Food and Nutrition Service

U.S. DEPARTMENT OF AGRICULTURE

WIC Nutrition Assessment and Tailoring Study: Final Report Part 2 – Appendix B

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Submitted to

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Office of Policy Support
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Project Officer

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In approving Ohio WIC's participation in this study, the Ohio Department of Health Institutional Review Board requires that publication of research findings include the following disclaimer: "This study includes data provided by the Ohio Department of Health, which should not be considered an endorsement of this study or its conclusions."

In approving Nebraska WIC's participation in this study, the Nebraska Department of Health and Human Services requires that publication of research findings include the following disclaimer: "These findings and their interpretation are the sole responsibility of the author and do not necessarily reflect the opinions or policy position of DHHS."

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Appendix B

Additional Methodology Information

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Appendix B. Additional Methodology Information

This appendix to the WIC Nutrition Assessment and Tailoring Study (WIC NATS) Part 2 Final Report presents the study research questions, describes the study's methodology for sampling State and local agencies, local agency recruitment, clinic selection within recruited local agencies and participant sampling. It also provides details on data collection and data analysis

B.1 Study Research Questions

Table B-1 presents the study's research questions for each objective and includes an indicator noting which research questions are addressed in Part 1 or Part 2 of the study's Final Report.

Table B-1. Study objectives and research questions

Objective 1. Provide in-depth descriptive information on how a diverse sample of local WIC agencies perform the WIC nutrition risk assessment. Describe the nutrition risk assessment process as carried out in practice in a variety of WIC clinics. Gather detailed information on staff and client experiences associated with nutrition risk assessment.	Final Report	
	Part 1	Part 2
Processes, protocols, and staff training		
1. What are the local agency nutrition risk assessment protocols? Describe the standard protocols as delineated in documentation and as observed in practice.	✓	
2. Which staff members typically perform nutrition risk assessment in local agencies? Does this vary by local agency characteristics?	✓	
3. How do staff determine and document applicable nutrition risk criteria?	✓	
A. Are all allowable nutrition risk criteria considered during the nutrition assessment?		✓
B. How do staff ensure a comprehensive assessment is completed?		✓
C. During the nutrition assessment, how do staff clarify when relevant information from the participant is not clear?		✓
4. To what extent is referral information from healthcare providers used in determining nutrition risk? What type of referral information is used?		✓
5. What training do staff receive related to carrying out the nutrition assessment, and how often is this training delivered (i.e., are there refresher trainings)?	✓	
6. Prior to the certification visit, what forms or information (e.g., nutrition assessment questionnaires, diet histories, etc.) does the participant provide to inform the nutrition assessment? What, if any, information does the site staff access prior to the certification visit? Prior to conducting the certification, if WIC staff provide participants with forms or surveys to complete at home or while in the participant waiting area, how long does it take for the participant and/or staff to complete this pre-visit information?	✓	
7. How do local agencies ensure that the nutrition risk assessment is conducted in a culturally appropriate manner (e.g., in the participant's spoken language, etc.)?	✓	

Table B-1. Study objectives and research questions (continued)

Objective 1. Provide in-depth descriptive information on how a diverse sample of local WIC agencies perform the WIC nutrition risk assessment. Describe the nutrition risk assessment process as carried out in practice in a variety of WIC clinics. Gather detailed information on staff and client experiences associated with nutrition risk assessment.	Final Report	
	Part 1	Part 2
Integration of technology and tools		
8. What tools (nutrition/health questionnaire, review of medical information, diet history, etc.) are used when performing the nutrition assessment?	✓	
9. How does the WIC Management Information System (MIS) facilitate nutrition assessment and record or store related information? To what extent does the MIS retain information about identified nutrition risks for participants over time? In what ways does it support tracking changes in nutrition risk?		✓
Assessments of breastfeeding and high risk		
10. How do staff conduct a breastfeeding assessment? Which staff are responsible for conducting a breastfeeding assessment, and what training do they receive?	✓	
11. How do State or local agencies determine which nutrition risk criteria are considered high risk?	✓	
12. How do site staff determine if a participant is high risk?		✓
13. What are the protocols for providing nutrition education to high-risk participants (e.g., do staff provide an individual care plan? Are participants referred to professional staff?)?	✓	
14. How is Value Enhanced Nutrition Assessment (VENA) guidance operationalized in the nutrition assessment process observed at local WIC agencies?		✓
Operationalization of VENA		
15. In what ways do local agencies differ in their nutrition assessment processes? How does VENA implementation vary between agencies and how does it impact their nutrition assessment processes?		✓
16. Identify and describe aspects of the nutrition assessment process that do not readily align with VENA guidance.		✓
Objective 2. Provide in-depth information to systematically describe how a sample of diverse local WIC agencies use the collection of nutrition assessment information to tailor Program benefits, including: food packages, nutrition education, breastfeeding promotion and support, and referrals to health and social services.	Final Report	
	Part 1	Part 2
17. How do local agencies use the information obtained in the nutrition assessment to tailor *food packages*? How does the specified nutrition risk(s) impact the food packages prescribed to participants?	✓	
18. How do local agencies use the information obtained in the nutrition assessment to tailor *nutrition education*? What elements (content, counseling method, delivery medium, etc.) of nutrition education are modified based on findings from the nutrition risk assessment?	✓	
A. How are nutrition education topics informed by the nutrition assessment for each participant?	✓	
B. When a participant has multiple nutrition risks, how are nutrition education topics prioritized?	✓	
C. How many nutrition risks are typically discussed with a participant?		✓
D. How often are identified nutrition risks addressed or directly discussed during nutrition education sessions?		✓
E. How is the nutrition assessment information used to guide participants in establishing nutrition and health goals?		✓

Table B-1. Study objectives and research questions (continued)

Objective 2. Provide in-depth information to systematically describe how a sample of diverse local WIC agencies use the collection of nutrition assessment information to tailor Program benefits, including: food packages, nutrition education, breastfeeding promotion and support, and referrals to health and social services.	Final Report	
	Part 1	Part 2
F. Are secondary nutrition education contacts tailored to the participant's nutrition risk(s)? If so, how?	✓	
G. How do local agencies ensure that nutrition education is provided in a culturally appropriate manner (e.g., in the participant's spoken language, etc.)?	✓	
19. Describe the frequency and type of referrals to internal (such as peer counselor or WIC Designated Breastfeeding Expert, or WIC Registered Dietitian) and external health or social services prompted by nutrition risk assessments?	✓	
20. In what way does the MIS facilitate the tailoring of program benefits using information from the nutrition risk assessment?	✓	
21. At appointments following the initial assessment:		
A. Considering the nutrition goals set or referral services made during the initial nutrition assessment, how do staff follow-up on the identified nutrition risks in follow-up appointments? In what situations do staff routinely follow-up on these goals and/or referrals? In what situations do staff not routinely follow-up on them?		✓
B. Are WIC program benefits adjusted based on changes noted with respect to identified risks?	✓	
C. How is the provision of nutrition education or other program benefits adjusted based on nutrition risks (including those that not addressed in prior appointments during the certification period)?	✓	
22. How consistent are the tailoring practices within and across sites? Do identified risks consistently result in similarly tailored benefits? If not, what accounts for the variation observed?		✓
Objective 3. Investigate relationships between WIC nutrition services processes (to include the nutrition risk assessment and the associated tailoring of program benefit delivery), and the clinic experience, participant and staff perceptions, and overall clinic flow and efficiency.	**Final Report**	
	Part 1	**Part 2**
Staff satisfaction and suggestions for improvement		
23. How long does it take WIC staff to (1) conduct the nutrition assessment, and (2) provide tailored nutrition education and breastfeeding support, (3) food package prescriptions, and (4) referrals, based on the information gathered in the nutrition risk assessment? What is the total time a participant is at the clinic for a WIC visit, and then specifically, the time it takes for the nutrition assessment and providing benefits? In other words, describe the timing of clinic flow of the nutrition services process.		✓
24. How do staff perceive the nutrition assessment process? What are staff suggestions to improve the nutrition assessment process for tailoring program benefits?		✓
25. What resources do staff utilize when conducting a nutrition risk assessment? Are there technical resources/assistance needed for staff to perform a nutrition assessment and tailor benefits beyond what they currently have available?		✓

Table B-1. Study objectives and research questions (continued)

Objective 3. Investigate relationships between WIC nutrition services processes (to include the nutrition risk assessment and the associated tailoring of program benefit delivery), and the clinic experience, participant and staff perceptions, and overall clinic flow and efficiency.	Final Report	
	Part 1	Part 2
26. What associations, if any, are identified between nutrition services processes and staff satisfaction? What associations are identified between nutrition services processes and clinic efficiency (as measured by participant time spent directly engaged with staff and participant time spent waiting to engage with staff)?		✓
Participant satisfaction		
27. Are participants satisfied with their nutrition services experience as a whole, and are they satisfied with each of the various components of nutrition services, including but not limited to satisfaction with nutrition risk assessment?		✓
28. How well do participants feel the services they receive reflect their specific needs and/or concerns?		✓
29. In what ways do participants view the nutrition services as valuable? What are their suggestions for improvement?		✓
30. What associations, if any, are identified between how local agencies conduct the nutrition services process and the clinic experience, including clinic flow and participant satisfaction?		✓
31. What practices, when used in the nutrition assessment process, facilitate a timely delivery of tailored Program benefits (including food packages, nutrition education (including breastfeeding promotion and support), referrals, and follow-ups)?		✓
Objective 4. Analyze study findings to identify specific practices or features of nutrition service processes that facilitate the use of nutrition assessment information for providing tailored Program benefits and are associated with participant and staff satisfaction.	**Final Report**	
	Part 1	**Part 2**
32. What are the benefits of MIS systems in facilitating nutrition assessment? What features of MIS systems are most effective in facilitating a comprehensive assessment and applying the information to tailored benefits?	✓	
33. What are promising practices for clinic flow and time savings involved in the nutrition services process?		✓
34. What are staff and participant suggestions to improve clinic flow?		✓
35. What are promising practices for participant experience, satisfaction, and minimizing participant burden involved in the nutrition services process?		✓
36. What are promising practices for staff satisfaction in the nutrition services process? Which of these practices also minimize staff burden?		✓
Objective 5. Describe the nutrition assessment and benefit tailoring processes when conducted remotely and compare these to the same processes as they occur in an in-person setting.	**Final Report**	
	Part 1	**Part 2**
		✓
Objective 6. Investigate participant and staff perceptions of WIC nutrition services when provided remotely and compare these to perceptions observed during in-person WIC services.	**Final Report**	
	Part 1	**Part 2**
		✓

B.2 Sampling State Agencies

The State agency frame included all eligible State agencies with a fully operational Electronic Benefits Transfer (EBT) system for at least 6 months prior to the study data collection window.[1] States and territories outside the contiguous United States were excluded from the frame due to resource constraints, as were State agencies engaged in overhauling their management information system (MIS) during the data collection period. Using WIC annual participation and State Plan data, the study team stratified eligible State agencies on four key variables:

- **Food and Nutrition Service (FNS) region.** The study team selected one State agency from each FNS region plus an additional State agency from the three regions with the largest numbers of eligible State agencies.

- **State agency participation level (high or low).** The study team defined high and low participation using the most recent annual participation data available from FNS: https://www.fns.usda.gov/pd/wic-program.

- **Flexibility allowed in tailoring of food packages (high or low).** The study team reviewed WIC State Plans to determine whether the State agency allows local agencies to develop specific individual food package tailoring guidelines (State Plan section IIB, question 2d). The study team defined State agencies that do not allow local agencies to develop tailoring guidelines as low-flexibility State agencies; State agencies that do allow this were defined as high-flexibility State agencies.

- **MIS complexity (high or low).** The study team also assigned MIS complexity using State Plan data. Section IIIC of the State Plan includes a checklist of functional requirements for State agency MISs, which State agencies use to indicate the functions their systems currently perform. The study team counted the number of items on the checklist for each eligible State agency, reviewed the distribution of this count to determine a "cutoff" between high and low complexity systems, and designated each State agency as either high or low MIS complexity.

To select a diverse set of 10 State agencies, the study team placed eligible State agencies into one of 8 stratum based on participation (high/low), tailoring flexibility (high/low), and MIS complexity (high/low). The eight strata are shown in Table B-2. State agencies were randomly selected from each stratum. To maintain geographic diversity, the study team removed the remaining State agencies in an FNS region from the sampling process once a region met its "quota" (i.e., one from each region plus a second from the three regions with the largest number of eligible State agencies).

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[1] U.S. Department of Agriculture, Food and Nutrition Service. (2022, December). WIC EBT Detail Status Report. Alexandria, VA: Authors. Available at: https://www.fns.usda.gov/wic/wic-ebt-activities.

Table B-2. Strata for selecting State agencies

Strata	Participation	Tailoring flexibility	Management information system (MIS) complexity
1	Low	Low	Low
2	Low	Low	High
3	Low	High	Low
4	Low	High	High
5	High	Low	Low
6	High	Low	High
7	High	High	Low
8	High	High	High

The final selection results are shown in Table B-3. Assigning characteristics to State agencies resulted in two strata (numbers 3 and 4) that were not populated. A third strata (number 8) included a single State agency (Oregon) that declined to participate because they were currently working on updating their MIS. Oregon was replaced with Nevada.

Table B-3. Selected State agencies

Strata	State agencies selected	State agency region
1	Vermont	Northeast
1	West Virginia	Mid-Atlantic
2	Choctaw Nation of Oklahoma	Southwest
2	Nebraska	Mountain Plains
2	Nevada	Western
3	–	–
4	–	–
5	Louisiana	Southwest
6	Indiana	Midwest
6	North Carolina	Southeast
6	Florida	Southeast
7	Ohio	Midwest
8	Oregon (replaced with Nevada)	Western

B.3 Sampling Local Agencies

The sampling frame for the selection of local agencies included those local agencies that completed the Local Agency Director Survey. Table B-4 presents the number and percentage of completed surveys by State agency.

Table B-4. Number and percentage of completed surveys by State agency

State agency	Number of WIC local agencies sent survey	Number of completed surveys	Percentage of surveys completed
Choctaw Nation of Oklahoma	1	1	100
Florida	44	41	93
Indiana	39	37	95
Louisiana	78	52	67
Nebraska	13	13	100
Nevada	16	12	75
North Carolina	84	76	90
Ohio	74	66	89
Vermont	12	12	100
West Virginia	8	8	100
Total	369	318	86

B3.1 Steps in the Local Agency Sampling Process

To select the local agencies for the study, the study team followed the selection process as described in the original WIC NATS Study Plan. Initially, the study planned to select three local agencies from each State agency. However, the Choctaw Nation of Oklahoma has only one local agency, and one of West Virginia's local agencies participated in the pretest. Therefore, in the initial selection of local agencies, the study team selected the one Choctaw Nation of Oklahoma local agency; two local agencies from West Virginia; three local agencies each from Vermont, Indiana, Nebraska, Nevada, and Florida; and four local agencies each from Louisiana, Ohio, and North Carolina. These last three State agencies had the greatest number of local agencies with completed surveys.

To begin the sampling process, the study team created 12 selection strata, as shown in Table B-5.

Table B-5. Selection strata

Characteristic	Strata
Caseload	Large (≥ 4,000) Medium (1,000 to 3,999) Small (< 1,000)
Urbanicity	Primarily urban Primarily rural Primarily suburban
Greater than 10% of participants are Spanish speakers	Yes
Greater than 10% of participants speak an "other" language (i.e., not English or Spanish)	Yes
Number of modes of nutrition education offered	5 or more 4 or less
Uses technology in providing nutrition education	Yes No

Each local agency could be assigned to up to six strata. The study team sorted the strata by number of local agencies within each from lowest to highest. The strata were then divided into quartiles. The number of local agencies sampled increased with the number of local agencies in the stratum. Table B-6 lists the number of local agencies in each stratum and the number of local agencies selected from each stratum.

Table B-6. Selection strata sorted by number of local agencies in stratum

Strata	Number of local agencies in stratum*	Local agencies selected from the stratum
10% or more of participants speak an "other" language (i.e., not English or Spanish)	33	1
Large caseload	72	1
Does not use technology in providing nutrition education	73	1
Primarily urban	82	2
Small caseload	89	2
Primarily suburban	90	2
Greater than 10% of participants are Spanish speakers	120	3
Offers 5 or more modes of nutrition education	138	3
Primarily rural	146	3
Medium caseload	156	4
Offers 4 or less modes of nutrition education	180	4
Uses technology in providing nutrition education	245	4

*This is the total number of local agencies in the stratum before the start of selection.

The study team randomly selected the stated number of local agencies from each stratum, starting with the smallest strata. Local agencies were removed from all strata if selected or if the number of sites to be selected from the associated State agency was reached. Except for ensuring that the Choctaw Nation local agency was selected, the study team followed the sampling process described in the study plan for the initial selection of local agencies. This sampling process ensured diversity across key local agency characteristics and that the characteristics that arose most frequently in the sampling frame would arise most frequently in the selected local agencies.

B.4 Recruitment Process for Local Agencies and Clinic Selection

The study team recruited 30 local agencies for the remote "site visit" component of the study. From each local agency, the study team recruited one clinic site that mirrored the selection characteristic of the local agency to the extent possible. Two senior data collectors conducted the recruitment of all local agencies. As the first step in local agency recruitment, the study team asked State agencies to send the selected local agencies an email encouraging their participation in the study. Recruiters sent an email to the local agencies to request participation and schedule a call to discuss the study and the local agency's role in it. The initial email requested that local agencies complete and return the included Clinic Site Information Form. The form recorded information about each clinic site associated with the local agency, which was used in clinic site selection.

Recruiters scheduled each local agency recruitment call for 1 hour. Calls included an overview of the study, a discussion of the local agency's role in study activities, and an opportunity for local agencies to ask questions about the study. If local agencies agreed to participate, we continued to clinic site selection. Recruitment issues and reasons why some local agencies did not agree to participate are discussed in the section on recruitment issues below.

Where local agencies had more than one associated clinic site, we used the information reported in the Clinic Site Information Form to select a clinic for recruitment that best mirrored the local agency in terms of the local agency's selection characteristics. For local agencies selected on the basis of size, urbanicity, and language use, the study team selected a clinic site with the same characteristics. So, for example, if the study selected the local agency from the "large caseload" stratum, the local agency's largest clinic (based on average monthly caseload) was recruited for the study.

For local agencies selected based on modes of education provided and use of technology in providing nutrition education, it was expected that all clinics in local agencies selected for these characteristics would have these characteristics. Therefore, the study planned to increase diversity in clinic site selection by selecting clinics for these local agencies that varied in terms of the percentage of high-risk participants and the percentage of participants with only one documented risk. There were 12 local agencies selected from these 4 strata. Seven of the 12 were single clinic sites. Four local agencies had multiple clinics from which to choose, and the State agencies provided the requested data for the clinic site selection process. For the remaining local agency in this group, the study team did not receive the data needed to complete this process and selected the clinic site based on the local agency's view of the site best suited for data collection. Finally, only clinics open at least 3 days a week were considered eligible for selection in order to ensure the study team would be able to complete 10 observation/ interview dyads within the site visit time frame.

Most local agencies returned the Clinic Site Information Form before the recruitment phone call, and therefore, the recruiters were able to discuss the selected clinic site with the local agency during the call. The recruiters asked each local agency director to contact the clinic site director and notify them of their selection for the study and let them know that the study team would follow up to discuss the study with them.

Two study team members conducted each clinic recruitment call. During the clinic recruitment calls, the study team provided an overview of the study and discussed the data collection protocol and how it might fit in to the clinics' remote operations. The study team identified WIC staff who conduct remote assessment appointments and discussed the best timing for the remote data collection site visit. During the clinic recruitment process, the study team asked selected clinics to participate in both the remote and in-person data collection phases of the study, with the understanding that the in-person data collection would not occur until clinics resumed in-person assessment visits and considered site visits by the study team to be safe. No clinic expressed a reluctance to participate in the in-person data collection at the time of recruitment for the remote data collection phase.

Once the local agency agreed to participate, recruitment of clinics proceeded smoothly. In one local agency, we recruited two clinic sites to ensure sufficient certification visits for the remote data collection.

Recruitment issues. As expected, the study team discovered early in recruitment that some local agencies had returned to in-person appointments for enrollment and recertification visits. In some instances, it seemed that the move to in-person appointments was reversing as a new wave of COVID-19 infections hit the local areas in which the selected local agencies operated. It appeared that WIC clinic operations were in flux during the recruitment period for remote data collection—most of which occurred in August and September 2021—and that the study team would not know for certain the extent to which local clinic operations were being conducted remotely until speaking with the local agencies during recruitment calls. Specific local agency and clinic recruitment issues encountered and their remedies included:

- For one State agency, it was determined that rural local agencies were conducting operations in person, so the study team prioritized finding a local agency that was still providing remote services regardless of site characteristics. One selected local agency providing services in person was replaced.

- In another State, only one of the four initially selected local agencies was able to participate. Two of the three needing replacements were not providing any remote services, and the third was interested in participating but was experiencing a staffing shortage. The study team identified a set of four or five potential replacement local agencies (based on selection characteristics) for each of the three original local agencies in this State that could not participate. We provided the State agency with the names of these potential replacement sites and asked the State agency to indicate those they believed were providing services remotely. The study team selected three replacement local agencies from those that were providing remote services, and all three replacement local agencies agreed to participate.

- The clinic site selection protocol required selection of a clinic site for each local agency that best mirrored the selection characteristics of the local agency as long as the clinic site conducted assessment appointments 3 or more days a week. This process for selecting clinics worked well in most places but broke down in one State agency. In this State agency, the selection process resulted in two local agencies from the “medium caseload” strata—having average monthly caseloads of 1,000 to 3,999. Both selected local agencies had several clinics, but these clinics either did not operate for 3 or more days a week or had caseloads smaller than the medium caseload needed to mirror the local agency caseload. A decision was made in conjunction with FNS to replace these two sites with the two largest medium-caseload local agencies in the State.

- Because of a delay in Institutional Review Board (IRB) approval in one State, the study team replaced one local agency in that State with a local agency from another State in order to move forward with data collection in as many local agencies as possible.

Of the original 30 selected local agencies, 4 were replaced as a result of the State agency review and 7 were replaced during the recruitment process for an overall "response rate" of 63 percent for the remote data collection phase.

Recruitment for in-person data collection. At the time of their recruitment for remote data collection, clinics agreed to participate in both in-person data collection as well, providing a starting point for in-person recruitment. However, as the COVID-19 public health emergency was still ongoing, and the WIC physical presence waivers were still in effect at the time of in-person recruitment, not all sites had returned to in-person service delivery. Clinics providing only remote services could not take part in the in-person data collection.

The study team contacted all 30 local agencies that had previously agreed to participate and discussed with them the possibilities surrounding in-person data collection at their clinic. It quickly became apparent that not all 30 sites which took part in remote data collection had plans to return to in-person service delivery prior to the end of the public health emergency. From these contacts, the study team learned that 14 replacement clinics would be needed in 6 State agencies.

In one State agency, all local agencies (not just those that were part of the remote data collection) were still providing remote services and would continue to do so through the end of the public health emergency. As there were no possibilities for replacement sites, this State agency, which had three study sites, was not included in the in-person data collection effort.

Site replacements were found in the other five State agencies by first reviewing the characteristics of local agencies needing replacement and then preparing a list of possible alternatives with similar characteristics. The study team provided a list of three possible alternatives for each local agency needing replacement to the State agency directors, asking that they review the list, identify any reasons one or more of the sites would not make good candidates for WIC NATS in-person data collection, and provide contact information for those sites that would be good candidates. This process allowed the study team to successfully recruit replacement local agencies in three of the five State agencies that had sites needing replacement. In the final two State agencies, the study team presented a second set of three alternatives to the State agency directors as well but were unable to find replacement sites for two local agencies—one in each of the remaining State agencies. The alternatives for these sites were not conducting in-person certification visits or were conducting so few in-person visits that it was felt they could not produce sufficient appointments to warrant a site visit.

These final efforts resulted in the recruitment of 25 local agencies for in-person data collection. This included:

- 16 local agencies that participated in remote data collection, and
- 9 local agencies newly recruited for in-person data collection.

For the nine newly recruited local agencies, once the local agency agreed to participate, recruitment of clinics proceeded smoothly. Where local agencies had more than one associated clinic, the study team discussed the associated clinics with the local agency director and selected the clinic that mirrored the local agency selection characteristics where possible, but also taking into account the availability of the clinic for a site visit within the restricted data collection period and the likelihood of being able to complete 10 participant observation/interview dyads in a 1-week site visit.

B.5 Participant Sample

To complete clinic data collection, the study team recruited up to 17 participants from each study clinic with the intention of achieving at least 10 completed observation/interview dyads per site in both the remote and in-person data collection phases. WIC participants/caregivers were eligible for the study if they were 18 years of age or older and were taking part in an enrollment or recertification visit.

Remote data collection presented a challenge for recruiting WIC participants into the study as there was no opportunity for recruiters to meet participants while in the waiting room prior to their appointment as the original study plan called for. One concern for participant informed consent was that WIC participants, particularly those being enrolled in WIC for the first time, would not understand that the study and incentive were not part of regular WIC services since study recruitment happened during the remote appointment. Revisions to the participant informed consent clarified that the study is an extra activity and not a part of their WIC appointment.

Participants were recruited into the study in the following manner for the remote data collection:

- Site staff began a certification appointment by phone and completed the income/eligibility portion of the appointment.
- Once the income/eligibility portion of the appointment was completed, the staff person mentioned the study to the participant and asked if they were interested in finding out more. If yes, Westat staff were asked to join the call.
- Westat staff discussed the study and completed the informed consent with the participant before the nutrition assessment portion of the appointment began.

For in-person recruitment of WIC participants, data collectors asked clinic front-desk staff to identify participants whose clinic visit involved enrollment or recertification by giving them a copy of the study brochure. In this way, data collectors knew whom to approach for recruitment into the study. A short screener was administered to gauge interest and determine if the participant/caregiver was at least 18 years of age. If the WIC participant was eligible for the study and interested in participating, the data collector walked through the informed consent with the participant and asked them to sign the document for both the observation and interview activities.

Because the study team wanted to observe nutrition assessments for all types of WIC participants—pregnant women, postpartum women, infants, and children—the study team originally asked WIC staff for the weekly schedule of clinic visits in advance of the site visit in order to obtain an idea of the types of participants that would be seen during the site visit week. This did not work out. Because the number of no-shows in many clinics was quite high, the weekly schedule of clinic visits often did not reflect the actual visits conducted. In practice, the study team was aware of the need to complete observations for all participant types and kept this in mind when recruiting participants. In many clinics, the number of enrollment and recertification visits were limited, and observers approached every possible participant in order to ensure they would be able to complete 10 observation/interview dyads. Table B-7 presents the distribution of study participants across participant categories compared to that distribution for the WIC program as a whole in 2020. The study data collectors recruited a sample of participants that generally mirrors the distribution of participant categories found in the 2020 WIC Participant and Program Characteristics data with two exceptions: the study sample has a larger percentage of pregnant women and postpartum women. This has served to provide the study a more balanced sample of participants across categories.

Table B-7. Comparison of participant categories for observed participants versus all WIC State agencies

WIC participant category	Percentage of WIC participants	
	Remote and in-person data collection (n=565)	All WIC State agencies, 2020 (n=7,036,902)
Pregnant women	22.3	7.8
Postpartum women	25.0	15.0
Infants	28.5	24.0
Children	58.4	53.2

Note: Percentages may not add to 100 because of rounding.

Sources: For remote and in-person data collection: U.S. Department of Agriculture, Food and Nutrition Service, WIC Nutrition Assessment and Tailoring Study, Observation Guide. Remote observations were conducted fall 2021– spring 2022 and in-person observations were conducted summer and fall 2022, Information collected prior to observation, questions 1–5. Questions to ask after the observation, questions 1 and 2. Tabulations are not weighted. Calculated from appendix E, Table 11.

For all WIC State agencies: Kline, N., Zvavitch, P., Wroblewska, K., Worden, M., Mwombela, B., and Thorn, B. (2022). WIC Participant and Program Characteristics 2020. Alexandria, VA: U.S. Department of Agriculture, Food and Nutrition Service. Table 3.1, page 28 presents the distribution of WIC participants by participant category.

B.6 Data Collection

Remote data collection occurred in the fall of 2021 for most sites. In one State, a delay in receiving IRB approval required the study team to defer data collection in that State until the spring of 2022. In-person data collection took place in the summer and fall of 2022.

B.6.1 Remote Data Collection

For each of the 30 sites recruited for remote data collection, the study team interviewed up to 5 staff members who conducted nutrition assessments. Staff members agreed to both an interview and observation of their certification appointments. Interviews with staff members were recorded.

Remote data collection also included observations of certification appointments and interviews with observed participants. At each site, up to 17 participants were recruited into the study as described above. The goal was to complete 10 observation/interview dyads at each site. Researchers asked participants to complete a 30-minute interview immediately or shortly after their appointment. Because some observed participants were unable to complete the interview, the remote data collection resulted in 304 observations but 280 completed interviews. Researchers called participants for the interview on a phone number collected at the time of the informed consent. Study staff bilingual in English and Spanish were available to observe appointments and conduct interviews with Spanish-speaking participants. A language line was also made available for interviews with participants who spoke a language other than English or Spanish, but it was only used once and that was for a Spanish-speaking participant. The interviews, but not the observations, were recorded. Observations were not recorded due to the personal nature of the assessment discussion. Participants were offered a $30 Visa gift card for their time.

All sites were also offered an incentive for their participation in the study. The incentive was children's books and toys appropriate for their waiting room with a value of $40. The remote data collection period took place in August through November 2021. For one State agency, however, data collection occurred in March of 2022 as IRB approval for the study in that State was delayed.

The data collection instruments used for remote data collection were adapted versions of the instruments created for in-person data collection. (These instruments are described further in section B.5.2.) The data collection instruments are contained in appendix A. Differences between remote and in-person instruments are highlighted by questions that are "grayed out." Additional questions were slightly reworded for use in the remote data collection. For instance, the word "visit" was replaced with "appointment" for remote interviews.

B.6.2 In-Person Data Collection

Westat conducted telephone and in-person interviews with clinic site directors. Telephone interviews occurred prior to the site visit when either the site director did not work at the clinic location visited or to save onsite time for observations and participant interviews. The site director interview collected information on clinic staffing, the use of tools and technology in conducting the assessment, how the clinic's MIS helped guide clinic staff through the assessment process, protocols for completing breastfeeding assessments, the process for determining if a participant is high risk, ensuring cultural sensitivity in service provision, and issues related to clinic flow. If a site director also conducted nutrition assessments at the clinic and completed the staff interview, questions were removed from the site director interview that were duplicative of those asked in the staff interview. Appendix A provides both versions of the Site Director Interview Guide.

Data collectors conducted telephone and in-person interviews with up to five WIC nutrition assessment staff in each clinic using the WIC NATS Staff Interview Guide. This interview collected detailed information on aspects of the nutrition assessment process not easily observed, focusing on the staff person's internal decision-making process. The instrument also included Likert scale questions to measure staff satisfaction and the perceived burden level of current practices, with follow-up probes to allow the respondent to explain their response choices and make recommendations for improvement. After completing the interviews, data collectors abstracted answers from the guide's closed-ended questions into an Excel spreadsheet to create the Staff Interview Quantitative Database.

Data collectors used the WIC NATS Nutrition Services Observation Form (also in appendix A) to record information during assessment observations. The Observation Guide allowed data collectors to document the elements present in the assessment through a series of checklists and closed-ended questions. Generally, data collectors obtained observations during the in-person phase of the project using the following process:

1. A WIC participant arrived at the clinic and signed in with a receptionist who may have also been the eligibility determination clerk for the clinic. The income/eligibility portion of the certification was completed.

2. Once the income/eligibility portion of the certification was completed, the participant went to a waiting area prior to being called for their appointment. At this time, a Westat data collector approached the participant and asked if they would be interested in participating in the study.

3. If the participant expressed interest, Westat staff described the study and completed the informed consent with willing participants before joining the participant for the rest of their appointment.

The Observation Guide was a TeleForm document. The interviewers sent completed guides to Westat, where data processing staff used TeleForm software to scan the hard-copy instruments in order to convert and store the data electronically in an Excel spreadsheet.

Interviewers asked participants to complete a 31-question in-person interview designed to obtain their perspectives on the nutrition assessment process and their satisfaction with the process and its outcomes. The Participant Interview Guide (see appendix A) also included questions about specific components of participants' WIC nutrition assessment appointment, aspects of the process that were perceived as burdensome, reasonableness of the length of time for the appointment, cultural sensitivity, and their recommendations for improvements. The interview was semi-quantitative with numerous Likert scales and closed-ended questions. Like the Observation Guide, the Participant Interview Guide was a TeleForm document. Interviewers sent the completed guides to Westat for scanning into an electronic database. As with remote data collection, the goal was to obtain a total of 10 completed observation-participant interview dyads per clinic. Of 261 participants with observed appointments, 256 completed an interview. Participants who completed an interview onsite were given a $20 Visa gift card for their time. If the interview was completed at a later time by phone, participants were given a $30 Visa gift card to cover the additional expense of the cell phone minutes used.

Finally, on-site data collectors created a flowchart describing a typical certification appointment at the clinics they visited. These flow charts are presented in appendix F. Data collected as part of the observation of clinic environments are included in appendix G.

B.6.3 Data Collection Challenges

The COVID-19 pandemic created several challenges for the study's data collection. The pandemic made local agency recruitment more complicated as WIC clinic site operations were in flux during both the remote and in-person data collection recruitment periods. For both data collection phases, the study team generally did not know how the local agencies were providing nutrition services until speaking to them. When the need for replacements arose, it was not always possible to find replacements with similar characteristics.

Remote data collection also presented a challenge because the study team did not have a schedule of visits in advance given the high number of no-shows and walk-ins in many clinics. This meant that data collectors did not know in advance when they would be needed to observe a remote certification visit. The study team made the remote data collection task a first priority for data collection staff in order to ensure they were available for unscheduled (or quickly scheduled) appointments or appointments rescheduled at the last minute.

Connectivity issues sometimes hampered remote data collection. This was an issue for the WIC clinics as well as the data collectors. Problems with no-shows and limitations on the number of certification visits provided in the manner needed due to changing modes of delivery during the data collection periods contributed to data collectors' inability to obtain 10 observation/interview dyads in some clinics. Data collectors completed less than 10 dyads in 5 remote clinics and 5 in-person clinics. A number of these clinics were quite small, so no-shows or participants opting for remote visits during the in-person data collection period (or vice versa) could result in lower numbers of recruited participants than expected. However, data collectors were often able to complete more than 10 observation/interview dyads in other clinics, so that overall numbers almost met the data collection goal for the remote period (completing 280 of the expected 300 dyads) and surpassed the goal in the in-person data collection period (completing 256 dyads, 6 more than the expected 250).

B.7 Analytic Approach

Analysis of collected data included both qualitative and quantitative approaches. Methods for the qualitative analysis and the creation of indices are described here.

B.7.1 Qualitative Analysis

Qualitative analysis of interview data began with the creation of NVivo datasets by trained, experienced qualitative analysts. Staff created a codebook and instructions for coding the remote data interviews, which were updated for the in-person interviews.

Analysts followed the same coding process for both the remote and in-person interviews. A team of four qualitative researchers completed the coding of the remote interviews in the fall of 2021. The process began with the creation of a preliminary codebook based on the participant and staff interview guide questions. Researchers used this preliminary codebook to conduct initial tests of consistency across coders. For the remote data, all researchers coded a selected participant and staff interview and reviewed the results together, discussing text where coding diverged. All researchers then coded a second selected participant and staff interview to ensure they were coding interviews in a similar manner. The coding team met weekly during the coding task to discuss questions that arose and the addition of codes to the preliminary list.

A similar process was completed for the in-person data by a different set of three researchers, who coded the in-person interviews from January to March 2023. At the beginning of the coding process for in-person interviews, each member of the qualitative team coded the same 4 interviews—1 site director, 1 staff, and 2 participant interviews. The team then met to review the codes used and any questions before continuing with coding the remainder of the transcripts. This team also met weekly during the coding task.

The codebook developed by the qualitative team contained both the list of codes (i.e., nodes) to be used and coding instructions. For each code, the codebook included:

- the code's definition;

- the interview type for which the code should be used, that is staff, participant, or both for remote data and staff, participant, site director or all three for in-person data; and
- the interview guide questions (by question numbers) associated with each code.

The researchers also included “valence” codes, which were used to double-code text as, for example, a challenge or negative statement or as a facilitator or positive statement. The double codes allowed researchers to indicate whether text coded as “referrals” or “nutrition education” was positive or negative, which would help in the analysis process. Researchers also added attributes for staff and site director interviews.

The outcome of this coding process allowed coders to organize interview text into coded “buckets,” which were “sliced” using valence codes or interviewee attributes, making the analysis of this large amount of qualitative data a much more manageable prospect. Once the coding was complete, researchers from the study team began to analyze the data and address the research questions by identifying the relevant codes and attributes (if any) and running a query to produce the appropriate text from all interviews with the selected codes. The researchers thoroughly read through the query results in NVivo and documented emerging themes, as well as supporting quotes and transcript ID numbers in Excel.

This method of coding was chosen for this task primarily because of the large number of interviews conducted for both the in-person and remote data collections. The study team needed to be able to efficiently and effectively code these interviews, with a team of coders working concurrently. Using NVivo as an organizing tool produces the codes that are the first step in the analysis of these data. Each researcher was assigned a section of the report, ran the relevant queries for that section, and then developed themes based on the consistent reading of the relevant text.

Direct integration and triangulation of findings. The study analysts integrated qualitative data with quantitative data to augment and validate quantitative findings using the following methods when possible:

- direct integration, in which qualitative data are used to create dichotomous or scaled implementation and contextual variables—in particular, the study team used quantitative variables created from the interview data in the study’s regression analyses;
- triangulation, in which qualitative analytical findings confirm the quantitative findings; and
- interpretation assistance, in which qualitative data are used to help interpret findings and guide further analyses to understand unexpected quantitative findings.

Qualitative analysts also reviewed flowcharts of how in-person service delivery was conducted at the visited sites. Data collectors completed 1 flowchart for each local agency visited for a total of 25. If the data collectors visited two clinics for a single local agency,[2] they noted any differences in the process between the two clinics in the flowchart. Data collectors were asked to "be as specific as you can," but there was variation in the amount of detail provided. Analysts used these flowcharts to create the two most common clinic flows in the WIC clinics visited.

B.7.2 Creation of Indices

Two indices, or composite measures, were created and used for different aspects of the study analysis. These indices facilitated the analyses of VENA operationalization and staff satisfaction.

VENA operationalization. A VENA operationalization index was created for each clinic to represent the extent to which clinic staff used VENA principles in the observed certification appointments. The study team used the following list of items from the Observation Guide that represent aspects of VENA principles in action to create the index:

- The CPA provides a clear explanation of the WIC risk assessment process and its purpose.
- The CPA asks about the participant's/caregiver's nutrition needs and interests.
- When discussing the participant's nutrition needs and interests, the CPA acknowledges and affirms the participant's thoughts and concerns.
- Nutrition risks are discussed directly with participants/caregivers.
- Discussion of nutrition risks focuses on positive changes and/or desirable health outcomes and not deficiencies.
- When multiple risks are identified, discussion with participants/caregivers determines the priorities for nutrition education.
- Goal setting includes input from the participant/caregiver.
- In a recertification visit, the CPA follows-up on progress made.
- The CPA looks directly at the client (and not at the computer) for the majority of the session.

[2] The data collection team visited two clinic sites for four local agencies in order to increase the opportunities for observing enrollment and recertification visits.

- The CPA invites the participant/caregiver to look at the computer screen, using the MIS to build rapport with the participant/caregiver.

Each item was coded from the assessment observation form with a 1 indicating a positive, VENA-influenced response. Codes were tabulated for each site and overall. If 3 of 10 items were coded 1 for an observation, that observation received a score of 3. Scores were averaged across all observations for each clinic to obtain a composite score that could range from 0 to 10 for in-person appointments and 0 to 7 for remote appointments. (The remote services composite measure included only those items that were applicable to a remote appointment.) Because some items could not be part of remote appointments (i.e., how often the WIC CPA looked directly at the participant), the composite measures were lower for remote appointments than in-person appointments. The analysis using this composite measure is presented in chapter 5 of the report.

Staff satisfaction. In order to construct a single dependent variable for a regression model examining staff satisfaction, five items from the staff interview contributed to an index measure of staff satisfaction. Factor analysis identified common variation among the items and factor loadings determined the contribution of each item to the overall index. Table B-8 presents the five items from the staff interview that were used in the factor analysis along with their relative contribution to the staff satisfaction index. The contributions are based on normalized factor loading scores. The resulting staff satisfaction index score ranged from 0 to 1 with a mean score of 0.78 and a standard deviation of 0.22. Nearly two-thirds of staff had scores between 0.87 and 1.00. The regression model and results are presented in section 7.3a of the report.

Table B-8. Survey items and their contribution to composite measure assessing staff satisfaction†

Staff interview question	Amount added to satisfaction score by response	
	Undecided/disagree/ strongly disagree	Agree/strongly agree
Q27: The nutrition risk assessment process when conducted remotely is effective in identifying participants' nutrition risks	0	0.282
Q34: Staff have all the resources they need to perform a nutrition risk assessment remotely for each participant	0	0.153
Q35: Staff have all the resources they need to tailor benefits remotely for each participant	0	0.153
Q38: The clinic's management information system (MIS) helps staff to complete the nutrition risk assessments remotely	0	0.282
Q39: The clinic could make better use of technology when communicating with participants about their nutrition risk assessment appointments	0.129	0

†A factor analysis was performed on these five items to identify common underlying variation, with the objective of creating an index assessing staff satisfaction—an unobserved factor. The composite measure of satisfaction constructed from this factor analysis ranges from 0.00 to 1.00.