only a select subset of covariates in the model that exhibited the strongest association with total HEI scores because coefficients on covariates that do not exhibit a relatively strong relationship (in terms of minimizing model residuals) are shrunk to zero. The tables present coefficient estimates, standard errors, and levels of statistical significance for the covariates retained by this selection process in each multivariate model.

A.3.2. Objectives 3b, 3c, and 5

BMI and weight for age. We applied the CDC BMI standard to calculate average BMI for children age 2 to 12 years and to categorize children into different weight categories: underweight, healthy weight, overweight, or obese. For children age 1 to 2 years, we used CDC weight for age categories and growth chart percentiles to categorize the weight for this age group. We tested the significance of differences between provider types for weight categories.

We used descriptive cross-tabular statistics with self-reported data from parents in combination with the CDC weight-for-age charts, birth to 36 months, to determine weight for age status for infants ages 0–11 months.

Child and household food security status. We examined household and teen food security status using information from the Teen Survey and either the Parent Interview or Teen Parent Interview. Food security was divided into three groups—high food security, low food security, and very low food security. The Parent Interview or Teen Parent Interview was used on its own for some analyses. However, we limited the

teen–parent dyad comparison to those that had complete data for both the Teen Survey and relevant parent interview.

A.3.3. Objectives 3a and 4

Contribution of CACFP meals and snacks to children's diets. We estimated several outcomes to characterize the role of CACFP meals and snacks in children's diets. First, we estimated mean intakes of USDA Food Pattern food groups from CACFP meals and snacks on child care days. Using these means, we also estimated the percentages of the minimum CACFP requirement consumed for each meal component. For this analysis, we adjusted data from the FPED to reflect how foods are credited under the CACFP meal patterns. We used the USDA Food Pattern food group amounts from FPED as a proxy for how foods are credited in the CACFP meal patterns. For example, the dairy group in FPED includes fluid milk, yogurt, and cheese; in the CACFP meal patterns, milk is its own meal component and yogurt and cheese are credited as meats/meat alternates. Tabulations show data for each meal and snack, by CACFP meal pattern age group within provider type. Second, we estimated the percentage contribution of CACFP meals and snacks to children's 24-hour intakes. We prepared separate tabulations for breakfast, lunch, and supper and for all snacks combined by CACFP meal pattern age group within provider type. Because the amount of time spent in care influences the number of meals and snacks available to children, we also tabulated the percentage contribution of all CACFP meals and snacks to total daily intakes by part-day versus full-day attendance using data from the Parent Interview.

HEI-2015 scores and usual intakes. We estimated HEI scores based on a single dietary recall for each child using the population ratio approach (see Section A.3.1 for more information). For children's dietary intakes on child care days, we estimated HEI-2015 scores separately for each type of CACFP meal and snack consumed and for all meals and snacks combined. When feasible, we estimated scores separately by CACFP age group and provider type.

We estimated usual intakes of calories, nutrients, USDA Food Pattern food groups, and water as a beverage using the National Cancer Institute (NCI) Method (Tooze et al. 2006, 2010; Freedman et al. 2010). Macros to implement this method appear on NCI's website, https://epi.grants.cancer.gov/diet/usualintakes/method.html. The NCI Method uses a two-stage regression model that models the probability of any intake in the first stage and models the amount of intake conditional on any intake in the second stage. By modeling usual intake measures through regression analyses, the NCI Method removes within-person variation and adjusts for differences in selected characteristics.

Because the subsample of children who provided a second day of dietary intake data was restricted to 3- to 5-year-olds, we estimated usual intakes for this age group and for all ECCs combined. We estimated means and distributions of usual intakes for both child care days and non-child care days.

Using the Dietary Reference Intakes, we estimated the percentage of 3- to 5-year-olds with inadequate, excessive,[34] and acceptable usual nutrient intakes. Although we tabulated data by the CACFP meal pattern age group of 3 to 5 years, we compared individual children to the appropriate Dietary Reference Intakes

[34] The term "excessive" refers to usual intakes of nutrients that exceed the Dietary Guidelines for Americans limits for saturated fat, sodium, and added sugars.

(for ages 1 to 3 and 4 to 8 years). We used Estimated Average Requirements (EARs) to assess adequacy for most vitamins and minerals and Acceptable Macronutrient Distribution Ranges (AMDRs) to assess macronutrient intakes. For nutrients without an EAR or AMDR, we compared usual intakes with the Adequate Intake level and, for sodium, the Chronic Disease Risk Reduction Intake (National Academies of Sciences, Engineering, and Medicine 2019). We also compared usual intakes of saturated fat and added sugars to the recommended limits in the 2020–2025 Dietary Guidelines for Americans. We performed two-tailed t-tests to assess differences in the prevalence of inadequate, excessive, and acceptable usual nutrient intakes between child care days and non-child care days for all 3- to 5-year-olds in the sample. We also tabulated mean usual calorie intakes and mean Estimated Energy Requirements.

Influence of the child care environment on dietary intakes. We used the same multivariate modeling described above (see Section A.3.1) to examine the relationships between the nutritional quality of CACFP meals and snacks (defined by total HEI scores) and (1) general characteristics of providers and (2) their food service practices.

Extent of plate waste and nutritional value of foods served but not eaten. We examined plate waste for major (defined as required CACFP meal components as well as accompaniments, combination entrees and other menu items or desserts) and minor food groups (defined as specific foods within each major category, such as 1 percent milk) classified as "served most frequently" in the Menu Survey data. The major and minor food groups were based on those used in SNACS-I, and we updated them to reflect new foods reported in the data. We defined foods served most frequently as those observed in 5 percent or more of children's plates. To determine the major and minor food groups served most frequently to children, we divided the number of children served a food by the total number of observed children in the sample. To determine the percentage wasted of a food, we divided the amount wasted by the total amount of the food that was served.

We used descriptive cross-tabular statistics to assess the types of food served and wasted by provider type and CACFP age group.

We imputed portion sizes in cases where the portion size was missing. If the item was a single, discrete item, such as a pretzel or apple slice, we determined the corresponding standard gram weight for the item in FNDDS. For items that did not have any portion descriptor, such as pretzels or apple slices, we assigned a portion size based on the average portion size for that age group.

To examine the nutritional value of foods served but not eaten, we applied the imputed portion sizes (by age group) to compute the amounts of calories and nutrients for all CACFP foods served and remaining on plates. We also linked foods to the FPED for all foods served and remaining to estimate information about added sugars. We estimated mean calorie, nutrient, and added sugar content of foods served and wasted at CACFP breakfasts, lunches, suppers, and snacks by provider type and CACFP age group.

Influence of the provider environment on plate waste. We used the same multivariate modeling described above (see Section A.3.1) to examine the relationships between the percentage of total calories; fruits and vegetables wasted; and general characteristics of the provider environment, including the timing of activities in separate models for ECCs and BASs. As described above, we included provider type as a

potential variable in all models, however, provider type was reported in the multivariate table results only if it was selected as a covariate by the LASSO procedure.

A.3.4. Objective 6

Cost analysis required sufficient data for key variables from all six required cost instruments. For sufficient partials, we imputed missing items within instrument. We never imputed entire instruments. The final sample excluded cases with missing or unreasonable labor cost or meal count data that could not be imputed. We also excluded cases with an estimated labor cost per meal above $30, a threshold used to identify cases with potentially inaccurate labor cost or meal count data that were difficult to identify before combining costs and meal counts to calculate per-meal labor cost.

Imputation procedures. We used the following imputation procedures to address missing data:

- **Estimation of infant feeding costs.** We used the Infant Menu Survey to identify the types of foods and beverages served to infants. This form did not collect portion size data. To estimate infant feeding costs, we used the median portion size for infant meals specified in the CACFP infant meal patterns.
- **Imputation of Classroom Waste Ratio (CWR) for unobserved meals**. We accounted for food waste in meal cost estimates using the ratio of the cost of food wasted to the cost of food consumed for a given meal for a given provider using data from the Classroom Waste Measurement Form for the target week. For providers with no classroom waste data for the target week, we imputed the CWR using the mean across all providers with classroom waste data. We imputed the CWR for 32 percent of providers. For providers with missing classroom waste data for meals that were not observed during the target week, we used the median CWR for all meals that were observed for that provider. We imputed 46 percent of observation-level classroom waste data using this approach (we imputed at least one observation for all 68 percent of providers with some classroom waste data).
- **Incomplete information on age groups represented at a provider.** To account for differences in portions sizes among different age groups, we estimated meal costs separately for each age group and then calculated a weighted average meal cost for all age groups. These calculations required the number of children by age in attendance per day at the provider's facility from the Meal and Snack Counts Form. The age groups ranged from "up to 3 months" to "18 years" with age groups broken into one-year increments, except for the ages under 1 year, where the groups were broken into two- or three-month ranges (such as 4–5 months, 6–7 months, and so on). For some providers, field interviewers were unable to obtain this detailed information from respondents; instead, they were able to collect the total number of children across a larger age range (for example, 8 to 12 years). When necessary, we estimated the number of children in each age group using distributions from other similar providers that serve children in the same age groups. We did this by taking the mean proportion of children in each age group and using those percentages to calculate the number of children for each age group for the case requiring imputation. We estimated the number of children in each age group for 3 percent of providers.
- **Incomplete labor cost data.** Some providers were missing data from one or more of the labor cost instruments (SCCI, CDCI, and CFSCI) that were necessary to estimate labor costs, including salary/wage and hours worked. We imputed missing percentage allocations to tasks for sponsor staff with missing SCCI data using the mean percentage across providers from staff with the same or similar titles (we

used means because these variables captured the proportion of time allocated to tasks). We imputed missing CACFP sponsor staff hours using the median across providers from staff with the same or similar titles. For all labor cost instruments, we imputed missing salaries/wages using the median salary/wage for staff with the same or similar titles among providers from the same State; when there were no staff with the same or similar title in the same State, we used the median across all staff. We imputed 3 percent of SCCI sponsor time allocations, 8 percent of CACFP hours, and 20 percent of salaries/wages. When a provider was missing data we could not reasonably impute, we excluded the provider from the cost analysis. We excluded 36 providers with missing or unreasonable data we could not impute (16 percent of the 219 providers that completed all 6 of the instruments).

- **Missing or implausible meal counts.** For all sponsored providers, we annualized meal counts reported on the Meal and Snack Counts Form from the target week to pair with provider-level labor cost data reported on the CDCI. To calculate annual counts from reported daily counts, we multiplied the total number of days a meal was served by the mean number of daily meal counts. For providers that were missing data on the number of days meals were served (reported separately for days in session and days not in session), we imputed days based on the median number of days in session among similar providers. We imputed days in session for 40 percent of sponsored providers. For any independent providers missing annual counts from the SACQ, we estimated annual counts from the meal counts reported on the Meal and Snack Counts Form using the same method we used for sponsored providers. For providers with missing or implausible annual meal counts from the SACQ (that is, fewer than 1,000 meals for a year), we used the annualized meal counts calculated from the Meal and Snack Counts Form. Sponsored providers with missing or unusable annual meal counts (for example, counts of sites or some other count that was not a meal count) that reported sponsor-level labor costs were excluded from analysis.

Comparisons to SNACS-I. For these comparisons, we adjusted SNACS-I estimates to account for inflation. We used the Consumer Price Index for the relevant data collection periods to inflate food costs and the Employment Cost Index to inflate labor costs. The reported SNACS-I cost estimates reflect the price levels in place at the time we collected the SNACS-II data. We compared for breakfast, lunch, and snacks for child care centers and Head Start centers combined and for snacks and suppers for all BASs combined.

Relationship between meal costs and nutritional quality of CACFP meals and snacks and provider characteristics. We used the same multivariate modeling described above (see Section A.3.1) to examine the relationships between meal costs and the (1) nutritional quality of CACFP meals and snacks (defined by total HEI scores) and (2) general characteristics of providers. Coefficients for continuous variables represent the average change in costs associated with a one-unit increase of the corresponding variable—for example, the average change in meal costs associated with each one-point increase in a meal's total HEI-2015 score. Coefficients for categorical variables represent the average difference in costs, relative to the omitted base category for that categorical variable—for example, the average difference in meals costs for the Midwest region relative to the base category of the Northeast and Mid-Atlantic regions combined.

A.4. Characteristics of the analysis samples

A.4.1. Objective 1 sample characteristics

Table A.17 shows the dispositions of all cases that were attempted for the Provider Survey and EOF. Tables A.18 and A.19 present the characteristics of the Provider Survey sample, and Tables A.20 and A.21 present the characteristics of the EOF sample.

Table A.17. Case dispositions for the Provider Survey and Environmental Observation Form

	Provider Surveys	Environmental Observation Form
Complete	1,045	389
Sufficient partial	28	0
Incomplete	209	8
Refusal	6	0
Total	1,288	397

Table A.18. Characteristics of early child care programs in the Provider Survey sample

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs, weighted
Program type			
Child care center	239	35,453	24.0
Sponsored	145	27,573	77.8
Independent	94	7,880	22.2
Head Start center	334	13,471	9.1
Family day care home	205	98,847	66.9
Program size			
Small (1–39 enrolled)	486	111,969	75.8
Medium (40–79 enrolled)	177	17,823	12.1
Large (80 or more enrolled)	88	9,828	6.7
Missing	27	8,150	5.5
Sponsor organization type, among sponsored child care centers			
Private nonprofit organization	59	10,748	38.9
Public school district or local government	14	1,346	4.9
For-profit corporation	52	10,981	7.4
Other	9	2,494	1.7
Don't know	10	1,813	1.2
Missing	1	191	0.1
Urban			
Yes	554	143,102	96.8
Percentage of children residing in the area who are minorities			
0% to less than 40%	303	49,731	33.7
40% to less than 80%	247	48,312	32.7
80% to 100%	226	49,705	33.6
Missing	2	24	0.0
Ages of children served			
0-11 months	326	75,752	51.3
12-35 months	536	124,735	84.4
3-5 years	719	131,139	88.7
Over 5 years	295	88,150	59.7

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs, weighted
Missing	2	64	0.0
Food and Nutrition Service Region			
Midwest	104	30,692	20.8
Northeast	114	18,305	12.4
West	166	29,248	19.8
Southwest	123	21,439	14.5
Southeast	129	11,272	7.6
Mountain Plains	66	15,883	10.7
Mid-Atlantic	76	20,932	14.2
Number of early child care programs	**778**	**147,771**	

Source: Second Study of Nutrition and Activity in Child Care Settings (SNACS-II), Provider Survey, winter through summer, 2023, and American Community Survey, 2021.

Tabulations are weighted to be nationally representative of all early child care programs participating in the Child and Adult Care Food Program.

Table A.19. Characteristics of before and after school programs in the Provider Survey sample

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs, weighted
Program type			
At-risk afterschool center	195	28,539	93.1
Sponsored	188	28,007	98.1
Independent	7	532	1.9
Outside-school-hours care center	100	2,109	6.9
Sponsored	94	1,999	94.8
Independent	6	110	5.2
Program size			
Small (1–39 enrolled)	85	9,258	30.2
Medium (40–79 enrolled)	74	8,580	28.0
Large (80 or more enrolled)	92	9,274	30.3
Missing	44	3,536	11.5
Sponsor organization type, among sponsored before and after school programs			
Private nonprofit organization	82	8,228	27.4
Public school district or local government	144	17,978	59.9
Charter school organization	7	1,053	3.5
For-profit corporation	25	1,399	4.7
Other	10	573	1.9
Don't know	9	708	2.4
Missing	5	68	0.2

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs, weighted
Urban			
Yes	226	29,776	97.2
Percentage of children residing in the area who are minorities			
0% to less than 40%	85	5,677	18.5
40% to less than 80%	107	12,254	40.0
80% to 100%	100	12,634	41.2
Ages of children served			
5-12 years	264	26,148	85.3
Over 12 years	107	12,844	41.9
Missing	3	198	0.6
Food and Nutrition Service Region			
Midwest	43	3,099	10.1
Northeast	46	2,532	8.3
West	34	6,991	22.8
Southwest	40	6,939	22.6
Southeast	35	4,536	14.8
Mountain Plains	32	2,675	8.7
Mid-Atlantic	65	3,876	12.6
Number of before and after school programs	**295**	**30,648**	

Source: Second Study of Nutrition and Activity in Child Care Settings (SNACS-II), Provider Survey, winter through summer, 2023, and American Community Survey, 2021.

Tabulations are weighted to be nationally representative of all before and after school programs participating in the Child and Adult Care Food Program.

Table A.20. Characteristics of early child care programs in the Environmental Observation Form sample

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs, weighted
Program type			
Child care center	91	36,434	24.6
Sponsored	55	26,852	73.7
Independent	36	9,582	26.3
Head Start center	112	12,669	8.6
Family day care home	83	98,847	66.8
Program size			
Small (1–39 enrolled)	184	114,672	77.5
Medium (40–79 enrolled)	60	17,813	12.0
Large (80 or more enrolled)	35	10,636	7.2
Missing	7	4,829	3.3

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs, weighted
Sponsor organization type, among sponsored child care centers			
Private nonprofit organization	18	8,358	20.8
Public school district or local government	6	1,017	2.5
For-profit corporation	18	10,274	25.5
Other	3	3,397	8.4
Don't know	2	2,026	5.0
Missing	8	1,781	4.4
Urban			
Yes	215	143,264	96.8
Percentage of children residing in the area who are minorities			
0% to less than 40%	108	34,592	23.4
40% to less than 80%	83	53,109	35.9
80% to 100%	94	60,225	40.7
Missing	1	23	0.0
Ages of children served			
0-11 months	104	64,355	43.5
12-35 months	175	102,943	69.6
3-5 years	233	108,710	73.5
Over 5 years	97	64,787	43.8
Missing	41	35,864	24.2
Food and Nutrition Service Region			
Midwest	36	23,483	15.9
Northeast	40	18,868	12.8
West	67	31,229	21.1
Southwest	50	30,712	20.8
Southeast	50	18,438	12.5
Mountain Plains	18	6,464	4.4
Mid-Atlantic	25	18,755	12.7
Number of early child care programs	**286**	**147,950**	

Source: Second Study of Nutrition and Activity in Child Care Settings (SNACS-II), Environmental Observation Form, winter through summer, 2023, and American Community Survey, 2021.

Tabulations are weighted to be nationally representative of all early child care programs participating in the Child and Adult Care Food Program.

Table A.21. Characteristics of before and after school programs in the Environmental Observation Form sample

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs, weighted
Program type			
At-risk afterschool center	70	28,342	93.0
Sponsored	66	28,138	99.3
Independent	4	203	0.7
Outside-school-hours care center	33	2,128	7.0
Sponsored	30	2,048	96.3
Independent	3	80	3.7
Program size			
Small (1–39 enrolled)	27	9,085	29.8
Medium (40–79 enrolled)	26	8,537	28.0
Large (80 or more enrolled)	30	8,301	27.2
Missing	20	4,546	14.9
Sponsor organization type, among sponsored before and after school programs			
Private nonprofit organization	30	10,555	35.0
Public school district or local government	36	13,264	43.9
Charter school organization	2	674	2.2
For-profit corporation	8	2,206	7.3
Other	2	119	0.4
Don't know	1	40	0.1
Missing	17	3,328	11.0
Urban			
Yes	79	29,611	97.2
Percentage of children residing in the area who are minorities			
0% to less than 40%	26	4,061	13.3
40% to less than 80%	33	12,559	41.2
80% to 100%	43	13,780	45.2
Missing	1	69	0.2
Ages of children served			
5-12 years	82	25,790	84.6
Over 12 years	34	10,575	34.7
Missing	18	3,964	13.0
Food and Nutrition Service Region			
Midwest	12	2,793	9.2
Northeast	15	2,267	7.4
West	11	5,938	19.5
Southwest	22	11,776	38.6
Southeast	8	2,791	9.2

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs, weighted
Mountain Plains	9	454	1.5
Mid-Atlantic	26	4,451	14.6
Number of before and after school programs	**103**	**30,469**	

Source: Second Study of Nutrition and Activity in Child Care Settings (SNACS-II), Provider Survey, winter through summer, 2023, and American Community Survey, 2021.

Tabulations are weighted to be nationally representative of all before and after school programs participating in the Child and Adult Care Food Program.

A.4.2. Objective 2 sample characteristics

Table A.22 shows the dispositions of all cases that were attempted for the Menu Survey. Tables A.23 and A.24 present the characteristics of the Menu Survey sample.

Table A.22. Case dispositions for the Menu Survey

	Menu Survey
Complete	1,088
No-contact	187
Refusal	13
Total	1,288

Table A.23. Characteristics of early child care programs in the Menu Survey sample

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs, weighted
Program type			
Child care centers	234	34,734	23.6
Sponsored	136	25,985	74.8
Independent	98	8,749	25.2
Head Start centers	337	13,839	9.4
Family day care homes	221	98,847	67.1
Program size			
Small (1 to 39 enrolled)	501	114,103	77.4
Medium (40 to 79 enrolled)	180	18,719	12.7
Large (80 or more enrolled)	92	8,919	6.1
Missing	19	5,679	3.9
Sponsor organization type, among sponsored child care centers			
Private non-profit organization	51	8,560	28.5
Public school district or local government such as town, city, or country	11	1,273	4.2
For-profit corporation	41	9,609	32.0
Other	8	2,248	7.5
Don't Know	7	1,358	4.5

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs, weighted
Missing	33	6,989	23.3
Urban			
Yes	569	142,757	96.8
Percentage of minority children residing in the area			
0 to less than 40 percent	304	50,833	34.5
40 to less than 80 percent	253	51,210	34.7
80 to 100 percent	230	45,190	30.7
Missing	5	187	0.1
Ages of children served			
0 to 11 months	284	64,044	43.4
12 to 35 months	467	101,922	69.1
3 to 5 years	634	107,548	73.0
5 years or older	249	66,255	44.9
Missing	107	26,046	17.7
Food and Nutrition Service Region			
Midwest	107	29,243	19.8
Northeast	117	19,414	13.2
West	179	27,366	18.6
Southwest	129	21,732	14.7
Southeast	126	12,866	8.7
Mountain Plains	58	14,352	9.7
Mid-Atlantic	76	22,446	15.2
Number of early child care programs	**792**	**147,420**	

Source: Second Study of Nutrition and Activity in Child Care Settings (SNACS-II), Provider Survey, winter through summer, 2023, and American Community Survey, 2021.

Note: Tabulations are weighted to be nationally representative of all early child care programs participating in the Child and Adult Care Food Program.

Table A.24. Characteristics of before and after school programs in the Menu Survey sample

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs, weighted
Program type			
At-risk afterschool centers	193	28,382	91.6
Sponsored	186	27,864	98.2
Independent	7	518	1.8
Outside-school-hours care centers	103	2,617	8.4
Sponsored	98	2,530	96.7
Independent	5	87	3.3
Program size			
Small (1 to 39 enrolled)	91	10,658	34.4

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs, weighted
Medium (40 to 79 enrolled)	75	7,056	22.8
Large (80 or more enrolled)	93	9,621	31.0
Missing	37	3,664	11.8
Sponsor organization type, among sponsored before and after school programs			
Private non-profit organization	75	7,330	24.1
Public school district or local government such as town, city, or country	132	17,440	57.4
Charter school organization	5	995	3.3
For-profit corporation	19	1,349	4.4
Other	8	522	1.7
Don't Know	8	312	1.0
Missing	37	2,447	8.1
Urban			
Yes	220	30,104	97.1
Percentage of minority children residing in the area			
0 to less than 40 percent	98	5,461	17.6
40 to less than 80 percent	107	12,363	39.9
80 to 100 percent	89	13,123	42.3
Missing	2	52	0.2
Ages of children served			
5 to 12 years	236	24,269	78.3
12 years or older	96	12,345	39.8
Missing	38	2,621	8.5
Food and Nutrition Service Region			
Midwest	44	3,279	10.6
Northeast	47	2,251	7.3
West	38	7,202	23.2
Southwest	40	7,254	23.4
Southeast	32	3,743	12.1
Mountain Plains	38	2,738	8.8
Mid-Atlantic	57	4,532	14.6
Number of before and after school programs	**296**	**31,000**	

Source: Second Study of Nutrition and Activity in Child Care Settings (SNACS-II), Provider Survey, winter through summer, 2023.

Note: Tabulations are weighted to be nationally representative of all before- and after-school programs participating in the Child and Adult Care Food Program.

A.4.3. Objectives 3b, 3c and 5 sample characteristics

Table A.25 shows the dispositions of all cases that were attempted for infant weight-for-age and the Infant Menu Survey. Table A.26 shows the dispositions of all cases that were attempted for the Teen

Survey and Teen Parent Interview. Table A.27 shows the dispositions of all cases that were attempted for the Height and Weight Form and Parent Interview. Table A.28 present the characteristics of sampled, eligible, and consented children, teens, and infants.

Table A.25. Case dispositions for infant weight-for-age and the Infant Menu Survey

	Infant weight-for-age	Infant Menu Survey
Complete	174	215
Sufficient partial	0	0
Incomplete	75	168
Ineligible	0	42
Refusal	0	29
Total	249	454

Table A.26. Case dispositions for the Teen Survey and Teen Parent Interview

	Teen Survey	Teen Parent Interview
Complete	734	325
Sufficient partial	0	0
Incomplete	249	197
Refusal	0	293
Total	983	815

Table A.27. Case dispositions for the Child Height and Weight Form and Parent Interview

	Height and Weight Form	Parent Interview
Complete	3,065	1,548
Sufficient partial	0	0
Incomplete	754	2,237
Refusal	0	46
Total	3,819	3,831

Table A.28. Characteristics of sampled, eligible, and consented children, teens, and infants

	Provider type or urbanicity	Sampled	Eligible	Consented
Total		**10,421**	**9,326**	**4,745**
	Child care center		1,824	1,216
	Head Start center		1,959	1,410
	Family day care home		515	379
	At-risk afterschool center		3,702	1,161
	Outside-school-hours care center		1,326	579
	Metro (CBSA)		7,173	3,739
	Non-metro (non-CBSA)		2,153	1,006
Total children ages 1 to 12[a]		**6,283**	**6,275**	**3,832**
	Child care center		1,533	1,038

	Provider type or urbanicity	Sampled	Eligible	Consented
	Head Start center		1,899	1,366
	Family day care home		475	352
	At-risk afterschool center		1,637	681
	Outside-school-hours care center		731	395
	Metro (CBSA)		4,811	2,994
	Non-metro (non-CBSA)		1,464	838
Total teens ages 10 to 18[a]		**3,631**	**3,415**	**984**
	At-risk afterschool center		2,681	707
	Outside-school-hours care center		734	277
	Metro (CBSA)		2,726	836
	Non-metro (non-CBSA)		689	148
Total infants ages 0 to 11 months		**508**	**391**	**249**
	Child care center		291	178
	Head Start center		60	44
	Family day care home		40	27
	Metro (CBSA)		328	204
	Non-metro (non-CBSA)		63	45

[a] Some teens ages 10-12 are included in both sample components, if they were a sampled child in a sampled classroom (756 sampled, 755 eligible, 320 consented).

CBSA = Core-Based Statistical Area.

A.4.4. Objectives 3a and 4 sample characteristics

Table A.29 shows the dispositions of all cases we attempted for the meal observations and 24-hour dietary recall interviews. Table A.30 presents the characteristics of sampled, eligible, and consented children.

Table A.29. Case dispositions for the meal observations and 24-hour dietary recalls

Disposition	Meal observations	Meal observations and child care days	Non-child care days
Complete	3,107	1,421	1,260
Sufficient partial	0	85	0
Incomplete	725	2,284	2,537
Refusal	0	42	35
Total	3,832	3,832	3,832

Note: For RQs 4 and 5 where the analysis is limited to CACFP meals, the total sample of child care days is 1,506 including 1,421 completed child care days and 85 partial child care days for children ages 6 to 12 years with completed CACFP meal observation.

CACFP = Child and Adult Care Food Program

Table A.30. Characteristics of sampled, eligible, and consented children

	Provider type or urbanicity	Sampled	Eligible	Consented
Total children (ages 1 to 12)		**6,283**	**6,275**	**3,832**
	Child care center	1,535	1,533	1,038
	Head Start center	1,900	1,899	1,366
	Family day care home	475	475	352
	At-risk afterschool center	1,642	1,637	681
	Outside-school-hours care center	731	731	395
	Metro (CBSA)	4,815	4,811	2,994
	Non-metro (non-CBSA)	1,468	1,464	838
Total children ages 1 to 2		**898**	**898**	**666**
	Child care center	455	455	335
	Head Start center	234	234	177
	Family day care home	209	209	154
	Metro (CBSA)	681	681	518
	Non-metro (non-CBSA)	217	217	148
Total children ages 3 to 5		**3,011**	**3,008**	**2,090**
	Child care center	1,080	1,078	703
	Head Start center	1,666	1,665	1,189
	Family day care home	265	265	198
	Metro (CBSA)	2,297	2,294	1,616
	Non-metro (non-CBSA)	714	714	474
Total children ages 6 to 12		**2,374[a]**	**2,369[a]**	**1,076**
	At-risk afterschool center	1,642	1,637	681
	Outside-school-hours care center	731	731	395
	Metro (CBSA)	1,837	1,836	860
	Non-metro (non-CBSA)	537	533	216

[a] One child in a family day care home was originally age-eligible but turned age six because the target week was rescheduled.
CBSA = Core-Based Statistical Area.

A.4.5. Objective 6 sample characteristics

Tables A.31 and A.32 present the characteristics of the ECC and BAS cost samples, respectively.

Table A.31. Characteristics of early child care programs in the meal cost analysis sample

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs weighted
Program type			
Child care centers	62	35,704	71.5
Sponsored	33	23,436	65.6
Independent	29	12,268	34.4
Head Start centers	59	14,238	28.5

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs weighted
Program Size			
Small (1 to 39 enrolled)	55	14,015	28.1
Medium (40 to 79 enrolled)	39	20,369	40.8
Large (80 or more enrolled)	24	15,264	30.6
Missing	3	295	0.6
Sponsor organization type, among sponsored child care centers			
Private non-profit organization	15	9,593	40.9
Public school district or local government such as town, city, or country	4	1,269	5.4
For-profit corporation	8	7,713	32.9
Other	1	1,560	6.7
Missing	5	3,301	14.1
Urban			
Yes	81	47,300	94.7
Percentage of minority children residing in the area			
0 to less than 40 percent	56	23,502	47.1
40 to less than 80 percent	33	15,006	30.0
80 to 100 percent	31	11,400	22.8
Missing	1	34	0.1
Ages of children served			
0 to 11 months	43	25,206	50.5
12 to 35 months	64	33,404	66.9
3 to 5 years	102	43,683	87.5
5 years or older	33	24,576	49.2
Missing	11	4,578	9.2
Food and Nutrition Service Region			
Midwest	16	14,316	28.7
Northeast	21	4,247	8.5
West	26	8,368	16.8
Southwest	18	3,625	7.3
Southeast	26	14,197	28.4
Mountain Plains	10	4,486	9.0
Mid-Atlantic	4	703	1.4
Meals served			
Breakfast	113	46,810	93.7
Lunch	116	48,876	97.9
Supper	7	1,858	3.7
Snack	115	49,205	98.5

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs weighted
Cost data available for meal			
Breakfast	109	45,622	91.3
Lunch	112	48,366	96.8
Supper	2	228	0.5
Snack	115	49,205	98.5
Number of early child care programs	**121**	**49,942**	

Source: Second Study of Nutrition and Activity in Child Care Settings (SNACS-II), Cost Instruments, winter through summer, 2023, and American Community Survey, 2021.

Note: Tabulations are weighted to be nationally representative of early child care programs participating in the Child and Adult Care Food Program.

Table A.32. Characteristics of before and after school programs in the meal cost analysis sample

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs weighted
Program type			
At-risk afterschool centers	21	28,078	94.8
Sponsored	20	27,845	99.2
Independent	1	232	0.8
Outside-school-hours care centers	13	1,553	5.2
Sponsored	12	1,473	94.9
Independent	1	80	5.1
Program Size			
Small (1 to 39 enrolled)	11	12,652	42.7
Medium (40 to 79 enrolled)	5	5,838	19.7
Large (80 or more enrolled)	13	6,253	21.1
Missing	5	4,887	16.5
Sponsor organization type, among sponsored before and after school programs			
Private non-profit organization	11	10,607	36.2
Public school district or local government such as town, city, or country	13	14,417	49.2
For-profit corporation	3	1,547	5.3
Missing	5	2,748	9.4
Urban			
Yes	29	28,833	97.3
Percentage of minority children residing in the area			
0 to less than 40 percent	10	8,101	27.3
40 to less than 80 percent	10	7,544	25.5
80 to 100 percent	14	13,985	47.2

	Number of sample programs, unweighted	Number of programs, weighted	Percentage of programs weighted
Ages of children served			
5 to 12 years	29	26,883	90.7
12 years or older	11	7,086	23.9
Missing	5	2,748	9.3
Food and Nutrition Service Region			
Midwest	3	457	1.5
Northeast	7	3,081	10.4
West	4	4,279	14.4
Southwest	8	11,224	37.9
Southeast	2	1,469	5.0
Mountain Plains	3	3,585	12.1
Mid-Atlantic	7	5,536	18.7
Meals served			
Breakfast	11	5,663	19.1
Lunch	12	4,030	13.6
Supper	22	20,836	70.3
Snack	25	20,513	69.2
Cost data available for meal			
Breakfast	10	3,567	12.0
Lunch	11	3,912	13.2
Supper	21	20,652	69.7
Snack	24	20,341	68.6
Number of before and after school programs	**34**	**29,630**	

Source: Second Study of Nutrition and Activity in Child Care Settings (SNACS-II), Cost Instruments, winter through summer, 2023, and American Community Survey, 2021.

Note: Data on ownership comes from a question on the Provider Survey that was only asked of sponsored providers, so the sample size for this panel matches the number of sponsored centers in the program type panel.

A.5. Estimated precision

A.5.1. Objective 1

Precision for the Provider Survey for population proportional outcomes (P) of 0.25 and 0.50 with a 95 percent confidence level appears in Table A.33. The term *precision* represents the degree of sampling error in the estimates. The precision presented in this table is the half-width of a 95 percent confidence interval, also referred to as the *margin of error*. The margin of error regards sample expectations when selecting all possible random samples from the same population with the same sampling scheme. For an estimate with a 10 percent margin of error for a 95 percent confidence interval, sample estimates (in expectation) would produce estimates within 10 percent of the estimate from this sample for 95 percent of all possible samples. Smaller precision estimates (for example, 5 percent precision versus 10 percent precision) represent greater precision.

For an outcome of 0.25, the precision is less than 10 percentage points for all provider types. For an outcome of 0.50, the precision is less than or equal to 10 percentage points (within rounding) for all provider types except FDCHs. We did not tie the EOF sample size to a specific precision target during sample design and did not design the study to meet a certain level of precision for the EOF sample.

Table A.33. Estimated precision for the Provider Survey

		Estimated precision	
Program type	**Program completes**	**P = 0.25**	**P = 0.50**
Child care centers	224	8.9%	10.2%
Head Start centers	343	6.9%	8.0%
Family day care homes	205	9.6%	11.1%
ECC subtotal	772	6.0%	7.0%
At-risk afterschool centers	171	9.0%	10.4%
Outside-school-hours care centers	130	7.6%	8.7%
BAS subtotal	301	8.5%	9.8%
Total programs	1,073	6.3%	7.3%

BAS = before and after school programs; ECC = early child care programs; P= population proportional outcome.

Three characteristics of the sample design merit a discussion because of their relationship with precision and the design effect. First, some strata had too few OSHCCs to yield the target sample for this program type; the result is reduced precision of the OSHCC subgroup. Second, the study oversampled rural (non-CBSA) programs, thus introducing additional design effects for the overall estimates. Third, the effort to sample only one program within providers with multiple programs, which was introduced into the SNACS-II design to address burden and participation challenges documented in SNACS-I, intensified the overall design effect.

A.5.2. Objective 2

Table A.34 presents the estimated precision for the Menu Survey for population proportional outcomes of 0.25 and 0.50 with a 95 percent confidence level.

For an outcome of 0.25, the precision was lower than 10 percentage points for all provider types. For an outcome of 0.50, the precision was 10 percentage points or better (within rounding) for all provider types except FDCHs.

Table A.34. Estimated precision for the Menu Survey

		Estimated precision	
Program type	**Program completes**	**P = 0.25**	**P = 0.50**
Child care centers	223	8.9%	10.3%
Head Start centers	342	6.9%	8.0%
Family day care homes	221	9.3%	10.7%
ECC subtotal	786	6.0%	6.9%
At-risk afterschool centers	177	8.8%	10.2%
Outside-school-hours care centers	125	7.7%	8.9%
BAS subtotal	302	8.5%	9.8%

Program type	Program completes	Estimated precision	
		P = 0.25	P = 0.50
Total programs	1,088	6.3%	7.3%

BAS = before and after school program; ECC = early child care program; P= population proportional outcome.

A.5.3. Objectives 3a, 3b, 3c, 4, and 5

We provide precision for the child-level weights based on the consent form participation in Tables A.35, A.36, and A.37. We provide precision for population proportional outcomes of 0.25 and 0.50 with a 95 percent confidence level. For an outcome of 0.25, the precision is lower than 10 percentage points for all provider types for the child and teen samples but higher than 10 percentage points for all provider types for the infant sample. For an outcome of 0.50, the precision is 10 percentage points or better for all provider types for the child sample except FDCHs, AR centers, and the combined BAS sample. For the infant sample, the precision is higher than 10 percentage points for all provider types. For the teen sample, for an outcome of 0.50, the precision is 10 percentage points or better for all provider types for the teen sample except for the OSHCCs.

Table A.35. Estimated precision for consented children (age 1 to 12 years)

Program type	Consented children	Estimated precision	
		P = 0.25	P = 0.50
Child care centers	1,038	8.4%	9.7%
Head Start centers	1,366	7.4%	8.6%
Family day care homes	352	10.0%	11.5%
Total children in ECCs	**2,756**	**7.6%**	**8.8%**
At-risk afterschool centers	681	9.1%	10.5%
Outside-school-hours care centers	395	7.0%	8.1%
Total children in BASs	**1,076**	**8.7%**	**10.0%**
Total children	**3,832**	**8.5%**	**9.8%**

BAS = before and after school program; ECC = early child care program; P= population proportional outcome.

Table A.36. Estimated precision for consented infants (age 0 to 11 months)

Program type	Consented infants	Estimated precision	
		P = 0.25	P = 0.50
Child care centers	178	12.7%	14.7%
Head Start centers	44	21.8%	25.2%
Family day care homes	27	26.2%	30.2%
Total infants	**249**	**11.1%**	**12.8%**

P= population proportional outcome.

Table A.37. Estimated precision for consented teens (age 10 to 18 years)

Program type	Consented teens	Estimated precision	
		P = 0.25	P = 0.50
At-risk afterschool centers	707	8.4%	9.7%
Outside-school-hours care centers	277	9.3%	10.7%
Total teens	**984**	**5.5%**	**6.3%**

P= population proportional outcome.

A.5.5. Objective 6

Table A.38 presents the estimated precision for the combined cost study instruments for population proportional outcomes of 0.25 and 0.50 with a 95 percent confidence level.

For an outcome of 0.25, the precision was between 13 and 24 percentage points for all provider types. For an outcome of 0.50, the precision was between 15 and 28 percentage points for all provider types. These are relatively large margins of error because of the smaller number of providers that completed all six or eight (if a production kitchen served a sampled center) required cost instruments with usable data.

Table A.38. Estimated precision for the combined cost study weight (COST_WT)

Program type	Program completes	Estimated precision	
		P = 0.25	P = 0.50
Child care centers	61	16.3%	18.8%
Head Start centers	59	15.5%	17.9%
ECC subtotal	120	12.90%	14.9%
At-risk afterschool centers	22	24.3%	28.1%
Outside-school-hours care centers	13	23.6%	27.2%
BAS subtotal	35	23.4%	27.0%
Total programs	155	13.4%	15.5%

Note: The precision estimates presented in this table are based on the provider type we thought providers were at the time of sampling.

BAS = before and after school program; ECC = early child care program; P= population proportional outcome.

A.6. Study limitations

This study's potential limitations could contribute to unmeasured error. First, because the sample design has nested units (States, providers, parents), the instrument response rates must account for the response at each sampling stage. For the parent and child data collection activities, the instrument response rate also included the parent consent rates. An additional challenge for some of the objectives is that we had to include responses across multiple instruments for a case in the analytic sample. For example, the study team must have completed both meal observations and dietary recall interviews on the same child. We must also have completed up to eight cost instruments about a provider for it to be included in the cost sample. Cumulative unweighted and weighted response rates across instruments ranged from 8 to 51 percent (Tables A.9–A.13).

Lower response rates increase the risk of nonresponse bias to the extent that respondents and nonrespondents differ from each other. We adjusted the weights for nonresponse to minimize this risk.

We conducted nonresponse bias analyses and found that with the available covariates, adjusting the instrument base weights for nonresponse corrected for possible bias based on variables available for the full sample frame (data not shown). However, the variables available for these analyses are available on the frame—available for both respondents and nonrespondents. Because so few variables are available on the frame, the analyses used the nearly the same set of variables used to adjust the sampling weights for nonresponse bias. Additionally, it is possible that the weighted sample does not match on other characteristics relevant to participation in a given data collection activity that are unmeasured for the full sample frame. For example, information about lifestyle and demographic factors is not available on the frame for children, but it could be related to children's diets.

Second, programs that began operating after States produced the lists used to construct the sample frame are not represented in this study. The sample frame from which we drew the study sample was based on lists of programs compiled from States as of April 2022; therefore, the study findings represent programs in existence at that time and do not include programs that began operating subsequently.

Third, measurement or processing error may have caused inaccuracies in the data. Many of the instruments are self-reported, and respondents could have mistakenly selected or written the wrong response; might not have understood the survey question; or might have intentionally selected a response they considered more acceptable than the accurate response (that is, social desirability bias). These types of errors and biases are always possible. We minimized these risks using different strategies across instruments:

- The Provider Survey was organized into modules, and we encouraged sample members to have the most knowledgeable person respond to each module. The goal was to reduce respondent fatigue and invite answers from the most knowledgeable person for each topic.
- We had field staff administer the cost interviews to avoid asking sample members to provide accurate information on their own in these very complex instruments.
- Staff reviewed height and weight measurements for implausible values and potentially incorrect units, such as measuring weight in pounds rather than kilograms.

In addition to the above, general limitations, the procedures for meal observations, dietary intakes, and meal cost analyses warrant additional discussion. In the meal observations, field staff visually estimated the amounts of foods and liquids served and wasted as a proportion of a standard serving, and visual estimates may be prone to error. However, measurement errors are likely to be random. We trained field staff to weigh standard servings in gram and ounce quantities and to make accurate, visual estimates of the amount of food served and remaining on children's plates. We carefully reviewed and edited the data to minimize errors.

Despite the known limitations of 24-hour dietary recalls, they are still considered a preferred method for estimating dietary intakes of children (Foster 2018). However, data from a single 24-hour recall do not provide a complete picture of a person's usual intake because intakes of specific nutrients and food groups may vary greatly from day to day. Experts in diet assessment have found that data from a single 24-hour recall will lead to biased estimates of the proportion of a group with usual daily intakes above or below a standard (Beaton et al. 1983). In SNACS-II, the parent of the child self-reported the dietary intake

data on non-child care days; on child-care days, we collected dietary intake data using a combination of field staff conducting meal observations on site and parents' reports. Thus, field staff and parents could have misreported a food or beverage or portion size, or parents could have provided an inaccurate, socially acceptable response.

For the meal cost analyses, we carefully reviewed and edited the data to minimize errors; however, this study required field staff and respondents to complete long, complex, and interconnected instruments. Although we identified and corrected errors through an extensive review and data cleaning process, there may be unidentifiable inaccuracies in the data introduced by either field staff or respondents. Known data concerns include the following:

- The data required to calculate the CWR (see Section A.3.4 above for a description of the CWR calculation) were more challenging for field staff to collect because staff had to shift between entirely different procedures for individual- and classroom-level data collection in short time frames for meal and snack service. We are confident that data collectors captured the information necessary for us to calculate the CWR and make the adjustment because the data collected for observed meals were complete and accurate. The team did, however, need to impute CWR data for programs missing this data.
- Data on sponsor- (if applicable) and program-level labor costs came from the SCCI, CDCI, and CFSCI. Together, the instruments captured data for sponsor- and program-level administrative, food service, and nonfood service staff and contractors. It was challenging for some respondents to report information for some staff (for example, salaries/wages and contractor time use). It is also possible that respondents overestimated the time staff spent on some tasks.
- There were larger amounts of item-level missing and unusable data on the self-administered instruments that captured data on days in session and meal counts, which were essential for estimating per-meal costs. The team made sure that labor costs were paired with the appropriate counts (for example, program-level labor costs were paired with program-level counts and annual costs were paired with annual counts) and replaced unreasonable reported counts with annualized counts where appropriate. Even so, several programs had missing and unusable meal counts that we could not estimate, and we excluded estimates for these programs from the analysis.

Because several programs with all the required instruments were missing item-level data, the analysis team imputed data required to estimate labor and food costs and meal counts, with the goal of including a larger number of cases in the analysis. Imputation for food prices and food waste data was more extensive than for labor costs. For most cases, we needed to impute data for one or two staff members. The calculations for annualizing program-level meal counts required the number of days a program served a meal during the year, and this data was missing for many programs. Meal counts, reported and imputed, are of the most concern. Having accurate meal counts is critical to analysis, and if reported counts are unreasonable or incorrect, or annualized counts do not reflect the true counts for the year, then the labor cost per meal estimates could be under or over estimated.

A.7. Crosswalks of research questions to analysis tables

Appendices B-H contain the analysis tables to answer the study RQs. The crosswalks in this section present the RQs, data sources, and table numbers and titles for each study objective:

Table A.39 presents supplementary tables in Appendices B and C that answer Objective 1 RQs about the characteristics of providers participating in CACFP; the CACFP environment; providers' menu planning, meal purchasing, and food service practices; and providers' wellness policies and practices.

Table A.39. Objective 1 research questions, data sources, and analytic tables

Research question	Data source	Table number	Table title
Menu planning practices			
1. Are menus planned by another entity or the provider? What influences a provider's menu planning practices?	Provider Survey	B.1	Menu planners' affiliation, background, and training in early child care programs
		B.2	Menu planners' affiliation, background, and training in before and after school programs
		B.3	Considerations in menu planning in early child care programs
		B.4	Considerations in menu planning in before and after school programs
2. What types of food storage and preparation equipment do providers have onsite?	Provider Survey	B.5	Food preparation and storage equipment available in early child care programs
		B.6	Food preparation and storage equipment available in before and after school programs
3. What percentage of providers use cycle menus? By number of weeks, what is the distribution and average length of how often providers cycle their menus?	Provider Survey	B.7	Use of menu cycles in early child care programs
		B.8	Use of menu cycles in before and after school programs
4. What percentage of providers conduct nutritional analyses of their menus? What percentage make use of tools and resources for selecting and purchasing healthier foods?	Provider Survey	B.9	Nutrient analysis and tools used for selecting and purchasing healthier foods in early child care programs
		B.10	Nutrient analysis and tools used for selecting and purchasing healthier foods in before and after school programs
5. What challenges have providers faced related to menu planning after the implementation of the updated meal pattern?[a]	Provider Survey	B.11	Challenges in planning menus that meet the CACFP meal patterns in early child care programs
		B.12	Challenges in planning menus that meet the CACFP meal patterns in before and after school programs
		B.13	Challenges in planning menus that meet the CACFP meal patterns in early child care programs, by share of minority children residing in the area
		B.14	Challenges in planning menus that meet the CACFP meal patterns in before and after school programs, by share of minority children residing in the area
Meal purchasing practices			
6a. What are typical purchasing practices with regard to branded	Provider Survey	B.15	Places early child care programs shop for fresh fruits and vegetables
		B.16	Places before and after school programs shop for fresh fruits and vegetables

Research question	Data source	Table number	Table title
entrées, pre-prepared foods, fresh fruits and vegetables, and locally produced foods?			
6b. What barriers do providers face in purchasing and serving healthy foods?	Provider Survey	B.17	Barriers to purchasing and serving healthy foods in early child care programs
		B.18	Barriers to purchasing and serving healthy foods in before and after school programs
6. Where and with what frequency do providers obtain food for meals? What is the job title for the individual who is responsible for food purchases? How does the distribution of food sources differ by provider characteristics?	Provider Survey	B.19	Sources of foods for meals and snacks in early child care programs
		B.20	Sources of foods for meals and snacks in before and after school programs
		B.21	Sources of foods for meals and snacks in early child care programs, by share of minority children residing in the area
		B.22	Sources of foods for meals and snacks in before and after school programs, by share of minority children residing in the area
		B.23	Frequency of using different food sources, among early child care programs that used each
		B.24	Frequency of using different food sources, among before and after school programs that use each
		B.25	Frequency of using different food sources, among early child care programs that used each, by share of minority children residing in the area
		B.26	Frequency of using different food sources, among before and after school programs that use each, by share of minority children residing in the area
		B.27	Entities responsible for food purchases in early child care programs
		B.28	Entities responsible for food purchases in before and after school programs
		B.29	Entities responsible for food purchases in early child care programs, by share of minority children residing in the area
		B.30	Entities responsible for food purchases in before and after school programs, by share of minority children residing in the area
7. Who conducts documentation of meal counts? What is the frequency of use of different meal counting and documentation methods?	Provider Survey	B.31	Entities responsible for documenting meal counts and methods used in early child care programs
		B.32	Entities responsible for documenting meal counts and methods used in before and after school programs

Research question	Data source	Table number	Table title
Food services practices			
9a. What are the policies and practices on receiving seconds for meals and snacks? Declining a food or beverage?[a]	Provider Survey	B.33	Policies about declining food and serving seconds in early child care programs
		B.34	Policies about declining food and serving seconds in before and after school programs
9b. Do providers have a "share table"? What strategies do providers use to reduce plate waste?	Provider Survey	B.35	Strategies used to reduce plate waste in early child care programs
		B.36	Strategies used to reduce plate waste in before and after school programs
11. What time of day are meals/snacks served?[b]	Provider Survey	B.37	Meals and snacks served in early child care programs
		B.38	Meals and snacks served in before and after school programs
12. What policies and procedures do providers follow to ensure food safety? How does the frequency of use of them vary by provider characteristics? What is the frequency of use of inventory control processes in place to allow for a product to be traced during a recall?	Provider Survey	B.39	Food safety policies and practices in early child care programs
		B.40	Food safety policies and practices in before and after school programs
13. What are providers' practices related to serving water and prompting children to drink water?	Environmental Observation Form	B.41	Drinking water practices in early child care programs
		B.42	Drinking water practices in before and after school programs
14. What are providers' policies and practices about children bringing snacks/meals from home?	Provider Survey	B.43	Entities that provide food for snacks and meals in early child care programs
		B.44	Entities that provide food for snacks and meals in before and after school programs
		B.45	Policies on types of food and beverages that can be brought from home in early child care programs
		B.46	Policies on types of food and beverages that can be brought from home in before and after school programs
Wellness policies and practices			
15. How often and how much time are children provided physical activities? What are the types of physical activities	Environmental Observation Form Provider Survey	C.1	Physical activity offered in early child care programs
		C.2	Physical activity offered in before and after school programs
		C.3	Physical activity equipment in early child care programs
		C.4	Physical activity equipment in before and after school programs

Research question	Data source	Table number	Table title
offered? Which are offered most frequently?		C.5	Structured physical activity offered in early child care programs
		C.6	Structured physical activity offered in before and after school programs
		C.7	Early child care programs that take children off-site for physical activity
		C.8	Before and after school programs that provide recreational or sports programming with time for physical activity
16. How much time do children spend in non-meal, non-screen–based sedentary activities?	Environmental Observation Form	C.9	Sedentary activity in early child care programs
		C.10	Sedentary activity in before and after school programs
17. How much time is spent on "screen time"?[c]	Environmental Observation Form	C.11	Group screen time in early child care programs
		C.12	Group screen time in before and after school programs
18. How do physical activity levels compare with appropriate national recommendations?	Environmental Observation Form	C.13	Adherence to Caring for Our Children physical activity guidance for children ages 12-71 months in early child care programs
		C.14	Adherence to National Afterschool Association Healthy Eating Physical Activity guidance for school-age youth in before and after school programs
19. What are barriers to providing physical activities? How do each of these impact the quantity and type of physical and sedentary activities? How does this differ for transient barriers vs. more permanent barriers?[a]	Provider Survey Environmental Observation Form	C.15	Barriers that make it hard for children to get physical activity in early child care programs
		C.16	Barriers that make it hard for children to get physical activity in before and after school programs
		C.17	Barriers that make it hard for children to get physical activity in early child care programs, by share of minority children residing in the area
		C.18	Barriers that make it hard for children to get physical activity in before and after school programs, by share of minority children residing in the area
		C.19	Differences in physical activity, screen, and total sedentary time between early child care programs with and without barriers to physical activity
		C.20	Differences in physical activity, screen, and total sedentary time between before and after school programs with and without barriers to physical activity
		C.21	Early child care programs that reported lacking equipment or space for physical activity
		C.22	Before and after school programs that reported lacking equipment or space for physical activity

Research question	Data source	Table number	Table title
		C.23	Early child care programs observed lacking equipment or space for physical activity
		C.24	Before and after school programs observed lacking equipment or space for physical activity
		C.25	Early child care programs that reported restricting active play as a disciplinary measure
		C.26	Before and after school programs that reported restricting active play as a disciplinary measure
		C.27	Early child care programs that reported restricting active play as a disciplinary measure, by share of minority children residing in the area
		C.28	Before and after school programs that reported restricting active play as a disciplinary measure, by share of minority children residing in the area
		C.29	Early child care programs observed restricting active play as a disciplinary measure among programs that had any physical activity
		C.30	Before and after school programs observed restricting active play as a disciplinary measure among programs that had any physical activity
		C.31	Early child care programs observed restricting active play as a disciplinary measure among programs that had any physical activity, by share of minority children residing in the area
		C.32	Before and after school programs observed restricting active play as a disciplinary measure among programs that had any physical activity, by share of minority children residing in the area
General provider characteristics			
20. What is the primary language spoken by the families in the providers' care? What is the primary language spoken by the providers?	Provider Survey	B.47	Primary languages spoken in early child care programs
		B.48	Primary languages spoken in before and after school programs
21. What policies and procedures are used to accommodate children with special dietary needs? What policies and procedures are used to accommodate	Provider Survey	B.49	Policies about managing special dietary needs in early child care programs
		B.50	Policies about managing special dietary needs in before and after school programs
		B.51	Policies about accommodating children with disabilities or impairments in early child care programs

Research question	Data source	Table number	Table title
children with disabilities or impairments?		B.52	Policies about accommodating children with disabilities or impairments in before and after school programs
22. What percent of ECCs also have an afterschool program? What percent participate in the at-risk afterschool component? The OSHCC component?	Provider Survey	B.53	Early child care providers that also operate a before and after school program
23. What resources or technical assistance do providers currently use to select and purchase foods? What additional resources would be useful?	Provider Survey	B.54	Resources and tools used for the selection and purchasing of healthier foods in early child care programs
		B.55	Resources and tools used for the selection and purchasing of healthier foods in before and after school programs
24. What challenges do providers face as participants in the CACFP?[a]	Provider Survey	B.56	Challenges faced by early child care programs participating in CACFP
		B.57	Challenges faced by before and after school programs participating in CACFP
25. What changes might help child care providers who do not currently participate in the CACFP decide to participate?	Provider Survey	B.58	Changes that could help early child care programs that do not currently participate in CACFP decide to participate
		B.59	Changes that could help before and after school programs that do not currently participate in CACFP decide to participate
26. How long have providers been in operation?[d]	Provider Survey	B.60	Length of program operation in before and after school programs
Comparisons to SNACS-I			
27. How have children's physical activity levels changed since PY 2016–2017 when SNACS-I was conducted?[a,e]	Environmental Observation Form	C.33	Physical activity levels in early child care programs in SNACS-I and SNACS-II
		C.34	Physical activity levels in before and after school programs in SNACS-I and SNACS-II
28. How has the percentage of providers meeting recommendations for physical activity changed since PY 2016–2017 when SNACS-I was conducted?[a,e]	Environmental Observation Form	C.35	Providers meeting recommendations for physical activity in SNACS-I and SNACS-II
29. How have sources of food purchases changed since PY 2016–2017 when SNACS-I was conducted?[a]	Provider Survey	B.61	Sources of foods for meals and snacks in early child care programs in SNACS-I and SNACS-II
		B.62	Sources of foods for meals and snacks in before and after school programs in SNACS-I and SNACS-II
30. How have reported difficulties providers face in participating in the	Provider Survey	B.63	Challenges participating in CACFP that early child care programs faced in SNACS-I and SNACS-II

Research question	Data source	Table number	Table title
CACFP changed since PY 2016–2017 when SNACS-I was conducted?[a]		B.64	Challenges participating in CACFP that before and after school programs faced in SNACS-I and SNACS-II

Note: Research question numbers are consistent with Table VII.1 in the SNACS-II final study plan (Fox et al. 2021).

[a] Includes significance testing.

[b] Findings for part of Research Question 10 ("What type of meal service do providers use? Do the providers sit with the children while eating? Do they eat the same meals and snacks as the children?") and the second part of Research Question 11 ("How much time do children have to eat their meals and snacks?") are included in Tables G.80-G.91 in Appendix G.

[c] Does not include screen time when children were mostly physically active.

[d] This survey question was not fielded to early child care programs.

[e] There were too many unreliable estimates in the SNACS-I data to break these comparisons down for other provider subgroups.

CACFP = Child and Adult Care Food Program; ECC = early child care program; OSHCC = outside-school-hours care center; PY = program year; SNACS = Study of Nutrition and Activity in Child Care Settings.

Table A.40 presents supplementary tables in Appendix D. These tables answer Objective 2 RQs about the food, calorie, and nutrient content of CACFP meals and snacks and the overall nutritional quality of these meals and snacks.

Table A.40. Objective 2 research questions, data sources, and analytic tables

Research question	Data source	Table number	Table title
1. What is the average calorie and nutrient content, overall and for each type of meal served, including snacks, in a typical week?	Menu Survey	D.1	Mean nutrient content of CACFP breakfasts served in early child care programs
		D.2	Mean nutrient content of CACFP lunches served in early child care programs
		D.3	Mean nutrient content of CACFP snacks served in early child care programs
		D.4	Mean nutrient content of CACFP breakfasts served in outside-school-hours care centers
		D.5	Mean nutrient content of CACFP snacks served in before and after school programs
		D.6	Mean nutrient content of CACFP suppers served in before and after school programs
		D.7	Mean and distribution of calories and nutrients in CACFP breakfasts served to 1 to 2 year olds in early child care programs
		D.8	Mean and distribution of calories and nutrients in CACFP breakfasts served to 3 to 5 year olds in early child care programs
		D.9	Mean and distribution of calories and nutrients in CACFP lunches served to 1 to 2 year olds in early child care programs
		D.10	Mean and distribution of calories and nutrients in CACFP lunches served to 3 to 5 year olds in early child care programs

Research question	Data source	Table number	Table title
		D.11	Mean and distribution of calories and nutrients in CACFP snacks served to 1 to 2 year olds in early child care programs
		D.12	Mean and distribution of calories and nutrients in CACFP snacks served to 3 to 5 year olds in early child care programs
		D.13	Mean and distribution of calories and nutrients in CACFP snacks served to 3 to 5 year olds in before and after school programs
		D.14	Mean and distribution of calories and nutrients in CACFP snacks served to 6 to 12 year olds in before and after school programs
		D.15	Mean and distribution of calories and nutrients in CACFP suppers served to 3 to 5 year olds in before and after school programs
		D.16	Mean and distribution of calories and nutrients in CACFP suppers served to 6 to 12 year olds in before and after school programs
2. How do the meals and snacks served compare to the most recent CACFP meal patterns?	Menu Survey, Meal Observation Booklet	D.17	Early child care programs serving all required meal components in CACFP breakfasts
		D.18	Early child care programs serving all required meal components in CACFP lunches
		D.19	Early child care programs serving all required meal components in CACFP snacks
		D.20	Early child care programs serving all required meal components across all CACFP melas and snacks
		D.21	Early child care programs serving each required meal component in CACFP breakfasts
		D.22	Early child care programs serving each required meal component in CACFP lunches
		D.23	Early child care programs serving each required meal component in CACFP snacks
		D.24	Early child care programs meeting select requirements on all days across all meals and snacks
		D.25	Before and after school programs serving all required meal components in CACFP snacks
		D.26	Before and after school programs serving all required meal components in CACFP snacks, by share of minority children
		D.27	Before and after school programs serving all required meal components in CACFP suppers
		D.28	Before and after school programs serving all required meal components across all CACFP meals and snacks

Research question	Data source	Table number	Table title
		D.29	Before and after school programs serving all required meal components across all CACFP meals and snacks, by share of minority children
		D.30	Mean percentage of providers serving each required meal component in CACFP breakfasts in outside-school-hours care centers
		D.31	Before and after school programs serving each required meal component in CACFP snacks
		D.32	Before and after school programs serving each required meal component in CACFP suppers
		D.33	Before and after school programs meeting select requirements on all days across all meals and snacks
		D.34	CACFP meal pattern food groups in breakfasts in early child care programs
		D.35	CACFP meal pattern food groups in lunches and suppers in early child care programs
		D.36	CACFP meal pattern food groups in snacks in before and after school programs
3. How do the meals and snacks served compare to the Dietary Guidelines, using the most current version of the Healthy Eating Index as a measure of nutritional quality?[a]	Menu Survey	D.37	Mean Healthy Eating Index–2015 scores for breakfasts served in early child care programs
		D.38	Mean Healthy Eating Index–2015 scores for CACFP lunches served in early child care programs
		D.39	Mean Healthy Eating Index–2015 scores for CACFP snacks served in early child care programs
		D.40	Mean Healthy Eating Index–2015 scores for CACFP breakfasts served in outside-school-hours care centers
		D.41	Mean Healthy Eating Index–2015 scores for CACFP snacks served in before and after school programs
		D.42	Mean Healthy Eating Index–2015 scores for CACFP suppers served in before and after school programs
		D.43	Mean Healthy Eating Index–2015 scores for all CACFP meals served in early child care programs
		D.44	Mean Healthy Eating Index–2015 scores for all CACFP meals served in before and after school programs
		D.45	Mean Healthy Eating Index–2015 scores for all CACFP meals served in early child care programs, by share of minority children

Research question	Data source	Table number	Table title
		D.46	Mean Healthy Eating Index–2015 scores for all CACFP meals served in before and after school programs, by share of minority children
4. How does the nutritional quality of meals vary by general characteristics of the provider and their food service practices?	Menu Survey, Meal Observation Booklet, Provider Survey	D.85	Multivariate analysis of total HEI scores on provider characteristics, using meal pattern group for ages 1 to 2
		D.86	Multivariate analysis of total HEI scores on provider characteristics, using meal pattern group for ages 3 to 5
		D.87	Multivariate analysis of total HEI scores on provider characteristics, using meal pattern group for ages 6 to 12
5a. What are the major food sources of calories, saturated fat, and key nutrients in meals and snacks served?	Menu Survey	D.47	Major food group sources of calories, key nutrients, and other dietary components in CACFP breakfasts
		D.48	Major food group sources of calories, key nutrients, and other dietary components in CACFP lunches
		D.49	Major food group sources of calories, key nutrients, and other dietary components in CACFP snacks
		D.50	Minor food group sources of calories, key nutrients, and other dietary components in CACFP breakfasts
		D.51	Minor food group sources of calories, key nutrients, and other dietary components in CACFP lunches
		D.52	Minor food group sources of calories, key nutrients, and other dietary components in CACFP snacks
5b. What foods are served most frequently among the various menu elements?	Menu Survey	D.53	Foods served most frequently in CACFP breakfasts in early child care programs
		D.54	Foods served most frequently in CACFP lunches in early child care programs
		D.55	Foods served most frequently in CACFP morning and afternoon snacks in early child care programs
		D.56	Foods served most frequently in CACFP breakfasts in outside of school hours programs
		D.57	Foods served most frequently in CACFP afternoon snacks in before and after school programs
		D.58	Foods served most frequently in CACFP suppers in before and after school programs
	Menu Survey	D.59	Availability of fresh fruits and vegetables in CACFP breakfasts served in early child care programs

Research question	Data source	Table number	Table title
5c. How frequently do meals include fresh produce and whole grains/whole grain–rich items?		D.60	Availability of fresh fruits and vegetables in CACFP lunches in early child care programs
		D.61	Availability of fresh fruits and vegetables in CACFP snacks in early child care programs
		D.62	Availability of fresh fruits and vegetables in CACFP breakfasts in outside-school-hours care centers
		D.63	Availability of fresh fruits and vegetables in CACFP snacks in before and after school programs
		D.64	Availability of fresh fruits and vegetables in CACFP suppers in before and after school programs
		D.65	Availability of whole grain-rich foods in CACFP breakfasts in early child care programs
		D.66	Availability of whole grain-rich foods in CACFP lunches in early child care programs
		D.67	Availability of whole grain-rich foods in CACFP snacks in early child care programs
		D.68	Availability of whole grain-rich foods in CACFP breakfasts in outside-school-hours care centers
		D.69	Availability of whole grain-rich foods in CACFP snacks in before and after school programs
		D.70	Availability of whole grain-rich foods in CACFP suppers in before and after school programs
7. How has the nutritional quality of meals and snacks changed since PY 2016–2017 when SNACS-I was conducted?[a] 8. How has the mean calorie and nutrient content of meals and snacks changed since PY 2016–2017 when SNACS-I was conducted?[a]	Menu Survey	D.71	Mean total Healthy Eating Index-2015 score and mean nutrient content of CACFP breakfasts served to children ages 3 to 5 in early child care programs in SNACS-I and SNACS-II
		D.72	Mean total Healthy Eating Index-2015 score and mean nutrient content of CACFP lunches served to children ages 3 to 5 in early child care programs in SNACS-I and SNACS-II
		D.73	Mean total Healthy Eating Index-2015 score for all CACFP meals and snacks served to children ages 3 to 5 in early child care programs in SNACS-I and SNACS-II
		D.74	Mean total Healthy Eating Index-2015 score and mean nutrient content of CACFP afternoon snacks served to children ages 6 to 12 in before and after school programs in SNACS-I and SNACS-II

Research question	Data source	Table number	Table title
		D.75	Mean total Healthy Eating Index-2015 score and mean nutrient content of CACFP suppers served to children ages 6 to 12 in before and after school programs in SNACS-I and SNACS-II
		D.76	Mean total Healthy Eating Index-2015 score for all CACFP meals and snacks served to children ages 6 to 12 in before and after school programs in SNACS-I and SNACS-II
9. How has the frequency of serving various food groups in meals and snacks changed since PY 2016–2017 when SNACS-I was conducted?[a]	Menu Survey	D.77	Major food groups served in CACFP breakfasts to children ages 3 to 5 in early child care programs in SNACS-I and SNACS-II
		D.78	Major food groups served in CACFP lunches to children ages 3 to 5 in early child care programs in SNACS-I and SNACS-II
		D.79	Major food groups served in CACFP afternoon snacks to children ages 6 to 12 in before and after school programs in SNACS-I and SNACS-II
		D.80	Major food groups served in CACFP suppers to children ages 6 to 12 in before and after school programs in SNACS-I and SNACS-II
10. How has the availability of fresh produce in meals and snacks changed since PY 2016–2017 when SNACS-I was conducted?[a]	Menu Survey	D.81	Availability of fresh fruits and vegetables in CACFP breakfasts served to children ages 3 to 5 in early child care programs in SNACS-I and SNACS-II
		D.82	Availability of fresh fruits and vegetables in CACFP lunches served to children ages 3 to 5 in early child care programs in SNACS-I and SNACS-II
		D.83	Availability of fresh fruits and vegetables in CACFP afternoon snacks served to children ages 6 to 12 in before and after school programs in SNACS-I and SNACS-II
		D.84	Availability of fresh fruits and vegetables in CACFP suppers served to children ages 6 to 12 in before and after school programs in SNACS-I and SNACS-II

Note: Research question numbers are consistent with Table VII.2 in the SNACS-II final study plan (Fox et al. 2021).

[a] Includes significance testing.

CACFP = Child and Adult Care Food Program; HEI = Healthy Eating Index; SNACS = Study of Nutrition and Activity in Child Care Settings.

Table A.41 presents supplementary tables in Appendix E that answer Objective 6 RQs about the cost of producing an average CACFP breakfast, lunch, supper, and snack.

Table A.41. Objective 6 research questions, data sources, and analytic tables

Research question	Data source	Table number	Table title
Cost analyses			
1. What is the average cost of producing reimbursable CACFP meals and snacks?	SCCI, CFSCI, CDCI, SACQ, Meal & Snack Count Booklet, Menu Survey, Meal Observation Booklet	E.1	Total cost (food and labor) per meal for early child care programs
		E.2	Total cost (food and labor) per meal for before and after school programs
		E.3	Food cost per infant feeding in early child care programs
		E.4	Distribution of programs by total cost (food and labor) per CACFP breakfast in early child care programs
		E.5	Distribution of programs by total cost (food and labor) per CACFP lunch in early child care programs
		E.6	Distribution of programs by total cost (food and labor) per CACFP snack in early child care programs
		E.7	Distribution of programs by total cost (food and labor) per CACFP breakfast in before and after school programs
		E.8	Distribution of programs by total cost (food and labor) per CACFP supper in before and after school programs
		E.9	Distribution of programs by total cost (food and labor) per CACFP snack in before and after school programs
2. What is the composition of costs?	SCCI, CFSCI, CDCI, SACQ, Meal & Snack Count Booklet, Menu Survey, Meal Observation Booklet	E.10	Cost per CACFP meal by cost component for early child care programs
		E.11	Cost per CACFP meal by cost component for before and after school programs
		E.12	Composition of labor costs by activity for early child care programs
		E.13	Composition of labor costs by activity for before and after school programs
3. What supports other than per-meal reimbursements do centers and sponsors receive?	SCCI	E.14	Types of revenues identified in early child care programs
		E.15	Types of revenues identified in before and after school programs
4. How do the average full costs of producing reimbursable meals and snacks compare to CACFP reimbursements?	SCCI, CFSCI, CDCI, SACQ, Meal & Snack Count Booklet, Menu Survey, Meal Observation Booklet	E.16	USDA subsidy as a percentage of food cost and as a percentage of total cost (food and labor) per meal in early child care programs
		E.17	USDA subsidy as a percentage of food cost and as a percentage of total cost (food and labor) per meal in before and after school programs

Research question	Data source	Table number	Table title
5. What is the relationship between meal costs and provider characteristics, including the use of fresh produce?	SCCI, CFSCI, CDCI, SACQ, Meal & Snack Count Booklet, Menu Survey, Meal Observation Booklet	E.18	Relationships between key program characteristics and total per-breakfast costs
		E.19	Relationships between key program characteristics and total per-lunch costs
		E.20	Relationships between key program characteristics and total per-snack costs
6. What is the relationship between meal costs and nutritional characteristics of meals?	SCCI, CFSCI, CDCI, SACQ, Meal & Snack Count Booklet, Menu Survey, Meal Observation Booklet	E.21	Relationships between nutritional characteristics of meals and total per-breakfast costs
		E.22	Relationships between nutritional characteristics of meals and total per-lunch costs
		E.23	Relationships between nutritional characteristics of meals and total per-snack costs
7. What is the relationship between food costs and nutritional characteristics of meals?	SCCI, CFSCI, CDCI, SACQ, Meal & Snack Count Booklet, Menu Survey, Meal Observation Booklet	E.24	Relationships between nutritional characteristics of meals and per-breakfast food costs
		E.25	Relationships between nutritional characteristics of meals and per-lunch food costs
		E.26	Relationships between nutritional characteristics of meals and per-snack food costs
Comparisons to SNACS-I			
8. How have meal costs changed since PY 2016-2017 when SNACS-I was conducted?	SCCI, CFSCI, CDCI, SACQ, Meal & Snack Count Booklet, Menu Survey, Meal Observation Booklet	E.27	Total cost (food and labor) per CACFP meal in early child care programs in SNACS-I and SNACS-II
		E.28	Total cost (food and labor) per CACFP meal in before and after school programs in SNACS-I and SNACS-II

Note: Research question numbers are consistent with Table VII.2 in the SNACS-II final study plan (Fox et al. 2021).

CACFP = Child and Adult Care Food Program; CDCI = Center Director Cost Interview; CFSCI = Center Food Service Cost Interview; PY = program year; SACQ = Self-Administered Cost Questionnaire; SCCI = Sponsor/Center Cost Interview; SNACS = Study of Nutrition and Activity in Child Care Settings; USDA = U.S. Department of Agriculture.

Table A.42 presents supplementary tables in Appendix F that answer RQs for Objectives 3b and 3c (characteristics of children and families served by CACFP providers, and characteristics of teens who participate in CACFP through BASs and the food content of meals and snacks offered to teens in these settings.

Table A.42. Objective 3b and 3c research questions, data sources, and analytic tables

Research question	Data source	Table number	Table title
Objective 3b			
1a. How many children usually bring meals/snacks from home?	Parent Interview	F.1	Children in early child care programs whose parents reported sending food from home, and reasons for doing so: children ages 1 to 5
1b. What is the frequency with which children bring food from home?	Parent Interview	F.1	Children in early child care programs whose parents reported sending food from home, and reasons for doing so: children ages 1 to 5
1c. Why are children bringing food from home?	Parent Interview	F.1	Children in early child care programs whose parents reported sending food from home, and reasons for doing so: children ages 1 to 5
2. What are children's weight status (BMI and percentage overweight or underweight)?	Height and Weight Form	F.2	Weight-for-age status for children younger than 2 years, measured in early child care programs
		F.3	Weight status for children ages 2 to 5 years, measured in early child care programs
		F.4	Weight status for children ages 6 to 12 years, measured in before and after school programs
3. What is children's activity level outside of care, reported by parents? How much physical activity is spent outdoors?	Parent Interview	F.5	Activity levels of children in early child care programs by percentage
		F.6	Activity levels of children in before and after school programs by percentage
4a. What is the food security status of households?	Parent Interview	F.7	Food security status and public assistance participation of CACFP participants in early child care programs
		F.8	Food security status and public assistance participation of CACFP participants in before and after school programs
4b. What is the food security status of children?	Parent Interview	F.7	Food security status and public assistance participation of CACFP participants in early child care programs
		F.8	Food security status and public assistance participation of CACFP participants in before and after school care programs
5. How many families participate in other food assistance programs?	Parent Interview	F.7	Food security status and public assistance participation of CACFP participants in early child care programs
		F.8	Food security status and public assistance participation of CACFP participants in before and after school care programs

Research question	Data source	Table number	Table title
6. How many families participate in other support programs?	Parent Interview	F.7	Food security status and public assistance participation of CACFP participants in early child care programs
		F.8	Food security status and public assistance participation of CACFP participants in before and after school care programs
7. What are the average hours per day and per week that children spend in the care of a CACFP provider?	Parent Interview	F.9	Average amount of time children spent in early child care programs
		F.10	Average amount of time children spent in before and after school programs
8. How has children's weight status changed since PY 2016-2017 when SNACS-I was conducted?	Height and Weight Form	F.51	Weight-for-age status for children younger than two years old measured in early child care programs in SNACS-I and SNACS-II
		F.52	Weight status for children in early child care programs ages 3 to 5 in SNACS-I and 2 to 5 years old in SNACS-II
		F.53	Weight status for children ages 6 to 12 measured in before and after school programs in SNACS-I and SNACS-II
Objective 3c			
1. Describe the quantity and type of physical and sedentary activities in which teens participate. How do these compare to the national guidelines?	Teen Survey	F.11	Teens meeting national physical activity recommendations
	Teen Survey	F.12	Number of days per week teens had at least 60 minutes of physical activity
	Teen Survey	F.13	Number of days per week teens had at least 60 minutes of physical activity, by age group
	Teen Survey	F.15	Number of days per week teens had at least 60 minutes of physical activity, by race and ethnicity
	Teen Survey	F.16	Number of days per week teens had at least 60 minutes of physical activity, by household income
	Teen Survey	F.17	Number of days per week teens had at least 30 minutes of physical activity
	Teen Survey	F.18	Types of moderate to vigorous physical activities reported by teens
	Teen Survey	F.19	Number of days spent engaging in bone-strengthening activities
	Teen Survey	F.20	Types of bone-strengthening activities teens engaged in
	Teen Survey	F.21	Number of days of school with physical education classes
	Teen Survey	F.22	Number of sports teams played on in the past 12 months
	Teen Survey	F.23	Hours spent watching TV or videos on school days and non-school days
	Teen Survey	F.24	Hours spent watching TV or videos on school days and non-school days, by age group

Research question	Data source	Table number	Table title
	Teen Survey	F.26	Hours spent watching TV or videos on school days and non-school days, by race and ethnicity
	Teen Survey	F.27	Hours spent watching TV or videos on school days and non-school days, by household income
	Teen Survey	F.28	Hours spent playing video games, accessing the internet, or using social media on school days and non-school days
	Teen Survey	F.29	Hours spent playing video games, accessing the internet, or using social media on school days and non-school days, by age group
	Teen Survey	F.31	Hours spent playing video games, accessing the internet, or using social media on school days and non-school days, by race and ethnicity
	Teen Survey	F.32	Hours spent playing video games, accessing the internet, or using social media on school days and non-school days, by household income
2. Determine the food content of CACFP meals and snacks served to teens, including the food items offered and the number of choices offered.	Menu Survey	F.33	Foods served most frequently to teens in CACFP suppers in before and after school programs
		F.34	Foods served most frequently to teens in CACFP afternoon snacks in before and after school programs
		F.35	Choices offered to teens in CACFP suppers for each meal component in before and after school programs
		F.36	Choices offered to teens in CACFP afternoon snacks for each meal component in before and after school programs
3. What are the average hours per day and per week that teens spend at AR centers and OSHCCs?	Teen Survey	F.37	Average number of hours spent in care per day and per week
4. What is the food security status of teens' households? What is the food security status of teens?	Teen Survey	F.39	Teen-reported food security status
	Teen Survey	F.40	Teen-reported food security status, by age group
	Teen Survey	F.41	Teen-reported food security status, by race and ethnicity
	Teen Survey	F.42	Teen-reported food security status, by household income
	Parent Interview and Teen Parent Interview	F.43	Parent-reported food security status of their teen
	Parent Interview and Teen Parent Interview	F.44	Parent-reported food security status of the household

Research question	Data source	Table number	Table title
	Parent Interview and Teen Parent Interview	F.45	Parent-reported food security status of the household, by household income
	Parent Interview and Teen Parent Interview	F.46	Comparison of teen- and parent-reported food security status in before and after school programs
	Parent Interview and Teen Parent Interview	F.47	Comparison of teen- and parent-reported food security status, by household income
5. How many families participate in other assistance programs?	Parent Interview and Teen Parent Interview	F.48	Household participation in assistance programs
	Parent Interview and Teen Parent Interview	F.49	Household participation in assistance programs, by household income
	Parent Interview and Teen Parent Interview	F.50	Household participation in assistance programs, by combinations of assistance programs
Objective 5			
1. What is the distribution and variety of foods served in a typical week? What foods are served most frequently?	Infant Menu Survey	H.1	Major and minor food groups served in daily infant menus in early child care programs, overall and by infant age groups
2. How often are providers using responsive feeding techniques with infants? How do they determine the end of infant feedings?	Provider Survey	H.4	Infant feeding techniques, as reported by early child care programs
3a. What is the percent of providers serving solid foods to infants under 6 months and under 4 months of age?	Infant Menu Survey	H.2	Early child care programs serving any solid foods to infants younger than 4 months and 6 months
3b. What is the percent of providers serving juice to infants under 12 months old?	Infant Menu Survey	H.3	Early child care programs serving juice to infants
4a. Does the timing of the introduction of solid foods follow AAP recommendations?	Provider Survey	H.5	Average age and AAP recommendations for serving solid foods to infants, as reported by early child care programs
4b.What type of solid foods do providers most often introduce first	Provider Survey	H.6	Types of solid foods most often introduced first, as reported by early child care programs

Research question	Data source	Table number	Table title
to infants? What challenges do providers face in feeding solid foods?	Provider Survey	H.7	Challenges providers face feeding solid foods to infants, as reported by early child care programs
5a. Does the provider have the necessary facilities to allow mothers to store pumped breast milk at the site overnight? If so, where is it stored?	Provider Survey	H.8	Storage of breast milk and preparation of breast milk and formula, as reported by early child care programs
5b. What percent of infants bring breast milk from home?	Infant Intake Form	H.12	Infants consuming breast milk brought from home and those nursed on site during the child care day, by infant age groups
5c. How are breast milk and formula warmed?	Provider Survey	H.8	Storage of breast milk and preparation of breast milk and formula, as reported by early child care programs
5d. Does the provider have the necessary facilities to accommodate mothers to breastfeed their infants onsite?	Provider Survey	H.9	Facilities available for mothers to breastfeed onsite, as reported by early child care programs
	Provider Survey	H.10	Reasons why parents and guardians send solid food from home, as reported by early child care programs
7. What is the percent of infants consuming breast milk, formula, or both?	Infant Intake Form	H.13	Infants consuming breast milk, formula, or both during the child care day, by infant age groups
8. What types of foods are consumed while in child care? What foods are consumed most frequently?	Infant Intake Form	H.14	All foods consumed by infants at early child care programs, by infant age groups
9. What are infants' weight status (as measured by weight-for-age)?	Parent Consent Form	H.15	Infant weight-for-age, as reported by parents
10. How often are infants provided opportunities for tummy time and outdoor time?	Provider Survey	H.11	Frequency of infant tummy time and outdoor time opportunities, as reported by early child care programs
12. How has the percentage of providers serving juice to infants changed since PY 2016-2017 when SNACS-I was conducted?	Infant Menu Survey	H.16	Juice served to infants 0 to 5 months in early child care programs in SNACS-I and SNACS-II
		H.17	Juice served to infants 6 to 11 months in early child care programs in SNACS-I and SNACS-II

Note: Research question numbers are consistent with Table VII.2 in the SNACS-II final study plan (Fox et al. 2021).

CACFP = Child and Adult Care Food Program; SNACS = Study of Nutrition and Activity in Child Care Settings.

Table A.43 presents supplementary tables in Appendix G. These tables answer RQs for Objectives 3a and 4 about children's usual food, calorie, and nutrient intake during child care days and non-child care days, and plate waste from CACFP meals and snacks.

Table A.43. Objectives 3a and 4 research questions, data sources, and analytic tables

Research question	Data source	Table number	Table title
Objective 3a			
1. Which CACFP meals and snacks do children consume on ICDs?[a]	Meal Observation Booklet 24-hour dietary recalls	G.1	Percentage of children ages 1 to 2 and 3 to 5 years in early child care programs consuming CACFP meals and snacks on a child care day
		G.2	Percentage of 6 to 12 year olds in before and after school programs consuming CACFP meals and snacks on a child care day
2. How much water are children consuming throughout the day?[a] 3a. What are the means and distributions of children's daily calorie, nutrient, and USDA Food Pattern food group intakes?[a]	Meal Observation Booklet 24-hour dietary recalls	G.3	Mean 24-hour intakes of USDA Food Pattern Food Groups among 1 to 2 year olds and 3 to 5 year olds in early child care programs on a child care day and non-child care day
		G.4	Mean 24-hour intakes of USDA Food Pattern Food Groups among 6 to 12 year olds in before and after school programs on a child care day and non-child care day
		G.5	Mean 24-hour intakes of calories, nutrients and water among 1 to 2 year olds and 3 to 5 year olds in early child care programs on a child care day and non-child care day
		G.6	Mean 24-hour intake of calories, nutrients and water consumed among 6 to 12 year olds in before and after school programs on a child care day and non-child care day
		G.7	Mean 24-hour intakes of calories, nutrients and water among 1 to 2 year olds in child care centers on a child care day
		G.8	Mean 24-hour intakes of calories, nutrients and water among 1 to 2 year olds in child care centers on a non-child care day
		G.9	Mean 24-hour intakes of calories, nutrients and water among 3 to 5 year olds in child care centers on a child care day
		G.10	Mean 24-hour intakes of calories, nutrients and water among 3 to 5 year olds in child care centers on a non-child care day
		G.11	Mean 24-hour intakes of calories, nutrients and water among 1 to 2 year olds in Head Start centers on a child care day

Research question	Data source	Table number	Table title
		G.12	Mean 24-hour intakes of calories, nutrients and water among 1 to 2 year olds in Head Start centers on a non-child care day
		G.13	Mean 24-hour intakes of calories, nutrients and water among 3 to 5 year olds in Head Start centers on a child care day
		G.14	Mean 24-hour intakes of calories, nutrients and water among 3 to 5 year olds in Head Start centers on a non-child care day
		G.15	Mean 24-hour intakes of calories, nutrients and water among 1 to 2 year olds in early child care programs on a child care day
		G.16	Mean 24-hour intakes of calories, nutrients and water among 1 to 2 year olds in early child care programs on a non-child care day
		G.17	Mean 24-hour intakes of calories, nutrients and water among 3 to 5 year olds in early child care programs on a child care day
		G.18	Mean 24-hour intakes of calories, nutrients and water among 3 to 5 year olds in early child care programs on a non-child care day
		G.19	Mean 24-hour intakes of calories, nutrients and water among 6 to 12 year olds in at-risk afterschool centers on a child care day
		G.20	Mean 24-hour intakes of calories, nutrients and water among 6 to 12 year olds in at-risk afterschool centers on a non-child care day
		G.21	Mean 24-hour intakes of calories, nutrients and water among 6 to 12 year olds in outside-school-hours care centers on a child care day
		G.22	Mean 24-hour intakes of calories, nutrients and water among 6 to 12 year olds in outside-school-hours care centers on a non-child care day
		G.23	Mean 24-hour intakes of calories, nutrients and water among 6 to 12 year olds in before and after school programs on a child care day
		G.24	Mean 24-hour intakes of calories, nutrients and water among 6 to 12 year olds in before and after school programs on a non-child care day
		G.25	Mean 24-hour intakes of USDA Food Pattern Food Groups among 1 to 2 year olds in child care centers on a child care day
		G.26	Mean 24-hour intakes of USDA Food Pattern Food Groups among 3 to 5 year olds in child care centers on a child care day
		G.27	Mean 24-hour intakes of USDA Food Pattern Food Groups among 3 to 5 year olds in child care centers on a non-child care day

Research question	Data source	Table number	Table title
		G.28	Mean 24-hour intakes of USDA Food Pattern Food Groups among 1 to 2 year olds in Head Start centers on a child care day
		G.29	Mean 24-hour intakes of USDA Food Pattern Food Groups among 1 to 2 year olds in Head Start centers on a non-child care day
		G.30	Mean 24-hour intakes of USDA Food Pattern Food Groups among 3 to 5 year olds in Head Start centers on a child care day
		G.31	Mean 24-hour intakes of USDA Food Pattern Food Groups among 3 to 5 year olds in Head Start centers on a non-child care day
		G.32	Mean 24-hour intakes of USDA Food Pattern Food Groups among 1 to 2 year olds in early child care programs on a child care day
		G.33	Mean 24-hour intakes of USDA Food Pattern Food Groups among 1 to 2 year olds in early child care programs on a non-child care day
		G.34	Mean 24-hour intakes of USDA Food Pattern Food Groups among 3 to 5 year olds in early child care programs on a child care day
		G.35	Mean 24-hour intakes of USDA Food Pattern Food Groups among 3 to 5 year olds in early child care programs on a non-child care day
		G.36	Mean 24-hour intakes of USDA Food Pattern Food Groups among 6 to 12 year olds in at-risk afterschool centers on a child care day
		G.37	Mean 24-hour intakes of USDA Food Pattern Food Groups among 6 to 12 year olds in at-risk afterschool centers on a non-child care day
		G.38	Mean 24-hour intakes of USDA Food Pattern Food Groups among 6 to 12 year olds in outside-school-hours care centers on a child care day
		G.39	Mean 24-hour intakes of USDA Food Pattern Food Groups among 6 to 12 year olds in outside-school-hours care centers on a non-child care day
		G.40	Mean 24-hour intakes of USDA Food Pattern Food Groups among 6 to 12 year olds in before and after school programs on a child care day
		G.41	Mean 24-hour intakes of USDA Food Pattern Food Groups among 6 to 12 year olds in before and after school programs on a non-child care day
3a. What are the means and distributions of children's usual daily calorie, nutrient, and USDA Food Pattern food group intakes?[a]	Meal Observation Booklet 24-hour dietary recalls	G.42	Percentage of 3 to 5 year olds in early child care programs with acceptable, inadequate, or excessive usual nutrient intakes on a child care day and a non-child care day
		G.43	Mean usual intakes of calories and nutrients among 3 to 5 year olds in early child care programs on a child care day and non-child care day

Research question	Data source	Table number	Table title
3b. How do usual nutrient intakes compare to the DRIs? What percentage of children are at risk of inadequate or excessive intakes for specific nutrients?[a]	Second recalls and meal observations for subsample	G.44	Mean usual intakes of calories (energy) for 3 to 5 year olds in early child care programs on a child care day and non-child care day and estimated energy requirements
		G.45	Means and distributions of usual intakes of calories and nutrients among 3 to 5 year olds in early child care programs on a child care day
		G.46	Means and distributions of usual intakes of calories and nutrients among 3 to 5 year olds in early child care programs on a non-child care day
		G.47	Mean usual intakes of USDA Food Pattern food groups among 3 to 5 year olds in early child care programs on a child care day and non-child care day
		G.48	Means and distributions of usual intakes of USDA Food Pattern food groups among 3 to 5 year olds in early child care programs on a child care day
		G.49	Means and distributions of usual intakes of USDA Food Pattern food groups among 3 to 5 year olds in early child care programs on a non-child care day
4. What are children's mean intakes of USDA Food Pattern food groups while in child care? How do intakes of USDA Food Pattern food groups from CACFP meals and snacks compare to CACFP meal pattern requirements?[a]	Meal Observation Booklet 24-hour dietary recalls	G.50	Mean amount of each CACFP meal component consumed at breakfast and the percentage of the minimum requirement consumed for children ages 1 to 2 and 3 to 5 years in early child care programs
		G.51	Mean amount of each CACFP meal component consumed at morning snack and the percentage of the minimum requirement consumed for children ages 1 to 2 and 3 to 5 years in early child care programs
		G.52	Mean amount of each CACFP meal component consumed at lunch and the percentage of the minimum requirement consumed for children ages 1 to 2 and 3 to 5 years in early child care programs
		G.53	Mean amount of each CACFP meal component consumed at afternoon snack and the percentage of the minimum requirement consumed for children ages 1 to 2 and 3 to 5 years in early child care programs
		G.54	Mean amount of each CACFP meal component consumed by 6 to 12 year old children at afternoon snack and the percentage of the minimum requirement consumed in before and after school programs
		G.55	Mean amount of each CACFP meal component consumed by 6 to 12 year old children at supper and the percentage of the minimum requirement consumed in before and after school programs

Research question	Data source	Table number	Table title
5. What are the mean scores on the Healthy Eating Index (HEI)?[a]	Meal Observation Booklet 24-hour dietary recalls	G.56	Mean Healthy Eating Index-2015 scores and percentage of maximum scores for 24-hour intakes for 2 year old children in early child care programs -- child care days versus non-child care days
		G.57	Mean Healthy Eating Index-2015 scores and percentage of maximum scores for 24-hour intakes for 3 to 5 year old children in early child care programs -- child care days versus non-child care days
		G.58	Mean Healthy Eating Index-2015 scores and percentage of maximum scores for 24-hour intakes for 2 to 5 year old children in early child care programs -- child care days versus non-child care days
		G.59	Mean Healthy Eating Index-2015 scores and percentage of maximum scores for 24-hour intakes for 6 to 12 year old children in before and after school programs -- child care days versus non-child care days
		G.60	Mean Healthy Eating Index-2015 scores and percentage of maximum scores for CACFP breakfasts consumed by children in early child care programs on a child care day
		G.61	Mean Healthy Eating Index-2015 scores and percentage of maximum scores for CACFP lunches consumed by children in early child care programs on a child care day
		G.62	Mean Healthy Eating Index-2015 scores and percentage of maximum scores for CACFP snacks consumed by children in early child care programs on a child care day
		G.63	Mean Healthy Eating Index-2015 scores and percentage of maximum scores for all CACFP meals and snacks consumed by children in early child care programs on a child care day
		G.65	Mean Healthy Eating Index-2015 scores and percentage of maximum scores for all CACFP meals and snacks consumed by children in before and after school programs on a child care day
6. What proportion of daily calorie and nutrient intakes are from CACFP meals and snacks?[a]	Meal Observation Booklet 24-hour dietary recalls	G.66	Mean percentage contribution of CACFP breakfasts to 24-hour intakes of calories and nutrients on a child care day for children ages 1 to 2 and 3 to 5 years in early child care programs
		G.67	Mean percentage contribution of CACFP morning snacks to 24-hour intakes of calories and nutrients on a child care day for children ages 1 to 2 and 3 to 5 years in early child care programs

Research question	Data source	Table number	Table title
		G.68	Mean percentage contribution of CACFP lunches to 24-hour intakes of calories and nutrients on a child care day for children ages 1 to 2 and 3 to 5 years in early child care programs
		G.69	Mean percentage contribution of CACFP afternoon snacks to 24-hour intakes of calories and nutrients on a child care day for children ages 1 to 2 and 3 to 5 years in early child care programs
		G.70	Mean percentage contribution of all CACFP snacks to 24-hour intakes of calories and nutrients on a child care day for children ages 1 to 2 and 3 to 5 years in early child care programs
		G.71	Mean percentage contribution of all CACFP meals and snacks to 24-hour intakes of calories and nutrients on a child care day for children ages 1 to 2 and 3 to 5 years in early child care programs
		G.72	Mean percentage contribution of CACFP afternoon snacks to 24-hour intakes of calories and nutrients on a child care day for 6 to 12 year olds in before and after school programs
		G.73	Mean percentage contribution of CACFP suppers to 24-hour intakes of calories and nutrients on a child care day for 6 to 12 year olds in before and after school programs
		G.74	Mean percentage contribution of all CACFP meals and snacks to 24-hour intakes of calories and nutrients on a child care day for 6 to 12 year olds in before and after school programs
		G.75	Mean percentage contribution of all CACFP meals and snacks to 24-hour intakes of calories and nutrients on a child care day in early child care programs, by part- or full-time attendance
7. Do certain aspects of the child care environment influence the dietary intakes of children?	Meal Observation Booklet 24-hour dietary recalls Provider Survey Parent Interview	G.76	Multivariate analysis of total Healthy Eating Index-2015 scores on child and provider characteristics, across all CACFP meals and snacks

Research question	Data source	Table number	Table title
8. What is the relationship between the nutritional quality of children's diets and household participation in food assistance programs?	Meal Observation Booklet 24-hour dietary recalls Parent Interview	G.77	Multivariate analysis of total Healthy Eating Index-2015 scores on household participation in food assistance programs
9. How has the nutritional quality of children's diets changed since PY 2016-2017 when SNACS-I was conducted?	Meal Observation Booklet 24-hour dietary recalls	G.78	Mean total Healthy Eating Index-2015 scores for 24-hour intakes among 3 to 5 year-olds in child care centers and Head Start centers in SNACS-I and SNACS-II on a child care day
		G.79	Mean total Healthy Eating Index-2015 scores for 24-hour intakes among 6 to 12 year-olds in before and after school programs in SNACS-I and SNACS-II on a child care day
10. What type of meal service do providers use? Do the providers sit with the children while eating? Do they eat the same meals and snacks as the children?[b]	Meal Observation Booklet	G.80	Meal service type and staff meal time practices in early child care programs, at breakfast
		G.81	Meal service type and staff meal time practices in early child care programs, at morning snack
		G.82	Meal service type and staff meal time practices in early child care programs, at lunch
		G.83	Meal service type and staff meal time practices in early child care programs, at afternoon snack
		G.84	Meal service type and staff meal time practices in before and after school programs, at afternoon snack
		G.85	Meal service type and staff meal time practices in before and after school programs, at supper
11. How much time do children have to eat their meals and snacks?[b]	Meal Observation Booklet	G.86	Mean and distribution of breakfast start and end times in early child care programs
		G.87	Mean and distribution of morning snack start and end times in early child care programs
		G.88	Mean and distribution of lunch start and end times in early child care programs
		G.89	Mean and distribution of afternoon snack start and end times in early child care programs
		G.90	Mean and distribution of afternoon snack start and end times in before and after school programs

Research question	Data source	Table number	Table title
		G.91	Mean and distribution of supper start and end times in before and after school programs
Objective 4			
1a. What is the extent of plate waste in meals? How does plate waste vary by foods and food groups? How does plate waste vary by meal or snack occasion? What foods are most frequently uneaten?[a]	Meal Observation Booklet	G.92	Foods wasted at breakfast in early child care programs
		G.93	Foods wasted at morning and afternoon snack in early child care programs
		G.94	Foods wasted at lunch in early child care programs
		G.95	Foods wasted at afternoon snack in before and after school programs
		G.96	Foods wasted at supper in before and after school programs
1b. What is the nutritional value of foods served but not eaten?[a]	Meal Observation Booklet	G.97	Calories and nutrients served and wasted at breakfast in early child care programs among 1 to 2 year olds
		G.98	Calories and nutrients served and wasted at breakfast in early child care programs among 3 to 5 year olds
		G.99	Calories and nutrients wasted at morning and afternoon snack in early child care programs among 1 to 2 year olds
		G.100	Calories and nutrients wasted at morning and afternoon snack in early child care programs among 3 to 5 year olds
		G.101	Calories and nutrients wasted at lunch in early child care programs among 1 to 2 year olds
		G.102	Calories and nutrients wasted at lunch in early child care programs among 3 to 5 year olds
		G.103	Calories and nutrients served and wasted at breakfast in early child care programs
		G.104	Calories and nutrients wasted at morning and afternoon snack in early child care programs
		G.105	Calories and nutrients wasted at lunch in early child care programs
4. What is the relationship between plate waste and key characteristics of children and the provider environment (including the timing of other activities)?	Meal Observation Booklet Environmental Observation Form Parent Interview Provider Survey	G.110	Multivariate analysis of plate waste on key child and program environment characteristics, breakfast percentage of calories wasted
		G.111	Multivariate analysis of plate waste on key child and program environment characteristics, breakfast percentage of fruit wasted
		G.112	Multivariate analysis of plate waste on key child and program environment characteristics, lunch percentage of calories wasted

Research question	Data source	Table number	Table title
		G.113	Multivariate analysis of plate waste on key child and program environment characteristics, lunch percentage of fruit wasted
		G.114	Multivariate analysis of plate waste on key child and program environment characteristics, lunch percentage of vegetables wasted
		G.115	Multivariate analysis of plate waste on key child and program environment characteristics, snack percentage of calories wasted
		G.116	Multivariate analysis of plate waste on key child and program environment characteristics, snack percentage of fruit wasted
		G.117	Multivariate analysis of plate waste on key child and program environment characteristics, supper percentage of calories wasted
		G.118	Multivariate analysis of plate waste on key child and program environment characteristics, supper percentage of fruit wasted
		G.119	Multivariate analysis of plate waste on key child and program environment characteristics, supper percentage of vegetables wasted
Comparisons to SNACS-I: plate waste			
5. How has plate waste in meals and snacks changed since PY 2016-2017 when SNACS-I was conducted?[a,c]	Meal Observation Booklet	G.106	Foods wasted at breakfast in early child care programs in SNACS-I and SNACS-II
		G.107	Foods wasted at lunch in early child care programs in SNACS-I and SNACS-II
		G.108	Calories wasted at breakfast in early child care programs in SNACS-I and SNACS-II
		G.109	Calories wasted at lunch in early child care programs in SNACS-I and SNACS-II

Note: Research question numbers are consistent with Table VII.1 in the SNACS-II final study plan (Fox et al. 2021).

[a] Includes significance testing.

[b] These outcomes are for Objective 1 RQs.

[c] Comparisons to SNACS-I focus on breakfasts and lunches served to 3 to 5 year olds in child care centers and Head Start centers.

CACFP = Child and Adult Care Food Program; DRI = Dietary Reference Intake; ICD = in-care day; PY = program year; SNACS = Study of Nutrition and Activity in Child Care Settings; USDA = U.S. Department of Agriculture.

Table A.44 presents supplementary tables in Appendix H that answer Objective 5 RQs about infant feeding practices, infant food intake, and infants' activity levels while in child care

Table A.44. Objective 5 research questions, data sources, and analytic tables

Research question	Data source	Table number	Table title
1. What is the distribution and variety of foods served in a typical week? What foods are served most frequently?	Infant Menu Survey	H.1	Major and minor food groups served in daily infant menus in early child care programs, overall and by infant age groups
2. How often are providers using responsive feeding techniques with infants? How do they determine the end of infant feedings?	Provider Survey	H.4	Infant feeding techniques, as reported by early child care programs
3a. What is the percent of providers serving solid foods to infants under 6 months and under 4 months of age?	Infant Menu Survey	H.2	Early child care programs serving any solid foods to infants younger than 4 months and 6 months
3b. What is the percent of providers serving juice to infants under 12 months old?	Infant Menu Survey	H.3	Early child care programs serving juice to infants
4a. Does the timing of the introduction of solid foods follow AAP recommendations?	Provider Survey	H.5	Average age and AAP recommendations for serving solid foods to infants, as reported by early child care programs
4b. What type of solid foods do providers most often introduce first to infants? What challenges do providers face in feeding solid foods?	Provider Survey	H.6	Types of solid foods most often introduced first, as reported by early child care programs
	Provider Survey	H.7	Challenges providers face feeding solid foods to infants, as reported by early child care programs
5a. Does the provider have the necessary facilities to allow mothers to store pumped breast milk at the site overnight? If so, where is it stored?	Provider Survey	H.8	Storage of breast milk and preparation of breast milk and formula, as reported by early child care programs
5b. What percent of infants bring breast milk from home?	Infant Intake Form	H.12	Infants consuming breast milk brought from home and those nursed on site during the child care day, by infant age groups
5c. How are breast milk and formula warmed?	Provider Survey	H.8	Storage of breast milk and preparation of breast milk and formula, as reported by early child care programs
5d. Does the provider have the necessary facilities to accommodate	Provider Survey	H.9	Facilities available for mothers to breastfeed onsite, as reported by early child care programs

Research question	Data source	Table number	Table title
mothers to breastfeed their infants onsite?			
6. What is the percent of infants bringing solid food from home and the reasons for doing so?	Provider Survey	H.10	Reasons why parents and guardians send solid food from home, as reported by early child care programs
7. What is the percent of infants consuming breast milk, formula, or both?	Infant Intake Form	H.13	Infants consuming breast milk, formula, or both during the child care day, by infant age groups
8. What types of foods are consumed while in child care? What foods are consumed most frequently?	Infant Intake Form	H.14	All foods consumed by infants at early child care programs, by infant age groups
9. What are infants' weight status (as measured by weight-for-age)?	Parent Consent Form	H.15	Infant weight-for-age, as reported by parents
10. How often are infants provided opportunities for tummy time and outdoor time?	Provider Survey	H.11	Frequency of infant tummy time and outdoor time opportunities, as reported by early child care programs
12. How has the percentage of providers serving juice to infants changed since PY 2016-2017 when SNACS-I was conducted?	Infant Menu Survey	H.16	Juice served to infants 0 to 5 months in early child care programs in SNACS-I and SNACS-II
		H.17	Juice served to infants 6 to 11 months in early child care programs in SNACS-I and SNACS-II

Note: Research question numbers are consistent with Table VII.2 in the SNACS-II final study plan (Fox et al. 2021). One research question is omitted from this report.

AAP = American Academy of Pediatrics; CACFP = Child and Adult Care Food Program; SNACS = Study of Nutrition and Activity in Child Care Settings.

A.8. List of major and minor food groups

Table A.45 (below) presents the foods served in ECCs and BASs classified into the eight major food groups. These classifications follow the same methods used in SNACS-I.

Table A.45. List of major and minor food groups

Major food group	Minor food group	Example
Milk		
	Whole, flavored	Whole milk with added flavoring
	Whole, unflavored	Whole milk with no added flavoring
	2%, flavored	2% chocolate or strawberry milk
	2%, unflavored	2% milk with no added flavoring
	1%, flavored	Low-fat chocolate or strawberry milk
	1%, unflavored	Low-fat milk with no added flavoring
	Skim, flavored	Fat-free chocolate or strawberry milk
	Skim, unflavored	Fat-free milk with no added flavoring
	Other milk beverage, flavored	Soy milk or almond milk with added flavoring
	Other milk beverage, unflavored	Soy milk or almond milk with no added flavoring
	Infant formula	
Vegetables		
	Cooked, dark green	Broccoli, Brussel sprouts, chard, collard greens, kale, mustard greens, spinach, turnip greens, mixed greens
	Cooked, beans and peas	Baked beans, pinto beans, kidney beans, black beans, bean soups
	Cooked, other	String beans, summer squash, cabbage, cauliflower, asparagus, onions, avocado
	Cooked, red and orange	Carrots, sweet potato, tomato soup, winter squash, red peppers
	Cooked, starchy	Corn, French fries, tater tots, green peas, lima beans, parsnips, plantains, turnip, white potatoes
	Cooked, mixture	Peas and carrots, vegetable soup
	Raw, dark green	Broccoli, kale, spinach
	Raw, other	Avocado, beets, bean sprouts, cabbage, cucumber, onion, radish, snow pea, string beans, summer squash
	Raw, red and orange	Carrots, tomatoes, red peppers
	Raw, starchy	Jicama, plantains, green peas,
	Raw, mixture	Side salads
	Juice	

Major food group	Minor food group	Example
Fruits		
	Canned, sweetened	Any canned fruit in light or heavy syrup or juice-packed, including fruit cocktail, peaches, pears, pineapples, sweetened applesauce
	Canned, unsweetened	Any canned fruit water-packed or drained including fruit cocktail, peaches, pears, pineapples, unsweetened applesauce
	Dried, other	Any dried fruit, including raisins, banana, apples, apricots, peaches, pineapples, mixtures
	Dried, citrus, melons, and berries	Cranberries, blueberries
	Fresh, citrus, melons, and berries	Any fresh fruit including, oranges, strawberries, kiwi, blueberries, blackberries, raspberries, grapefruit, lime, cantaloupe
	Fresh, other	Apples, grapes, bananas, peaches, plum, pineapple, fig, cherries, persimmon, mango
	Frozen, sweetened	Strawberries, peaches
	Frozen, unsweetened	Blueberries, strawberries, raspberries, peaches, cherries, fruit cocktail
	Juice, citrus, melons and berries	Orange juice, grapefruit juice, strawberry juice, fruit juice blends
	Juice, other	Apple juice, grape juice, pineapple juice, mango juice, passion fruit juice, fruit juice blends
Combination entrees		
	Breakfast burritos	Burrito with egg, cheese, sausage, ham or bacon
	Breakfast sandwich	Sandwich with egg and cheese or meat, sausage biscuit
	Cheeseburger and similar beef/pork with cheese	Cheeseburger, similar beef/pork sandwich with cheese
	Entree salads	Taco salad
	Frankfurter, corn dogs, and similar sausage sandwiches	Hot dog on bun, chicken hot dog on bun, corn dog
	Hamburger and similar beef/pork sandwiches	Hamburger, similar beef/pork sandwiches
	Mexican-style entrees	Burrito, taco, nachos, quesadillas, fajitas, and enchiladas
	Mixtures with grain, meat/meat alternate, and/or vegetables	Spaghetti with sauce, macaroni and cheese, lasagna, ravioli, chicken, beef or pork with rice or noodles
	Other mixtures with meat/meat alternate and/or vegetables	Chili with meat/meat substitute, baked potato with cheese and/or meat, egg rolls
	Parfaits	Parfaits with yogurt, fruit, and granola
	Peanut butter sandwich	

Major food group	Minor food group	Example
	Pizza with meat	Sausage pizza, pepperoni pizza, chicken pizza
	Pizza without meat	Cheese pizza, vegetable pizza
	Pizza pockets, pizza sticks, and calzones	Pizza pocket, calzone, Italian dunkers, cheese breadsticks
	Sandwich with mayonnaise-based poultry, tuna, or egg salad	Chicken patty, breaded beef or pork patty, breaded fish patty sandwiches, chicken, egg, and tuna salad sandwiches
	Sandwich with meat substitute and/or vegetables	Burger with vegetarian patty
	Sandwich with only cheese	Grilled cheese, sandwich with cheese and vegetables
Breads/Grains		
	Biscuits and cornbread	Biscuits, cornbread, croissant, hush puppy, bread stuffing
	Bread or bread alternate with added fat	Bagel, pre-buttered bread and rolls
	Breads, rolls, bagels, and other plain breads	Bread, rolls, bagels, English muffins, tortillas, soft pretzels
	Cold cereals	Any type of sweetened or unsweetened cold cereal
	Crackers, croutons and pretzels	Animal crackers, graham crackers, saltines
	Corn/tortilla chips	Corn chips, tortilla chips
	Hot cereal	Oatmeal, grits, cream of wheat
	Muffins, sweet/quick breads	Blueberry muffin, chocolate chip muffin, pumpkin bread, zucchini bread
	Other	Egg rolls
	Pancakes, waffles, French toast	Pancakes, waffles, waffle sticks
	Pasta	Macaroni, spaghetti, noodles, pasta salad without meat, macaroni and cheese as a side dish
	Rice	White, brown, wild, yellow rice, rice pilaf
Meats/meat alternates		
	Chicken and turkey, breaded or fried	Chicken nuggets, patties, parts
	Chicken and turkey, plain	Grilled chicken, chicken fajita strips, roasted chicken breast, roasted turkey
	Chicken and turkey, with sauce, gravy or mayonnaise	Chicken or turkey salad, barbecue chicken, chicken or turkey with gravy, sweet and sour chicken or turkey
	Fish and shellfish, breaded or fried	Breaded fish patty or nuggets
	Fish and shellfish, plain	Animal crackers, graham crackers, saltines
	Fish and shellfish, with sauce, gravy or mayonnaise	Tuna salad with mayonnaise
	Meat (beef and pork), breaded or fried	Breaded beef, breaded pork chop or patty
	Meat (beef and pork), plain	Ground beef, beef or pork crumbles, beef patty, ham, pork roast, rib patty

Major food group	Minor food group	Example
	Meat with sauce, gravy or mayonnaise	Beef stroganoff, spaghetti sauce with meat, meatballs with sauce, barbecue pork, beef or pork with gravy, sausage gravy
	Other protein, cheese	Cheddar cheese, mozzarella cheese, American cheese, cheese sticks, cheese sauce, cottage cheese
	Other protein, eggs	Omelets with meat, cheese, and/or vegetables; hard-boiled, scrambled and fried eggs
	Other protein, meat substitutes, hummus and legumes	Hummus, meatless chicken, tofu, chickpeas, black beans, pinto beans, refried beans
	Other protein, nuts, nut butters, seeds nut mixtures	Peanut butter, almond butter, soy nuts, sunflower seeds
	Sausage, frankfurters, cold cuts	Beef, pork, chicken or turkey sausage or hot dog, turkey ham, deli turkey or ham
	Yogurt	Low-fat, fat-free and regular
Desserts and other menu items		
	Candy (hard candy, chocolate, gum)	
	Dairy-based desserts	Ice cream, frozen yogurt, pudding
	Desserts containing fruit or fruit juice	Fruited gelatin, frozen juice bars
	Grain-based desserts, brownies	Brownies with or without icing
	Grain-based desserts, cakes	Cakes or cupcakes with or without icing
	Grain-based desserts, cinnamon buns	Cinnamon buns, cinnamon rolls
	Yogurt	Low-fat, fat-free and regular
Accompaniments		
	Condiments and toppings	
	Salad dressings	Ranch, Caesar, Italian, honey mustard, blue cheese, French, Thousand Island